CONTROLLING INVASIVE PLANTS IN THE MONADNOCK AREA

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What Is An Invasive Plant?

An invasive plant is a non-native species that is able to grow and reproduce quickly. By becoming self-sustaining populations, these invasive plants dominate and replace native plant species. This disrupts natural habitats for native plants and animals.

Garden Club of Dublin
Dublin, New Hampshire

A Member of the Garden Club of America
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Controlling Invasive Plants

Learn to recognize invasive species and eliminate them from your garden and yard before they become well established. Never leave any soil disrupted as this is an ideal place for invasives to grow.

Mechanical Control - Woody plants of less than 1 inch in diameter may be pulled by hand or dug using a digging fork. Be sure to get all the roots! Use a weed wrench if necessary. Replant disrupted area with a native plant.

Cut or Mow - Large areas of invasives may be cut or mowed. Cut or mow when the plant is knee high. This must be done 3 or 4 times a year for 3 to 5 years. Make sure to properly dispose of all cuttings. Any cuttings with seeds or berries should be put in the burn pile at the dump. Be aware that cutting stimulates some plants to grow more branches. Control these plants using other methods.

Herbicides - Two herbicides, according to the The Native Plant Trust are *"made up of nontoxic organic compounds that, when combined, become toxic to plants. Both bind with soil particles and break down rapidly into harmless organic compounds."* One of these is **glyphosate**, an active ingredient in Roundup and Rodeo, the other is **triclopyr**, an active ingredient in Brush-B-Gone, Garlon and other brush eradicators. You may use herbicides on your own property except in wetland areas and on a public right of way where a permit is necessary. It is extremely important to read and follow the directions carefully. Different methods include: 1) Foliar application of herbicides may be used for large areas of herbaceous plants. Apply when plants are actively growing. Use care not to spray any surrounding plants. 2) Stems of larger woody plants may be cut close to the ground and herbicide applied with a small paint brush to the cut. Usually this is done in the fall. 3) Basal bark treatment is used on trees which have a trunk of more than 4 inches in diameter. Make alternating slashes in the bark and apply a 25% - 35% solution of the herbicide to the slash. Re-apply the herbicide after 5 minutes. Do this in the fall. The treatment must be repeated for 2 or 3 years. In all three methods the herbicide goes directly to the roots of the plant only, killing it, but not harming surrounding plants.

Biological Control - The *galerucella* beetle for purple loosestrife, approved by the USDA in 1972, is the only biological control presently available. The Dublin Conservation Commission received a permit from the NH Dept of Agriculture to release these beetles in specific wetland areas of Dublin, starting in 2008.

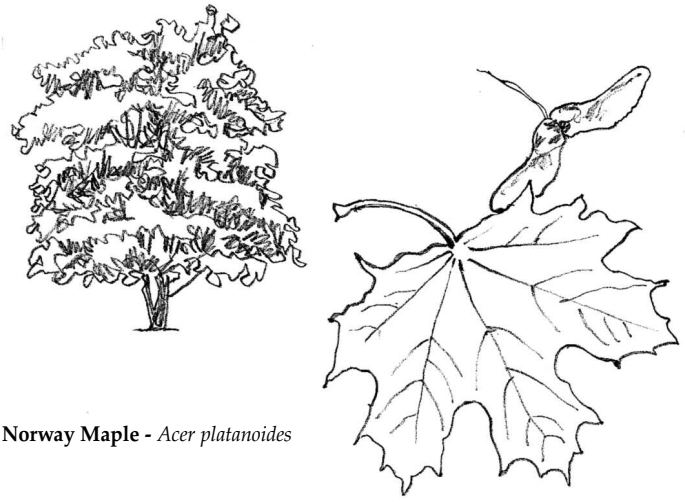
Norway Maple - *Acer platanoides*

This native of Europe and western Asia grows to 60 feet high and 40 feet wide; it prefers moist, well drained soil, but resists drought, pollution and pests, and is able to outcompete the native sugar maple - *Acer saccharum*. It suppresses the growth of other plants beneath it. It is now illegal to sell this aggressive invasive in New Hampshire and Massachusetts.

The bark of the Norway maple is dark brown and furrowed. Its leaves are similar in shape but larger than those of the sugar maple, and their stems and veins exude a milky sap when broken. In the fall they turn yellow. Norway maple thrives in full and partial sun. Its wind-borne seeds germinate and grow easily in deep shade, creating stands of Norway maple in our deciduous forests.

Control: Pull or dig; slash bark and apply a herbicide containing glyphosate.

