



Department of
Environmental
Conservation



GREAT LAKES CENTER
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Early detection survey protocol and habitat suitability modeling for slender false brome, an invasive bunch grass.



Brittany Hernon, WNY PRISM

hernonba@buffalostate.edu · 716-878-5422

www.wnyprism.org



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The Great Lakes Slender False Brome Working Group is part of WNY PRISM, a sponsored program of the Research Foundation for SUNY Buffalo State and the Great Lakes Center. Funding for this Working Group is provided by the U.S. Environmental Protection Agency, through the Great Lakes Restoration Initiative.

Overview



The photos contained within this presentation are credited to WNY PRISM unless otherwise specified.

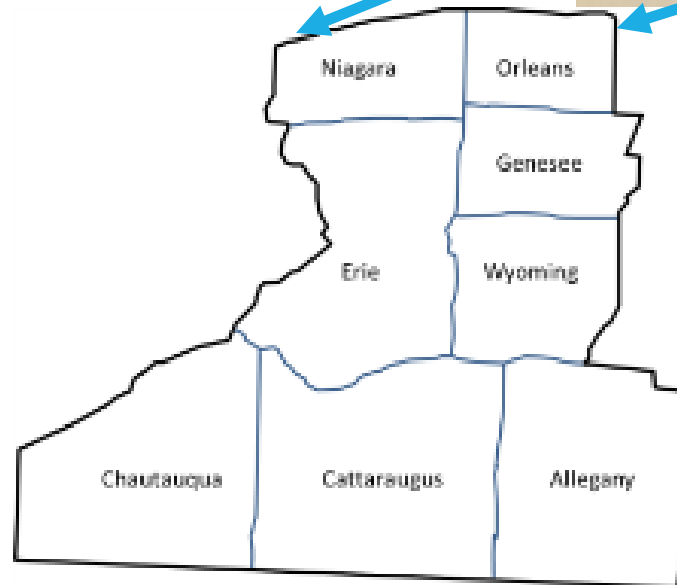
- Project Background
- Slender False Brome Identification
- Survey Protocol
- Habitat Suitability Modeling

WNY PRISM

Partnership for Regional Invasive Species Management

Mission:

To proactively identify, evaluate and address invasive species priorities in western New York using a coordinated partnership of local professionals, organizations and private citizens to improve, restore and protect local aquatic and terrestrial resources.

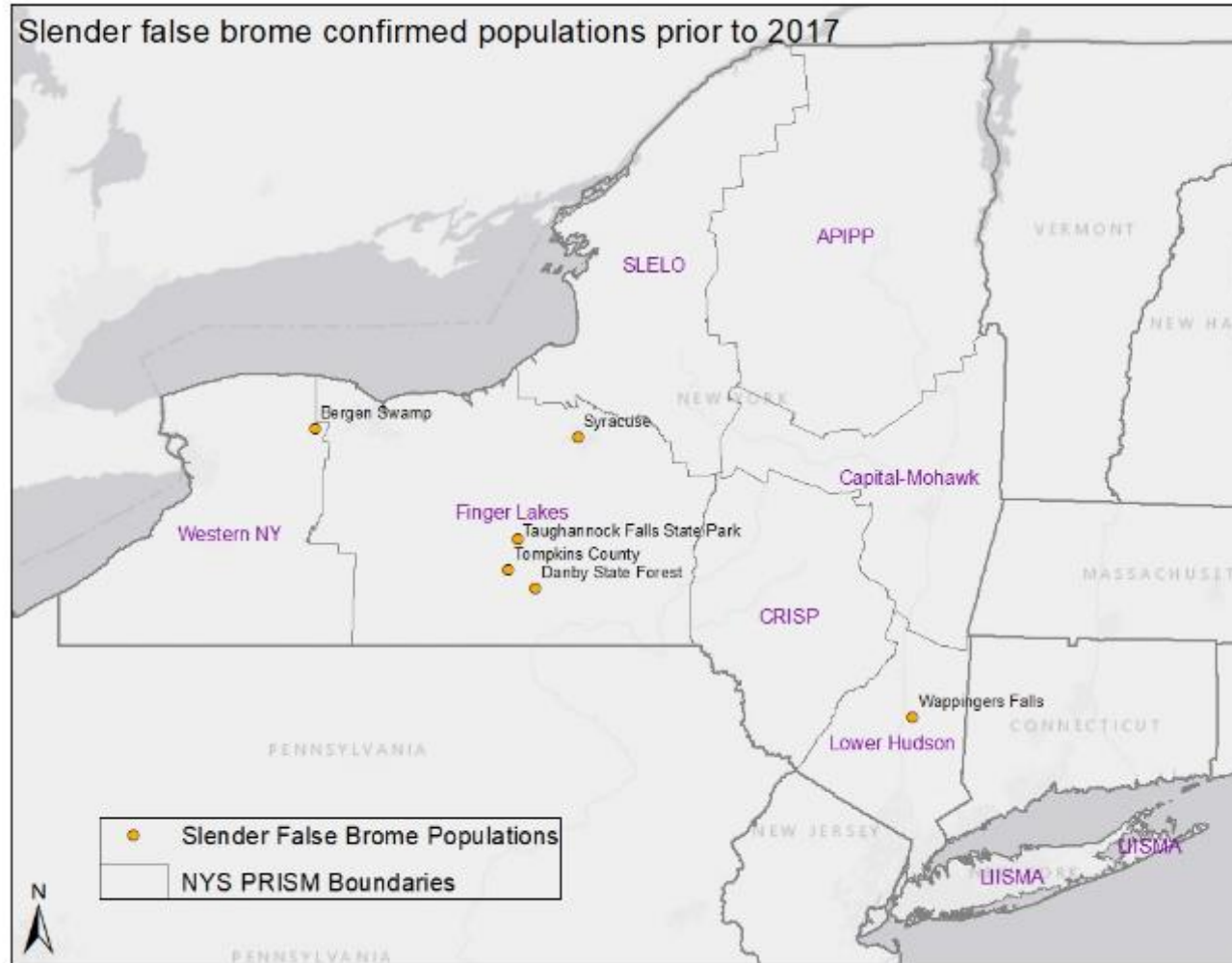


Slender false brome (*Brachypodium sylvaticum*)



- Native to Eurasia and North Africa
- First found in the US in 1939 near Eugene, Oregon
- Threatened habitat containing Kincaid's lupine, host plant for Fender's blue butterfly
- Later found in California, Washington, and British Columbia
- In the Great Lakes Basin found in Michigan (Benzie County), New York and Ontario

Slender false brome in New York State



- First reported in 2 locations in 2009
- New occurrences reported in the following years
- Species more widespread than initially thought, high spread potential and negative impacts
- WNY PRISM early detection priority species



Great Lakes Slender False Brome Working Group

- WNY PRISM received funding in 2017 from the EPA, through the GLRI
- Collaborative focused on spreading awareness of the species and improving management methods

Threat

- Not typically eaten by wildlife or livestock
- Single plants can produce hundreds of seeds each year
- Can grow in a broad range of habitats
- Forms dense monocultures



Identification



General Characteristics

- Grows up to 2.5 feet
- Graceful, nodding form
- Bright green color which it retains into the fall
- Layer of dead plant material from previous years visible under the clump



Stems and Leaves

- Lower stem and nodes covered in tiny hairs
- Flat leaves arch out from the plant
- Leaves 5-12 mm wide, hairy on both sides
- Leaf sheath margin is not overlapping at the top, and is also hairy.

