A Guide to INVASIVE PLANTS in Massachusetts

Photo by Bill Byrne

by
Pamela B. Weatherbee, Paul Somers and Tim Simmons

The Massachusetts Biodiversity Initiative

Massachusetts
Division of Fisheries & Wildlife

Why Are Some Non-Native Plants a Serious Threat?

Plants introduced from somewhere else leave behind the diseases andherbivores that kept them under control in their native habitats. This provides them with an advantage that allows some of them to crowd out native species.

Some non-native plants were introduced deliberately for their vigorous, growth potential: exceptional for erosion control, but a big problem for slower growing native plants. A few were selectively bred to produce abundant fruits and seeds attractive to birds and other wildlife — and thus are readily spread by these animals into many habitats. Others arrived unintentionally in a variety of ways and their spread has been accelerated by human activities and pathways of transportation. Most of these plants thrive in disturbed areas: roadsides, abandoned fields, right-of-way corridors and ditches.

These invasive, typically non-native species (also called "exotics" or "alien weeds") often occur in huge patches — one species taking the place of a great variety of native plants — thus reducing the biodiversity of natural areas.

Why do we need biodiversity? Our plants and animals have evolved together for thousands of years, developing into a closely interwoven web of life, with many animals and plants dependent on specific species for their survival. Invasive plant populations change the characteristics of these complex webs and can lead to the elimination of many plants and animals. For example, some butterflies require a specific food plant, and many plants require specific pollinators. If invasive plants crowd out the species the butterfly needs, or the ones the special pollinators need, whole sections of the web can collapse, diminishing the wildlife community. Do we really want a world of just starlings and dandelions?

Plants have been moving around the landscape and evolving since life began. However, these current invasions of aggressively spreading plants are not natural range extensions (which would include natural control agents and give native species time to develop competitive strategies). They are moving so fast and are so overwhelming that many native species simply cannot contend with them. All too frequently, natural habitats are degraded by multiple invasive species.

Many of these "bad plants" are still being planted because they seem to fill a particular need for fast-growing erosion control, visual screening, windbreaks, wildlife foods, or even as garden plants. Native plants can and should be used to fill these needs. Some are available in nurseries and seed catalogs, and others are being studied for their potential uses.

Most introduced species, such as garden, meadow, and agricultural species, are NOT harmful. Only a few are troublemakers. If we know the characteristics of a plant we may be able to predict how it will behave; whether it will spread like wildfire or stay where it is planted. Responsible introduction of new species or varieties should involve careful research and testing before release.

A Typical Harmful Invasive Plant

1. Grows and matures rapidly
2. Spreads quickly
3. Can flower and/or set seed all season
4. Has no known diseases or pests to control it
5. Thrives in many habitats
6. Is difficult to remove or control

What Can We as Individuals and Organizations Do?

First, be aware of the value of our native habitats to wildlife and the dangers posed by invasive non-natives.

Join local groups that are introducing people to the enjoyment of local native habitats and wildlife communities.

Don't plant invasive species or spread them inadvertently (for instance, collecting oriental bittersweet for fall or winter decorations, and later discarding the stems, fruit and seeds outside).

Learn to identify the most invasive species. The ones featured on the following pages are among the worst currently found in Massachusetts.

If you notice new or small populations of invasive species on public land or nature reserves, notify the managers. Caught in time, the weeds may be controlled; otherwise it will involve expensive, arduous labor to remove them. Land managers are in a good position to take action against new invaders.

If you are a landowner or land-manager, be vigilant for the appearance of invasive species on your property. Learn how to eradicate or control them (this booklet should help), and take steps to do so **before** they become a serious problem.

Don't disturb soil or vegetation in natural areas unnecessarily. Undisturbed natural areas are resistant to invasion.

Encourage the planting of native species in municipal and town gardens, memorial sites, parks, traffic islands, etc. Ask your nursery to stock more native species; point out any plants for sale at your nursery that are known to be harmful invasives.

Contact the Division of Fisheries and Wildlife, The Wildflower Society, your local garden club and other environmental or agricultural organizations for information on what to plant. Join conservation organizations that are protecting natural habitats, plants and wildlife.

