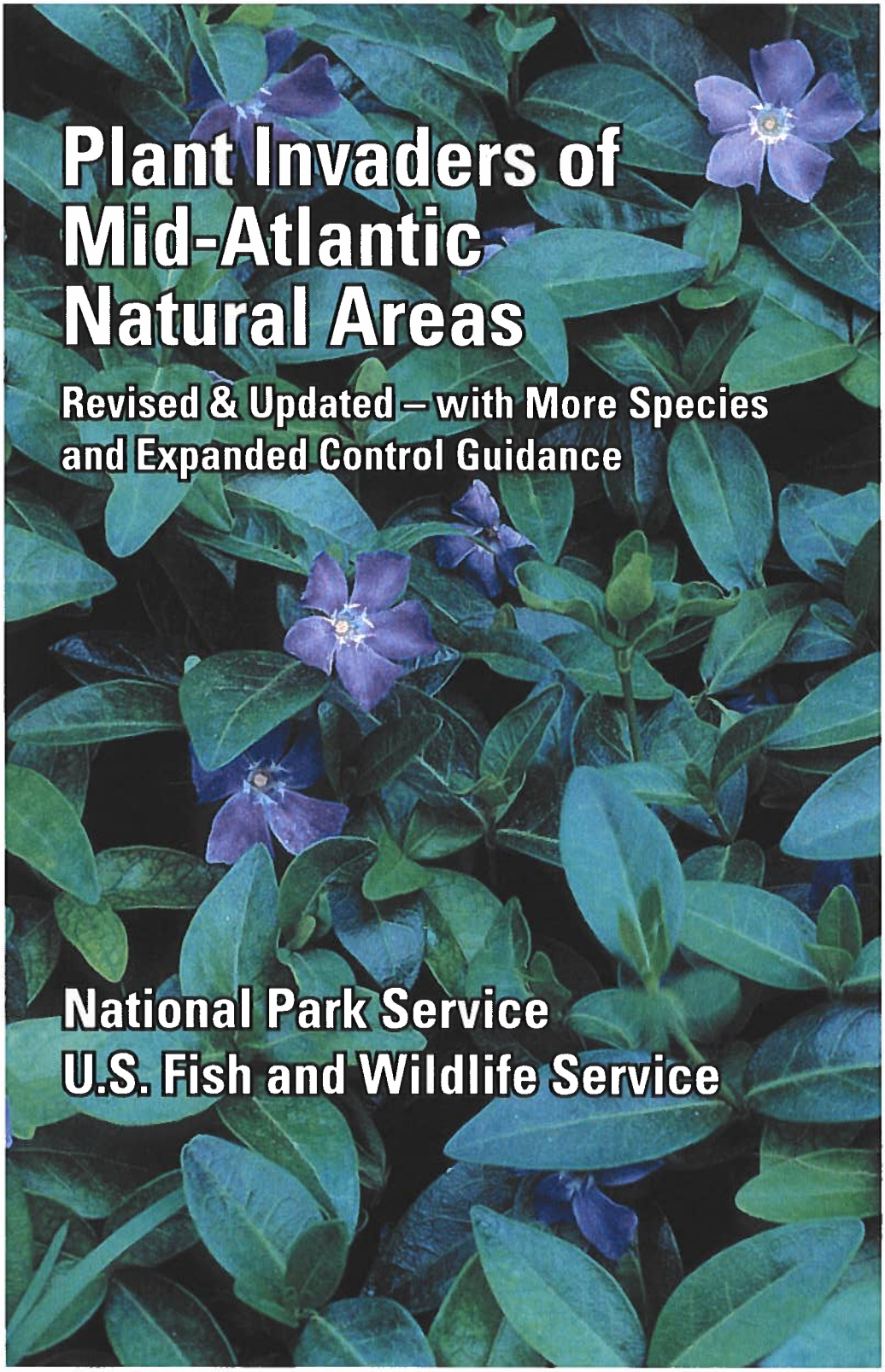

Plant Invaders of Mid-Atlantic Natural Areas

Revised & Updated – with More Species and Expanded Control Guidance

National Park Service
U.S. Fish and Wildlife Service

Distribution and Habitat
Wineberry is found from New England and eastern Canada to North Carolina and west to Michigan and Tennessee. It occurs along forest, field, stream and wetland edges and in open woods, preferring moist habitats.

Ecological Threat
Wineberry forms dense shady thickets that displace native plants and significantly alter habitat structure.

Description and Biology
- Plant: multi-stemmed shrub with spiny stems densely covered with reddish, glandular hairs, also on flowering stems and buds.
- Leaves: alternate, divided into three leaflets with toothed margins, terminal leaflet largest; undersides conspicuously white.
- Flowers, fruits and seeds: flowers with five white petals occur in springtime; bright red edible berries produced in early summer.
- Spreads: by seed that is consumed and dispersed by birds and mammals (including humans) and by vegetative means when new plants grow from the tips of canes that touch the ground and new plants sprout from root buds.

