

New Hampshire's Invasive Species Program

Presented by:

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271-3488

Invasive Species Law (HB1258-FN)

- NH Invasive Species Committee (ISC)
 - Evaluates plants, insects & fungal species for the purpose of protecting the health of native species, the environment, commercial agriculture, forest crop production, or human health.
 - The ISC is an advisory committee to the Commissioner of the NH Dept. of Agriculture, Markets & Food (DAMF)
 - The ISC's primary objective is to evaluate and develop a list of proposed prohibited invasive species for adoption by rules for regulatory purposes.
 - ISC is currently working on a Statewide Action Plan

Invasive Rules - Agr 3800

No person shall collect, transport, import, export, move, buy, sell, distribute, propagate or transplant any living and viable portion of any plant species , which includes all of their cultivars and varieties, listed in Table 3800.1, New Hampshire prohibited invasive species list.

- Agr 3800 was first adopted in 2004 and included 24 invasive plants.
- After a 3-year Phase-out period, Norway maple, Burning bush and Japanese barberry were added to the rules, which took affect in 2007.
- All licensed plant dealers in NH get copies/updates of the rules every year.

NH Pesticide Rules – Pes 500

For the control of invasive species as listed within Agr 3802.01 NH Prohibited Invasive Species, New Hampshire restricted invasive species as described within RSA 430:53 IV, Common Reed (*Phragmites australis*, formerly *P. communis*), or Purple Loosestrife (*Lythrum salicaria*)

Pes 502.01 Pes 502.01 Use in Accordance with Labeling Instructions

Dosage, concentration or frequency less than specified on labeling; use against any target pest not specified on labeling; or any application method not prohibited by labeling.

Pes 505.01 Use Along Public Road Rights-of-Way - *Brownout*

Pes 505.05 Application Form – *Submission <60 days for EDRR*

Pes 505.06 Notification of Spraying in Rights-of-Way

NH DES Rules

The NH Department of Environmental Services (DES), Wetlands Bureau and the DES Alteration of Terrain Bureau have adopted language in their rules that includes reference to Agr 3800.

Wetlands Bureau & Shoreland Program – Permits issued by the NH Wetlands Bureau often contain conditions specific to invasive species management, especially if mitigation is required. The Shoreland Water Quality Protection Act (RSA 483-B) protects native species and promotes the management of invasive plants.

Alteration of Terrain Bureau – An alteration of terrain permit is required whenever a project proposes to disturb more than 100,000 square feet of terrain (50,000 square feet if any disturbance is within the protected shoreland as defined by RSA 483-B). Permits issued require compliance with Agr 3800.

