

Invasive Plants in New England

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Invasive plants are non-native to our ecosystem, and have the ability to invade the forest and out-compete native vegetation.

These are among some of the most common invasive plants we encounter in the Central Vermont region. All invasive plants share most of these similar characteristics:

- Produce abundant viable seed
- Plants leaf out early in spring and stay on late in fall
- Have few pests or disease that keep them in check
- Allelopathic- produce chemicals that make it difficult for other plants to grow
- Adapt to a wide range of growing conditions
- Create monocultures
- Reproduce both sexually and asexually

Implications on Forest Health and Productivity

- Threatens Biodiversity
- Interrupts Natural Succession
- Degrades Habitat
- Hastens Erosion
- Changes Soil Chemistry
- Economic Impacts
- Human Health Risks

Invasive plants have the ability to invade the forest, and interfere with the growth of native trees, shrubs and herbs.

These plants have the ability to out-compete the native trees, and form monocultures. The majority of the invasives have little or no commercial value. Invasive plants are particularly competitive in open growing conditions such as along road edges, streams, wetlands, powerline, and field edges. This ability to compete gives these plants the ability to overwhelm native regeneration in abandoned pastures or regenerating forest, and will interfere with natural succession.

Invasive plants degrade the wildlife habitat by outcompeting the more nutritional and desirable food sources.

Although some species such as knotweed form dense thickets along the river; the root structures have very little holding power to anchor the riverbanks.

Species such as buckthorn increase the nitrogen levels in the soil
GM disrupts mycorrhizal relationships in tree seedlings and saplings.

Species such as giant hogweed, chervil, and poison parsnip contain a phytopototoxic sap that will burn the skin when exposed to sun.

Economic costs of treating invasive plants range from about \$250-800+/acre (This does not

consider the loss of value in the trees that were out-competed).



The 5 steps to Invasive plant management are:

- 1: education and prevention
2. Early Detection and Rapid Response
- 3: Treatment
4. Restoration
5. Monitoring

The Nature Conservancy partnered with Vermont Forest Parks and Rec, Redstart Forestry, the Upper Valley land Trust, and Vermont land trust to develop “Best Management Practices for the prevention and treatment of Terrestrial Invasive Plants in Vermont Woodlands”. This is an excellent handbook that can provide guidance on preventing, assessing, and treating invasive plants in Vermont, and can be used throughout New England.

Education/Prevention

- Prevent the introduction
- Outreach



BMP 1: Learn to identify both native and invasive plants. Help your clients learn about plants

BMP 2: To prevent the introduction and spread of invasive plants, become familiar with current non-native plants in Vermont and those in neighboring states. Don't plant these species

Education and prevention is the first step to slowing the spread of any invasive plant problem. It is important that land managers, and landowners know the invasive plants in their State, and other local states, and avoid planting these species. In addition, knowing how to ID these plants, and avoiding these areas when the spread of their seed is at risk. A good example is to avoid driving through a garlic mustard patch that has gone to seed. It is also important to continue to scout other areas to make sure the infestation has not spread.

Use local state and federal recourses to help educate the public, to learn id, and learn appropriate control methods.

www.vtinvasives.org

Education/Prevention

BMP 3: Prevent the spread of invasive plants species when working or recreation in the forest

BMP 4: Incorporate early detection into all land management plans

BMP 5: Scout for and locate new invasive plant infestations annually

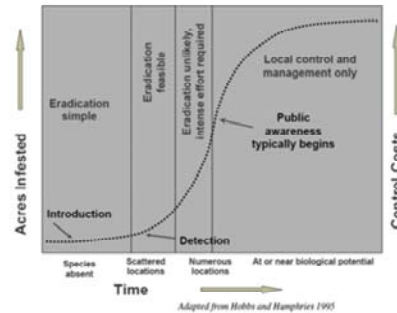
BMP 6: Foresters should survey for invasive plants during forest inventories and incorporate invasive plant management info forest management plans

Early Detection and Rapid Response

BMP 7: If a property is infested with invasive plants, develop a strategy for managing invasive species that includes short-term and long-term goals and actions.

Table 5. Seed production and viability for some invasive plant species.

Species	Relative Seed Production	Approximate Seed Viability
Garlic mustard	100/mature plant	4-7 yrs
Asiatic bittersweet	1,000-2,000/mature plant	<1 yr
Black swallow-wort	2,000 / stand	unknown
Giant hogweed	1,500/ flower head	10 yrs
Goutweed	unknown but not aggressive	<1 yr
Multiflora rose	1 million/mature plant	20 yrs
Spotted knapweed	9-17/flower	10% after 8 years
Autumn olive	60,000 plant thousands / plant	unknown
Burning bush		<1 yr
Honeysuckle	2-4/ berry - 1000s /plant	5-6 yrs
Barberry	1000 / plant	unknown
Buckthorn	prolific	2-6 yrs
Japanese knotweed	220-1750/ square meter	high



Early detection is critical, especially in areas with few invasives or where a specific invasive is not yet abundant.

If caught early enough, management, and possibly eradication are relatively feasible. However, the longer the infestation stays established, and the more it spreads, the more \$\$\$\$ it gets to control, and eradication becomes a rare feat. Unfortunately, public awareness often times happens as the infestation spikes.

