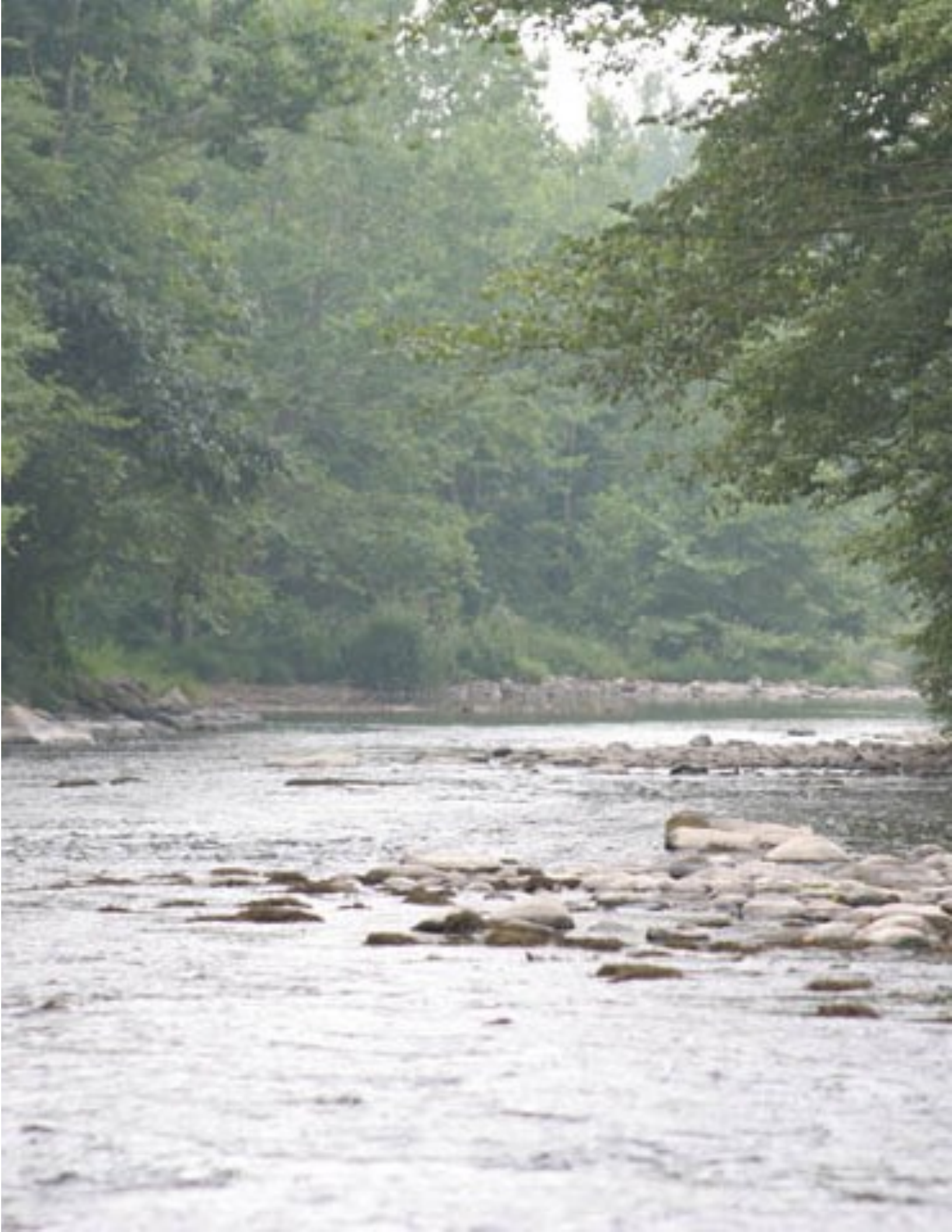
A LANDOWNER'S GUIDE

to Invasive Plant Management

Farmington Wild & Scenic River

Farmington River Coordinating Committee



The Importance of Managing Invasive Species

As a landowner, it is important to manage invasive plants in order to preserve our native plants and animals, to care for our fields, forests and waterways, and to protect farmlands.

This brochure is intended as a guide for you, to provide the most up-to-date and relevant prevention and management techniques for invasive plants in our area. Controlling the spread of invasives can be a complicated issue, so this guide will help you navigate the different management options available. Because complete eradication is unrealistic in most cases, you will find guidelines for prioritizing efforts in managing the most common invasive plants, different control techniques, and tips for preventing new invasions from occurring. While this guide aims to inform you, it is not exhaustive and you may want to consult field guides and other resources in order to identify specific plants in the field and the native species they are impacting.

