BSC GROUP
BUILD | SUPPORT | CONNECT

Engineers
Environmental Scientists
Software Developers
Landscape Architects
Planners
Surveyors

www.bscgroup.com

MARCH 7, 2024

Arlington Conservation Commission
730 Mass Ave Annex
Arlington, MA 02476

RE: Notice of Intent
Invasive Species Management Plan (ISMP)
Thorndike Place Residential Community
Dorothy Road, Arlington, MA

Dear Members of the Arlington Conservation Commission:

On behalf of Arlington Land Realty, LLC (the Applicant), BSC Group, Inc. is pleased to present the attached Invasive Species Management Plan (ISMP) for review by the Arlington Conservation Commission in conformance with *SWCA Response 2* contained in Commission's Peer Review consultant's letter report dated March 6, 2024.

Tom Groves, a BSC Senior Botanist with extensive experience in restoration ecology (see attached resume) has prepared a detailed ISMP designed to achieve realistic goals for the Site as quickly as possible with the intention of reducing the amount and duration of land disturbance required to achieve restoration goals to the greatest extent possible.

We look forward to the opportunity to discuss the ISMP with the Commission and its Peer Review consultant. Mr. Groves will be available to attend a meeting of the Commission to discuss the ISMP and is also available to answer questions that may come up during its review.

If you have any questions regarding the enclosed information, please contact me at (617) 896-4594 or mburne@bscgroup.com. Thank you for your consideration in this matter.

Thank you,
BSC Group, Inc.

Matt Burne, PWS
Senior Ecologist

cc: Stephanie Keifer

Enclosed: Resume, Tom Groves, Senior Botanist
Thorndike Place Invasives Species Management Plan

Dorothy Rd. Arlington, MA Invasive Plant Management Plan

March 2024

PREPARED FOR

Arlington Land Realty LLC
116 Huntington Avenue
Boston, MA 02116

PREPARED BY

BSC GROUP
803 Summer St. Floor 3
Boston, MA 02127

Table of Contents

1. Invasive Plant Species Management Plan

Introduction

Invasive plants are non-native species which have a competitive advantage over the native plant species of New England. Introduction of these invasive species has been facilitated by various human origins over the past two hundred years. Due to the ability to quickly colonize disturbed areas and without any natural predators or diseases, these species have many advantages over our native plant species. Invasive species can produce more seeds, grow faster, and utilize available water, habitat, and photosynthetic resources which is detrimental to not only native plants but also wildlife, insects, fungi, and humans. The degradation of natural habitats due to invasive plants can alter soil chemistry, water quality, and biodiversity across taxa.

The Thorndike Place Residential Community (the Project) will impact 4.7 acres of a 17.7-acre site, with the remaining 12 acres placed in conservation restriction. This project will include six (6) duplex units and a 124-unit senior living residential apartment building, parking, landscaping, lighting, and other site improvements. The Project proposes work within the FEMA 100-Year Floodplain/Bordering Land Subject to Flooding as well as within the buffer zone to Bordering Vegetated Wetland.

A site visit was made on February 26, 2024, by Tom Groves, Senior Botanist/Ecologist, and Matt Burne, Senior Ecologist from BSC Group, to determine the invasive species composition, their distribution, density, and maturity. This information is imperative to creating a site-specific invasive plant management plan for the acreage included in the scope of this project.

Management Goals and Objectives

Invasive species will forever be present at this location due to the proximity to major urban zones, invasive pressure from neighboring sites, existing invasive plant seed banks, and invasive plants in the immediate vicinity that are out of the scope of this management plan. The overarching goal of any invasive management plan is to control, to the greatest extent possible, the invasive plants currently present, encourage native plant regeneration, and detect any new invasive species early enough to gain control while the extent of the infestation is low.

The planned disturbances at this location include grading, soil disturbance, and construction development for housing. There are a few options for managing invasive plants within the designated restoration area. The likelihood of germination and/or introduction of new invasive species to the site is very high and for this reason, continued monitoring of the site post-construction and post-initial treatment is recommended for 10 years to ensure success and provide opportunities for continued invasive management adaptive strategies.

Existing Conditions

During the site visit on February 26, 2024, there were twelve invasive species observed. As a note, this survey was done during the dormant season, and additional invasive species could be present that were not observable during the February site visit.

The 4.7 acres included in the scope of this invasive plant management plan have portions that fall within the FEMA floodplain for the Little River and the native species composition here are indicative of this habitat type. The area of focus for habitat restoration efforts has low, medium, and high infestations of both herbaceous and woody invasive plant species (Table 1). Additionally, various native plant species exist in this location, although visibly being outcompeted by the invasive species. Retaining these native species through targeted treatments for only invasive plants will aid in reducing the likelihood of recolonization of invasive plants in the future.