Replacement: *Acer saccharum* – sugar maple, *Acer rubrum* – red maple, *Fagus grandifolia* – American beech



Norway Maple - *Acer platanoides*

Autumn Olive - *Elaeagnus umbellata*

A deciduous dense shrub, autumn olive grows from 3 to 20 feet high in poor soil in old fields and along edges of woods where it displaces native plants. Autumn olive was brought to the United States in the 1830 from Japan and China. It was planted in wildlife areas and for mine reclamation. More recently it has been planted to retain eroding shorelines.

The silvery, dotted underside leaves of the autumn olive are 3 – 5 inches long and 1 inch wide. Abundant clusters of small, tubular yellowish flowers grow near the stem in May and June. Its red berries grow in clusters in the fall. They are favorites of birds who help spread the plant. It is capable of fixing nitrogen in its roots which interferes with the nitrogen cycle of native plants.

Control: Dig or pull; spray, slash bark or cut and apply a herbicide containing glyphosate in mid to late summer.

Replacement: *Viburnum prunifolium* – black haw, Aronia spp. – chokeberry, *Clethra alnifolia* – summersweet

Autumn Olive - *Elaeagnus umbellata*

Border Privet - *Ligustrum obtusifolium*

Imported from Japan and Europe, border privet, also known as blunt-leaved privet, is used as a hedge. It easily adapts to soil conditions and thrives in both full sun and partial shade. This 12 foot tall shrub grows rapidly and replaces native species.

Its leaves are opposite, 1-3 inches long and 1⁄2 inch wide, and its small white flowers blossom in May and early June. In late summer green berries form in drooping clusters and turn black in the fall. The seeds are easily spread by birds.

Control: Pull or dig; cut and grind out stump; cut and apply a herbicide containing glyphosate.

Replacement: *Ilex glabra* – inkberry

Border Privet - *Ligustrum obtusifolium*

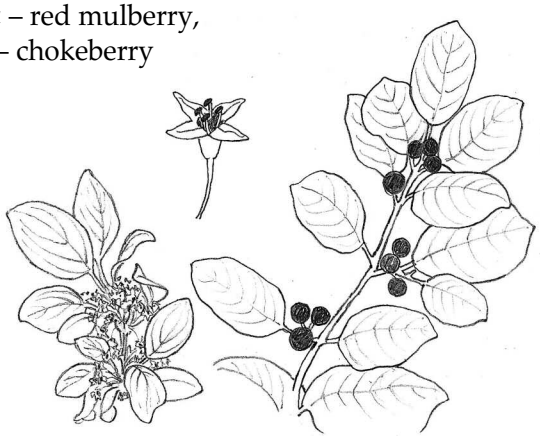
Buckthorn - *Rhamnus spp.*

Common buckthorn – R. *cathartica* and glossy buckthorn – *R. frangula* (sometimes called *Frangula alnus*) are frequently found along roadsides, edges of fields and in newly-cut forests. Glossy buckthorn is also found in wetlands. Both species form a thicket and crowd out other understory shrubs. Buckthorn is native to Europe, Asia and Africa, and was introduced in the U.S. in the 1700's.

Both varieties can grow to 20 feet high and 15 feet wide. Its leaves are glossy, egg-shaped, bluntly toothed, and 1 1⁄2 to 2 1⁄2 inches long. Those on common buckthorn are opposite and the tiny flowers are greenish yellow. The leaves of glossy buckthorn are whorled on the stem, and the flowers are greenish white. Berries on both turn red and then black. The bark of young plants is brown with raised white lenticels.

Control: Pull; dig by hand or with a weed wedge; cut or mow three times annually; slash bark or cut and apply a herbicide containing glyphosate.

Replacement: *Amelancier spp*. – serviceberry,
Chionanthus virginicus – fringetree,
Morus rubra – red mulberry,
Aronia spp. – chokeberry



