Collaborative Management of A New Invasive Species

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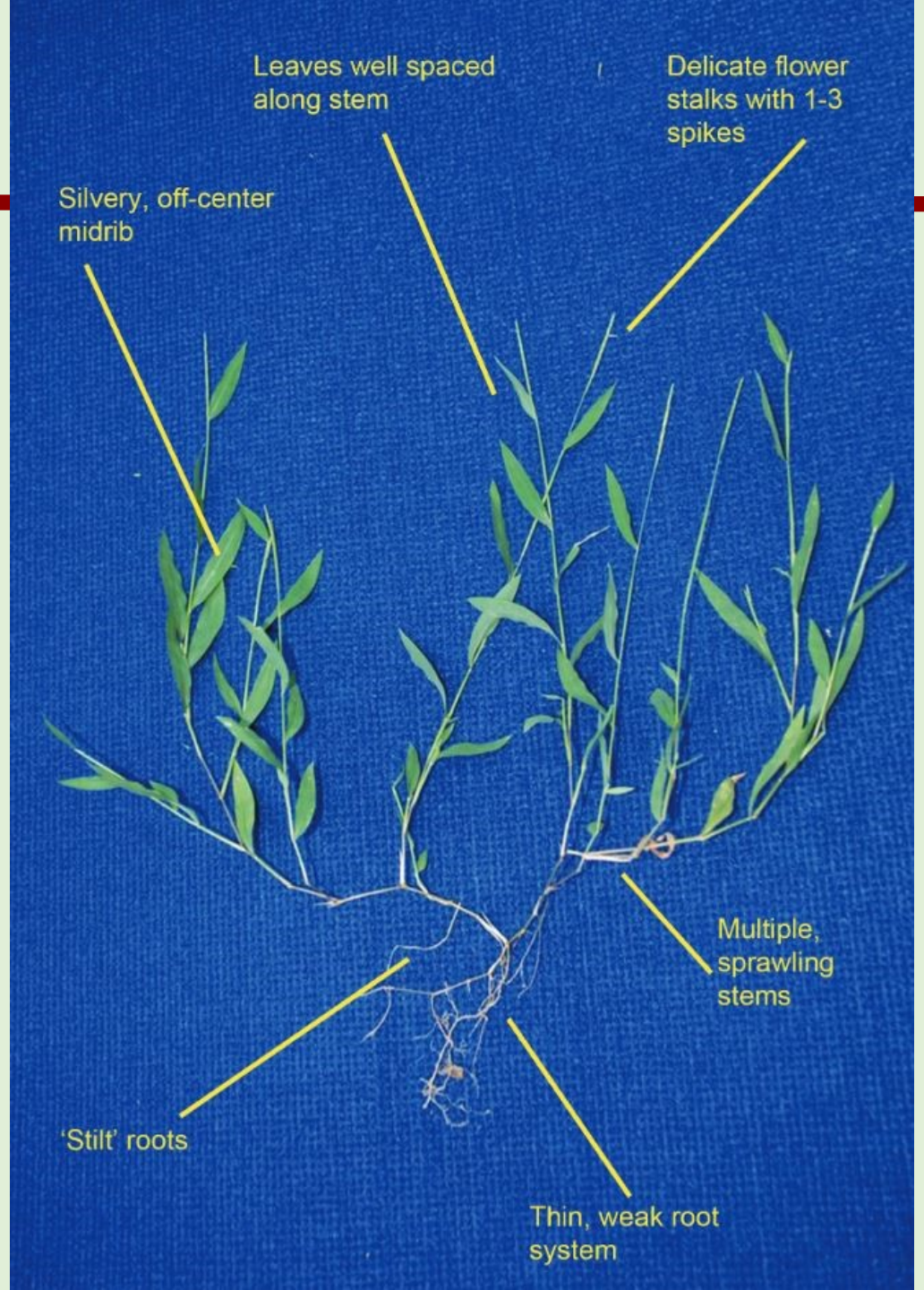
What is Stiltgrass?

- An annual grass native to East Asia
- Introduced to North America in 1919 in Tennessee
- Used as packing material for porcelain
- Grows in floodplain forests, forest edges, damp fields and lawns, and on streambanks and road and trail edges
- Very tolerant of shade

Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org



- Resembles a small, delicate mangrove with weak roots and a sprawling habit
- Easy to pull up
- Leaves are 1-3 inches long with an off-center, shiny midrib
- Aerial roots form near the base, resembling "stilts"
- Resembles and often grows with native whitegrass (*Leersia virginica*) and crabgrass

Photo: Leslie J. Mehrhoff, University of Connecticut, Bugwood.org

Photo: Chris Evans, University of Illinois, Bugwood.org

Why Is It Bad?

- Rapidly forms dense monocultures and crowds out native vegetation
- Alters soil and nutrient cycling
- Drastically lowers biodiversity levels
- Produces lots of easily transportable seeds
- Thatch burns very hot, making controlled fire a difficult tool to use
  - Fire does not kill seeds

Photos: Chris Evans, University of Illinois, Bugwood.org

An Established Problem

Invasive Alien Plant Species of Virginia

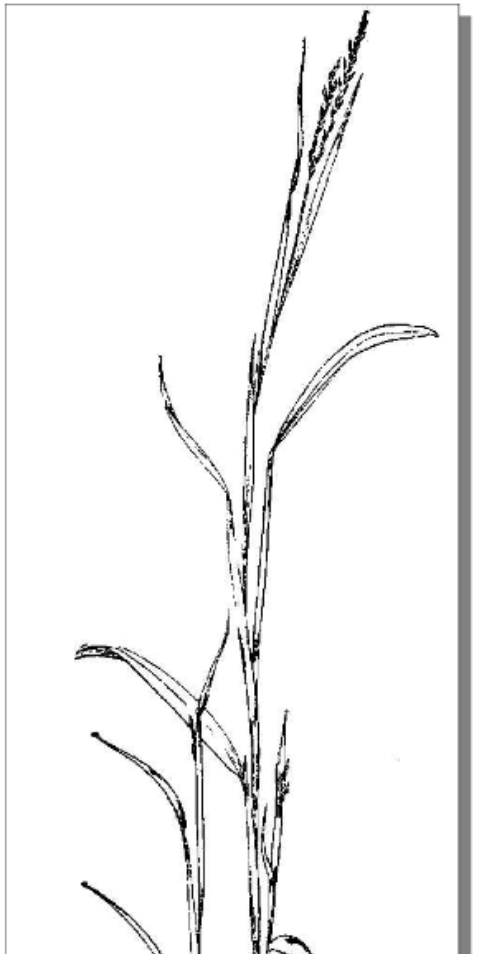
Japanese Stilt Grass (*Microstegium vimineum*)

