

# “INVASIVES”

## PREVIOUSLY DESCRIBED and NEWLY ARRIVED



A 2022 update to *Great Infestations*, the 2002 report of the Council on Environmental Quality’s recommendations for control of invasive species in Connecticut.

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## Table of Contents

Executive Summary .....	2
I. Introduction .....	3
a. What makes a plant “invasive”? .....	3
b. Invasive animals too .....	4
II. Progress and Problems - Successes, Failures and Emerging Threats .....	5
a. Some notable successes .....	5
b. Persistent pests from the past.....	6
c. Notable new arrivals during the past 20 years .....	8
d. The very newest arrivals and anticipated invaders .....	8
III. Allies in the fight .....	9
a. The Legislature.....	9
b. Invasive Plant Council (IPC).....	10
c. Connecticut Invasive Plant Working Group (CIPWG) .....	10
d. Connecticut Agricultural Experiment Station (CAES).....	11
e. Connecticut Department of Energy and Environmental Protection (DEEP) .....	11
f. Individual scientists and researchers.....	12
g. Connecticut Nursery and Landscape Association (Association) .....	12
h. Northeast Aquatic Nuisance Species Panel (NEANS).....	12
i. Connecticut Council on Soil and Water Conservation .....	12
j. Multiple Federal Agencies .....	13
k. Numerous private associations and organizations.....	13
IV. Recommendations.....	14
1. Prioritize responses and publicize plans.....	14
a. The following tiers for prioritization are recommended. ....	14
b. Prioritize the re-establishment of the rapid response capability the state possessed formerly. ....	14
c. Expedite restoration of the position of invasive plants coordinator. ....	15
2. Innovation in legislation. ....	15

3.	Prioritize prevention of invasive infestations on state lands and at state-supported projects.....	16
4.	Establish a repository for data on invasive species within the state.....	16
5.	Expand the state’s education efforts about invasive species.....	16
6.	Encourage the private sector to be proactive in halting the spread of invasive species. ....	17
V.	Appendices.....	18
	APPENDIX A - Abbreviations and Terms Used in This Report.....	18
	APPENDIX B – Relevant Sections from the Connecticut General Statutes (CGS) for Invasive and Non-native Species .....	19

## Executive Summary

It has been 20 years since the Council on Environmental Quality (Council) released its report on invasive species. In the intervening years, those that were identified in that report have prospered and many new invasive species, both animal and plant, have taken up residence in our state. None have been extirpated and it is not realistic to expect that they will be. In fact, it is to be expected that more will arrive as a consequence of the warming climate that is gradually making Connecticut more hospitable to species that do not tolerate cold weather. Additionally, higher levels of atmospheric carbon dioxide might accelerate the growth of vines relative to other plants.<sup>1</sup> The adverse impacts of invasives affect all the state’s land forms and ecosystems, from its waterways to its natural lands and also its working lands and developed landscapes. The ecological, economic and human health costs of unchecked invasive species can be high.

Preventing invasive species from taking over and disrupting Connecticut’s landscapes and waterways, requires advanced planning, vigilance, maintenance, coordination and prioritization of the expenditure of human energy and of public funds. Control and containment can be achieved through habitat management techniques that reduce the likelihood of the arrival of invasive species. Newly discovered invasive species must be addressed immediately to prevent their spread. Efforts to address species that are already widely established should be at those geographic areas where they can be eliminated or contained.

The spread of invasive terrestrial plants has proven to be a virtual “whack-a-mole” challenge. Proliferation of terrestrial invasive plants can be inhibited by reducing disruption of ecosystems where native plants are well established. For state actions, this can be accomplished by rigorously removing invasive plants at state construction and forestry projects. Aquatic invasive plants are often the target of focused, intense eradication efforts; however, the fluid nature of the aquatic environment presents a unique challenge. There are two additional tools that would greatly enhance the state’s ability to address both terrestrial and aquatic invasive plants – a coordinator for the state’s efforts and a rapid response capacity. Funding for a person to coordinate the state’s attack on invasive plants is now available. The filling of that position must become a priority. The state also has a standard contract with a number of businesses that could be mobilized to respond to infestations. This capability should be implemented quickly whenever a new species is discovered. Additionally, changes to the state’s invasive species law are warranted to simplify the process of designating invasive species and expand the responsibility of property owners for species that are spreading onto other properties.

Invasive animal species, being inherently mobile, are the most challenging, but can be brought into balance if biological controls, such as diseases or natural predators are introduced naturally or as targeted control efforts. Other techniques already in place can be effective in preventing the spread of unwanted plants, and the animals

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<sup>1</sup> [Increase In Creeping Vines Signals Major Shift In Southern U.S. Forests \(osu.edu\)](https://osu.edu)

that attach to them, including conducting inspections of arriving commercial plants and policing businesses that sell plants. The majority of invasive plants, discussed herein, were brought here as ornamentals or enhancements for aquaria. The private sector has a role to play in self-policing by not bringing in plants that pose a risk of uncontrolled propagation and in educating customers about proper disposal.

Mitigating the potential economic and ecological damage from invasive species will demand significant and continuing expenditure of public resources. The multi-state nature of the problem justifies regional responses and assistance from the federal government, especially for species like hydrilla that are present in locales which can facilitate their spread to other states.

## I. Introduction

Every gardener knows that achieving stasis on a plot of land is a constant challenge. Since the arrival of European colonists<sup>2</sup>, and certainly prior to that, people have brought a plethora of flora and fauna to their habitats, both intentionally and unintentionally. Twenty years ago, the Council on Environmental Quality (Council) released “Great Infestations”, in both [long](#) and [abbreviated](#) versions. That report documented for Connecticut the threat posed by many invasive plants and animals and pointed out that the state had relied on a “finger in the dike” approach to dealing with the problem. It made a number of recommendations, many of which were adopted. Ten years later, the Council’s Executive Director sent a [memo](#) to the Council emphasizing that the state must focus on early detection and response and noted that “no other environmental threat – air pollution, water pollution, water diversion – is addressed through such a diffuse assemblage of responsibilities and unfunded authorities...” This update has only one version, with the detail and documentation moved to footnotes and to the Appendices, allowing for both a quick review as well as a deep dive into the data. Additionally, links to photos and supplemental information are provided for each invasive species when it is first mentioned by name in the text.

This update will describe some successes during the intervening two decades and will highlight new threats, both plant and animal, that warrant increased attention now. For the reader who might be unfamiliar with some of the terminology, a glossary of terms and abbreviations is provided in [Appendix A. Recommendations](#) to improve how the state addresses control of invasive species are included at the report’s end.

### a. What makes a plant “invasive”?

The classic definition of a weed is “a plant out of place”. An invasive species is more than simply out of its usual place. The Department of Energy and Environmental Protection (DEEP) describes non-native and invasive species as follows:

**Non-native species** are “those that are alien to the ecosystem that they have been introduced into and whose introduction causes or is likely to cause harm to the environment or human health.”