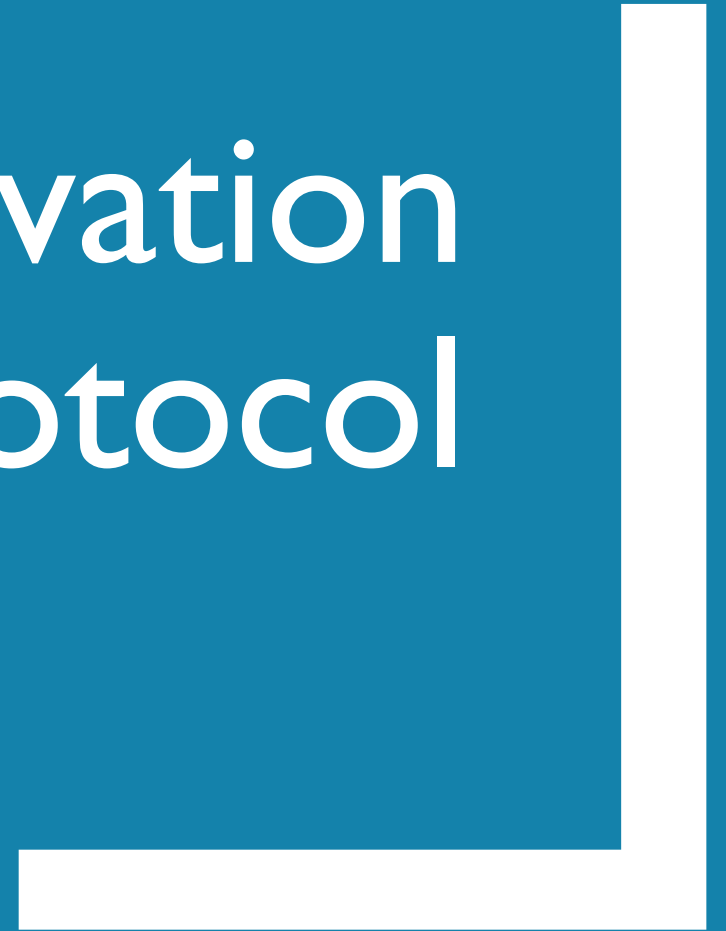


Flowers

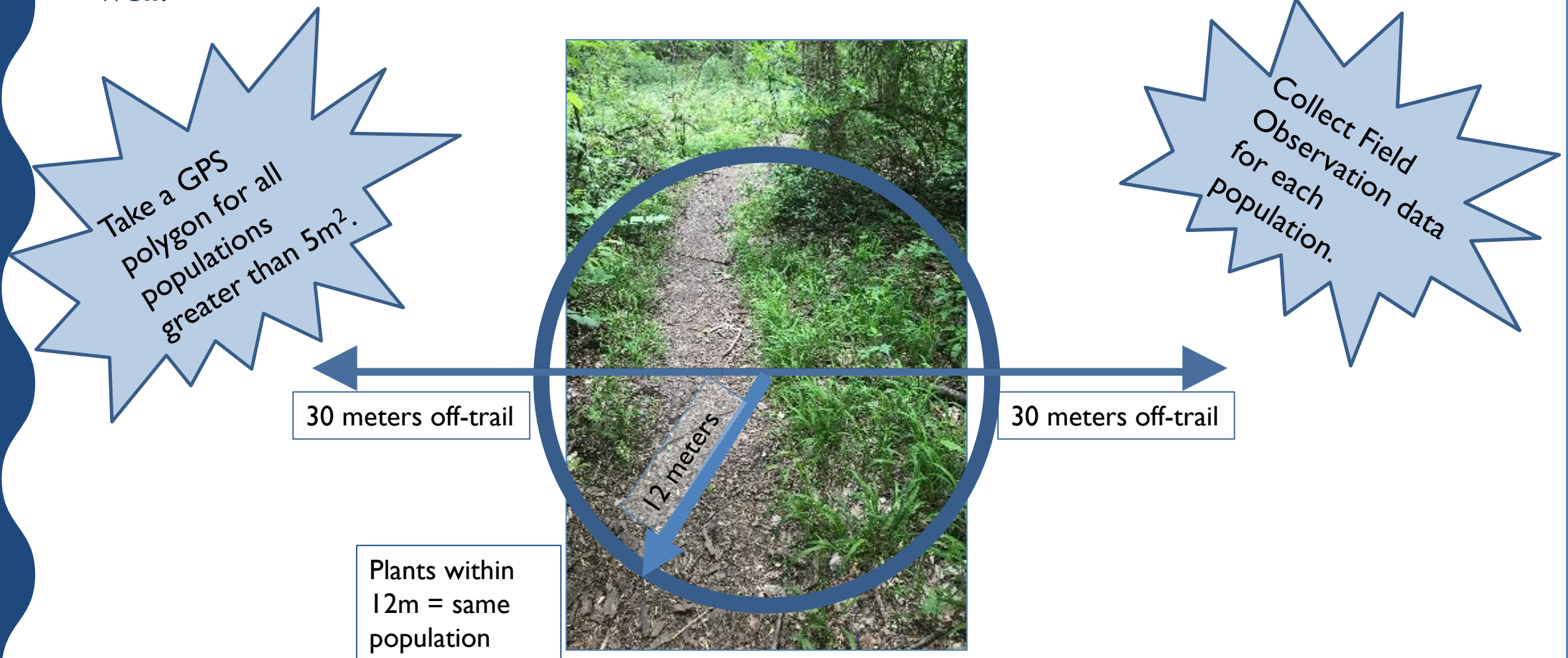
- Has a drooping inflorescence
- Spikelets have no stalk, with 6-16 florets per spike
- Has long awns that are 7-15 mm
- Begins flowering in July, mature spikelets seen into the fall
- Information is needed on time between flowering and seed set



Field Observation Survey Protocol



Walk along all trails or roads in the target area and observe both sides, approximately 30 meters off-trail. If the area is too wide, survey one side and then the other. A population includes all plants found within 12 meters of one another, while any plant further than 12 meters apart is considered a separate population. When the species is found along the trail, survey 30 meters off-trail at those locations as well.



Essential Information

- If slender false brome (or another target species) is found, use field guides and outreach materials to confirm its ID and rule out similar species.
- Once an observation is confirmed, record the location including trail name, intersection, property address, and **latitude** and **longitude**, if possible. If the infestation is greater than 5m² take a GPS polygon as well.
- Fill in the **observer(s)**, **date** and **time**.



Photo Documentation



- Primary photo: Initial photograph that show the entire plant(s).
- Infestation photo: Clearly shows the extent of the population and how it fits into the landscape.
- Close-up photo: Focus on the characteristics of the plant that led to a positive identification.
- Submit the observation information to your local invasive species management organization.

Advanced data collection for management

- Determine the **plant maturity** using the following categories: vegetative, flowers, seed and other (provide a description).
- Measure and record the **distance** from the trail or road to the occurrence.
- Determine the **distribution** of the plants. Categories include: single plant, scattered plants, dense plants, dense throughout, linearly scattered and monoculture.