Description
Japanese stilt grass, also known as eulalia, is an annual grass which forms dense mats. The somewhat reclining stems grow up to 40 inches long and may root at the stem nodes. The lime green leaves, four to five inches in length and half an inch wide, taper at both ends. The inflorescence may be at the end of the stem, or arise from leaf axils. Japanese stilt grass is similar to jointed grass (Arthraxon hispidus), another invasive alien grass species. Consult a natural resource specialist for accurate identification.

Habitat
Japanese stilt grass prefers moist soils that are shaded from full sun. It is found in marshes, ditches, low woods, floodplains, woodland borders, damp fields,

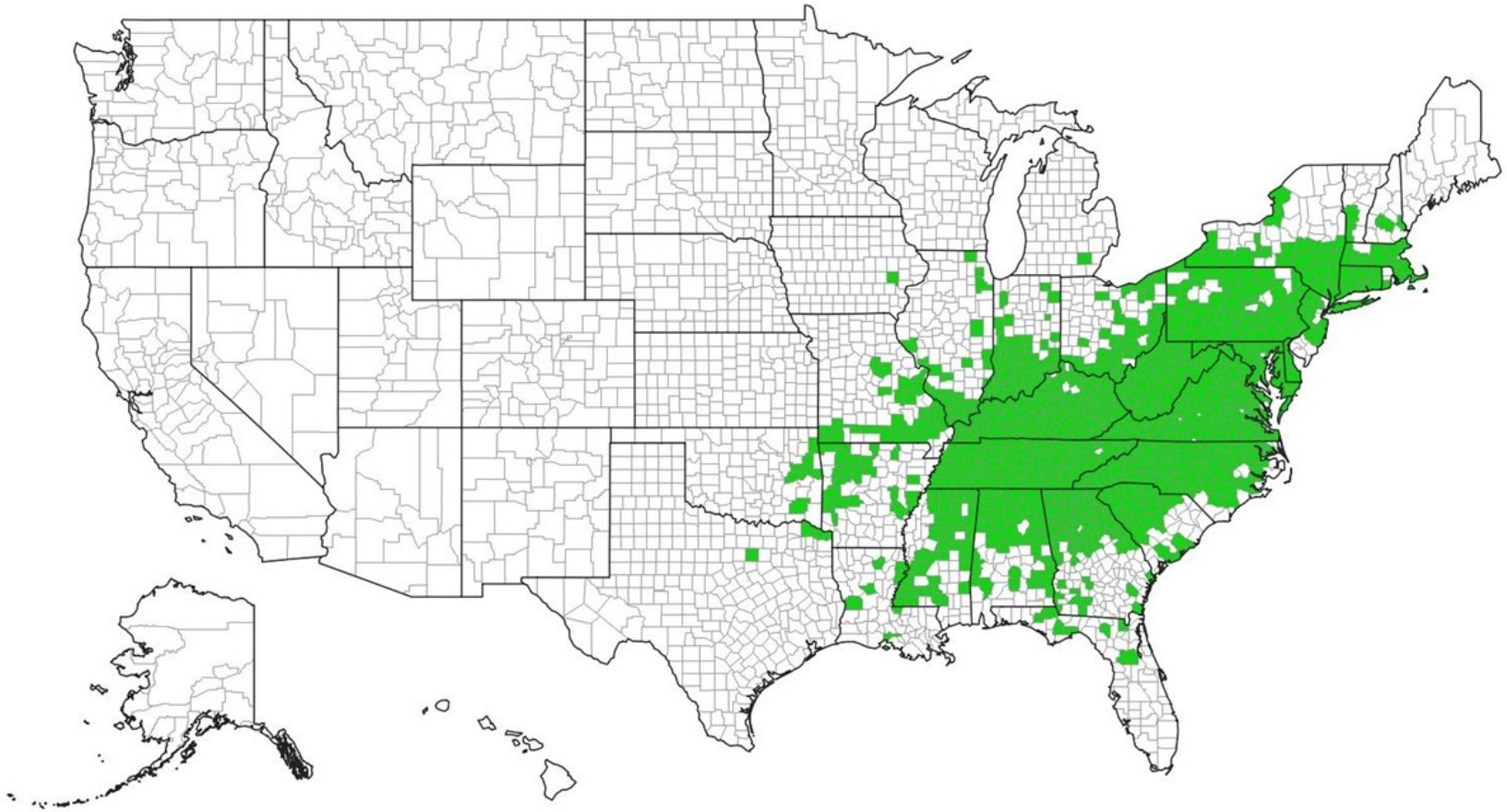
discovered in the United States in 1919 in Tennessee. Since then, it has spread to all states east of the Mississippi and south of and including Connecticut. Japanese stilt grass was used as a packing material for porcelain from China, and this was the likely means of its introduction to our area. Japanese stilt grass is found in every county in Virginia.