Purple loosestrife Biocontrol Program



Galerucella californiensis Larva

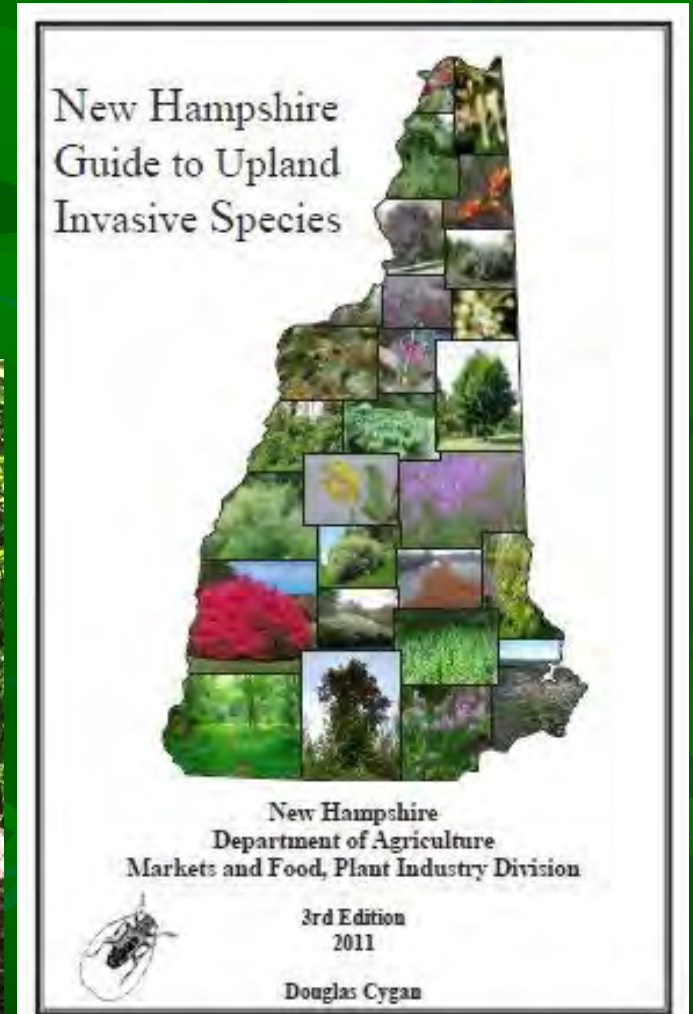


Galerucella californiensis



Outreach & Education

- ~30,000 Book
- 5,000 Posters
- 30-50 Presentations/Year



NH DAMF Invasive Webpage

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Invasive Plants

It is illegal in New Hampshire to collect, transport, sell, distribute, propagate or transplant any living or viable portion of any listed prohibited invasive plant species including all of their cultivars, varieties, and specified hybrids.




Burning bush (*Euonymus alatus*)

Many of the invasive pests that are introduced as a result of escaping from a managed environment occur among landscape plants. Initially planted in yards because of their attractive appearance and low-maintenance, these plants can quickly overrun and dominate natural environments, where they out compete native plants. This is why some formerly popular landscaping plants (purple loosestrife, burning bush, Norway maple) are on the list of [prohibited invasive plants in New Hampshire](#).

- [Grants & Funding Sources for Invasive Species Control](#)
- [Invasive Species Frequently Asked Questions](#)
- [Invasive Trees, Shrubs, Vines, and Herbaceous Plants](#)
- [Prohibited Invasive Species](#)
- [Restricted Invasive Species](#)
- [Alternative Plants for Prohibited Species](#)
- Invasive Species Booklet and Poster
 - [New Hampshire Guide to Upland Invasive Species](#)
 - [NH Prohibited Invasive Upland Plants Poster](#)
- Invasive Species Control
 - [Japanese Knotweed Control](#)
 - [Integrated Pest Management \(IPM\) for Woody Plants](#)
 - [Control of Invasive Species by Numbers](#)
 - Invasive Plant Control Project (IPCP) Yearly Reports
 - [2012 IPCP Yearly Report](#)
 - [2013 IPCP Yearly Report](#)
 - [2014 IPCP Yearly Report](#)

Plant Industry

- ◊ [Emerald Ash Borer Quarantine](#)
- ◊ [Firewood Quarantine](#)
- ◊ [Frequently Asked Questions](#)
- ◊ [Growing Degree Day Resources](#)
- ◊ [Nursery/Plant Dealer Licensing Program](#)
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Japanese knotweed (*Polygonum cuspidatum*)

<http://agriculture.nh.gov/divisions/plant-industry/invasive-plants.htm>

NH DAMF Invasive Fact Sheets

Oriental bittersweet

Celastrus orbiculatus
Control Guidelines

NH Department of Agriculture, Markets & Food, Division of Plant Industry, 29 Hazen Dr, Concord, NH 03301
(603) 271-3488

Common Name: Oriental Bittersweet
New Hampshire Invasive Species Status: Prohibited (Agr 3800)

Latin Name: *Celastrus orbiculatus*
Native to: Japan, China, Korea



Photos by: Douglas Cygan

Description: Deciduous vine reaching heights of 40-60'. Bark: Tannish, furrowed. **Leaves:** Alternate, ovate, bluntly toothed, 3-4" long by 2/3" as wide, tapered at the base. **Flowers:** Small, greenish, blooming in spring. **Fruit:** Yellow dehiscent capsule surrounding an orange-red aril. **Fruits:** occur in the axils of the stems whereas native bittersweet (*Celastrus scandens*) fruits at the ends. **Zone:** 4-8. **Habitat:** Disturbed edges, roadsides, fields, forests and along rivers and streams. **Spread:** Birds and humans. **Comments:** Very aggressive, climbs up and over trees and smothers them. Do not buy wreaths made of these vines. **Controls:** Difficult to manage. Cutting, pulling, or recommended herbicide use applied to foliage, bark, or cut-stump.

