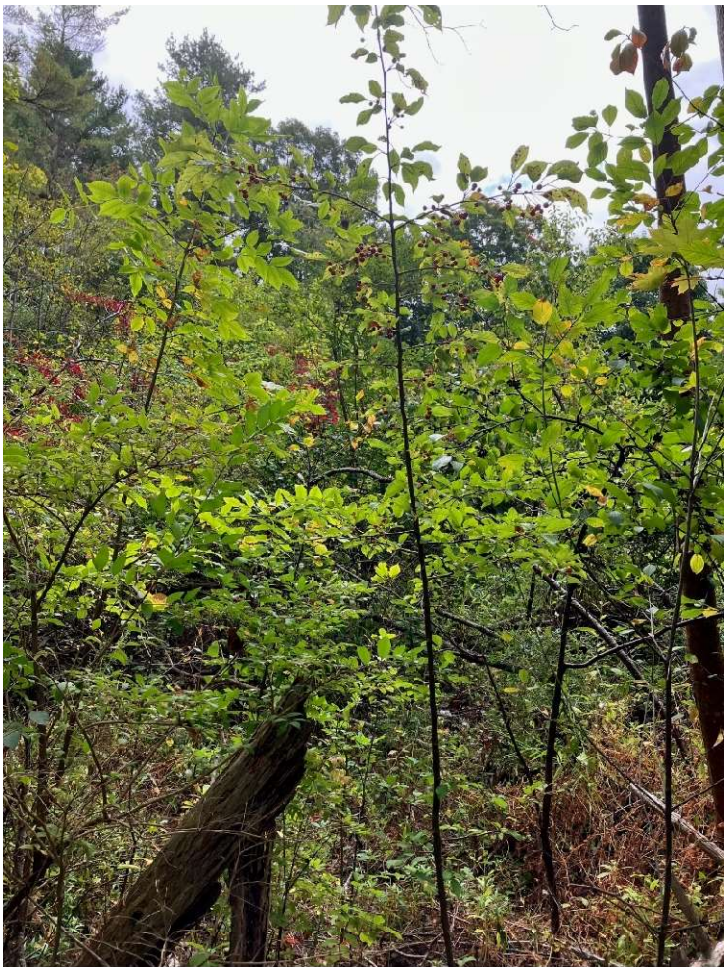


Invasive Plant Control Practice Plan

Goodrich Park

Town of York, ME

Prepared: October 14, 2024

Prepared By: Brian Reader, ME LFP #3538

Reader Forest Management LLC

55 Oak St., North Waterboro, ME 04061

207-205-5917

Reader Forest Management, LLC

Brian Reader, Manager
55 Oak St.
N. Waterboro, ME 04061

Telephone 207- 205-5917
Email: breadertrees@yahoo.com

Invasive Plant Control Practice Plan

General Information

Owner:	**Town of York**
Address:	186 York St. York, ME 03909
Plan Prepared:	October 14, 2024
Prepared by:	Brian Reader, ME L.P.F. #3538
Parcel Location:	York Tax Map 66, Lot 1 Total Acres: 13.02 Acres York Tax Map 67, Lot 5 Total Acres: 15.57 Acres

Property Overview

This property is owned by the Town of York and consists of around 28.59 acres, on Route 1, and Ferry Lane South, in the town of York, Maine. The York Parks & Recreation also has their offices at this location. This lot is adjacent to the York River, and is heavily forested, with a trail system that is often used for recreation.

The Town of York is open to discussion about the use of herbicide(s). Herbicide treatments in or within 25' of a wetland, stream, river, lake or pond may require DEP permits, applicators license, and/or a variance from the Maine Board of Pesticides Control. Also, some State listed rare plants have been documented along the York River. Any areas planned for treatment should be reviewed by the Maine Natural Area Program or inspected by a qualified botanist before any control work is done.

Survey Description and Summary of Survey Effort

This site was surveyed for invasive plants on the morning of September 25, 2024. We started in the western part of the lot, walking on the perimeter trail, noting species on my map as I went. We found some species that were individuals sporadically located, and large areas of buckthorn that I determined would be best mapped as polygons. Another polygon of a mix of multiflora rose, Norway maple, black locust, etc., located west of Ferry Lane South, and north of Route 1. It should be noted that this area of York has a lot of invasives and keeping them in control should be a continued effort.

Description of Invasive Plants Found

The survey of the area described above found 12 common invasive species; glossy buckthorn, common buckthorn, Japanese barberry, multiflora rose, shrubby honeysuckles, Asiatic bittersweet, Japanese knotweed, Norway maple, black locust, Autumn olive, privet and burning bush (listed roughly from most prevalent to least). These invasive species have the potential to suppress tree recruitment and growth in forests, crowd out beneficial native plants, reduce wildlife habitat quality, and are generally a nuisance when maintaining a property.

Glossy and common buckthorn were found in high levels in the southern parts of both the lots, on both sides of Ferry Lane South. These areas have had no known treatment and could use considerable work to control these species.

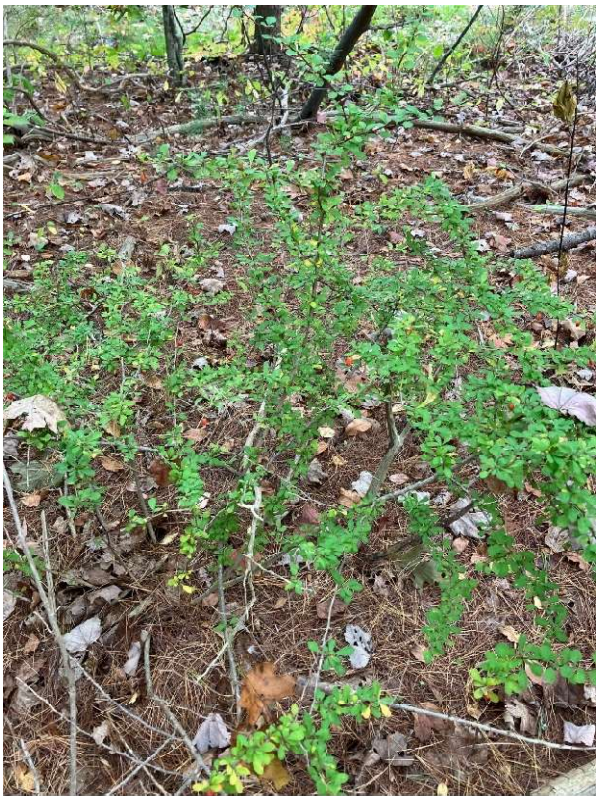
Japanese barberry is found throughout the southern part of Map66, Lot 1, and the species is very prevalent.

Multiflora rose, Asiatic bittersweet, Norway maple, Japanese knotweed, Autumn olive, and black locust were all found in the southern part of Map 66, Lot 1, adjacent to the parking area. This area could use considerable treatment.

Some shrubby honeysuckles were found mostly on the perimeter trail behind the buildings. These were mostly individual plants that could easily be controlled.

