



Invasive Plant F.A.Q.



<i>Objective</i>	Learn background information about invasive plants, based on frequently asked questions.
<i>Audience</i>	1 or more participants; all ages
<i>Duration</i>	<20 minutes
<i>Materials</i>	“Invasive Plant F.A.Q.” document, digital or printed
<i>Background</i>	When people are first learning about invasive plants, there are many questions that get repeated. We’ve distilled a range of these questions down to themes to help you answer questions that may arise during an activity, event, or workday.
<i>Procedure</i>	You can share these frequently asked questions with your participants, or if these questions arise, use this as a guide for the conversation.

What are Invasive species?

Invasive species are plants or animals that

- Did not evolve in the place where you find them
- Cause harm to the local economy, the environment, and/or human health

Why Do We Need to Step In?

Within an ecosystem, a community of similar organisms often compete for sunlight, water, nutrients, and even for space. They also develop defenses against common predators and diseases. Our locally evolved Vermont plants have evolved within such a community and have a long list of other species they normally struggle against, including competing plants, animal predators, and diseases and parasites.

Invasive plants also evolved within such a community in their home ecosystem, which are left behind when these plants are brought to Vermont. In this new environment, they escape many of the factors that inhibit plant growth, and so these plants thrive, unchecked, unless humans intervene.

What Impacts Do Invasive Plants Have?

Invasive plants cause harm to things we value:

Harm to the Environment

Displacement of locally evolved plants

- Not all plants are able to grow just anywhere – many have specialized adaptations that limit where they can grow and thrive (e.g. garlic mustard vs. multitudes of spring ephemerals).
- Additionally, displacement of locally evolved plants has many cascading impacts (e.g. disrupting the food chain and loss of local pollinators)

Disruption of the food chain

- When invasive plants out-compete and displace locally evolved plants it effects all trophic levels in the food web. When locally evolved plant populations decline, the quantity and diversity of insect species also decline as many locally evolved insects will not eat invasive plants. Insects are an important food source for many secondary consumers such as birds, which are a food source for tertiary consumers such as hawks and other birds of prey.

Food sources become scarce

- Displacement of native plants means normal sources of food for wildlife become less abundant.
 - For example, migrating birds need to bulk up on nutrient rich berries in the fall such as fruit from dogwood, elderberry, and maple leaf viburnum. Unfortunately, invasive buckthorn berries also ripen in the fall and mature trees produce hundreds of berries. Buckthorn berries, roots, and leaves are rich in anthraquinone which is turned into emodin, a laxative, in the gut of many birds. When birds eat the anthraquinone-laden berries, it has a laxative effect. So they have not only wasted valuable time foraging for this nutrient-poor food, but the laxative chemicals force expulsion of any food in their systems, preventing them from absorbing those nutrients, and causing stress from the evacuation of their bowels.

Loss of local pollinators

- Many locally evolved pollinators (such as bees and other insects) are specialists. When invasive plant species replace the locally evolved plants these pollinators depend on for pollen, populations decline and the overall diversity of pollinators decline.

Reduced populations and local extinctions

- When invasive black swallow-wort is introduced to an area, Monarch butterfly populations are negatively impacted. Monarch butterflies depend on specific plants in the milkweed family to complete their life cycle, as they are the only plants the caterpillars can eat. Swallow-wort, which evolved in Europe, is also in the milkweed family so sometimes Monarchs will lay their eggs on swallow-wort. Unfortunately, Monarch caterpillars cannot eat swallow-wort.
- The West Virginia White butterfly is listed as a species of special concern in Vermont. This butterfly emerges early in the spring and depends on rich woods host plants such as toothwort to complete its life cycle. Garlic mustard plants exude a similar chemical attractant to that of locally evolved toothworts and that similarity can confuse the butterfly into laying its eggs on garlic mustard instead of toothwort. When the eggs hatch, the caterpillars feed on the toxic leaves of the garlic mustard and die. This can significantly impact the already rare West Virginia White butterfly population.