**Invasive species** are “non-native species exhibit an aggressive growth habit and can out-compete and displace native species.”<sup>3</sup>

Not all introduced species result in negative consequences. DEEP has introduced non-native species of fish into some water bodies to enhance recreational fishing. Though they can become established residents, DEEP does not consider them “invasive”. Occasionally, non-native species will be introduced as biological control agents for undesirable species and are not deemed to be “invasive”, like the *Galerucelia* beetles

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<sup>2</sup> [We Came over on The Mayflower, Too!](#) A Timeline of North American Invasive Species (eattheinvaders.org)

<sup>3</sup> DEEP, [Invasive Species \(ct.gov\)](#)

that were introduced to control purple loosestrife. To distinguish between desirable and undesirable non-native species, the term “nuisance” is sometimes used, especially for aquatic plants, to convey the meaning that they are non-native, undesirable and require action to control their spread.

In the Connecticut General Statutes (CGS) ([Section 22a-381b](#)), the characteristics of an invasive plant are more specifically defined:

- (1) The plant is nonindigenous to the state.
- (2) The plant is naturalized or has the potential to become naturalized or occurring without the aid and benefit of cultivation in an area where the plant is nonindigenous.
- (3) Under average conditions, the plant has the biological potential for rapid and widespread dispersion and establishment in the state or region within the state.
- (4) Under average conditions, the plant has the biological potential for excessive dispersion over habitats of varying sizes that are similar or dissimilar to the site of the plant's introduction into the state.
- (5) Under average conditions, the plant has the biological potential for existing in high numbers outside of habitats that are intensely managed.
- (6) The plant occurs widely in a region of the state or a particular habitat within the state.
- (7) The plant has numerous individuals within many populations.
- (8) The plant is able to out-compete other species in the same natural plant community.
- (9) The plant has the potential for rapid growth, high seed production and dissemination and establishment in natural plant communities.

In [CGS Section 22a-381a](#), the legislature created an “[Invasive Plants Council](#)” (IPC) that can recommend plant species to the legislature to add to the invasive plants list.<sup>4</sup> The law specifies that to be listed on the state’s official invasive species plant list, it must possess each of the characteristics set forth in subdivisions (1) to (5) above and, additionally, possess at least one of the characteristics set forth in subdivisions (6) to (9), above. The listing of a species as invasive or potentially invasive must be approved by a majority of the IPC’s membership. The IPC may also hold a public hearing regarding its determination. [CGS Section 22a-381d](#) lists the invasive plants currently illegal to import, move, sell, purchase, transplant, cultivate or distribute in Connecticut.

#### **b. Invasive animals too**

Plants are not the only invasive species of concern. Many invertebrate and vertebrate animals pose a threat to the state’s economy and ecology. They are in marine, aquatic and terrestrial environments and are alien to the ecosystem. Listed in this report are some that are known to cause harm to the environment or human health. The Connecticut Agricultural Experiment Station (CAES) has an extensive [list](#) with fact sheets of insect pests and plant diseases on its website. There is not a single list of all invasive animals, nor is it the intent of this report to list every single one. Those that are mentioned are most commonly identified as immediate threats.

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<sup>4</sup> The recommendation for listing of a species as invasive or potentially invasive must be approved by a majority of the IPC’s membership. The IPC may also hold a public hearing regarding its determination. [CGS Section 22a-381b](#)

## II. Progress and Problems - Successes, Failures and Emerging Threats

### a. Some notable successes

The Council's 2002 report, [Great Infestations](#), made a number of recommendations.

#### Recommendations of "Great Infestations" in 2002

1. *develop an effective capability for rapid response to NEW reports of harmful infestations, both on public and private lands.*
2. *Develop a plan and priorities for battling invasive species.*
3. *Improve information campaigns to prevent the spread of species that are introduced accidentally.*
4. *Put somebody in charge.*
5. *Discourage the spread of already established invasive species via the sale of horticultural products.*
6. *Prevent the deliberate introduction of dangerous species.*

While not all the recommendations of the 2002 report were implemented as thoroughly as was hoped, Connecticut has accomplished much since its publication.

- Legislation.

[Appendix B](#) lists applicable statutes that deal with the multiple and mounting invasive threats. Among them, two stand out.

1. In 2013, 2014, and in 2017, legislation was enacted ([CGS Section 22a-381e](#)) to halt the uncontrolled spread of non-native, "running bamboo" (*Phyllostachys aurea*). The law had key provisions that led to its success, such as:
  - establishing a responsibility of the owner of the property on which the plant is present to control its spread;
  - requiring that sellers of the plant inform buyers of the potential liability they can incur, and setting a fine for sellers who do not disclose the required information;
  - establishing that an owner who allows the plant to grow beyond the property's boundaries is creating a nuisance under law; and
  - authorizing enforcement of specific provisions by DEEP, any duly authorized municipal constable, municipal tree warden, zoning enforcement officer or inland wetlands and watercourses enforcement officer.

Permitting enforcement by civil suits and by local jurisdictions are enforcement mechanisms that could prove useful for dealing with other species and for new invasive arrivals.

2. In 2019, the legislature passed [PA 19-190](#), which bolstered the existing Connecticut Lakes, Rivers and Ponds Preservation Account with a \$ 5.00 fee on in-state boat registrations and a \$20 fee for out-of-state boats that are operated within the state. In 2021, DEEP allocated \$360,000 in grants from the Connecticut Lakes, Rivers and Ponds Preservation Account to applicants for research, education and control projects throughout the state to deal with invasive species.

- Some big threats were made smaller at some locations, but their total eradication is elusive.

- [Phragmites \(\*Phragmites australis\*\)](#) DEEP's Wetland Habitat Management Program was able to reduce Phragmites by 95 percent at Roseland Lake in Woodstock<sup>5</sup> from 2003 – 2006. By 2016 and 2017, some had returned, necessitating reapplication of herbicides, illustrating the necessity of regular control measures.<sup>6</sup>
- [Eurasian water milfoil \(\*Myriophyllum spicatum\*\)](#) The introduction of sterile (triploid) carp<sup>7</sup> to control Eurasian water milfoil in Candlewood Lake and Squantz Pond in 2019 resulted in the virtual eradication of the Eurasian water milfoil in Squantz Pond and a reduction in Candlewood Lake. DEEP is continuing to monitor those waterbodies to determine to what extent other vegetation might be affected and what successional plants might appear. At Amos Lake in Preston, chemical control achieved reduction of Eurasian Milfoil infestations in 2012<sup>8</sup>.
- [Hydrilla \(\*Hydrilla verticillate\*\)](#) This aquatic invasive plant is extremely difficult to eradicate. DEEP has worked with the Town of Coventry on hydrilla investigations, treatment plans and monitoring of Coventry Lake (aka Lake Wangumbaug) over the last few years. Initial results of chemical treatment from 2016 were encouraging. The 2020 survey showed that it remains in portions of Coventry Lake and multi-year follow up and evaluation will be required.<sup>9</sup>

Even those successes require regular monitoring and additional interventions. Both Amos Lake and Coventry Lake received grants for additional treatments in 2021 and 2020, respectively. Despite the successes at specific locations with those plants, they remain major problems statewide. The total eradication of those, and of most invasive species and non-native plants, cannot be expected, as is shown by the examples below.

