

TOWARD A MORE NATURAL MEDWAY

Policies for the Management of Invasive Plants in Medway

Developed by the Open Space Committee, Conservation Commission and
the Department of Public Works, 2022



Great blue heron at Hopping Brook

This document addresses the Open Space and Recreation Plan Goal #10:
“Establish sound practices for managing invasive species on town-owned land; implement
invasive species control practices”

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Description of the Problem

All the land in Medway has been repeatedly disturbed since at least the 1600s. The primary disturbances reflect the development of the town by immigrants, mostly from Europe. Examples are farming, woodlots, housing, industry, and community infrastructure. In the past decade, where there had once been farming and logging, successful efforts have been made to set aside parcels of land of significant size, to become permanent open space. These parcels are where management is kept to a minimum, so that they become “natural” areas, valued and enjoyed for their own sake. In earlier times in Medway, a natural process called ‘succession’ could be relied upon to keep these parcels in a natural condition. Succession takes these once-disturbed lands through growth stages, first of annual plants and grasses, then shrubs, and finally, trees. However, in the present day, simply allowing for succession on these lands will not result in natural areas for Medway.

The problem is that the many species of invasive plants that grow throughout Medway prevent native plant species from establishing themselves. To be labeled as invasive means there are no natural controls on the proliferation of these plants. They keep spreading, eventually dominating their habitats. Once a habitat has lost its native plant dominance because of being overwhelmed by invasives, biodiversity declines drastically. There are far fewer species of animals, insects and plants. Native animal life does not recognize an invasive plant as food, thus eliminating any natural counterbalance to its spread. Only human activity can manage and reduce the growth of invasive plants in our open spaces. While costly in terms of time, physical work, and expense, the more effort put into invasive plant management, the more natural our open spaces will become, the more they will resemble the lands first encountered by the early settlers and lived in for ages by native peoples.

Invasive species within Medway pose a threat to the ecological and cultural integrity of our open space. Under current conditions, these non-native aggressive plant species threaten to degrade the functionality of the stream banks along the Chicken Brook Corridor (identified in the Open Space and Recreation Plan), while displacing the native plant communities that support local wildlife species. One of the primary goals of the Medway Open Space Committee, the Conservation Commission, and the Department of Public Works is to effectively manage existing invasive species encountered throughout our open space to preserve and enhance the native species diversity that provides the favored natural character of lands.

This document affirms that invasive plant management is an important element of the Town of Medway’s stewardship of its open spaces. In the following sections are aspects of this management that are to be considered in planning for intervention in specific areas.

Lands Addressed by this Policy

The focus of the policies described here is on town properties where management actions are currently kept to a minimum. Ultimate responsibility for most of these parcels lies with the Conservation Commission and/or the Select Board. The focus of this document is on the large parcels of town lands, such as between Lovering Street and Choate Park, portions of Oakland Park, Idylbrook Park, the Amphitheater, the Community Farm, and Bresnahan's Landing (Canoe Launch) on Village Street. They do not include town sports fields, or any private properties. Other town park locations, such as Choate Park and Oakland Park can benefit from the management approaches outlined in this document. While the town owns many small parcels, at present these are not a focus of this document. These small parcels are generally not part of an intact ecosystem. Winding across Medway are several utility corridors for natural gas and electricity transmission. To maintain the viability of the transmission lines, vegetation growth is controlled on a regular basis by utility management plans. Thus, the habitats along these corridors are in an ongoing state of disturbance, serving as a reservoir for invasive plants. There is not likely to be a change in vegetation management by the utilities anytime soon. For town lands that abut these corridors, it will be necessary to regularly monitor property edges for intrusions from the corridors.

In Massachusetts, the edges of roads fall into a special regulatory category. Towns are encouraged to develop a general Vegetation Management Plan that addresses vegetation along roadways. If chemical management is contemplated near roads, a specific plan must also be developed and approved by state agencies. In Medway, these plans are developed by the Department of Public Works. The DPW may carry out these plans or engage with contractors. The principles of management described within this document still apply to roadway vegetation management operations.

