How to identify and control common invasive plants of Maine

Nancy Olmstead, Invasive Plant Biologist
Maine Natural Areas Program

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What is an invasive species?

An alien or non-native species whose introduction does or is likely to cause economic or environmental harm or harm to human health. (ME Dept. of Ag, 2011)

Japanese knotweed (aka bamboo) and burning bush (aka winged euonymus)

What harm do invasive plants do?

Primary ecological harm is to out-compete or impair native species, overrun habitats

Values and resources at risk

- Health of native species and the environment (e.g., biological diversity)
- Human & animal health & safety
- Recreation & aesthetic resources
- Forest crop production
- Commercial agriculture
- Property values
- Infrastructure

Learning to identify plants

- Just like all skills, plant ID requires practice.
- Seeing pictures and descriptions is only the first step.
- To learn these plants, seek them out in the field and check your ID.

General control principles

- Manual/mechanical control
  1. Disturb the soil as little as possible
  2. Properly dispose of plant parts: some plants can sprout from fragments
  3. If possible, remove before seed set; check later in season and remove any re-growth
  4. Be patient, it will probably take ***multiple*** years
  5. Some large infestations are not possible to control with manual/mechanical work alone; multiple methods can be a good approach
  6. Re-plant with natives

General control principles

- Herbicide control
  1. Avoid native plants, can use timing to help
  2. Use the lowest concentration that will do the job
  3. Remember it takes several days to see results
  4. Choose the right time of year and conditions
  5. You may need additives – read label
  6. The Label Is The Law
  7. Be patient, it may take multiple years
  8. Re-plant with natives
  9. **Today I'm discussing UPLAND (dry site) applications. Near wetlands or waterbodies, additional rules and considerations apply!**

General control principles

- Herbicide control
  - 3 main kinds of treatments:
    - Foliar spray
    - Basal bark
    - Cut-stem or cut-stump
  - mostly mention 2 active ingredients :
    - glyphosate
    - triclopyr

ID and control of 10 common, terrestrial, invasive plants

Asiatic bittersweet (*Celastrus orbiculatus*)

- Woody vine that climbs other plants
- Can strangle or weigh down a mature tree
- Favors open areas but will survive under forest canopy

Asiatic bittersweet (*Celastrus orbiculatus*)

- Red fall fruits with yellow covers
- Dense clusters of fruit all along the vine in the axils (where the leaf meets the stem)
- Leaves alternate, round to elliptical
- Leaves turn yellow in fall

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Asiatic bittersweet control

- Manual
  - **Cut** vines at knee height, leave them in trees so you don't damage the tree
  - For sprouts and low growth, **pull**, pull, pull or **mow**, mow, mow, 2x/month or as needed
  - **Repeat** as long as it keeps resprouting, may take years
- Herbicide
  - For large vines, **cut-stem** treatment with concentrated (25%) triclopyr, leave vines in trees; growing season after spring sap flow
  - For sprouts and low growth, **foliar spray** with 2% triclopyr anytime during active growing season

Autumn olive
Eleagnus umbellata

- Woody shrub can grow to ~15’ tall
- Found in open areas and forest edges
- Alternate leaves with tiny brown and/or silver scales
- Leaf edges are smooth

Autumn olive
Eleagnus umbellata

- Tiny scales also found on twigs
- Clusters of tubular, white-yellow flowers
- Fruits start out brown, mature to deep orange-red
- Russian olive is a sister species, much less common, very similar

Autumn olive control

- Manual (smaller plants)
  - **Pull/dig** small plants when soil is damp
  - Only effective with small plants/early in an invasion
  - Mowing/cutting stimulates sprouting so would have to be done *repeatedly* or in combination with herbicide
- Herbicide (larger plants)
  - **Basal-bark** treatment with 20% triclopyr, ester formulation, with penetrating oil; year-round but must have access to dry, bottom 18”
  - **Cut-stem** treatment with 20% triclopyr; growing season after spring sap flow

Common buckthorn (*Rhamnus cathartica*)

- Upright shrub or small tree (to 25’)
- Does fine in full shade
- ~1/4 in. “thorns” at the end of twigs – easy to miss, not like rose or raspberry thorns
- Bark of larger buckthorns has scaly appearance similar to black cherry

Common buckthorn (*Rhamnus cathartica*)

- Opposite to subopposite to alternate leaves
- Leaves egg-shaped with pointed tips
- Toothed leaf edges
- Clusters of little green flowers
- Fruits mature to black color