During the time of the site visit, the identifiable native species included common hackberry (*Celtis occidentalis*),

bladdernut (*Staphylea trifoliata*), cottonwood (*Populus deltoides*), boxelder (*Acer negundo*), red maple (*Acer rubrum*), silver maple (*Acer* saccharinum), grapes (*Vitis spp.*), cherries *(Prunus* spp.), staghorn sumac (*Rhus typhina*), American pokeberry (*Phytolacca americana*), goldenrod (*Solidago spp.*), blackberries (*Rubus spp.*), and white birch (*Betula papyrifera*).

The most widespread of the woody species observed during the site visit were Norway maples (*Acer platanoides*). Also evident was the number of seeds of this species present on the ground during the survey. The other woody species within the restoration area were not overly large nor was there an abundance of fruit. Herbaceous invasive plants with the highest densities were Japanese knotweed (*Fallopia japonica*) and garlic mustard (*Allaria petiolata*).

Invasive Species Observations and Background

Invasive Plant Control General Overview

There are four categories included in "Invasive Pest Management": Cultural, Biological, Mechanical, and Chemical. The long-term control of invasive species and the level of success is increased when the four methods are used in conjunction. For instance, a cultural change would be for the town to implement a bylaw to eliminate invasive plants in landscaped areas. Biological controls are few and far between and often rely on non-native insect species that have the potential to do more harm than good and often do.

Due to the scope of this management plan, only two approaches (mechanical and chemical) for the control of invasive plants are addressed.

Mechanical Control

Mechanical control of invasive plants is possible but the success of choosing this method is dependent on specific conditions. Plants when in low density, seedlings, or in wet ground can often be hand-pulled or weed-wrenched out of the ground. As infestations become more mature, widespread, and denser, this method on its own quickly becomes time-consuming, expensive, and has the potential to cause the germination of many more invasive plants.

Mulching is also included in this category and can be an effective use of a pre-mechanical treatment if paired with a subsequent chemical control treatment.

Chemical Control

Usually thought of as a last resort, the chemical control approach is an effective, efficient, and economical way to address an invasive plant infestation. This option requires knowledge of native and invasive plant species to target only the desired plants for the treatment. If done properly there are low instances of off-target damage and a high rate of success. Herbicide control treatments can reduce invasive plants after 1-year of treatment to 5% - 10%. This method additionally doesn't disturb the soil, which can assist in reducing seedling flushes.

Within this category is a range of application techniques. The chosen application method is dictated by species, seasonality, growth habit, density, access, or other sensitive species. The application methods are also related to herbicide solution percentages, volume, and plant surface area. For this habitat management plan, I've defined the applicable terms "*Foliar*" and "*Cut-Stump.*"

Foliar: Foliar treatment is the application of herbicide in a 5% solution of wetland-approved herbicide and a non-ionic surfactant with water. Another type of application method is with a 7% solution of wetland-approved herbicide and an application product called Thinvert. These two percentages of solution are applied using a low-volume/low-pressure backpack sprayer. This approach is beneficial when the invasive plant population is below 50% of the total make of the treatment area. If the invasive plant density is more than 50% of the total vegetative makeup of the area, then a high-volume/high-pressure approach can be considered. This approach uses more volume of water but less herbicide. An application using this method would mix wetland-approved herbicide with a 1% - 2% solution.

Cut-Stump: This type of treatment is effective when treating plants that cannot be foliar treated. By severing the stem of the tree, shrub, or vine, herbicide in a 50% wetland-approved herbicide and 50% water is applied to the cambium of the stump. This is only effective during the later part of the growing season, during the time plants are returning resources to their root system.

Woody Trees, Shrubs, and Vines

Oriental Bittersweet (Celastrus orbiculatus)

The bittersweet present at the Dorothy Road site is primarily observable in fully-grown vines (Photo 1). These climbing vines can strangle, reduce the health of native trees, and make them more susceptible to snow and ice storms. Additionally, this species flowers profusely and can hybridize with native Massachusetts (S3 uncommon) American bittersweet *(Celastrus scandens*).

Small plants of this species can easily be hand-pulled in the spring when the ground is wet.

Medium-sized or matting plants that have yet to climb into the canopy can be sprayed with backpack sprayers and a Glyphosate product during the summer until leaf drop in the fall.

Large vining individuals that have climbed into the tree canopy of larger trees must be cut-stumped.

Norway Maple (Acer platanoides)

Norway maples are widespread on these property parcels and represent the largest estimated basal area of tree species present at the site. Additionally, many seeds of this species were observed in the leaf litter during the site visit and will play into the future management strategies for this area.

