2015
Final Report
Esopus, NY Mile-a-Minute Control Project

Prepared for
The Lower Hudson Partnership for Regional Invasive Species Management

Prepared by
Trillium Invasive Species Management, INC

This document summarizes the deliverables completed towards the 2015 Esopus Mile-a-Minute project. Conception and execution of the project was made possible through a partnership between; The Catskill Regional Invasive Species Partnership, Scenic Hudson and Trillium Invasive Species Management, INC.

This project was contracted by the Lower Hudson Partnership for Regional Invasive Species Management (PRISM) using funds from the Environmental Protection Fund as administered by the New York State Department of Environmental Conservation

Project Introduction

In the fall of 2014 an infestation of Mile-a-minute (MAM) vine (*Persicaria perfoliata*) was identified in the Town of Esopus, NY. Subsequently, multiple patches were discovered along a railroad corridor and in neighboring private wooded and residential lands, some under conservation easement through Scenic Hudson, others within Scenic Hudson's Shaupeneak Ridge Park. This patch assemblage occurs within approximately 145 acres, is the first occurrence of mile a minute vine identified in Ulster County NY and is one of the most northern patches in New York State. For these reasons this infestation is cause for significant concern: it represents a considerable threat to the yet-uninvaded Catskills region, and important conservation lands held by Scenic Hudson.

A partnership was developed between Scenic Hudson, CRISP and Trillium ISM in order to develop and implement a strategy for management. The partners surveyed the area and developed a proposal for action in 2015 that would: 1. develop a management plan; 2.continue survey efforts; 3. establish community outreach in the immediate area and; 4. initiate control of the infestation. Initial landowner outreach in the winter of 2014-2015 only connected with one property owner, the Peck property. LHPRISM funding was awarded to support planning, monitoring and management support for the Peck property.

In 2015 the partnership engaged in community outreach, established a management plan for a portion of the infestation and implemented control measures using chemical, biological and manual measures.

Outreach to owners of land within the estimated infestation boundaries is ongoing and instrumental to continuing efforts to suppress this patch. The two largest landowners that were not involved in control for 2015 have been contacted. Surveys on their lands have taken place and currently Trillium ISM and Scenic Hudson are working to ensure inclusion of these lands in the project scope for 2016.

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Project Narrative

A large assemblage of mine-a-minute vine (*Persicaria perfoliata*) patches was identified in 2014 by Scenic Hudson in the Town of Esopus, Ulster County, NY. This assemblage extends along a rail road corridor and into private wooded and residential lands- some of which are under conservation easement through Scenic Hudson- and into Scenic Hudson's Shaupeneak Ridge Park. This project proposes to assist in controlling the largest patch of the mile-a-minute vine in this assemblage by providing a plan, aiding in control work and tracking/reporting on its progress on the Peck property- a privately owned parcel of approximately 79 acres.

A. Justification of the project and its importance

Mile-a-minute vine's invasiveness is ranked as "Very High" by NYS. While it is considered an established species within the LHPRISM, this patch is located in the northernmost corner of the LHPRISM, where it is still uncommon. The assemblage is the first occurrence within Ulster County and is in close proximity to the LHPRISM/CRISP boundary. Given these factors, CRISP and Scenic Hudson are engaging in an education and outreach campaign to prevent further spread of the species from this location. Scenic Hudson will be initiating control efforts on the portion of the infestation in their adjacent Shaupeneak Ridge Park- an approximately 800 acre property known for its diversity of species, natural communities and habitats, as well as its recreational opportunities. Scenic Hudson recently documented a healthy population of a NYS endangered grass (side-oats grama, *Bouteloua curtipendula)* less than 1,200 feet from the nearest mile-a-minute patch.

Ted Peck, the owner of one of the properties with the largest extent of mile-a-minute vine, is engaged in the nascent collaborative effort to control the infestation, and wishes to manage the occurrence on his property. However, he does not have the technical or financial resources to accomplish management planning and the necessary control activities on his 78.9 acre parcel.