Threats
Japanese stilt grass can spread rapidly following a disturbance such as flooding or mowing. Within three to five years it can form dense monotypic stands which crowd out native herbaceous vegetation. Although Japanese stilt grass does not produce prolific amounts of seed, a single plant typically giving rise to 100 to 1000 seeds, the seeds



Japanese stiltgrass (*Microstegium vimineum*)

EDDMapS
Early Detection & Distribution Mapping System

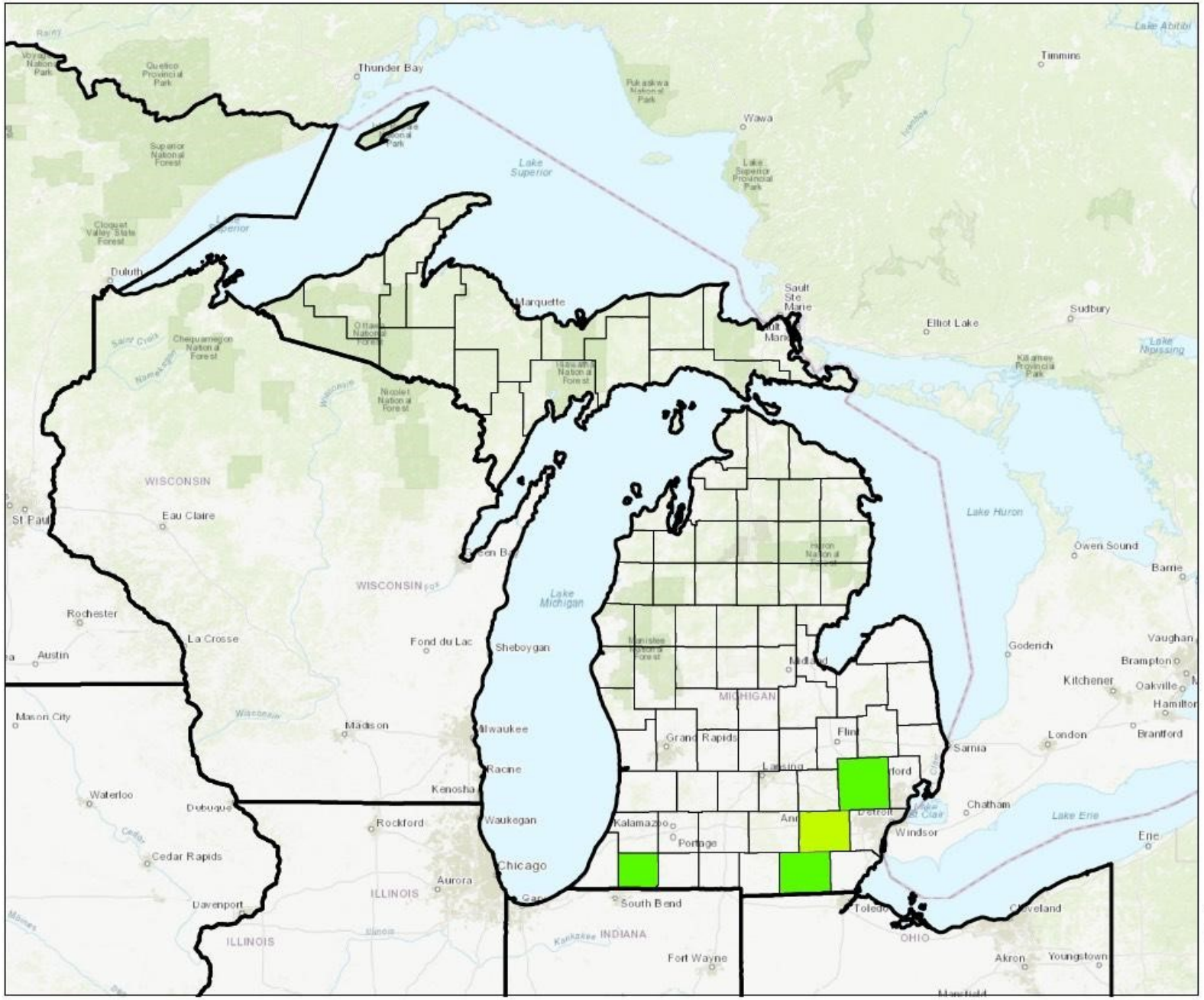


Legend

- No Data
- Species Reported

8/9/2018

Michigan: Japanese stiltgrass (*Microstegium vimineum*) 2018



Total Species Occurrences

Legend

Observations per County

- 2500+
- 2001 - 2500
- 1501 - 2000
- 1001 - 1500
- 501 - 1000
- 101 - 500
- 51 - 100
- 1 - 50
- No Data

N W E S

MISIN
Midwest Invasive Species Information Network

This map depicts the total number of observations reported for a certain species in a county. Changes in the number of observations is displayed as a color progression. Large amounts are shown in darker colors.

Please note that these colors and numbers are not meant to represent infestation levels or show un-infested areas. Some areas tend to be more active than others. This is a distribution of point data, which may be clustered.

MICHIGAN STATE UNIVERSITY

0 45 90 180 Miles

Production Date: 8/14/2018

Our Story Begins in 2017

- Stiltgrass is found on a private property between Dexter and Ann Arbor
- Quick identification allowed for quick action
  - First sighting (that we know of…)
- Local stewardship community mobilized
- Neighboring properties were searched
- Eradication and a pat on the back!

But in 2018…

- Stiltgrass is found on a Legacy Land Conservancy easement just outside of Ann Arbor
- Following the footprint of the infestation revealed that it was also on a City of Ann Arbor conservation easement and a Washtenaw County Preserve.

Avengers Assemble!

Realizing this may be a bigger problem than initially thought, the local conservation community came together to discuss next steps. The initial goal was to eradicate, or at least contain the invasion.