Common Name	Scientific Name	Growth Form	Level of Infestation	Areas Found
Glossy Buckthorn	*Frangula alnus*	Shrub	High	Southern
Common Buckthorn	*Rhamnus cathartica*	Shrub	High	Southern
Japanese Barberry	*Berberis thunbergia*	Shrub	High	Southern
Multiflora Rose	*Rosa multiflora*	Vine	Medium	Southern
Honeysuckles	*Lonicera spp.*	Shrub	Medium	Southern
Asiatic Bittersweet	*Celastrus orbiculatus*	Woody vine	Medium	Southern
Japanese Knotweed	*Fallopia japonica*	Herb	Med./Low	Southern
Norway Maple	*Acer platanoides*	Tree	Low	Southern
Black Locust	*Robinia pseudoacacia*	Tree	Low	Southern
Autumn Olive	*Elaeagnus umbellate*	Shrub	Low	Southern
Privet	L. obtusifolium/vulgare	Shrub	Low	Southwestern
Burning Bush	*Euonymus alatus*	Shrub	Low	Southwestern

Glossy & Common Buckthorn



Japanese Barberry

Multiflora Rose

Asiatic Bittersweet

Burning Bush

Norway Maple

Privet

Autumn Olive

Japanese Knotweed

Shrubby Honeysuckles

Prioritization Strategy

Prioritization is helpful because it is not usually realistic to remove every invasive plant from every acre of land. In general, the highest priority in invasive plant management is prevention – keeping new species out. After invasive plants become established, invasive plant management follows a three-tiered prioritization, see below.

1. Early Detection and Rapid Response to eliminate species which are new to the area or only present in small patches. Goal is eradication from the site. Hopefully can be achieved over a short timeframe (several years). Best return on treatment investment.

2. Early Management to control modest patches of more common invasive plants. Goal is to expand the "clean" habitat and prevent it from being re-infested through monitoring over time. This work may need to be repeated every several years (2-5 year interval) if there are nearby sources of propagule pressure. Areas of special concern (important timber resources, rare/exemplary natural features, special wildlife habitats) may be targeted first or more often.

3. Suppress and Contain areas of dense infestation. Goal is to reduce the spread of seeds or other plant propagules and prevent the infestation from expanding. This is ongoing, maintenance work which is repeated every several years or as resources permit, e.g., simply cutting down large shrubs every 5-10 years. Infestations near areas of special concern may receive more frequent or more intense attention. If a species is expanding from an area considered "the motherlode," (densest aggregation of mature plants) the general practice is to recommend working from the outside in to control outliers/the advancing front, while at the same time (if possible) suppressing the motherlode to prevent additional seed production.

Prioritized Management Recommendations (1 = highest priority)

The treatment suggestions outlined here are considered highly effective approaches to the specific infestations found. Other options may also be effective or preferable in certain scenarios.

1. Prevent new Invasions to the property. Require that equipment (e.g., logging, earth-moving) be cleaned before it comes to your property. This will remove seeds or plant fragments which could otherwise spread from the last job to your property. Also, be careful with fill, hay, mulch, compost and topsoil – all these can carry weed or invasive plant seeds. Monitor any areas where fill, hay, or mulch are applied for 1-2 years afterwards, to make sure nothing undesirable sprouts. Last but not least, be careful with your boots and personal gear. If you are returning to your property from another site that may be infested with invasive plants, be sure to clean your boots carefully and brush off your pant legs, etc. at the site before getting in your vehicle and driving home to your property! This will reduce the chance that seeds can hitchhike home to your forest.

2. Eradicate species in low abundance. [GOAL: Eliminate several species while it is still relatively simple to do so.] Autumn Olive, burning bush and Japanese knotweed are present at low levels, and therefore should be relatively simple to eradicate from the property. If mechanically removed, the debris should be disposed of properly (can be put in trash bags or brought to a facility to be burned). Left untreated, these will spread and become larger

infestations that will be much more difficult to control. Repeat manual cutting/pulling can work on isolated plants, if this is regularly followed up to cut back re-sprouts. Flag each plant so that it is easier to re-locate for follow-up. Herbicide treatments can also be effective, but due to the modest extent of the populations, may not be necessary if the landowner is diligent and thorough.

3. Suppress infestations of abundant and widespread species. [GOAL: Release native forest trees and understory plants from competition and improve wildlife habitat by suppressing growth, while recognizing that a significant seed bank exists and eradication is unlikely.] Dense and widespread infestations of common and glossy buckthorn, Asiatic bittersweet, shrubby honeysuckle and multiflora rose, threaten forest tree regeneration and reduce the wildlife habitat value of the forest understory.

It is unrealistic to expect to be able to find and kill all plants once this level of infestation is reached. However, an intense treatment can kill large plants, buying time for the forest to grow and develop relatively free from invasive plant pressure. Repeating the treatment once every 10-15 years, or when invasive shrubs again come to be noticeable, can help achieve forestry objectives while also improving conditions for wildlife.

Successful suppression of these widespread infestations will probably require herbicide treatment as some plants are large and the area infested is significant. We recommend hiring a licensed professional herbicide applicator. We suggest spraying below-chest height plants with a foliar application of glyphosate or triclopyr and using basal bark application for multiflora rose. Large shrubby honeysuckles do not respond well to basal bark and may require cut-stump treatment with follow-up to treat re-sprouts.

Notes on Using Herbicide

Successful suppression of widespread infestations will probably require herbicide treatment as some plants are large and the area infested is significant. We recommend hiring a licensed professional herbicide applicator. The method that uses the least amount of herbicide molecules is foliar treatment using low concentration herbicide solutions. For larger shrubs too tall to spray (the leader must be sprayed or the treatment will not succeed; it is also dangerous to spray over your head), a basal bark or cut stump treatment may be used, but this requires much more concentrated solution and can actually use more molecules of active ingredient than a dilute foliar spray. In general, foliar spray is the most effective method of treating shrubs and trees with small diameter stems.

Glyphosate or triclopyr are the most commonly used herbicides for invasive plant control; triclopyr works best in the spring and mid-summer when plants are actively growing, while glyphosate works best in mid-late summer and early fall when plants are sending materials down to the roots. Glyphosate and to a lesser extent triclopyr are available in forms you can purchase “over the counter” at a local garden center. Both herbicides are short-lived and not mobile in soil. As with any herbicide, proper technique is required to minimize collateral damage and ensure applicator safety.

Pay close attention to the herbicide concentrations listed in the product label, the required personal protective equipment, and the timing of application. Do not spray plants when they are flowering as beneficial insects may be visiting. Do not use herbicide during a drought as plants will not take up the product well and it will not be effective. Also, remember that with herbicide use, more is not always better – use the minimum recommended concentration first and see if it does the job. Note also that some herbicides may require the addition of a surfactant (often true for foliar applications). Read and follow all label instructions if using herbicide yourself; The Label is The Law. Note there are special restrictions on the use of herbicide in or near any wetland or waterbody. If you have any questions about herbicide use, contact the Maine Board of Pesticides Control: 207-287-2731; pesticides@maine.gov and online at http://www.maine.gov/dacf/php/pesticides/index.shtml

Five year suggested timeline

Year	Task	Time of Year	Responsible Party
2025	Mechanically remove as much glossy and common buckthorn, Japanese barberry, honeysuckles, Japanese knotweed and multiflora rose as possible. The small areas of bittersweet and burning bush should also be mechanically treated .	During growing season	Town/Volunteers
2026	Mechanically remove above mentioned species. Follow up with herbicide in previously mechanically treated areas as needed.	Growing Season	Town/Volunteers
2027	Monitor past treatments, flag new invasive populations and treat as needed	Growing Season	Town/Volunteers
2028	Monitor past treatments, flag new invasive populations and treat as needed	Growing Season	Town/Volunteers
2029	Monitor past treatments, flag new invasive populations and treat as needed	Growing Season	Town/Volunteers

Map

About the data shown on the map(s)

The map(s) included with this report show locations of invasive plants that were observed during the site visit. All these invasive plant data are stored in iMapinvasives ("iMap"), an online mapping program and database. More detailed information about each point or shape is available by getting an iMap account and logging in. Once logged in, navigate to your property and turn on data. In iMap points and shapes are called "presences." Shapes cover more area and hold more detailed information. For more information about iMap, or to request an account, visit www.imapinvasives.org.


