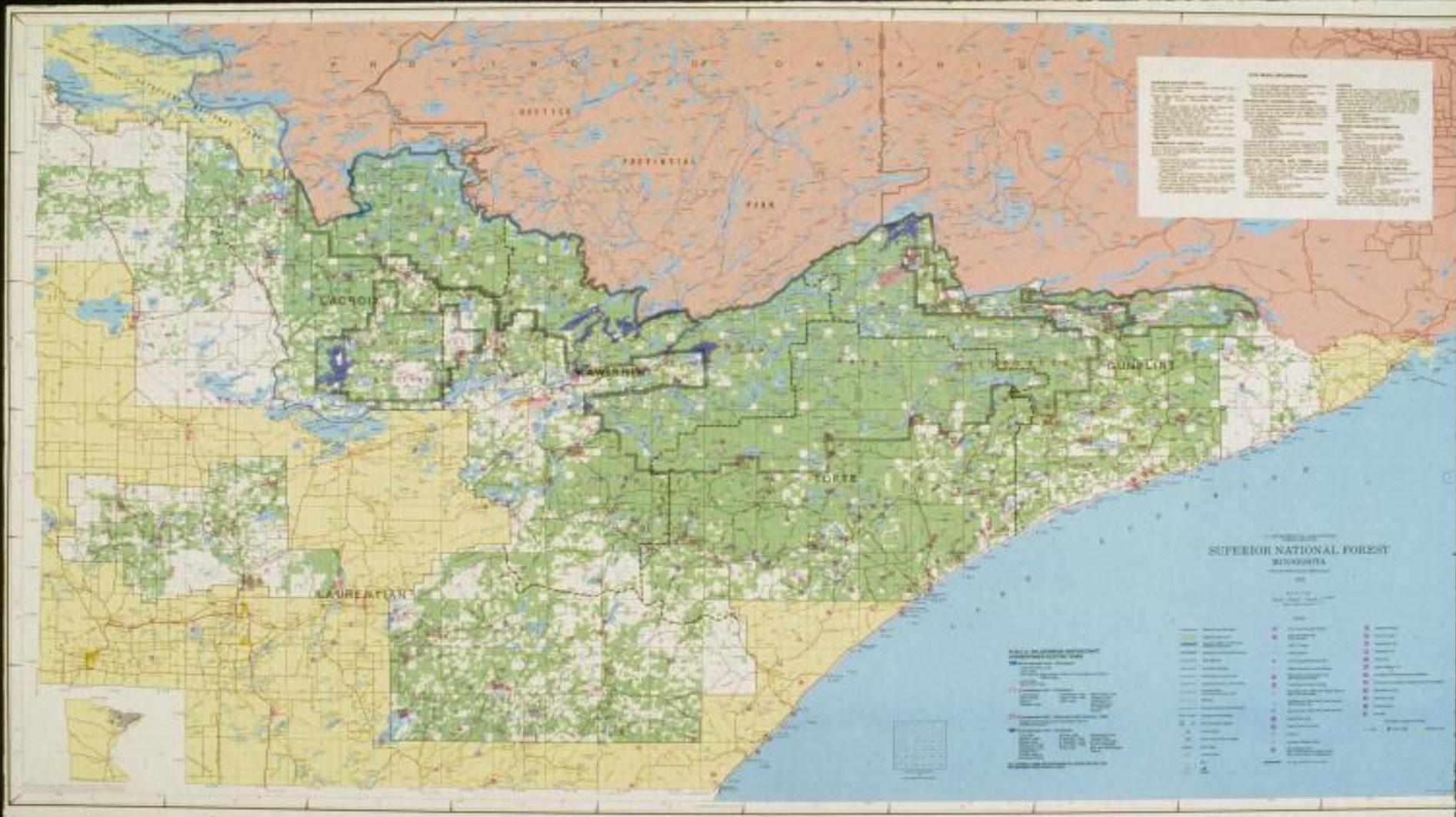
