

# Your Invasive Plant Management Questions Answered

Strategies & Tactics for  
Land Trusts of All Sizes


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Japanese knotweed





# State-wide strategies for managing invasive plants

## 1) We must make choices/prioritize

*Eradication of all invasives is beyond our collective capacity*

## 2) Our knowledge is incomplete

*Every action is an opportunity for learning*

## 3) Context is key

*Management decisions should be informed by an understanding of site history, ecological processes, etc.*

## 4) Plan for success

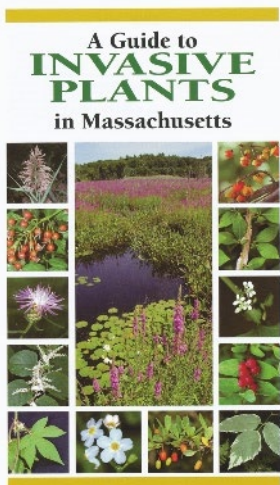
*Commit sufficient resources to achieve restoration goals*



# A Definition of Invasive

a species that is non-native to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm or harm to human health

- Self-sustaining populations
- Capacity to become dominant and/or disruptive in natural areas
- Includes sub-species, cultivars, and hybrids



Burningbush



Japanese barberry



Common reed



Autumn olive



## Base criteria

A species must meet all these criteria to be considered invasive by MIPAG:

- Nonindigenous
- Potential for rapid and widespread dispersion
- Potential for jumping spatial gaps
- Potential for existing in high numbers away from intensely managed habitats



Norway maple



Round-leaved bittersweet



Garlic mustard





# Priority Actions

- Prevent the establishment of new populations of known or suspected invasive species
- Protect from invasive species encroachment:
  - known populations of state-listed rare species
  - rare and exemplary natural communities
  - actively managed habitats of conservation focus
- Restore potentially high-quality natural communities already degraded by invasive species *where restoration is feasible*





# Know Your Toolkit

## Physical – remove target species

- Manual (hand pulling, etc.)
- Mechanical (tools/machines)

## Chemical – herbicide treatments

- Cut-stem, frilling, basal bark
- Foliar spray

## Biological – release natural enemies of target species (Generally overseen by government agencies)

## Cultural – changing human practices to deter invasives

- Raise awareness
- Implement best practices (e.g. mulching, grazing, solarization, etc.)





Sudbury Valley Trustees

## Regional Land Trust Perspectives: A Case Study

Smith Conservation  
Land in Littleton, MA



# The property

- 48 acres owned by SVT + 12 owned by Town of Harvard
- 2019 – Acquired by SVT, with help from Littleton Conservation Trust & Town of Harvard
- Larger mosaic of conserved land
- HUGE populations of invasives...but why focus on this property?