Buckthorn - *Rhamnus spp.*

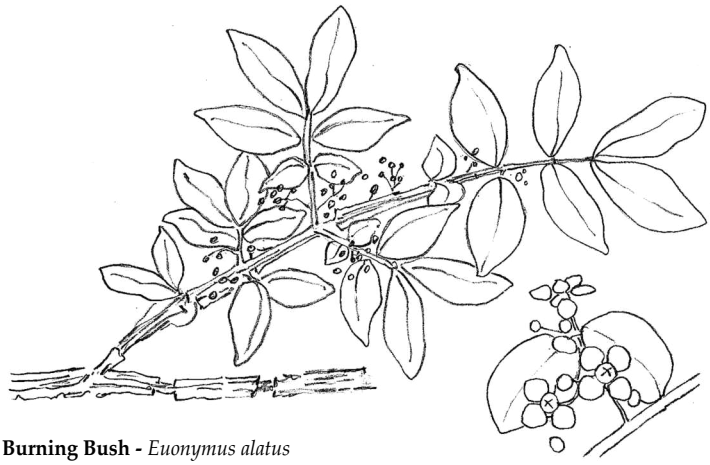
Burning Bush - *Euonymus alatus*

A native of Asia, this shrub with bright red fall foliage was widely used as a landscape plant, but is now illegal to sell in New Hampshire and Massachusetts. Its seeds are spread by birds to sunny, open spaces or shady, open forests where it forms a 20 foot wide and 20 foot tall, dense, impenetrable tangle, crowding out other native plants.

The bark of burning bush is silvery gray and smooth with white lenticels. Its elliptical, glossy leaves are 2 to 3 inches long with serrated edges. In June it has a solitary, white flower with 4 petals. Its "corky" four sided wings on the terminal branches make it easy to spot.

Control: Trim off all flowers; dig; cut and apply a herbicide containing glyphosate.

Replacement: *Vaccinium atrococcum.* – black high – bush blueberry, *Aronia spp.* – chokeberry, *Ilex glabra* – inkberry, *Fothergilla intermedia* – Mount Airy



Burning Bush - *Euonymus alatus*

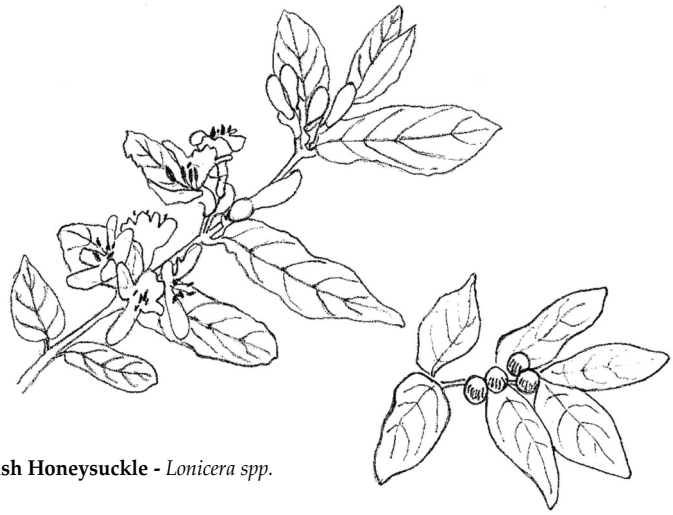
Bush Honeysuckle - *Lonicera spp.*

Two of the most common invasive bush honeysuckles are *morrowii* – Morrow's and *tatarica* – Tatarian. These were imported from Asia, Tatarian in 1752 and Morrow's in the 1800's. All invasive honeysuckles grow in dense thickets in open woodlands, old fields and disturbed areas, crowding out native plants.

The blossoms on invasive honeysuckles are white, cream, yellow or pale pink in color, and tubular in shape. Their abundant berries are spread by both birds and animals. Bush honeysuckle can sprawl into a thicket 20 feet in both height and width.

Control: Cut flowers; pull or dig; mow or cut 3 times annually; cut stem and apply a herbicide containing glyphosate.

Replacement: *Lindera benzoin* – spicebush in rich soil, *Viburnum acerifolium* – maple-leaf viburnum in dry, thin soil, *Viburnum recognitum* – arrowwood in moist soil



Bush Honeysuckle - *Lonicera spp.*

Japanese Barberry - *Berberis thunbergii*

This small, thorny shrub grows on field edges, roadsides, and in newly cut forest areas and wetlands. It likes the sun but is shade tolerant. It crowds out other plants and nothing is able to grow beneath it. A native of Asia, Japanese barberry was first brought to New England in about 1845 as an ornamental plant. It is no longer legal to buy or sell Japanese barberry in both New Hampshire and Massachusetts.

A mature Japanese barberry is 2 – 6 feet tall. It has 1⁄4" wide, solitary flowers hanging below a cluster of small, toothless 1" wedge shaped leaves which cover the entire straight spine. Thorns grow below the leaves. It is one of the first plants to leaf out in the spring, and in the fall it has brilliant, scarlet foliage and fruit.

