

Invasive Species—Biology Gone Bad

by Scott Kishbaugh

Invasives are “hot.” Not hot, as in hot and bothered – although an inadvertent brush against giant hogweed may start with hot and bothered and end with a third-degree burn or even blindness. They’re not even hot, as in stolen – even if the possession of the northern snakehead and some other invasive plants and animals is or soon will be prohibited by state law. But they are hot as in not cool. They are definitely hot as in a hot topic lake issue – like point source pollution in the 1960s and 1970s, nonpoint source and stormwater pollution in the 1980s and 1990s, and probably like pharmaceuticals and algal toxins in the 2010s and beyond. Like these other persistent problems, the prevention and control of invasive organisms will occupy the attention of government agencies, lake managers, environmental stewards and concerned citizens well into the future.

Nuisance or Invasive?

So what is an invasive? Common definitions may vary, and the distinction between nuisance and invasive may appear to be trivial to a lake resident clearing dense Eurasian watermilfoil tangles from their boat propeller, or an angler catching and releasing one common carp after another. But the differences are more than semantic. A nuisance organism interferes with human activity, but is usually indigenous to a lake or pond. As frustrating as thick mats of coontail may be to a hand harvester trying to elbow out a nasty weed infestation, these are nuisance plants. Invasives are exotic, non-native organisms that reproduce rapidly, displacing native organisms and causing significant ecological and even economic harm.

A legal definition of invasive species is now codified within the state’s Environmental Conservation Law (ECL), at ECL Title 17, Section 9-1703. The water quality and ecological effects of zebra mussels, and the municipal costs for clearing water intake pipes, have been well documented. As succinctly stated in “Intruders,” an article in the April 2009 issue of *New York State Conservationist*, invasive species are biological pollution. They can be introduced intentionally and inadvertently, as ornamentals or biological cargo, whether plants, animals, insects or pathogens.

Not all non-native species are invasive – it has been estimated that only 10 to 15 percent of exotic species cause environmental harm. Yet survey after survey of lake residents show that invasive species are often the primary target of lake management activities, from Long Island to the Erie Plains, from farm ponds to the Great Lakes, whether residents use their lakes and ponds for clean drinking water, a quiet paddle or picnic, a thrilling slalom or battle with a trophy fish, or as a valuable shoreline investment. Lake management tools, from in-lake plant control techniques to lake stewards and boat inspectors, and other grants programs, have been built and sharpened primarily



Hilary Smith – Adirondack Park Invasive Plant Program

The invasive water chestnut plant is shown here growing abundantly in southern Lake Champlain.

to deal with invasive species. The lake landscape has turned into a battlefield, with a building coalition of government agencies, lake associations and private citizens joining forces to wage war against a growing list of invasive organisms, to protect lake uses, important ecological habitats, and valuable native plants and animals.

The Battleground

For many years, the fight against lake invaders was waged mostly by hand, by lake residents pulling water chestnut rosettas growing near swimming beaches and plucking zebra mussel shells from a dock. This brave battle continues in many of the thousands of private lakes and ponds covering the New York landscape, for lake management in New York State largely remains a local endeavor, befitting a state strongly governed by home rule. Lake associations increasingly play a role in invasive species management to: evaluate the myriad of management alternatives in the toolbox; navigate through the permitting maze; build consensus among lake residents striving to optimize competing lake uses; and raise or attract funds needed to pay for pricey mechanical weed harvesters, aquatic herbicides or herbivorous fish.

The New York State Federation of Lake Associations and New York State Department of Environmental Conservation (NYSDEC) partnered to create a lake management publication, *Diet for a Small Lake*, to introduce invasive species management tools and to guide lake residents and associations through the lake management process. As legislators and government agencies have come to view invasive species as biological pollution, the toolbox has expanded.

New York State was among the first to recognize the importance of invasive species. The state Aquatic Non-Indigenous Species (ANS) plan in 1993, the first in the nation, helped channel federal funds to research on zebra mussel colonization, biocontrols and statewide inventories of exotic plants. It took more than a decade, however, for the state to formally characterize invasive species as biological pollu-

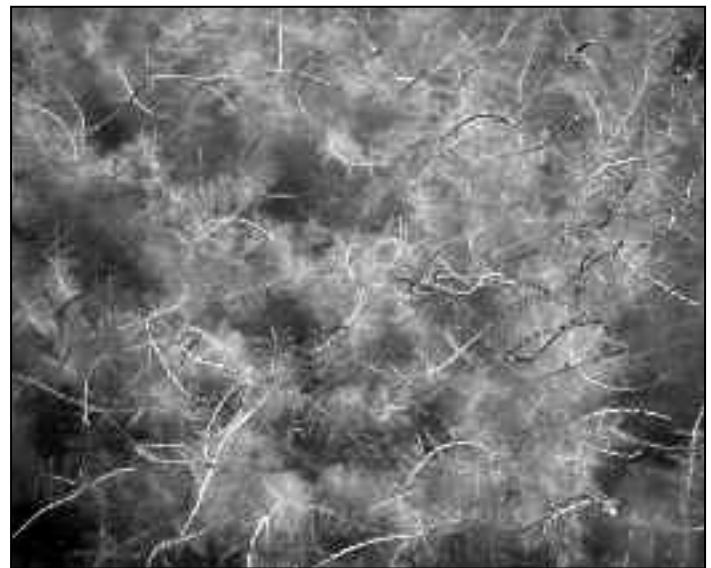
continued on page 30

tion. Permit writers and grant programs largely viewed the control of exotics more favorably than the control of native organisms, and the management of ANS in lakes focused primarily on reducing impacts along developed shorelines instead of large-scale, whole-lake management devised to protect entire lake habitats from invasives. Even today, with a growing cadre of government scientists dedicated to invasive species management, progress comes in fits and starts. Grants programs have not yet been retrofitted to provide shovel-ready funds for rapid response to freshly discovered invaders. Statutory authority for government agencies to pro-act or even re-act to invading plants is still unclear. Regulatory programs have not yet been implemented to allow for a rapid, comprehensive response to the latest infestation. Government struggles to balance the need to provide public access while reducing the opportunities for invaders hitchhiking on boats and other recreational gear. Legislation to ban the sale or transit of many exotic organisms, from the aquaria trade to ballast water, has been slow to develop as well.