Disrupted breeding and nesting

- Research is suggesting that invasive shrub honeysuckles can create an “ecological trap” for many species of nesting birds, which could be problematic – especially for rare and uncommon birds. In the early spring, we know that invasive shrub honeysuckles grow leaves before any locally evolved shrubs, which could give off the illusion of being healthy and ideal nesting habitat for nesting birds. The strongest birds build their nests in this “ideal” habitat, but are thought to face higher rates of

nest predation compared to nests built in locally evolved shrubs. Research suggests this is due to several factors, including a decrease in average nest height of nests built in invasive shrubs which makes the nests more accessible to ground predators such as raccoons and snakes. Another reason there might be increased nest predation for nests in invasive plants is that many invasive shrubs have many sturdy branches at lower heights and also lack thorns, which again make it easier for predators to access the nests.

River System Health:

- Invasive plants, such as Japanese knotweed, outcompete and displace locally evolved riparian plants. Although Japanese knotweed has a deep, extensive root system, its coarser roots do not stabilize banks as well as the finer roots of locally evolved trees, shrubs, and grasses. Consequently, streams and rivers infested with Japanese knotweed are more prone to erosion in times of flooding.

Harm to the Economy

Impacts on local industry:

- Invasive shrubs and trees are generally quick-growing and shade tolerant. They can take over entire forest understories, shading out and outcompeting locally evolved plants. When this happens, forest regeneration is stunted which can have a negative impact on the forestry, logging, and maple sugaring industries in Vermont.
- Future generations of locally evolved tree species desirable for lumber and firewood are impacted.
- Future generations of sugar maple trees used to make maple syrup are impacted.
- Running and maintaining sap lines through a dense understory of invasive plants is difficult and unpleasant.
- Invasive plants are costly to remove.

Impacts on recreational fishing:

- Streams infested with invasive Japanese knotweed are more susceptible to erosion during floods. When loosened soil settles on stream beds it alters important spawning habitat for locally evolved brook trout and salmon.

Impacts on hunting:

- Most invasive plants are not a good source of food for wildlife. For example, invasive shrub honeysuckles are not a preferred food source for deer. Areas with lots of invasive shrub honeysuckles can increase browse pressure on locally evolved plants from deer.

Harm to Human Health

Phototoxic reaction:

- Wild parsnip contains furocoumarins in its sap, chemicals that when combined with skin and ultraviolet light can cause what's known as phytophotodermatitis – painful blisters or rash. Other invasive plants like wild chervil and giant hogweed can also cause a phototoxic reaction.

Increase in deer ticks:

- Studies have shown that areas with heavy invasive barberry infestations have higher densities of deer ticks carrying Lyme disease compared to other habitats. This is

because invasive barberry infestations form thorny, impenetrable thickets that attract the white footed mouse and deer ticks. It is ideal habitat for the white footed mouse, a carrier of Lyme disease, and these thickets have an increased humidity level compared to the surrounding habitats, which is ideal for deer ticks. With this habitat under the invasive barberry welcoming to both mouse and tick, their populations are more likely to overlap, and more likely to transfer the Lyme bacteria into the tick population.

How did invasive plants get here?

Invasive plants were brought here (wherever here might be for you), mostly by people. In some cases, this was an accident (e.g. common reed seeds/rhizomes in ship ballast), but in most instances people transported invasive plants here intentionally (though not with mal-intent). Most invasive plants were brought as ornamental or garden plants. They tend to be attractive, low maintenance, and pest/insect resistant – all desirable characteristics for garden plants! Once here, they have a variety of dispersal techniques including wind, wildlife, and people that get them out of the garden and into the woods.

What can we do? Take Action!

Create and implement a dynamic Invasive Plant Management Plan

Design restoration efforts around having the greatest impact on each target plant

- Work should be customized to reflect the best way to eliminate or control each invasive plant species. This depends on many variables including the life cycle of the plant.
- The best methods of control can change from month to month, so action plans need to be dynamic and flexible.
- The best methods often include using multiple methods of control, also known as Integrated Pest Management.

Monitoring and Evaluation:

Multiple treatments are typically needed when managing invasive plants.

- Monitoring is an extremely important part of any invasive management plan –
 - it can help evaluate the effectiveness of each treatment and
 - it can alert managers to new invasive plant infestations (either from new introductions, root sprouts, or seeds dormant in the soil).
- Follow-up treatments as necessary
- Restoration plantings – removal of invasive plants can also have negative impacts like soil disturbance.

Why bother doing this work at all? *You Are Making a Difference!!!*

The work we do makes a difference in our forests, parks, and natural lands. It makes a difference in our Vermont economy, it makes a difference to fish and wildlife, and it makes a difference in our ability to enjoy the outdoors of our great state. Thank you for the work you are doing!