Control of Invasive Plant Species

An exotic plant invasion can move through an area with the speed of an epidemic. Like a disease, eliminating it right away, or better yet, preventing its introduction in the first place, is always the best medicine. Pulling or killing a few stems, saplings or seedlings when they first appear may prevent an insurmountable problem later. **(Make sure you've correctly identified the plant first; don't destroy native species by mistake!)**

Attacking the problem by hand with the aid of a few gardening tools is least destructive to the habitat; plants can be pulled, mowed, or cut. Always keep in mind that each species will respond differently to each control method. Some sprout prolifically when cut, for instance, and may require multiple cuttings for several years before their roots will finally die. Find out what works for the species you are dealing with, and what methods may make matters worse.

Treating invasive plants with herbicides is often an effective control method, but it should be used cautiously and with discretion. Other alternatives should always be considered first. Be sure to read and follow instructions on herbicides sold over the counter at stores and garden centers. Consider seeking professional advice from licensed applicators or the state Pesticide Bureau in the Massachusetts Department of Food & Agriculture. When considering application in or near wetland areas, town conservation commissions or administrators must be consulted.

Photo by Paul Somers

Trees

Black Locust

Robinia pseudoacacia

Not a native of the New England region, Black Locust has been extensively planted for wood, fence posts and landscaping in Massachusetts. It becomes a problem when large patches formed by root sprouts choke out other vegetation. It forms large colonies in grasslands and pine barrens in southeastern Massachusetts. Cutting, then herbiciding the freshly cut stumps, has proven to be an effective method of control.

Artwork by Walter Lincoln Graham,
courtesy The New York Botanical Garden

Photo by Bill Byrne

Norway Maple

Acer platanoides

Widely planted as an ornamental and street tree, this maple has seeded into roadsides, wetland edges and forests, and may outcompete our native Sugar Maple. Dense shade under its canopy reduces species of wildflowers and other tree seedlings. Easily overlooked by its similarity to Sugar Maple, identify it by its wide leaves with milky sap (tear a leaf or its stem and check the broken veins) and regular furrowed bark. Saplings can be pulled and large trees cut.

Artwork by Eduardo Salgado,
courtesy The New York Botanical Garden

Photo by Frank Bramley,
courtesy New England Wildflower Society

Shrubs and Vines

Oriental Bittersweet

Celastrus orbiculata

Artwork by Eduardo Salgado,
courtesy The New York Botanical Garden,
and Nancy Childs (lower illustration)

A fast growing vine, Oriental Bittersweet can wind around young trees, choking them, or spread over vegetation, smothering it. Similar to the now-scarce native bittersweet, it differs by having flower clusters all along the stem. The vine interferes with forest regeneration, kills trees, covers fields and hedgerows, and displaces native plants. Once established, it is extremely difficult to eliminate, but mowing, cutting or hand-pulling of vines may help. Due to extensive below-ground "runners" (rhizomes) that sprout prolifically, herbicide treatments applied to cut stems at the time of the first killing frost are often necessary to achieve control.

Photo by Bill Byrne

Japanese Barberry

Berberis thunbergii

Japanese Barberry has spread from plantings, taking over pastures, woodlands, ledges, and floodplains. It forms thorny thickets in young woodlands, preventing native herbaceous and shrub growth. Although it provides food for wildlife, the damage it does outweighs the good. Common Barberry, *Berberis vulgaris*, is also an invasive, non-native shrub in open, disturbed habitats across Massachusetts. Young plants can be pulled easily; cutting alone does not work.

Artwork by Walter Lincoln Graham, courtesy The New York Botanical Garden, and Nancy Childs (lower illustration)

Photo by Pamela B. Weatherbee

Black Swallow-wort

Cynanchum louiseae

A charming little vine related to the milkweed, this aggressive plant can spread explosively, covering open areas, edges and hedgerows, and eliminating all other vegetation. Small maroon flowers soon produce wind-borne seeds that drift everywhere, making this species hard to control. A closely related species with paler flowers known as "dog-strangling vine," *Cynanchum rossicum*, behaves similarly and is now considered a weed in parts of Connecticut.