Prevention and Control
Do not plant wineberry. It can be controlled through mechanical means or by treating the canes with a systemic herbicide like glyphosate or triclopyr (see Control Options).

Native Alternatives
Native blackberries and non-invading cultivated raspberry would be good alternatives.

Winged Burning Bush

Euonymus alatus (Thunb.) Sieb.
Bittersweet Family (Celastraceae)

Origin: Northeastern Asia, Japan and Central China

Background
Winged burning bush, also known as winged wahoo and winged euonymus, was introduced to the U.S. around 1860 as an ornamental plant for use in landscaping. Despite its invasive nature, it remains very popular and is widely sold for its hardiness, winged stems and intense red foliage

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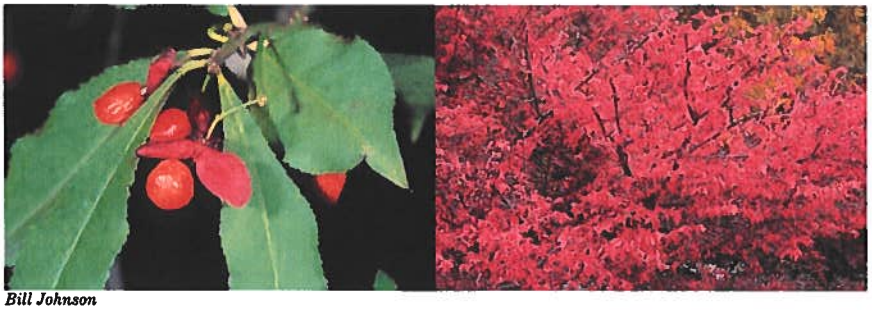

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in the fall. It is ubiquitous and can be found planted along roadways, at commercial and industrial sites and in park and residential landscapes.

Distribution and Habitat

In the United States, winged burning bush is found from New England to northern Florida and the Gulf Coast and also in Illinois.

Ecological Threat

It threatens a variety of habitats including forests, coastal scrublands and prairies where it forms dense thickets, displacing many native woody and herbaceous plant species. Hundreds of seedlings are often found below the parent plant in what is termed a "seed shadow."

Description and Biology

- Plant: multiple stemmed, angular branching shrub with conspicuously winged stems, normally 5-10 ft. high but mature plants can grow to 20 ft.
- Leaves: deciduous, dark green, in pairs along stem, turn brilliant red-purple in autumn.
- Flowers, fruits and seeds: inconspicuous, greenish flowers occur in late spring and red-purple fruits mature during summer.
- Spreads: expands locally through vegetative reproduction and to new areas through bird dispersal of seeds.
- Look-alikes: may be confused with other species of euonymus including our native strawberry bush (*Euonymus americana*), also called 'hearts-a-bustin,' which has green non-winged stems. Saplings of native sweetgum (*Liquidambar styraciflua*) with winged stems may be mistaken for winged burning bush.

Prevention and Control

Do not plant winged burning bush. Manual, mechanical and chemical means are available to control established plantings. Seedlings can be pulled by hand. Shrubs can be repeatedly cut to the ground to control re-sprouts, or cut and treated with systemic herbicides like glyphosate and triclopyr (see Control Options).

CONTROL OPTIONS

GENERAL GUIDANCE FOR MOST SHRUBS

Use pesticides wisely: always read the entire pesticide label carefully, follow all mixing and application instructions and wear all recommended personal protective gear and clothing. Contact your state department of agriculture for any additional pesticide use requirements, restrictions or recommendations. Notice: mention of a trade name does not constitute the endorsement of the product by authors, agencies or organizations involved in the production of this publication.

Chemical

Two of the more widely used systemic herbicides are glyphosate and triclopyr. Systemic herbicides are absorbed by plant tissues and carried to the roots causing the entire plant to die usually within about a week. Glyphosate is a non-selective herbicide that may kill or harm any plants that come in contact with the spray. It carries a Caution signal word and requires long-sleeved shirt, long pants, shoes and socks during application. Glyphosate products referred to in this publication are sold under a variety of brand names (Accord®, Rodeo®, Roundup Pro® Concentrate) and in three concentrations (41.0, 50.2 and 53.8% active ingredient). Other glyphosate products sold at home improvement stores may be too dilute to obtain effective control.

Triclopyr is a selective herbicide that affects only broadleaf plants (e.g., forbs, shrubs and trees) and can be used in grasslands or areas where desirable grasses are growing under or around targeted woody or broad-leaved invasives. Use of triclopyr in areas where soils are permeable, particularly where the water table is shallow, can result in groundwater contamination. Triclopyr comes in two forms – triclopyr amine (e.g., Garlon® 3A, Brush-B-Gone®, Brush Killer®) and triclopyr ester (e.g., Garlon® 4, Pathfinder®, and Vinex®). They are very different products with very different specific uses, hazards and precautions. Triclopyr amine mixes with water and can be used near water without posing a threat to aquatic organisms and can be used as a cut stem treatment at a 50% rate or a foliar treatment at 5% rate. It is not effective for basal bark treatments. However, the amine form of triclopyr carries a Danger signal word due to its corrosive properties which, in concentrated form, can cause irreversible eye damage. For this reason, it should only be used by trained and certified applicators who are familiar with this hazard and know the precautions that need to be taken when using it.