Due to the size of these species, it will be necessary to cut these trees and treat the stumps with a cut-stump application. Due to the proximity to wetlands, this application should preferably be applied with a Buckthorn Blaster to reduce off-target damage to native plant species.

Once the trees have been cut down and treated, there are two options for the tree material. The remaining stumps could be chipped in place to reduce germination of this species and other invasive plant seeds present like garlic mustard (*Alliaria petiolata*). Alternatively, the logs could be used to create wildlife piles on the exterior of the habitat area or in the conservation restriction area. These piles could provide additional habitat for small mammals, amphibians, and reptiles as well as fungi and insects.

Tree-of-Heaven (Alianthus altissima)

Similar to Norway maples (*Acer platanoide*s), this tree species should be felled, and the stump treated. Smaller plants with accessible foliage can be treated with a 5% - 7% wetland-approved Glyphosate solution applied with a backpack sprayer.

Common Buckthorn (Rhamnus cathartica)

A difficult woody species to control with foliar treatments, the ideal treatment method for this species is mechanical control via digging and removal of the tree along with the root system. This method is easier with seedlings or small plants. As the plant matures, removal with a machine may be necessary. An alternative approach is to sever the tree and treat the stump with a cut-stump application at the end of the growing season.

Autumn Olive (Elaeagnus umbellate)

Observed occurring in a low to medium density within the habitat restoration area, this shrubby species rarely grows taller than 8 feet and can either be treated with a foliar treatment or cut-stump treatment. Seeds of this species are probably present in the seed bank and should be on the list of species to monitor during future site visits.

Multiflora Rose (Rosa multiflora)

This species was observed in low densities mixed in with Japanese knotweed (*Fallopia japonica*) and garlic mustard (*Allaria petiolata*) throughout the habitat restoration area. This invasive species is killed most effectively with a mid-summer into fall foliar treatment or with a cut-stump treatment during the same period.

These plants were observed in February without fruit and likely do not currently flower under a closed canopy. With the increase in canopy gaps with the removal of competing tree species like Norway maples (*Acer platanoide*s), there is an increased likelihood that these plants could develop flowers and fruits if left untreated.

Glossy buckthorn (Frangula alnus)

There were no mature specimens of this species observed during the February site visit. This could suggest that there's a mature seed source close by, or the plants that are present are a result of bird dispersal. The plants observed were waist-high on average and not mature enough to produce fruits.

Management of this species could be accomplished with mechanical control or with backpack sprayers and a foliar application during the growing season until leaf drop. Cut-stump treatment of small stems like in this situation isn't as effective due to human error and small stems are often missed. This non-treatment of small stems creates a situation for sprouting. If follow-up treatments aren't made, the resulting effect of the sprouting is growth in the number of stems present which exponentially increases the number of possible flowering stems and future fruits.

Common Ivy (Hedera helix)

This species was only observed in one location and comprises a very low percentage of the total number of invasive plants at this location. Invasive plants of this species should either but cut-stumped or foliar treated along with other woody invasives during the July – October window.

Honeysuckle (Lonicera spp.)

At least two species of invasive honeysuckles (*Lonicera spp.*) with two different growth forms were observed during the February site visit.

The vining Japanese honeysuckle (*Lonicera japonica*), was commonly seen on the forest floor but not growing up into trees (Photo 3). The most effective treatment for this species is a foliar treatment during the growing season.

The second species of invasive honeysuckle was of the shrub-type growth habitat. There are three to four invasive *Lonicera* species present in New England. Identification of these two species is only possible during fruiting/flowering. There were few mature specimens of these species within the treatment area. Treatment of these occurrences can be treated at the same time as *Lonicera japonica*).

Herbaceous Plants

Japanese knotweed (Fallopia japonica)

This invasive species occurs in high density throughout the treatment area as well as where activities will take place (Photo 2). These plants have low seed viability and are primarily spread via cuttings of the stem or pieces of the rhizomes. This makes it particularly important for the cleaning of incoming and outgoing construction equipment during the construction phase of this project.

This species is best treated with a foliar solution after flowering has completed, typically in September. Other control methods for this species are often time-consuming and ineffective, but with a well-timed foliar treatment, mature populations can be reduced 90% - 95% after the first season. It's imperative that after treatment the plants are left undisturbed until at least November (2 months) to absorb the herbicide into their root system for the greatest effect.