The partners in this project aim to manage the population with the goal of preventing further spread into the immediate area and the region. Surveys, planning, and the first year's control work helped to inform longer-term goals (e.g. whether eradication is possible in any of the occurrence area). Outreach is ongoing to other owners of parcels within the known and probable extent of the infestation

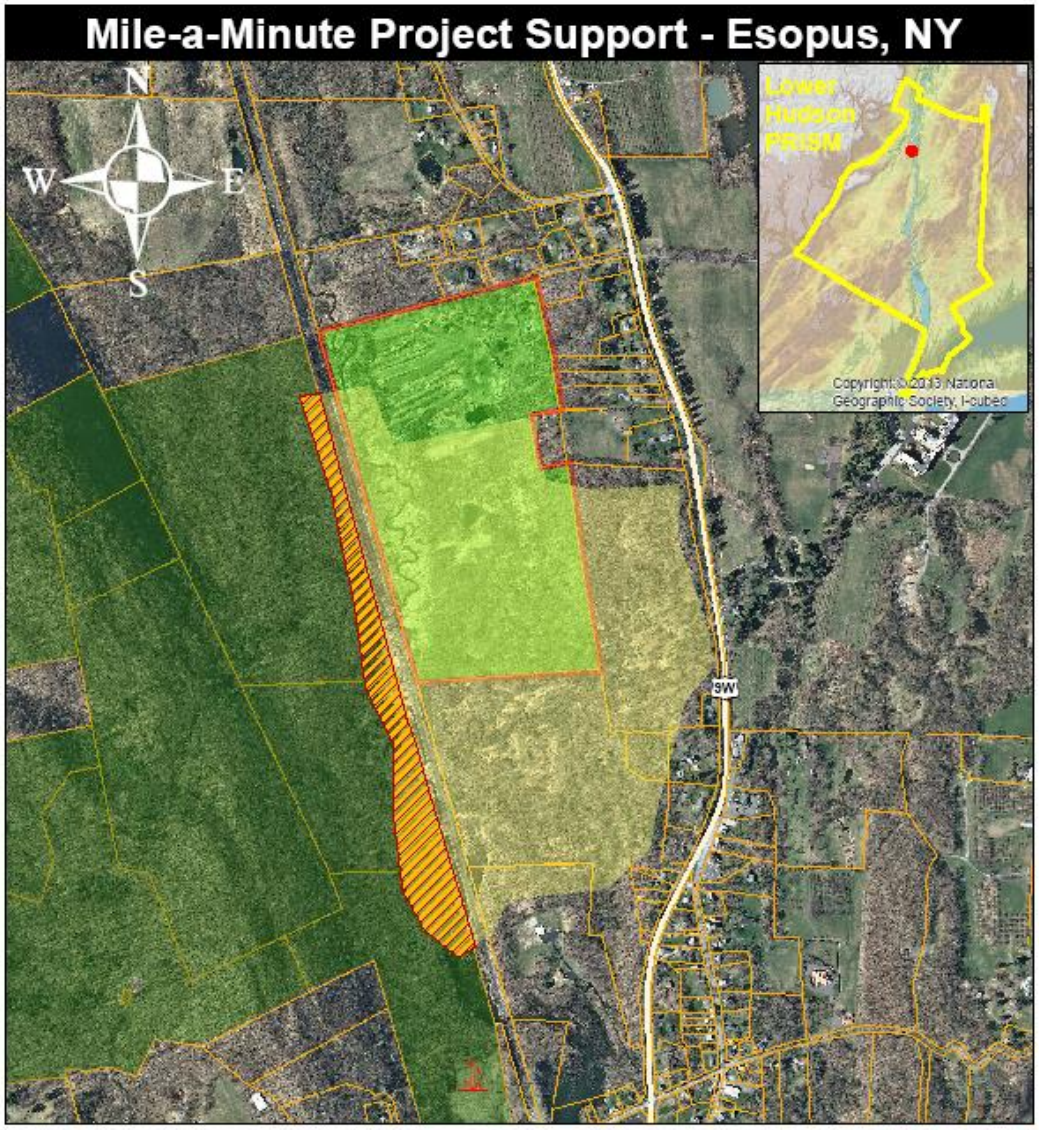
B. Breadth of application/regional implications

This project is the first step in executing a coordinated response to the first documented case of mile-a-minute vine in Ulster County. While this invasive vine is already present in much of the LH PRISM service area, it has not yet established in the most northern portions of the LH PRISM or in the Catskill Mountains. CRISP has invested considerable time and effort in keeping mile-a-minute vine out of its service area and this occurrence is currently the greatest known threat to that goal. Controlling this population is vital to protecting species and habitats in the Hudson Valley (e.g. a nearby occurrence of side-oats grama, a NY State endangered species) and in the Catskill Mountains, where the ecological function of the natural communities protects a large portion of New York City's water supply.

The project area occurs within all but one of the LHPRISM's Conservation Target Areas categories:

1. NYS Protected Areas
2. Land Fire Forest Block >500 ac
3. NY Natural Heritage Communities
4. Forest Blocks and Linkages
5. HREP Significant Biodiversity Areas
6. TNC Focal Portfolio Areas

Project Area Map



Map 1 – This map illustrates the probable extent of MAM populations, overlaid on a layer of parcel boundaries. The Peck property and Scenic Hudson Management areas were surveyed and treated in 2015. A significant goal for 2016 is to include the large parcels to the South and East of the Peck property.