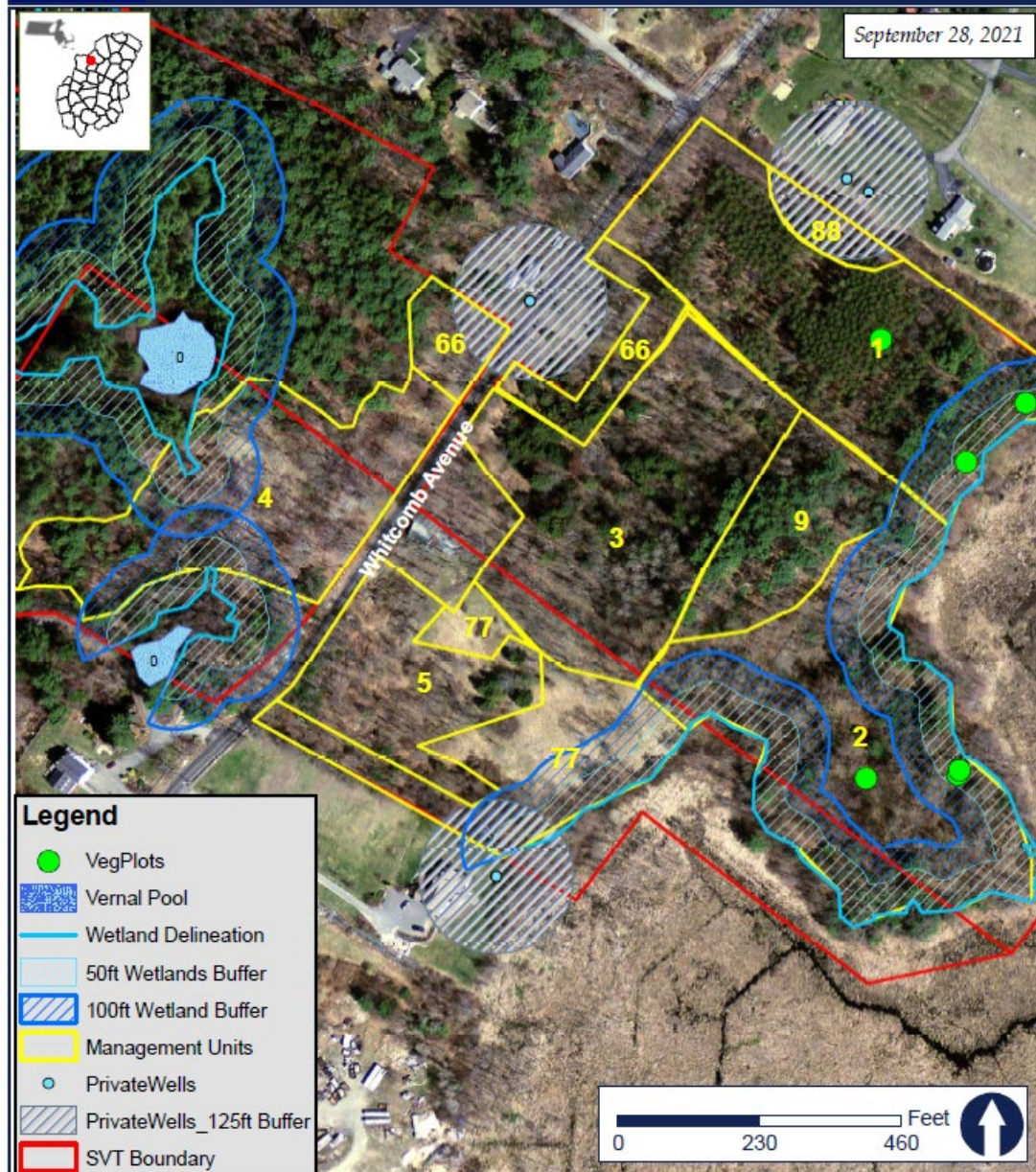
# Invasives in abundance

- Bittersweet, multiflora rose, glossy buckthorn, Japanese barberry, garlic mustard, Dame's rocket, narrow-leaved bittercress, greater celandine, wall lettuce, black swallow wort, hemlock woolly adelgid, non-native tree stands

Bad news overall...but an opportunity to experiment!







# A multifaceted, multiyear, multiplayer approach

## GOALS

- Reduce abundance of bittersweet
- Increase abundance of native plants and native biodiversity
- Improve aesthetics
- Improve forest health overall
- Evaluate effectiveness of different techniques

## APPROACHES

- Chemical treatment
- Manual removal
- Mechanical clearing
- Alternative treatments (more experimental)



# Chemical treatments



- Cut & dab large stems
- 2-3 years of foliar treatment
  - Limited by environment – 50-100ft buffer areas
- Lots of research, outreach, education (TIME & CAPACITY)
- **Contractors (MONEY)**



# Mechanical removal/clearing

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- Clearing non-native tree stands
- Making room for native species
- Creating a more resilient forest
- Easier to navigate to find invasive regrowth
- **Contractors (MONEY)**
- Long-term vegetation monitoring (TIME/STAFF CAPACITY)







## Manual removal

- Largely focused on herbaceous invasives and bittersweet
- Root excavation – very effective
- **HUGE** number of staff and volunteer hours
- *Scale* is important



# "Alternative" treatments

- Cardboard smothering
- Solarization
- Carbon starvation (repeated cutting)
- Animals (goats/pigs)
- **Staff and volunteer time**
  - Engagement and education
- Smaller scale







# Long term monitoring

- Measuring effectiveness
- Monitoring regrowth
- Reporting to stakeholders, funders, neighbors
- **Lots of staff time**
- Necessary for ongoing funding and education!