#### b. Persistent pests from the past

Most species that were problems in 2002 are even greater problems today. The plant and animal invasive species listed below were present in Connecticut in 2002 and have persisted. It is, by no means, an all-inclusive list, nor are they all prohibited.

- [Autumn Olive \(\*Elaeagnus umbellate\*\)](#) This plant was marketed widely as an ornamental. It can grow to 20 feet in height. It grows well in disturbed areas, open fields, forest margins, roadsides, and clearings. It is tolerant of drought and its seeds may be distributed into forest openings or open woodlands.
- [Water Chestnut \(\*Trapa natans\*\)](#) This dense, floating foliage can outcompete native aquatic plants for light and space. Its growth can make recreational and commercial navigation nearly impossible. *Great Infestations* reported that Water Chestnut had been found in Connecticut in Keeney Cove (Glastonbury), the Hockanum River (East Hartford), the Podunk River (South Windsor), and in two private ponds in Eastford. For several years, DEEP, contractors and volunteers have manually pulled Water Chestnut out of Keeney Cove and the Hockanum River. It was estimated that, not including staff time and volunteer efforts, the contract expenses totaled nearly \$23,000. Unfortunately, it has become established in Connecticut with the potential to dominate the shallow waters of the Connecticut River. It is also present throughout the Housatonic River system.
- [Fanwort \(\*Cabomba caroliniana\*\)](#) Native to the southeastern U.S., Fanwort is believed to have been spread through incidental release from aquariums. It grows in muddy areas of stagnant or slow-moving water such as in streams, small rivers, lakes and ponds. It can crowd out native plants and interfere with recreational uses.
- [Brazilian Elodea \(\*Egeria densa\*\)](#) Brazilian Elodea is a submersed, rooted aquatic plant that can form impenetrable mats on the surface of a waterbody that restrict water movement, trap sediment, and cause changes in water quality. Brazilian Elodea is thought to be introduced to Connecticut by unknowing aquarium owners. It was discovered in Fairfield County in 1992. It is widely sold in Connecticut pet shops under the name Anacharis.
- [Japanese barberry \(\*Berberis thunbergii\*\)](#) This plant is believed to have been introduced in the late 1800's. It is a popular ornamental that is now believed to provide habitat for ticks. In the wild, it is known to take root after logging and out-shade regrowth of native plants.

<sup>5</sup> [Roseland Lake, Woodstock CT - INVASIVES](#)

<sup>6</sup> <http://www.roselandpark.org/upcoming-events/2017/10/4/phragmites-treatment-on-roseland-lake>

<sup>7</sup> DEEP [Grass Carp Stocking \(ct.gov\)](#)

<sup>8</sup> The Day, October 18, 2012 [The Day - Clean Water Act's influence still felt on local waterways after 40 years - News from southeastern Connecticut](#)

<sup>9</sup> [Coventry-Lake-2020-Hydrilla-Report \(coventryct.org\)](#)

- [Japanese Knotweed](#) (*Fallopia japonica*) This plant is a multi-stemmed herbaceous perennial shrub that can reach heights of ten feet or more. It suppresses native species by limiting light penetration and is believed to release toxic chemicals that inhibit other plants' growth.
- [Giant Hogweed](#) (*Heracleum mantegazzianum*) This herbaceous plant was first identified in Connecticut in 2001. By 2018, it had spread to 25 towns in all eight counties. It can grow up to 15 feet in height with hollow stems two to four inches in diameter. Large numbers of small white flowers can span to 2.5 feet across. Its sap causes large painful blisters on human skin and acts as an anti-sunscreen, which may cause skin to be more sensitive to sunlight and eye contact may result in blindness.
- [Oriental bittersweet](#) (*Celastrus orbiculatus*) (aka Asiatic Bittersweet) It is a non-native vine that grows vigorously, wrapping around trees and other vertical structures damaging trees and other plants and forming dense stands. It can overtake landscapes, literally smothering trees, shrubs, and any plant in its path with twisting vines, sometimes four inches thick, and heavy enough to uproot large trees under its weight. It was added to Connecticut's list of prohibited invasive plants in 2004.
- [Garlic Mustard](#) (*Alliaria petiolata*) This biennial herb is believed to have been introduced in the late 1800's. It spreads rapidly in shady habitats, roadsides, moist forests, and along stream corridors and can out-compete native species.
- [Purple loosestrife](#) (*Lythrum salicaria*) The prolific capability of this wetland plant that arrived in the 1800's allows it to quickly out-compete native species. Some biological control of the plant has been attempted with the introduction of *Galerucella pusilla* and *G. californiensis*, leaf-eating beetles which seriously affect growth and seed production by feeding on the leaves and new shoot growth of purple loosestrife plants.
- [Multiflora Rose](#) (*Rosa multiflora*) This climbing rose was brought to the state in the 1880's. It grows in dense thickets that can displace native plant species, impede the nesting of native birds and is a vector for rose rosette disease.
- [Norway Maple](#) (*Acer platanoides*) Norway maple has been planted extensively as an ornamental tree and is now found invading natural areas where it can outcompete native deciduous trees including sugar maples and red maples.
- [Mile-a-Minute vine](#) (*Persicaria perfoliata*) This very aggressive vine can grow a remarkable six inches in a day. It forms dense mats that smother herbaceous plants, shrubs, and young trees in open areas, such as meadows, forest edges, logged forests, streambanks, and utility rights-of-way. It was first reported in Greenwich in 1999 and has [spread](#) to over 25 percent of the towns throughout the state since then.
- [Mugwort](#) (*Artemisia vulgaris*) This plant spreads by seed and also spreads under the soil, by way of rhizomes — a lateral root system that allows new plants to grow up from those roots. It was brought to North America in the 1500's. Like many invasive plants, it is problematic because of its ability to displace useful native plants in Connecticut.
- [Winged euonymus](#) (*Euonymus alatus*) This plant, also commonly known as "Burning Bush", decreases diversity in our woodlands and is becoming ubiquitous in Connecticut's understory. It is prohibited for sale in New Hampshire, but not in Connecticut.
- [Asian shore crab](#) (*Hemigrapsus sanguineus*) This species was discovered in Connecticut in the 1990's and it is rapidly displacing native mud crabs. Some native species are being eaten by these hungry crustaceans. Where Asian shore crabs emerge, native crustaceans go into decline. Even larger species, like blue crabs and lobster, are forced into competition for food with the Asian shore crab.
- [Spongy Moth](#) (*Lymantria dispar*) Though present in the state since the 1860's, major spongy moth outbreaks occurred in Connecticut in the 1960's through the end of the 1980's. The emergence of the maimaiga [fungus](#) during humid conditions appears to have provided an effective biological check on the moth's spread. However, dry conditions like those of 2015 and 2016 can prompt a resurgence, as was evident in 2017 and 2018. Weakened trees [fell victim](#) to other predators and disease. The caterpillar stage of this insect has damaged hundreds of acres, killing trees and creating a hazard to the public.
- [Zebra Mussel](#) (*Dreissena polymorpha*) First discovered in Connecticut in 1998, the mussels have colonized portions of the Housatonic River. Extremely small with sharp shells, they can cover any hard substrata, including other bivalves. Their ability to filter vast amounts of water can change the light penetration of a water body and, consequently, its ecology. They are thought to be virtually impossible to [eliminate](#).
- [Rusty Crayfish](#) (*Orconectes rusticus*) This crayfish has been in the state's waters since [1989](#). It is more prolific than other species. Though many species of crayfish have been introduced to the state, this is one is considered "invasive" due to concern that it could out-compete the others.