Control: Trim off all the flowers; pull or dig; cut or mow three times annually; cut and apply a herbicide containing triclopyr.

Replacement: *Lindera benzoin* – spicebush, *Viburnum dentatum* – arrowwood, *Vaccinium spp.* – blueberry, *Aronia spp.* – chokeberry

Japanese Barberry - *Berberis thunbergii*

Multiflora Rose - *Rosa multiflora*

A rootstock for ornamental roses, multiflora rose came to the U.S. from Asia in 1866 and in the 1900's was planted as a 'living fence' for livestock control. It flourishes in full sun and forms almost impenetrable thickets in fields and forest edges where it displaces native plants.

This multi-stemmed, thorny shrub grows to 10 – 12 feet high and has small, white to pinkish 5-petaled flowers in clusters in June and July. Its alternating leaves are 1 1⁄2 inches long with serrated edges. The fruits are small red rose hips which remain on the plant all winter.

Control: Dig; mow 3 times annually; cut and apply a herbicide containing triclopyr in the spring or a herbicide containing glyphosate after flowering in the fall.

Replacement: *Clethra alnifolia* – summersweet, any native rose.

Multiflora Rose - *Rosa multiflora*

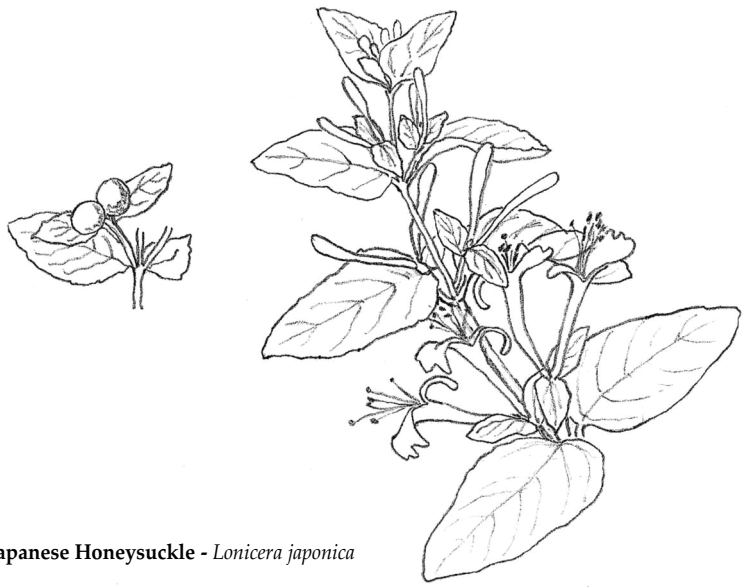
Japanese Honeysuckle - *Lonicera japonica*

A native of Japan and Korea, Japanese honeysuckle is a perennial climbing vine that thrives in moist soil and full to partial sun. It grows rapidly, crowding out native plants.

Its 1 1⁄2 - 2 inch long, oblong opposite leaves are rounded at the base and grow along the stem. From May to July it has 5-petaled, tubular, white, fragrant flowers. Black berries appear in the fall. The flowers and berries occur in pairs along the stem at leaf junctures. Its seeds are easily spread by birds.

Control: Dig; cut 3 times annually; cut and apply a herbicide containing glyphosate.

Replacement: *Lonicera sempervirens* – trumpet honeysuckle, *Campsis radicans* – trumpet vine. Hummingbirds love both these vines.



Japanese Honeysuckle - *Lonicera japonica*

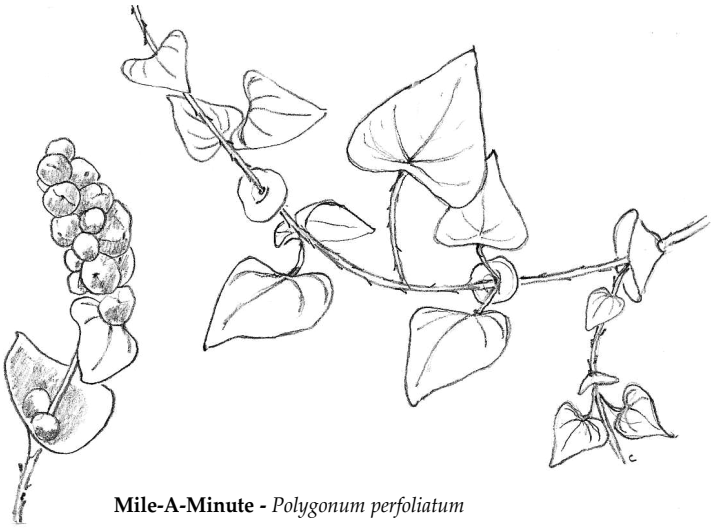
Mile-A-Minute - *Polygonum perfoliatum*

Soon to arrive from southern New England, this native of Asia is an herbaceous, annual, trailing vine. As a self-pollinating weed it produces abundant seeds. It grows extremely rapidly over shrubs and small trees, eventually killing them. It thrives in open, disturbed areas, woods, wetlands, fields and roadsides, and it tolerates poor soil, full sun and semi-shady conditions.