Scope of Work and Deliverables[1]

Catskill Regional Invasive Species Partnership (CRISP)
CRISP staff hosted an informational session covering identification of mile a minute at the Town of Esopus fire station. Educational materials were also distributed at this event. In 2016 CRISP plans to survey areas surrounding the Esopus infestation within the CRISP PRISM's boundaries in order to ascertain how far westward the species has spread.

Scenic Hudson
As part of this project Scenic Hudson made the commitment to manage MAM populations on their adjacent property, and to reach out to the largest neighboring landowners to connect them with PRISM approved educational materials and management options. Additionally, they worked in collaboration with CRISP to organize a neighborhood meeting with a mile-a-minute vine presentation given by CRISP staff. Scenic Hudson staff also acquired permits for biocontrol release, purchased weevils and coordinated their release. Their staff has also created maps documenting the current known extent of mile-a-minute vine and has assisted in generating this proposal.

Outreach:
Eighty neighboring landowners, with ownerships larger than 2 acres, were compiled into a spreadsheet and mailed information on MaM with an invitation to an April 23rd meeting at the local fire station (<.5 from the infestation). The meeting consisted of a presentation on MaM biology from CRISP Program Coordinator Molly Marquand and a Q&A with both Ms. Marquand and Scenic Hudson Land Manager, Nate Nardi-Cyrus. About 25 individuals attended the meeting, with at least one adjacent landowner showing interest in walking their property to survey for MaM.

On July 13th, a MaM biology and management presentation was given by Nate Nardi-Cyrus to the Town of Esopus Environmental Board. The presentation was advertised to the general public by flyers at the Esopus Town Hall and was distributed through the Scenic Hudson Listserv. The date was chosen to coincide with the NYS Invasive Species Awareness Week. About 25 citizens attended, with favorable feedback given by participants. Scenic Hudson was asked to return next year to present on this topic again.

On November 6th at the NYBG Invasive Plant Summit, Nate Nardi-Cyrus described this project in a presentation entitled "*Collaborative Mile-a-Minute Management: Stories from the Northern Frontier",* to approximately 200 attendees.

Management:

A description of Scenic Hudson's management actions may be found appended at the end of this document.

Peck Property

The land owner of the 80 acre parcel implemented chemical and mechanical control efforts as recommended by the management plan. The land owner provided at least 80 hours of labor; beginning in May with brush cutting in Compartment 2 (see management map below),

[1] Each partner has provided a summary of their involvement in the project.

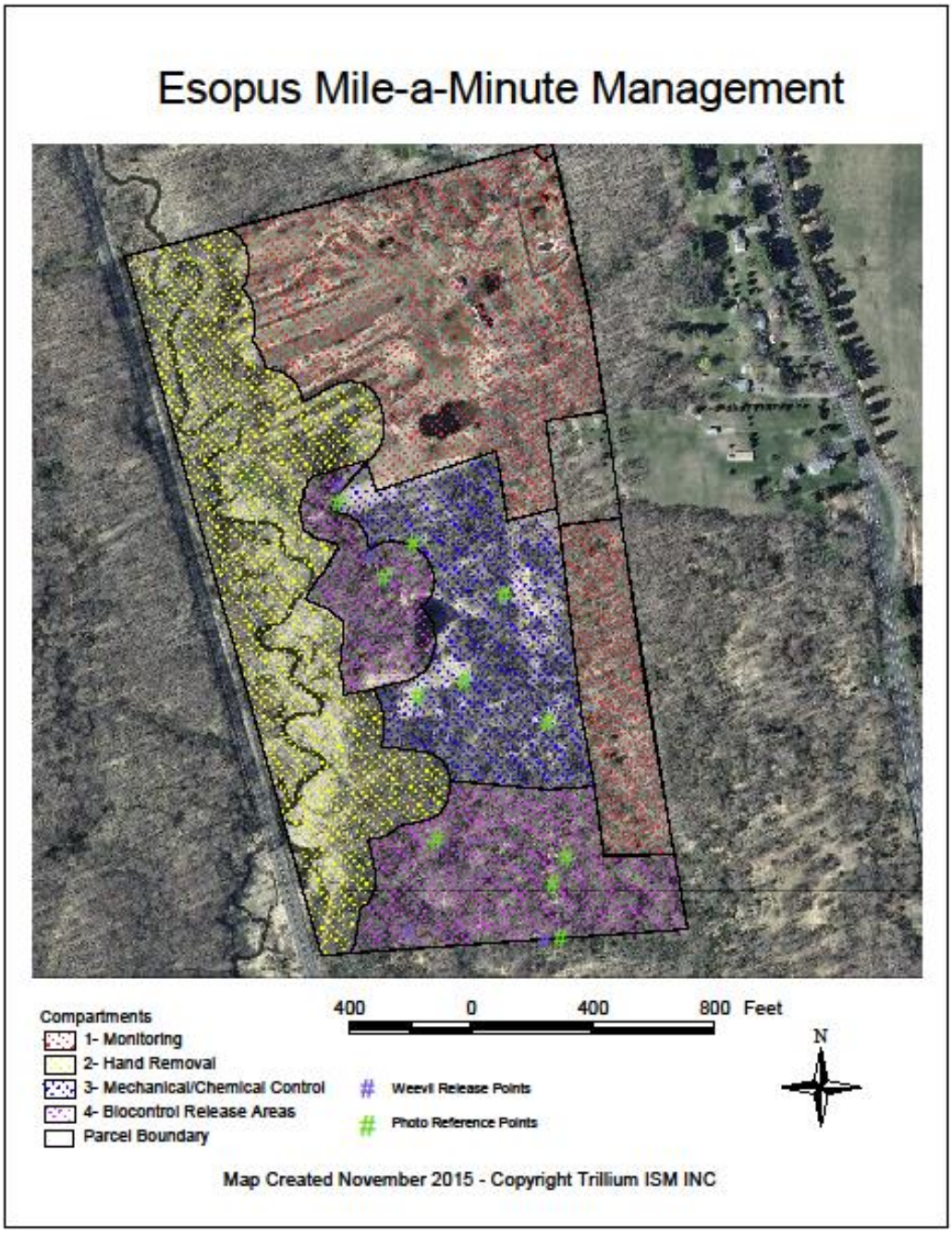
access was provided for post-emergent herbicide applications throughout June, July and into August