Invasive Plant Survey Map
Town of York
Goodrich Park
York, ME
Tax Map 67, Lot 5
N
W
E
S
1 inch = 300 feet
RT. 1
Legend
Asiatic Bittersweet
Japanese Knotweed
Honeysuckle
Multiflora Rose
Autumn Olive
Black Locust
Japanese Barberry
Common Buckthorn
Glossy Buckthorn
Norway Maple
Burning Bush
Privet
Boundary Line
Goodrich Park Track 1
Japanese Knotweed, Multiflora Rose, Norway Maple, Black Locust
Common & Glossy Buckthorn
Produced 10/10/24 By:
Brian Reader, ME LPF #3538
Reader Forest Management LLC
55 Oak St., N. Waterboro, ME 04061
207-205-5917
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Glossy Buckthorn

Frangula alnus

2019 Status in Maine: Widespread. Severely Invasive.

Description: Perennial, deciduous, shrub or small tree, often multi-stemmed, can be single-trunked, to ~20' tall. Despite name, lacks thorns. **Leaves**: Simple, alternate, elliptical, 2-4" long, and sometimes glossy. **Flowers**: White-yellow, 5-petaled, small, in leaf axils, ~June in Maine (though some may bloom later). **Fruit**: Mature from green to red to purple-black in late summer/early fall, red and black fruit can co-occur on same plant. **Bark**: Mature twigs and stems have dark bark with raised, horizontal, light-colored lenticels. **Roots**: Red.

Native range: Europe, Northern Africa, Central Asia. **How arrived in U.S.**: As an ornamental, but also planted for wildlife and revegetation projects.

Reproduction: By seed. Fruits eaten and dispersed by birds and small mammals. Seeds viable at least two years.

Habitat: Forests, forest edges, many types wetlands. Moderately shade tolerant; more productive in sun. Tolerates wet to moist soils.

Glossy buckthorn roots, Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Similar native species: Cherries (*Prunus* spp.) have lenticels but scratched bark or twig has characteristic bitter almond smell and leaves are toothed. Alder-leaved buckthorn (*Rhamnus alnifolia*) has serrate leaf margins. Most dogwood shrubs (*Swida* spp.) have opposite leaves with wide bases, narrow tips, and paired veins that arch toward the tip.

Similar non-native species: Common buckthorn (*Rhamnus cathartica*) has sub-opposite, toothed leaves, and small woody spines at the ends of branches.

Documented Ecological Impacts

- Glossy buckthorn can negatively impact native plant and insect diversity and abundance, simplify vegetation structure, disrupt food webs, delay succession, and it is the alternate host for the fungus that causes oat rust disease and for the alfalfa mosaic virus. (Gucker, C.L. 2008. *Frangula alnus. In: Fire Effects Information System*. U.S. Department of Agriculture, Forest Service)
- Glossy buckthorn reduces native tree seedling density and diversity in white pine forests. Its extensive shallow root system may make it a strong below-ground competitor, and the increasing dominance of glossy buckthorn in New England pine forests may delay filling of canopy gaps. (Fagan, M.E. and D.R. Peart. 2004. *Impact of the invasive shrub glossy buckthorn (Rhamnus frangula L.) on juvenile recruitment by canopy trees*. Forest Ecology and Management 194:95-107)
- Birds and small mammals are major dispersal mechanisms for glossy buckthorn. The laxative effect of the fruits facilitates its spread. (Michigan Natural Features Inventory. 2012. Glossy buckthorn fact sheet. Michigan Department of Natural Resource)
- The Maine Natural Areas Program has documented glossy buckthorn in high quality wetlands, of concern because it can degrate wildlife habitat and the wetlands' natural benefits to humans.

Fact Sheets and Identification Links

- Maine Cooperative Extension Fact Sheet for Glossy and Common Buckthorn
- Outsmart Project, Massachusetts, Identification Video (1:50)
- Go Botany page for *Frangula alnus*

Control Methods

Small plants and seedlings may be pulled up by the roots when soil is moist; larger plants can be cut, but re-sprouting will occur.* Persistent cutting or mowing multiple times during the growing season over several years may kill the plant, but diligence is required (at least 3x/yr for 3 yrs is suggested). Mowing can prevent seedlings from establishing. Herbicides† are effective as foliar applications (triclopyr or glyphosate solution), cut-stump applications (glyphosate or triclopyr solution applied immediately after cutting except in early spring), or basal bark application (for stems <6" diameter, triclopyr ester in oil). ***Special rules apply to herbicide use in or near wetlands and water bodies - consult the Maine Board of Pesticides Control.***

* Correctly dispose of all plant parts ↲ † Follow all label directions when using herbicides ↲

Control Technique Video Demonstrations

- Coon Rapids, Minnesota (6:29), hand pulling, weed wrench, stump cut and herbicide
- Ontario (5:00), lever/wrench, girdling, proper disposal and restoration
- Forest Restorations, Minnesota (2:30), hand tools: lever/wrench

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

Glossy buckthorn fruit and leaves

Glossy buckthorn seedlings

Common Buckthorn

Rhamnus cathartica

2019 Status in Maine: Widespread. Severely Invasive.

Description: Perennial, deciduous shrub or small tree, often multi-stemmed, can be single-trunked, to ~25' tall. Despite name, lacks thorns; has small spines (up to ⅞" but usually < ½") at very end of most twigs.

Leaves: Simple, sub-opposite, some more nearly alternate or opposite, elliptical to almost round, toothed, with arching leaf veins, pointed tip, 1-3" long. **Flowers**: Small, white-green, 4-petaled, in clusters at leaf bases along stems, appear in ~June in Maine. **Fruit**: Round, ¼ - ½" wide, mature from green to a glossy black color in late summer. **Bark**: Mature plants have horizontal, lighter-colored lenticels on brownish-gray bark. Larger plants have orange inner bark.

Native range: Europe and Asia. **How arrived in U.S.**: As an ornamental; wind break and hedge plant.

Reproduction: By seed. Plants are usually dioecious; males do not produce fruit. Fruits are eaten by birds, mice, and deer. Seeds viable for 2-6 years.

Common buckthorn stem with flowers

Habitat: Forests, forest edges, old fields, open areas. Shade-tolerant; will germinate, grow, and reproduce under full canopy. Tolerant of moist to well-drained soil.

Similar native species: Alder-leaved buckthorn (*Rhamnus alnifolia*) has larger leaves that are opposite along the stem, 5-petaled flowers, and is a low shrub (<5') of wetlands.

Cherries (*Prunus* spp.) have lenticels but scratched bark or twig has characteristic bitter almond smell and leaves are consistently alternate. Winterberry holly (*Ilex verticillata*) has alternate leaves, bright red fruits, and prefers wet soils. None have orange inner bark.

Similar non-native species: Glossy buckthorn (*Frangula alnus*) leaves are entire, twig ends have no spines, can have both red and black fruit at once, and lacks orange inner bark. Apples (*Malus* spp.) have alternate leaves and leaf venation that is not as pronounced.