Common Reed (Phragmites australis)

Although this species does not occur in the area included in the scope of this habitat management plan, addressing this species' presence in the surrounding wetland is valuable for adaptive management planning. This species occurs in the wetland southwest of the project area and within the Conservation Restriction area and should be addressed in relation to wetland habitat, restoration, and water quality. This species also has the potential to spread into the habitat restoration area with future flood events and the nature of the soil composition at the site.

Treatment of this species should be made after the plants have tasseled (flowered) during the months of September/October. Similar to Japanese knotweed (*Fallopia japonica*), this species has very few viable seeds and primarily spreads asexually through stem and rhizome fragments. The most effective treatment for this species is a foliar treatment made with a wetland-approved Glyphosate product in a 5% - 7% Thinvert solution applied with backpack sprayers.

Garlic Mustard (Alliaria petiolata)

The site at Dorothy Road is heavily infested with this invasive species. As a biennial, this species undergoes one season of non-reproductive growth (basal leaves) before it bolts (flowers) in the second season. During the site visit both basal rosettes (first year plants, Photo 4) as well as desiccated mature plants (second year plants, Photo 5) were observed. Seeds of this species can remain viable for up to 10 years in the soil. For this reason, a successful management plan for this species must first interrupt seed dispersal.

Mechanical control for this species can be effective but due to this species ability to continually flower through the growing season, it's unreasonable to assume that one pre-flowering cutting will be sufficient to interrupt the seed bank. This species, even after being severed from the main stem can still flower and produce viable seeds.

Due to the size of the infestation at the site, it is reasonable to consider a foliar application of a wetland-approved herbicide early in the spring to eliminate flowering plants permanently. A month after the initial treatment of both first and second-year plants, it would be beneficial to apply a minimum of 3" of woodchips to act as a smothering layer to eliminate the possibility for any existing seeds to germinate.

Table 1: Invasive Species List, Density, Recommended Control Methods, and Timing Summary

Invasive Species Common Name	Scientific Name	Density	Control Method	Treatment Timing
Japanese knotweed	*Fallopia japonica*	High	Foliar	August - October
Common Reed Grass	*Phragmites australis*	Adjacent to the treatment area	Foliar	August - October
Garlic Mustard	*Alliaria petiolata*	High	Hand-Pulling/Foliar	March - May
Oriental Bittersweet	*Celastrus orbiculatus*	High	Cut-Stump/Foliar	July - October
Norway Maple	*Acer platanoides*	High	Cut-Stump	July - October
Tree-of-Heaven	*Alianthus altissima*	Low	Cut-Stump	July - October
Common Buckthorn	*Rhamnus cathartica*	Low/Medium	Cut-Stump	July - October
Autumn Olive	*Elaeagnus umbellata*	Low/Medium	Cut-Stump	July - October
Multiflora Rose	*Rosa multiflora*	Medium	Cut-Stump/Foliar	July - October
Glossy buckthorn	*Frangula alnus*	Low	Cut-Stump/Foliar	July - October
Common Ivy	*Hedera helix*	Low	Cut-Stump/Foliar	July - October
Honeysuckles	*Lonicera spp.*	Low/Medium	Foliar	July - October

Mechanical Pre-Treatment Approach

Due to the current site conditions at the habitat restoration location, it could be beneficial to pre-treat the site with mulching equipment like a Brontosaurus mower or ASV mulcher. Machines like this can immediately chip woody debris and plant material creating a more accessible site for future invasive management visits. This approach additionally has the advantage of creating resprouting vegetation that can be treated when knee-high, reducing the required labor and herbicide use. Mechanical pre-treatment isn't a perfect process however and species like bittersweet which could be vining around trees intended for retention would have to be cut by hand for protection. Another potential benefit from this pre-treatment process is an increase in soil disturbance. Normally this would cause issues after an initial chemical treatment, but in this case, it could assist in forcing germination of the seed bank and lessening future chemical treatments by creating a mass germination event before an initial chemical treatment.

If mechanical pre-treatment was a desired plan for this property, I would suggest having the Japanese knotweed (*Fallopia* japonica) treated before the mulching. In my experience success is more likely when healthy plants of this species are treated with chemicals. Cutting *Fallopia japonica* changes the hormones and the resprouts take many more years to get under control after this scenario. Additionally, the spreading of this material to other areas on or off the site will be reduced if these mature healthy plants are treated before a mulching treatment.

Coordination of a management approach like this is difficult. It helps if the contractor can do both the mechanical and chemical treatments. If this isn't possible and two contractors are required, timing of the two processes will be key to the success of the project. Ideally, a mechanical pre-treatment approach would be completed during the months of November – March.

