CONTROLLING SPOTTED KNAPWEED

In NW Minnesota State Parks and Trails

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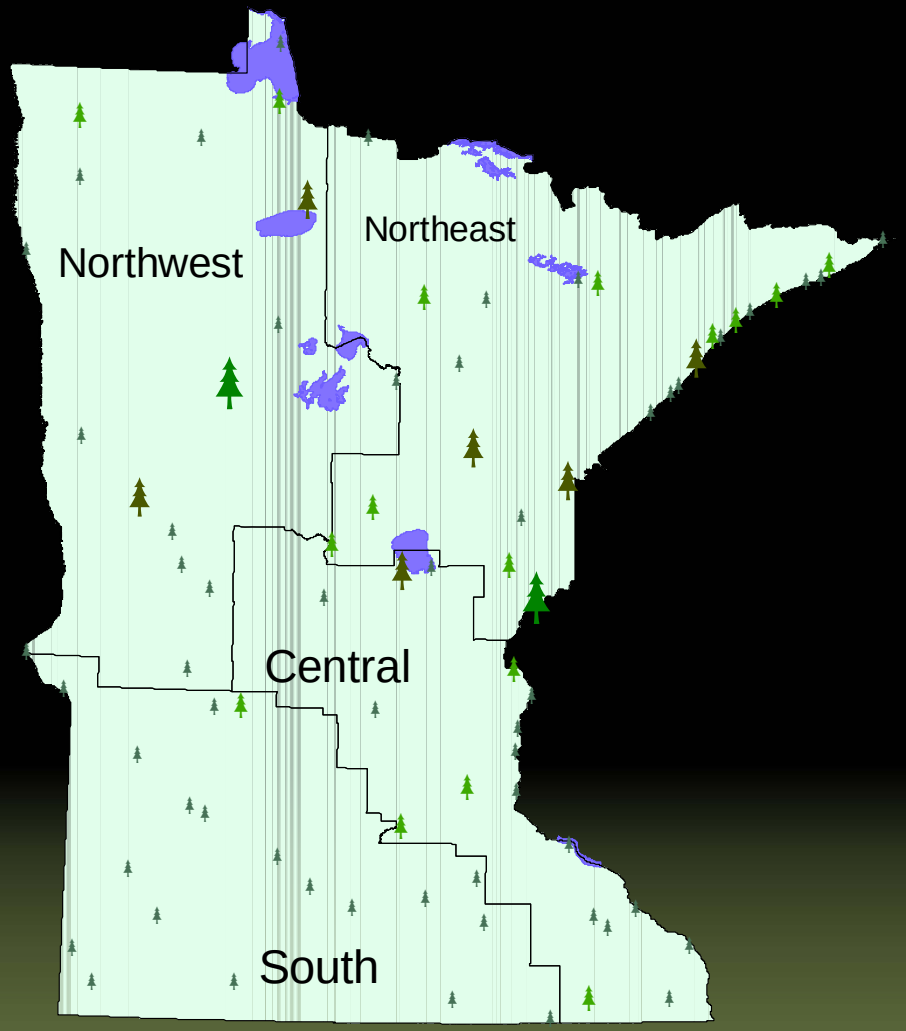
NW MN State DNR Parks and Trails Units

- 15 State Parks, State Recreation Areas, State Wayside Areas – 70,000 acres

And in 2009 combined with

- 3 State Trails – 200 miles
- 5 State Water Trails – 700 miles
- Public Water Accesses
- GIA Trails



Controlling Spotted Knapweed

4 Ecological Provinces

Weeds…Top 10 *(least)* Wanted

- Leafy Spurge
- Spotted Knapweed
- European Buckthorn
- Smooth Brome
- Sweet Clover
- Tartarian Honeysuckle
- Wild parsnip
- Canada, Musk, Bull Thistles
- Absinthe wormwood
- Garlic mustard