Priorities in the of Management of Invasive Plants

Since invasive plants are pervasive in Medway, the concept of management, rather than eradication, is a more realistic goal. As resources and workers become available, they should be aimed at areas where they might have the most impact. The Town is working to develop a list of priorities for open space to determine where best to direct our resources. These areas are:

- Where invasives are only beginning to move in. Prevention of invasion is the best of all management strategies. The invasive plants in these locations tend to be smaller, easier to discover, and have not yet had a deleterious effect on their habitat.
- Trail edges. Any disturbed area (where bare soil is exposed) and areas where people move through are likely to sprout invasive plants. Trail walkers, their pets and landscaping equipment inadvertently move seeds. Areas with no disturbance are slow to show the spread of invasives.
- Existing areas of land purchased with CPA funds, such as the Adams Street area and the Medway Community Farm, both of which have been identified to have invasive species present.

- Existing areas of Conservation Commission lands which are currently under invasive species management such as the Amphitheater.

Medway's open spaces vary from being comprised of completely natural vegetation, to a mixture of native and invasives, to locations that are completely dominated by invasives. For those trying to plan management actions, there should be maps and/or other descriptive devices that indicate levels of invasiveness for all open spaces. These can be developed by the Open Space Committee and updated yearly.

Management Methods

Selected management techniques are generally based upon the extent of a given species within the vegetation community at a target site and employ strategies that best control the invasive species, while minimizing the potential for adverse impacts to other desirable (i.e., native) species. Invasive species are often difficult to eliminate from an area, and a practical management goal is to control, not necessarily eradicate, invasive species while simultaneously encouraging or even introducing a native plant community.

Methods for the management of invasive species fall into three basic categories:

- Mechanical (cutting, pulling, grubbing, covering, etc.)
- Chemical (use of herbicides)
- Biological (using living organisms such as insects or domestic grazing animals)

All controls on invasive species involve human labor. There is digging, cutting, pulling and hauling, mostly done by volunteers. Larger efforts benefit from the assistance of the Department of Public Works.

Depending on the species, identified in the field, the following methods may be used based on a collaboration with the Open Space Committee and the Conservation Commission, and the Department of Public Works.

Mechanical Methods

To reduce the effect of invasives on natural habitats, the plants can be removed from the ground, continually cut back so they can no longer grow to maturity and reproduce or smothered in place. The target plant species, location, skills of the volunteers, and environmental concerns are all factors in making specific management plans.

All long-term planning must include the concept of "seed bank". Only some of the seeds that drop each year from invasive plants will sprout during the next growing season. It can sometimes be several years before a seed may sprout. This means that monitoring for new growth must be considered a yearly activity, just as is trail upkeep, for example.

Chemical Methods

To aggressively attack larger swaths of invasives, such as found in large fields, chemical methods may be used under the direction of the Department of Public Works and/or the Conservation Commission. The Town of Medway has received approval of a Vegetation Management Plan for the Town valid from 2021-2026. All work is a case-by-case basis and reviewed carefully prior to resorting to the application of chemicals for the removal of invasives. However, the Town recognizes that this may be the best method for the situation.

It is recommended that non-chemical methods of control be used wherever feasible. However, for large infestations, and for a few plants specified in the appendix, non-chemical methods are inadequate. Any herbicide use would be applied only by a Massachusetts' Licensed Pesticide Applicator and in accordance with all State regulations pertaining to herbicide application and would not be applied within any aquatic area (e.g., within Bordering Vegetated Wetlands, rivers and streams). The likely two main herbicide treatments considered in developing this management plan include glyphosate and triclopyr. Glyphosate (e.g., Round-up® or Rodeo®) is a non-selective, systemic herbicide that kills both grasses and broad-leaved plants. Triclopyr (e.g., Brush-B-Gone™, Garlon™, Pathfinder™) is a selective herbicide that kills broad-leaved plants but does little or no harm to grass species. Applied carefully to avoid non-target plants, glyphosate is the least environmentally damaging herbicide in most instances. Round-up® contains a petroleum-based sticker-spreader that allows the herbicide to cling to the target species to ensure its absorption into the plant's tissues. Rodeo®, the glyphosate formulation for use in wetlands, does not contain any sticker-spreader, and thus is considered to be safer for the wetland environment. As with the timing for mechanical methods for management of invasive species, non-specific use of herbicides or use of a specific herbicide at incorrect times or in incorrect concentrations can actually lead to spreading of invasive species. Other considerations for herbicide use include avoiding inclement weather conditions such as wind, which could result in herbicide application to non-target, possibly native species, or rainy conditions, which could dilute or wash away applied herbicides, rendering them ineffective.