Artwork by Anne Rogelberg and Laura Vogel, courtesy The New York Botanical Garden

Shining Buckthorn

Photo by Frank Bramley,
courtesy New England Wildflower Society

Shining and Common Buckthorn

Rhamnus frangula and *R. cathartica*

Shining Buckthorn is the more abundant of these two shrubs in Massachusetts. Although sometimes found in uplands, it typically invades marshes, swamps, bogs, wet meadows and the edges of beaver ponds, crowding out a variety of native species. Common Buckthorn is typically found on drier sites. Both shrubs are tolerant of dense shade. They flower and fruit all season and spread rapidly because birds eat their berries and thus spread seeds. Removal is difficult because stems resprout after cutting. If stems are cut and herbicide applied to their stump tops in winter, mortality is high. Young plants can be pulled by hand and older ones pulled mechanically. Because of regeneration from remaining root and stem, as well as dormant seed, follow-up work will be necessary in subsequent years.

Shining Buckthorn

Common Buckthorn
(with fruit)

Artwork by Anne Rogelberg,
courtesy The New York Botanical Garden

Photo by Paul Somers

Japanese Honeysuckle

Lonicera japonica

This climbing honeysuckle displays large white or cream-colored, fragrant flowers that occur in pairs. Each flower pair later forms two black, fleshy berries. The vine chokes supporting trees and shrubs by twining tightly around and over them, forming dense patches. Already a major pest from Connecticut southward, where it invades successional forest and fencerows, it is a localized problem in parts of Massachusetts. Early detection and control is imperative; once established, it is very difficult to remove.

Artwork by Eduardo Salgado,
courtesy The New York Botanical Garden

Morrow's Honeysuckle

Photo by Bill Byrne

Morrow's Honeysuckle and other shrub honeysuckles

Lonicera morrowii, L. tatarica, L. maackii, L. xbella

The red berries of the shrubby honeysuckles are spread by birds, and the resulting shrubs quickly form impenetrable thickets, displacing other vegetation in young forests and on floodplains. Morrow's and Amur (*L. maackii*) have white flowers fading to yellow; Tatarian and its hybrid with Morrow's, *L. xbella*, are pink. Morrow's is the most pervasive in Massachusetts and can be distinguished from Tatarian honeysuckle by its hairy leaves and shreddy bark. It appears that Tatarian honeysuckle is not as invasive. Amur honeysuckle (*L. maackii*) is not yet common in Massachusetts, but is the predominant weedy honeysuckle in some midwestern states. Young shrubs can be pulled by hand, but mechanical means are necessary for extracting established older ones. Before initiating control measures, be certain that the plants in question have been identified correctly: there are two native species of honeysuckle that **belong** in the New England plant community.

Morow's Honeysuckle

Artwork by Eduardo Salgado,
courtesy The New York Botanical Garden

Photo by Bill Byrne

Autumn Olive

Elaeagnus umbellata

Until quite recently, fast-growing Autumn Olive and Russian Olive (*Elaeagnus angustifolia*) were considered ideal for screening. They have been used in wildlife plantings for decades because of their abundant, fleshy red fruits. On the negative side however, these shrubs (Autumn Olive in particular) spread rapidly into old fields and natural grasslands, creating dense thickets that crowd out native vegetation. Autumn Olive's distinctive scaly, silvery leaves soon become green on the upper side, whereas those of Russian Olive remain silvery on both surfaces. Small fragrant flowers, silvery without and pale yellow within, produce reddish berries. These are avidly eaten by birds, which spread the seeds far and wide. Control of established colonies may require a combination of mechanical means and herbicide treatments.

Artwork by Laura Vogel,
courtesy The New York Botanical Garden

Porcelain Berry

Ampelopsis brevipedunculata

Currently most abundant along the coast, this vigorous vine can cover the ground and overwhelm trees and shrubs, especially in disturbed areas, along shorelines and around forest edges. The leaves, often three-lobed, are similar to grape, a close relative. The distinctive, small, grape-like berries start off lilac in color, then mottle, maturing to a bright blue with a waxy sheen. Climbing by tendrils, this plant is difficult to eradicate, but pulling the vines from trees and then repeatedly cutting or mowing the remaining plants will help control it.