More invasive plants and animals have arrived to stay since the 2002 report bringing new ecological and economic threats to the state.

### c. Notable new arrivals during the past 20 years

- [Hydrilla](#) Though mentioned previously, it warrants repetition in this section because a new [species](#) of this difficult-to-eradicate aquatic invasive has been identified in the Connecticut River, posing an ecological and economic threat to the River and all its bordering states. Because of its location on a waterway of multistate importance, federal funding is being sought<sup>10</sup> to control it.

Vacuolar myelinopathy (VM) is a fatal [neurological disease](#) caused by the [neurotoxin, aetokthonotoxin](#), that is produced by a [cyanobacteria](#) that has been linked to Hydrilla verticillate. It affects fish, frogs, snails, salamanders, turtles, and snakes. Because eagles feed on all these species, it can be easily concentrated and have a devastating impact on their well-being. DEEP recommends contacting its Wildlife Division at 860-424-3011 immediately to report any sighting of an eagle unable to fly, stumbling, or falling down. Because that could be the result of VM, leave the animal alone. (Wildlife Magazine, May/June 2021).

- [“Rock snot”](#) (*Didymosphenia geminata*, *Didymosphenia hullii*, *Cymbella janischii*) These three [varieties](#) of microscopic algae can form large mats of thick cotton-like material that can cover large portions of stream bottoms and are known to be present in portions of the Farmington River. None had been observed in the state prior to 2011.
- [Japanese Stiltgrass](#) (*Microstegium vimineum*) This plant is not believed to have been present in 2002. It is thought to be spreading prolifically due to the distaste that most herbivores have for it. As deer and other animals browse around it, they eliminate the native plants, allowing for its spread.

Animal invaders have also arrived.

- [Brown Marmorated Stink Bug](#) (*Halyomorpha halys*) This non-native insect was introduced from Asia and was first detected in Connecticut in 2008. Though observed by many residents as an occasional household pest, it is believed to pose a threat to the state’s agricultural industry.
- [Emerald Ash Borer](#) (EAB) (*Agrilus planipennis*) This insect feeds on the white, green, and red ash trees in the state. Ash trees lose most of their canopy within two years of infestation and die within three-four years. It is possible that it could destroy virtually all the state’s ash trees, if recently released biologic control measures prove to be ineffective in managing the EAB.
- [Spotted Winged Drosophila](#) (*Drosophila suzukii*) This fruit fly arrived in Connecticut in the summer of 2011. It put an end to the fall raspberry harvest across the state because it lays its eggs in soft, thinned skin fruit that is just beginning to color unlike other fruit flies that lay eggs in over-ripe or decomposing fruit. It is expected to be a major challenge to growers of berries like raspberries, blackberries and blueberries. Other fruits at risk could be peaches, grapes, and some varieties strawberries.
- [Hemlock Woolly adelgid](#) (*Adelges tsugae*) This insect destroyed vast stands of Hemlock in Connecticut and persists as a threat to those magnificent trees.
- [Asian Tiger Mosquito](#) (*Aedes albopictus*) This mosquito has aggressive daytime human-biting behavior and the ability to vector many viruses, including West Nile virus. It was first discovered in Connecticut in 2006.
- [Asian Jumping worms](#) (*Amyntas*) While most earthworms one encounters in Connecticut are not native, the invasive jumping worms are a [concern](#) because they tend to rob the soils of nutrients and consequently inhibit plant growth and create an undesirable soil characteristic for other, beneficial, worms and other species that rely on the soil for food and habitat. In 2015, they were identified in southwestern Connecticut and have since been reported in central portions of the state.
- [Chinese Mitten Crab](#) (*Eriocheir sinensis*) This invasive crab was first identified in Connecticut in 2012. They have been reported to accelerate erosion from their burrowing, clogging water intakes and interfering with angling due to their large numbers. They are believed to be a secondary host for the Oriental lung fluke, (flat worm/parasite), which can affect humans.<sup>11</sup>

### d. The very newest arrivals and anticipated invaders

New potential threats require immediate interdiction before their range expands. They include:

<sup>10</sup> [CT-River-Hydrilla-Program-Appropriation-Outreach-RiverCOG-Blumenthal.pdf \(uconn.edu\)](#)

<sup>11</sup> Aquatic Nuisance Species Task Force, <https://www.fws.gov/anstaskforce/Chinese-mitten-crab-plan2-02.pdf>



- [Goldencreeper](#) (*Thladiantha dubia*) Like other invasive imports, it quickly takes over, smothering native plants with its quick-growing vines and leaves, blanketing the ground, growing up and over what it meets. It was discovered in 2021 on a property in Kent. Quick action led to its removal. Continual monitoring will be necessary to assure its eradication.
- [Knobfin Sculpin](#) (*Cottus Immaculatus*) Initially identified in 2002, they remained present at low levels for over 10 years, then rapidly proliferated and spread into all available main stem habitat in the Pomperaug River. Historical fish sampling data show that impacts to other resident fish species, including young trout, have been devastating, and impacts to aquatic invertebrate species, such as crayfish and aquatic insects, are probably significant as well. Their migration has been constrained by dams.
- [Spotted Lanternfly](#) (*Lycorma delicatula*) This insect is considered a [threat](#) to Connecticut’s agriculture. In both the nymph and adult stages. It feeds by sucking sap from the stems and leaves of host plants. Many of the fruit trees grown in Connecticut, such as apples, grapes, cherries, and peaches, are vulnerable. Even if the insect does not kill the trees, it could destroy the value of the fruit. The impact on the agricultural industry of Connecticut could be devastating. It was first seen in Connecticut in 2018 and has been identified in New Haven and Fairfield Counties.
- [Asian Longhorned Beetle \(ALB\)](#) (*Anoplophora glabripennis*) Though not yet confirmed to be in Connecticut, it is present in both Massachusetts and New York. DEEP projects that “Approximately 47% of the trees in our forests are considered susceptible to the ALB, with some 32% considered to be highly susceptible, with potentially devastating consequences to street treescapes”.<sup>12</sup>
- [Red Swamp Crayfish](#) (*Procambarus clarkia*). This non-native species was found in 2021. It can carry crayfish fungus plague and is a reported host for parasites and diseases that would threaten native crayfish populations. Once established, they compete for plants, insects, snails, fish and amphibians that native species depend upon.
- [Chinese Mystery Snail](#) (*Cipangopaludina chinensis*) This snail is deemed to be a problem because, like the Zebra mussel, it can clog water intakes. It might also transmit diseases and parasites to fish and other wildlife and, like other non-native species, compete with native snails for food.

### III. Allies in the fight

The Council launched this update on its report of 2002 believing that, though the problem of invasive species had grown in two decades, the state’s response had not. When doing the research, it became apparent that there are many programs, spontaneous collective efforts and individuals working to eliminate non-native and invasive species and to repair the damage they caused. The “allies” cited below is not a complete list of the many organizations dedicated to that effort.