Documented Ecological Impacts

- Common buckthorn alters native plant community composition and structure, and the dense shade can interfere with establishment of native plants. (Zouhar, Kris. 2011. *Rhamnus cathartica, R. davurica. In: Fire Effects Information System*. U.S. Department of Agriculture, Forest Service)
- Common buckthorn alters ecosystem processes, including decomposition and nitrogen and carbon cycling. Leaf litter has high nitrogen levels and decomposes rapidly. This nitrogen is not available to other plants but is an attractive food source for non-native invasive earthworms, which further reduce the leaf litter layer and affect nutrient cycling. The bare soil conditions under common buckthorn are ideal for its own seed germination.(Knight, KS, et al. 2007. *Ecology and ecosystem impacts of common buckthorn (Rhamnus cathartica): a review*. Biol Invasions 9:925–937)
- A compound in common buckthorn is associated with malformation and mortality in amphibian species. (Sacerdote, A.B. and R. B. King. 2014. *Direct effects of an invasive European buckthorn metabolite on embryo survival and development in Xenopus laevis and Pseudacris triseriata*. Journal of Herpetology 48:51-58)
- The Maine Nautral Areas Program has documented common buckthorn invading rare floodplain forest natural communities in Maine, a top concern for conservation of biodiversity.

Fact Sheets and Identification Links

- Vermont Fact Sheet and Species Spotlight for Common Buckthorn
- Red Wing, Minnesota, Identification Video (3:45)
- Michigan DNR Best Control Practices for Common Buckthorn
- Go Botany page for *Rhamnus cathartica*

Common buckthorn stem showing leaf stipules

Control Methods

Small plants and seedlings may be pulled up by the roots when soil is moist; larger plants can be cut, but re-sprouting will occur.* Persistent cutting or mowing multiple times during the growing season over several years may kill the plant, but diligence is required (at least 3x/yr for 3 yrs is suggested). Mowing can prevent seedlings from establishing. Common buckthorn keeps its leaves late into the fall after native plants have dropped theirs. Foliar applications of glyphosate† aare very effective during this period. Herbicides can also be applied as cut-stump applications (glyphosate or triclopyr solution applied immediately after cutting except in early spring), or basal bark application (for stems <6" diameter, triclopyr ester in bark oil).

* Correctly dispose of all plant parts† Follow all label directions when using herbicides

Control Technique Video Demonstrations

- Coon Rapids, Minnesota (6:29), hand pulling, weed wrench, stump cut and herbicide
- Ontario (5:00), lever/wrench, girdling, proper disposal and restoration
- Forest Restorations, Minnesota (2:30), hand tools: lever/wrench

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

Japanese Barberry

Berberis thunbergii

2019 Status in Maine: Widespread. Severely Invasive.

Description: Perennial, deciduous shrub, up to 6' tall and wide, though typically smallery, usually very branched. Branches can root at the tip. Canes have a sharp, ~⅓" spine at each leaf axil. **Leaves**: Simple, alternate, entire, small (to ~ 1" long), rounded at far end and long-tapering to the base, occurring in groups at nodes along the twig. Leaf out in early spring. Turn red in fall (some palnted cultivars turn other colors). **Flowers**: Small (<½" wide), pale yellow, 6-petaled, hang below stem, bloom ~May in Maine. **Fruit**: Oblong red berry, ~⅓" long, hangs below stem, mature in late summer. **Roots**: Root interior is bright yellow.

Native range: Japan and Asia. **How arrived in U.S.**: Introduced as a replacement for common barberry, which is a host for stem wheat rust.

Reproduction: By seed. Birds (especially turkey and grouse) and mammals consume fruits and disperse seed. Seed longevity seems to be short, on order of 1-5 years.

Japanese barberry habit

Habitat: Most robust in full sun but will germinate, grow, and produce fruits in full shade. Found in forests, forest edges, old fields, as well as disturbed habitats. Tolerates dry to damp soils.

Similar native species: None. The combination of spines, oblong fruit hanging below branches, and unusual leaf size and shape are distinctive. No barberries are native to New England.

Similar non-native species: In fall, red color may be reminiscent of burning bush (*Euonymus alatus*), but that species has opposite leaves. European barberry (*Berberis vulgaris*) has toothed leaves and larger spines in groups of 2-3.

Fact Sheets and Identification Links

- Maine Cooperative Extension Fact Sheet for Japanese Barberry
- Rhode Island Natural History Identification Video (5:57)
- Go Botany page for *Berberis thunbergii*

Control Methods

Japanese barberry infestation at Wells Reserve

Small plants and seedlings may be pulled up by the roots when soil is moist (wear glovew!); larger plants can be cut, but re-sprouting will occur.* Persistent cutting or mowing multiple times during the growing season over several years may kill the plant, but diligence is required. Mowing can prevent seedlings from establishing. Flame-weeder (propane torch) can be effective if used in spring and followed-up during the summer to treat survivors. Herbicide† is highly effective as foliar applications (glyphosate or triclopyr solution) anytime the plant has leaves, including early in the spring before native species leaf out, thus reducing chance of collateral damage. Cut-stump applications are possible but not recommended due to numerous small stems. For plants too tall to folair spray, a combination of cutting in year 1 followed by foliar herbicide in year 2 is effective.

* Correctly dispose of all plant parts ↲ † Follow all label directions when using herbicides ↲

Control Technique Video Demonstrations

- Rhode Island Natural History (5:57), hand pulling, disposal, cutting tools and equipment, and in-depth herbicides
- Connecticut Agricultural Experiment Station (7:00), tick connection explained, brush cutter followed by herbicide, brush cutter followed by propane torch

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

Japanese barberry

Multiflora Rose

(Rambler rose)

Rosa multiflora

2019 Status in Maine: Widespread. Very Invasive.

Description: Perennial, deciduous shrub, up to 20' tall, usually very branched, with arching canes that can grow up other plants into low tree branches. Canes have stout, recurved thorns. Thornless varieties exist, but they are uncommon. **Leaves**: Pinnately compound, 5-11 leaflets, each ~1" long, with teeth. Petiole is fringed at the base (stipule) where it attaches to twig; no other rose in Maine has this character. **Flowers**: 5-parted, white to pale pink, ~1" wide, clustered at twig tips, blooms in June in Maine. **Fruit**: ~¼" round to oblong, red, rose "hips" clustered at twig tips.

Native range: Japan and Asia. **How arrived in U.S.**: Rootstock for ornamental roses; also promoted for erosion control and living fences.

Reproduction: By seed and rooting from twig tips. Birds and mammals eat fruits and disperse seed. Seeds viable in soil for up to 20 years.

Habitat: Reaches largest size and fruiting capacity in full sun but is somewhat shade-tolerant. Found in forest edges, old fields, as well as disturbed sites. Can occur in forest interior after disturbance such as timber harvest. Tolerant of dry to moist soils.

Multiflora rose hips. Chris Evans, University of Illinois, Bugwood.org

Similar native species: Native roses, but none of our native roses have a fringed base on the leaf petiole. Also, all native roses have pink flowers.

Similar non-native species: Rugosa rose (*Rosa rugosa*) has pink flowers to 2" wide and stems with prickles all around. Other horticultural roses escape infrequently and have fewer flowers, as well as other prickle arrangements.