Photo by Leslie J. Mehrhoff,
courtesy George Stafford Torrey Herbarium

Artwork by Laura Vogel,
courtesy The New York Botanical Garden

Photo by Bill Byrne

Multiflora Rose

Rosa multiflora

Originally promoted as a "living fence," this aggressive shrub now creates a "living hell" of thorny thickets. Thriving in any habitat from pasture to forest, it can displace many native trees, shrubs and herbs, effectively thwarting their regeneration. Clusters of many white flowers produce tiny red fruits (hips) spread by birds. Hand-pulling works for small plants, but large ones will require other techniques such as repeated cutting or mowing during the growing season for a couple of years. Once established, mechanical pulling or an herbicide applied to cut stems late in the growing season or during the dormant season can be effective.

Artwork by Regina O. Hughes,
courtesy Agricultural Research Service,
U.S. Department of Agriculture

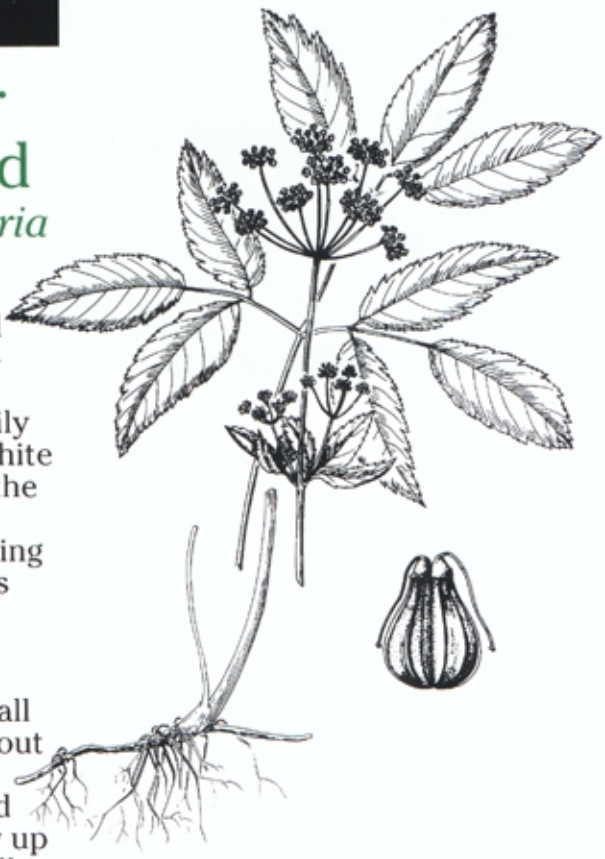
Photo by Paul Somers

Herbaceous Annuals and Perennials

Goutweed or Bishop's Weed

Aegopodium podagraria

An escapee from gardens, where it was a handy ground cover, Bishop's Weed has invaded floodplains, forming dense mats. In the same family as Queen Anne's Lace, the white flower cluster is similar but the leaves, instead of being lacy, have toothed leaflets appearing in threes. Some garden forms have variegated leaves with broad white margins (as in photo). It spreads by underground rhizomes. Even a small piece left in the soil may sprout into a plant, making it very difficult to exterminate. Hand pulling or raking, with follow up monitoring and removal of all new plants, is necessary.



Artwork by Lucille E. Blum and Laura Vogel, courtesy The New York Botanical Garden

Photo by Pamela B. Weatherbee

Yellow Iris

Iris pseudacorus

Beautiful but aggressive, Yellow Iris will spread rapidly on pond shores and in wetlands and can pre-empt sites where native wetland plants, including two native iris species, would grow. It has also invaded rocky coastal shoreline habitat in northeastern Massachusetts. Pulling or digging it out when first seen may be preferable to pursuing herbicide usage in wetland settings.

Artwork by Mary C. Easton,
courtesy The New York Botanical Garden

Japanese Knotweed or Japanese Bamboo

Polygonum cuspidatum

Photo by Paul Somers

Most harmful to natural habitats on riverbanks, gravel bars and floodplains, this plant spreads by rhizomes up to 60 feet long. Rhizome fragments frequently are the source of new downstream colonies, since even a small piece can generate a new plant. Its hollow bamboo-like stems form large patches that eliminate all other vegetation. Also, the large, loose inflorescense of whitish-green flowers produce abundant, shiny black, triangular seeds that disperse easily. A minimum of four cuttings during a growing season are required to eliminate the underground reserves of a colony. With small patches, removal by digging may be a practical and effective option.