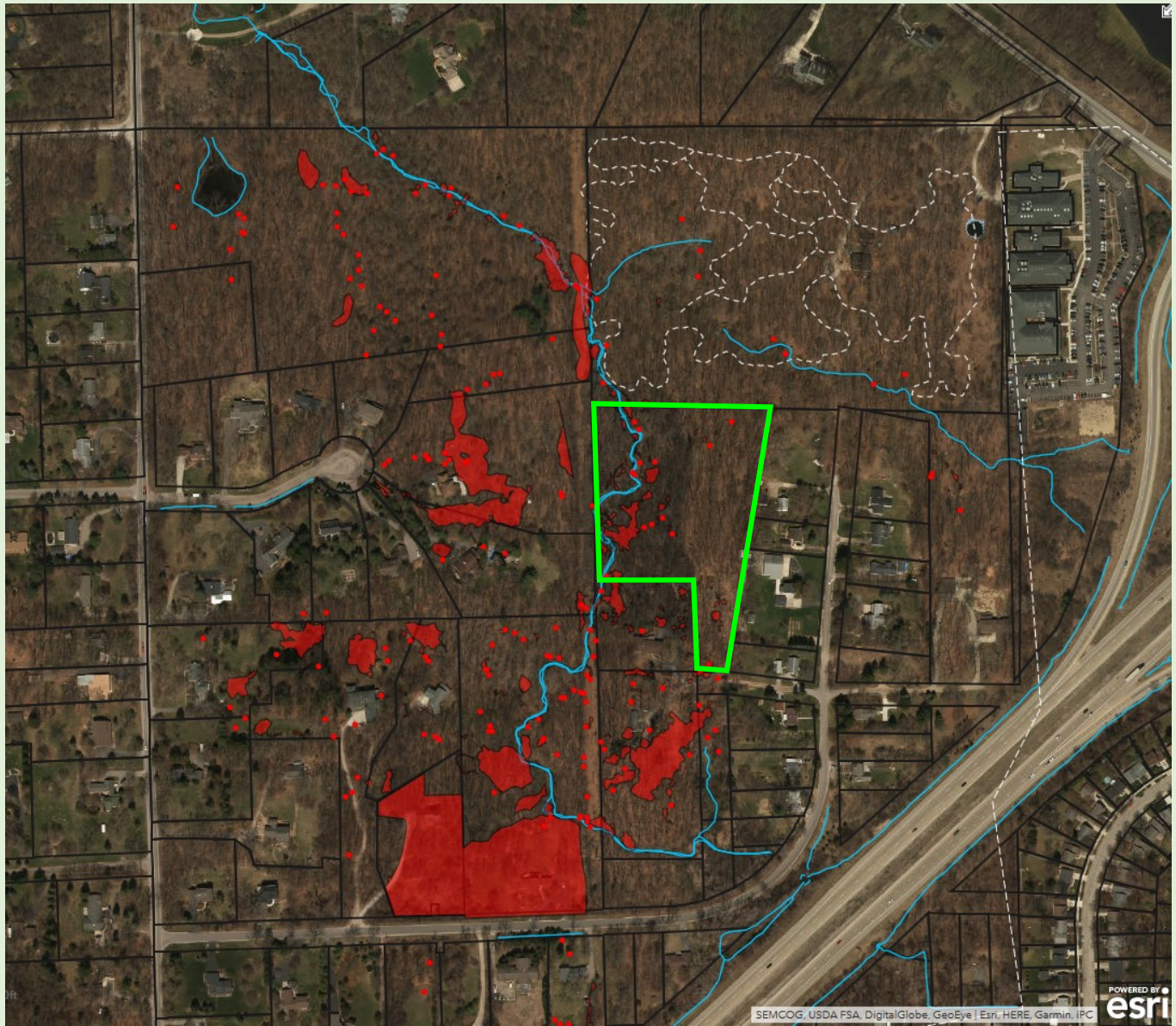
- Legacy Land Conservancy
- City of Ann Arbor Natural Area Preservation
- Washtenaw County Parks and Recreation
- Michigan Department of Natural Resources
- Stewardship Network
- Huron River Watershed Council
- WildOnes Ann Arbor
- The new Jackson, Lenawee & Washtenaw CISMA