Mile-a-minute has barbs on its delicate stems and the underside of its light green, triangular shaped leaves. Its white flowers are small and inconspicuous and its deep blue fruit grow in clusters. They are spread by birds.

Control - Pull small plants including all roots; mow 3 times annually; research is being done on a small weevil, *Rhinoncomimus latipes*, which feeds on this weed.

Replacement: This unwanted weed needs no replacement.



Mile-A-Minute - *Polygonum perfoliatum*

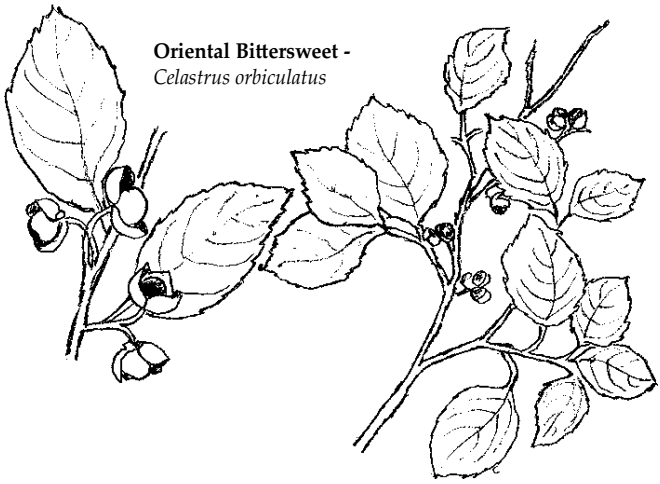
Oriental Bittersweet - *Celastrus orbiculatus*

A rapidly growing vine, oriental bittersweet grows in rich thickets where it strangles shrubs and trees. It is hybridizing with American bittersweet – *C. scandens*, threatening to eliminate this native plant. Oriental bittersweet is native to Asia and came to the U.S. in 1879. Now wide spread, it flourishes in both sun and shade, and tolerates almost any soil.

The leaves of oriental bittersweet are round and green, and its small greenish berries cluster along the leaf axils. The fruit turns from green to yellow and when ripe, splits open to reveal three orange arils that contain its seeds. Its branches are round with many lenticels. They grow around a bush or tree in a tight, strangling hold, smothering the plant. The native American bittersweet has a small cluster of berries at the very tip of its branch, making it easy to distinguish from oriental bittersweet.

Control: Remove berries; dig; cut and apply a herbicide containing triclopyr, repeat as needed.

Replacement: *Celastrus scandens* – American bittersweet



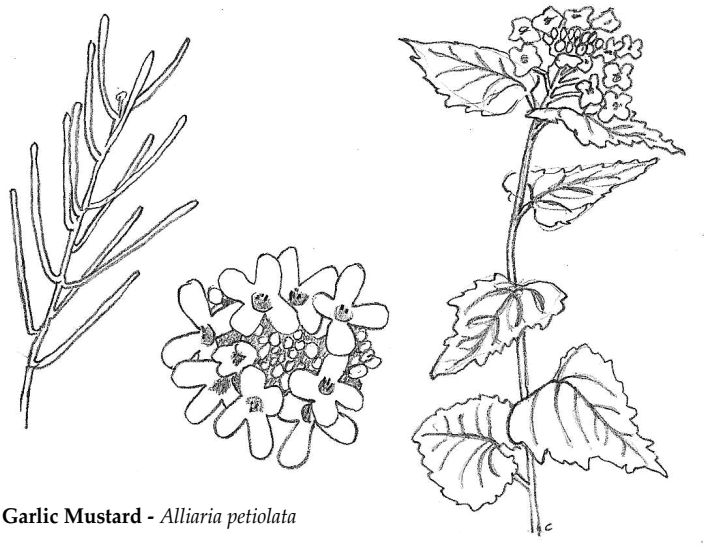
Garlic Mustard - *Alliaria petiolata*

This herbaceous biennial aggressively invades open woodlands and moist, shady roadsides. It crowds out other plants and produces allelopathic compounds that inhibit seed germination of native species. Garlic mustard was brought to the U. S. in the 1900's for medicinal and culinary purposes.

