

Efforts to Eradicate or Combat the Spread of Invasive Species in Chittenden County, Vermont

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Introduction

In April 2015, the Senate Committee on Agriculture and the House Agriculture and Forest Products Committee asked Vermont's regional planning commissions to compile reports on the work being completed by organizations in their region to combat invasive species. This report gives an overview of the local, regional and state-wide agencies that work to eradicate or prevent the spread of invasive species in Chittenden County. At the end of this document is a list of invasive species currently found in or likely to spread to Vermont, with indication of whether the species is currently present or likely to spread to Chittenden County.

Because it contains the Green Mountains, the Champlain Valley and the shores of Lake Champlain, Chittenden County is vulnerable to a wide range of aquatic and terrestrial invasive species. A number of groups work in the county to attempt to eliminate or prevent the spread of invasive species. The three activities commonly undertaken by groups combating invasive species are attempted eradication of invasives on specific sites, prevention of invasive species spread through education and enforcement, and policy advocacy at the state level. Larger, well-funded organization at the regional or state level may undertake all three, while smaller organizations tend to focus on one or two. CCRPC contacted 26 organizations to ask about their role in eradicating or preventing the spread of invasive species in Chittenden County. The results are below, divided depending on whether the organization's primary focus is combating aquatic invasive species or terrestrial invasive species.

Organizations Focusing on Aquatic Invasive Species

The Lake Champlain Committee works to develop management plans for current infestations of invasive plants, such as water chestnut, as well as rapid response plans to control new infestations. The Committee also works to prevent the spread of new species into Lake Champlain through efforts to educate citizens about invasive species as well as advocating for policy changes at the state and national level. The group provides input to national groups such as the USFW Alternative Sea Lamprey Control Task Force.

Local organizations such as town **conservation commissions** play a role in mitigating AIS by identifying sites of infestation, and then organizing volunteers and leveraging funding for eradication efforts. These groups play a critical role in local work by educating residents about invasive species and attempting to remove invasive species from keys areas. However, funding is often limited, and removal of key infestations on private lands may be difficult due to the need for landowner consent.

The **Vermont Department of Fish and Wildlife's Nuisance Species Team** participates in efforts to increase coordination between organizations and agencies on the topic of invasive species. The Team is part of the Lake Champlain Basin Aquatic Invasive Species Rapid Response Task Force (see below) and participates in the efforts of regional and federal efforts to control invasive species. The Team also samples fish stocks for diseases, conducts public education efforts, and advocates for policy changes.

The **Lake Champlain Basin Program** provides grants annually to municipalities, educational institutions, natural resource conservation districts and other nonprofit organizations with a focus on watershed or lake management for reducing the spread and impact of aquatic invasive species. This is accomplished through projects that establish or expand early detection and monitoring programs, educate lake users about AIS, as well as through supporting boat launch or other lake or river access greeter programs designed to inform lake or river users and prevent the spread of aquatic invasive species. These grants are made in support of *Opportunities for Action*, the group's water quality management plan for Lake Champlain. LCBP also coordinates the **Lake Champlain Basin Aquatic Invasive Species Rapid Response Task Force**, a group of basin experts from New York, Vermont and Quebec able to quickly respond to any new invasive species in Lake Champlain.

The **Vermont Department of Environmental Conservation Watershed Management Division's Aquatic Invasive Species Management Program** works around the state to “reduce and prevent the environmental and socioeconomic impacts of aquatic invasive and nuisance species to protect and improve water quality, aquatic and terrestrial wildlife habitat, and lake ecosystem functions.” The program provides technical and financial assistance to towns and water body association seeking to manage existing infestations and surveys the spread of invasive species. However, the group notes that eliminating AIS is very difficult, and so the primary focus of the program is preventing the spread of AIS. Programs such as the Public Assess Greeters and Clean Boats, Clean Waters educate water body users about how they can prevent the spread of AIS.

Organizations Focusing on Terrestrial Invasive Species

Local organizations such as town **conservation commissions** and the **Lewis Creek Association** also play a role in mitigating terrestrial invasive species by identifying sites of infestation, and then organizing volunteers and leveraging funding for eradication efforts. These groups play a critical role in local work by educating residents about invasive species and attempting to remove invasive species from keys areas. However, funding is often limited. Removal projects may be complicated by the need for pesticide application or expensive specialized tools such as Weed Wrenches. Additionally, removal of key infestations on private lands may be difficult due to the need for landowner consent.