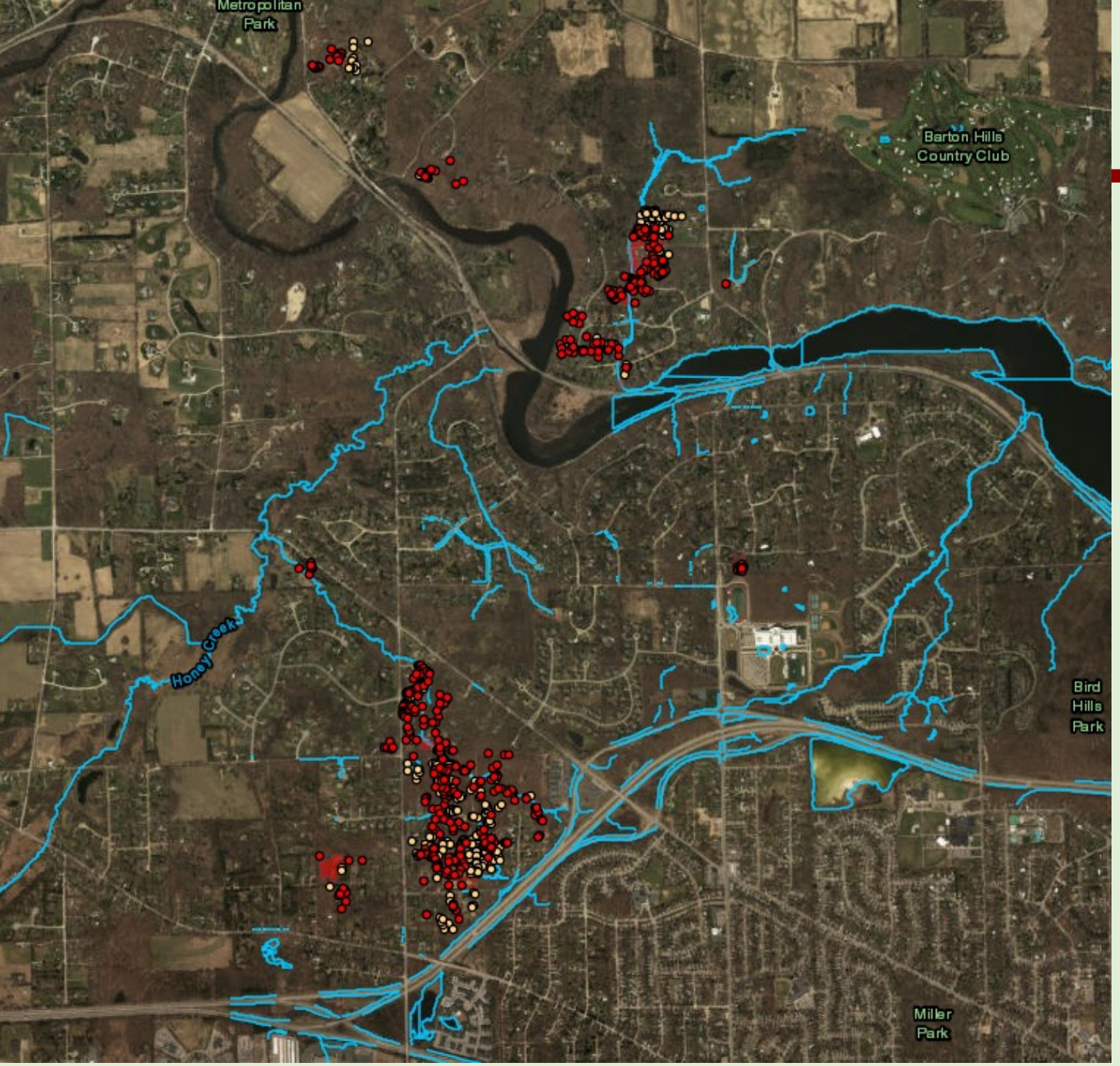
Citizen Engagement

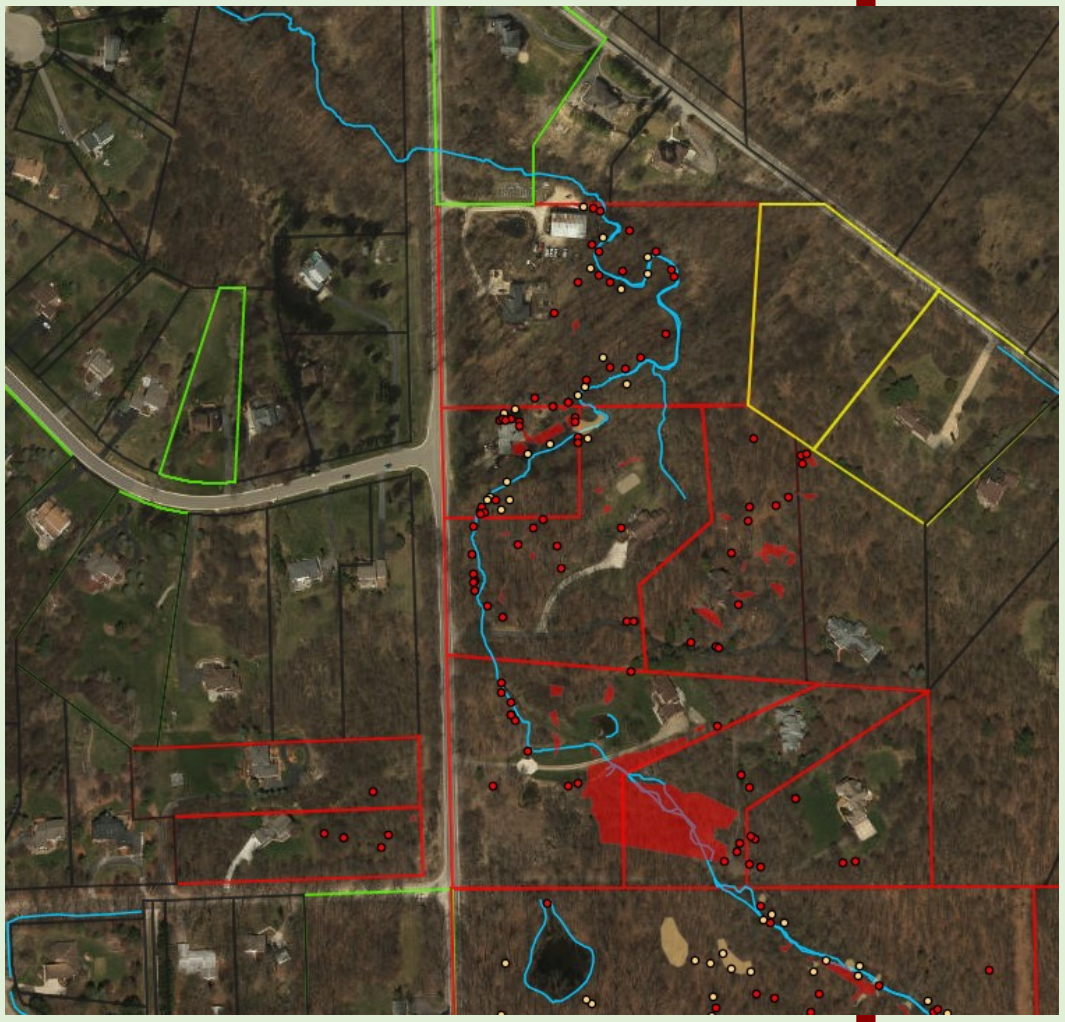
- The hunt is on!!
- Informational brochure developed and mailed to over 600 people in the “hot zone,” asking them to look for and report stiltgrass
- Interns/volunteers went door-to-door to houses in hot zone
  - Requested homeowners to sign up to have properties surveyed
- Dedicated email and Google voice accounts created