Invasive Species Monitoring Program

After the implementation of the initial management approach strategy, it will be necessary to begin a regular monitoring program to capture any newly established species, collect information on the success of the treatment, and adapt future management control actions. Due to the proposed disturbance activities for the site, proximity to other invasive plant populations not presently at the site, and the high possibility for invasive plants in general monitoring should be implemented to account for these probable introductions.

Monitoring immediately after a treatment isn't necessary and it will usually be beneficial to delay monitoring until the next growing season or alternate years of treatment and monitoring. At least five separate monitoring events should take place intermittently over 6 years after completion of the initial and follow-up treatments to assess success and changes to management strategies.

2. Appendices

Invasive Species Control Management Options & Schedules

Table 2: Chemical Treatment Solution Recommendations

Treatment Type	Applicable Species	Description	Timing
Foliar	Woody seedlings, smaller shrubs, *Fallopia japonica, Phragmites australis*	5% - 7% Solution wetland approved herbicide (i.e. Glyphosate Round-Up Custom) and 0.5% non-ionic surfactant (i.e. Aquachem 90) with water or Thinvert. Applied during the growing season to actively growing foliage.	July – October*
Cut-Stump	Woody vine, shrub, tree species where foliage is not treatable.	50% Solution of wetland approved herbicide (i.e. Glyphosate Round-Up Custom) mixed with water. Application is best made with a Buckthorn Blaster.	July – October*

*For specific species treatment timing refer to Table 1.

Table 3: Option 1 - Chemical Control

Task Chemical Approach	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. Garlic Mustard Chemical Treatment												
2. Cut Mature Trees (Norway Maple/Tree-of-Heaven) and Stump Treat												
2a. Create Wildlife Piles												
2b. Retain Logs for Chipping/Weed Suppression												
3. Foliar Treatment on Woody Plants*												
4. Foliar Treatment on Japanese Knotweed												
5. Chip Norway/Tree of Heaven logs for 3" mulch after GM treatment												
6. Monitoring/Follow-up Treatment												
7. Monitoring												

Season 1
Season 2
Season 3
Seasons 4, 6, 8, & 10

In this scenario, each treatment time is laid out by season. If subitems are accomplished in the proper order without delays, this phase of the project could be completed in two seasons.

Table 4: Option 2 – Mechanical Control Option

Task Mechanical Pre-Treatment Approach	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1. Cut Mature Trees (Norway Maple/Tree-of-Heaven) and Stump Treat												
1a. Create Wildlife Piles												
1b. Retain Logs for Chipping/Weed Suppression												
2. Chemical Treatment of Japanese knotweed (Foliar)												
3. Mechanical Mulching Treatment												
4. Site Wide Chemical Control Treatment												
5. Chip Norway/Tree of Heaven logs for 3" mulch after GM treatment												
6. Monitoring												

Season 1
Season 2
Season 3
Seasons 4, 6, 8, & 10

This scenario includes a mechanical mulching treatment. Imperative to this option is a chemical treatment of Japanese knotweed (*Fallopia japonica*). Selection of this option without first treating these species and delaying mulching for a few months is not recommended.

Photos

Photo 1: Oriental bittersweet (*Celastrus orbiculatus*) climbing up a mature black cherry tree in the habitat restoration area off Dorothy Rd.

Photo 2: A picture of the habitat restoration area off Dorothy Rd. The conditions seen here were roughly consistent across the 4.7 acres.