General Considerations

The introduction of Oriental bittersweet to non infested areas is generally associated with birds and small mammals feeding on the abundant fruits in the fall and excreting the seeds as they move from one area to another. Dispersal is also associated with human activities where earth moving activities occur or when the vines and fruits are collected in the fall for ornamental wreaths and decorations (which is prohibited) and then carelessly discarded. Seed viability and germination rate is relatively high at 90% in the spring of the subsequent growing season, but drops off significantly the following year. Fruits that remain on the vine eventually drop to the ground and decompose leaving behind three seeds per berry. These seeds ultimately become part of the seed bank, which usually remains viable for only 1-year. Anyone involved with control practices or site development should take precautionary measures to ensure that fruits and soil material containing seeds are not moved off site. Preventative measures to avoid this may necessitate the creation of a cleaning station where soils/seeds and/or propagules can be removed from vehicles, tires, and equipment. Heavy deposits of soil may require pressure washing.

Another factor that warrants consideration is the rejuvenation of Oriental bittersweet from root fragments left in the ground. Control measures that involve cutting the upper portion of the vine and leaving the rooting system intact

typically results in new shoot emergence, known as suckering. These can form at the crown or along the root itself. Subsequent monitoring and control measures may be necessary to manage this recurrence.

Since there are no known biological controls, and cultural controls are generally ineffective, the standard management practices involve mechanical and chemical controls. Depending on the method employed it can take less than one year or up to several years to eliminate Oriental bittersweet from the management area.

To easily identify and locate where Oriental bittersweet occurs in any habitat, simply scout areas of concern in the fall when native plant species have reached their peak colors. At this point most native species will have dropped their leaves leaving the bright lemony-yellow foliage of Oriental bittersweet as a key indicator. In New Hampshire, this generally occurs around late October to early November. This method is very effective for early detection and rapid response (EDRR) by enabling managers to map out areas of concern and implement control strategies early on.

Control Options

See the following control guides: [Integrated Pest Management \(IPM\) for Woody Plants](#) or the [Control of Invasive Species by Numbers](#)

(Although native American bittersweet, *Celastrus scandens*, is not prevalent in New Hampshire, it is important to properly identify which bittersweet you have and confirm that it is Oriental bittersweet before control measures begin.)

<i>Celastrus orbiculatus</i> Oriental bittersweet	
Plant Type	Liana
Habitat Type	Mostly forest edge
USDA Hardiness	4-8
Zone	
Rooting Structure	Lateral
Environmental Impacts	Hybridizing with American bittersweet. Weaken mature trees by girdling the trunk and weighting the crown.
Wildlife Impacts	
Leaf arrangement	Alternate
NW1 Ranking	UPL, FACU
Soil Type	
Soil pH Range	5-7.5
Light Requirements	Prefers partial to full sun
Growing Season	
Growth Rate	0.3-3.0 m (1-12 ft)
Mature Height	60 ft. (18.3 m)
Life Span	
Reproductive Age	3-5 years
Flowering Period	May - June
Flower Type	Diocious & monoecious
Pollination	Insects, mostly bees, and wind
Seed Set	August through September
Seed Per Plant	5 seeds per fruit
Scarification Required	Yes
Cold Stratification	Yes
Seed Longevity	Typically 1-year, possibly 2
Seed Germination Rate	95%
Seedling Density	
Other Propagules	root suckering
Dispersal Vectors	Birds, small mammals, humans

Sources

Boelle, D. (2007) *Lepidium latifolium* L. Encyclopaedia, California Department of Food and Agriculture, APWVG: WEED US.
http://www.texastinvasives.org/invasives_database/detail.php?symbol=LILA2

Boelle, D. (2006) *Lepidium latifolium* L. Mustard family (Brassicaceae). Plant Conservation Alliance, Alien Plant Working Group.
<http://www.apwg.org/plants/ALIEN/fact/lala1.htm>