Trillium Invasive Species Management, INC

Trillium was responsible for delivering a management plan for the Peck property and aiding implementation of the management plan throughout the year to the extent that funding would allow. The following actions were implemented with the LHPRISM funds:

2015 Actions:

- Survey of the Peck Parcel for MAM locations began in late March and a management plan was finalized in April. The plan was reviewed and accepted by Scenic Hudson, as required by their easement agreement. The plan was submitted to the LHPRISM and is appended to this report.
- Photo monitoring points throughout the area were established at 11 locations throughout the property. Photos were taken throughout the year.
- Brush cutting to enable access to patches for herbicide application began in early May and was finished in mid-May.
- During a monitoring visit on 5/27 the bio-control weevil (*Rhinoncomimus latipes*) was identified on a high percentage of MAM stems throughout the management area.
- Post-emergent applications of herbicide began in mid-June and continued until seeds were formed in mid-August. Trillium applied approximately 52 ounces of Rodeo (EPA Reg No. 62719-324) at 1% concentration on approximately 4 acres within Compartment 2.
- In late June and early July transects were walked within Compartment 3 to hand pull MAM stems and mark their locations for follow-up monitoring.
- A follow-up hand pulling control in Compartment 3 took place in mid-August. Plants with seeds were bagged.
- Bio-Control was released with Scenic Hudson at four locations in the Peck Parcel on 8/26/15.
- Outreach to landowners and survey of three parcels comprising Southern, Central and Eastern portions of the patch.
- Presentation on project at LHPRISM Meeting, 11/12/15.
- Presentation on project at CRISP Partners Meeting, 12/5/15.
- Best Management Practice sheet developed.



Map 2 – Map outlines management compartments, biocontrol release points and photo monitoring locations for the Peck property.

Summary and Considerations for 2016

Much was learned about this infestation in 2015 as this was the first year any of the partners observed the site during the growing season. Experience with the control area in 2015 has underscored the need for increasing the scope of the management area in future years. There are several large, high-density populations within the 145 acres, and much of the area in between those populations has MAM growing in low density as well. However, all findings were not negative. One particularly positive finding from this season was the observation that the biocontrol weevil is already present throughout much of the infestation. Additionally, outreach to the neighboring areas did not turn up any new MAM populations outside of the immediate area.

Given that the control goal of this project was to suppress MAM seed production while the weevil is introduced and established, we are happy to get a jump-start on this process. The weevil is established and hopefully its populations are increasing to levels necessary for MAM suppression. For the time being, continued intervention in the form of chemical and manual control will suffice for suppression.

Outreach to neighboring land owners has resulted in contacting the remaining owners of properties with significant infestations. The inclusion of these lands will allow for suppression of the entire patch from the edges inwards.

