

# Invasive Plants

## What is to be Done - and How to Permit It

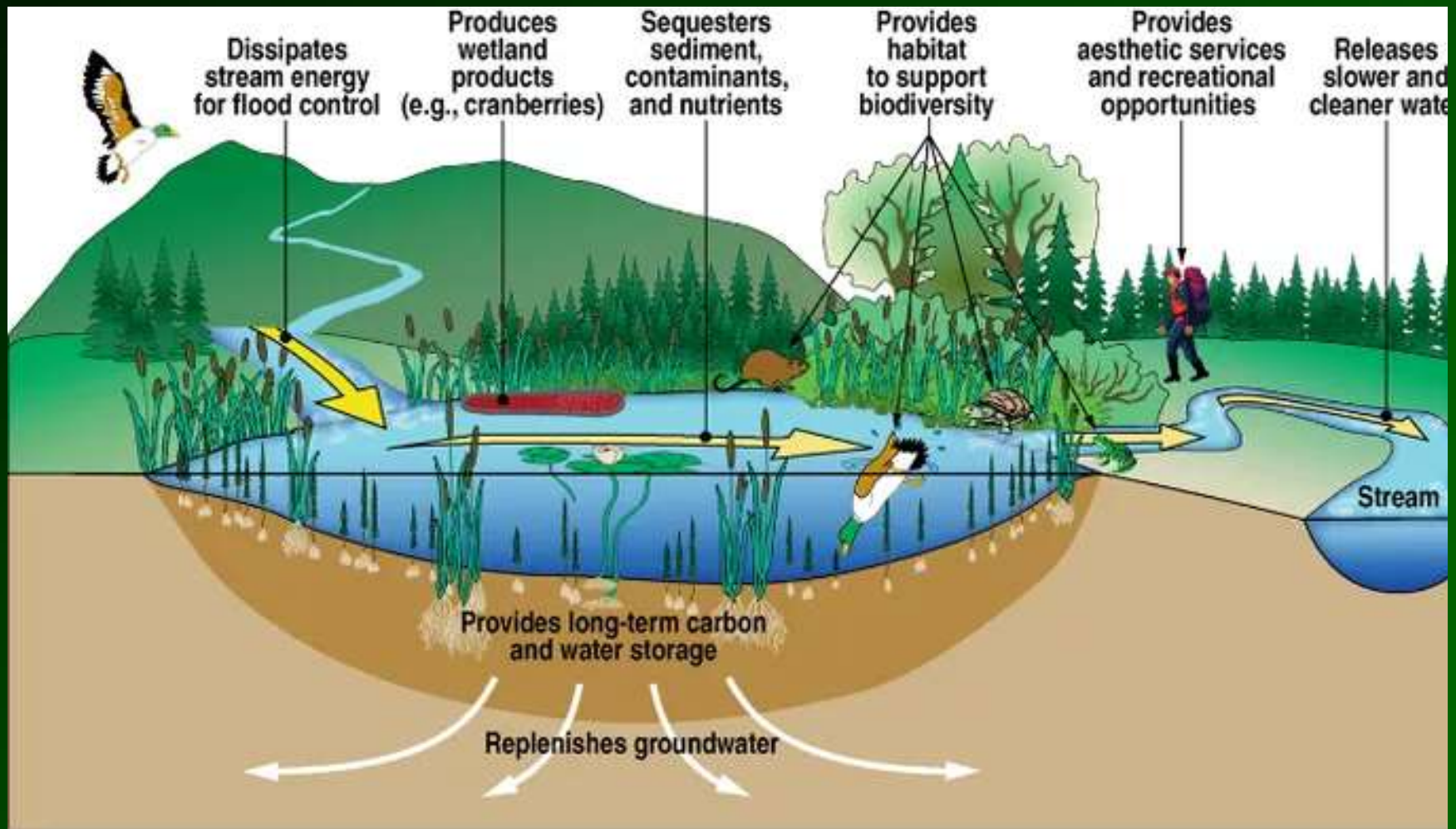


Joan Deely, MS  
Land Stewardship , Inc.  
July 13, 2022

“More diverse communities have been shown to have higher and more temporally stable ecosystem functioning than less diverse ones, suggesting they should also have a consistently higher level of functioning over time.”

**Compensation and the Stability of Restored Grassland Communities**

*Ecological Applications* | 02/10/2007 | Eric W. Seabloom



## *Threats to wetlands*

- ❖ Filling, grading, removal of vegetation
- ❖ Building construction
- ❖ Changes in water levels and drainage patterns
- ❖ Diking and damming to form ponds, lakes and reservoirs
- ❖ Diversion of flow to or from wetlands
- ❖ Contamination from industry, agriculture, infrastructure
- ❖ Alteration to tidal flow
- ❖ Climate Change

**Invasive species**

# Global Climate Change

- Increased temperatures and increased rainfall
- Increased flooding
- Reduced recharge
- Degradation through conversion to agriculture
- Reduced carbon sink functionality
- Intermittent heavy precipitation and extended periods of drought
- Changes in duration and seasonality of flooding
- Reduction in biodiversity – wetland-specific plants, R/E species
- Changes favor generalist species tolerant a broad range of hydrologic conditions - overall loss of plant species diversity
- Increase in abundance of invasive species currently present, arrival of new invasive species

1990 Map



After USDA Plant Hardiness Zone Map, USDA  
Miscellaneous Publication No. 1475, Issued  
January 1990.

2015 Map



Arbor Day Foundation Plant Hardiness Zone  
Map published in 2015.