Whether managing your land for agricultural or forest uses, as wildlife habitat, or for recreational use, invasive species can impact your activities. Your management efforts will have a positive impact on the long-term goals for your property. A good first step is making a plan to protect and preserve the nature of your property and your community. The work you do to manage invasive plants will help maintain habitat for our native wildlife and create more resilient natural habitats. Thank you for choosing to steward your land in an informed way.

Invasive Plants Change the Landscape

Non-native invasive plants change the landscapes we love. These species have arrived either accidentally or were intentionally introduced from places around the globe, and can behave quite differently in landscapes away from their native habitats. They grow rapidly and form dense thickets, dominating habitats and harming the natural resources we depend on both ecologically and economically. Invasive plants can negatively impact farmland, working forests, recreational land, and rare species (both plants and animals). Understanding the problems these plants create will help motivate you to take steps towards reducing their spread. Some of the most damaging impacts from invasive plants include:

- Habitat degradation and destruction
- Decreased forest regeneration
- Hastened erosion
- Decreased wildlife value of habitats
- High economic cost of removal
- Overgrown trails that are difficult to walk

Invasive plants pose one of the greatest threats to native plants and animals within the Farmington River Watershed. **Asian honeysuckles** *(Lonicera* spp.*),* **Japanese barberry** *(Berberis thunbergii),* **Autumn olive** *(Elaeagnus umbellata),* **Purple loosestrife** *(Lythrum salicaria),* **Porcelainberry** *(Ampelopsis brevipedunculata),* **Fig Buttercup** *(Ficaria verna),* Japanese Stiltgrass *(Microstegium viminium),* **Goutweed** *(Aegopodium podagraria),* **Garlic mustard** *(Alliaria petiolata)* and **European and glossy buckthorn** *(Rhamnus cathartica & Frangula alnus)* are some of the most common invasive plants in the area.

Autumn olive

Oriental bittersweet

Phragmites

Glossy buckthorn

Goutweed

Black swallowwort

In general, invasive plants have several characteristics that make them so successful at spreading and changing our natural habitats:

- Produce large quantities of fruit and seeds;
- Leaves emerge earlier in spring and remain on plants later in fall than native species, gaining a competitive advantage for nutrients;
- Are not susceptible to most pests or diseases in their new habitats;
- Many species produce toxic chemicals that inhibit growth of native species;
- Most are generalists that can invade a range of landscapes.

Principles for Managing Invasive Plants

PREVENTION

The most cost-effective and complete approach to combating invasive plants (and other invasive species) is to keep them from becoming established in the first place. There are several steps you can take to prevent unwanted or accidental introductions:

- Clean equipment before transporting it between properties
- Review the MA Department of Agricultural Resources' prohibited plant list and the Invasive Plant Atlas of New England (IPANE) website prior to any planting activities (see pages 14-15)
- Remove invasive plants from designed landscapes before they can spread into minimally managed and natural habitats
- Work with your neighbors to encourage these preventative practices on abutting properties

EARLY DETECTION AND RAPID RESPONSE

When prevention fails, detecting and eliminating invasive plants before they spread will save time and resources down the road. By monitoring your property regularly (at least annually) for potential introductions, especially near boundaries and disturbed areas, you will be able to catch a new infestation when it is relatively easy to control using mechanical methods. Review potential new invasive species each year, refer to the Massachusetts Invasive Plant Advisory Group's updated lists, IPANE's catalog and identification tips, and attend early detection workshops when available.

When a species is found on your property and the decision is made to control or eliminate it, you can use a variety of techniques, depending on the species involved, the size of the population, the location (proximity to water or other significant habitats), and other factors. Effective management of invasive plants can involve mechanical or chemical control methods, or a combination, and these different techniques are detailed in the following sections. Removal of vegetation and herbicide use within sensitive areas, such as wetlands, may require a permit in Connecticut. Landowners should contact their local Conservation Commission or an invasive species management professional to learn more.

PROPER IDENTIFICATION AND REPORTING

Care should be taken that invasive species are properly identified before control work is undertaken. Some invasive plants are similar in appearance to native plants that are not a threat (and often provide a benefit!) to the local ecosystem. There are many good resources for identifying invasive plants, some of which are listed in the back pages of this guide.