The ester form of triclopyr (e.g., Garlon® 4) carries a Warning signal word for the potential to cause skin and eye irritation but is not known to cause irreparable eye damage. Because it is toxic to aquatic invertebrates, it cannot be used near water or in wet soils. Garlon® 4 can be used for foliar, cut stem and basal bark applications. Due to the high potential for volatilization and offsite drift, *triclopyr should not be used when the temperature is above 85°F.* Drift can result in kill of non-target trees and other woody vegetation. It is imperative that protective eyewear and chemical resistant gloves be worn in addition to long-sleeve shirt, long pants, shoes and socks, during mixing and application. Always read the entire label before using any pesticide.

Basal Bark Method: This method is effective throughout the year as long as the ground is not frozen. While reducing the total amount of herbicide mixture applied to the environment, it requires a much more concentrated mix than that used for foliar applications. Prepare a mixture of 25% triclopyr plus 75% horticultural oil and apply to the basal parts of the shrub to a height of about a foot from the ground. Thorough wetting is necessary for good control; spray until run-off is noticeable at the ground line. A dye added to the mixture will help keep track of treated plants.

Cut Stem Method: This method and basal bark should be considered when treating individual plants or when target plants are mixed in with desirable species which would preclude foliar treatment. It is usually effective as long as the ground is not frozen. As with basal bark treatment, it reduces the total amount of herbicide mixture applied to the environment but requires use of a much more concentrated mix than that used for foliar applications. Cut stems at or near ground level and immediately apply a 25% solution of glyphosate or triclopyr mixed in water to the cut stump surface, making sure to cover the entire surface. As with basal bark, a dye added to the mix will help keep track of treated plants.

Foliar: Because this method involves applying herbicide mix to foliage (leaves), it should be considered mostly for large infestations where the risk to non-target species is minimal. The best time to treat is late fall or early spring when targeted plants are shifting resources toward the roots and many native species are dormant. Foliar application can be done almost anytime but air temperature should be above 65°F to ensure absorption of the herbicide mix. To allow ample drying time applications should be made when rain is unlikely for about 12 hours after application and leaves should be dry prior to treatment. Wind speed should be below 8-10 mph to avoid off-site drift. Apply a 2% solution of glyphosate or triclopyr and water plus a 0.5% non-ionic surfactant to thoroughly wet all leaves. Mix should not

be dripping off leaves. Use a low pressure and coarse spray pattern to reduce spray-drift damage to non-target species. To avoid drift, triclopyr and glyphosate should be applied when winds are below about 8 mph. If desirable trees are nearby, a no-spray buffer area should be established to protect non-target plants.

Manual

Hand pulling is an effective method for many shrubs when in the young seedling stage, after which a tool or other method is often needed to remove strong roots. Plants should be pulled as soon as they are large enough to grasp but before they produce seeds. Seedlings are best pulled after a rain when the soil is loose. Larger stems, up to 6 cm (2½ in), can be removed using a Weed Wrench® or similar uprooting tool. For most species, the entire root should be removed to avoid resprouting.

Mechanical

Cutting or mowing is appropriate for small infestations or environmentally sensitive areas where herbicides cannot be used. It is not generally recommended for plants that resprout heavily unless cutting can be repeated and plants monitored until the targeted invasive has been eliminated. Ideally, cutting is most effective when combined with an application of herbicide to cut surfaces. Stems should be cut at least once and preferably multiple times per growing season and as close to ground level as possible.

AMUR HONEYSUCKLE

See General Guidance.

AUTUMN OLIVE

See General Guidance.

Basal bark. Seedlings, saplings, and mature trees can be killed using triclopyr ester (e.g. Garlon® 4) as a basal bark treatment which is very effective. This method involves spraying herbicide directly onto the lower 2 feet of each stem with triclopyr (e.g. Garlon® 4 or Remedy™). It minimizes soil disturbance and maintains other desirable vegetation. Applications should completely wet the entire circumference of all stems or clumps of stems, but not to the point of run-off. For saplings, apply Garlon® 4 as a 20 percent solution (2.5 qts. per 3 gal. water) in horticultural oil with a penetrant (check with herbicide distributor) to young bark as a basal spray.

Cut stump. First cut the stem/trunk as close to the ground as possible, then immediately (within a few minutes) brush-on or squirt a 50% Garlon® 4 onto the cambium layer of the cut-stump. This can also be done as a hack and squirt type application.