



# Prevention Key to Controlling Invasive Plants

By Elizabeth Gara  
Executive Director, CWWA

Unightly weeds have long plagued gardeners and farmers. But weeds are child's play compared to the way that harmful, non-native plants and other species have spread across Connecticut and other states. These invasive plants cause serious ecological harm, taking over whole habitats and choking out native species. In fact, nationwide, three million acres are lost each year to invasive species.

For water companies, invasive plants are an increasing concern because they grow rapidly, are difficult if not impossible to eradicate and can create permanent and serious problems for the state's public water supplies. For example, certain species clog intake valves and impede the flow of water. Other species crowd out native plants that are vital to source water protection efforts. Also, herbicides, which are often used to control invasive plants in other areas, cannot be used in public water supply watershed areas because of concerns that they will contaminate water supplies.

What are the characteristics of an invasive plant?

Invasive plants share five key traits:

- Abundant fruit and seeds
- Ability to disperse seeds wide distances
- Quickly and easily established in a variety of conditions
- Rapid growth
- Absence of natural controls on growth and reproduction that would be found where the invader is native.

The state Department of Environmental Protection (DEP), which is charged with protecting native species and their habitats, has taken measures to control and remove invasive species on state land while offering assistance to private landowners seeking to manage invasive species on their properties. In addition, recognizing that invasive species were causing ecological harm in Connecticut, the legislature created the Connecticut Invasive Plants Council, which has been instrumental in developing and implementing

enforcement tools to help eradicate invasive plants. It has also developed a list of non-native plants that cause or have the potential to cause environmental harm. Some of the invasive plants on the list have posed problems for water utilities in Connecticut, including Eurasian Water Milfoil, Water Chestnut and Japanese Barberry.

Eurasian water milfoil wipes out native species, prevents sunlight from reaching underwater species, and may even change water chemistry. According to Brian Roach, Supervisor, Environmental Protection for the Aquarion Water Company of Connecticut, "Milfoil is present in essentially all of Aquarion's reservoirs, but is most troublesome in some of our smaller, shallower lakes. Because the chemical applications that would be necessary to control this plant are not an option in public drinking water supply reservoirs, no viable or practical eradication or control measures currently exist."

Aquarion did experiment with milfoil control in its shallow, 60 acre Aspetuck Reservoir in Easton, Connecticut, by lowering the reservoir water levels during winter months to allow freezing temperatures to reach the sediments where the plants are rooted. While this control method has been touted as effective elsewhere, the very aggressive nature of milfoil propagation and growth quickly negated these efforts in the Aspetuck Reservoir and the program was soon discontinued.

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John Hudak, RWA

South Central Connecticut Regional Water Authority (RWA) also periodically hand cuts and removes Eurasian Water Milfoil in the vicinity of a recreational boat dock on one of its reservoirs. This has been adequate to

keep the boat dock clear but it has not eliminated the problem or prevented its expansion. One concern with Milfoil is clogging of the intake and pumping mechanism between the reservoir and the treatment facility because the intake is not in deep water, according to a 2008 report\* sponsored by the American Water Works Association Research Foundation and U.S. Environmental Protection Agency. A secondary concern, the report notes, is the apparent association of blue-green algal mats with colonies of Eurasian Water Milfoil that causes some taste and odor issues.

“For the most part, eradication isn’t a realistic goal with invasive plants. And, control/management efforts involving herbicides pose obvious conflicts in public water supplies,” notes John Hudak, Environmental Planning Manager for RWA. “For uninfested water bodies, prevention is the best strategy. For example, boat trailers are a significant potential means of transferring invasive plants from one water body to another. Water utilities need to be careful of this during their own sampling programs or when allowing others to access their reservoirs for recreation, research, etc.”

James Sipperly, Environmental Resource Specialist for Middletown Water & Sewer, indicated that they are experiencing similar problems with Eurasian Water Milfoil. “Just a few years ago, plant operators at Middletown’s Higy Reservoir noticed that when they were treating the reservoir with copper sulfate the boat motor was having trouble. Upon closer inspection, they noticed that a mat of aquatic weeds had wrapped around the small outboard propeller which appeared to be Eurasian Water Milfoil and other types of aquatic weeds,” said Sipperly. “Because of its growth potential it can block irrigation ditches and intake pipes,” he added.

Middletown Water & Sewer contacted the Connecticut Agricultural Experiment Station, which has agreed to conduct an assessment and survey the type and extent of the aquatic weeds that are present. Gregg Bugbee, Aquatic Scientist, who will be conducting the study, will

be looking at species present, water depth, sediment characteristics and will collect specific data on water quality such as temperature, ph, specific conductivity, dissolved oxygen and turbidity. The data will be collected at all grid locations where the water depth is less than 10 feet and aquatic vegetation is present. Most aquatic vegetation generally does not grow at depths greater than 10 feet.