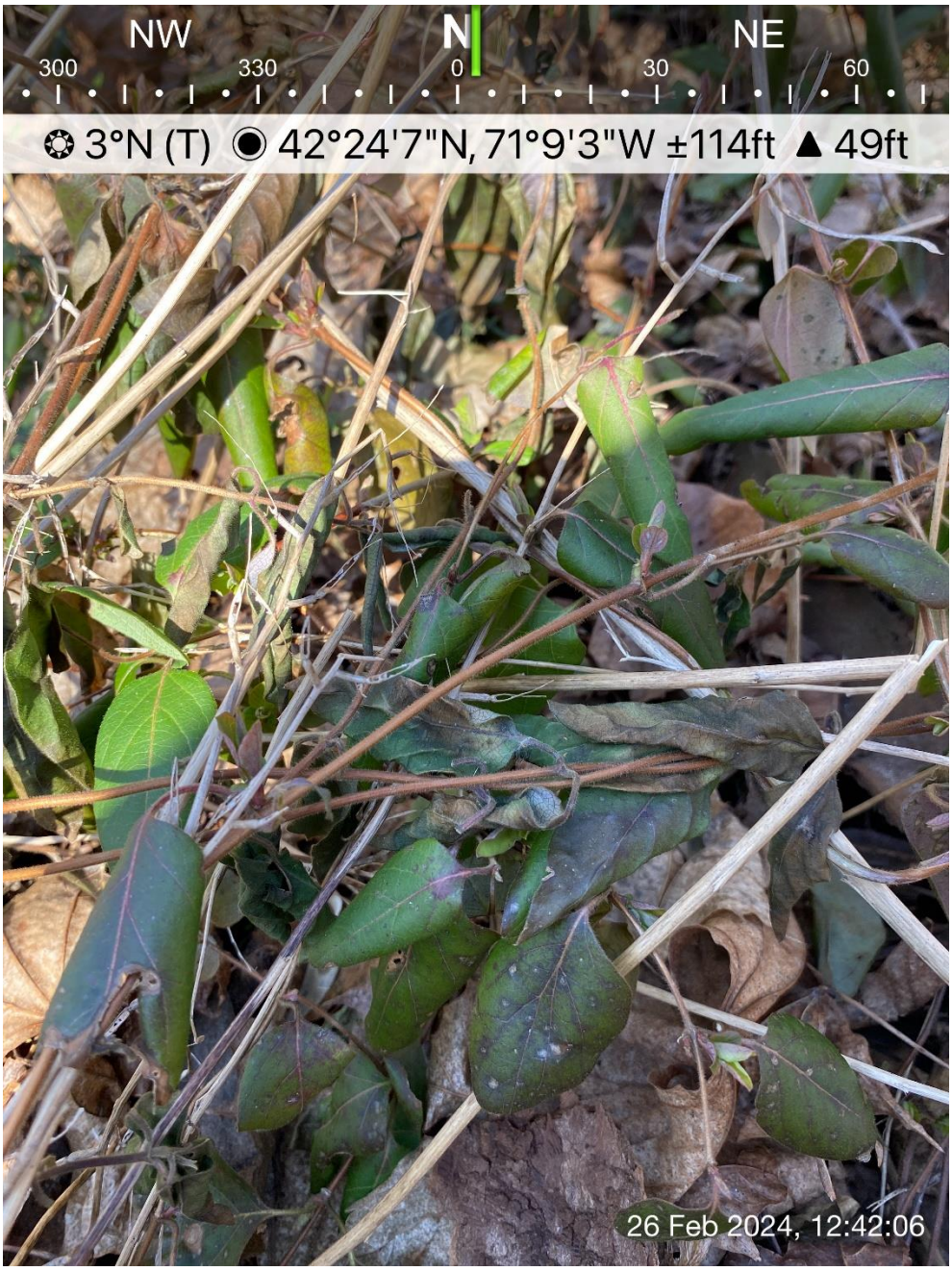
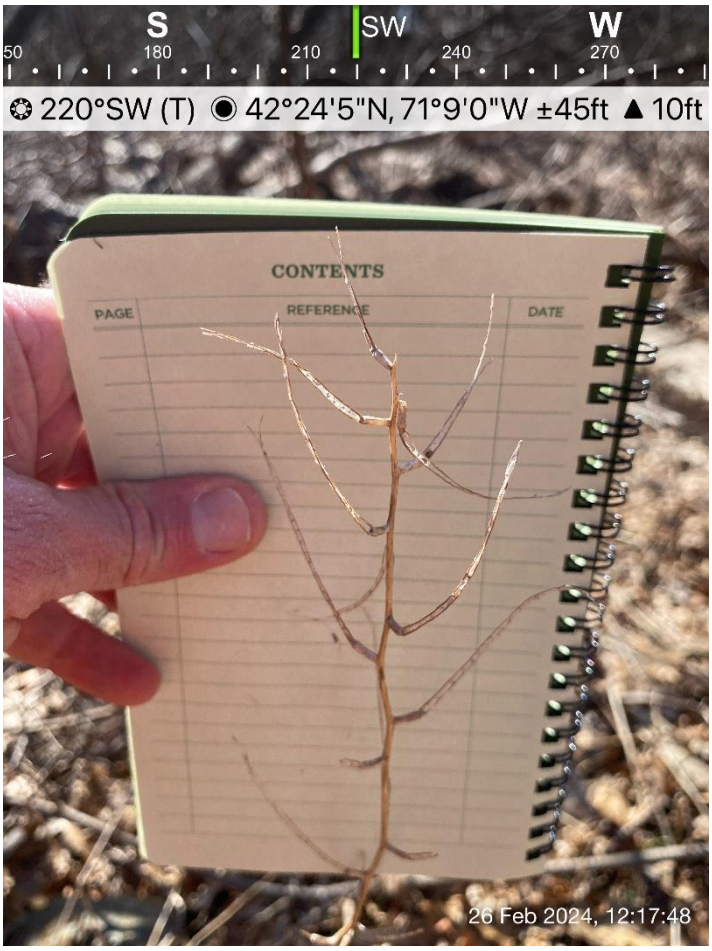
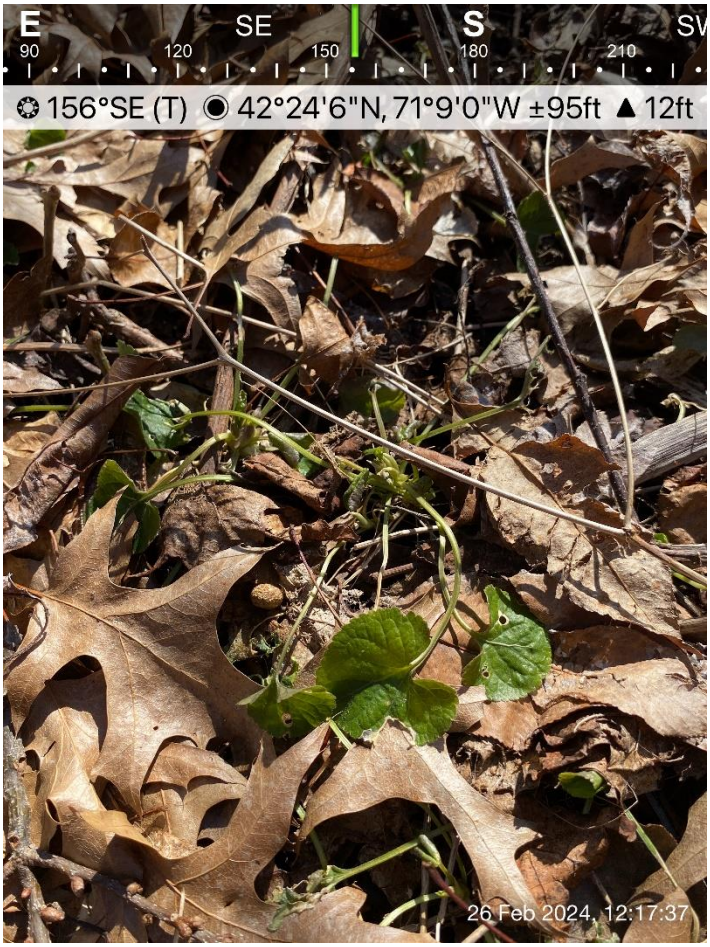