Biological Methods

It is not known if any biological controls on invasive plants have ever been used in Medway. The Galerucella beetle is currently living in town wetlands and has been reducing the spread of purple loosestrife. This beetle has likely flown to Medway from other towns. Biological methods can be quite helpful in management efforts, but they must be approved by the agencies responsible for the target locations.

Working to Prevent the Spread

Because resources and workers are finite, these must be utilized in the most efficient manner. Accepted management practice encourages planners to devote efforts to areas where invasives are just starting to appear.

Where there is a population of invasives, it is generally most efficient to work from the outside edges inward. For a given amount of work, a larger area of habitat can be cleared than if that same work is applied to a dense patch of plants.

The overall strategy of management efforts is to diminish the influence of invasive plants on our open space habitats by reducing their size and number. Two factors indicate that there will be a need for invasive plant management for many years. First, there is the existing seedbank (filled with millions of seeds) and second, nearby properties (private lands and utility easements) are often dense with invasive plants, contributing seeds on a yearly basis. As long as the management process proceeds from dominance by invasive plants to dominance by native plants, the goals of good stewardship are intact.

Movement of soils. Any soil introduced into a natural area should be checked for invasives prior to the import of materials.

It is generally recommended to keep invasive material that has been cut/dug up on site if possible, in an out-of-the-way location. All state and local laws shall be followed and permits taken when needed and as advised by the Conservation Commission if under wetlands jurisdiction.

Re-Vegetation

After invasive plants have been removed from a location, re-planting with native plants shall be considered as a part of the overall management effort. The goal is to jump start the native population and not provide more area for new or the same invasives species to return. This would involve an added monetary and labor cost, which may be worthwhile in some cases. Factors to be considered in this decision include:

- Amount of volunteer/town employee time available for planting and care
- Amount of money available from town resources/grants/donations
- Habitat priority. After invasives removal, some habitats tend to re-vegetate more readily. A location that is heavily dominated by invasives will be greatly disturbed by the removal work. The first plants to move in tend to be invasives. While vigilance is always required to remove incoming invasives, planting natives helps the habitat recover more quickly.
- Difficulty of choosing appropriate native plants. All of Medway's open spaces are in a process of transition from early re-growth after disturbance to mature, self-sustaining habitats. There are a series of vegetative stages, and habitats reflective of those stages that any location will pass through toward maturity. Choosing native plants that will be supported in later stages of normal vegetative succession can be somewhat tricky, because some choices may not succeed. The default choice would be to use plants typical of nearby habitats that are not invaded.

Additionally, once the native species are planted it would be valuable to start a monitoring program. The program would assign volunteers to areas where management is in its final stages and native plants were installed. This monitoring program would involve completing periodic

site visits to review the viability of the native species planted and to remove any invasive species growth through hand-pulling methods. This monitoring should continue monthly for two years.

Education and Public Awareness

Any invasive plant management activity should be viewed as an opportunity to engage Medway residents in learning about the importance of native habitats and the threat of invasives. Signage, social media, spontaneous interactions with volunteers can all be used. As residents learn of the role that people have in the spread of invasives, they will care more about the health of our open space environments. They will learn to better care for the spaces around their own homes. Ultimately, it is the support of the public that will lead to our open spaces becoming more natural.