Once the survey is complete, methods of treatment will be recommended. “We are planning to apply for funds for treatment under the Connecticut Corporate Wetlands Restoration Partnership,” explained Sipperly. The Partnership funds restoration projects that restore wetlands and aquatic ecosystems in the State of Connecticut. Applications are considered based on four criteria, ecological merits, technical feasibility, local community benefits and financial clarity and strength of the application.

The steps that these water utilities have taken are consistent with the following recommendation outlined in the AWWA report relative to milfoil:

1. Conduct a threat analysis for the reservoir to determine the likelihood of milfoil invasion and the potential for resultant water supply problems.
2. Map the aquatic plant assemblage in the reservoir.
3. If invasive Milfoil is not present, take steps to prevent its introduction and establishment. Inspections at any boat launch and development of a practical rapid response plan are two important actions in this regard.
4. Monitor logical locations of invasions (inlets, boat launches, areas of bird congregation) and be prepared to implement the rapid response without delay.
5. If invasive milfoil is established, evaluate the potential for water quality impacts and effective control. Implement a control plan if warranted.

*Continued on page 10*




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Water Chestnut is another highly invasive plant that some utilities are grappling with. One acre of Water Chestnut can produce enough seeds to cover 100 acres the following year, wiping out native plants in the process.

“When water chestnut was discovered several years ago in our 20 acre Means Brook Reservoir in Shelton, it was noted by DEP and the Connecticut Agricultural Experiment Station as the first known occurrence of this invasive species in Fairfield County,” Roach explained. Aquarion undertook a control campaign of the water chestnut in Means Brook Reservoir by hand harvesting the floating rosettes and underwater stems and roots by boat over several consecutive summer growing seasons.

“Literally tons of Water Chestnut leaves, stems, and roots were removed from the reservoir in the first harvest, but a dramatic reduction in the volume of plant materials harvested in subsequent years has been an encouraging indication that the control efforts have been effective,” Roach said. “However, monitoring for water chestnut and hand harvesting of the remnant plants that are found will have to continue for several more years because the seeds of the water chestnut can remain viable in lakebed sediments for up to 12 years.”

Japanese Barberry, once adored as an ornamental shrub, is also a highly invasive plant.

“Japanese Barberry is an invasive shrub that not only has the potential for adversely affecting forest ecology in important reservoir watershed areas, but has also been linked to higher Blacklegged tick densities and increased levels of tick-borne diseases where it is densely prevalent in forest understories.” Roach said. Aquarion assisted the Connecticut Agricultural Experiment Station with its recent study\*\* of various treatment methods for controlling barberry.

The study showed that in public drinking water supply watershed locations where herbicide use is prohibited, non-chemical alternative measures such as mechanical mowing and directed flame applications with a 100,000 BTU propane torch can be extremely effective.

Carol Yuell, Natural Resources Administrator for the Metropolitan District, said that MDC’s Watershed Management Unit has also used backpack propane torches on small areas of watershed land to control Japanese Barberry and it has been fairly effective, but very labor intensive. “I believe that control of invasive plant and animals is becoming a significant challenge

for public water supply watershed managers where options are limited due to public health concerns,” Yuell said.

Fortunately, the state has taken some steps to prevent the continued introduction and spread of invasive species. In addition to creating the Connecticut Invasive Plants Council, the state has prohibited the planting or introduction of invasive plants and fines individuals up to \$100 per plant for violating the ban, although enforcement has proven difficult given staffing

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Brian Roach, Aquarion Water Company of Connecticut

and funding constraints. This year, a new law also authorizes conservation officers to enforce the ban. When funding was available, DEP also provided grants to municipalities for invasive plant control projects on publicly accessible land and waters. DEP also oversees efforts to enforce the law requiring boaters to inspect their vessel for vegetation and properly remove and dispose of any vegetation before transporting the vessel.

Prevention, early detection and action are vital to efforts to keep invasive plants from interfering with your system. For information and guidance on how to develop an effective plan for controlling invasive plants, visit the following websites:

[www.hort.uconn.edu](http://www.hort.uconn.edu) – Includes information on state’s efforts to control invasive plants, such as an invasive plant identification guide and strategies for controlling/eradicating plants

<http://plants.usda.gov> – Includes information compiled by the U.S. Department of Agriculture

\* “Milfoil Ecology, Control & Implications for Drinking Water Supplies”, (2008), K.J. Wagner, D.F. Mitchell, J.J. Berg and W.C. Gendron, ENSR Corporation, AWWA Research Foundation & U.S. EPA.

\*\* “Controlling Japanese Barberry (*Berberis thunbergii* DC) in southern New England, USA”, (2009), J.S. Ward, et al, Forest Ecology and Management, vol. 257, pp.561-566)