The **Vermont Agency of Agriculture, Food and Markets Plant Industry Section** enforces the statewide “Noxious Weeds Rule,” which “prohibits the sale, movement, distribution, and in some cases, possession or cultivation of certain species of plants that have been recognized as invasive in Vermont or adjacent States.” The rule is mainly enforced through the inspection of nursery inventories. Plant Industry Section officials note that while preventing the sale of plants in Vermont is effective, there are no regulations preventing state-to-state transport of commodities like firewood, which may carry invasives.

The **Winooski Natural Resources Conservation District** works with partner organizations to manage invasive species before and after undertaking riparian plantings. The WNRCD is one of several organizations that noted the negative effect that invasive species can have when it comes to water quality efforts and streambank erosion mitigation. The WNRCD's partner organizations include **Habitat Restoration Solutions, LLC**, a company specializing in mapping invasive plants and determining key areas for removal. The company acts as a resource for a number of nonprofit organizations throughout the county.

The **Intervale Center** and other land conservation efforts in Chittenden County deal with woody invasive species that impact forested and riparian lands. The Intervale Center's primary focus is on-the-ground removal of existing invasives.

The **Winooski Valley Park District** also focuses on directly removing invasive species that are found in parks throughout Chittenden County. The District's park at Colchester Pond also hosts a member of the AISMP's Greeter program, in an attempt to prevent the spread of AIS into the pond.

The **Nature Conservancy** owns natural areas around the state and manages them to ensure biodiversity. This includes annual efforts to control and manage terrestrial invasive plants on those lands, with labor primarily provided by volunteers. In Chittenden County, the organization owns the Lewis Creek Hill, Richmond Rivershore, LaPlatte River Marsh, Williams Wood and H. Laurence Achilles (Shelburne Pond) Reserves. The Nature Conservancy is also a partner in maintaining VTinvasives.org and helped raise funds for the Department of Forests, Parks and Recreation to hire their current Invasive Plant Coordinator. The organization works to create educational materials about invasive species, and works with the Department of Fish and Wildlife to coordinate volunteer work, especially cutting and stump treatment for woody invasives.

The **Vermont Department of Forests, Parks and Recreation** houses a new statewide position focusing on terrestrial invasive species, the Invasive Plant Coordinator. The Department's strategies for addressing invasive species varies depending on the local and severity of an infestation. When an invasive species is well-established (common in state parks in the Champlain Valley), mitigation and confinement of those species is a priority. However, when invasive species are found in upland sites in relatively un-fragmented areas (such as Camel's Hump State Park or Mount Mansfield State Forest), elimination is a priority. Regional staff would benefit from investments in creating a management plan, consolidating location information, developing treatment protocols, and expanding training opportunities. Volunteer and partner organization participation in eradication and mitigation efforts may be explored in the future.

The **Vermont Department of Fish and Wildlife** works to eliminate newly found patches of invasive plants and to prevent the spread of established infestations, with a focus on State Wildlife Management Areas (6,400 acres in Chittenden County). Staff conduct educational

outreach about invasive plants and pests by creating brochures and working directly with landowners and school groups. The Department also works with the Natural Resources Conservation Service to implement the Environmental Quality Incentives Program (EQIP). EQIP enables staff to work directly with private landowners to control invasive plants and enhance wildlife habitat conditions. Hundreds of landowners in Chittenden County are involved in EQIP.

The **Chittenden County Forester** helps prevent the spread of invasive species by educating property owners participating in the Vermont Use Value Appraisal (Current Use) program about invasive species. The Forester also assists with mapping of invasive species on sites such as iNaturalist.org.

As reported by TRORC, “The **Vermont Agency of Transportation (VTrans)** controls a large amount of highway right-of-way across the state and is probably the biggest single owner of state land compromised by multiple terrestrial invasive species, but control and eradication are not in their mission. They do have best practices to avoid spreading invasive species while conducting normal operation and maintenance activities along state roads, as well as to avoiding injury from plants such as poison ivy, parsnip or hogweed.”

The **USDA Natural Resources Conservation Service** develops guidelines for various conservation practices, including brush management and herbaceous weed control practices for invasive plant species. The NRCS also provides technical support to landowners in managing invasive terrestrial plants, including through the development of Early Detection and Rapid Response Plans.

The **UVM Extension** hosts a Forest Pest Outreach Coordinator, who works to increase community knowledge about forest pests. The Extension is also a partner in maintaining VTinvasives.org. The Extension also coordinates the Forest Pest First Detectors Program, which trains citizen volunteers to educate their communities about forest pests and to quickly identify the presence of forest pests.

Conclusions

Many respondents to our survey noted that the most effective way to control invasive species is preventing the spread and establishment of species into new territory. Attempting to eradicate species that are already present is extremely difficult or impossible.

In the aquatic world, very little can be done to control, reduce or eradicate an invasive species once it is introduced. Occasionally, successful mitigation activities can be implemented, but these are generally considered Band-Aid approaches.