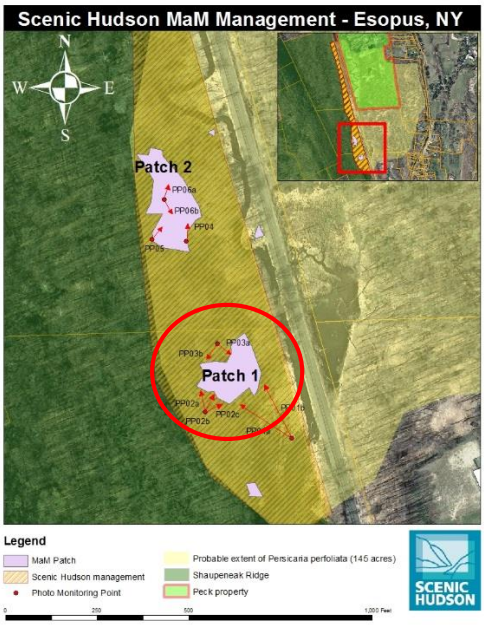
Appendices:

- Scenic Hudson Management Summary

- Peck Management Plan

Shaupeneak Ridge Mile-a-minute Vine Management 2015

Site Location:



Management Actions:

Date	Species Managed	Area Managed (m^2)	Person Hours	Method of Management	Life Stage
3/24/2015	Lonicera spp, Rosa multiflora, Vitis spp.	1730	20	Mechanical (Chainsaw/Brush Cutter)	Woody (Dormant)
6/5/2015	Persicaria perfoliata	1151	2	Manual (Hand-pull)	Vegetative
8/5/2015	Persicaria perfoliata	1151	3	Mechanical (Electric scythe)	Vegetative
8/19/2015	Persicaria perfoliata	1151	6	Manual/Mechanical (Hand-pull/Weed Wacker)	Fruiting
8/26/2015	Persicaria perfoliata	1151	1	Bio-control*	N/A
9/2/2015	Persicaria perfoliata	1151	3	Manual/Mechanical (Hand-pull/Weed Wacker)	Fruiting
9/18/2015	Persicaria perfoliata	1151	3	Manual/Mechanical (Hand-pull/Weed Wacker)	Fruiting
9/28/2015	Persicaria perfoliata	1151	3	Manual (hand-pull)	Fruiting
	Total:	**1730**	**41**		

*Biocontrol release on Peck CE with assistance from Trillium ISM. Refer to Peck Mgmt file for release locations.

Shaupeneak Ridge Mile-a-minute Vine Management 2015

Photo Monitoring:

March

August

May

September

July

Peck Property
Persicaria perfoliata (Mile-A-Minute)
Management Plan

Prepared by
Trillium Invasive Species Management, INC
April 2015

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LOWER HUDSON PRISM

Plant Profile

Mile-a-minute vine (MAM) is an herbaceous, annual vine with barbed stems native to East Asia. It is non-twining and uses barbs for grasping climbing structure rather than tendrils. Barbs are also present on the underside of the light green, triangle shaped entire leaves (1-3" across) which present alternately. Flowers are inconspicuous, small and white. Fruit are green when immature, turn deep blue when mature but are capable of germination even when green[2]. They are berry like, ~1/4" in size, produced in clusters and are produced from July until the first frost which kills the plant. Key character for identification is a round ocreae at the base of leaf and flower stems. The ocreae persists through the winter, along with most barbs on the reddish colored stems.

MAM gets its name from its reported ability to grow up to six inches in a day. It is a capable smothering vine that may grow 20-50' in a year. It is a prolific seeder and the seeds are dispersed by water, birds and animals. As an infestation develops over years it will create dense mats over any supporting structure, killing most if not all plants where it is growing and creating maintenance issues on any man-made structure.

Context and Scope

A large assembly MAM patches was identified in 2014 by Scenic Hudson in the Town of Esopus, Ulster County, NY. This assembly extends along a rail road corridor and into private wooded and residential lands, some under conservation easement through Scenic Hudson, and into Scenic Hudson's Shaupeneak Ridge Park. This patch of MAM represents the northern most patch known in the Hudson Valley and the only known patch in Ulster County, NY. The probably extent of the entire assembly is 148 acres[3]. The largest portion of which occurs within the Peck property, 78.9 acres, in the Town of Esopus. Approximately two-thirds of the parcel is invaded with MAM occurring in low (<6 stems on an isolated brush or tree) to high (complete smothering of all other vegetation) density.