Single Plant:



Scattered Plants:



Dense plants:



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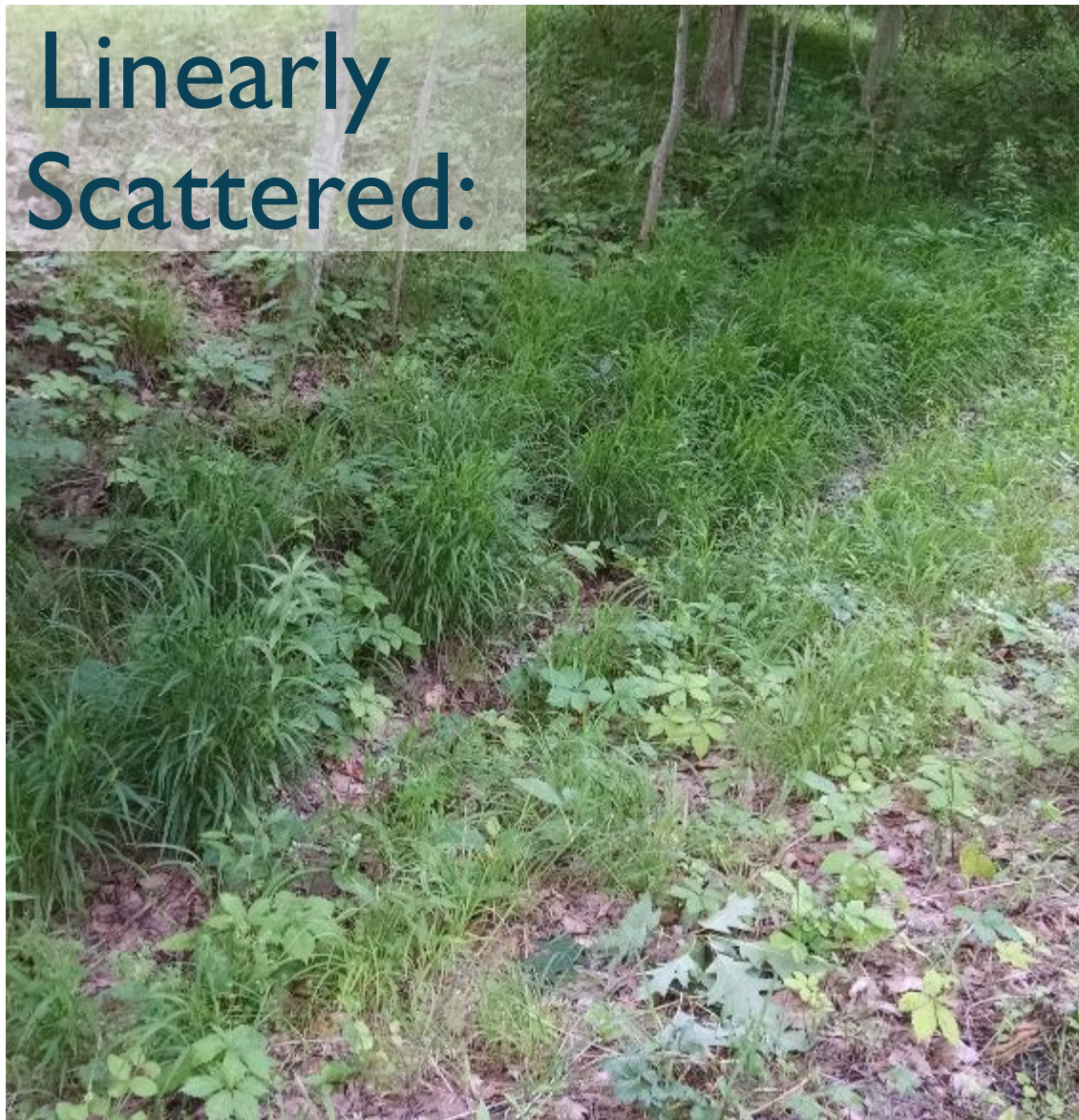
Dense
Throughout:



Monoculture:



Linearly
Scattered:



SPHERICAL DENSIOMETER

Model-A

(An instrument for measuring forest overstory density)
Instructions

Hold instrument level, 12" - 18" in front of body and at elbow height, so that operator's head is just outside of grid area.

Assume four equi-spaced dots in each square of the grid and systematically count dots equivalent to quarter-square canopy openings.

Multiply the total count by 1.04 to obtain percent of overhead area **not occupied** by canopy. The difference between this and 100 is an estimation of overstory density in percent. (Assuming each dot to represent one percent is often accurate enough.)

Make four readings per location - facing North, East, South and West - record and average.

Robert E. Lemmon, FOREST DENSIOMETERS
5733 SE Cornell Dr. • Bartlesville, OK 74006
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- Use a forest densiometer or similar tool to measure **canopy cover**.