Fact Sheets and Identification Links

- Maine Cooperative Extension Fact Sheet for Multiflora Rose
- Herndon Environmental Network, Virginia, Identification Video (5:30)
- Eno River Citizen Science, North Carolina, Identification Video (1:53)
- Go Botany page for *Rosa multiflora*

Control Methods

Small plants and seedlings may be pulled up by the roots when soil is moist (wear gloves!); larger plants can be cut, but re-sprouting will occur.* Persistent cutting or mowing multiple times during the growing season over several years may kill the plant, but diligence is required. Mowing can prevent seedlings from establishing. Goats will browse it but repeated, heavy damage over multiple years is required to kill established shrubs. Herbicides† are effective as foliar applications (glyphosate or triclopyr solution), cut-stump application (glyphosate or triclopyr solution applied immediately after cutting except in early spring), or basal bark application (glyphosate or triclopyr ester in bark oil).

Multiflora rose leaf stipules

* Correctly dispose of all plant parts ↲ † Follow all label directions when using herbicides ↲

Control Technique Video Demonstrations

- Herndon Environmental Network, Virginia (5:30), hand tools, disposal, herbicides, biological control, native alternatives.

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

Multiflora rose flowers

Multiflora rose habit

Shrubby Honeysuckles

Lonicera morrowii and *Lonicera tatarica*

2019 Status in Maine: Widespread. Severely Invasive.

Description: Perennial, deciduous shrub, up to ~10' tall and wide, usually very branched. **Leaves**: Simple, opposite, oval to egg-shaped, with blunt to pointed tip, 1-2" long, edges entire, may be hairy underneath. Leaves emerge early and are held late. **Flowers**: ~1" wide, paired in leaf axils, fragrant, tubular, creamy white, yellow, or pink. Bilaterally symmetrical, ½" long petals like "arms" extending in several directions. Appear in May in Maine. **Fruit**: Red, globular, juicy berry, to ~⅓" wide. Ripen by late summer in Maine. **Stems**: Larger plants have shaggy bark on lower stem. Larger twigs have hollow pith (tube in twig center, cut with sharp blade to see).

Native range: Asia. **How arrived in U.S.**: As an ornamental and for windbreaks.

Reproduction: By seed. Birds and mammals consume fruits and disperse seed. Seed longevity is not known but likely modest.

Lonicera morrowii flowers

Habitat: Reaches largest size in sun but highly shade-tolerant and capable of invading intact forest understory. Grows in forests, edges, old fields, and roadsides. Tolerant of dry to wet soils, nutrient-poor soils.

Similar native species: Fly-honeysuckle (*Lonicera canadensis*) and mountain honeysuckle (*Lonicera villosa*) both have similar oval, paired leaves, but have solid pith and tubular flowers with short triangular petals, and are much shorter in height. Bush-

honeysuckle (*Diervilla lonicera*) has solid pith and leaves with fine teeth which are long-pointed at the tip. All native honeysuckles (*Lonicera* spp.) have solid pith.

Similar non-native species: The invasive shrubby honeysuckles can be distinguished as follows: *L. morrowii* (white-yellow flowers) is finely hairy on leaf bottoms, *L. tatarica* (pink flowers) mostly lacks leaf hairs, and their hybrid *L.* x *bella* (light pink to white flowers) is somewhat hairy. Common snowberry (*Symphoricarpos albus*), another opposite-leaved shrub, has clusters of small pink flowers and forms large white berries.

Fact Sheets and Identification Links

- Vermont Fact Sheet for Shrubby Honeysuckles
- Vermont Invasive Honeysuckles vs Native Honeysuckles
- Friends of Acadia Identification Video (2:15)
- University of Wisconsin Identification Video (2:53)
- Go Botany page for *Lonicera morrowii* and for *Lonicera tatarica*

Lonicera morrowii leaf undersides

Control Methods

Small plants and seedlings may be pulled up by the roots when soil is moist; larger plants can be cut, but re-sprouting will occur.* Persistent cutting or burning the root crown multiple times during the growing season over several years may kill the plant, but diligence is required. Mowing can prevent seedlings from establishing. Goats and sheep will browse it but repeated, heavy damage over multiple years is required to kill established shrubs. Glyphosate† is the most effective herbicide for honeysuckles. They will hold on to their leaves into the fall which makes them susceptible to a foliar glyphosate application after many native species have dropped their leaves. For cut-stump application use glyphosate applied immediately after cutting except in early spring. Basal bark application is less effective on these species.

* Correctly dispose of all plant parts ↵ † Follow all label directions when using herbicides ↵

Control Technique Video Demonstrations

- Southern Illinois (4:50), cut stump herbicide treatment
- Hemdon Environmental Network, Virginia (1:00), cut stump and herbicide treatment for the backyard gardener (5:00)
- Acadia National Park (1:00), time lapse removal

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

Lonicera morrowii leaf buds in early spring

Lonicera morrowii in the forest understory

Lonicera morrowii early leaf out in the woods

Asiatic Bittersweet

Celastrus orbiculatus

2019 Status in Maine: Widespread. Severely Invasive.

Description: Perennial, deciduous, woody vine. Twines around mature trees and climbs high into the canopy, or sprawls over low-growing vegetation. **Leaves**: Simple, alternate, round to somewhat elliptical, 2-4" long, with wavy or weakly toothed edges, turning yellow in fall. Leaves abruptly pointed at tips or in sun more tapering toward pointed tip. **Flowers**: Green-yellow, 5-petaled, small, clustered in leaf axils, ~June. **Fruit**: Distinctive yellow aril covers orange-red seed. Fruits mature in fall and persist into winter. **Bark**: Light brown bark with raised light tan lenticels. **Roots**: bright orange.

Native range: Japan, China, Korea. **How arrived in U.S.**: As an ornamental.

Reproduction: By seed and vegetatively. Plants are usually dioecious; males do not produce fruit. Fruits are eaten and dispersed by birds and small mammals, or by careless disposal of bittersweet wreaths. Seeds are viable for about one year. New shoots may sprout from the root crown, and root fragments may also regenerate

Habitat: Forests, forest edges, woodlands, old fields, beaches, and dunes. Moderately shade tolerant; more productive in sun. Tolerates dry to moist soils.

Similar native species: American bittersweet (*C. scandens*), uncommon in Maine, is very similar byt only has flowers and fruit at vine tips, and usually has leaves twice as long as wide. Grape (*Vitis* spp.) will also grow into tree canopies. Grape bark has a peeling, shredded appearance and leaves are larger and palmately lobed.

Similar non-native species: None in our area.

Documented Ecological Impacts

- Changes in soil chemistry and leaf litter decomposition rates were seen in areas with Asiatic bittersweet compared to areas without it, across different site conditions and soil types. (Leicht-Young, et al. 2009. *The Amercan Midland Naturalist* 161 (2):219-231)
- Asiatic bittersweet interrupted old-field succession and resulted in a vine-dominated community rather than the expected forest vegetation. (Fike and Niering. 1999. *Journal of Vegetation Science* 10:483-492)
- Thickets of Asiatic bittersweet have the potential to harbor increased tick populations and other invasive species. Asiatic bittersweet can also serve as an alternate host for a bacterium that can transmit several crop diseases and tree diseases such as variegated chlorosis. (Fryer, J.L. 2011. *Celastrus orbiculatus.*

In: Fire Effects Information System. U.S. Department of Agriculture, Forest Service)

Fact Sheets and Identification Links

- Maine Cooperative Extension Fact Sheet for Asiatic Bittersweet
- Purdue University Cooperative Extension, Indiana, Identification Video (3:30)
- Go Botany page for Celastrus orbiculatus

Asiatic bittersweet unripe fruit

Control Methods

Very small plants and seedlings may be pulled up by the roots when soil is moist; larger vines can be cut, but agressive re-sprouting will occur.* Cut larger vines at chest height and also at ankle height to prevent new vines climbing up old ones (you can also treat the rooted part of the vine with cut-stem herbicide if desired). Persistent cutting alone, multiple times during the growing season over several years, may kill the plant, but diligence is required (at least 6x/yr for 3 yrs is suggested). Vines can be left to die in the canopy; pulling the vines from the trees can cause additional damage. Mowing can prevent seedlings from establishing. Herbicides† are effective as foliar applications (triclopyr solution, foliar glyphosate not as effective on this species), cut-stump applications (glyphosate or triclopyr solution applied immediately after cutting except during early spring), or basal bark application at any time of year (for stems < 6" diameter, triclopyr in bark oil). For dense thicket-type growth and very large infestations, cut or bush-hog all vines at mid-summer, then foliar spray triclopyr solution the following summer before flowering when plant height is lower and less herbicide is needed.