Photo 3: *Lonicera japonica*, a common invasive on the forest floor in the habitat management parcel.





Photos 4 and 5: Garlic mustard (*Alliaria petiolata*) with two different looking growth forms. Photo 4 (Left): Second year plant that previously flowered, set and dispersed seed. Photo 5 (Right): Basal rosettes from the 2023 season that will flower and produce seed this season.

BSC GROUP

Tom Groves

Senior Botanist

YEARS OF EXPERIENCE

10

EDUCATION

Framingham University
B.S. Wildlife Biology (2014)
UMass Lowell
B.A. English Writing (2006)

CERTIFICATIONS

New Hampshire Supervisory Pesticide Applicators License #S-2229958 (2017 – 2022)
Vermont Pesticide Applicators License #1208-4955 (2014 - 2023)
Massachusetts Pesticide Applicator License #AL-0052105 (2014 - 2023)
OSHA 10-Hour Construction Safety and Health

AFFILIATIONS

New England Botanical Society Field Trip Program Coordinator

2024 - Present

New England Botanical Society Member

2020 – Present

Native Plant Trust Plant Conservation Volunteer

2014 - Present

MEET TOM

Tom is an observant botanist dedicated to learning as much as he can about New England's natural habitats, ecosystems, and most importantly, plants. Over the past 10 years, Tom has been privileged enough to spend most of his time in the varied habitats of New England observing the habitats and flora. This natural habitat immersion and dedicated observation time have helped hone his ability to find rare plants and see the small differences in cryptic and often overlooked species. Tom has been providing ecological restoration advice to national wildlife refuges, state biologists, NRCS, and private landowners in Massachusetts, New Hampshire, and Vermont for the past decade. From 2015 – 2023, Tom was responsible for planning, managing, and executing 1,400 acres of habitat restoration work annually on behalf of a Vermont-based forestry company. In the past year as a Senior Botanist with BSC Group, Tom has been leading rare plant surveys, ecological restoration mitigation strategies, and permitting of ecological projects with clients like National Grid, Eversource, and Bradley International Airport. Additionally, Tom was a BSC Team member working with the City of Stamford, CT to map and prepare invasive management strategies to assist the city in meeting ecological restoration goals. Tom is a botanist who is forever intrigued by the world around him, excited by natural habitats, and observant of all the special components of the biodiversity in New England.