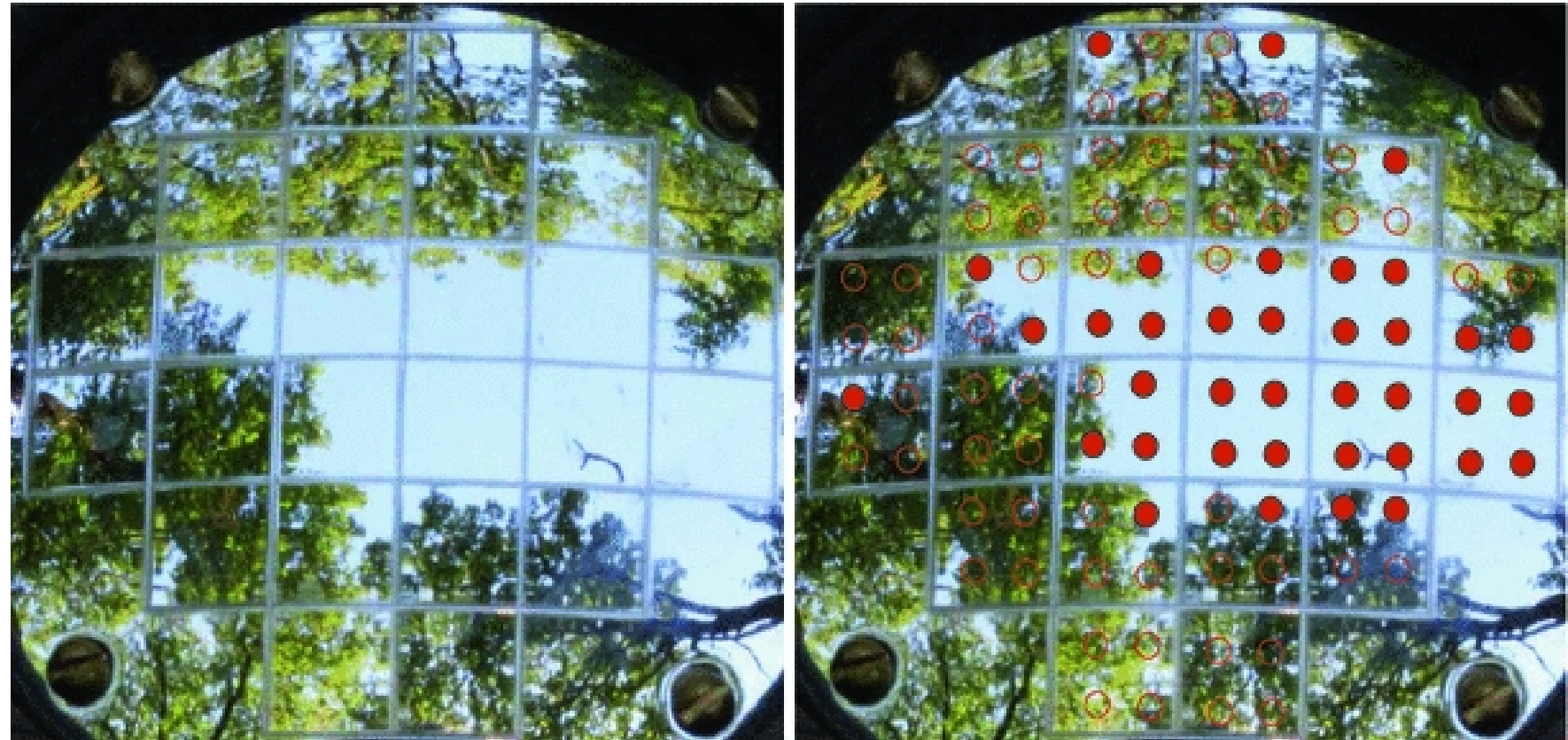


Photo credit: Olivier Baudry, Charlotte Charmetant, Catherine Collet and Quentin Ponette

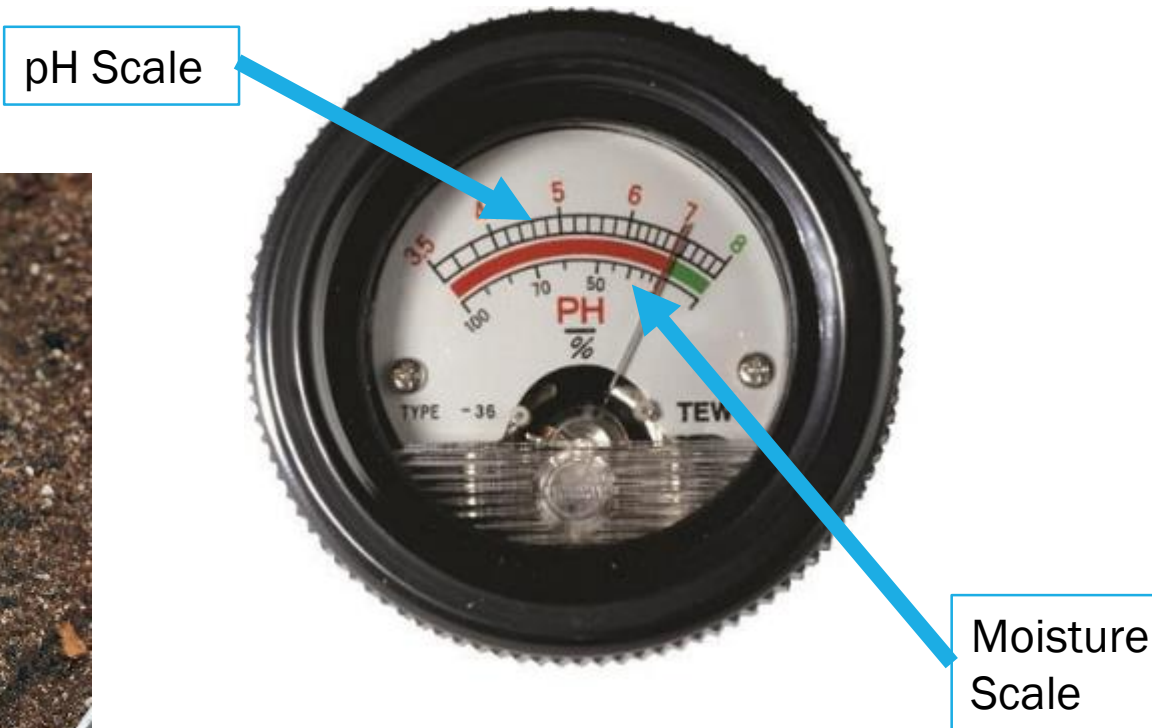
Other Invasive Species

- Identify other **invasive species** present within or surrounding the infestation.
- Determine the **distribution** of the other invasive species in the area.



Soil characteristics

- **Soil moisture:** very dry, dry, moist, wet/water
- Soil **percent relative saturation**, 0-100%
- **Soil pH**, 3.5-8
- Used a Kelway soil pH and moisture meter



The dull side of the conditioning film contacts the metal plates.



Moisture Scale

Landscape / Community Type

- Agricultural system: located on farmland where crops are grown or livestock are raised
- Open naturalized area: located in an old field
- Human dominated area: located in a residential, commercial or industrial area
- Along transportation corridor: located along a road or railroad track
- Wetland: located in or adjacent to an area designated as a wetland
- Forest: Indicate dominant species-up to 3
- Grassland/Prairie Opening: Indicate dominant species-up to 5
- Other: provide a description

Disturbance

- Observe the area around the occurrence to determine the **disturbance type**, using the categories: natural, human, both or none.
- Assess the **disturbance severity** by observing how intact the habitat is and the ease at which human disturbance can be seen. Severity can be described as none, light, moderate or heavy.