- Shawn Good, Aquatic Nuisance Species Team Chair for the VFWD

It is a mistake to identify species that have already become established as [the] highest priorities. That horse has left the barn.

-Mike Winslow, Lake Champlain Committee

The best hope for eliminating or preventing the spread of invasive species seems to be a coordinated effort at the local, regional and state levels to educate to prevent the spread of invasive species, as well as to identify keep locations for targeted mitigation projects.

Invasive species have wide ranging negative impacts. AIS in Chittenden County are a concern for the quality of both Lake Champlain and smaller bodies of water such as Colchester Pond. Aquatic invasive plants and animals, such as watermilfoil or zebra mussels, cause problems for recreational users such as swimmers and boaters, disrupt ecologic systems and outcompete or kill native species. Certain diseases that affect fish are also considered invasive, such as fish hemorrhagic septicemia. These diseases reduce fish populations that are important for recreational fishers and for maintaining biodiversity.

Terrestrial invasive plants create both aesthetic and practical problems for working and conserved lands. Invasive shrubs and trees, like Norway Maple or Japanese Barberry, can outcompete native species and negatively impact industries such as timber and maple production. If they spread to Chittenden County, invasive insects such as the Asian Longhorn Beetle or Emerald Ash Borer may have the same effects. Other invasive plants, such as giant hogweed, are noxious weeds that affect hikers and road crews. Japanese Knotweed creates environments that increase the tick population and the risk of Lyme disease.

Given the state's current focus on water quality, it is important to note that species such as Asiatic Bittersweet and Japanese Knotweed destabilize natural riparian forests and have negative impacts on water quality. The presence of these invasive species may also disqualify land for participation in the Conservation Reserve Enhancement Program (CREP). CREP is a USDA program that removes farmland in impaired watersheds from production and plants the land with native trees, creating a natural buffer to enhance water quality. However, riverbanks taken over by invasive species may not be eligible for this program.

Coordination between organizations to identify key species and key areas to protect or remove invasives from is key to a successful fight against terrestrial and aquatic invasive species. Currently, there seems to be a greater amount of coordination between organizations dealing with AIS than there is between organizations whose focus is terrestrial invasive species. The Lake Champlain Basin Aquatic Invasive Species Rapid Response Task Force, for example, is a team of experts able to quickly respond to any new AIS found in Lake Champlain. It remains to be seen whether the recent creation of the Invasive Plant Coordinator position within the Department of Forests, Parks and Recreation will create a similar level of inter-organization cooperation between groups primarily focused on terrestrial invasive species. There currently are not any coalitions focusing on a coordinated response to terrestrial invasive species in Chittenden County.

List of Invasive Species

Common Name	Scientific Name
Alewife*	<i>Alosa pseudoharengus</i>
Amur Cork Tree†	<i>Phellodendron amurense</i>
Ash Yellows	<i>Candidatus Phytoplasma fraxini</i>
Asian Longhorned Beetle†	<i>Anoplophora glabripennis</i>
Asiatic or Oriental Bittersweet*	<i>Celastrus orbiculatus</i>
Autumn olive*	<i>Elaeagnus umbellata</i>
Balsam Woolly Adelgid	<i>Adelges piceae</i>
Beech Bark Disease	<i>Cryptococcus fagisuga</i> and <i>Neonectria</i> spp.
Black swallow-wort†	<i>Cynanchum louiseae</i>
Burning bush or Winged Euonymus*	<i>Euonymus alatus</i>
Butternut Canker*	<i>Sirococcus clavigignenti-juglandacearum</i>
Chestnut Blight	<i>Cryphonectria parasitica</i>
Common barberry*	<i>Berberis vulgaris</i>
Common buckthorn (European Buckthorn)*	<i>Rhamnus cathartica</i>
Common Reed*	<i>Phragmites australis</i>
Dame's Rocket*	<i>Hesperis matronalis</i>
Didymo*	<i>Didymosphenia geminata</i>
Dutch Elm Disease	<i>Ophiostoma novo-ulmi</i>
Elongate hemlock scale	<i>Fiorinia externa</i> Ferris
Emerald Ash Borer†	<i>Agrilus planipennis</i>
Eurasian Watermilfoil*	<i>Myriophyllum spicatum</i>
European Alder (European Black Alder)*†	<i>Alnus glutinosa</i>
Frogbit*	<i>Hydrocharis morsus-ranae</i>
Garlic mustard*	<i>Alliaria petiolata</i>
Giant hogweed*†	<i>Heracleum mantegazzianum</i>
Glossy buckthorn*	<i>Frangula alnus</i>
Goutweed or Bishop's weed*	<i>Aegopodium podagraria</i>
Hardy Kiwi	<i>Actinidia arguta</i>
Hemlock Woolly Adelgid†	<i>Adelges tsugae</i>
Japanese Barberry*	<i>Berberis thunbergii</i>
Japanese knotweed*	<i>Polygonum cuspidatum</i>
Japanese stilt-grass†	<i>Microstegium vimineum</i>
Kudzu†	<i>Pueraria montana</i> var. <i>lobata</i>
Mile-a-minute vine†	<i>Persicaria perfoliata</i>
Multiflora Rose*	<i>Rosa multiflora</i>
Norway maple*	<i>Acer platanoides</i>
Oak Wilt	<i>Ceratocystis fagacearum</i>
Ornamental Jewelweed†	<i>Impatiens glandulifera</i>