If you do think you have found an invasive plant species — especially an "Early Detection" species that is new to the area — please take the time to report your findings through the resources listed at the back of this guide.

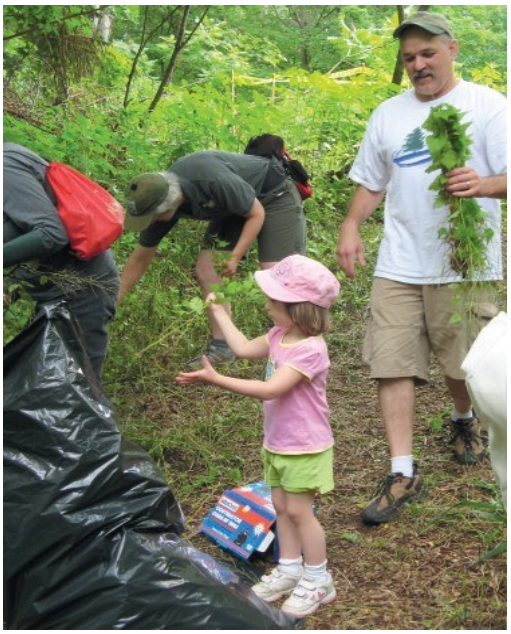
Mechanical Control Methods

HAND PULLING

Hand pulling is a good way to deal with young plants or herbaceous species and can ensure that only targeted plants are removed. To remove, grasp plant at the base and pull slowly to ensure that you remove the entire plant and root system—it is crucial to get the entire root so that plants cannot re-sprout. Plants are easiest to remove after a rain, when the ground is moist, and you may also find it helpful to use a weeder, trowel or spade to aid in removal. Make sure that before you begin to hand pull, you understand the plant's reproductive strategies. This will inform when and how to remove the plant (see page 15 for link to disposal guidelines). For example, garlic mustard is best pulled before it has flowered, but if removed while flowering it will need to be bagged.

CUTTING OR MOWING

This can be a good option when invasive plants are found in large monocultures or when their root systems are extensive. The plants will typically have significant carbohydrate reserves stored in their root system, so it will take multiple cuts over a season and/or years to fully deplete the plant's reserves. As with hand pulling, know the plant's reproductive strategy to inform when you cut or mow.



SMOTHERING

Some invasive species have insidious root systems (such as goutweed and Japanese knotweed), where a small fragment of root can start a new plant at any time during the growing season. For these species, remove all above-ground vegetation and then cover the entire site— include at least a three foot "buffer" zone—with several layers of black plastic. This technique will smother the plant's new growth, basically starving it by preventing sunlight from reaching the plants. Secure the covering with large stones or bricks, and monitor frequently to ensure the covering remains in place and that roots are not growing outside the cover. Depending upon the species, you may need to leave the ground cover in place for one full growing season or more.

GIRDLING

This is an effective technique to kill trees and shrubs that have a single trunk. Use a chainsaw or ax to make two to three circular cuts, at least three inches apart, around the circumference of the tree. This will kill the cambium (inner bark), which is a layer of living tissue responsible for producing new wood and bark, and transporting carbohydrates and sugars between the roots and leaves. Be sure not to make the cut too deep, or the tree will topple in high winds.

BURNING

Propane torches can be used to successfully reduce small populations of certain woody plants. With this technique, use torches only during a rainy, wet period. Follow up treatments of certain spots will also likely be necessary.

Chemical Control Methods

Before using any chemical control techniques, keep in mind that these should only be one piece of your prevention plan, and should only be used when another approach will not be effective. Be sure to review safety tips before using herbicides and read labels in their entirety. Follow directions precisely, for both environmental and personal safety and because the labels describe how these chemicals can be used legally. In order to ensure effective treatment and minimal damage to non-target species, it is recommended that property owners contact a certified herbicide applicator who specializes in invasive plant management. While herbicides are the most effective controls available, it is important to consider the negative impacts of applying large quantities of herbicides into natural systems. Generally, in low concentrations, the herbicides listed below do not negatively impact insects, mammals or birds. When working in sensitive areas, such as wetlands, look for a product that is specifically labeled for wetland use. Herbicide use within these areas may require a permit from the town Conservation Commission.