Determining the Extent

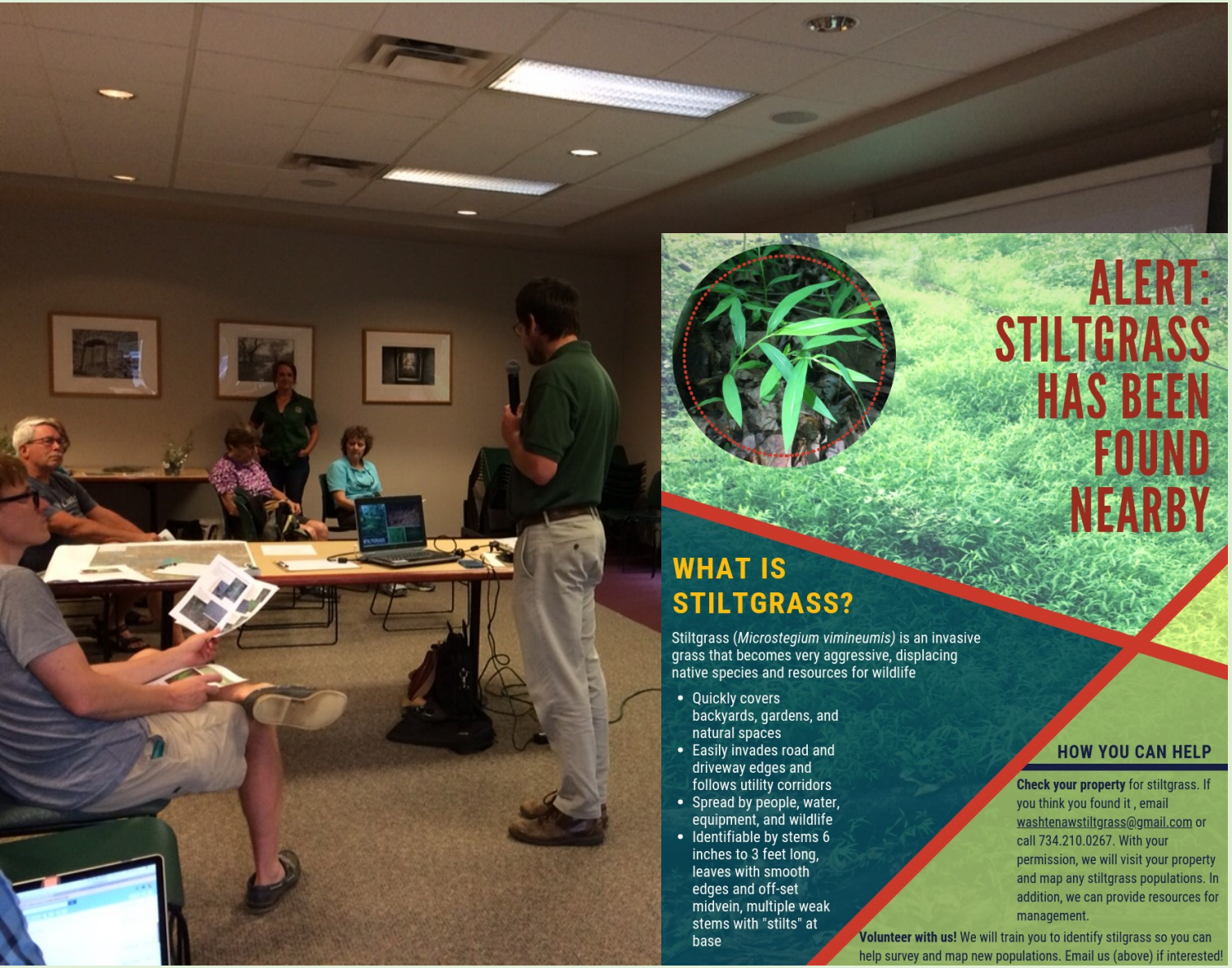
- Neighbors gave us permission to survey
- Volunteers went out with GPS units
- Results were put into an online map that all partners could access




Metropolitan Park
Barton Hills Country Club
Honey Creek
Bird Hills Park
Miller Park



Increasing Awareness



- Public meeting mid-summer in 2018 and 2019 for neighbors of “hot zone” and interested citizens
  - Sign up to volunteer and/or have property surveyed
- Hired a coordinator through MISGP funding to be point person for contacting landowners

2019 Efforts Begin

- Basically did the same thing we did in 2018, but now with a coordinator!
- Point person for contacting landowners and working group members
- Collected permissions for surveying and treatment

Management

- 2018: landowners could check out equipment to treat themselves, or hire contractors
- 2019: got funding for contractors!
- Several options are available for different budgets, land types, personal preference

Management – *Mechanical*

Hand Pulling

- Appropriate for:
  - High quality areas
  - Small infestations (area and density)
  - Limited resources and lots of time
- Several follow-up visits
- Disposed of stiltgrass with waste (not compost)

Management – *Torching*

- Spot-burning shortly before seed set
- Perennials should return following year
- Less time consuming than hand-pulling
- Good option for folks who don’t want herbicides

Management – *Mechanical*

Mowing

- Weed whip
- Conduct in fall immediately before seed set
- No decline in native plant community
- More effective in sites recently invaded instead of established populations
- Decontamination of tools
- Cleistogamous seeds
- Not ideal!!!

Luke Flory, Jason Lewis *(2009). Nonchemical Methods for Managing Japanese Stiltgrass (Microstegium vimineum). Invasive Plant Science and Management, 2(4):301-308. 2009. Weed Science Society of America*