Photo credit: www.thestar.com



Photo credit: paulhumphriesriverecology.wordpress.com



Spread Prevention

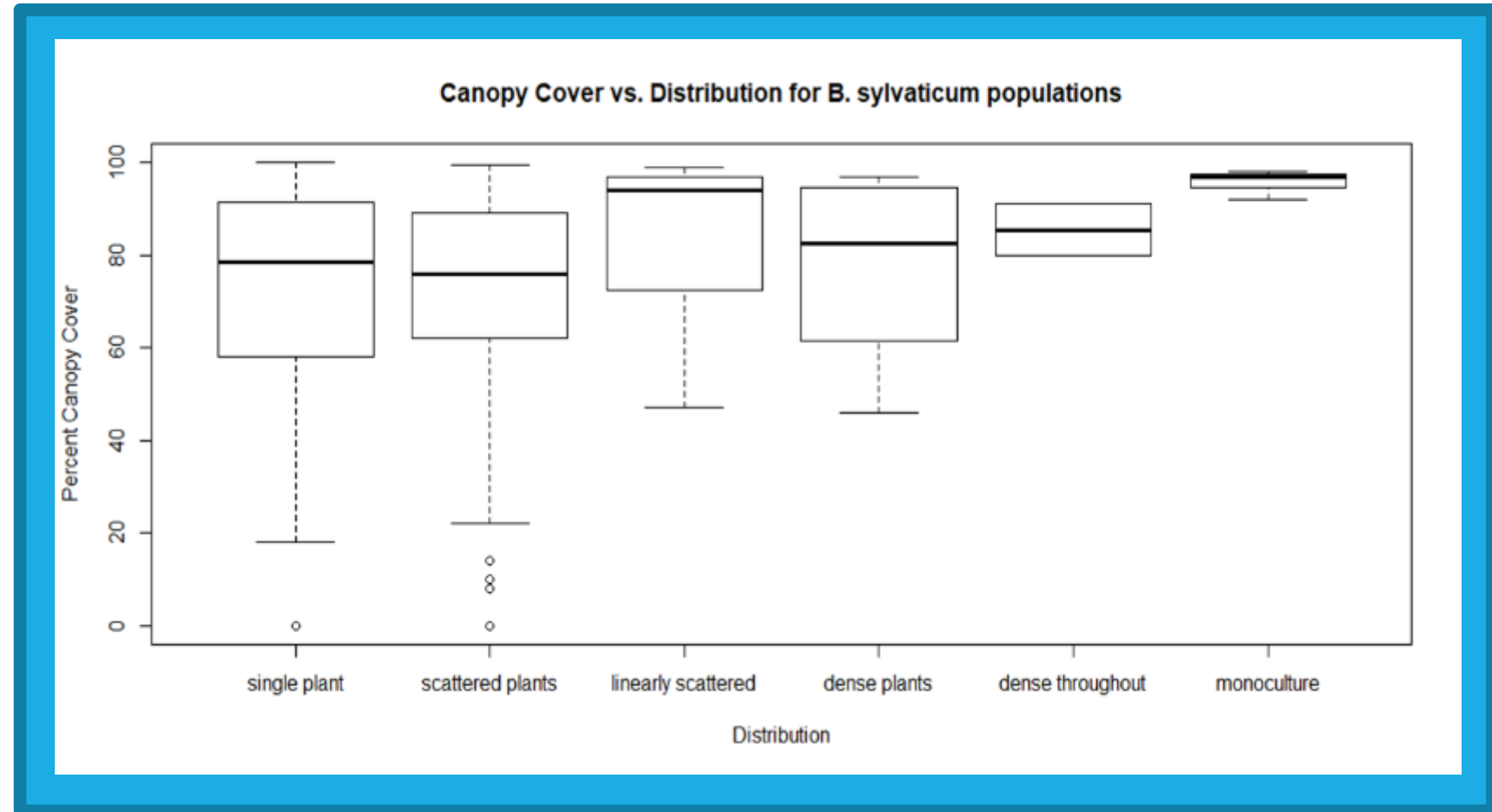
- Before leaving an area for the day, remove any plant material from clothing, footwear, backpacks and equipment.
- Use a handheld boot brush to remove dirt from the treads of footwear, which can contain seeds of invasive species and facilitate their movement to a new location.

Where to survey?

- Method one: Surveyed roads and trails adjacent to known locations. Work outward to then include nearby parks.
- Method two: Ensure our region was uniformly surveyed. Chose parks and natural areas in counties that were previously under-surveyed or not surveyed.

What did we find?

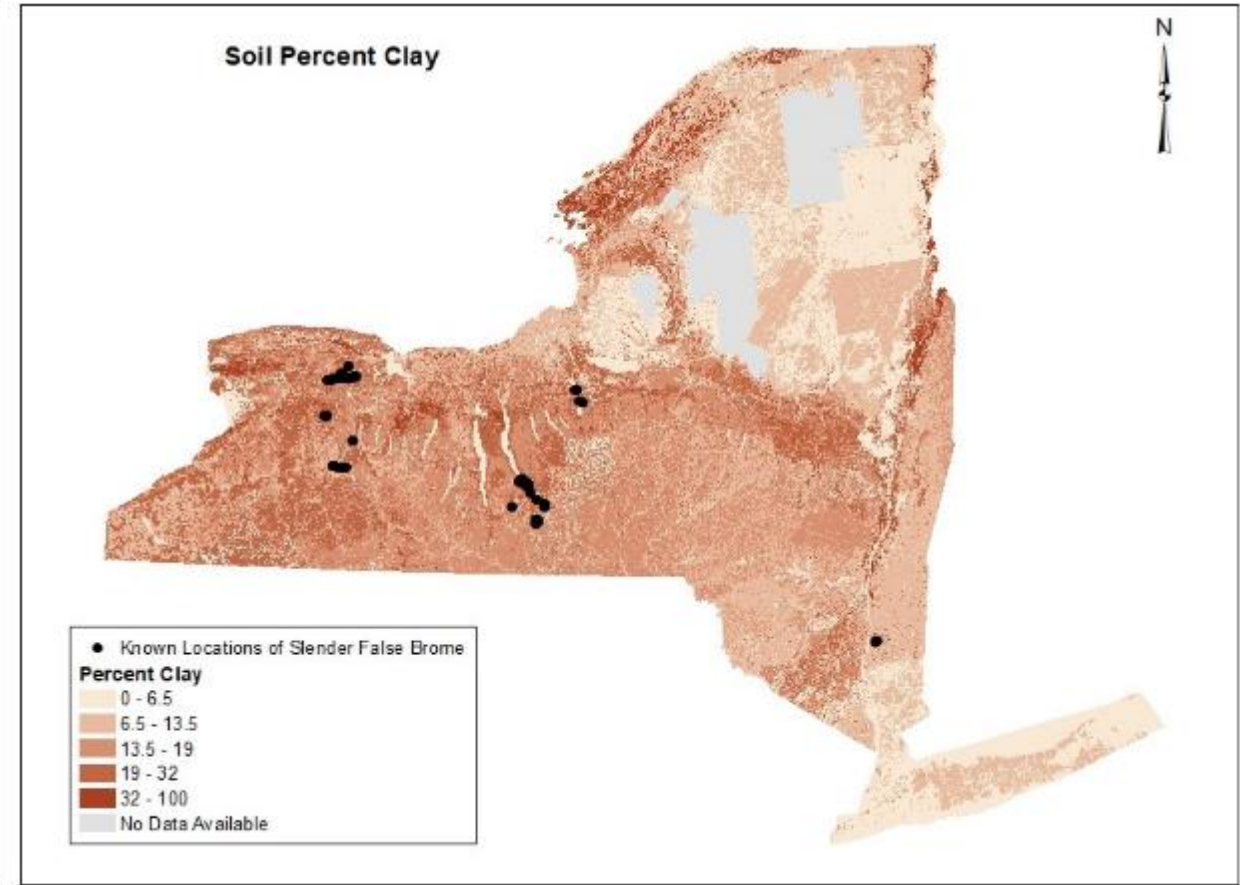
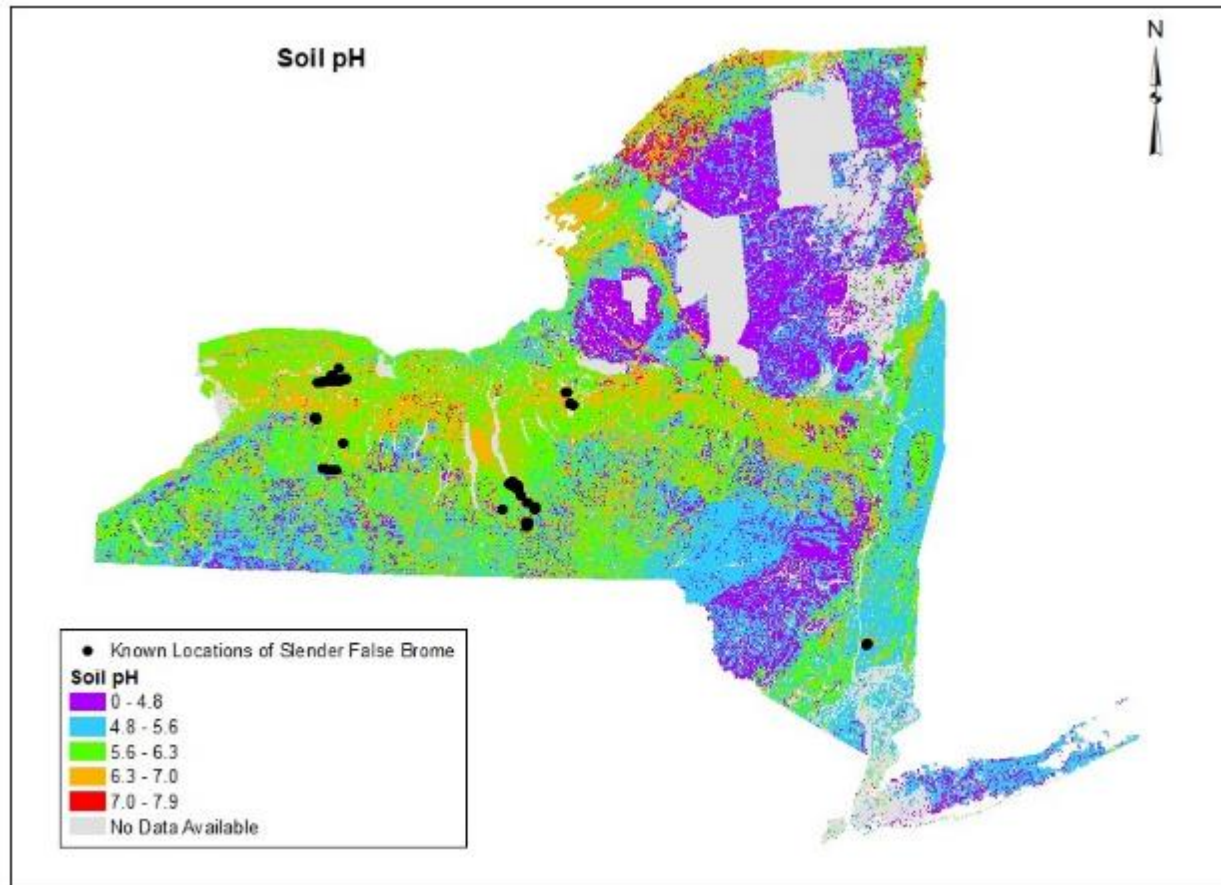
- Found along deer trails and areas with high ATV use.
- All distribution categories were recorded from single plant to monoculture
- Majority of the sites soil pH range of 6.5-7.2