Most of the common invasive plants can be treated using one of two herbicides:

- **Glyphosate** (the active ingredient in Roundup™ and Rodeo™) is non-selective, meaning that it kills all plant material it contacts. Correct application is thus important to avoid damage to non-target plants. For perennial species, glyphosate is more effective when applied later in the summer and into early fall.
- **Triclopyr** (the active ingredient in Brush-B-Gone™ and Garlon™) is selective to broad-leaved plants, (it is designed to not kill grasses or (orchids). It is, however, a much stronger herbicide than glyphosate, and is therefore used on plants that are the most difficult to control. Most triclopyr formulations require a Pesticide Applicator's License to purchase.

There are 2 common techniques to apply herbicides to treat invasive plants:

CUT STEM TREATMENT

This technique is most effective in late summer. Stems should be cut close to the ground. For woody stemmed species, apply herbicide directly to the cut surface immediately after cutting, before the stem starts to dry out. For larger stumps, the herbicide only needs to be applied to the living tissue in the outer layer. You can apply the herbicide using a sponge, paintbrush or spray bottle. You may find it helpful to mix a dye, like food coloring, in with the herbicide, so that you can see where you previously applied the chemical. Another variation on this method for larger shrubs and trees is known as "hack and squirt"—cutting angular slashes through the bark around the stem and applying the herbicide in the slashes.

FOLIAR APPLICATION

This technique involves applying herbicides directly to a plant's leaves, and it is frequently used on large infestations using a backpack sprayer or a boom sprayer. It is most effective when plants are actually growing, ideally when they are flowering or beginning to form fruit. The target plants should be sprayed with the herbicide on a day when there is no rain forecasted and minimal wind. The benefits of foliar application are that there is a wide window of time that it can be used, it requires a lower concentration of herbicide, and is less time consuming than the cut stem treatment. However, since it uses a spray, this application is more likely to hit non-target species.

Other Techniques for Managing Invasives

BIOLOGICAL CONTROL

This technique uses agents such as insects, pathogens, fungi, animals or microbes to feed on or otherwise disrupt invasive plants. Biocontrols are not expected to completely eliminate invasives, and it can take years after repeated releases before their effects are substantial. There is controversy, however, as to whether the agent itself can eventually harm native vegetation or have negative impacts on ecosystems. Biocontrols are generally not suitable for individual landowners but have been used in some instances in Connecticut by government agencies and research institutions.

GRAZING

Goats, sheep and cows can be used as management tools. These animals can feed on weeds in hard to reach places and in heavily overgrown areas. Although grazing alone will not eliminate most invasive plants, when combined with other control techniques, severe infestations can be reduced. However, while grazing can make a positive impact on invasive species populations, it can also result in significant damage through soil disturbance and destruction of native plants. This technique should not be used in areas with an abundance of native plants or threatened species.

The Farmington River Coordinating Committee can help get you started on planning for invasive control on your property.

Purple loosestrife

ORGANIC CONTROL

There are a few organic controls available for managing invasive species, including corn gluten, as well as vinegar and clove based controls, like Burnout II. Corn gluten inhibits seed germination and is considered an excellent pre-emergent herbicide for sites where you know there is a viable seed bed of invasive species. Some of the other organic controls are useful for short-term control, but not for long-term management of invasive plants. Caution needs to be taken when using some organic controls as their concentrations are quite high and can cause harm to the applicator.