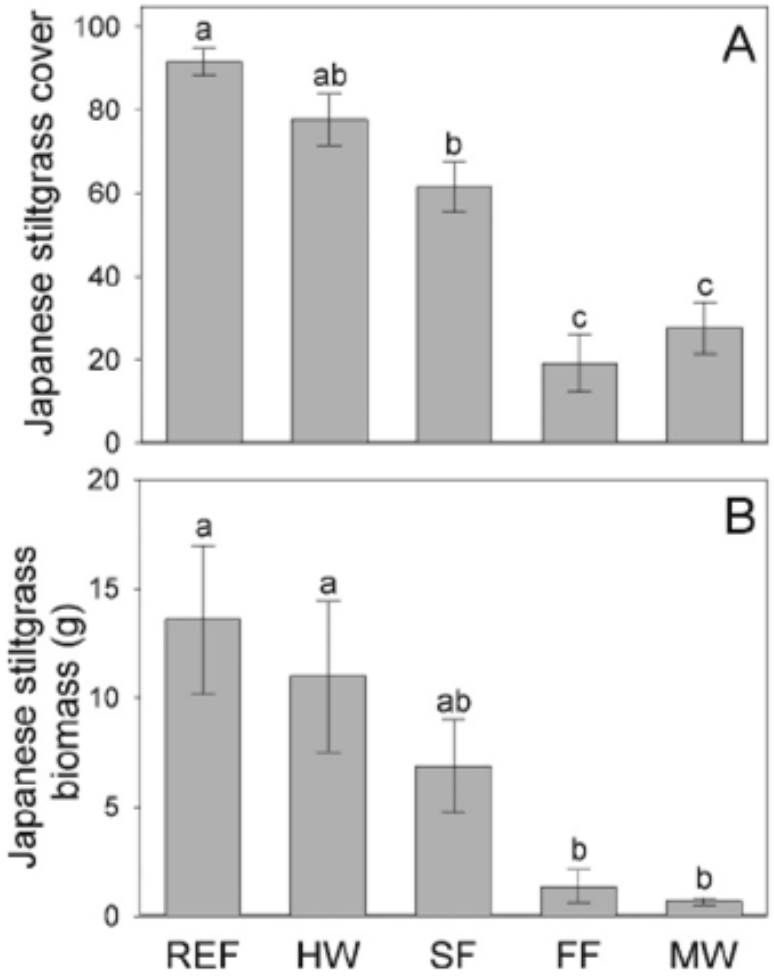
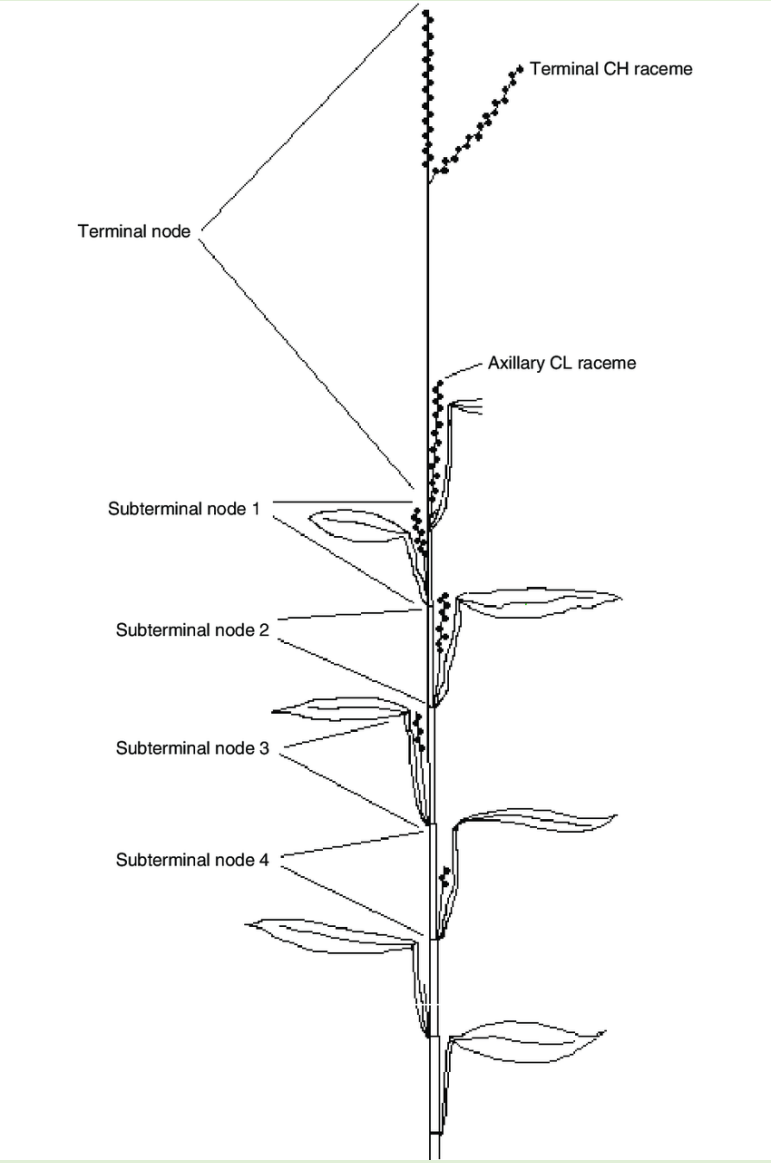


Figure 1. Average (± SE) (A) Japanese stiltgrass percent cover and (B) biomass in the reference (REF), hand weeded (HW), spring fire (SF), fall fire (FF), and mowed (MW) plots (0.25 m^2). Different letters indicate significant differences among treatments at $P < 0.05$.

Management – *Mechanical*



Management – *Chemical*

WSWG partners discuss best treatment options

Aquaneat, RoundUp (Glyphosate)

- Low active ingredients intended to control stiltgrass (annual) and not native perennials
- Different solutions: 0.25%, **0.5%**, 1.0%

Management – *Chemical*

Glyphosate – Aquaneat, Roundup

1.5 weeks after application of 0.25%

Management – *Chemical*

WSWG partners discuss best treatment options

Aquaneat, RoundUp (Glyphosate)

- Low active ingredients intended to control stiltgrass (annual) and not native perennials
- Different solutions: 0.25%, **0.5%**, 1.0%

Scythe (Pelargonic Acid)

- Quick Acting, not selective
- Breaks down quickly
- More expensive
- Ideal for late season