Yet, much progress has been made. The Governors Invasive Species Task Force, created in 2003 and comprised of representatives from 17 state agencies and non-government organizations (NGOs), produced a dozen recommendations to comprehensively address invasive species issues in the state. Some of these recommendations have already been implemented:

- The Invasive Species Council (ISC) and IS Advisory Committee (ISAC) were established (under ECL, Article 17) in 2008. The ISC consists of executive level representatives from nine stakeholder state agencies with NYSDEC and NYS Department of Agriculture and Markets co-leading the body. The ISC is charged with assessing invasive species impacts in the state, identifying council member actions to prevent introductions of invasive species and implementing recommendations of the Task Force. The ISAC, whose membership is representatives of 25 non-governmental stakeholder groups including academia, trade, lake associations, user groups and conservation organizations, advises the ISC.
- A permanent Office of Invasive Species Coordination was established within NYSDEC to manage invasive species activities within the walls of state government and reach out to local and regional invasive species management efforts. These efforts include the development of a rapid response protocol for streamlining the process from discovery to action.
- The state is partnering with the New York Natural Heritage Program to develop an accurate, online invasive species database (<http://www.imapinvasives.org>) to document the emerging inventory and spread of invasive species throughout the state.
- The New York Invasive Species Clearinghouse (<http://nyis.info>) provides public outreach education and links to scientific research, state and federal management programs and policy information, and grassroots invasive species actions.
- In recognition that the fight for invasive species destruction is best waged at the local level, eight Partnerships for Regional Invasive Species Management (PRISM) have been formed across the state to provide volunteers with training in invasive species monitoring, eradication, control, education and outreach.
- To get dollars into the hands of lake associations, municipalities and environmental organizations striving to extirpate invasive species, the state Invasive Species Eradication Grants (ISEG) program provides state matching funds for projects initiated to eradicate both aquatic and terrestrial invasive organisms, particularly exotic plants.

- The New York State Invasive Species Research Institute (NYSISRI) was recently established at Cornell University to coordinate basic and applied research at a regional and state level (<http://nyisri.org>). The Institute helped coordinate the first state invasive species symposium in 2009.
- Several organizations, including the OISC, government agencies,



Washington State Dept. of Ecology

Eurasian watermilfoil, as shown here, left alone to flourish will eventually clog the surface of a lake.

NGOs and industry, are evaluating the invasiveness of individual non-native species, and are developing regulatory tools for creating a “four-tier” list of potentially prohibited, regulated and unregulated non-native invasive species (the fourth tier being the process for evaluating these organisms).

Role of Lake Associations in Invasive Species Management

Lake associations have always been involved in invasive species management and do not stand on the sidelines in the evolving battle against invasives. PRISMs reach out to lake associations and private citizens to gather important information about the distribution and impact of invasive species on the use and ecological integrity of lakes. This is particularly important because lake recreational users and lakefront property owners – the primary constituencies represented by lake associations – have firsthand knowledge about invasive species issues in lakes. Their input into the “ground-truthing” of regional or statewide invasive species policies is vital in matching allocation of management resources to the reality of local needs.

Volunteers also serve as a critical first line of defense in finding and rapidly responding to new invaders. The Adirondack Park Invasive Plant Program (<http://www.adkinvasives.com>), run by the Adirondack Chapter of the Nature Conservancy, trains volunteers to identify exotic aquatic plants and works with the Adirondack Park Agency to streamline the permitting process and foster rapid response actions. Exotic plant identifications are offered by the NYSDEC through the New York Citizens Statewide Lake Assessment Program (CSLAP, see article on page 20) and by other organizations throughout the state. Lake associations can harness the power of their members to meticulously search the depths and widths of a lake for a fragment of hydrilla or some previously undiscovered plant, the telltale tangle of the spiny waterflea on an angler’s line, or something amiss with a carp washed up on some distant shore.

Most importantly, the public plays a critical role in preventing invasive species from entering lakes by understanding all of the pathways through which these exotic invaders enter. Lake associations are vitally important in helping to inspect, dry and clean boats and empty bait buckets before they enter lakes; dissuading their neighbors not to feed the ducks or to empty spent aquaria into lakes in hopes of saving the aging family fish; and for educating lakefront residents and visiting guests about the growing threat that invasive species bring to lakes.

Whether gathering support for a large scale plant eradication project, providing more eyes on and in the water, lending assistance to their local PRISM, or alerting their local officials to the need for grants programs or "black listed" legislation in the works, it is only with the cooperation and assistance of concerned citizens that the battle against new waves of invasive organisms can continue to be waged.

For more information about the New York Citizens Statewide Lake Assessment Program, contact Scott Kishbaugh, NYSDEC Program Director, at 518-402-8282 or sakishba@gw.dec.state.ny.us.



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