Zone



© 2015 Arbor Day Foundation®





# WPA Wetland Resources Areas

- ❖ Bordering Vegetated Wetland
- ❖ Riverfront Area
- ❖ Bordering Land Subject to Flooding
- ❖ Isolated land subject to flooding
- ❖ Land Under Waterbodies and Waterways

# Department of Environmental Protection (DEP) Wetland Protection Act

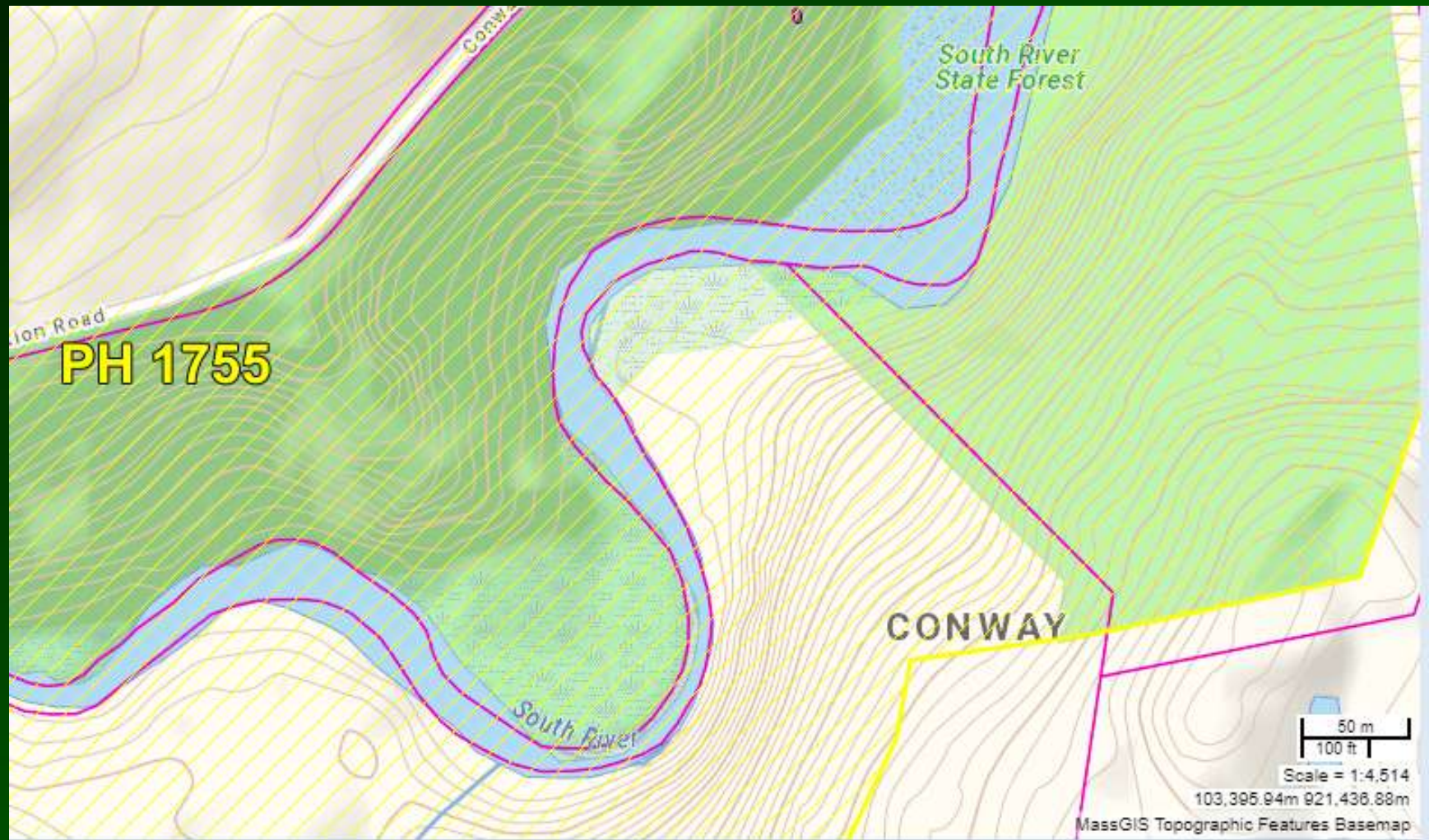
**Any invasive plant control work within a jurisdictional wetland (as determined by DEP mapping and/or delineation by certified wetland scientist) must be permitted by the DEP**

- Permit applications are filed with Conservation Commission in the municipality where work will occur.
- Notice of Intent (NOI) - fees, legal notice, etc.; Ecological Restoration Limited Project Appendix A. If rare/endangered species present, need review by NHESP. Order of Conditions (OOC) issued  
(Some towns/cities have adopted additional wetlands by-laws)
- Request for a Determination of Applicability (RDA)– no fee, legal notice
- MassGIS:  
<https://maps.massgis.digital.mass.gov/MassMapper/MassMapper.html>

# Department of Environmental Protection Wetland Maps *Mass Mapper*



# Natural Heritage and Endangered Species Program (NHESP)



- All required materials for the NOI or RDA
- Detailed treatment sequence for three years
- Maps of project area
- Clear explanation of the project – context, justification for treatment plan, consequences of inaction
- Detailed description of management plan, including tools/materials to be used
- Acknowledgement of potential for restoration activities
- Photos of site

# Management Calendar

## Multiflora Rose (*Rosa multiflora*)

	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Leaves Appear												
Flowering and Seed Ripening						No	Cut	Or	Mow			
Foliar Herbicide application												
Basal Bark												
Cut stem treatment												
Propane Torch												
Hand pull												

Multiflora rose can be mowed in the spring. Resurgent plants can be treated with herbicide later in the growing season.