The invasive problem spans aquatic plants, terrestrial plants, marine plants, insects, annelids, crustaceans, bivalves and fish that appear in multiple locations and produce economic and ecological consequences of varying severity. The multifaceted nature of the invasive problem has resulted in multi-locational responses of varying intensity. Much good work is being done by many entities, yet the challenges grow. The expanding nature of the problem makes a reexamination of resources and strategies appropriate, so that the state’s response can be focused and proactive rather than the fragmented and reactionary “finger in the dike” approach that was criticized in the 2002 report.

#### a. The Legislature

As discussed previously, the Connecticut legislature has responded to the concern of its citizens to address the problem of invasive species. Appendix B lists bills proposed and passed to deal with the multiple and mounting invasive threats. Of particular note, is the legislation that designated “running bamboo” that escapes property boundaries as a “nuisance” and established the responsibility of the

<sup>12</sup> DEEP, The Asian Longhorned Beetle and Connecticut; <https://portal.ct.gov/DEEP/Forestry/Forest-Protection/Asian-Longhorned-Beetle>

property owner for the condition. Similar laws might be appropriate for unknown arrivals with the potential to disrupt the state's ecology and economy.

**b. Invasive Plant Council (IPC)**

[CGS Section 22a-381](#) established the nine-member IPC to (1) develop and conduct a program to educate the general public, merchants and consumers about the problems associated with invasive plants; (2) make recommendations to control and abate the spread of invasive plants; (3) make available information regarding invasive plants available to any person or group who requests such information; (4) annually publish, and periodically update, a list of plants considered to be invasive or potentially invasive; and (5) support those state agencies charged with protecting the environment in conducting research into the control of invasive plants including, but not limited to, the development of new varieties of plant species that do not harm the environment and methods of eradicating and managing existing species of invasive plants.

The IPC has been without staff to rely on since 2015 when it lost its “coordinator” staff position. It hasn't published an annual report since 2017 nor has it published meeting minutes since 2019. Its quiescence has been attributed to the loss of its staff position.<sup>13</sup>

**c. Connecticut Invasive Plant Working Group (CIPWG)**

The University of Connecticut (UConn) hosts the website of the CIPWG. The CIPWG is a consortium of individuals, organizations, and agencies concerned with invasive plant issues that was organized in 1997 as an ad-hoc group. It meets one to two times per year to collaborate and share information about invasive plant issues affecting Connecticut and the region. The group includes federal, state, and town agency staff, researchers, nursery growers, educators, master gardeners, community members, and interested citizens. Its website provides information on invasive plant topics that include identification, management, alternatives to invasive species, resources, legislative updates and [lists and photos](#) of invasive plants, including those that are identified in law ([CGS Section 22a-381d](#)).

CIPWG collaborates and shares information about invasive plant issues affecting Connecticut and the region.<sup>14</sup> Since 2002, it has hosted biennial invasive plant symposia. These events have attracted audiences of 300 to 400 people for a day of workshops, lectures, and discussions about invasive plants and their impacts on the environment. Other events include seasonal meetings and hosting guest speakers and workshops. CIPWG's 2020 annual report details the management of invasive plants and educational activities that occurred in over 50 Connecticut towns throughout the year. Its listserv of over 730 members makes it an excellent medium for dissemination of information about invasive plants.

The CIPWG publishes its own [list](#) of invasive plants in Connecticut, which has no authority in statute. The CIPWG definition, includes the following additional [characteristics](#), of what constitutes an invasive plant:

1. The ability to establish new plants and grow rapidly under a wide variety of site conditions,
2. a high reproductive rate,
3. the ability to disperse wide distances,
4. often by the spreading of vegetative fragments, as well as seeds,
5. the lack of the natural controls on growth and reproduction that would be found where the invader is native.

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<sup>13</sup> Invasive Plant Council 2017 Annual Report; <https://cipwg.uconn.edu/wp-content/uploads/sites/244/2018/01/IPC-annual-report-2017.pdf>

<sup>14</sup> University of Connecticut, Connecticut Invasive Plants Working Group, “About CIPWG”; <https://cipwg.uconn.edu/about/>

**d. Connecticut Agricultural Experiment Station (CAES)**

The CAES was [established](#) in 1875 and is the nation's oldest agricultural experimentation station. In 2002, scientists at the [CAES](#) began surveying Connecticut lakes and ponds for invasive aquatic plants and investigating novel management options. The [surveys](#), from 2004 to the present, are available on its website. They provide information on the frequency and expanse of aquatic invasive species and on how their presence might be related to water chemistry, sediment type, boat launches, watershed development and/or climate change.<sup>15</sup> CAES collaborates with private groups and other government entities to address specific infestations, as is now being done to address *Hydrilla verticillata* on the Connecticut River.<sup>16</sup> CAES is currently exploring methods to determine if the cyanobacteria are present on Hydrilla in the Connecticut River and, if so, ways to determine if the neurotoxin is present. In the meantime, CAES is preparing to address this critical ecological impact to eagle populations should it occur.

The CAES also assesses the [extent](#) of many invasive insects, including recently arrived, disease carrying, [mosquitos](#) in the state. The CAES conducts numerous and varied educational programs and [seminars](#) and educates the public about invasive and non-invasive threats to public health, like ticks<sup>17</sup>. Importantly, the CAES has broad [authority](#) to [inspect](#) premises and to quarantine and destroy plants and pests that present a risk to the state's flora and fauna. An important part of that responsibility is its regular inspections of plant nurseries and aquarium retailers for the presence of invasive species. Surveys, reported in 2017, showed that nearly thirty percent of the State's aquarium plant retailers had banned species for sale.

**e. Connecticut Department of Energy and Environmental Protection (DEEP)**

DEEP works to educate the public about controlling invasive species through its [website](#), educational materials, boat launch inspections, and active [monitoring](#) for aquatic invasive plants and animals. It receives revenue from the "Connecticut Lakes, Rivers and Ponds Preservation Account" (Account), which is a separate, nonlapsing account of the General Fund, established in 2018 ([PA 18-101](#)). The account is for (1) restoration and rehabilitation of lakes, rivers and ponds in the state; (2) programs of the Department of Energy and Environmental Protection for the eradication of aquatic invasive species and cyanobacteria blooms; (3) education and public outreach programs to enhance the public's understanding of the need to protect and preserve the state's lakes, rivers and ponds; (4) allocation of grants to state and municipal agencies and not-for-profit organizations to conduct research and to provide public education and public awareness to enhance understanding and management of the natural resources of the state's lakes, rivers and ponds; (5) provision of funds for all services that support the protection and conservation of the state's lakes, rivers and ponds; and (6) reimbursement of the Department of Motor Vehicles for the cost of producing, issuing, renewing and replacing Save Our Lakes commemorative number plates, including administrative expenses, pursuant to [CGS Section 14-21z](#). Other revenue for the Account comes from Aquatic Invasive Species Stamp fee (Public Act 19-190), which provides dedicated revenue for programs to protect the state's lakes, ponds and rivers by addressing aquatic invasive species and cyanobacteria blooms. DEEP offers [grants](#) from the Account for

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<sup>15</sup> Connecticut Agricultural Experiment Station (CAES), Invasive Aquatic Plant Program; <https://portal.ct.gov/CAES/Invasive-Aquatic-Plant-Program/IAPP/Aquatic-Plant-Survey-Program-for-Connecticut-Lakes>

<sup>16</sup> [Public-Information-Statement-Final.pdf \(ct.gov\)](#)

<sup>17</sup> [CAES-Lone-Star-Tick-Trifold-Brochure.pdf \(ct.gov\)](#) and [CAES-Tick-Brochure.pdf \(ct.gov\)](#)

control of aquatic invasive species. In 2021, \$360,000 in grants were provided from that Account for research, education and eradication associated with invasive species.<sup>18</sup>

DEEP collects data for its Natural Diversity Data Base (NDDDB). The NDDDB is a database of locations where state listed species are likely to be located. Though not intended for this purpose, it is also a baseline of what exists that could document future displacement by invasive species.