In its second year of growth the 1 – 4 foot tall plant has small 4-petaled white flowers in the spring and early summer. Its toothed, triangular leaves have a distinctive mustard odor when crushed. Garlic mustard is spread easily by water and wildlife.

Control: Dig before flowering; spray with a herbicide containing glyphosate.

Replacement: *Lobelia cardinalis* – cardinal flower, *Iris versicolor* – blue flag, *Zizia aptera* – heart-leaved Alexanders.



Garlic Mustard - *Alliaria petiolata*

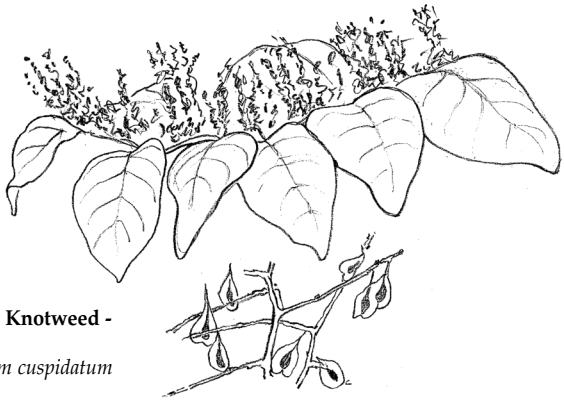
Japanese Knotweed - *Polygonum cuspidatum*

An herbaceous perennial, brought to the U.S. in 1894, Japanese knotweed is also known as Mexican bamboo. It grows 10 feet high and 4 – 30 feet wide in dense clumps in both full sun and full shade. Its rhizomes spread rapidly crowding out native plants.

Japanese knotweed leaves are 3 – 6 inches long, 2 – 5 inches wide, triangular and pointed at the tip. Its tiny greenish-white flowers grow at the axils in August and September. The stem is hollow and covered with scales, similar to bamboo. Its nodes or joints are growth points which, when cut, will start a new plant.

Control: Dig small clumps removing all the rhizomes; cut or mow low in June, removing all the cut branches, then in July or August spray with a herbicide containing glyphosate, treating the entire clump; repeat for several years. Research is being conducted in Britain with a sap-sucking psyllid – *Aphalara itadori* which will eat only Japanese knotweed.

Replacement: Iris versicolor - blue flag, or *Phlox divaricata* – wild blue phlox; *Vaccinium vacillans* – lowbush blueberry, *Viburnum acerifolium* – maple-leaf viburnum or *Ilex glabra* – inkberry



Japanese Knotweed -

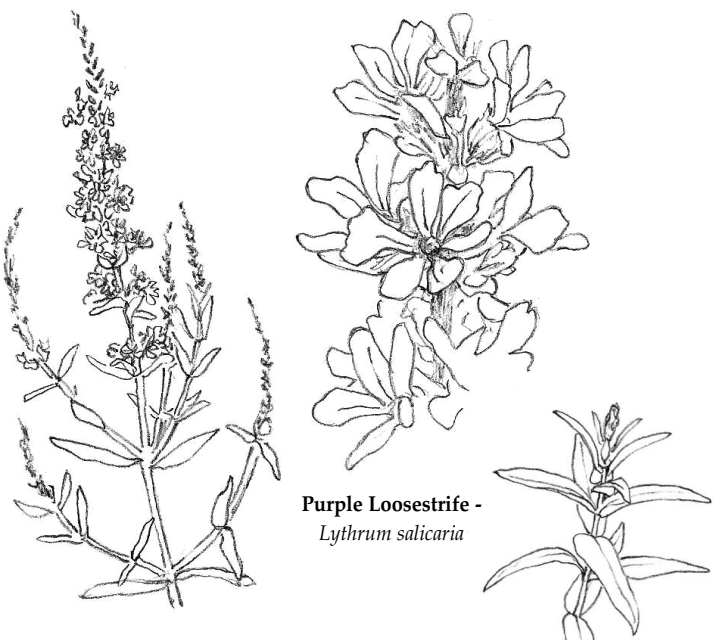
Polygonum cuspidatum

Purple Loosestrife - *Lythrum salicaria*

Imported from Europe in the 1900's, purple loosestrife chokes out native plants in swamps, marshes, and moist meadows, and harms wildlife habitat. This plant, which grows in large colonies and has millions of rapidly spreading seeds, is now labeled a NH prohibited aquatic invasive plant species. The small magenta flowers with 5 or 6 petals grow along a 2 – 6 foot dense spike, blooming throughout the summer. Its 1 – 4 inch leaves are lance-shaped and grow in pairs, clasping the stem.