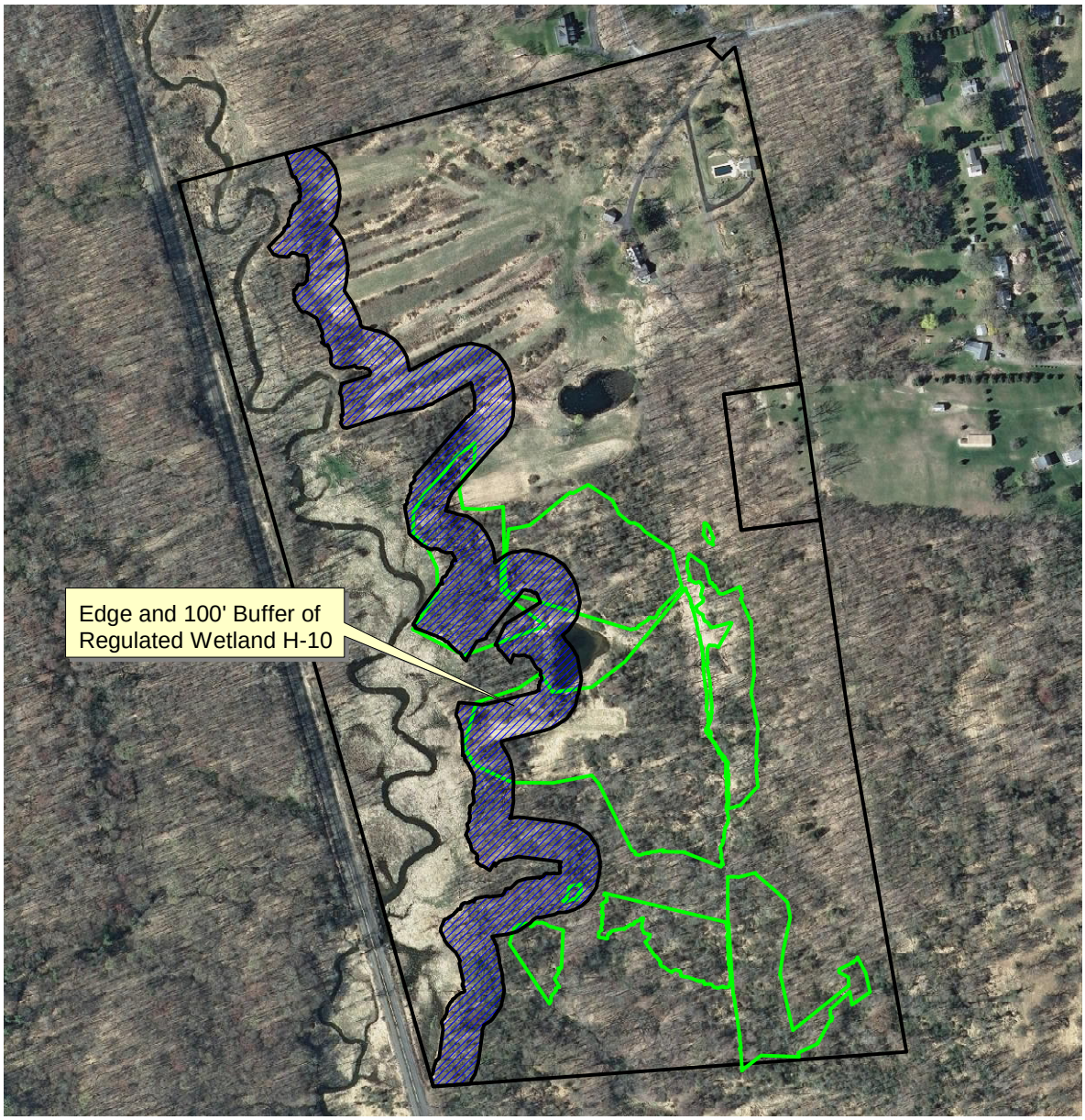
The property is bordered on the West by wetland H-10, a 57.5 acre class two wetland, and an unnamed class C stream that feeds into Black Creek. The property contains two man made ponds. Much of the property is wooded (Cherry, Ash (with significant EAB kill), Black Locust, Maple) with an understory composed primarily of Japanese Barberry, Morrow's Honeysuckle, stiltgrass and multiflora. A dense patch of Star-of-Bethlehem (*Ornithogalum umbellatum* L) is growing in the wooded area between the ponds. Approximately 7.5 acres are managed shrub rows. The wide diversity of habitat types, along approximately ½ mile of stream frontage and rail corridor make the area an excellent site for many species of birds both migratory and indigenous that may be one of the primary vectors for MAM dispersal.

[2] Biology and Biocontrol of Mile-A-Minute Weed, FHTET-2008-10, http://www.fs.fed.us/foresthealth/technology/pdfs/Biocontrol_MAM_webfile.pdf

[3] Scenic Hudson estimate.