**ECR**

Environmental Consulting & Restoration, LLC



October 23, 2020

Town of Marion  
Conservation Commission  
2 Spring Street  
Marion, MA 02738

**RE: Notice of Intent, Proposed Phragmites Removal Project, Holly Road, Marion**

Dear Members of the Conservation Commission:

Environmental Consulting & Restoration, LLC, in collaboration with Solitude Lake Management, Inc. is pleased to submit this Notice of Intent application for the proposed Common Reed (*Phragmites australis*) removal project located along Holly Road in Marion (the site). The site consists of 8 parcels to include 35, 43, 51, 67, 75, 83, 95 and 99 Holly Road. The proposed project involves the treatment and removal of Common Reed (*Phragmites australis*), a non-native invasive plant species, located throughout portions of the site. Portions of the proposed project occur within Bordering Vegetated Wetlands, Salt Marsh, 200-foot Riverfront Area, Land Subject to Coastal Storm Flowage, and associated 100-foot buffer zones. This project is intended to provide and overall betterment to the wetland resource areas and is being submitted in accordance with the Massachusetts Wetlands Protection Act and the Town of Marion Wetlands Protection Bylaw.

If you have any questions or require additional information, please contact me at (617) 529-3792.

Sincerely,  
Environmental Consulting & Restoration, LLC

Brad Holmes, PWS, MCA  
Manager

CC: Department of Environmental Protection, Wetland Division, 20 Riverside Drive, Lakeville, MA 02347

Division of Marine Fisheries, Southeast Marine Fisheries Station, attn.: Environmental Reviewer, 1213 Purchase Street, 3<sup>rd</sup> Floor, New Bedford, MA 02740-6694

Massachusetts Natural Heritage & Endangered Species Program, 1 Rabbit Hill Road, Westborough, MA 01581

Solitude Lake Management, Inc.

Friends of Wings Cove, c/o Kitt Sawitsky, 75 Holly Road, Marion, MA 02738

SPECIAL CONDITIONS TO ORDER OF CONDITIONS SE 041-1343 - Page 1

**APPENDIX A**

**SPECIAL CONDITIONS TO ORDER OF CONDITIONS SE 041-1343**

To

**FRIENDS OF WINGS COVE**

for work at

**35, 43, 51, 67, 75, 83, 95 & 99 HOLLY ROAD, MARION, MASSACHUSETTS**

**APPLICABLE INTERESTS OF THE WETLANDS PROTECTION ACT:**

Storm damage prevention  
Prevention of pollution  
Protection of wildlife habitat  
Land containing shellfish  
Flood Control  
Fisheries

**SCOPE OF WORK**

1. For the removal of phragmites from single family residence properties adjacent to Wings Cove.

**GENERAL**

2. Prior to the commencement of work, this Order shall be recorded at the Plymouth County Registry of Deeds, in accordance with General Condition No. 8, and the recording information stamped by the Registrar on this Order shall be submitted to the Marion Conservation Commission. A building permit and/or a septic permit may not be issued until a copy of the proof of recording is submitted to the Building Department and/or the Board of Health.

3. The Marion Conservation Commission shall be notified when the work on the project is to begin and the name of the contractor (telephone 508-748-3515).



Massachusetts Department of Environmental Protection  
Bureau of Resource Protection - Wetlands

## WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Provided by MassDEP:

MassDEP File Number

Document Transaction Number

Norwell

City/Town

### A. General Information (continued)

#### 6. General Project Description:

Invasive plant control targeting primarily Chinese wisteria (*Wisteria sinensis*). Very low density woody invasive species will be treated as well.

#### 7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

- |   |   |
|---|---|
| 1. <input checked="" type="checkbox"/> Single Family Home             | 2. <input type="checkbox"/> Residential Subdivision       |
| 3. <input type="checkbox"/> Commercial/Industrial                     | 4. <input type="checkbox"/> Dock/Pier                     |
| 5. <input type="checkbox"/> Utilities                                 | 6. <input type="checkbox"/> Coastal engineering Structure |
| 7. <input type="checkbox"/> Agriculture (e.g., cranberries, forestry) | 8. <input type="checkbox"/> Transportation                |
| 9. <input type="checkbox"/> Other                                     |   |

#### 7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1.  Yes  No If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

#### 8. Property recorded at the Registry of Deeds for:

Plymouth

a. County

46291

c. Book

b. Certificate # (if registered land)

100

d. Page Number

DocuSign Envelope ID: 9F02C8CB-5AEC-4798-AEE7-FED577542AC3

31. No plants listed on the latest Massachusetts Department of Agricultural Resources Prohibited Plant List (available at [http://www.mass.gov/agr/farmproducts/Prohibited\\_Plant\\_Index2.htm](http://www.mass.gov/agr/farmproducts/Prohibited_Plant_Index2.htm)) may be brought onto or planted anywhere on the property.
32. All construction vehicles must be cleaned of accumulated soil or plant matter from other sites prior to entering the site, through washing, brooming, or another method approved in advance by the Conservation Commission.
33. In order to prevent the spread of invasive species from one portion of the project site to another, construction vehicles may not enter locations infested with invasive species. If this is unavoidable, vehicles must be washed or broomed clean prior to leaving the infested portion of the site.