Control: Hand pull or dig; use the *galerucella* beetles.

Replacement: *Typha spp.* – cattails, or native reeds, rushes and sedges



Purple Loosestrife -
Lythrum salicaria

Yellow Flag Iris - *Iris pseudacorus*

Mostly found in wet areas such as ditches and marshes, yellow flag iris thrives in brackish and acidic water and can withstand periods of drought. It was brought to the U. S. in the mid-1800's as an ornamental from Eurasia and Northern Africa. It spreads rapidly and crowds out native plants.

The long, thin, mid ribbed leaves of the yellow flag iris grow to 3 – 4 feet tall. Its flowers are 3 - 4 inches wide and bloom in late spring and early summer. They develop in groups of 2 – 10 and have 3 drooping sepals with purple-brown markings and 3 smaller, unmarked yellow petals.

Control: Dig, making sure to get all the rhizomes.

Replacement: *Lobelia cardinalis* – cardinal flower, or native reeds, rushes and sedges

Yellow Flag Iris - *Iris pseudacorus*

Common Reed - *Phragmites australis*

Although common reeds have been in the U. S. for thousands of years, an invasive new strain, *australis*, was introduced from Europe in about 1900. It is replacing the native variety and crowding out all other plants in wet areas such as marshes, riverbanks, and dredged areas, forming monocultures in formerly biologically diverse wetlands. Large masses of reed harm the ecosystems by changing their nutrient cycles and hydrological conditions.

The reed is a tall grass, 6 to 12 feet high, with smooth, flat leaves 6 to 18 inches long and 1 to 2 inches wide. Its tawny spikelet flowers appear in July among its tufts of silky hair. Its seeds sprout in the spring and it spreads rapidly through underground rhizomes. The common reed is now labeled a NH prohibited aquatic invasive plant species.

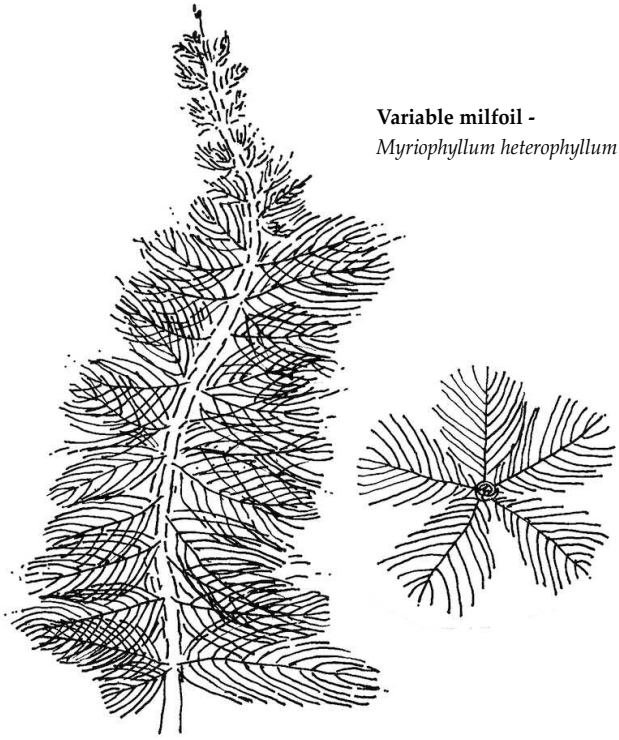
Control: This plant is extremely difficult to eliminate. However, when flowering in mid-summer dig it out if possible.

Replacement: *Typha latifolia* – common cattail

Common Reed - *Phragmites australis*

Variable milfoil - *Myriophyllum heterophyllum*

Variable milfoil, a non-native plant, is now found in some New Hampshire bodies of water. Having no natural predator in our waters, it easily reproduces when plant fragments break off and are carried by wind, swimmers or boats through the water. Large patches of growth may be found in shallow swimming areas. Variable milfoil easily attaches to boats or trailers, is often found near boat ramps, and is carried from one body of water to another. Fragments may spread through the newly infested body of water. Variable milfoil may be controlled by hand-pulling, suction harvesting and herbicide treatments applied by a licensed applicator.