* Correctly dispose of all plant parts ↲ † Follow all label directions when using herbicides ↲

Japanese Knotweed

(Mexican bamboo)

Fallopia japonica

2019 Status in Maine: Widespread. Severely Invasive.

Description: Robust, very tall (to 10') perennial herb growing in dense stands. **Leaves**: Simple, alternate, entire, flat at base and abruptly tapering to pointed tip, ~6" long and 3-4" wide. **Flowers**: Small, white, abundant, in small spikes along stems, late summer in Maine (late July or August). **Fruits**: Small, (<½") with thin "wings" to enable wind dispersal. **Stem**: 1-2" diameter, round, hollow, with swollen nodes where leaves meet the stem. Dead, brown-red stalks persist through winter.

Native range: Eastern Asia. **How arrived in U.S.**: As an ornamental; also for fodder and erosion control.

Reproduction: Mostly by fragments of living stem or rhizome. Fertile seeds are sometimes produced, and all seed should be treated as potentially viable. Can sprout from any stem node or rhizome fragment.

Habitat: Open uplands, riverbanks, lakeshores, forest edges, disturbed areas within the forest. Extremely adaptable, tolerant of dry to seasonally saturated soils. Especially problematic along larger rivers where spring flooding transports live rhizomes downstream.

Japanese knotweed branch, note zig-zag shape of stem

Similar native species: None in our area.

Similar non-native species: Giant knotweed (*Fallopia sachalinensis*) is typically taller than Japanese knotweed (to 12') and has larger leaves with heart-shaped bases that taper more gradually toward the tip. The two species hybridize (*F.*x *boehemicum*), and can back-cross. Giant knotweed and the hybrid are also invasive.

Fact Sheets and Identification Links

- Maine Cooperative Extension Fact Sheet for Japanese Knotweed aka Mexican Bamboo
- Kings County, Wisconsin, link to several videos, the first is about identification
- Go Botany page for *Fallopia japonica*

Control Methods

New patches (<20 stems) can be cut repeatedly throughout the growing season*, as often as once/week, for several years. Larger patches cannot be controlled manually without a persistent, reliable labor source. Smothering with heavy black landscaping cloth or erosion control fabric can be successful but requires biweekly maintenance and must be repeated for up to 10 years; see references for sources of information on this method. Herbicides† are effective. For small patches, use stem injection or cut-drip applications of glyphosate*. Be sure to dispose of cut stems carefully. For large patches, cut or mow when plants are approximately 3' tall, then apply glyphosate as foliar spray when plants have re-grown to 3-5' tall later in the same growing season, or apply to uncut, mature stems just before flowering. Avoid application of foliar herbicide during flowering as bees are attracted to this species. Follow-up will be needed in almost all circumstances. ***Special rules apply to herbicide use in or near wetlands and water bodies - consult the Maine Board of Pesticides Control.***

* Correctly dispose of all plant parts ↲ † Follow all label directions when using herbicides ↲

Japanese knotweed plant, which is a single clone

Control Technique Video Demonstrations

- Kings County, Wisconsin (10:00 total), several videos explaining mechanical and chemical methods, including herbicide stem injection
- USFWS West Virginia Field Office (6:30), ecology of species, cutting to manage height for herbicide application

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

Japanese knotweed cut stem, showing hollow center and node

Japanese knotweed flowers

Japanese knotweed fruit

Burning Bush

(Winged euonymus)

Euonymus alatus

Status in Maine: Widespread. Severely Invasive.

Description: Perennial, deciduous shrub, broadly branched, up to ~15' tall, forms dense thickets. Stems frequently have corky "wings." **Leaves**: Simple, opposite, roughly elliptical, tapered at both ends, usually 1-2" long, finely toothed. Vivid red fall color. **Flowers**: Small (~¼"), 4-petaled, light yellow to light green, in small clusters coming off the twig on 1-3" stems. Blooms in late spring. **Fruit**: In early fall, a capsule of red-orange seed surrounded by two purple fleshy coverings which split open. Fruit may remain on plant into the winter.

Native range: Northeastern Asia. **How arrived in U.S.**: As an ornamental.

Reproduction: By seed and vegetatively. The fruit is eaten and dispersed by birds. There is currently no data on seed banking. Plants can expand vegetatively from root sprouts, especially if damaged.

Habitat: Forests, forest edges, old fields, open areas. Shade-tolerant, will germinate, grow, and reproduce under full canopy. Tolerant of moist to well-drained soil.

Burning bush in the woods along a stream

Similar native species: Several heath shrubs (blueberries, huckleberry) turn bright red in fall but these lack corky wings on branches and have alternate, usually entire leaves.

Similar non-native species: European spindle-tree (*E. europaeus*) has pink seed coverings over its reddish seeds, and has less oval, stouter leaves. Wintercreeper (*E. fortunei*) looks similar but is usually a climbing vine and is infrequently naturalized in New England. Japanese barberry can turn red in fall but has leaves in alternate nodes along the stem and sharp spines at the base of leaves. None of these have corky wings on the twigs like burning bush.

Documented Ecological Impacts

- Burning bush is fully shade tolerant and thus can easily spread into forests forming dense thickets that shade out native plants. (Winged Euonymus Fact Sheet. Morris Arboretum of the University of Pennsylvania. 2011)
- The dense shade and dense, tightly matted root system of burning bush makes it nearly impossible for other species to grow under it. (Burning Bush Fact Sheet, Skidmore College Crandall Park Trees)
- High white-tailed deer populations can promote establishment and spread of burning bush, as they preferentially feed on native vegetation. (Fryer, J.L. 2009. *Euonymus alatus. In: Fire Effects Information System*. U.S. Department of Agriculture, Forest Service)
- Spider abundance and diversity is greater in areas with native shrubby vegetation than in areas with burning bush. (Roberson, E., & Cipollini, D. (2015). *Effects of Winged Burning Bush (Euonymus alatus), Management Strategy, and White-tailed Deer (Odocoileus virginianus) on Spider Assemblages*. Wright State University, Biological Sciences Faculty Publications 557)

Fact Sheets and Identification Links

- Purdue University Extension, Indiana, Identification Video (2:30)
- Vermont Invasives Fact Sheet
- Go Botany page for *Euonymus alatus*

Control Methods

Small plants and seedlings may be pulled up by the roots when soil is moist; larger plants can be cut, but re-sprouting will occur.* Persistent cutting or mowing multiple times during the growing season over several years may kill the plant, but diligence is required. Mowing can prevent seedlings from establishing. Herbicides† are effective as foliar applications (glyphosate solution) or cut-stump applications (glyphosate or triclopyr solution applied immediately after cutting except in early spring).