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Common buckthorn control

- Manual
  - **Pull/dig** small plants when soil is damp
  - Only effective with small plants/early in an invasion
  - Mowing/cutting stimulates sprouting so would have to be done *repeatedly* or **in combination** with herbicide
- Herbicide
  - **Basal-bark** treatment with 20% triclopyr ester formulation, with penetrating oil; year-round but must have access to dry, bottom 18”
  - **Cut-stem** treatment with 20% triclopyr ester; growing season after spring sap flow

Glossy false buckthorn (*Frangula alnus*)

- Shrub or small tree (to 20')
- Can grow in uplands or wetlands, in shade or sun
- Twigs/bark with small, white, horizontal marks
- Alternate leaves
- Smooth leaf edges
- Leaf veins mostly parallel to each other

Glossy false buckthorn (*Frangula alnus*)

- Leaves egg-shaped with pointed tips, widest above the middle
- Leaves can be glossy or not
- Inconspicuous white flowers
- Fruits are first green, then red, mature to purple-black

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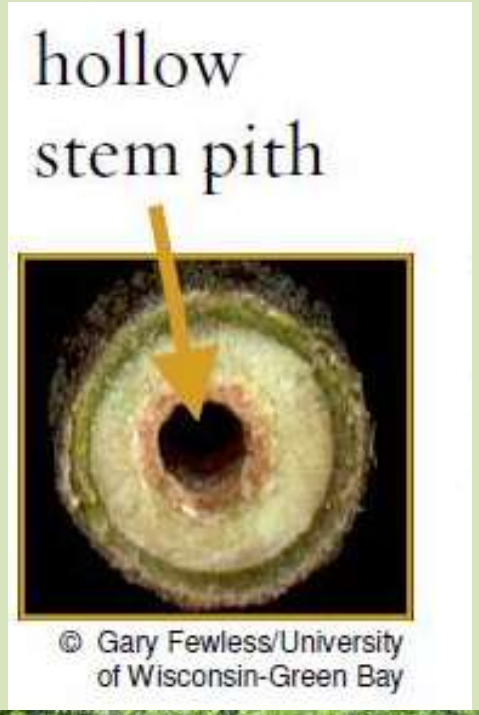
Glossy buckthorn control

- Manual
  - **Pull/dig** small plants when soil is damp
  - Only effective with small plants/early in an invasion/in looser soils
  - Mowing/cutting stimulates sprouting so would have to be done *repeatedly* or in combination with herbicide
  - **Girdle** with ~2" tall cut completely around stem (remove bark)
- Herbicide
  - For stems <4-6" in diameter, **basal-bark** treatment with 20% triclopyr ester formulation, with penetrating oil; year-round but must have access to dry, bottom 18"
  - **Cut-stem** treatment with 20% triclopyr ester; growing season after spring sap flow

Honeysuckle shrubs
Lonicera morrowii, L. tatarica

- Arching shrubs of open to shaded areas
- Older shrubs can reach 10’ tall and 10’ wide
- Bark on larger trucks peels in strips
- Hollow stem pith distinguishes invasive spp. from our one native species



Honeysuckle shrubs *Lonicera morrowii, L. tatarica*

- Leaves longer than wide, smooth edges
- Leaves usually hairy, at least on underside
- Flowers in pairs usually yellow, occasional shrubs with pink flowers
- Fruit mature to juicy red berries

Shrubby honeysuckle control

- Manual
  - **Pull/dig** small plants when soil is damp
  - Only effective with small plants/early in an invasion/in looser soils
  - Mowing/cutting stimulates sprouting so would have to be done *repeatedly* or in combination with herbicide
- Herbicide
  - **Cut-stem** treatment with 25% glyphosate or triclopyr; late in growing season
  - For smaller, smooth-trunked ones, **basal bark** spray with 12% triclopyr ester with oil; anytime except spring sap flow
  - **Foliar spray** with 2% glyphosate, add surfactant if not included; do in fall to avoid natives and maximize effectiveness

Japanese barberry *Berberis thunbergii*

- Arching shrub of forests and edges
- Grows well in shade
- Can grow to 5’ tall and just as wide
- Can tolerate damp soil
- Densely thorny twigs (“barbs”)

Japanese barberry
Berberis thunbergii

- Small, alternate leaves
- Small, oblong, bright red fruits hang below the twigs

Japanese barberry control

- Manual
  - **Pull/dig** small-medium plants when soil is damp (cut as much of root as possible)
  - Mowing/cutting stimulates sprouting so would have to be done *repeatedly* or in combination with herbicide or torch
  - **Propane torch!** in combination with follow-up treatment. See UConn Coop Ext. website FMI
- Herbicide
  - **Cut-stem** treatment with 25% glyphosate or triclopyr; late in season
  - **Foliar spray** with 2% glyphosate, add surfactant if not included; after leaf out but before fruiting – can do early since it leafs out early

