

LOWER HUDSON PARTNERSHIP FOR REGIONAL INVASIVE SPECIES MANAGEMENT**BEST MANAGEMENT PRACTICES**

Japanese barberry

Prohibited Invasive Species (6 NYCRR § 575.3(d)(2)(lx))

Japanese barberry (crimson pygmy)

Berberis thunbergii D.C. (*Berberis thunbergii* var. *atropurpurea* (Chenault), *Berberis thunbergii* var. *maximowiczii*, *Berberis thunbergii* var. *minor*)

REGIONAL STATUS

Japanese barberry is Tier 4 – Widespread in the Lower Hudson PRISM Region.

State law prohibits transporting, buying, selling or offering invasive Japanese barberry for sale or distributing plants, plant parts or seeds.

This species is common and abundant throughout most of the Hudson Valley.

Lower Hudson PRISM recommends that eradication from the PRISM is not feasible and focus should be on localized management to contain, exclude, or suppress to protect high-priority resources like rare species or recreation assets.

INVASIVENESS

New York State has assessed this species' invasiveness as VH-Very High.

IMPACTS OF THIS SPECIES

Due to Japanese barberry's prolific seed production, this invasive shrub rapidly achieves understory dominance. More than simply homogenizing the subcanopy layer, however, this Chinese and Japanese native has wide ranging effects on natural processes such as nitrogen soil accumulation and leaf litter decomposition. Studies suggest Japanese barberry promulgates a range of novel environmental conditions that appear to favor its own establishment ⁽²⁾. In addition, Japanese barberry is a known harbinger of ticks, creating a health hazard for humans and all other susceptible host species in dense infestations. ⁽³⁾

BACKGROUND INFORMATION**History of Introduction**

Introduced via the horticultural trade in the late 1800s, Japanese barberry appears to have become naturalized at the turn of the 20th century, after it escaped from intentional plantings in gardens. ⁽⁴⁾ The species is now reported as extant in 38 states. ⁽⁵⁾

Description

- Japanese barberry is a member of the Barberry family (Berberidaceae).
- A deciduous, mounding shrub Japanese barberry is most easily identified by its small, narrowly oval leaves and conspicuous spines. In the fall the invasives' persistent, bright red fruits hanging along the length of its stems are a good species identifier. ⁽⁴⁾
- **Leaves:**
 - Leaves are untoothed, dark green above, paler below and arranged in small rosettes along the length of the shrub's arching stems. A single, very sharp spine sits beneath each cluster of leaves. ⁽⁶⁾
- **Flowers:**
 - Pale yellow to whitish flowers emerge in late April or May in the Hudson Valley and are generally borne in drooping clusters along the length of the stem — although they can occur singly. ⁽⁶⁾
- **Fruit/Seed:**
 - Japanese barberry's fruit are long, bright red, oval berries 0.3-0.5 inches long. ⁽⁶⁾

Reproduction and Spread

- Japanese barberry is capable of copious seed production, even where light levels are low. ⁽⁸⁾ In some reports, over twelve thousand seeds can occur on a single plant ⁽⁹⁾ with upwards of 90% of these seeds germinating. ⁽⁶⁾ Although the majority of seeds fall within 10 meters of the parent plant, turkey, grouse and other woodland birds have been observed to eat Japanese barberry's fruit, suggesting the possibility of long distance dispersal is relatively common. ⁽⁸⁾ This species also spreads locally via rhizome sprouts and layering. ⁽¹⁰⁾
- Vectors: birds, small mammals, horticultural trade ⁽⁴⁾

Habitat

- Japanese barberry is tolerant of a variety of soil types in full sun to shade. Although the species is strongly associated with anthropogenic disturbance this invasive is capable of establishing under a closed canopy. In the Hudson Valley, Japanese barberry is commonly seen in waste places such as roadsides, shrub thickets, and disturbed woodlands and readily adapts to high acidity environments and low fertility and shallow soils, although it prefers mesic sites ⁽¹⁰⁾