WORK RELATED EXPERIENCE

BSC Group | Manchester, NH | 2023 – Present
Senior Botanist

Long View Forest | Hartland/Westminster, VT | 2015 – 2023
Woodland Services Division Manager/Botanist

Polatin Ecological Services | Gill, MA | 2014 – 2015
Habitat Restoration Technician

Native Plant Trust | Framingham, MA | 2013 - 2014
Rare Plant Conservation Fellow

Tom Groves

Reported New Populations of Rare Plants (S1/S2)

Triphora trianthophora – Dummerston, VT 2018
Collinsonia canadensis –Bennington and Rutland Counties 2022
Silene ovata – Asheville, NC 2021
Cypripedium parviflorum var. pubescens – Cornish, NH 2022
Lupinus perennis – Hudson, NH 2023
Viola adunca – Royalston, MA 2023
Carex castanea – Grafton County, NH 2023
Pycnanthemum virginianum – Charlestown, NH 2023
Silene stellata –Stamford, CT 2023
Carex typhina –Wethersfield, CT 2023
Gentianopsis crinita –Lebanon, NH 2023
Hackelia virginiana –Lebanon, NH 2023
Viola lanceolata –Vernon, VT 2023
Polygala polygama –Vernon, VT 2023
Pycnanthemum torrei – Pelham, NH 2023

New Populations of Uncommon Plants (S3)

Celsastrus scandens – Swanton, VT 2020
Spiranthes lucida – Manchester, VT 2022
Dirca palustris – Arlington, VT 2022
Triosteum perfoliatum – Cullowhee, NC 2022
Mimulus alatus – Stamford, CT 2023

PROJECT EXPERIENCE HIGHLIGHTS

Eversource, 400/500 Lines Rebuild Project (Zone 5 of the ECT Program), Ledyard and Preston, CT

Senior Botanist

Oversaw the Atlantic White Cedar mitigation portion of this project including fencing, planting, long-term monitoring, reporting, and vegetation management to ensure compliance with Water Quality Certification (WQC) guidelines.

National Grid, Eversource, and Rhode Island Energy Rare Plant Surveys and Mitigation Guidance for Various Utility Projects

Senior Botanist

Perform rare plant surveys for transmission line companies in Vermont, New Hampshire, Massachusetts, Connecticut, and Rhode Island. Plan, identify, map, and report on rare plants as well as invasive populations in priority habitats in these New England states for reporting to Natural Heritage Programs to support utility line projects.

Bradley International Airport (BDL) Taxi Way Expansion Project, Windsor, CT

Senior Botanist

Surveyed, assessed, and reported on the quality of sand barren habitat in project expansion areas. Data was collected, mapped and a habitat restoration plan was prepared to provide the best ecological restoration options for rare species including lepidopterans, plants, and provide ecological recommendations to BDL and Natural Diversity Data Base (NDDB)..

New England Power Company A1/B2 ACR Project Vernon, VT

Senior Botanist

Surveyed, collected seed, and provided recommendations to Vermont Agency of Natural Resources on transplanting of impacted rare plant species within the ROW.

Green Mountain National Forest, Mary Beth Deller, Vermont

Invasive Plant Specialist/Botanist

Provide expert recommendations on prioritization of invasive species treatment areas as well as provide appropriately timed treatments and reports.

Parker River & Great Bay National Wildlife Refuge, Nancy Pau, Portsmouth, NH & Newburyport, MA

Invasive Plant Specialist/Botanist

Tom Groves

Work with MA Fish and Wildlife to advise, prepare, and execute invasive plant management practices in the NWRs.

ADDITIONAL EXPERIENCE

University of New Hampshire Cooperative Extension - 2019
Senior Botanist/Educator

Continuing education instructor for extension office on timber stand improvement and integrated pest management strategies.

Antioch University – 2021 & 2022
Senior Botanist/Educator

Instructor for Master's Degree program on invasive plants and management strategies.

Rhode Island Nursery and Landscape Association - 2023
Senior Botanist/Educator

Continuing education instructor for Introduction to Botany and invasive plant management

University of Rhode Island Cooperative Extension 2023 - Present
Senior Botanist/Educator

Continuing education instructor for invasive plant identification and invasive plant management.

AWARDS AND AFFILIATIONS

Native Plant Trust

2014 Marylee Everett Conservation Fellowship

The Wildlife Society

2013 Scholarship Awardee for 2-week long Wildlife Techniques course with Castleton State College and VT Fish & Wildlife

New England Botanical Society

2022 Les Mehrhoff Botanical Research Award