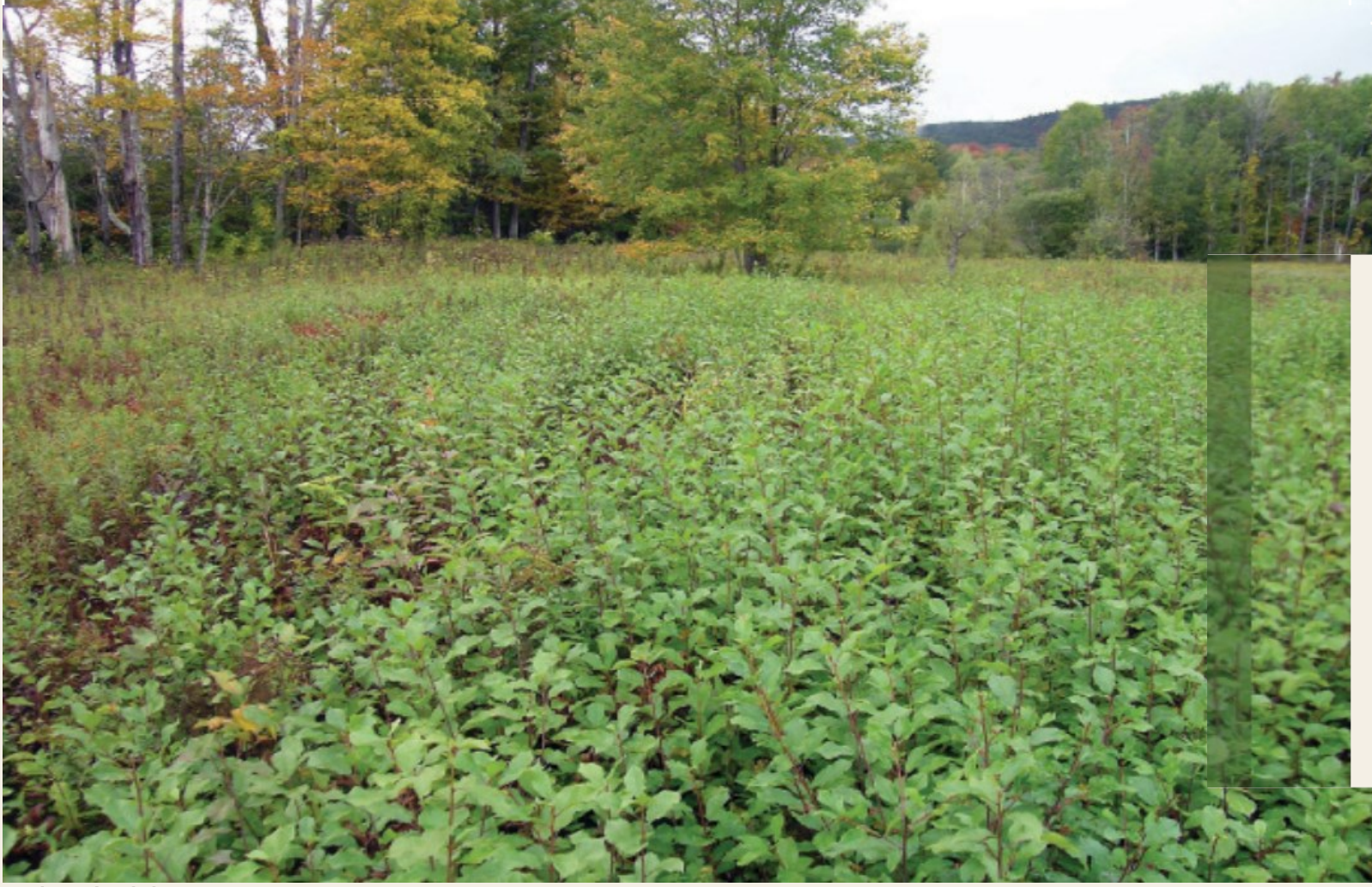
INVASIVE SPECIES CONTRACTOR

If your property has ponds, streams, wetlands, or other sensitive areas, or has a large quantity or diversity of invasive plant species, FRCC recommends that you consult a professional invasive plant management expert. These professionals can help you navigate any regulations, determine what species to tackle first, decide where to focus your work, and identify which techniques are appropriate in sensitive areas. When selecting an invasive plant management contractor, do some research in order to hire an appropriate contractor who can help you meet your management goals for your property.

Invasive Plant Management Plan

It is easy to feel overwhelmed when faced with the task of managing invasive plants. There are a multitude of plants to identify, and a range of control techniques, as this brochure has outlined. Having a management plan in place will allow you to focus your resources on the plants that are most threatening your property and the areas of highest importance. The Following guidelines will help you get started in developing your own management plan:

- **CREATE A PROPERTY MAP**
  Depict the natural features and major vegetation cover types on your property. You can sketch your map by hand or use programs like Google Earth to create more sophisticated, interactive maps.
- **CREATE LAND MANAGEMENT GOALS**
  Determine what you want your land to be like 5, 10 or 20 years from now. Think about what natural features you want to protect, as well as what wildlife management, forestry activities or trail building you may do in the future.
- **IDENTIFY AND MAP INVASIVE PLANTS**
  Find out what plants are likely to occur on your property and look for them along logging roads and trails, at old home sites, openings in the forest canopy and deeper in the woods. Map the species you find, and try to convey the size and density of the populations.
- **PRIORITIZE POPULATIONS FOR MANAGEMENT**
  Identify areas of significant resources to protect on your property, such as rare native plants or wildlife habitat. Prioritize these areas for invasive plant control.