Japanese knotweed (*Fallopia japonica*)

- Technically an “herb” but has tough stems
- Thrives in open areas, also in floodplain forests and in partial shade
- Can tolerate wet soil
- Grows in dense clumps connected by rhizomes

Japanese knotweed (*Fallopia japonica*)

- White flowers are rarely fertile
- Mostly spreads by fragments – can sprout from any node ☹
- Leaves alternate
- Leaves wider than long, with smooth edges

Japanese knotweed control

- Manual
  - **Pull/dig** *not recommended* except for isolated patches of <5 stems; must repeat
  - **Cutting** is only effective if done *repeatedly* (monthly for years) on *small* patches, or in combination with herbicide
  - **Disposal**: cuttings can sprout from any node; should be landfilled in bags or burned once dry, NEVER compost!!

- Herbicide
  - **Combo with cutting**: a)after cutting to ground twice in one growing season, allow to grow waist-high, **foliar spray** with 2% glyphosate or triclopyr
    b) **Cut stem** between lowest nodes, spray immediately with 25% glyphosate
  - Remember that if you can't spray the top, herbicide will not kill it

X Mowing* X

Multiflora rose
Rosa multiflora

- Arching shrub
- Grows in open areas to partial shade
- Typical, rose-like thorns along twigs
- Can even start to climb/sprawl on trees and shrubs

Multiflora rose
Rosa multiflora

- Opposite, compound leaves
- Leaf base has fringed petiole where it meets the stem – distinguishes it from all native roses
- Many small, white flowers clustered at or near the twig tips
- Small, red, rose “hips”

Multiflora rose control

- Manual
  - **Cut/pull/dig** small-medium plants when soil is damp (get as much of root as possible)
  - Not effective by itself for larger infestations or large plants
  - **Repeated mowing** can suppress large population but will not likely kill it
- Herbicide
  - **Foliar spray** with 2% glyphosate or triclopyr, using surfactant; after leaf out but before fruiting
  - **Cut-stem** treatment is difficult due to thorny canes, but will respond to 25% glyphosate or triclopyr
  - Combo method: **Cut/mow** to ground early in season, then foliar spray re-sprouts with 2% glyphosate or triclopyr

Winged euonymous
aka burning bush
Euonymous alatus

- Branching shrub can grow to over 10’ tall
- Tolerates sun and full shade
- Moist to wet soils
- Corky “wings” on larger twigs

Winged euonymous
aka burning bush
Euonymous alatus

- Opposite leaves
- Leaves taper at both ends
- Foliage turns bright red in fall
- Small, inconspicuous flowers
- Purple capsule splits open - red fruit

Winged euonymus/burning bush control

- Manual
  - **Cut/pull/dig** small-medium plants when soil is damp (get as much of root as possible)
  - For large plants, use weed wrench, then monitor and cut re-growth
- Herbicide
  - **Foliar spray** with 2% glyphosate, using surfactant; after leaf out but before fruiting
  - **Cut-stem** treatment for shrubs too large for foliar spray; 25% glyphosate or triclopyr
  - **Basal bark** treatment using 25% triclopyr in oil; growing season after spring sap flow

Norway maple
Acer platanoides

- Canopy tree
- Leaves opposite
- Leaves slightly different shape than native maples
- Broken leaf stem has white, milky sap, unlike native maples

Norway maple
Acer platanoides

- Bark less shaggy than native maples, more regular ridges
- Fruits typical maple samaras, but with very wide angle
- Saplings tolerate dense shade