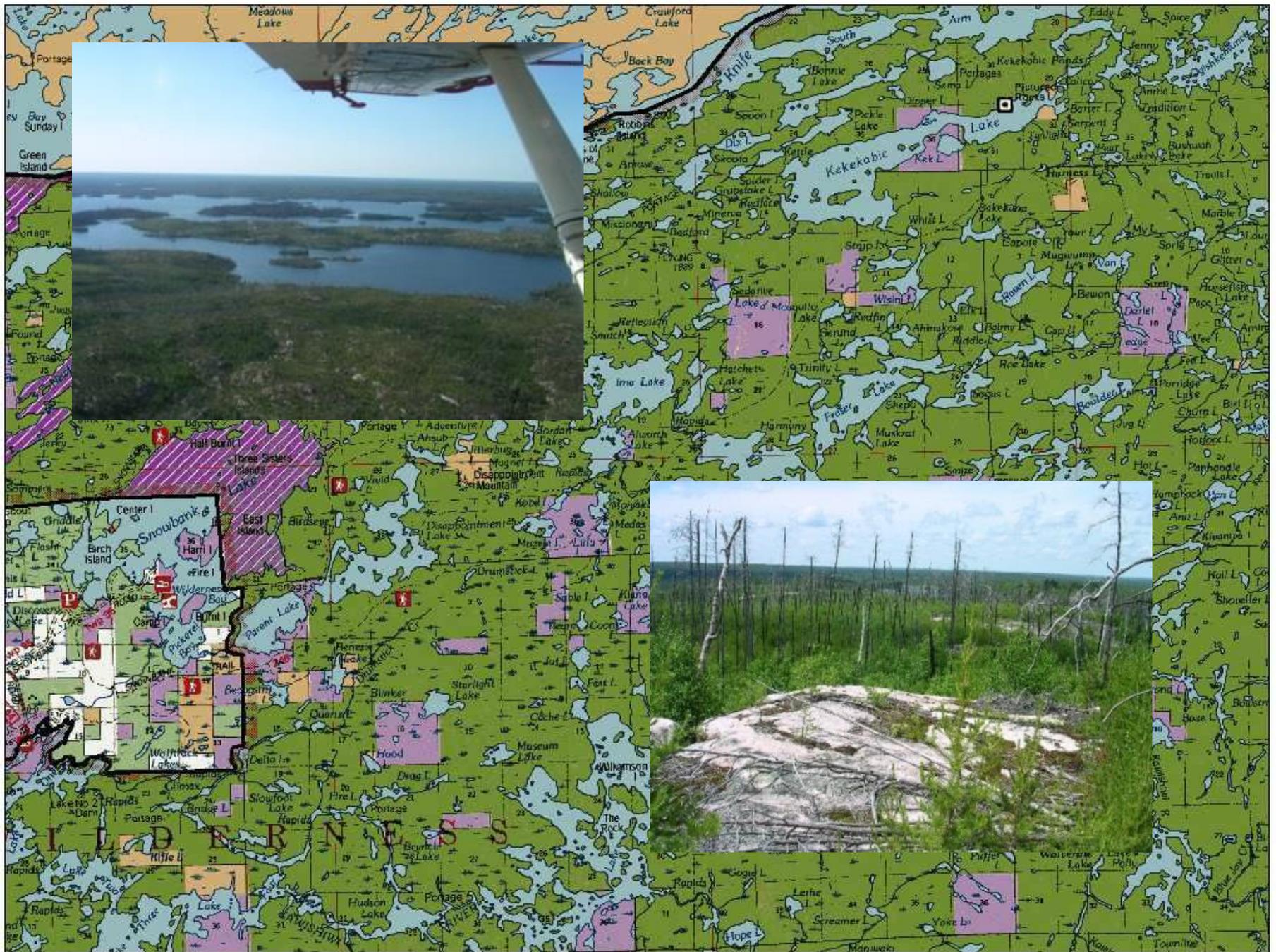