Habitat Suitability

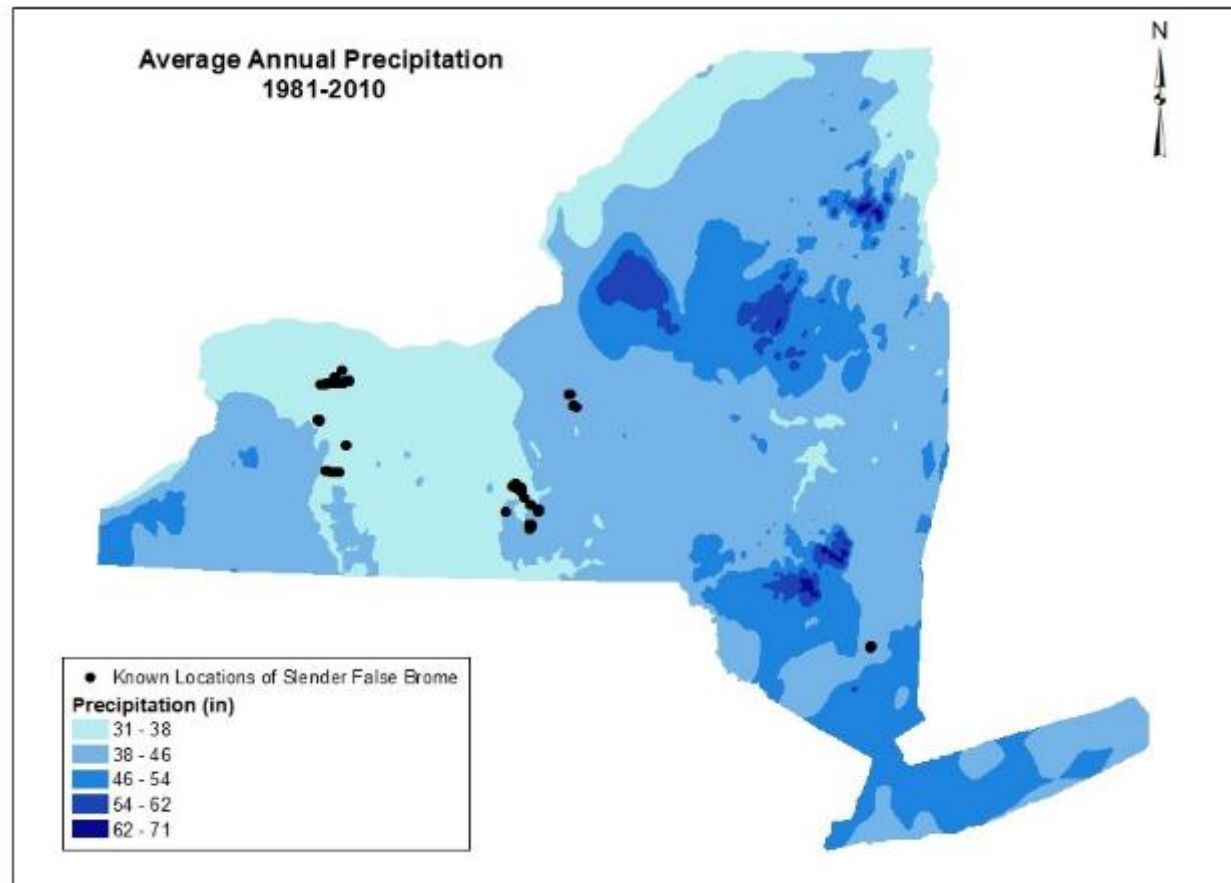
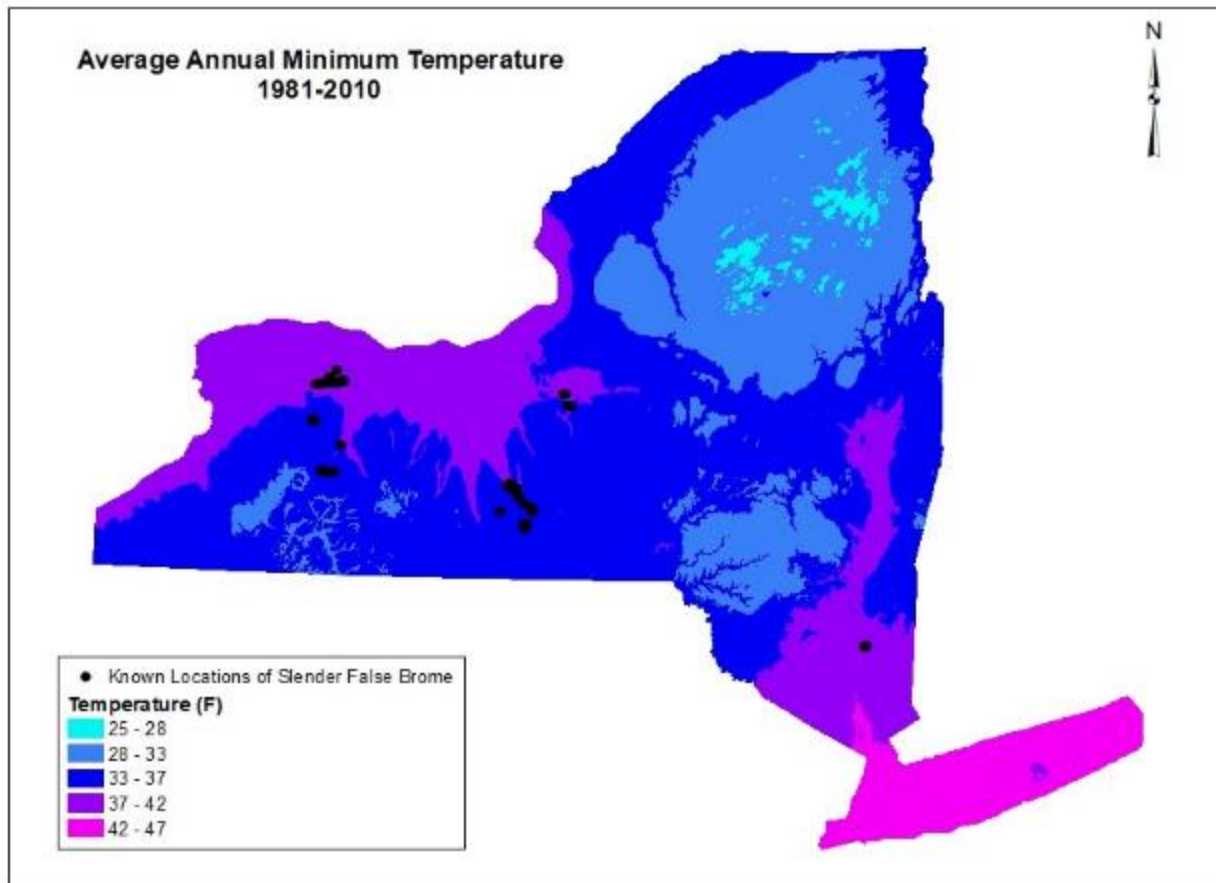