Artwork by Walter Lincoln Graham, courtesy The New York Botanical Garden

Photo by Frank Bramley,
courtesy New England Wildflower Society

Purple Loosestrife

Lythrum salicaria

Although a showy wetland plant that many find beautiful, Purple Loosestrife forms impenetrable mats where few other plant species can live. By reducing the variety or abundance of native plants in the marsh, the survival or success of many animals that have evolved to use these plants for cover, food and nesting areas are affected. Purple loosestrife should be removed immediately when first noticed because it is almost impossible to exterminate. Each plant produces up to 2 million seeds each year which remain viable for many years in wetland soils. Biological controls may be the only practical way to control most infestations. Two Eurasian leaf-eating beetles and a weevil have been released in many areas following tests at Cornell University to determine how they might behave in natural environments; initial results seem promising with much reduction of Purple Loosestrife.

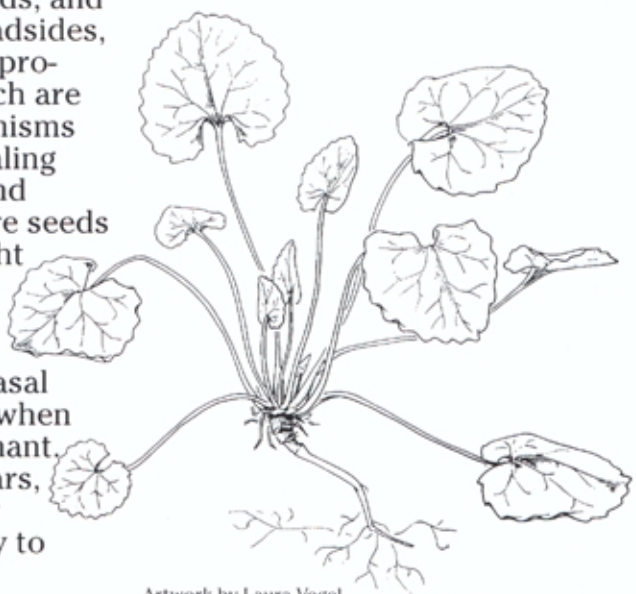
Artwork by Lucille E. Blum,
courtesy The New York Botanical Garden

Photo by Paul Somers

Garlic Mustard

Alliaria petiolata

Garlic Mustard, an herbaceous biennial herb native to Europe, has garlic-smelling, round, toothed leaves and small flowers with four white petals. It outcompetes many native wildflowers in floodplains and woodlands, and is a pestiferous weed in roadsides, hedgerows and gardens. It produces abundant seeds which are easily dispersed by mechanisms such as flooding. When dealing with small populations, hand pulling all individuals before seeds ripen for several years might work, but with larger ones it will be necessary to augment this with herbicides applied to overwintering basal rosettes during the winter when most other plants are dormant. Seed remains viable 2-5 years, so follow-up treatments for several years are necessary to accomplish control.



Artwork by Laura Vogel,
courtesy The New York Botanical Garden

Photo by Bill Byrne

Phragmites or Common Reed

Phragmites australis

A 15 foot tall grass with plume-like seed heads, Common Reed spreads rapidly in wetlands by its extensive rhizomes. Originally a native species of brackish marshes in eastern Massachusetts, it now follows salt-laden highway margins and pipeline corridors, spreading into adjacent land. It chokes out all other vegetation and sharply reduces the value of wetlands habitat to most wildlife. Labor intensive cutting followed by the application of herbicide to stems is effective, but also quite costly. Hydrologic controls (e.g., flooding for four months during the growing season), dredging, and summer/fall burning are other techniques that have worked in particular situations. A combination of treatments is often a good approach.

Artwork by Mary C. Easton,
courtesy The New York Botanical Garden

Problem Plants to Watch For

The following species are presently not common in Massachusetts and are not causing any immediate, serious problems in the state. However, based on past experience and their record in other states, they are regarded as likely future pests.