### POST CONSTRUCTION:

34. There shall be no application of road salt or deicing chemicals onto the driveway because of the importance of the site and wetlands to the groundwater supply.
35. The use of chemicals, including pesticides and fertilizers, shall be prohibited on this property, because of the importance of the site and wetlands to the groundwater supply.
- a. Alternate – only slow release organic granular type fertilizers shall be used within the buffer zone. This condition shall survive the expiration of this order, and shall be included as a condition in perpetuity.
36. The applicant shall submit an "as built" plan with the WPA Form 8- Request for a Certificate of Compliance to the Conservation Commission upon completion of this project. The plan shall be signed by the professional engineer of record, who shall certify that the work has been done in accordance with the approved plans, and this Order of Conditions. This plan must be submitted prior to the issuance of a Certificate of Compliance by the Conservation Commission. *The As-built shall show the features of the property, required mitigation plantings and the accepted wetlands line.*
37. ~~Prior to the issuance of a Certificate of Compliance, Conservation Bounds are to be installed along the 50-foot no-disturb buffer zone. The type and location of the permanent markers shall be approved by the Conservation Commission or its Agent. These shall be shown on the as-built plan and are to remain in perpetuity. NO future alteration or disturbance may occur beyond this point without permission from the Conservation Commission.~~
38. Because invasive species establish and thrive in disturbed areas, to the extent feasible, all soil and vegetation disturbance on site shall be minimized, and existing native vegetation remain intact. All fill brought in must be clean, debris free, and devoid of invasive plants or their parts or seeds. Introduction of invasive species or the spread of invasives shall be the responsibility of the contractor and property owner to remediate.
39. Dumping in the buffer zone is prohibited for the life of the property/project.
40. There shall be no additional alterations to areas under the jurisdiction of the Conservation Commission without first obtaining review and appropriate permits.
41. ~~The erosion control line shall be removed with approval of the agent or commission before a CoC will be issued.~~
42. This Order shall apply to all successors in interest and successors in control of the property described in the Notice of Intent and accompanying plans.