Using Herbicides to Manage Non-native Invasive Plants in the Boundary Waters Canoe Area Wilderness







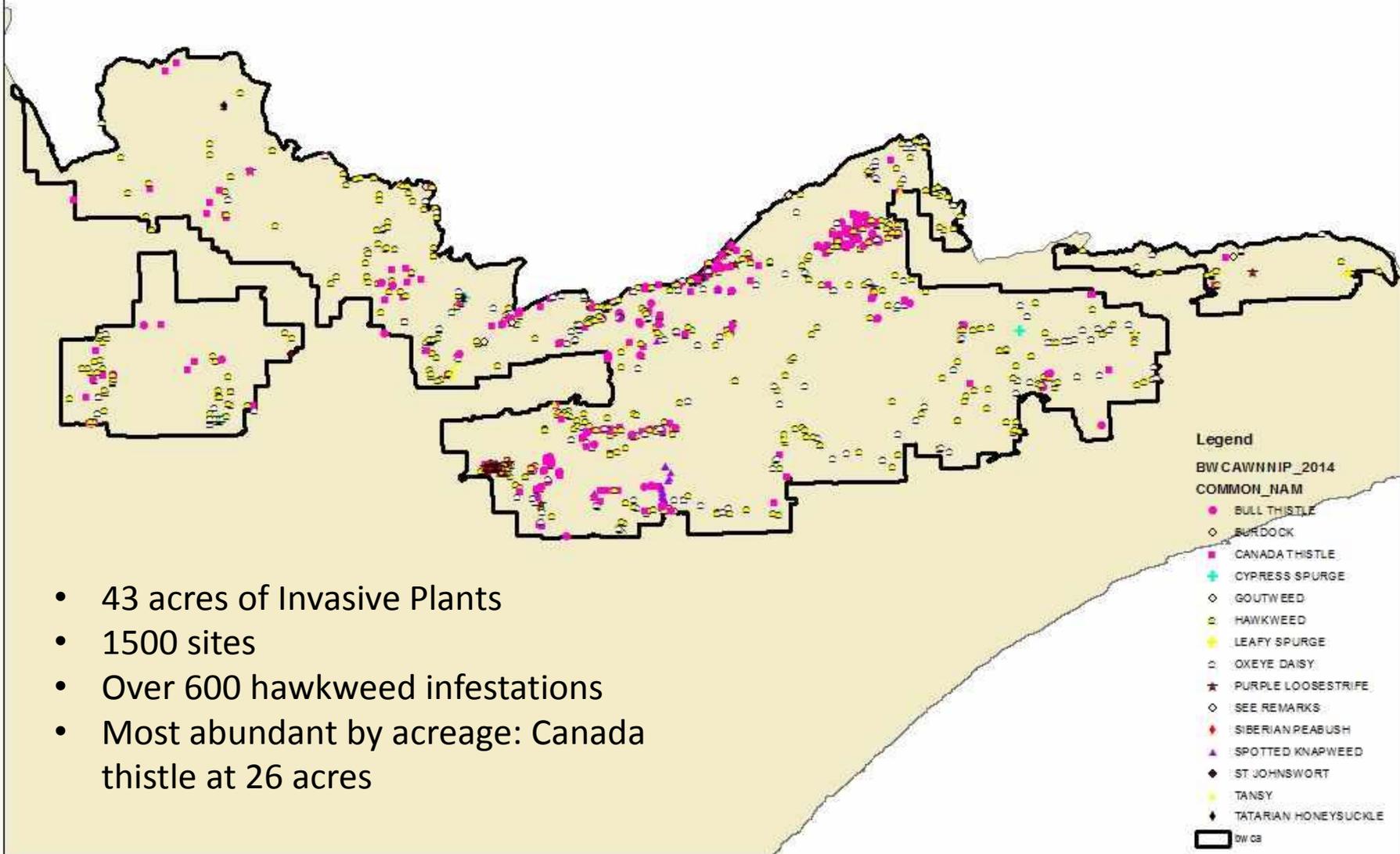


A topographic map of the Ottawa Islands region, showing various islands and lakes. The map is annotated with handwritten notes and symbols. A red dashed line traces a path across the islands. A black-bordered text box is overlaid on the map, containing a list of search criteria. The map includes labels for 'Washington Island', 'Lincoln Island', 'Squirrel Island', 'Basswood Lake', and 'Indiana Lake'. Handwritten annotations include 'Cabin', 'Walshy', 'Old Grants', 'MacCartney', 'Uggents', 'Wind', 'Altohist', and 'Hawthorn'. Elevation contours and spot heights are also visible.

Focused Inventory On:

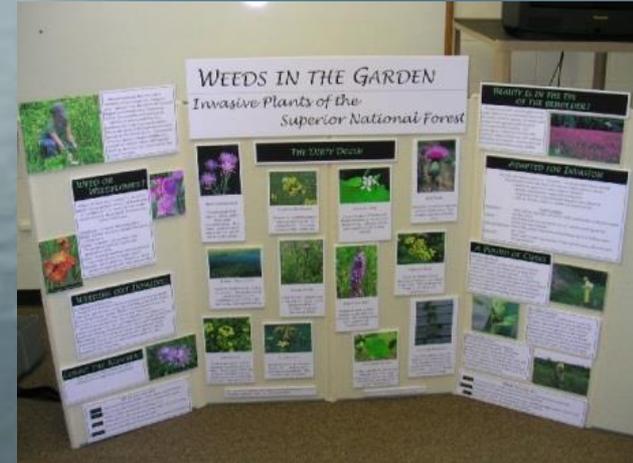
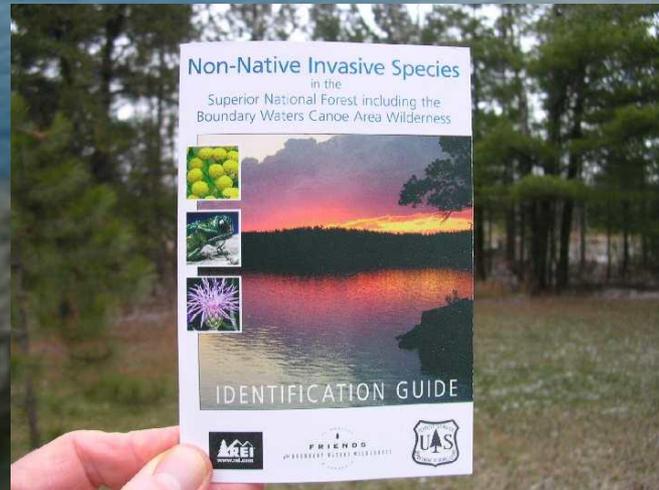
- Old Resorts/Cabin Site
- Old Logging Camps
- Current Campsites/Portages

BWCAW Invasive Plant Inventory



- 43 acres of Invasive Plants
- 1500 sites
- Over 600 hawkweed infestations
- Most abundant by acreage: Canada thistle at 26 acres

Education



Prevention

Clean Your Boots Before Entering

Please treat this natural area like your home and **WIPE YOUR FEET** before entering. Your shoes can carry seeds of invasive plants from other areas. Invasive species are non-native organisms which have been introduced to Minnesota and now threaten the native plant and animal community. These species can greatly alter the ecosystem and be very difficult and costly to remove. Please help protect our native species like the beautiful moccasin flower by learning to identify invasive species and cleaning your boots before and after entering this area.



Moccasin Flower - Pink Lady Slipper (*Proterium ovatum*) is native to northeast Minnesota

Help Stop the Spread of Invasive Plants

Spotted Knapweed (*Centaurea stoebe*) is a 2-3 ft tall non-native biennial or short-lived perennial plant which threatens sunny areas with well-drained or gravelly soil in northeastern Minnesota. Spotted knapweed is able to displace native plants because it produces a chemical which inhibits the growth and/or germination of other plants.