Jacobs, J. and J. Mangold. (2007) Ecology and Management of Perennial Peppercress [*Lepidium latifolium* L.]. Natural Resources Conservation Service.
<http://www.invasivescience.org/ruraliving/DreamPDF/peppern.pdf>

NMSU Board of Regents (2007) *Lepidium latifolium* L. New Mexico State University.
http://weeds.nmsu.edu/factsheet.php?weed_id=50
Perron, C. (2008) Best Management Practices for Roadside Invasive Plants. New Hampshire Department of Transportation.
<http://www.nh.gov/dot/bureau/environment/documents.htm>

Orch, J. F., Gammon, M., Abdul-Baziz, F., Stenerson, R. D., Tinsley, D., Ebersole, J., et al. (2006) Natural history, distribution, and management of *Lepidium latifolium* (Brassicaceae) in New England. *Rhodora*, 108(934), 103-118.

Renz, Mark. (2000) *Lepidium latifolium* L. The Nature Conservancy.
<http://www.invasive.org/weedod/pdfs/tncweeds/lepidat.pdf>

NH DAMF Japanese Knotweed BMP Manual

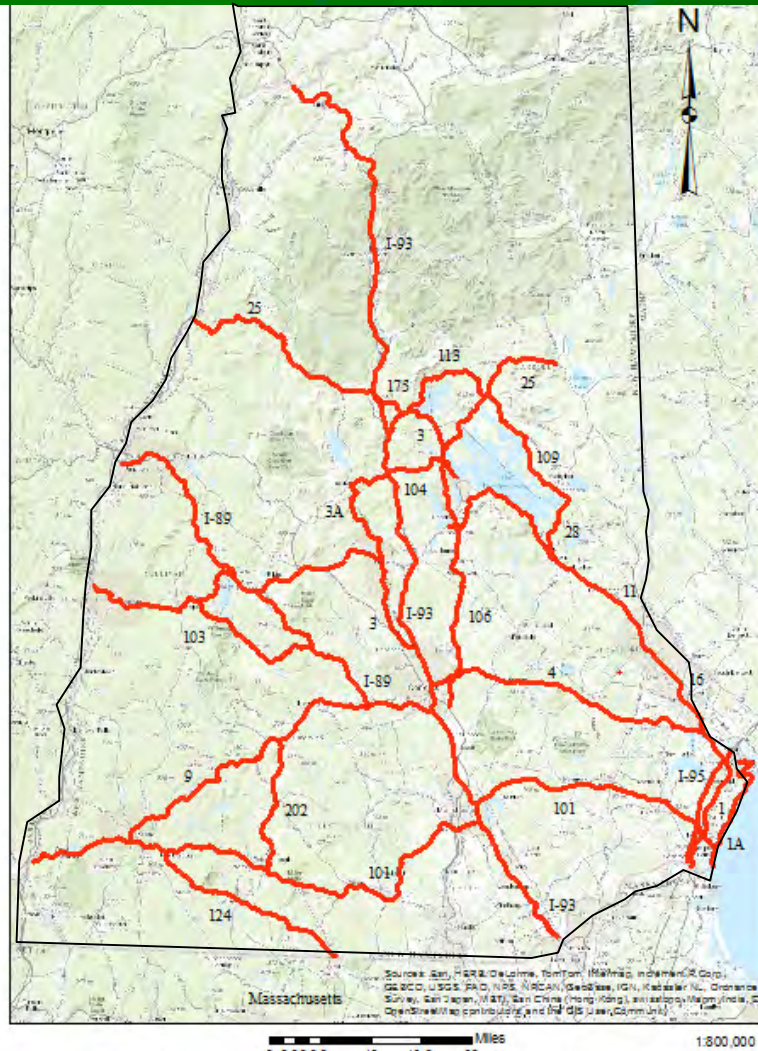
Preventing the Spread of
Japanese knotweed
(*Reynoutria japonica*,
Fallopia japonica)