* Correctly dispose of all plant parts ↲ † Follow all label directions when using herbicides ↲

Control Technique Video Demonstrations

- No appropriate control videos found

Burning bush stem with corky wings

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

Burning bush stem with flowers

Burning bush stem with flowers

Black Locust

Robinia pseudoacacia

2019 Status in Maine: Widespread. Severely Invasive.

Description: Medium to tall (40-100'), fast growing deciduous tree, native to several southeastern and a few midwestern states. Bark of young trees is smooth green but becomes deeply furrowed and dark brown with age. Large spines grow in pairs on truks and branches, especially on suckering stems. Wood is dense and prized for its durability. **Leaves**: Alternate, 8-12" long, pinnately compound with oval leaflets up to 1" wide and 2" long. Blue-green, with lighter undersides. **Flowers/Seeds**: Typical pea flower in shape, white (rarely pink), with a yellow smudge in the center, ~1" wide, and fragrant; in loose, 8" long racemes that hang in large numbers from the branches. Late flowering tree in Maine (mid-June). Fruits are pods, 2-4" long and ½" wide, each containing 4-8 seeds. Dried pods often remain on trees through winter.

Native range: Southeastern U.S., Pennsylvania to Georgia, west to Missouria (Appalachia; Ozark Plateau). **How it spread**: Planted for its durable lumber, also as an ornamental and for soil stabilization.

Black locust flowers, Robert Vidéki, Doronicum Kft., Bugwood.org

Reproduction: By seed and by suckers. Flowers require pollinators. Fragrance and nectar make for high rates of visitation. Seed bank longevity is likely high. Suckering can establish large clones.

Habitat: Prefers sun and well-drained soils. Common in disturbed sites and forest edges as well as roadsides, logging roads, hedgerows, and gravel pits. Its association with nitrogen fixing bacteria allow it to invade open canopy plant communities associated with sandy, nutrient poor soils.

Similar native species: None.

Similar non-native species: Honey locust (*Gleditsia triacanthos*) has bipinnately compound leaves and dense clusters of large, multi-pronged thorns on its branches and trunk. Siberian pea-shrub (*Caragana arborescens*) is much smaller with yellow flowers and no thorns.

Documented Ecological Impacts

- Black locust changes soil chemistry by fixing nitrogen and can result in a higher number and great cover of non-native and invasive species, even years after the black locust is removed. (Von Holle, B. et al. 2013. Ecosystem legacy of the

introduced N_2-fixing tree *Robinia pseudoacacia* in a coastal forest. Oecologia 172:915-924)

- Black locust lengthens the fire return time in globally rare pitch pine – scrub oak forests, causing the fire-adapted trees and understory plants to become shaded out. Other oak-dominated forest types are also considered vulnerable to black locust establishment. (Stone, K.R. 2009. *Robinia pseudoacacia* In: Fire Effects Information System, U.S. Department of Agriculture, Forest Service)
- Black locust is known to invade pitch pine woodlands and barren communities, all of which rare in Maine and some are rare globally. Since these are rare habitats, invasions in these areas are of top concern for conservation of biodiversity.

Fact Sheets and Identification Links

- Black locust fact sheet, University of California Weed Research and Information Center
- Black locust fact sheet, Michigan Natural Features Inventory
- Black locust fact sheet, Plant Conservation Alliance
- Black locust fact sheet, Natural Resources Conservation Service
- Black locust identification video (1:32)
- Go Botany page for Black locust

Black locust dried seed pods, Ohio State Weed Lab , The Ohio State University, Bugwood.org

Control Methods

Seedlings can be hand pulled; saplings can be pulled with a weed lever or cut, but re-sprouting will occur so follow-up will be necessary*. Larger trees can be cut, but will also re=sprout unless the cut stump is immediately treated with concentrated herbicide† (triclopyr or glyphosate). However, this is not effective in early spring due to sap rising. Repeated follow-up cutting can control re-sprouting from cut stumps, but persistence is required, sometimes for many years. Foliar spray (glyphosate or triclopyr) can also be effective for seedlings, short saplings, or re-sprouts, as long as you can reach the top of the plant. For stems up to about 4-6: diamter, basal bark treatment can be effective (spray lower 18-24" of trunk with triclopyr in penetrating oil). In urban or suburban areas where trees provide valuable shade, a phase-out approach with re-planting of native trees may be advisable.

* Correctly dispose of all plant parts ↲ † Follow all label directions when using herbicides ↲

Control Technique Links

- Penn State College of Agricultural Sciences, plant management guidelines.
- New Earth Landscaping video on control methods in turf settings (2:31)
- Wild Ones Louisville video on ecological impacts and control methods (3:14)
- The Woodland Steward video on ID and control in natural areas (14:40)

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

Paired thorns on black locust branch, Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Black locust tree in flower

Spines on black locust trunk

Autumn Olive

Elaeagnus umbellata

2019 Status in Maine: Localized. Very Invasive.

Description: Perennial, deciduous shrub, up to 10-15' tall and wide, usually very branched, with silvery and/or brown scales along twigs. Some plants bear 1"+ woody spines. **Leaves**: Simple, alternate, tapered at both ends (distal end may be blunt-tapered), 1-3" long, leaf edges entire but crinkly/wavy. Lower surface with slivery and brown scales (use hand lens or may be visible with naked eye). **Flowers**: Fragrant, white to cream to light yellow. Tubular base with 4 pointed petals. Occur in small clusters along twigs at leaf bases, May-June in Maine. **Fruit**: Roundish, <½" wide, can be slightly longer than wide, light colored scales on surface, start brown and mature through yellow, orange, to red around September.

Native range: China, Korea, Pakistan, and Japan. **How arrived in U.S.**: As an ornamental; also for food and cover for wildlife.

Reproduction: By seed. Birds and mammals consume fruits and disperse seed. Longevity in seed bank is not known. Plants are mostly dioecious but there are occasional exceptions with male and female flowers on the same plant.

Habitat: Commonly found in old fields, roadsides, forest edges, and fragmented forests. Not tolerant of wet soils. Prefers sun but will germinate in partial or full shade, though growth and reproduction may be slowed. Autumn olive is a nitrogen-fixing species and can therefore colonize very low-nutrient soils.

Autumn olive branch with flowers

Similar native species: Could be confused with shrubby willows, but those lack silvery and brown scales on twigs and leaves, and have very different flowers and fruit.

Similar non-native species: Shrubby honeysuckles also have round, red fruits, but leaves are opposite and more clearly oval (less tapered at ends) and lack scales. Russian olive is similar, with leaves silvery on upper and lower surfaces, but is not naturalized in Maine.