Garlic Mustard (*Alliaria petiolata*) is 1-3 ft tall, shade tolerant, non-native biennial plant which threatens forest health by displacing native wildflowers and limiting tree regeneration. This species has become a major problem in the eastern United States and land managers consider it one of the most harmful and difficult to control invasive plants in the region.



Common Tansy (*Tanacetum vulgare*) is a 2-5 ft tall non-native perennial plant which creates dense single-species colonies from extensive underground root structures in sunny, well-drained habitats. These colonies threaten the ecological health of areas through a reduction of species diversity and wildlife habitat.



Canada Thistle (*Cirsium arvense*) is a 3-5 ft tall non-native perennial plant which spreads both by seed and sprouting from creeping roots. Contrary to its common name, Canada thistle is not native to North America and forms dense stands in a variety of habitats. This plant shades out and displaces native vegetation and is very difficult to remove.



Produced by the Cook County Invasive Team

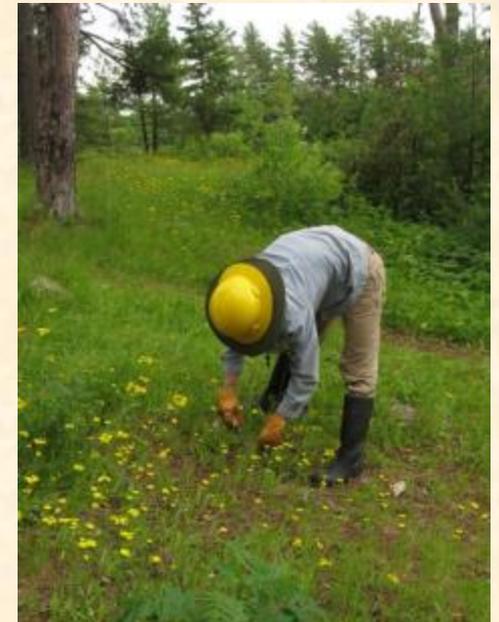
A coalition of local, state, federal, tribal, and non-profit organizations working together to limit the impacts of non-native species in northeastern Minnesota



Collaboration



Pulling/Cutting



Challenges for NNIS Management

- Susceptible habitat – shallow soils
- Rhizomatous species of invasive plants
- Continued high levels of recreational use

• Wildfires	Year	Acres
Alpine Lake Fire	2005	1,335
Turtle Lake Fire	2006	2,085
Famine/Redeye Fire	2006	5,898
Cavity Lake Fire	2006	24,152
Ham Lake Fire	2007	75,443
Pagami Creek Fire	2011	92,682

Pietro Lake 2008
2yrs post Turtle Fire



Pietro Lake 2013
2yrs post Pagami Fire (7yrs post Turtle Fire)





United States
Department of
Agriculture
Forest Service

August 2013



Final Environmental Impact Statement

BWCAW Non-native Invasive Plant Management Project

Superior National Forest
Cook, Lake, and St. Louis Counties, Minnesota



Considerations For Project

- Water-based Wilderness
 - Emphasize safe use and transport of herbicides
- Federally Designated Wilderness Area
 - Very limited motor use
 - Transport everything by human-power
- Short, Fast Growing Season
 - Have to cover a lot of ground in short time
- Heavy Visitor Use
 - But most of weeds at campsites
- Budget – far more weeds than we have
\$ to treat

Prioritization

Species with few known occurrences



Tansy (28)



Spotted Knapweed (40)



St. Johnswort (2)



Tatarian Honeysuckle (6)



Goutweed (3)