# REGIONAL LAND TRUST PERSPECTIVES AT SMITH

## ADVANTAGES

- *Staff capacity*
- *Volunteer pool*
- Expertise
- Networks (CISMA)
- Financial resources/access to funding sources
- Long term follow-up capabilities

## CHALLENGES

- Abutter concerns and outreach
- *Staff capacity*
- *Volunteer pool*
- Long term project
- Balancing management priorities (lots of acreage/properties)



# Experience of the Stow Conservation Trust: Managing Invasives with Volunteers

John Sangermano, Stow Conservation Trust Stewardship Co-Lead



[www.StowConservationTrust.org](http://www.StowConservationTrust.org)  
Stow, MA





The **Stow Conservation Trust** is a local non-profit land trust. 48 years working to protect natural resources and open space.

Works with the town on critical land projects. Can be the catalyst between town, State, people to make projects happen.

Volunteer run.

Funded by memberships (\$ 50 family membership for one year).

The Trust holds over 20 Conservation Restrictions – can provide a way for a person/family to own land but be assured of no development in perpetuity.

The Trust maintains miles of trails. See website and Facebook/Instagram Page.



# Stow Conservation Trust: local land trust performing invasive control

## Starting Point:

- Our all-volunteer land trust that has an active volunteer "Stew Crew" list of helpers. One work day a month
- A land steward assigned to every parcel
- 10 Fee-owned parcels, 433 Acres
- Benefit: no parcels with severe invasives infestation
- Stewardship leads with experience in invasives.





## Stow Conservation Trust: local land trust performing invasive control

Started a focused Invasive Control Effort in 2020

Made a Plan: Started with a US Forest Service template and adapted.  
Initially worked on one parcel, but expanded to others.

### Contents:

**Overall Goal**

**Measurable Goal**

**Management and Monitoring**

**Objectives**

**Parcel History and Invasives Problem Areas**

**>> A look at five problem areas**

### **Specific Invasives and Areas of Concern**

- A. Garlic Mustard
- B. Japanese Knotweed
- C. Glossy Buckthorn
- D. Oriental Bittersweet
- E. MultiFlora Rose
- F. Japanese Barberry
- G. Burning Bush



## Stow Conservation Trust: local land trust performing invasive control

### Method:

- Inspection of parcels.
- Mapping of invasives – identify problem areas.
- Rating of invasive infestation.
  - Simple {High, Medium, Low, Controlled} ratings.
- Target a particular parcel and area for a work day.
- Return to sites, multiple times a year and multi-year.
- Rate progress.
- Teach volunteers as work is done.





## Stow Conservation Trust: local land trust performing invasive control

### Goals:

- Learn about your parcel: bounds, critical habitat, prioritized work plan.
- Continued, year-after-year effort.
- Accept that we can make slow, steady progress.
- Set an example for the town.
  - Look to inspire individuals to work their home/yard.
- Educate our 'Stew Crew' volunteers.
- Awareness of risks from new invasives – land stewards are first line of control.



## Stow Conservation Trust: local land trust performing invasive control

### Results:

- Selected 'victories'; areas under control.
- 'Keeping even' in certain areas.
- Identify areas where herbicides are needed – example is a dense patch of Japanese Knotweed.
- We are able to pull Oriental Bittersweet, Burning Bush, Glossy Buckthorn, small Japanese Barberry, Garlic Mustard.
- Japanese Knotweed is difficult to manage. Large Barberry hard to manage. Large MultiFlora dangerous – thorns.
- Aquatic Water Chestnut is difficult to arrange volunteers (boats).