Landscape Data: Soil pH and Soil percent clay (obtained from USGS GeoSpatial Data Gateway)



Climate Data:

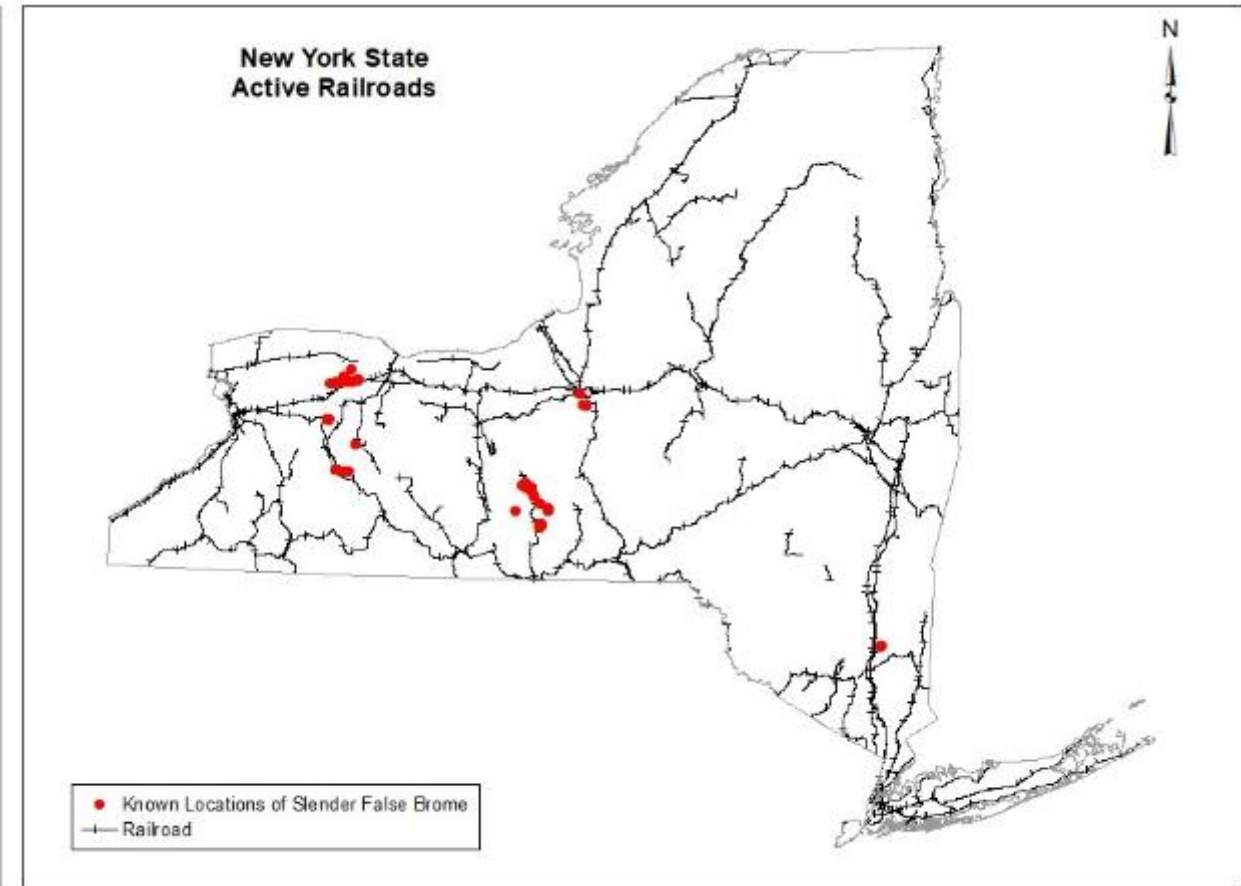
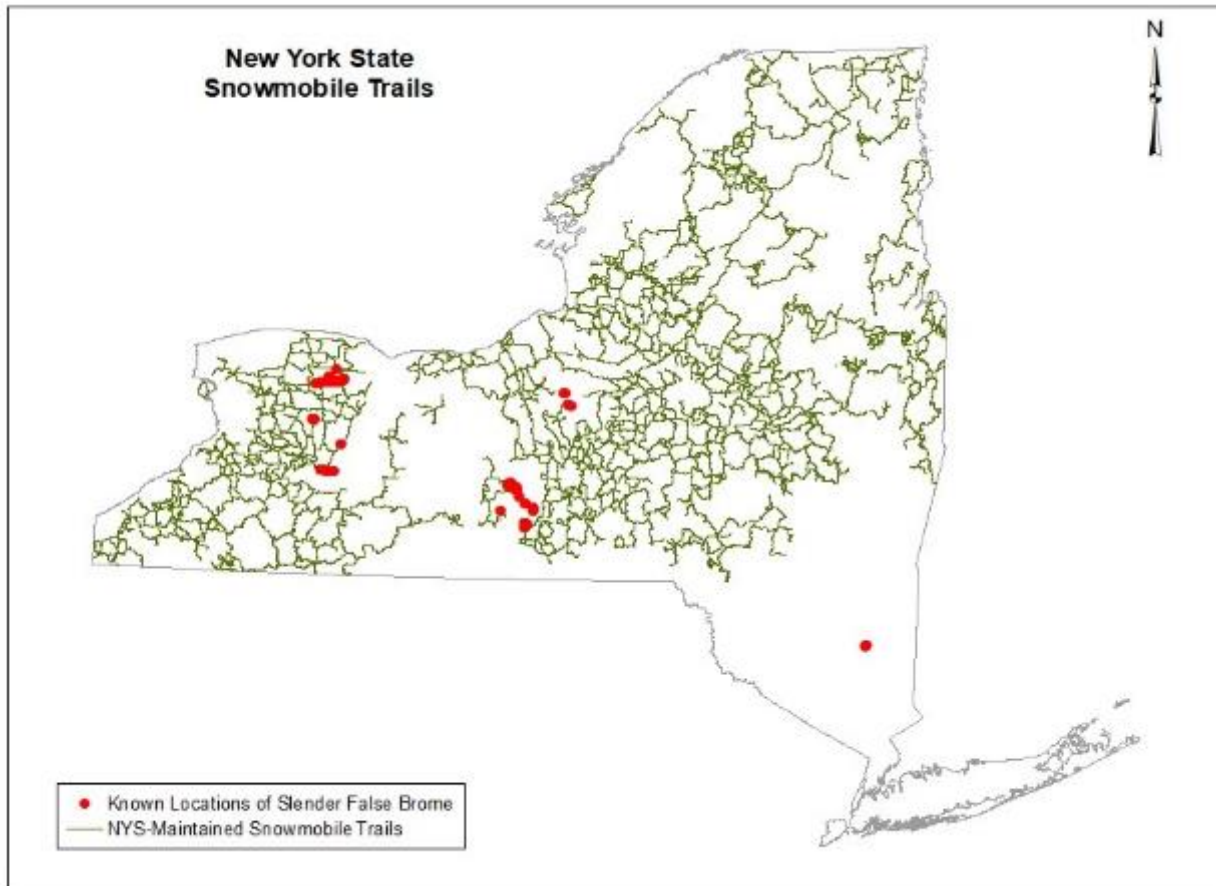
Annual average precipitation, annual average max temperature and annual average min temperature (obtained from USGS Geospatial Data Gateway)



