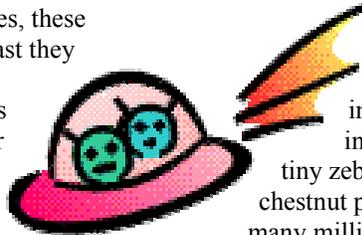


Great Infestations Connecticut's Response to Green Invaders

The second biggest threat to Connecticut's natural habitats is invasion by alien plants and animals (behind loss of habitat to sprawling land development.) With few natural enemies, these species grow, spread, and multiply so fast they can transform healthy ecosystems into weed-choked woodlands and waterways in just a few years. Worse, many of our native plants and animals are deprived of light, nutrients and ultimately their continued existence. Collectively, invasive species are a silent but serious environmental problem for which Connecticut is not prepared.

What is an invasive species? Federal agencies have agreed on this working definition: "an alien

species whose introduction does or is likely to cause economic or environmental harm or harm to human health."



These alien species have been landing on our shores for decades, but greater infestations are expected as a side effect of international trade. From colonies of the tiny zebra mussel to stream-clogging water chestnut plants, invaders threaten to cost the state many millions of dollars. Already, state agencies and nonprofit land conservation organizations are finding they must spend hundreds of thousands of dollars to keep these species at bay. Many species will turn out to be mere nuisances, while a few, if left alone, will be ecological disasters for Connecticut.

Beauty Gone Bad

Many invasive plants were introduced purposely to America, then found their way to Connecticut, sometimes with further human assistance. They were imported to beautify landscapes and water gardens or to enhance wildlife habitat. Regrettably, about eight to ten percent of these imports turned out to be aggressive in their new environment. The following species are targets of expensive control efforts.

Water Chestnut: Muddy Work on the Hockanum

Dense mats of Water Chestnuts (*Trapa natans*) can make fishing or swimming nearly impossible. The seeds move downstream or get caught in the feathers of waterfowl. The most effective means of controlling the plant are early detection, hand-pulling, and mechanical harvesting, which must be repeated for 5 to 12 years. Since 1999, water chestnut has been found in Keeney Cove (Glastonbury), the Hockanum River (East Hartford), the Podunk River (South Windsor) and two private ponds in Eastford. If not for uncounted staff time and volunteers, the expense would be far beyond the \$23,000 paid so far to contractors. The Department of Environmental Protection (DEP) currently has no set policy on controlling this or any invasive species on private property, and efforts are left largely to volunteers, including DEP staff working on their own time. Water Chestnut has the potential to become the dominant plant in the shallow waters of the Connecticut River.

Chemical Warfare on Hydrilla

Aquarium owners unwittingly might have released Hydrilla (*Hydrilla verticillata*) into Connecticut waters, though it also is known to hitchhike on the roots of other aquatic plants purchased from sources outside our state. Hydrilla forms dense mats that shade out native vegetation, and can interfere drastically with swimming or boating. First reported in 1995, Hydrilla is present in small ponds in Mystic, North Stonington, and Wilton. The first two ponds were treated with an herbicide. Unfortunately, both infestations still are present.



Purple Loosestrife: Meet the Beetles

Able to produce 2.5 million seeds per plant each year, Purple Loosestrife (*Lythrum salicaria*) is widespread in many kinds of wetland habitats throughout Connecticut. Known for its attractive flowers, Purple Loosestrife is dangerous because it crowds out native vegetation and provides few of the ecological benefits of native plants. In 1996, a pilot

program saw the release of two beetle species into loosestrife stands in Storrs and Haddam, with encouraging results. Care was taken to make sure the beetles would eat only Purple Loosestrife, and not turn into pests themselves. Now, two hundred thousand beetles are serving as biological control agents for Purple Loosestrife.

People continue to plant invasive species. Winged Euonymus or Burning Bush (*Euonymus alatus*) is a very popular shrub, seen along many of our highways, which turns ruby red in autumn. Animals scatter its seeds in woodlands, where it displaces native flora. Japanese Barberry's (*Berberis thunbergii*) autumn tones of bright red and orange have made it popular as an ornamental shrub. It is an aggressive nuisance in the wild, where birds distribute its fruit. The most effective means of management of both of these species is mechanical removal. It can be found growing in front of the headquarters of the DEP and Council on Environmental Quality.

Oops!

People brought the following species to North America -- and Connecticut -- by accident.