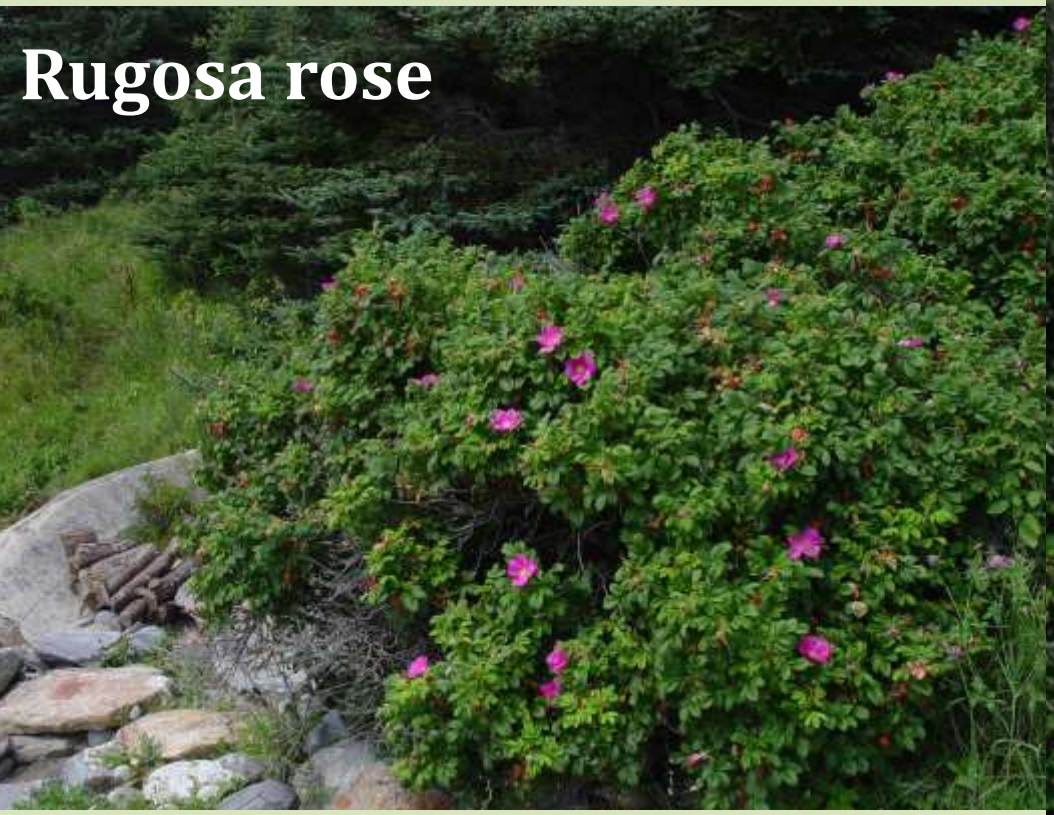

Norway maple bark


Sugar maple bark

Norway maple control

- Manual
  - **Cut/pull/dig** saplings when soil is damp (get as much of root as possible)
  - **Cut** larger trees anytime; monitor and cut (or foliar spray) re-sprouts
  - **Girdle** larger trees and apply 25-40% triclopyr amine to the cambium
- Herbicide
  - For re-sprouts after cutting, **foliar spray** with 2% glyphosate, using surfactant
  - For small trees (<6" diameter) with thin bark, **basal bark** treatment using 20% triclopyr ester in oil; growing season after spring sap flow
  - **Cut-stump** treatment with 25% glyphosate

Other terrestrial invasive plants



Common wetland invasive plants

These require additional permits/exemptions/variances to treat. Please consult the BPC, DEP, and/or town CEO for more info.

Purple loosestrife and common reed (aka Phragmites)

Species to crush (new/not yet widespread) and habitats where they are found

Upland forests and forest edges
Garlic mustard
Japanese stiltgrass*

Disturbed areas, fields
Black swallowwort
Porcelainberry
Japanese honeysuckle
Mile-a-minute weed*
Tree-of-heaven
Kudzu*

Wetlands
Perennial pepperweed
Ornamental jewelweed
Yellow iris

***Not known from Maine**

A new online mapping tool for invasive species - iMapInvasives

- Map locations of invasive plants using your smartphone or on your computer
- See distribution data statewide
- Keep track of control efforts
- Free user accounts
- Easy to use
- www.imapinvasives.org/meimi
  or search for Maine iMapInvasives

Websites for ID

- GoBotany
- About My Woods, What's in My Woods section

Websites for Control

- Michigan Dept. of Natural Resources – "Invasive Species Best Control Practices"
- US Forest Service PDF "*A Management Guide for Invasive Plants in Southern Forests*"

Acknowledgements and references

These plus

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QUESTIONS?

Nancy Olmstead

Maine Natural Areas Program

Nancy.olmstead@maine.gov

287-8046

Rugosa rose aka salt-spray rose
Rosa rugosa

Wild parsnip
Pastinaca sativa

Biennial; photo-toxic

Giant Hogweed
(*Heracleum mantagazzianum)*

Maine Natural Areas Program, 2014

Cow Parsnip
(*Heracleum maximum)*

Porcelain berry (*Ampelopsis brevipedunculata*)

Mile-a-minute weed (*Persicaria perfoliata*)

Garlic mustard
Alliaria petiolata

Biennial – careful monitoring needed

Black swallowwort & pale swallowwort
Cynanchum louiseae & *C. rossicum*

Perennial or tall pepperweed
Lepidium latifolium

Ornamental jewelweed, Himalayan balsam

Impatiens glandulifera