## Stow Conservation Trust: local land trust performing invasive control

### Problems:

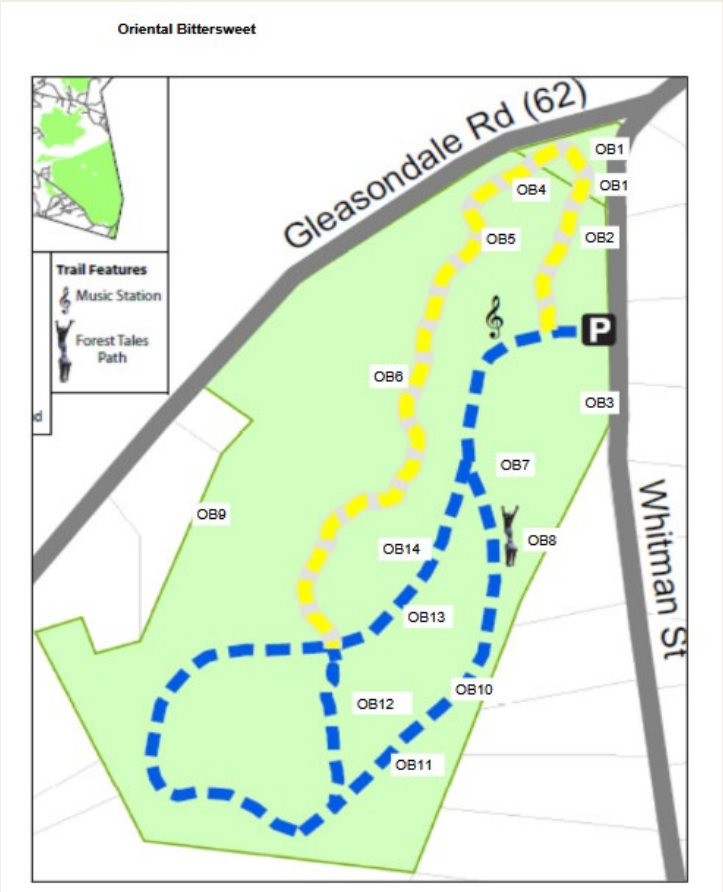
- Too many things to do in May-June.
- Example: small time window for Garlic Mustard pulling.
- Hard to work in mid-summer: deer flies, humidity, volunteers busy.
- Aquatic Water Chestnut pulling needs coordination for boats and people.
- 'Volunteer fatigue' for invasive work (versus building a boardwalk).
- Difficulty implementing herbicide by volunteers: cost of insurance and risk of resident/abutter concern.





# Stow Conservation Trust: local land trust performing invasive control

## Illustration of invasive mapping and how we measure progress



		H == High Density M == Medium Density			L == Low Density C == Controlled			Work Notes
Invasive		2019	2020	2021	2022	2023	2024	
Garlic Mustard								Annual work 2017-2024 Annual work 2017-2024 Located in 2021, Much worse in 2024
	GM1	M	M	L	L	L	M	
	GM2	L	L	L	L	L	L	
	GM3			L	C	C	M	
Japanese Knotweed								Digging/Cutting 2019-2024 Digging/Cutting 2019-2022, 2024 Located in 2021 - Problem Area - No Work
	KW1	M	L	L	L	L	L	
	KW2	M	M	L	L	L	L	
	KW3	-	H	H	H	H	H	
Oriental Bittersweet								Problem Area: Work target in 2024 no work done Work in 2020-2022 no work done no work done Work 2022 Work in 2019/2020,2024. Larger problem area seen in 2024 Work in 2019/2020,2024. Larger problem area seen in 2024 No work Focused Work: 2020 -2024 Focused Work: 2020 -2023 limited work in 2020 Focused Work: 2022 -2024 Focused Work: 2022 -2024
	OB1	H	H	H	H	H	H	
	OB2	L	L	L	L	L	L	
	OB3	M	M	M	M?/L?	M	M?/L?	
	OB4	L	L	L	L	L	L	
	OB5	L	L	L	L	L	L	
	OB6	L	L	L	L	L	?	
	OB7	L	L	L	L	M	M	
	OB8	L	L	L	L	L	M	
	OB9	M	M	M	M	M	M	
	OB10	H	M	M	M	M	M	
	OB11	M	M	M	M	M	M	
	OB12	L	L	L	L	L	L	
	OB13			M	L	M	M	
	OB14			M	L	M	M	