Best Management Practices

New Hampshire Department of Agriculture,
Markets & Food

Statewide Invasive Species Management Program



Statewide Invasive Species Control Project 2015

Map showing the project areas highlighted in red

2016 Invasive Treatment Plan	
17	Parks, conservation lands, town roads, special projects
21	State & Interstate Highway Systems

Watershed Special Permit Application
Submitted By: Douglas Cygan
NH Dept. of Agriculture, Markets & Food
License #: S-1608565N

Statewide Invasive Species Management Program

Table of invasive species treated and application method used

Common name	Scientific name	<i>Plant type</i>	<i>Application method</i>
Autumn olive	<i>Elaeagnus umbellata</i>	Woody	Foliar Spray
Black swallow-wort	<i>Cynanchum louiseae</i>	Herbaceous Vine	Foliar Spray
Burning bush	<i>Euonymus alatus</i>	Woody	Foliar Spray
Common buckthorn	<i>Rhamnus cathartica</i>	Woody	Foliar Spray
Glossy buckthorn	<i>Frangula alnus</i>	Woody	Foliar Spray
Honeysuckle	<i>Lonicera spp.</i>	Woody	Foliar Spray
Japanese barberry	<i>Berberis thunbergii</i>	Woody	Foliar Spray
Japanese knotweed	<i>Fallopia cuspidatum</i>	Herbaceous	Foliar Spray
Oriental bittersweet	<i>Celastrus orbiculatus</i>	Woody vine	Foliar Spray
Perennial pepperweed	<i>Lepidium latifolium</i>	Herbaceous	Foliar Spray

Table 4

Treatment Year	# of Stems	Acres of Knotweed
2012	2,690	23 Acres
2013	7,000	43 Acres
2014	6,589	25 Acres
2015	~1,000	21.5 Acres
Total	17,279	112.5 Acres

Table 5

Odiorne State Park Habitat Restoration Project



Odiorne State Park Habitat Restoration Project



Odiorne State Park Habitat Restoration Project



Odiorne State Park Habitat Restoration Project





Japanese Knotweed

Rejuvenation from stem tissue







10-Feet

2" Diameter
Rhizome

15-Feet

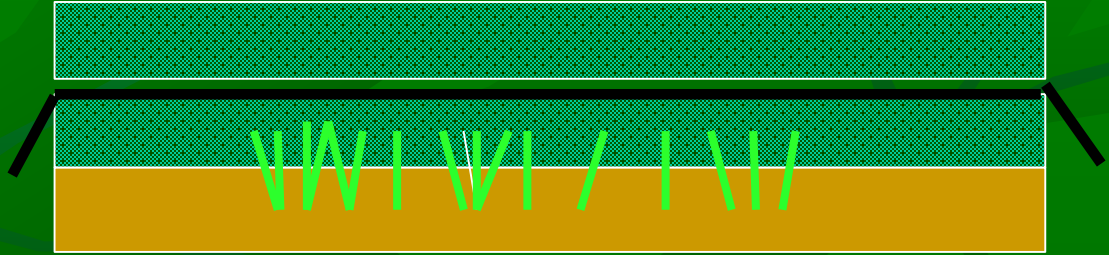
Smothering – 7mil Black Plastic



**Cover with heavy black plastic and
cover with wood chips or other material**

**Periodically check the site and make
repairs as necessary**

Smothering – 7mil Black Plastic



Cut the Japanese knotweed stalks off near the base and dispose of properly so they dry out. Put down a layer of woodchips or bark mulch on top of the cut stems to protect the plastic from punctures. Lay heavy mil black plastic on top of the cushion material and extend at least 5-10 feet beyond the limit of cut stems. Place another 4-inch thick layer of woodchips or bark mulch on top of the plastic to prevent the plastic from deteriorating

Japanese knotweed invasion at a DOT site in Barrington 2013



Japanese knotweed site - Barrington
5% Roundup-Pro & 0.05%
Milestone



Controls – Herbicide 5%Roundup-Pro



Controls – Herbicide

5% Roundup-Pro

I-93 From New Hampton to Plymouth - Photo taken in Sept. 2014



New Invasive Species Finds in NH



Mile-a-Minute - *Polygonum perfoliatum*



Ornamental jewelweed – *Impatiens glandulifera*