Dispersal Corridors:

Distance to: waterways, roads, railroads and NYS maintained snowmobile trails

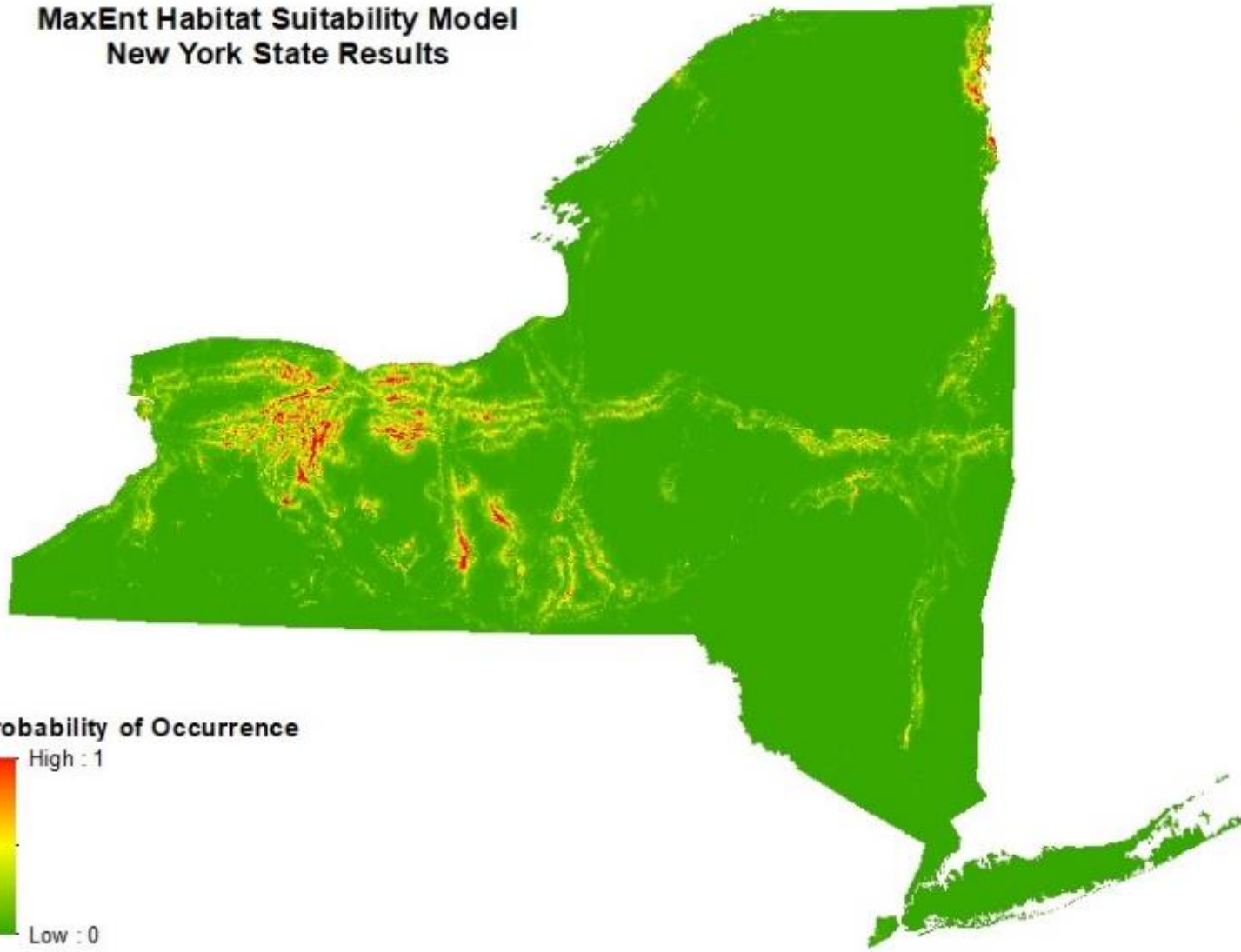
(obtained from NYS GIS Clearinghouse)



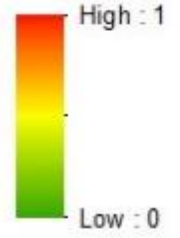
Habitat Suitability Results

- Used MaxEnt modeling software
- Used the 9 GIS layers and the known occurrence data from iMapInvasives and our survey efforts
- Most important variables: annual average precipitation, distance to snowmobile trails and distance to railroads

**MaxEnt Habitat Suitability Model
New York State Results**



Probability of Occurrence



Project Website: <http://www.wnyprism.org/projects/slenderfalsebrome/>



Thank you to all of the Working Group Members, Working Group and WNY PRISM partner organizations, Slender False Brome Project Staff, WNY PRISM Staff, WNY PRISM Crew