Trees

Princess Tree
Paulownia tomentosa

A fast growing tree with large broad leaves, it is more of a problem in the mid-South, where it outcompetes native trees. While only known from a few sites in Massachusetts, at present it is regarded as invasive in Connecticut. Its soft, white wood is prized in the Orient for use in traditional wedding boxes, so even in this country it brings a good price on the market. In the spring it has upright clusters of velvety, deep blue, fragrant flowers.

Western Catalpa or Cigar Tree
Catalpa speciosa
and Chinese or Yellow Catalpa
Catalpa ovata

Western Catalpa is a midwestern and southern U.S. native that has spread from plantings and is hardy in Massachusetts and tolerant of periodic flooding in the floodplain forests of our major rivers. It, along with its yellow-flowered relative, the Chinese Catalpa, which also is naturalizing into western Massachusetts habitats, pose new problems for natural lands managers. Both species resprout from cut stumps.

Shrubs and Vines

Hardy Kiwi
Actinidia arguta

An Asian relative of the edible kiwi of New Zealand, it and other Asian relatives are now being sold widely in temperate North America. Advertised as having fragrant flowers, edible fruit and strong-growing vines, it can behave like Oriental Bittersweet, smothering other vegetation in forests and clearings. It can withstand temperatures down to -30° F and appears to be hardy in the Berkshires where it is a weedy invader in natural settings.

Winged Euonymus, Wahoo or Burning Bush
Euonymus alata

This shrub has been planted extensively for years because of its bright red fall foliage and fruit and corky winged branches. Now it is invading forests and pastures. Considered a frequent and abundant weed in Connecticut, where it replaces native understory shrubs, it occurs in natural habitats throughout Massachusetts. Berries are spread by birds, and there is an abundant seed source in ornamental plantings. Young plants can be hand-pulled, but with large patches, either mechanical pulling or cutting stems and applying herbicide may be more practical and effective.

Kudzu
Pueraria montana var. lobata

"The plant that ate the South" has persisted where introduced at a few places in southeastern Massachusetts. Since it dies back each winter in this climate, it may be limited by lack of hardiness. Nevertheless, given its reputation in the south, it should be watched.

Herbaceous Annuals and Perennials

Mile-A-Minute Plant
Polygonum perfoliatum

Not in the state yet, but documented a year ago just south of the border in Connecticut. Given its name, it may be here already as you read this. A prickly vine with triangular leaves, it crawls or climbs with the aid of backward bending barbs along its weak branching stems. It smothers other vegetation and its seeds are spread by birds that eat its pea-sized, iridescent blue fruits.

Japanese Stilt Grass
Microstegium vimineum

Spreading northward from the southeastern United States, this annual grass is now considered an invasive weed in Connecticut. It is very shade tolerant, growing in less than 5% light. Typically, it forms a loosely interwoven, 6-10 inch tall carpet of weak stems, spreading rapidly through river floodplains or recently disturbed areas such as logging roads. It spreads by seeds or plant fragments. A healthy plant can produce over a thousand seeds a year.

English Water Grass
Glyceria maxima

This tall, aggressive grass has the potential to be as destructive as Phragmites. At present it is limited to one wetland location in Essex County where it is excluding all other vegetation including Purple Loosestrife. Efforts to control it with cutting and herbicide treatments have yet to eradicate it at this site. There is always a danger that a few rhizomes could start a new colony, or that its seeds could land where it can get established.

Ornamental Grasses such as Eulalia
Miscanthus sinensis
and others

Some species may pose a problem as they are being planted in ever increasing numbers without full testing for invasive qualities. Eulalia, for instance, is planted for its silvery inflorescense and variegated foliage, but has been observed spreading into native grassland habitat at a site on Cape Cod. Some bamboos are hardy and may spread aggressively through containers and walls. These may be difficult to eradicate once established.

INVASIVE PLANT SPECIES OCCURRING IN MASSACHUSETTS

The following is a list of non-native plants recorded in Massachusetts which possess strongly invasive characteristics. Those which are currently presenting the greatest threat to native plant communities are highlighted. Remember, however, that some species which are not highlighted may eventually become major problems, and that others may not become widespread problems.