Manhan Meadows Floodplain Forest Restoration Planting  
Northampton, MA

# Glossy buckthorn

*Frangula alnus*





Photos, Joan Deely

# Japanese barberry

*Berberis thunbergii*



All photos, Les Mehrhoff



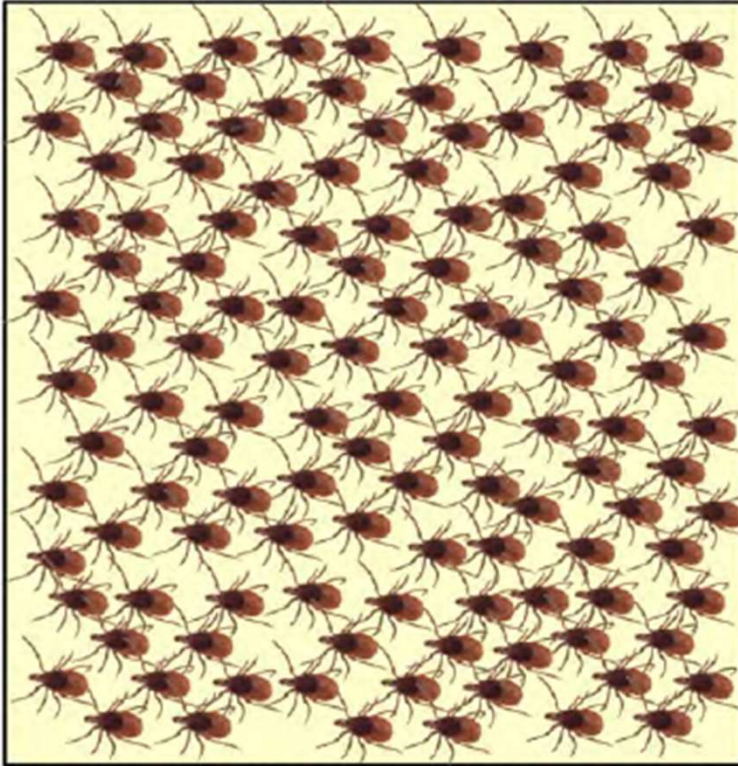
Les Mehrhoff



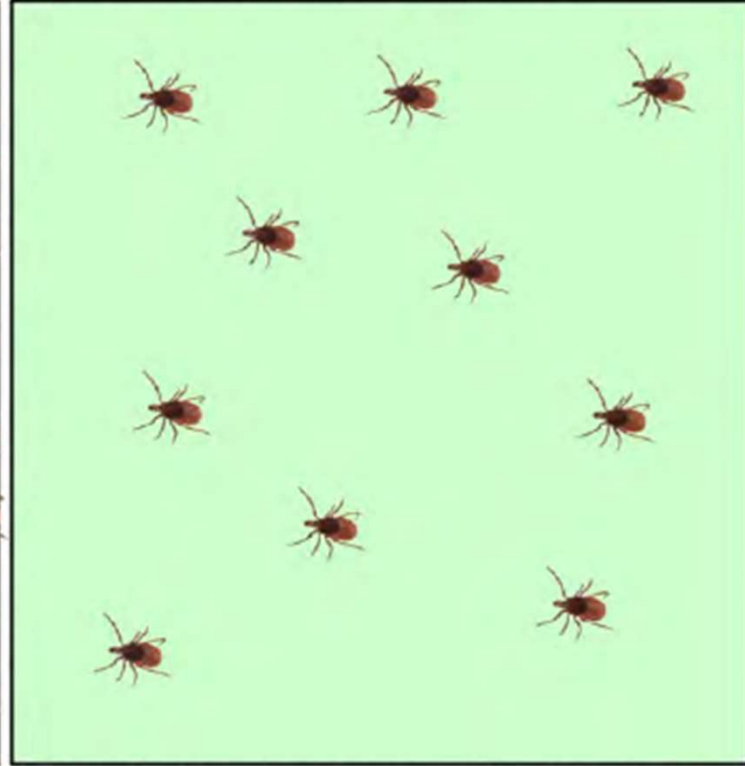
Joan Deely



Density of ticks with *Borrelia burgdorferi* – the causal agent of Lyme disease



Barberry infested forest ~ 120 ticks per acre



Forest without barberry ~ 10 ticks per acre

Connecticut Agricultural Experiment Station

# Purple loosestrife *Lythrum salicaria*



Les Mehrhoff



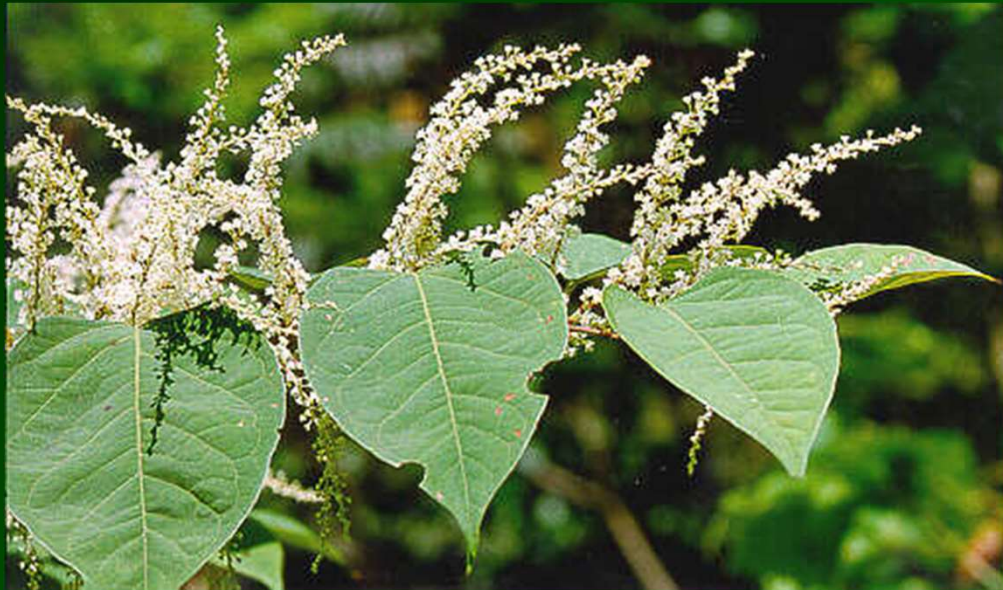
Joan Deely

# Japanese knotweed

*Polygonum cuspidatum*



Joan Deely



# Phragmites (Common reed)

*Phragmites australis*



Photos, Joan Deely



# Japanese stiltgrass

*Microstegium vimineum*





**Japanese stiltgrass**  
*Microstegium vimineum*

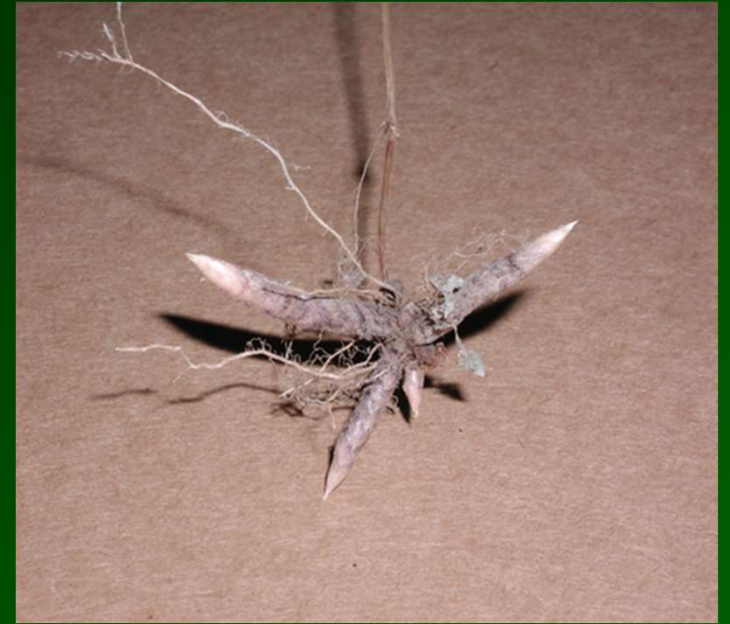


**White Grass**  
*Leersia virginica*





Stiltgrass



White grass



Photo, Les Mehrhoff

# Level 1 Management: Manual Methods



# Know Your Seedlings



*Glossy buckthorn*



*Japanese barberry*



*Oriental bittersweet*



*Japanese knotweed*

# Hand-pulling



Joan Deely

# Buckthorn Baggies



# Prep Cutting



# Mowing



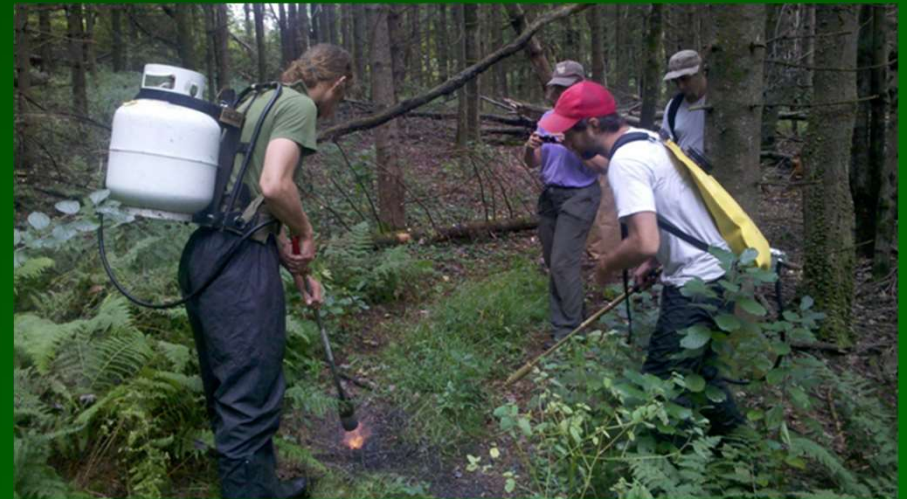
# Propane Torch



*Multiflora rose,  
Japanese barberry*



*Garlic mustard*



*Japanese stilt grass*

# Level 1 Permitting & Regulatory Considerations

- Approval from conservation commission for volunteer workdays in wetlands and buffer zones; advance notification and updates; with oversight
- Waiver of liability to participate
- Annual meeting to discuss land management program with community members and neighbors