Fretting Over Zebra Mussels (*Dreissena polymorpha*)

In the mid-1980's, ships from overseas released mussel-infested ballast water into the Great Lakes. The mussels do not have any effective natural predators on this continent, and are distributed by carriage on boats, trailers, and fishing gear, or by birds and other animals. They routinely clog industrial or power utility pipes, and damage boat engines and hulls, while consuming the plankton normally eaten by native species. In 1998, zebra mussels were found established in East Twin Lake in Salisbury. Most waterbodies in Connecticut are low in calcium and are not believed to be prone to infestation. However, the freshwater portion of the

Housatonic River and its associated hard-water lakes remain susceptible.

Two other species have arrived by sea. The Asiatic Clam (*Corbicula fluminea*) is considered a nuisance for the same reasons as the Zebra Mussel. The Pacific Shore Crab (*Hemigrapsus sanguineus*) (or Asian or Japanese shore crab) shares the same habitat as juvenile green crabs and mud crabs; as the invader multiplies the natives decline. Scientists believe it is too early to say what kind of an impact the crab will have. It was discovered on Connecticut's shore in the 1990s.



Just Landed: Mile-A-Minute or Devil's Tearthumb

Though its name is an exaggeration, Mile-a-Minute (*Polygonum perfoliatum*) can grow a remarkable six inches in a day. When first discovered in 1999 in a nature sanctuary in Greenwich, local residents tried to eradicate it. However, in 2001, Mile-a-Minute was found on adjacent properties. Seeds survive the winter, while animals eat its fruits, helping to distribute the plant. Current management techniques for Mile-a-Minute include cutting, mowing, or hand pulling. Herbicides can be effective in some settings. The Greenwich population is the first in New England, adding urgency for the state to respond quickly.

Million Dollar Weed: Common Reed

Common reed (*Phragmites australis*) is a tall wetland grass found along marshes, riverbanks, and often on roadsides and dredged areas that have been disturbed or polluted. Very recent research has found that the *Phragmites* in Connecticut is actually not native. Its explosive growth in wetlands is easy to observe. Like many other invasive species, it shades out and competes with native vegetation. The usual control strategy is to improve the flow of brackish or

salt water into the wetlands; this impedes the growth of *Phragmites*, while reducing mosquitoes and increasing bird life. Where necessary, the reed is treated with herbicides. The DEP has many success stories in these restoration projects, but they have not come cheaply. Six projects done in 1999-2000 cost a total of more than \$730,000. Funds spent on controlling *Phragmites* dwarf the amounts spent on other species.

The state's effort to control *Phragmites* is something of an exception in the war against green invaders, because the plant is widespread and well established. Most invaders that fit this description are beyond the ability of any organization to treat effectively, except in limited sites and circumstances. We may never eradicate invasive plants from Connecticut's landscape. This fact underscores the importance of moving quickly to battle and remove newly-discovered infestations of those plants which have not yet become established or widespread, such as Hydrilla, Mile-a-Minute, and Water Chestnut.

Invasives on the Books

Connecticut's only law pertaining to invasive species was adopted in 2001, buried deep in Public Act 01-150. It directs the Commissioner of Environmental Protection to make recommendations and take action to control invasive plant species, create informational materials and educational activities, and maintain a list of nonnative invasive plant species -- all tasks the Department has undertaken on its own in a limited way, as funds allow. The law contains no deadlines. Other states have taken more action.



Northeastern States' Response to Green Invaders

State	Management Plan	Staff	Law Prohibiting Sale of Invasive Species
VT	Yes (Lake Champlain)	Yes	Yes (Zebra Mussel, Eurasian Watermilfoil, Water Chestnut, Quagga Mussel)
NH	No	Yes	Yes (Milfoils, Fanwort, Water Chestnut, Purple Loosestrife, Others)
ME	In Progress	Yes	Yes (Water Chestnut, Milfoils, Hydrilla, Others)
NY	Yes	Yes	Yes (Water Chestnut)
RI	No	No	No
MA	In Progress	No	Yes (Water Chestnut)
CT	NO	NO	NO

Connecticut's Finger in the Dike: Responses to Date

The Connecticut Invasive Plant Working Group (CIPWG) is the state's largest cooperative effort working on the invasive species problem. It consists of state and federal agencies, conservation organizations, garden clubs, universities, nurseries, and others. This group has no legal status and no funding but is taking the lead in focusing the state's efforts on invasives. It has developed two invasive plant posters, numerous fact sheets, and a website containing a breadth of information on invasive plants. The CIPWG and the University of Connecticut (UConn) have developed a list -- "Non-native Invasive and Potentially Invasive Vascular Plants in Connecticut" -- which the DEP has adopted, but the list has no legal status. The DEP has an internal working group that manages invasives on a case-by-case basis; it is far too small in proportion to the ecological threat. Connecticut also lacks a coordinated public education campaign, as well as a comprehensive plan for addressing invasive species.