High risk species



Pagami Creek Burned Area



Methods



Methods



Methods – Wipe On Application



Wipe-It

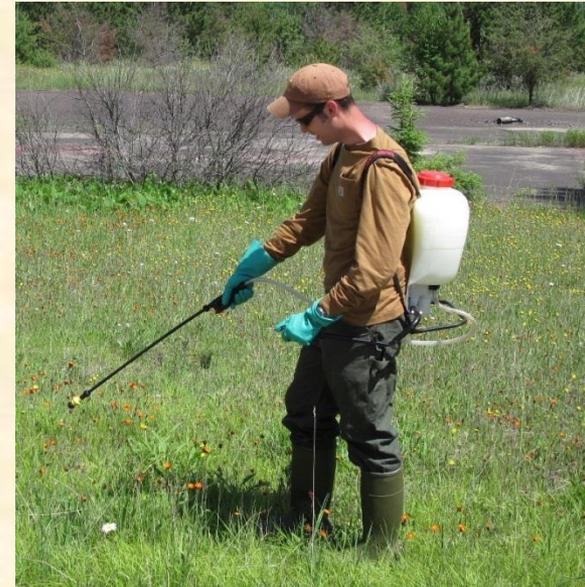


Sideswipe



Glove of Death

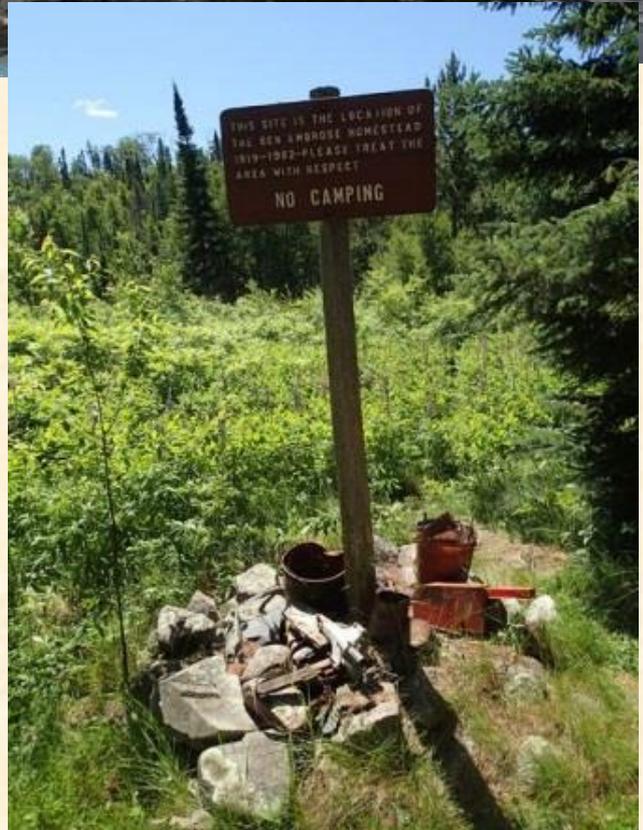
Methods – Foliar Spray



Training

- Calibration
- Mixing
- Spray Techniques
- Weed ID
- Info About Project

Treatment Sites



Results



Monitoring

Alton Lake



Before



After

Monitoring

Brule Lake



Before



After

Monitoring

Alton Lake



Before



After

Monitoring

Brule Lake



Before



After

Monitoring

Gabbro Lake



Before



After

Future Work...

- Follow up treatments
- Expanding to new sites
- No shortage of NNIS, but budget is limiting
- Volunteers



A woman wearing a white baseball cap, a grey jacket, and a grey t-shirt with "FEMINIST LEAVE BSU" printed on it is sitting on the left side of the log. She is holding a clear plastic container and looking towards the other people.

A woman with long brown hair, wearing a grey t-shirt and blue shorts, is sitting in the middle of the log. She is holding a clear plastic bowl filled with salad and eating with a purple spoon.

A man wearing a blue jacket and grey pants is crouching on the ground behind the log. He is eating from a pink plate with a white fork.

A man wearing a plaid shirt and brown pants is sitting on the right side of the log. He is leaning forward, looking down at something on the ground, possibly a green bag or piece of clothing.

A clear plastic bottle of Pepsi is on the ground in the bottom left corner.

A black metal fire pit with a pot of food cooking inside is in the foreground.

A blue bag with "ARDS CITY" printed on it is on the ground in the bottom right corner.