Variable milfoil -
Myriophyllum heterophyllum

Protecting Dublin's Bodies of Water

The town of Dublin has three major bodies of water: Dublin Lake, Mud Pond and Howe Reservoir. These are enjoyable recreation spots and each has a boat launch for boaters and for those who enjoy fishing. Dublin Lake and Howe Reservoir also offer good swimming. Unfortunately, all these lovely bodies of water are potential homes for invasive plants. Common Reed – *Phragmites australis*, grows in shallow water in these areas and purple loosestrife – *Lythrum salicaria* grows in Mud Pond. Variable milfoil – *Myriophyllum heterophyllum* was found in Cemetery Cove in Dublin Lake in 2001, and extensive work by the New Hampshire Department of Environmental Services and volunteers has brought it under control. Careful inspections have continued, and no variable milfoil plants have been found since 2006. Non-invasive pipewort – *Eriocaulon aquaticum,* is also present in many shallow parts of Dublin Lake. Some swimmers find it disagreeable and want to pull it out. However, doing this disturbs the soil, creating a potential home for invasive plants. It is best to simply cut the pipewort off under the water, leaving the roots in place.

Bodies of water need to be protected from the land as well as in the water itself. Protective native plants such as summersweet – *Clethra alnifolia*, rose – *Rosa rugosa,* hobblebush – *Viburnum lantanoides,* buttonbush – *Cephalanthus occidentalis and* blueberry – *Vaccinium angustifolium* planted along the water's edge will help hold the soil in place and keep debris out of the water.

Dublin Rotary Park at Howe Reservoir is a pleasant place for a picnic, swimming, boating and fishing. The water is tested here once a year by Nancy Markuson using the State of New Hampshire's Volunteer Lake Assessment Program (VLAP) and funded by the Town of Dublin. Nancy reports that the tested values are always fairly similar and she feels that a continuous baseline has been established.

Mud Pond is a great place for canoeing or rowing a boat and it is a good place to fish. The invasive plant purple loosestrife – *Lythrum salicaria* growing near the boat landing at Mud Pond has been treated with *galerucella* beetles for several years by the Dublin Conservation Commission with funds from the Garden Club of Dublin. The beetles eat only purple loosestrife and no

other plant life. Fortunately, the beetles are now reproducing on their own and it is unnecessary to add more beetles. They definitely do not bother boaters.

Dublin Lake is an excellent place to boat, fish and swim. The Dublin Lake Project Committee of the Garden Club of Dublin (GCD) tests the water using the VLAP program and the testing is funded by the GCD and the Town of Dublin. The Dublin Lake Project Committee also looks for and encourages others to look for invasive variable milfoil and other invasive plants in the water. The Beech Hill Dublin Lake Watershed Association has funded a study for the Town of Dublin's Dublin Lake Preservation Committee. The study suggested ways to protect Dublin Lake's shores with an emphasis on lessening destructive run off from the surrounding areas. Planning for this work is in the process.

Over the years, Dublin town committees have made many helpful efforts to protect the health and natural beauty of the town. The Dublin Conservation Commission has worked to lessen the destructiveness of invasive plants, especially by the control of purple loosestrife *Lythrum salicaria* and Japanese knotweed *Polygonum cuspidatum* along the roads. They helped the Dublin Rotary Club clear the land and clean up the woods in preparation for the Dublin Rotary Park at Howe Reservoir. As mentioned above, the Beech Hill Dublin Lake Watershed Association has supported the Dublin Lake Preservation Committee in its efforts to protect Dublin Lake.

April 2020
Louisa Birch

REFERENCES

The easiest way to find information on a specific plant is simply to Google the plant name.

To obtain a permit for using herbicides in wetlands, or on a public right of ways on your own property contact the Division of Pesticide Control at the NH Department of Agriculture at: 603-271-3550.

New Hampshire law states: No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living species stated in Table 3800.1, NH prohibited invasive species list.

Web Sites

Native Plant Trust: www.nativeplanttrust.org

NH Department of Agriculture: http://agriculture.nh.gov/

The Nature Conservancy: http://nature.org

Booklet

N. H. Invasive Species Committee. Guide to Invasive Upland Plant Species In N.H.: N. H. Department of Agriculture

Native Plant Guides and Books

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Cullina, William: Native Trees, Shrubs and Vines, The New England Wildflower Society, 2002

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Newcomb, Lawrence: Wildflower Guide, Boston: Little Brown & Co., 1977

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Appreciation and thanks to Karen Bunch and Mary Liz Lewis for their untiring support and assistance with this project.

BACK COVER