APPENDIX

A. Medway's Major Invasive Plants

These are the four species that are causing the most habitat degradation throughout Medway.

Glossy buckthorn (*Frangula alnus*) shrub/small tree, with glossy, deciduous, sub-opposite leaves, 1"-3" long, without teeth on edge. Bark is gray-brown, with elongated speckles on younger plants. Small, yellow-green flowers, May-September. Fruit is a berry, starting as green, then red, and black when ripe, July-September. Berry is extremely bitter-do not try to eat. Habitat-generalist, it can be found from road edges to deep woods, and anywhere the soil is moist. When young, it resembles our native black cherry (*Prunus serotina*), but the cherry has toothed edges on its leaves. Ecological threat: because of its rapid growth and prolific seed production, it forms dense stands under which native plants cannot thrive.

Management: if small, can be pulled by hand; larger plants must be dug up or pulled out with a weed wrench or with a cable attached to a truck; systemic herbicide can be applied on leaves or on cut stump; opaque material, such as heavy-gauge black trash bags, can be draped over 6-inch stumps which prevents resprouting. Simply cutting down buckthorn is usually counter-productive. The plant does not die. It responds by widening its stump 2-4x and sending up numerous basal shoots. In time, the plant becomes a wide bush, producing many more berries than the original plant would have.

Multiflora rose (*Rosa multiflora*) When growing in the open, it acts like a shrub, growing to 12 feet in height with numerous arching stems. If it grows under taller vegetation, its growth becomes vine-like, with stems reaching upwards more than 30 feet. Leaves are deciduous and compound, with 7-9 leaflets. Bottom one inch of leaf stem is fringed with coarse hairs. The stems have stiff, downward-pointed thorns. Flowers are white, with 5 petals, each becoming a hard red berry. None of the native roses have white flowers. Ecological threat: displaces native vegetation, forms impenetrable thickets which impede passage by both humans and wildlife. Management: wear protective clothing, especially thick gloves, to reduce injury from thorns.

When in shrub form, can carefully cut an opening with clippers to allow access to base. Then the remaining stems can be cut and the stump removed. If the stump is not removed, it can be covered with opaque material (such as a black plastic sheet) or treated with herbicide. The same management techniques are used if the plant is in vine form, but it is easier to work with.

Oriental bittersweet (*Celastrus orbiculatus*) A vine that grows to 65 feet. Leaves are alternate, deciduous, toothed, lower leaves are round (orbiculate). Bright yellow fruit coat that splits open to reveal orange/red fruit. Ecological threat: grows aggressively up trees, covering the leaves of the trees. Unless a tree is substantially taller than 65 feet, it eventually dies. In old fields, it forms mounds of vines that completely shade out all other vegetation, except for a few stems of multiflora rose. Management: seedlings can be successfully hand pulled. Mature plants can be cut down to the ground to prevent seed development but will re-sprout. Repeated mowings (several times a season) will eventually drain the roots of energy. Systemic herbicide can be applied to the cut stem, or foliar application of triclopyr on the re-growth after a mowing.

Autumn olive (*Elaeagnus umbellata*) A shrub growing to 20 feet. Leaves are alternate, deciduous, without teeth on leaf edge, and silvery underneath. Yellow flowers in spring are strongly fragrant, followed by red berries. Bark is smooth and gray. This is not Russian olive, which is also invasive, but not found in Medway. Ecological threat: in old fields and edges, it forms dense stands, crowding out native plants. Management: seedlings are easily pulled; mature shrubs can be dug up, but remaining roots tend to re-sprout; stumps can be covered with opaque material; systemic herbicide can be applied to leaves or stumps.