Management – *Chemical*

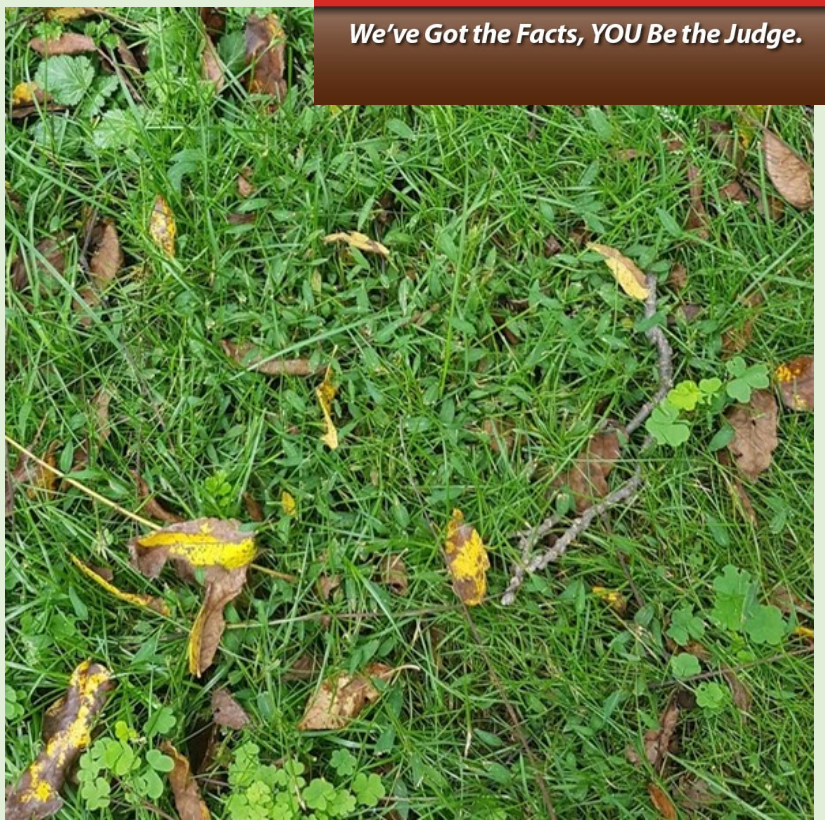
1 day after treatment

Management – *Results*

- **347 acres surveyed**
- **14.5 acres of stiltgrass discovered**
- **80% of stiltgrass treated (11.9 acres)**
- With all methods, plan on follow-up visits
- We were not able to survey, treat all properties

Management Challenges

- Resistance to herbicide
  - Lots of contradicting news and statistics about glyphosate
- About 50% of stiltgrass is found in lawns or gardens
  - Requires very targeted, fine treatment-- becomes labor intensive
- Some landowners don't think stiltgrass is a problem
- Weird growing season
  - July-October
  - Keeps sprouting from seedbank after you kill it → requires multiple revisits
  - Challenging for contractors

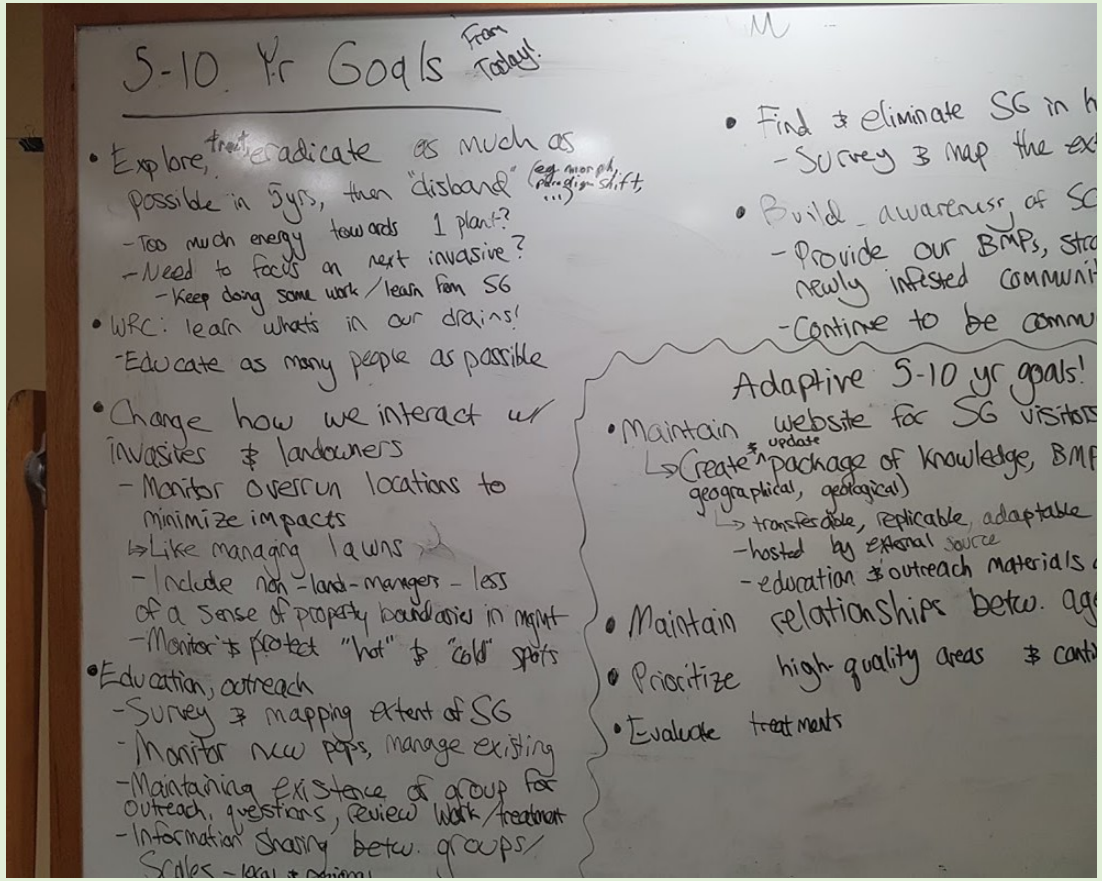


Lessons Learned

- Private property treatment is tough!
  - Get to know landowners!
  - Walk the property with them and have conversations
- Data collection plan
  - Can get tedious, know what you're signing up for
- Make a plan for fundraising early
  - Getting funding can take time

What Next?

- Is it worth it??
- 5-10 year plan developed
- Adaptive management plan, responding to ecosystem & human changes
- Identify, prioritize, and monitor high-quality areas
- Standardize the way we treat properties: high, medium, and low priority sites
  - Determines how many visits the site gets
- Redefine the hot zone based on vectors
- Implement neighborhood “captains” who are the first line of defense/info for stiltgrass



What Next?

- But...we lost our state funding :(
- Use this plan & our experiences to respond to future invasives
  - Pretty unique experience!

Questions?

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