Site Map

Peck Property Map - Mile-A-Minutue Extent
Esopus,NY



Mile-A-Minute Patches

400 0 400 800 Feet

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Orthophoto source - NYSGIS Clearinghouse; Parcel Source - Ulster County Information Services

Management Plan

This document outlines a control strategy for the vine patches located on the Peck property. Initially the goal of this plan is to suppress seed production. However, given that this patch assembly is on the northern range of MAM's spread in the region and that the habitat is an ideal location for dispersal, the eventual goal for this plan is elimination. This goal should be revisited in 2017 depending on MAM dispersal and biocontrol establishment.

A complete suite of tools is available for this control effort; chemical, manual and biocontrol (*Rhinoncomimus latipes*). The extent of manual and chemical control that will be exercised is dependent on commitments made prior to the writing of this document. The patch was discovered in 2014 and soon thereafter it was determined that control should be exercised.

Since that time three parties have been engaged to provide resources for control. A commitment was given by Scenic Hudson to supply biocontrol and permitting for release. The landowner committed to supplying extensive mechanical and chemical control tools and ~80hours of labor. Funding was sought and awarded to enable Trillium I.S.M. INC to aid the control effort with an additional 88 labor hours of mechanical/manual/chemical control and monitoring. Given the large size of the infested area it is possible that not all of the infestation will experience some level of control. As such, this management plan will be implemented until these resources are exhausted. Management in following years will be adapted based on level of control attained in 2015.

The primary goal is reduction of propagule production and suppression of the overall patch while eliminating stems growing outside of the main high density cores. In general, as the biocontrol establishes itself and suppresses propagule production in some of the higher density areas, mechanical and chemical control will be implemented on outlier and isolated patches.

The property has been divided into compartments with control measures specified based on MAM density, proximity to neighboring patches, and proximity to wetland H-10.

1. No MAM observed. Monitor and spot treat with herbicide if observed.
2. No MAM observed or only on edges. Monitor and hand pull or weed-wack in mid and late summer. Monitor for biocontrol symptoms before controlling.
3. MAM in dense stands, mechanical cutting required for access for chemical control
4. MAM in dense stands, biocontrol release area.

Available Resources for 2015

Chemical – A 2(ee) recommendation exists for MAM. This recommendation establishes MAM as a labeled target for the product Rodeo with foliar application. Rodeo is a Glyphosate based product. As such it provides non-selective plant control. Non-target herbicide kill is of low concern given that the MAM is primarily growing on invasive honeysuckle and multiflora or around stiltgrass and other invasive plants such as star-of-bethlehem.

Manual/Mechanical – The land owner owns and will employ mechanical equipment such as a tractor, skidder, brush cutter, etc. Trillium owns and will employ walk-behind brush cutter, hand-held brush cutter and chainsaws.

Biocontrol - *Rhinoncomimus latipes* is a weevil effective in the control of MAM. Scenic Hudson has agreed to purchase 1000 weevils for release on and around this property and has secured the necessary permits for the release. This will occur on or about August 12th, 2015. Release should occur at 4-5 points within the two compartments, 250-200 weevils per location.

2015 Control Schedule

Spring –

Compartment 3 - Brush cutting and mowing to enable access for chemical control later in year.

Late Spring/Early Summer –

Compartments 1,2,3 –Implement control strategies outlined for each compartment, including chemical and mechanical controls outlined above.

Summer –

Compartments 1,2,3 – Monitor and follow-up control with strategies outlined for each compartment, including chemical and mechanical controls outlined above.

Compartment 4 – Biocontrol release.

Late Summer –

Compartments 1,2,3 – Continued follow-up control as resources allow, particularly in Compartment 2 where primary control method is mechanical/manual.

Monitor control activities in all compartments.

2016 Control Schedule –

*Scenic Hudson may purchase more biocontrol for release this year.

Late Spring –

Compartments 1,2,3 –Implement control strategies outlined for each compartment unless establishment of biocontrol is observed.

Compartment 4 – Monitor for biocontrol establishment (signs of egg laying at nodes)

Summer –

Compartments 1,2,3 – Monitor and follow-up control (chemical or manual depending on compartment strategy) where no biocontrol is observed.

Compartment 4 - If necessary, collect weevils and distribute to widen range in Compartment 4.

Late Summer –

Compartments 1,2,3 – Continued follow-up control as resources allow, particularly in Compartment 2 where primary control method is mechanical/manual.

Monitor control activities in all compartments.