B. Invasive Plants that are Less Common but still Problematic in Many Locations in Medway

Garlic mustard (*Alliaria petiolata*) Herbaceous plant that lives for 2 years, first year as a basal rosette. In the second year, it sends up a flowering stalk, 6 inches to 3 feet. Leaves are alternate, round to triangular, and toothed. Flowers are white, with 4 petals. After its black seeds mature, the plant dies. Crushing any part of the plant will produce a strong garlic odor. Ecological threat: crowds out spring-blooming wild flowers and tree seedlings; its roots exude chemicals that inhibit the growth of native plants; although attracted to garlic mustard, the larvae of several native butterflies do not survive on this plant. Management: hand-pulling of second year plants before the seeds mature. Place in opaque trash bags, tie off the open end of the bag, and allow the plant material to rot until the next spring.

Bush honeysuckle (*Lonicera morrowii* & *L. maackii*) Two species of shrubs that look very similar. Both are equally invasive. They have opposite leaves, oval in *L. morrowii* and pointed in *L. maackii*. Spring flowers are white, fading to yellow, followed by red fruits. Branches are hollow. Ecological threat: these form dense thickets that crowd out native plants. Management: roots are shallow and weak, so plants can be uprooted; remaining roots may resprout; repeated mowings or browsing by goats can kill the plant.

Swallowwort, pale (*Cynanchum rossicum*) and black (*Cynanchum louiseae*) Herbaceous vines that grow 2 feet to 10 feet long. Leaves are opposite, oval, with a pointed tip. Produces

milkweed-like pods and seeds that can travel for miles on the wind. Only difference between species is flower color—both are equally problematic. Ecological threat: colonial, that is, it spreads by roots to become so dense that it can dominate both woodlands and grasslands; attracts Monarch butterfly larvae which die after feeding on the plant. Management: small populations can be controlled by digging up root crowns; tarps that block out all light can cover larger areas or triclopyr herbicide can be applied but these also kill surrounding vegetation.

Purple loosestrife (*Lythrum salicaria*) Erect wetland shrub with tall spikes of magenta flowers (5-6 petals). Leaves are long, pointed, opposite, with no teeth. Ecological threat: can form dense stands that crowd out important native wetland plants; amphibian populations decline sharply; a single mature plant can produce 2 million seeds per year. Management: plants are difficult to access and difficult to remove. However, a beetle (galerucella) has been introduced that feeds on this plant and has resulted in significant reductions in loosestrife density in some locations. The beetle lays its eggs only on purple loosestrife.

Japanese knotweed (*Fallopia japonica*) has stout, hollow stems that grow up to 10 feet high, then they die with the frost. The large alternate leaves are egg-shaped to heart-shaped, not toothed along the edges, and are square across the bottom. Tiny white flowers appear in long clusters in August. Seeds are generally not viable. The spread of knotweed occurs almost always when root fragments are carried in dirt by construction, highway and landscaping equipment. When mature, the root structure can often span 45-60 feet. Ecological threat: once established, the colony of tall stems crowds out all other vegetation. The thick layer of decomposing stems and leaves acts as a mulch to prevent seedlings of other plants from emerging. Management: cutting the stems close to ground, four or more times a season, for three years is often effective. If using systemic herbicide, first cut down all live stems. When flowers have emerged on other stands of knotweed, the target patch is given a foliar application of herbicide.

Burning Bush (*Euonymus alatus*) a shrub, to 15 feet tall. Small white-green petals, becoming purple seed pods that split open to orange fruit in the fall. Leaves opposite, pointed, finely toothed, become bright scarlet in the fall. Brown stems with corky wings (cultivated species may lack the wings). Spreads rapidly to open woods. No other local plants have corky wings. From a distance, it may resemble highbush blueberry.

C. Other Invasive Plants Found in Medway Which May Become Problematic

SHRUBS

Common Buckthorn (*Rhamnus cathartica*)

Japanese barberry (*Berberis thunbergia*)

Privet (*Ligustrum* species)

HERBACIOUS PLANTS

Dame's Rocket (*Hesperis matronalis*)

Forget-me-not (*Myosotis scorpioides*)

Mugwort (*Artemisia vulgaris*)

Knapweed (*Centaurea species*)

Spurge (*Euphorbia cyparissias*)

Wild Parsnip (*Pastinaca sativa*)

GRASSES

Common reed (*Phragmites australis*)

Japanese stilt grass (*Microstegium vimineum*)

Reed Canary Grass (*Phalaris arundanaceae*)

TREES

Black locust (*Robinia pseudoacacia*)

Gray willow (*Salix cinerea*)

Norway maple (*Acer platanoides*)

Tree of heaven (*Ailanthus altissima*)

VINES

Winter creeper (*Euonymus fortunei*)

Periwinkle (*Vinca minor*)

D. Advice for Homeowners in Medway

Homeowners are encouraged to take actions to lessen the dominance of invasive plants and create a more natural habitat on their property.