Pale Swallowwort†	<i>Cynanchum rossicum</i>
Pear Thrips	<i>Taeniothrips inconsequens</i>
Porcelainberry†	<i>Ampelopsis brevipedunculata</i>
Purple loosestrife*	<i>Lythrum salicaria</i>
Rusty Crayfish*	<i>Orconectes rusticus</i>
Shrub Honeysuckles*	<i>Lonicera sp.</i>
Sirex Woodwasp	<i>Sirex noctilio</i>
Thousand Cankers Disease	<i>Geosmithia morbida sp. nov</i>
Tree of heaven†	<i>Ailanthus altissima</i>
Variable-leaved Watermilfoil	<i>Myriophyllum heterophyllum</i>
Wall Lettuce†	<i>Lactuca muralis</i>
Water Chestnut	<i>Trapa natans</i>
White Pine Blister Rust*	<i>Cronartium ribicola</i>
Wild Chervil*	<i>Anthriscus sylvestris</i>
Wineberry	<i>Rubus phoenicolasius</i>
Winter Moth	<i>Operophtera brumata</i>
Yellow flag iris*	<i>Iris pseduocorus</i>
Zebra Mussels*	<i>Dreissena polymorpha</i>

Species are those identified by VTinvasives.org, the Chittenden County Forester or local organization reports

Species in bold are designated Class B noxious weeds in Vermont

Species with an * have been identified in Chittenden County by the Early Detection and Mapping System (<http://www.eddmaps.org/>), Chittenden County Forester Reports (<http://www.inaturalist.org/guides/820>) or local organization reports

Species with a † have been designated as early detection priorities by the Chittenden County Forester (<http://www.inaturalist.org/guides/820>)

Contact Information of Respondents

Organization	Contact	Email	Phone Number
Charlotte Conservation Commission	Amos Baehr	grizzly@affordablefutures.com	802-343-6035
Chittenden County Forester (former)	Keith Thompson	keith.thompson@vermont.gov	802-879-6565
Habitat Restoration Solutions LLC	Robert Hyams	robert@madriver.com	802-734-5630
Hinesburg Conservation Commission	Alison Lesure	alisonlesure@gmail.com	802-434-6518
Lake Champlain Basin Program	Meg Modley	mmodley@lcbp.org	802-372-3213
Lake Champlain Committee	Mike Winslow	mikew@lakechamplaincommittee.org	802-658-1461
Landowners in Current Use Program	Pat Haller	phaller@veic.org	
Lewis Creek Association	Marty Illick	martyillick@gmail.com	802-425-2002
The Intervale Center	Seth Gillim	seth@intervale.org	802-660-0440 x104
The Nature Conservancy	Rose Paul	rpaul@tnc.org	802-229-4425 x108
UVM Extension Forest Pest Outreach	Mollie Klepack	mklepack@uvm.edu	802-656-7746
Vermont Agency of Agriculture, Food and Markets Plant Industry Section	Tim Schmalz	tim.schmalz@vermont.gov	802-279-2090
Vermont Department of Environmental Conservation Watershed Management Division Aquatic Invasive Species Management	Ann Bove	ann.bove@vermont.gov	802-490-6120
Vermont Department of Fish and Wildlife			
<i>Aquatic Nuisance Species</i>	Shawn Good	shawn.good@vermont.gov	802-786-3863
<i>Fisheries Division, Essex</i>	David Adams	dave.adams@vermont.gov	802-879-2330

<i>Natural Heritage Inventory</i>	Bob Popp	bob.popp@vermont.gov	802-476-0127
Vermont Department of Forests, Parks and Recreation	Elizabeth Spinney	Elizabeth.Spinney@vermont.gov	802-477-2134
Winooski Natural Resources Conservation District	Corrina Parnapy	corrina@winooskinrcd.org	802-828-4493 x110
Winooski Valley Park District	Tim Larned	timlarned@wvpd.org	802-373-0743