The DEP adopted an internal policy in 1998 that discourages the planting of invasive species and disturbing soil in ways that favor invasive species. Other state agencies also have responded to the threat. The Department of Transportation (DOT) currently does not plant species that appear on the list described above. However, neither the DEP nor the DOT have funds to remove the enormous stands of invasive plants planted in previous years; these are likely to remain as sources of seed for decades to come, perhaps for centuries.

UConn is creating a grant-funded Invasive Plant Atlas of New England (IPANE), which will include images, descriptions, maps, historic data, and a collection database documenting the existence and spread of invasive plants.

The plant industry has responded to the problem as well. A new brochure developed by the Connecticut Florists, Greenhouse Growers, and Nursery and Landscape Associations depicts various species of invasive plants that participating nurseries voluntarily have agreed not to sell. The brochure lists about 20 plants that would be highly destructive if they became widespread, but they are species with little or no economic investment at this time.

For many people, invasive species are an economic issue. The Nature Conservancy has found it necessary to raise substantial funding to combat invasive species on their lands, especially in northwestern Connecticut and the Connecticut River valley. Invasives threaten to cost land conservation organizations enormous sums, which will divert resources away from their primary conservation mission.

Moving Forward

Eradication of most invasive species from natural habitats is not a realistic goal for the foreseeable future. Connecticut's priorities should be to prevent new infestations and to control the spread of the most harmful species into sensitive areas. The Council recommends the following specific steps:

► Rapid Response To New Invasions

1. Connecticut must develop an effective capability for rapid response to *new* reports of harmful infestations, both on public and private lands. This team must have resources on hand (much like chemical emergency response teams) and legal authority to take immediate action.

► Plan The Campaign

2. The Governor and General Assembly should provide the DEP the authority and funds necessary to prepare a comprehensive plan, within one year, that would define priorities for battling invasive species.



A. The Governor and General Assembly should assign one agency the responsibility for informing the public about the dangers of planting invasive species, and appropriate adequate funds. The agency should work closely with the horticultural industries on plans to inform the public. This should include information for municipalities to use in their review of planting plans submitted by zoning applicants.

B. The Governor and General Assembly should direct all state agencies to 1) refrain from planting any species on the list adopted by the DEP, and 2) insert into all construction and maintenance contracts and economic development grants a standard provision that prohibits use of state funds for the planting of any species on the list.

► Prevent Accidents

3. The Governor and General Assembly should require the DEP to create information campaigns about preventing the spread of species that are introduced accidentally. Connecticut will need to work with regional bodies to better control species that "hitchhike" on boats and plant pots. An informed public will be essential.

► Put Somebody In Charge

4. The Connecticut Invasive Plant Working Group is a commendable example of cooperative work in the sphere of public policy. To the extent state government can further the work and status of this body, it should do so.

► Phase Out The Repeat Offenders

5. We should discourage the spread of invasive species that are already established. The Council recommends the following specific actions:

► Keep Dangerous Species Out

6. We need to prevent *deliberate* introductions of new invasive species by discouraging their sales. This pertains to species not yet established here, and in which no Connecticut grower has a significant investment. For these, the Council recommends establishing a list of such species that by mutual agreement should never be sold, transported, or grown in Connecticut. These are the plants so harmful that they should be regarded as biological pollution.

A. The nursery industry should continue its voluntary educational campaign, and should work with the Invasive Plant Working Group to monitor the appearance of listed species on store shelves.

B. The University of Connecticut should continue to implement its grant-funded program (IPANE) to monitor the spread of new invasive species in the wild.



The Council on Environmental Quality is the state agency charged with reporting to the governor on the status of the state's environment, recommending improvements to state environmental programs, reviewing state agencies' construction projects, and investigating citizens' complaints. Members are Donal C. O'Brien, Jr. (Chairman), Thomas Harrison, Eric Janney, Susan Mendenhall, Susan Mellow, Richard Miller, Earl W. Phillips, Jr., Ann Sherwood, Wesley Winterbottom.