DEEP is a large landholder that controls approximately 175,000 acres of forest land. Newly disturbed land, due to construction or forestry activities, is highly susceptible to colonization by invasive species once native species are gone. DEEP uses funds collected from wood sales to control those invaders.

**f. Individual scientists and researchers**

Numerous individual scientists, limnologists, lake managers and academic researchers are monitoring Connecticut's water bodies and surveying its land in connection with their regular work. Unfortunately, their work is not compiled in a single repository. Such a collection would be more than a historic documentation; it could provide a baseline that could be of future scientific value.

**g. Connecticut Nursery and Landscape Association (Association)**

The [Association](#) runs educational [programs](#) for the nursery industry that include information on invasive plants and insects. In 2008, it instituted a voluntary [removal](#) of the porcelain berry plant from sales and production, making national news with its fresh approach to this non-native plant. Actions like that could forestall initiatives like Virginia's [call](#) for a study that to explore options for phasing out the sale and use of invasive plants in Virginia's horticultural industry, and to promote the sale and use of native plant. The importance of education for the professionals who can, in turn, educate their customers cannot be overstated. This applies to the horticultural industry and to the aquarium industry. Fourteen plants that are specifically listed in this report are those that were mentioned in the 2002 report plus newer arrivals that appear to be particularly problematic. Of them, nine were once sold as ornamental plants.

**h. Northeast Aquatic Nuisance Species Panel (NEANS)**

[NEANS](#) was established in 2001, under the auspices of the federal Aquatic Nuisance Species Task Force, pursuant to the Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990. The NEANS Panel's mission is to protect the marine and freshwater resources of the Northeast from invasive aquatic nuisance species through commitment and cohesive coordinated action. The Panel's members represent state, provincial, and federal governments; academia; commercial and recreational fishing interests; recreational boaters; commercial shipping; power and water utilities; environmental organizations; aquaculture; nursery and aquarium trades; tribal concerns; lake associations; and the bait industry. It is active in efforts to control hydrilla in the Connecticut River and has developed a management [plan](#) for the river.

**i. Connecticut Council on Soil and Water Conservation**

Connecticut's [Conservation Districts](#) were created by CGS section 22a-315a and are locally governed. Their programs are implemented by staff at the direction of each of the five Districts' locally elected Board of Directors. Districts were created to provide timely and unbiased, technical and educational services on local land use issues, for farmers, municipal land use decision makers and individual landowners. All five districts are involved in activities related to invasive species management, primarily

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<sup>18</sup> DEEP Letter to the Environment Committee, December 14, 2021

focused on terrestrial invasive plants. Their activities include on-the-ground invasive plant control through habitat restoration and enhancement projects, some with community engagement components. They advise landowners on how to control invasive plants on their properties, assess properties for invasive plants and develop habitat restoration plans with invasive plant management recommendations. The districts also provide general outreach and education through resources like the publication of the Connecticut River Coastal Conservation District's publication, [Invasive Plants in Your Backyard! A Guide to Their Identification and Control](#), which is distributed statewide through all the districts and via other avenues, such as the CIPWG conferences.

**j. Multiple Federal Agencies**

- The United States Army Corps of Engineers (USACE) plays a role in controlling invasive species. Its Aquatic Plant Control Program is a program for the prevention, control, and progressive eradication of noxious aquatic plant growths and aquatic invasive species in U.S. waters. The program supports research and development of management solutions for invasive aquatic plants that affect USACE missions. It has the potential to play a larger role in the future, especially in interstate waters, with congressional authorization.
- United States Department of Agriculture (USDA):  
The USDA Animal and Plant Health Inspection Service ([APHIS](#)) inspects cross state and international threats and does outreach and education. It has a presence at Bradley Airport as well as at the ports of Bridgeport, Groton/New London and New Haven.  
The USDA Natural Resources Conservation Service ([NRCS](#)) offers funding and technical assistance to localities to control invasives. Through its Environmental Quality Incentives Program ([EQIP](#)), it provides financial and technical assistance for invasive species control to agricultural producers and non-industrial forest managers.  
The USDA [Forest Service](#) conducts research on controlling of invasive species. In Connecticut, it has provided funds to address climate change through the America the Beautiful Grant Program. (See [Urban Forestry Grant Opportunities \(ct.gov\)](#)).
- The Fish and Wildlife Service (FWS) of the Department of the Interior conducts numerous [programs](#) and offers [grants](#) that can be used to control invasive species.

**k. Numerous private associations and organizations.**

Citizens have organized throughout the state to tackle the problems of invasive species. Lake associations, shore front property owners, municipalities and volunteer groups have conducted eradication efforts. For example, at the previously mentioned Amos Lake, the Amos Lake Association, an incorporated nonprofit organization, worked with the town of Preston and DEEP to control the spread of variable leaf milfoil and Eurasian watermilfoil. The Connecticut River [Conservancy](#) has ongoing volunteer events aimed at elimination of Water Chestnut. From April 2019 – December 2020, the Connecticut Resource Conservation and Development ([RC&D](#)) Program conducted an Environmental Review Team process at the request of twelve towns of the lower Connecticut River to examine the spread and impact of aquatic invasive species, both ecological and economic. It was found that a new more aggressive species of hydrilla was prevalent in 189 acres of the lower Connecticut River. In addition to efforts like those to remove aquatic invasive plants, groups have organized across the state to eliminate terrestrial invasive plants too. Recognizing that disturbed land is likely to be recolonized by invasives, some groups, like [CT NOFA's](#) Ecotype project and [Pollinator Pathway Northeast](#) have focused on reestablishing native plants and pollinator friendly plants.

## IV. Recommendations

Preventing species from taking over and disrupting traditional natural habitats requires advance planning, vigilance and maintenance. Most invasive species, once established, will not be eliminated, and where they are removed, they, or other invasive species, are highly likely to reestablish naturally. Invasive species control requires continual management and swift action to respond to a newly discovered species before it is established.