# Level 2 Management



# Judicious Herbicide Use

- Integrate management activities (cutting, mowing, etc.)
- Targeted herbicide methods to minimize amounts used
- Timing to maximize effectiveness of treatment

# Cut Stem/Stump Application

- 20%-50% glyphosate product in water
- Applied immediately after cutting
- Can apply throughout the year, excepting sap season





# Foliar Spot Treatment



**Resurgent glossy buckthorn  
< 2' tall after prep cut**



# Hand Wiping



# Stem Injection



# Level 2 Permitting, Regulatory & Best Management Practices

- File RDA or NOI with conservation commission; Ecological Restoration Limited Project (Appendix A)
- Herbicide applicator license required
- Advanced training for Level 2 applicators
- Posting signs designating work-in-progress areas; Reentry Interval (REI) for herbicide in use

## Level 2, Continued

- Appropriate Personal Protective Equipment (PPE) for applicators
- Community meeting to discuss land management program
- Reporting to Conservation Commission
- **BRP WM04 license** required by the Office of Watershed Management for anyone applying chemicals to bodies of water

<http://www.mass.gov/eea/agencies/massdep/water/approvals/wetlands-and-waterwaysforms.html>

# Level 3 Management





# Mechanical Methods



**Field edge mowing**

*Concord, MA*

# Large-Scale Mechanical Methods



*Mass Audubon Drumlin Farm  
Lincoln, MA*



# Level 3 Permitting/Regulatory/ BMP Considerations

- File RDA or NOI depending on type of project and disturbance/alteration
- NOI filing may require Ecological Restoration Limited Project (Appendix A)

# IP Treatment Sequence

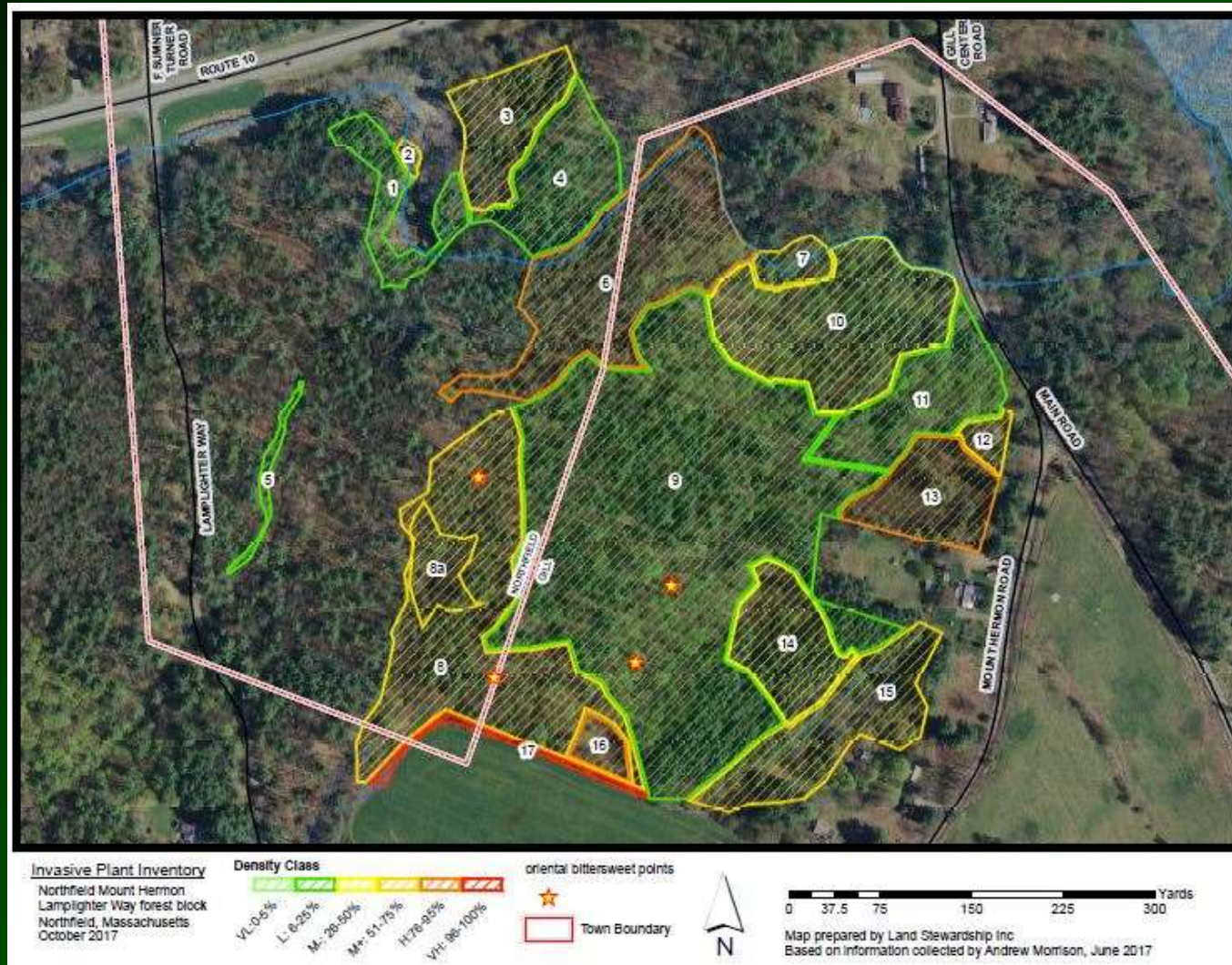
Year 1. Initial treatments (combination of mechanical and chemical) - 90% control