1. Become knowledgeable about and learn to identify the invasive plants that may be on their property.
2. Begin to reduce the amount of invasive plants that they identify. Care must be used so that any plants that are cut or dug up do not re-grow elsewhere. Cut plant material can be piled in an out-of-the-way location so that it decomposes in place. Storing in opaque plastic bags accelerates this process. Tools used should be cleaned.
3. Special care must be taken when planning to work in or near wetlands. Because of the fragile nature of wetlands, regulations and guidelines to protect wetlands have been established at the state and local level. Part of the mission of the Medway Conservation

Commission is to assure that all disturbance in wetlands follows regulations and best practices. In brief, land within 25 feet of water is always considered a “no-disturb zone.”

4. When replacing vegetation or in new landscaping projects, consider using native plants. Plant nurseries that are individually-owned are increasing their stock of native plants. Garden in the Woods in Framingham sells only native plants. Here is a list of native plants that will do well in Medway.

Shrubs

Shadbush (*Amelanchier canadensis*)
Highbush Cranberry (*Viburnum trilobum*)
Pussy Willow (*Salix discolor*)
Black Chokeberry (*Aronia melanocarpa*)
Red Chokeberry (*Aronia arbutifolia*)
Pepperbush/Summersweet (*Clethra alnifolia*)
Inkberry (*Ilex glabra*)
Redtwig Dogwood (*Swida sericea*)
Winterberry (*Ilex verticillata*)
Sweetspire (*Itea virginica*)
Mountain Laurel (*Kalmia latifolia*)
Elderberry (*Sambucus canadensis*)
Spicebush (*Lindera benzoin*)
Rosebay (*Rhododendron maximum*)
Early Azalea (*Rhododendron prinophyllum*)
Pink Azalea (*Rhododendron periclymenoides*)
Swamp Azalea (*Rhododendron viscosum*)
Bayberry (*Morella pensylvanica*)
Northern White Cedar also called Arborvitae, (*Thuja occidentalis*)
Lowbush Blueberry (*Vaccinium angustifolium*)
Highbush Blueberry (*Vaccinium corymbosum*)

Small Trees

Redbud (*Cercis canadensis*)
Flowering Dogwood (*Benthamidia florida*)
American Holly (*Ilex opaca*) can be a substitute for other evergreens
Red Cedar (*Juniperus virginiana*)

Groundcovers

Creeping juniper (*Juniperus horizontalis*)
Bearberry (*Arctostaphylos uva-ursi*)

Trees

Red maple (<i>Acer rubrum</i>)	Sugar maple (<i>Acer saccharum</i>)
River birch (<i>Betula nigra</i>)	Paper birch (<i>Betula papyrifera</i>)

Black walnut (<i>Juglans nigra</i>)	White spruce (<i>Picea glauca</i>)
Sycamore (<i>Platanus occidentalis</i>)	White oak (<i>Quercus alba</i>)
Swamp white oak (<i>Quercus bicolor</i>)	Scarlet oak (<i>Quercus coccinia</i>)
Pin oak (<i>Quercus palustris</i>)	Red oak (<i>Quercus rubra</i>)
Black oak (<i>Quercus velutina</i>)	Hemlock (<i>Tsuga canadensis</i>)
Elm (<i>Ulmus americana</i>) (seek out a blight-resistant variety from a nursery)	

This document reflects best practices circa 2022. As knowledge of invasive plant management evolves, it should be updated accordingly.