Treatment

Integrated Pest Management (IPM)

BMP 8: Consider different treatment strategies and methods that will help you determine where, when and how to treat the invasive plant infestation

BMP 9: Apply treatment methods at the appropriate time and make sure that follow-up steps, such as monitoring and restoration, are taken

BMP 10: Plan for post-treatment management of invasive plant populations

- Manual/Mechanical
 - Hand pulling
 - Cutting/Mowing
 - Suffocation (Black Plastic)
- Chemical
 - Foliar
 - Basal Bark
 - Cut surface
- Biological
- Cultural

Eradication is generally the goal of any invasive plant work; however, it should be looked at more as the side effect. The goal is management. Management for a variety of purposes; regeneration, wildlife habitat, ect

Integrated Pest Management (IPM)

- Manual/Mechanical
 - Hand pulling
 - Cutting/Mowing
 - Suffocation (Black Plastic)



Manual techniques are often used on light infestations or in particularly sensitive areas. Hand pulling is among the most common manual methods used, and works great on shallow rooted plants, that are scattered and few in number

Repeated cutting and mowing works to deplete the nutrient reserves in the roots. This method requires the physical mowing of the plants at least 2-4 times in a given growing season, and may require multiple growing seasons to fully kill the plant.

Mowing of biennials such as chervil should be done just after the plant has bolted, and well before the seeds have matured.

An example of smothering is in a knotweed patch. It should be cut just after it has reached full height (late June) and covered entirely after cutting.

Integrated Pest Management (IPM)

- Chemical
 - Foliar
 - Basal Bark
 - Cut surface
 - Stem Injection



Integrated Pest Management (IPM)

- Biological



Integrated Pest Management (IPM)

- Cultural
 - Read you Seed Mix!
 - Plant native trees/shrubs



High Diversity Monarch Seed Mix

The ISU Monarch Conservation Workgroup developed this seed mix for research purposes. The mix includes self-seeded species that are host plants to monarch caterpillars and nectar-producing species that benefit butterflies. These plants are also beneficial for other pollinators, such as bees, and all species are native to Iowa.

Green species are mostly short to medium height in order to reduce grass competition with forbs. The plant species were selected to perform well in well-drained and moderately well-drained soils. Adjustments may be necessary for wet soils. Iowa State University reserves the right to alter this mix as needed depending on research results.

Common	Scientific Name	Seeds/lb	Seeds/100 lbs
Big Bluestem	<i>Andropogon gerardii</i>	0.26	0.126
Indigo Buckwheat	<i>Eurythoe composita</i>	1.16	5.791
Blue Joint Grass	<i>Calamagrostis canadensis</i>	0.25	0.115
Copperhead Aster	<i>Coreopsis lanceolata</i>	0.2	0.092
Phlox and Salvia	<i>Coreopsis lanceolata</i>	0.2	0.092
Canada Wild Rye	<i>Elymus canadensis</i>	0.25	1.709
June Grass	<i>Andropogon scoparius</i>	1.5	0.107
Little Bluestem	<i>Andropogon scoparius</i>	1.5	0.107
Indian Grass	<i>Sorghastrum nutans</i>	0.25	0.107
Prairie Cordgrass	<i>Spartina patens</i>	0.25	0.107
Tall Drumhead	<i>Andropogon scoparius</i>	1.5	2.141
Prairie Dropseed	<i>Sporobolus heterophyllus</i>	0.1	0.045

Native Grass	Scientific Name	Seeds/lb	Seeds/100 lbs
Little Bluestem	<i>Andropogon scoparius</i>	0.25	1.709
Wild Rye	<i>Elymus canadensis</i>	1	1.709
White Flint Ridge	<i>Andropogon scoparius</i>	0.02	0.009
White Prairie Clover	<i>Trifolium repens</i>	1.5	0.009
Purple Prairie Clover	<i>Trifolium repens</i>	1.5	0.009
Shannon's Yarrow	<i>Andropogon scoparius</i>	0.1	0.009

Read your seed list

Plant natives

Restoration

BMP 11: Consider the need for restoration efforts following invasive plant treatment work

BMP 12: Use site appropriate native plants and invasive-free materials for restoration efforts

BMP 13: Attempt to limit the introduction and spread of invasive plants during reforestation or re-vegetation.

Monitoring

BMP 14: Plan for annual and continuous monitoring of the forest following invasive plant treatment work, forest management activities, and restoration efforts

Silvicultural Consideration

BMP 15: Foresters should survey for invasive plants during forest inventories and incorporate invasive plant management in forest management plans.

BMP 16: consider timing forest inventories during the seasons when invasive plant populations can be detected .

BMP 17: Treat invasive plant infestations before commencing timber harvesting or using roads, skid trails and landings.

Silvicultural Consideration

BMP 18: Consider invasive plant populations and their likely response when prescribing timber harvesting activities that result in an increase of sunlight reaching the forest understory

BMP 19: Consider invasive plants and their likely response when prescribing timber harvesting activities that result in soil disturbance.

BMP 20: To the extent feasible, clean all before moving onto and off a property to reduce the chance of spreading invasive plants

Silvicultural Consideration

BMP 21: Attempt to limit the spread of invasive plants on existing forest roads, trails, and landings or when constructing new infrastructure.

BMP 22: Ensure, to the extent practical, that materials used in forest activities are free of invasive plants.

BMP 23: Consider how wildlife management goals are influencing the introduction or spread of invasive plants.

BMP 24: Consider how the presence of invasive plants is affecting the wildlife goals on your property.

Plant ID #1

Non-Native Honeysuckle



hollow
stem pith



Plant ID #2

Native- American Fly Honeysuckle



Plant ID #3

Common Buckthorn



Plant ID #4

Glossy Buckthorn



alternate
glossy
leaves



unripe
red
berries

Plant ID #5

Multiflora Rose



Plant ID #6

Garlic Mustard



Plant ID #7

Wild Chervil



Plant ID #8

Barberry



Plant ID #9

Bittersweet



Plant ID #10

Japanese Knotweed



Questions?