Documented Ecological Impacts

- Autumn olive can form dense thickets and change native habitat, including forest understory. Autumn olive's nirogen fixing abilities give it a competitive advantage over native species, especially in poor soils. (Munger, G.T. 2003. *Elaeagnus umbellata. In: Fire Effects Information System*. U.S. Department of Agriculture, Forest Service)
- Autumn olive produces prolific berries that are attractive to wildlife, however, these fruits are high in carbohydrates and low in fats and proteins. Autum olive fruit provides poor nutritional value to birds, which can slow migration and make birds vulnerable to other risks. (Autum Olive Fact Sheet. 2020. PennState Extension. and Autumn Olive Fact Sheet. 2021. Blue Ridge Partnership for Regional Invasive Species Management)
- Autumn olive leaves in wet depressions may increase production of West Nile virus carrying mosquitoes. (Gardner, A.M., et al. 2015. *Asymmetric effects of native and exotic invasive shrubs on ecology of the West Nile virus vector Culex pipiens (Diptera: Culicidae)* Parasite Vectors 8: 329)

Fact Sheets and Identification Links

- Michigan DNR Best Control Practices for Autumn Olive
- University of Maryland identification video (3:08)
- Vermont Dendrology identification video (2:57)
- University of Massachusetts identification video (1:41)
- Go Botany page for *Elaeagnus umbellata*

Control Methods

Small plants and seedlings may be pulled up by the roots when soil is moist; larger plants can be cut, but re-sprouting will occur*. Persistent cutting or burning of the the root crown multiple times during the growing season over several years may kill the plant, but diligence is required. Mowing can prevent seedlings from establishing. Goats and sheep will browse it but repeated, heavy damage over multiple years is required to kill established shrubs. Herbicides† are effective as foliar applications (glyphosate or triclopyr solution), cut-stump application (glyphosate or triclopyr solution applied immediately after cutting except in early spring), or basal bark application (triclopyr ester in bark oil).

* Correctly dispose of all plant parts ↲ † Follow all label directions when using herbicides ↲

Control Technique Video Demonstrations

- Herndon Environmental Network, Virginia (5:05), identification, ecology, mechanical removal, cut-stem herbicide application, native alternatives
- White Oak Nursery, New York (3:28), cut-stump/herbicide using forest clearing saw, *please note use of proper safety equipment including chaps, boots, gloves, and face shield*

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

Autumn olive leaves

Autumn olive growth habit in field

Autumn olive branch on left, Russian olive on right

Norway Maple

Acer platanoides

2019 Status in Maine: Widespread. Very Invasive.

Description: Extremely shade-tolerant, canopy-height tree, often planted. Cultivars include "Crimson King" which has purple-red color. **Leaves**: Opposite, 5-lobed with pointed tips but without other teeth. Broken petiole oozes white sap – distinguishes this species from native maples. Winter buds are reddish-green and rounded. **Flowers**: Tiny, yellow-green, high in canopy, early spring. **Fruit**: Typical maple samara but with a very wide angle. **Bark**: Furrowed, dark gray, not shaggy like native maples.

Native range: Europe, Eastern Asia. **How arrived in U.S.**: As an ornamental and shade tree.

Reproduction: By seeds which are dispersed short distances by wind or small mammals; occasional long-distance transport by water might be possible.

Habitat: Forests, forest edges, open areas. Extremely shade-tolerant, can germinate and compete under a closed canopy.

Similar native species: Norway maple could be mistaken for sugar maple (*A. saccharum*), but Norway maple has milky petiole sap, furrowed bark, and reddish-green, rounded buds, whereas sugar maple lacks milky sap, has shaggy bark, and has brown, pointed buds.

Similar non-native species: Amur maple (*Acer ginnala*) is a small tree, has much smaller, narrower leaf shape, and has toothed leaves.

Documented Ecological Impacts

- Norway maple inibits sapling growth of native forest species. (Galbraith-Kent, S.L. and S.N. Handel. 2008. *Invasive Acer platanoides inhibits native sapling growth in forest understorey communities*. Journal of Ecology 96:293-302)
- Norway maple out performs sugar maple and other native species regeneration, under itself and under sugar maple, partly because of its high shade tolerance and abundant seed crops. (Martin, P.H. 1999. *Norway maple (Acer platanoides) invasion of a natural forest stand: understory consequence and regeneration pattern*. Biological Invasions 1:215-222)
- Insect herbivory and fungal damage is less on Norway maple than native sugar maple, consistent with the enemy release hypothesis which states that invasive species are often more successful in their new range because they lack the enemies of their native range. (Cincotta et al. 2007. *Testing the enemy release hypothesis: a comparison of foliar insect herbivory of the exotic Norway maple*

(Acer platanoides L.) and the native sugar maple (A. saccharum L.). Biological Invasions 11:379-388)

Fact Sheets and Identification Links

- SUNY-ESF, New York, (2:30)
- Vermont Invasives Factsheet for Norway Maple
- Go Botany page for *Acer platanoides*

Norway maple leaves

Control Methods

Seedlings can be pulled up*; saplings can be pulled with a weed lever or cut, but re-sprouting will occur so follow-up will be necessary. Longevity of seeds is not known. Larger trees can be cut, but will also re-sprout unless the cut stump is immediately treated with concentrated herbicide‡ (glyphosate or triclopyr). However, this is not effective in early spring due to sap rising. Repeated follow-up cutting can control re-sprouting from cut stumps, but persistence is required, sometimes for many years. Foliar spray can also be effective for seedlings, short saplings, or re-sprouts (glyphosate or triclopyr), as long as you can reach the top of the plant. For stems up to about 4-6" diameter, the basal bark treatment can be effective any time of year(spray lower 18-24" of trunk with triclopyr with penetrating oil). In urban or suburban areas where trees provide valuable shade, a phase-out approach (removing trees gradally over time) with re-planting of native tree species may be advisable.

* Correctly dispose of all plant parts↲ † Follow all label directions when using herbicides↲

Control Technique Video Demonstrations

- No appropriate control videos found

Norway maple bark

Please email invasives.mnap@maine.gov if you have questions about invasive species in Maine

VERY INVASIVE

PRIVETS

Ligustrum obtusifolium, L. vulgare

Status in Maine: widespread

Description: Spreading multi-stemmed perennial shrub, up to 15' wide and tall; deciduous, semi-evergreen or evergreen. **Leaves:** Opposite, shiny green, oval to elliptical to lanceolate, entire, up to ~2" long, sometimes at right angles to stem. **Flowers/seeds:** Tubular, 4-lobed, ~⅓" long, white. Clusters of flowers form at the end of twigs and in leaf axils, and are usually a few inches long and cone shaped. Forms round fruits up to ¼", green turning blue-black. **Roots:** Shallow, fibrous, and spreading.

Native range: Japan, Europe, and North Africa. **How arrived in U.S.:** As an ornamental. Several species of *Ligustrum* have been developed into many ornamental varieties.

Reproduction: By seed. Mature shrubs can produce hundreds of fruits per year. Fruits persist into winter; birds and other wildlife disperse them. Privet does not form a lasting seed bank. Also spreads vegetatively by stump sprouts and suckering.

Habitat: Bottom-land forests and floodplains, forest edges, open woods, shrub lands, open stream systems, barrens, fence rows, and old fields. Can form dense thickets and monocultures.

Similar native species: Native shrub honeysuckles (*Lonicera canadensis, Diervilla lonicera*) have opposite leaves

PRIVETS

and branching, but have different flowers and fruits.

Similar non-native species: Burning bush (*Euonymus alatus*) shares privet's branch geometry, but has finely toothed pointed leaves, and usually has corky wings on smaller branches. Shrubby honeysuckles (*Lonicera* spp.) have opposite leaves but have paired flowers in the leaf axils.

Control methods: Small plants and seedlings may be pulled up by the roots when soil is moist; larger plants can be cut, but re-sprouting will occur. Persistent cutting or mowing multiple times during the growing season over several years may kill the plant, but diligence is required. Mowing can prevent seedlings from establishing. Goats and sheep will browse it but repeated, heavy damage over multiple years is required to kill established shrubs. Herbicides are effective as foliar applications (glyphosate or triclopyr solution), cut-stump application (glyphosate or triclopyr solution applied immediately after cutting except in early spring), or basal bark application any time of year (triclopyr ester in bark oil).

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