Likelihood of naturalization: High. Japanese barberry tolerates a wide range of climatic and environmental characteristics and easily spreads into new habitats, far from its original source, via birds. Preferential herbivory on competing shrubs by deer may give Japanese barberry a competitive edge in Hudson valley habitats. ⁽¹⁰⁾

CONTROL INFORMATION

Biological Control

There is currently no single optimal biological control agent in use against this species⁽¹¹⁾

Manual or Mechanical Control

Pulling / Digging Up: Pulling by hand is an effective method of control for seedlings and small plants as long as the entire root is extracted from the soil. For larger plants, a weed wrench may be used, however, any leftover root fragments may re-sprout.⁽¹²⁾

Mowing: While mowing will suppress Japanese barberry, it will not eradicate it⁽¹²⁾

Girdling: Not applicable

Prescribed Fire: Carefully managed, early spring fires can help to reduce the overall size of Japanese barberry infestations, prior to the employment of other management strategies.⁽¹³⁾

Torching: Torching is an effective management tool for smaller, scattered infestations of Japanese barberry, where root crowns of individual plants can be isolated and targeted for at least 10-20 seconds of treatment. Follow up treatment in 2-3 weeks will likely be necessary to monitor and re-treat newly emerged sprouts⁽¹³⁾

Prescribed Grazing: Not applicable

Soil Tilling: Not advisable. Tiling may fragment roots and encourage re-sprouting.

Mulching: Not advisable. Tiling may fragment roots and encourage re-sprouting.

Solarization: Not applicable

Hot Foam Spray: Not applicable

Chemical Control

The pesticide application rates and usage herein are recommendations based on research and interviews with land managers. When considering the use of pesticides, it is your responsibility to fully understand the laws, regulations and best practices required to apply pesticides in a responsible manner. At times, the pest you seek to treat may not be on a pesticide label, requiring a 2ee exemption from NYSDEC. Always thoroughly read the label of any pesticide and consult the NYSDEC or a licensed pesticide applicator with questions.

Foliar Spray: A 2-3% solution of glyphosate is effective at managing Japanese barberry, although a repeat application will likely be necessary. Infestations managed in this way should be revisited in 2-3 weeks to monitor for regrowth. Always read and follow all instructions on the herbicide label.⁽¹³⁾

Cut Stump: Apply a 20-25% solution of glyphosate or triclopyr to the cut stump of larger Japanese barberry plants towards the end of the growing season⁽¹²⁾.

Basal Bark: A 2% solution of triclopyr applied to the bark of dormant Japanese barberry is somewhat effective in controlling infestations, although this technique is best applied with other strategies, such as a follow-up foliar spray. ⁽¹⁴⁾

Hack-And-Squirt

Stem Injection: Not applicable

Pre-Emergent Spray: Not applicable

SUMMARY OF BEST MANAGEMENT PRACTICES

General management overview and recommendation:

As with any other invasive infestation complex, large stands of Japanese barberry are best managed via a combination of mechanical and chemical means. Spring wildfires or sequential cutting followed by foliar spray of the vegetation that re-sprouts and/or application of herbicide to cut stumps will give the most complete control. Managed infestations should be monitored for at least five years to ensure exhaustion of the seed bank ⁽¹⁰⁾. Any new seedlings can be hand pulled. Due to Japanese barberry's ability to alter native soil characteristics, managed sites should be watched carefully for signs of re-invasion from outside sources.

Post treatment monitoring: Any infestations managed by chemical means must be revisited in 2-3 weeks to check for treatment efficacy. Although the species does not appear capable of forming long-term seed banks, treated populations should be revisited for at least five years to ensure no new seedlings have germinated. ⁽¹⁰⁾.

Disposal Methods

Freshly cut stems may root if left in contact with the ground. Material left on site should not be left in contact with the ground until thoroughly dried. Waste material can be crushed, chipped, burned or composted so long as management was completed prior to seed set. Any fruit must be bagged and disposed of, and any roots thoroughly crushed or dried.

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