COMMON NAME	SCIENTIFIC NAME
Amur honeysuckle	***Lonicera maackii***
Autumn olive	***Elaeagnus umbellata***
Barnyard grass	*Echinochloa crusgalli*
Black locust	***Robinia pseudoacacia***
Black swallow-wort	***Cynanchum louiseae***
Bittersweet nightshade	*Solanum dulcamara*
Bushy Rock-cress	*Cardamine impatiens*
Canada bluegrass	*Poa compressa*
Chervil	*Anthriscus sylvestris*
Coltsfoot	*Tussilago farfara*
Common barberry	***Berberis vulgaris***
Common buckthorn	***Rhamnus cathartica***
Common / hedge privet	*Ligustrum vulgare*
Common mullein	*Verbascum thapsus*
Creeping buttercup	*Ranunculus repens*
Curly pondweed	*Potamogeton crispus*
Cypress spurge	*Euphorbia cyparissias*
Dame's rocket	*Hesperis matronalis*
Eurasian water-milfoil	*Myriophyllum spicatum*
Fanwort	*Cabomba caroliniana*
Garlic mustard	***Alliaria petiolata***
Giant waterweed	*Egeria densa*
Glossy buckthorn	***Rhamnus frangula***
Goutweed or Bishop's weed	***Aegopodium podagraria***
Hair fescue	*Festuca filiformis*
Hairy willow-herb	*Epilobium hirsutum*
Japanese barberry	***Berberis thunbergii***
Japanese honeysuckle	***Lonicera japonica***
Japanese hops	*Humulus japonicus*
Japanese knotweed	***Polygonum cuspidatum***
Japanese privet	*Ligustrum obtusifolium*
Japanese rose	*Rosa rugosa*
Kiwi vine	*Actinidia arguta*
Kudzu	*Pueraria montana*
Lesser naiad	*Najas minor*
Live-forever or Orpine	*Sedum telephium*
Moneywort	*Lysimachia nummularia*
Morrow's honeysuckle	***Lonicera morrowii***
Morrow's X Tatarian honeysuckle (hybrid)	***Lonicera xbella***
Multiflora rose	***Rosa multiflora***
Norway maple	***Acer platanoides***
Oriental bittersweet	***Celastrus orbiculata***
Phragmites, Reed grass	***Phragmites australis***
Porcelain berry	***Ampelopsis brevipedunculata***
Purple loosestrife	*Lythrum salicaria*
Reed canary-grass	*Phalaris arundinacea*
Russian olive	***Elaeagnus angustifolia***
Sea- or horned poppy	*Glaucium flavum*
Sheep fescue	*Festuca ovina*
Sheep-sorrel	*Rumex acetosella*
Silver lace-vine	*Polygonum aubertii*
Silver poplar	*Populus alba*
Spotted knapweed	*Centaurea biebersteinii*
Sweet reedgrass	*Glyceria maxima*
Sycamore maple	*Acer pseudoplatanus*
Tatarian honeysuckle	***Lonicera tatarica***
Tree-of-heaven	*Ailanthus altissima*
True forget-me-not	*Myosotis scorpioides*
Water-chestnut	*Trapa natans*
Watercress	*Rorippa nasturtium-aquaticum*
Western catalpa	*Catalpa speciosa*
White mulberry	*Morus alba*
Wild thyme	*Thymus pulegioides*
Winged euonymus	Euonymus alata
Variable water-milfoil	*Myriophyllum heterophyllum*
Yellow floating heart	*Nymphoides peltata*
Yellow iris	***Iris pseudacorus***

For More Information:

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A companion guide to this publication – *A Guide to Invasive Non-native Aquatic Plants in Massachusetts* by C. Barre Hellquist – is available from the Mass. Department of Environmental Management, Lakes & Ponds Program, 100 Cambridge St., Boston, MA 02202

About the Authors:

Pamela B. Weatherbee is the author of *The Flora of Berkshire County* and a member of the Massachusetts Non-Game Advisory Committee.

Paul Somers is the State Botanist with the Massachusetts Division of Fisheries & Wildlife's Natural Heritage & Endangered Species Program.

Tim Simmons is the Restoration Ecologist with the Massachusetts Department of Fisheries, Wildlife & Environmental Law Enforcement's Biodiversity Initiative.

COMMONWEALTH of MASSACHUSETTS
DIVISION of FISHERIES & WILDLIFE

MassWildlife

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