Glossy buckthorn

- ## PRACTICE EARLY DETECTION AND RAPID RESPONSE

  Walk your property each year to look for invasive plants and remove new problem plants as soon as you see them.

- ## DETERMINE WHICH METHODS YOU WILL USE

  A mix of the techniques described earlier is usually the most successful way to manage invasive plants.

- ## CONSIDER AVAILABLE RESOURCES

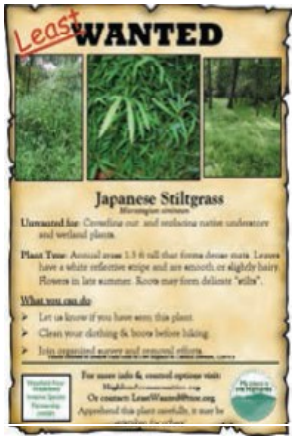
  The USDA Natural Resource Conservation Service (NRCS) offers a number of programs, including WHIP and EQIP, to help private land owners defray the costs of invasive plant management. See page 15 for contact information.

- ## DEVELOP A REASONABLE TIMELINE AND BE REALISTIC

  Base your timeline on the size of the infestation, the species involved and what suitable control methods exist. Invasive plant management can be a long term project, so be prepared to treat established populations for at least several years, and continue to monitor.

Resources

INFORMATION & IDENTIFICATION



Invasive Plant Atlas of New England (IPANE)

Has useful information on identification of the plants, locations in the region, and research results using IPANE data.

www.eddmaps.org/ipane

"Least Wanted" Posters

www.thetrustees.org/what-we-care-about/the-natural-world/least-wanted.html

NatureServe's Invasive Species Ranks

Assesses non-native plants found in North America according to their impacts on native plants, animals, and natural communities.

www.natureserve.org/getData/plantData.jsp

National Park Service Explore Nature

Introduces invasive species, what they are, and why they are a problem.

www.nature.nps.gov/biology/invasivespecies/

Connecticut Invasive Plant Working Group

Has information on the invasive plant species that exist in the state of Connecticut.

www.cipwg.uconn.edu

REPORTING

Invasive Plant Atlas of New England (IPANE)

Tracks invasive plants throughout New England.

www.eddmaps.org/ipane/report/index2.cfm

Outsmart Invasives

Apps for reporting invasive species through your phone.

masswoods.net/outsmart

CONTROL

Vermont Landowner's Guide to Invasive Terrestrial Plant Management

Includes species-specific control methods

www.nature.org/ourinitiatives/regions/northamerica/unitedstates/vermont/volunteer/nature-conservancy-invasives-landowner-guide-april-2010.pdf

VT Invasives

Prevention, management, and case studies on control efforts.

www.vtinvasives.org

Midwest Invasive Plant Network Control Database

Search by scientific or common name for information on how to control many common invasive plant species.

mipncontroldatabase.wisc.edu

Guidelines for Disposal of Terrestrial Invasive Plants

www.cipwg.uconn.edu/pdfs/Invasive_plant_disposal_guide_6-2012.pdf

Acknowledgements

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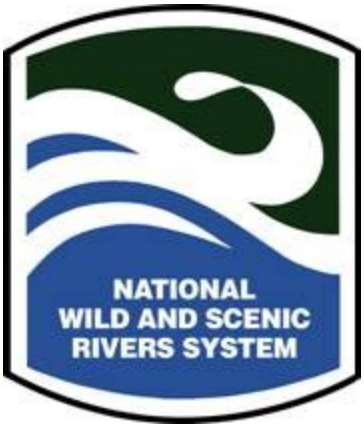
About the Farmington River Coordinating Committee (FRCC):

The Farmington River Coordinating Committee was established by the U.S. Congress to oversee and coordinate activities on the 14-mile federally designated Wild & Scenic section of the upper Farmington River. Each year the FRCC receives funding from Congress to fulfill its mandate. The Upper Farmington River Management Plan guides the actions of the Committee — and others who have an interest in stewardship of the river. The Upper Farmington W&S River designation extends from just below the Goodwin (Hogsback) Dam in Hartland to the New Hartford-Canton town line.

The Upper Farmington River Management Plan can be read at www.FarmingtonRiver.org



Upper Farmington Wild & Scenic River

www.FarmingtonRiver.org