# Stow Conservation Trust: local land trust performing invasive control



Digging out  
Japanese Knotweed



Pulling Water Chestnut with boats

Locating aquatic invasives

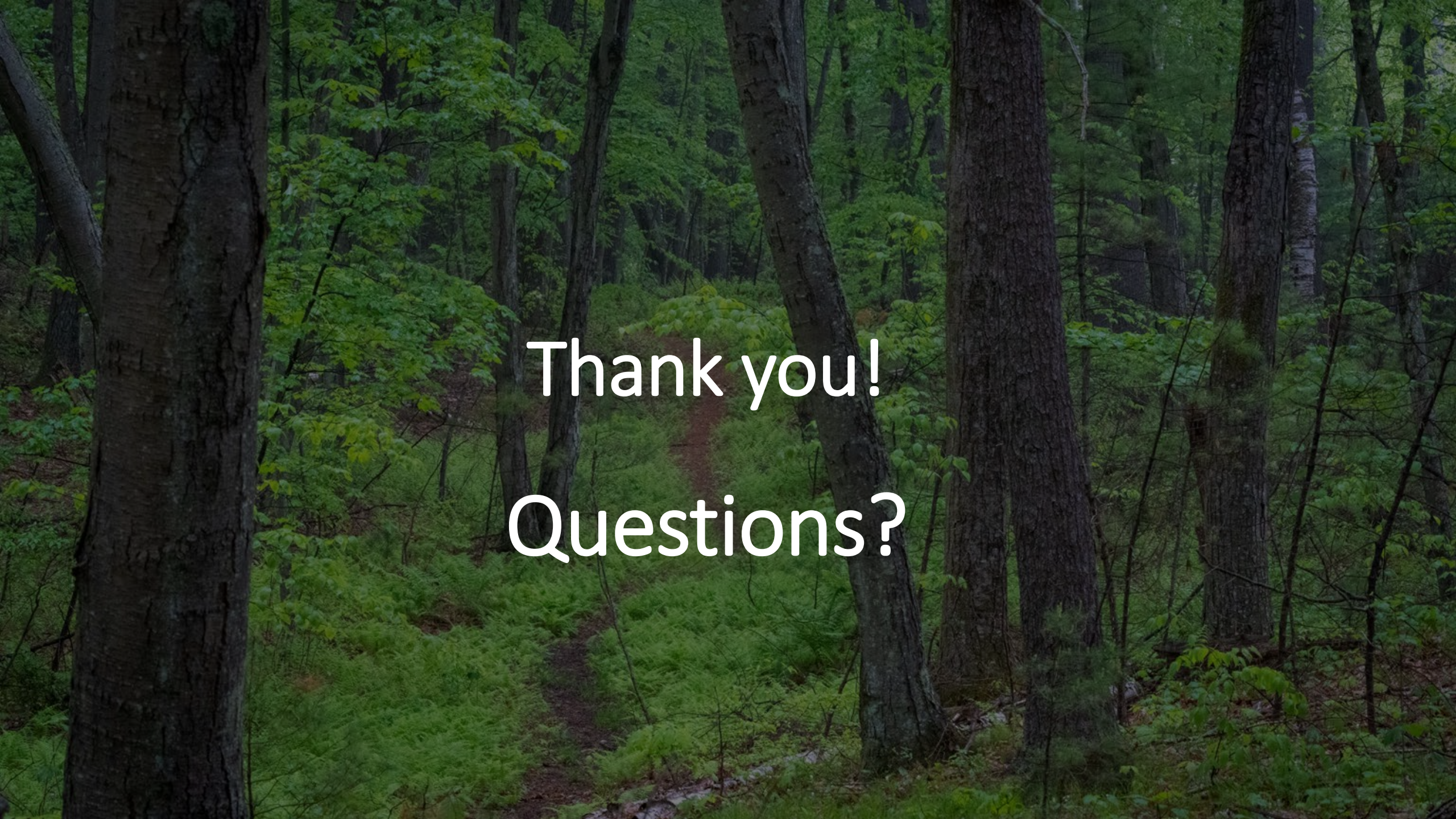


## Stow Conservation Trust: local land trust performing invasive control

### **Conclusion:**

- Do not give up. Pick a project area.
- Organize and act and get an accomplishment.
- Find an expert and grow your land trust expertise.
- Come up with a method where progress can be monitored.
- Set an expectation of an ongoing project. Expect to return to a site to revisit work areas.
- Inspire/challenge volunteers. Promote work in the community.



A photograph of a forest scene. In the foreground, a path covered in lush green ferns leads into the distance. Several tall, dark tree trunks are visible, framing the path. The background is filled with more trees and foliage, creating a sense of depth. The overall lighting is soft and natural.

Thank you!  
Questions?