Year 2. First follow-up treatment (targeted chemical) - 95% control

Year 3. Second follow-up treatment (manual or targeted chemical) - 99% control

Annual stewardship and maintenance (primarily manual) maintains 99% control

# Northfield Mount Hermon School



Gill/Northfield

# Longmeadow Flats Conservation Areas



C. Polatin



C. Eiseman





**DeGhetto Property  
Norwell**

# Little Sippewissett Marsh Falmouth



# Amherst

**Mowing only along boundary between residential property and town conservation land. Follow-up treatment to seedlings with propane torch**



J. Deely

- **Hand-pulling only within marked wetland boundary**
- **Foliar/CST outside of boundary**



J. Deely

# H.4595/S.563

## An Act Responding to the Threat of Invasive Species

- Create a centralized office
- Create an Invasive Species Trust
- Appoint a State Coordinator

For more information:

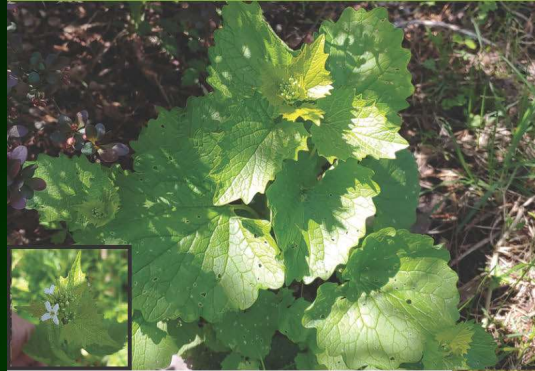
Kira Arnott, Office of Rep. Rogers, [Dave.Rogers@mahouse.gov](mailto:Dave.Rogers@mahouse.gov)

Mark Martinez, Office of Sen. Jehlen, [Mark.Martinez@masenate.gov](mailto:Mark.Martinez@masenate.gov)

Katharine Lange, Mass Rivers Alliance, [katharinelange@massriversalliance.org](mailto:katharinelange@massriversalliance.org) (860) 373-8855

# BE ON THE LOOKOUT

HELP US FIND GARLIC MUSTARD APHIDS



## You can help us map the location of garlic mustard aphids

We are calling all citizen scientists to be on the lookout for garlic mustard aphids (*Liaphis alliariae*), also known as grenade aphids. These aphids have been identified as garlic mustard specialists originally from Europe. They have not been previously recorded in the United States. Because the aphids may help control invasive garlic mustard plants, we are working with citizen scientists to map their distribution.

## Background Information

In the summer of 2021, staff at Holden Forests and Gardens found an unidentified aphid on garlic mustard plants (*Alliaria petiolata*). The aphid seems to negatively affect the plant by creating twisted seed pods (siliques) and a wrinkled effect on the leaves.



## HOW TO REPORT YOUR SIGHTINGS

1 Report your sighting to [EDDMaps](https://www.eddmaps.org/report/) - <https://www.eddmaps.org/report/> or download the EDDMapS App

- Including photographs is strongly recommended
  - Zoom in on any damage to the garlic mustard plant
  - Take a close-up (or a few) of the aphid(s)
- 2. If possible, please also send us a sample
  - Preserve the aphid(s) in 70-95% ethanol
  - Send to : Rebecah Troutman, 9500 Sperry Road, Kirtland, OH, 44094

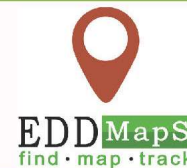
3. Negative sightings are also strongly encouraged - where garlic mustard is present but the aphid is not
4. Any questions? Contact Rebecca Troutman at [rtroutman@holdenfg.org](mailto:rtroutman@holdenfg.org)