### 1. Prioritize responses and publicize plans.

The 2002 report recommended “1. develop an effective capability for rapid response to NEW reports of harmful infestations, both on public and private lands”. As was true in 2002, the state’s response to invasive plants and animals has been sporadic and often inadequate to the urgency presented by some invasive species, especially newly arrived ones. The evidence shows that most invasive plants and animals in the state are here to stay. They can be controlled and even eradicated in some locations but are likely to reestablish unless followed by monitoring and continual maintenance. Consequently, the state’s response to invasive species should be tiered, with resources allocated to prevent new infestations and to control the spread of the most harmful species into sensitive areas. This objective is compatible with the state’s Aquatic Nuisance Species [Management Plan](#).

#### a. The following tiers for prioritization are recommended.

- “Immediate response required” = The highest priority is new invasive plants or animals, with populations small enough to be functionally eliminated. The elimination of Goldencreeper on a property in Kent is an example of identification and presumed elimination of a new invasive pest in the state.<sup>19</sup> A “rapid response” capacity would be an advantageous tool in these circumstances, as would a law allowing for a species at a given location to be determined to be a public nuisance.
- “Urgent response required” = The next priority is invasive plants and animals that are likely to spread to new areas with negative ecological or economic consequences resulting. Think of a river system as an example. The hydrilla concentrations in the Connecticut River is an illustration of this category.
- “Priority removal” = The status assigned to all other management plans that are not “immediate” or “urgent”. In this category, the response can vary by location depending on priorities. Control would be by routine monitoring and removal. An example is the removal of invasive plants in conjunction with other activities like highway trimming.

In the categories of “immediate” and “urgent”, the goal is to quickly address the invasive species. Because the timeframe for a “priority” removal is longer, there is time to identify individuals or groups that could be inconvenienced, and response plans can be explicit about the tradeoffs that are at stake. For example, clearing a swim area of aquatic plants that provide habitat for fish might diminish angling opportunities.

#### b. Prioritize the re-establishment of the rapid response capability the state possessed formerly.

The second recommendation of the 2002 report was “2. Develop a plan and priorities for battling invasive species”. Public Act [14-217](#) (Section 248) authorized DEEP to use funds from the Aquatic

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<sup>19</sup> [Connecticut plant scientists warn of new invasive species | Connecticut Public \(ctpublic.org\)](#)

Invasive Species Management Grant and Prevention and Education Program to “conduct a rapid response to a population of aquatic invasive species in an inland water body of this state that is identified after July 1, 2014.” DEEP should use its existing contracts<sup>20</sup> with businesses that are capable of removing invasive species to respond quickly using the tiered approach described above to eradicate a newly discovered invasive species.

**c. Expedite restoration of the position of invasive plants coordinator.**

The fourth recommendation of the 2002 report was “4. *Put somebody in charge*”. An invasive plant coordinator position existed prior to 2015 and was shared between UConn and DEEP. This position provided the much-needed administrative assistance to the IPC, which appears to have had a diminished capacity since funding was “swept” for that position during the state’s fiscal crisis that year. Funding for the position is now available due to the revenue generated by the state’s “[boat stamp](#)” and the fees received from the “[lakes](#)” license plate.

**2. Innovation in legislation.**

**a.** One shortcoming in the state’s framework for dealing with the threat of invasive species is the possibility that an unknown threat could appear on private lands where the owner is unable or unwilling to mount an eradication project. In anticipation of such a crisis, the legislature should consider allowing municipal or state authorities to declare the species a public nuisance and launch the action needed to eliminate it. In essence, this was done with the passage of the “running bamboo” law that established penalties for property owners who allow their plantings to create a nuisance condition. The state of Oregon, where the forest products industry plays a major role in the state’s economy, has already enacted such a law<sup>21</sup>. There are many scholarly articles supporting the legal theory that invasive plants could qualify as public nuisances.

**b.** Additionally, penalties like those in the “running bamboo” legislation for plant sellers that fail to educate consumers about proper handling and disposal of their plant species, should be considered for other plants that pose a public risk. Over the next several years, the total cost to control invasives will probably be in the millions of dollars and needs to be weighed against any economic benefit from the sale of potentially problematic species for landscaping or for aquaria. The ratio of public cost to private gain underscores the important role of the horticultural industry in stopping the spread of undesirable non-native and invasive plant species as well as the insects that travel on them.

**c.** Consideration should be given to simplifying the state’s definition of what constitutes an invasive plant. The nine-part test in CGS 22a – 381 is a challenge for the layman, and possibly for plant sellers. The distinction between invasive, potentially invasive and prohibited is not widely understood, nor is the process by which those designations are established. Presently, “invasive” designation requires approval by a two-thirds vote of the IPC members to recommend to the legislature that the import or export, retail sale or wholesale and purchase of any plant listed as an invasive plant or a potentially invasive plant pursuant to section 22a-381b be prohibited. In deciding whether to make such recommendation, the IPC may consider: (1) The estimated dollar value of sales of said plant in the state; (2) the estimated costs associated with eradication of the plant in the state; (3) the potential effect of the plant on the environmental resources of the state or a region within the state; and (4) the estimated effect on property values in the state or a region of the state where said plant may propagate. Variables like those

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<sup>20</sup> DAS CONTRACT AWARD NO.:18PSX0145

<sup>21</sup> [https://www.oregonlegislature.gov/bills\\_laws/ors/ors570.html](https://www.oregonlegislature.gov/bills_laws/ors/ors570.html)

are extremely difficult to quantify and raise the question of how much public cost resulting from allowing a nuisance plant to remain in the stream of commerce is acceptable. A designation process that is quicker, more transparent and more readily understood by those who implement it, like public works departments, landscapers and volunteer groups, would be a timely change.

Delaware took on the challenge of streamlining its law governing invasive species. Beginning in July of this year it will define an “invasive plant” as “any living part, cultivar, variety, species, or subspecies not native to Delaware identified by the Secretary as having the potential to do all of the following: a. Result in widespread dispersal and establishment; b. Out-compete other species in the same area; c. Exhibit rapid growth or high seed or propagule productions; and d. Become established in natural areas in the State. The Delaware law simply forbids the import, export, buy, sell, transport, distribute, or propagate any viable portion, including seeds, of an invasive plant in the state. Exceptions are allowed for disposal, control, research, or education.

### **3. Prioritize prevention of invasive infestations on state lands and at state-supported projects.**

While [CGS 22a-381c](#) prohibits state agencies from buying invasive species, invasives do not need an invitation to appear. Most are advantaged by disturbances that remove native ecosystems and allow invasive plants the opportunities to become established. Consequently:

**a.** All state construction projects and all state-regulated projects should include a contractual requirement for a site inspection and elimination of invasive arrivals in the subsequent year(s).

**b.** All state construction and forestry operations should minimize the disruption of natural ecosystems (like core forests) and native botanical impediments (like spartina) that inhibit encroachment of invasive species.

### **4. Establish a repository for data on invasive species within the state.**

The CAES maintains a website that lists the invasive species in the water bodies it has surveyed. DEEP has a volunteer monitoring program, [CT Lake Watch](#), where participants are trained to monitor lake/pond water clarity and identify and report algal blooms that could lead to unsafe recreation conditions. Recently, DEEP has added the capacity for the CT Lake Watch volunteers to add their observations of invasive species to its database. DEEP has expressed the intention to submit the data it collects on nonnative species to the Nonindigenous Aquatic Species ([NAS](#)) information resource of the United States Geological Survey (USGS).