2017 and Beyond

Control methods and efficacy should be reviewed at this point to determine best options for control. Many factors may alter the management plan including;

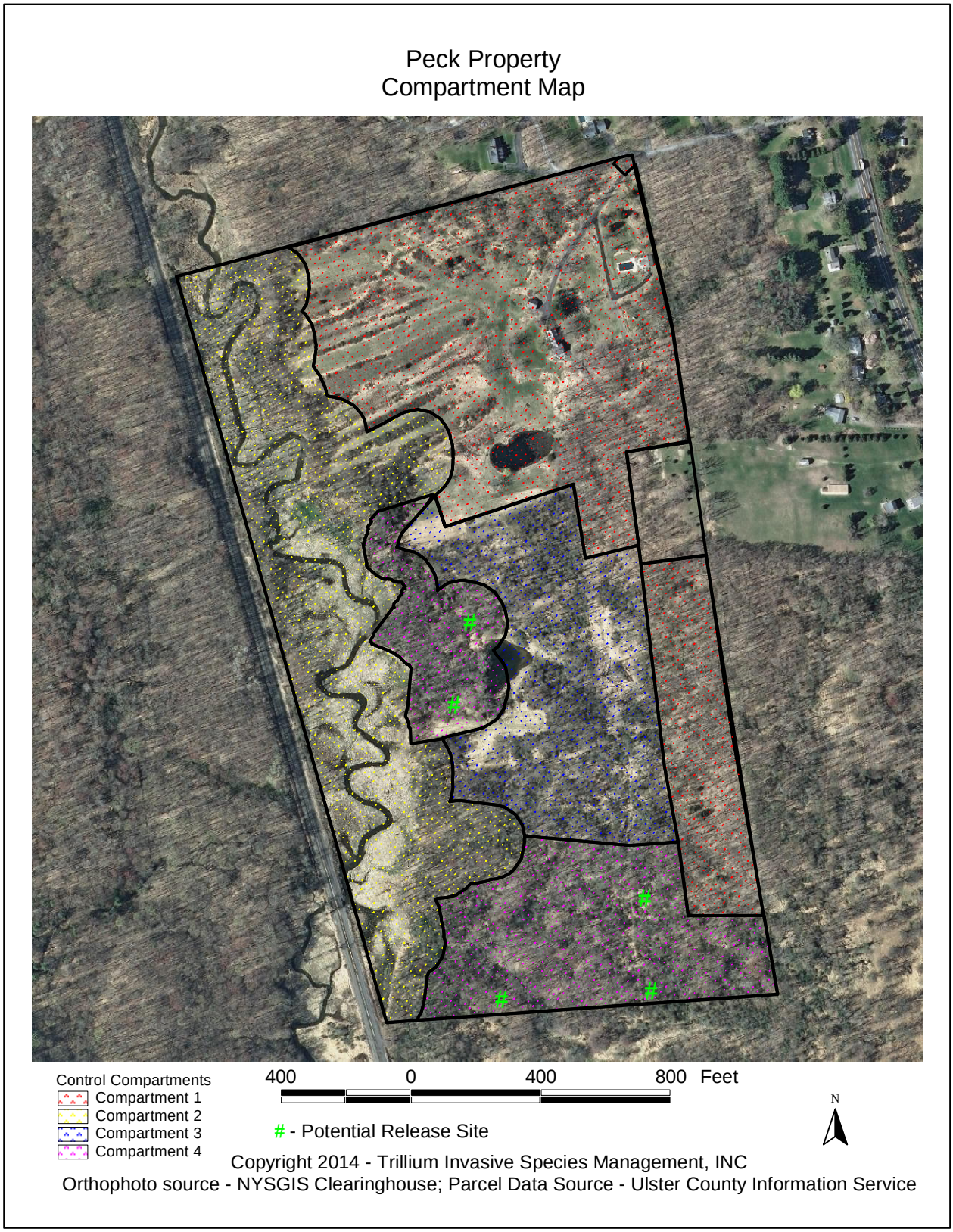
Continued spread of MAM to surrounding areas,

Discovery of new infestations in surrounding towns or counties,

Establishment and spread of biocontrol.

Spread of MAM throughout the nearby area or into surrounding towns or counties may warrant halting manual/chemical control in order to aid and enhance biocontrol population growth. Conversely, if MAM isn't found to be expanding its range, control should be continued to constrict patch size with the goal of elimination.

Compartment Map:



Post Management Considerations –

This project has the potential to enhance habitat for many invasive plants, particularly Japanese Stiltgrass. Where resources allow, late summer mowing and weed-whipping of stiltgrass is recommended. Given the extent of the site, restoration activities are warranted. Seeding and live planting are recommended, but should begin possibly as late as 2017 in order to allow assessment of control and continued control if required.

Clean entry and exit –

All persons and equipment entering and exiting the site should be thoroughly cleaned to reduce seed dispersal. Special care should be taken with footwear and all equipment before leaving the site.

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