App for Android

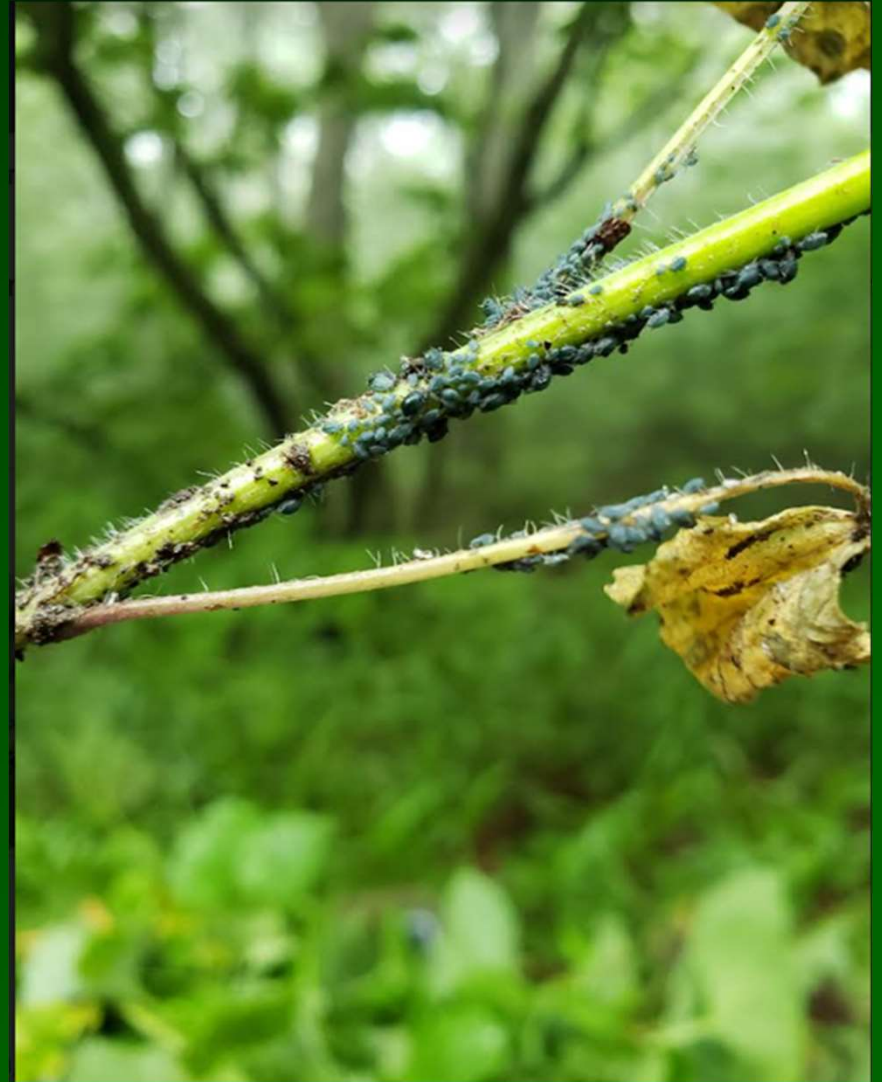


App for Apple



# Garlic mustard aphid

*Liaphis alliariae*



[jennifer.forman-orth@mass.gov](mailto:jennifer.forman-orth@mass.gov)

# Planning Resources

**Handbook for Ranking Exotic Plants for Management and Control**

[https://especies-envahissantes-outremer.fr/wp-content/uploads/2017/03/methode\\_hierarchisation\\_hiebert.pdf](https://especies-envahissantes-outremer.fr/wp-content/uploads/2017/03/methode_hierarchisation_hiebert.pdf)

**Richmond Silver Maple/Ostrich Fern/Floodplain Forest Management Plan**

<http://www.richmondvt.gov/wp-content/uploads/2014/03/2010-Richmond-Floodplain-Forest-Weed-Management-Plan-Final.pdf>

**Invasive Species Control/Management Plan (ISCP) Guidance, US Army Corps of Engineers**

<https://www.nae.usace.army.mil/Portals/74/docs/regulatory/InvasiveSpecies/ISCPGuidance.pdf>

**Maine Natural Areas Program, planning document prepared for subject property**

[https://www.maine.gov/dacf/mfs/projects/invasive\\_plant\\_mgmt/documents/IPCPP\\_Example\\_Plan.pdf](https://www.maine.gov/dacf/mfs/projects/invasive_plant_mgmt/documents/IPCPP_Example_Plan.pdf)

**Training modules for project planning**

<https://www.fws.gov/invasives/staffTrainingModule/planning/introduction.html>

**Clean Equipment Protocol for Industry: Inspecting and cleaning equipment for the purposes of invasive species prevention**

[https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol\\_June2016\\_D3\\_WEB-1.pdf](https://www.ontarioinvasiveplants.ca/wp-content/uploads/2016/07/Clean-Equipment-Protocol_June2016_D3_WEB-1.pdf)

# Invasive Plant Resources

[www.eddmaps.org](http://www.eddmaps.org) - ED and Distribution mapping

[www.eddmaps.org/ipane](http://www.eddmaps.org/ipane) - Invasive Plant Atlas of New England

[www.invasivespecies.gov](http://www.invasivespecies.gov) - programs, guidelines and management plans,  
*National Invasive Species Council*

[www.nativeplanttrust.org/conservation/invasive/](http://www.nativeplanttrust.org/conservation/invasive/) -information on IP in  
New England - *Native Plant Trust (formerly New England Wild Flower  
Society)*

<https://www.mipn.org/> - Midwest Invasive Plant Network

<https://woodyinvasives.org/> - Woody Invasives of the Great Lakes

**Mistaken Identity: Invasive Plants and Their Native Look-Alikes**

[https://www.lhprism.org/system/files/documents/Mistaken\\_Identity\\_Final-1.pdf](https://www.lhprism.org/system/files/documents/Mistaken_Identity_Final-1.pdf)

**Disposal of Invasive Terrestrial Plants** <https://cipwg.uconn.edu/wp-content/uploads/sites/244/2022/05/Invasive-Terrestrial-Plant-Disposal.pdf>



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