However, there are numerous scientists, scholars, lake managers and other qualified individuals with data about the presence of invasive species that are not publicly accessible. The creation of a website to which the numerous scientists, scholars, lake managers and other qualified individuals may contribute their findings would provide an important baseline for research and assessments of the effectiveness of control efforts. Either DEEP or the CAES would be a logical home for such a repository, which could also become part of the NAS database or other resources like [iNaturalist](#) or the Global Biodiversity Information Facility ([GBIF](#)) resource. Associations of researchers and lake managers, like the [New England Aquatic Plant Management Society](#) and the Connecticut Federation of Lakes could enlist their membership to participate in the reporting.

### **5. Expand the state’s education efforts about invasive species.**

The third recommendation of the 2002 report was “3. *Improve information campaigns to prevent the spread of species that are introduced accidentally*”.



a. DEEP is doing much to educate the public about the role it can play in reducing invasive species in Connecticut. DEEP created a [reporting page](#) on its website where residents may report observations of the Chinese mitten crab. This good idea should be expanded to include other species of high concern. These reports could be added to DEEP's previously mentioned collection of reports of invasive species.

b. [CGS Section 14-21aa](#), authorized DEEP to market materials to support the Account with the "Save Our Lakes" image. NEANS has considered marketing consumer items to support its efforts; DEEP should also. Hats, keychain floats or other items valued by boaters with a QR code that links to DEEP's invasive species webpage could prove to be useful educational tools.

c. State websites with information about invasives should be duplicative of each other to increase their outreach. Appropriately, DEEP's aquatic invasive species webpage focuses on how to avoid spreading invasive plants through boating and fishing. The CAES website is, appropriately, rich with information about the locations of invasives, their biology, and methods to control them once they are established. Both websites should add the important information about on how to identify and dispose of potentially problematic plants, including aquarium plants, and how to properly inspect and clean your boat and fishing material.

d. DEEP is actively working to reduce the volume in the state's solid waste stream. Improperly disposed of invasive plants can lead to their inadvertent spread. DEEP should add information to its website with instructions on how to properly dispose of invasive plants and encourage transfer stations to set up dedicated, covered areas to receive those plants. This would keep the plants out of the waste stream while reducing the likelihood of their spread.

## **6. Encourage the private sector to be proactive in halting the spread of invasive species.**

The final two recommendations of the 2002 report were "5. Discourage the spread of already established invasive species via the sale of horticultural products", and "6. Prevent the deliberate introduction of dangerous species." A commitment by the private sector to reducing the spread of invasive species would be an invaluable assist to the efforts of the public sector to do the same.

a. At minimum, nurseries and aquarium retailers should be able to identify invasive plants and to educate the public on how to properly dispose of them. In January of this year, New Jersey [enacted](#) a law to increase consumer awareness of the important role of native plants in the ecosystem through advertising campaigns and marketing programs and created a labeling program to identify native plants as "Jersey natives". Connecticut's wholesalers and retailers should establish a tag to identify invasive and potentially invasive plants, as will be required in Delaware. The same businesses should be able to identify and recommend substitutes that are native to the region.

b. Other entities, not specifically involved in the marketing of plants, but interested in beautification and horticultural improvement could become involved in the cause as well. It has been suggested that homeowners could solicit certificates that their property is free from invasives. Local garden clubs or realtors could initiate that service.

## V. Appendices

### APPENDIX A - Abbreviations and Terms Used in This Report

**AIS Grants Oversight Committee** Aquatic Invasive Species Grants Oversight Committee

**Association** Connecticut Nursery and Landscape Association

**CAES** Connecticut Agricultural Experiment Station

**CGS** Connecticut General Statutes

**CIPWG** Connecticut Invasive Plant Working Group.

**DEEP** The Connecticut Department of Energy and Environmental Protection, including its prior designation, the Department of Environmental Protection (DEP).

**IPC** Invasive Plants Council

**Invasive Species** are non-native plants or animals that are disruptive in a way that causes environmental or economic harm, or harm to human health.

**CAES** Connecticut Agricultural Experiment Station

**CGS** Connecticut General Statutes

**CIPWG** Connecticut Invasive Plant Working Group.

**DEEP** The Connecticut Department of Energy and Environmental Protection, including its prior designation, the Department of Environmental Protection (DEP).

**EAB** Emerald Ash Borer

**FWS** Fish and Wildlife Service

**GBIF** Global Biodiversity Information Facility

**IPC** Invasive Plants Council

**Invasive Species** are non-native plants or animals that are disruptive in a way that causes environmental or economic harm, or harm to human health.

**NAS** Nonindigenous Aquatic Species

**NEANS** Northeast Aquatic Nuisance Species Panel

**NDDDB** Natural Diversity Data Base

**PA** Public Act

**UConn** University of Connecticut

**USACE** United States Army Corps of Engineers

**USDA** United States Department of Agriculture

**APHIS** Animal and Plant Health Inspection Service

**EQIP** Environmental Quality Incentives Program

**NRCS** Natural Resources Conservation Service

**APPENDIX B – Relevant Sections from the Connecticut General Statutes (CGS) for Invasive and Non-native Species**

<b>CGS</b>	<b>Title</b>
<a href="#">Sec. 14-21aa</a>	Connecticut Lakes, Rivers and Ponds Preservation account.
<a href="#">Sec. 14-21bb.</a>	Aquatic Invasive Species fee. Requirements for payment of fee
<a href="#">Sec. 14-21z</a>	Save Our Lakes commemorative number plates. Fees. Regulations.
<a href="#">Sec. 15-140e</a>	Safe boating certificate
<a href="#">Sec. 22-11f.</a>	Licensing of aquaculture operation. Regulations. Control of importation and cultivation of nonnative plants or animals.
<a href="#">Sec. 15-180</a>	Transporting vessel or trailer without inspecting for and properly removing and disposing of vegetation and aquatic invasive species. Penalty.
<a href="#">Sec. 22a-27r</a>	Invasive species detection and control account.
<a href="#">Sec. 22a-339g</a>	Control of nonnative invasive plant species.
<a href="#">Sec. 22a-339i</a>	Aquatic invasive species management grant and prevention and education program. Allocation of funds. Regulations.
<a href="#">Sec. 22a-381</a>	Invasive Plants Council: Membership; meetings.
<a href="#">Sec. 22a-381a</a>	Duties and recommendations of the Invasive Plants Council.
<a href="#">Sec. 22a-381b</a>	Listing of invasive and potentially invasive plants by council. Criteria for listing. Approval by majority of council's membership.
<a href="#">Sec. 22a-381c</a>	Prohibition on purchase of invasive or potentially invasive plants by state agencies.
<a href="#">Sec. 22a-381d</a>	Prohibited actions re certain invasive plants. Exceptions. Municipal ordinances prohibited. Penalty.
<a href="#">Sec. 22a-381e</a>	Prohibited actions re running bamboo. Disclosure statement. Penalties. Enforcement. Running bamboo as nuisance.