Spotted Knapweed – the purple wildfire

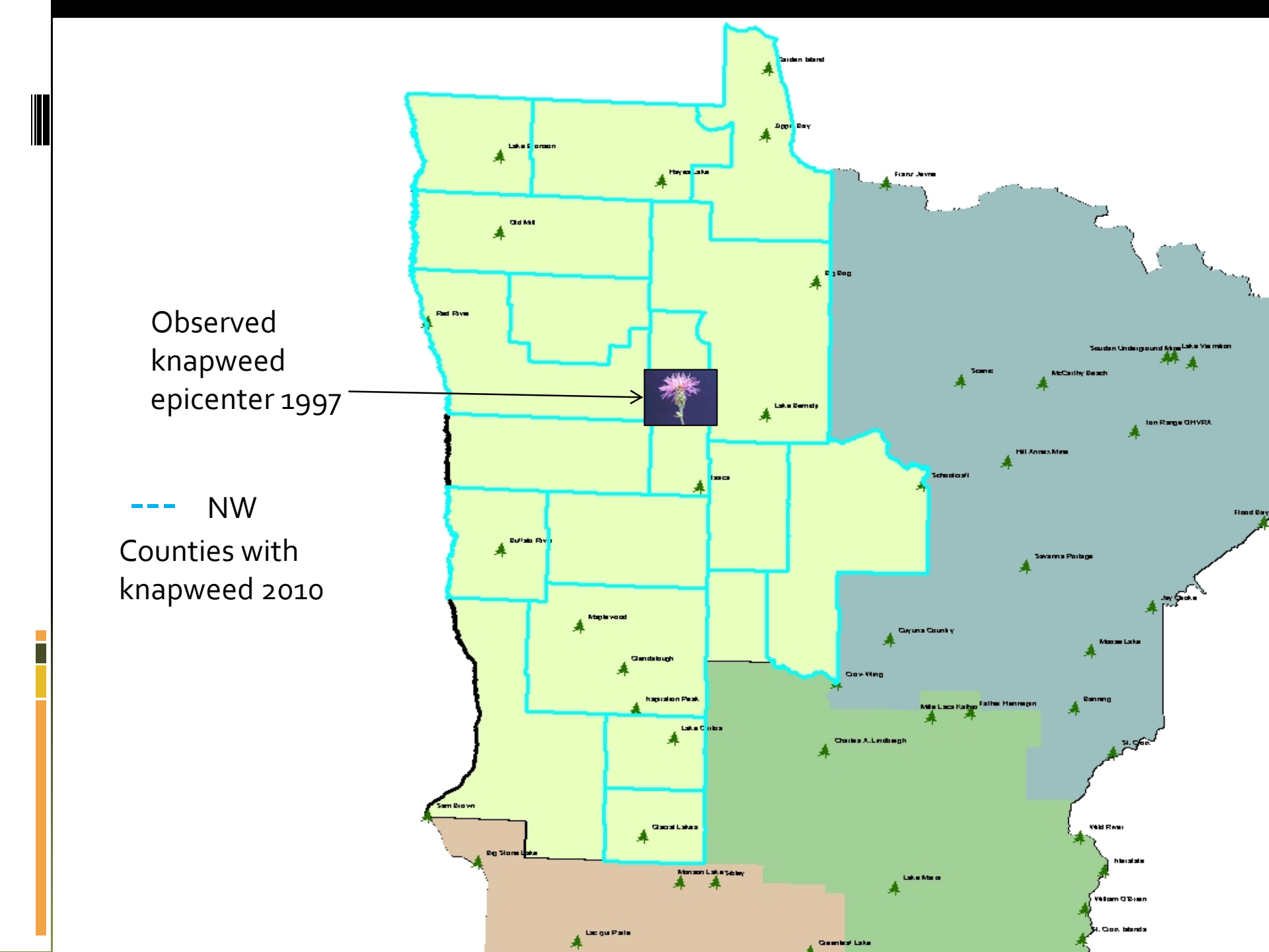
Spotted Knapweed *(Centaurea stoebe)*

- Native to Europe – brought to North America in 1800's
- Readily establishes in disturbed or light soils
- Tap rooted "biennial", spreads by seed
- Prolific seed producer (>1,000 seeds/plant)
- Seeds viable >7 yrs, plants live up to 9 yrs
- Spread by vehicles, animals, humans, wind and water
- Can infest native plant communities
- Allelopathic

Spotted Knapweed

New growth rosette

Bolted, setting seed


Observed knapweed epicenter 1997
NW
Counties with knapweed 2010

Spotted knapweed infestation

Invasion by movement on road and trail corridors

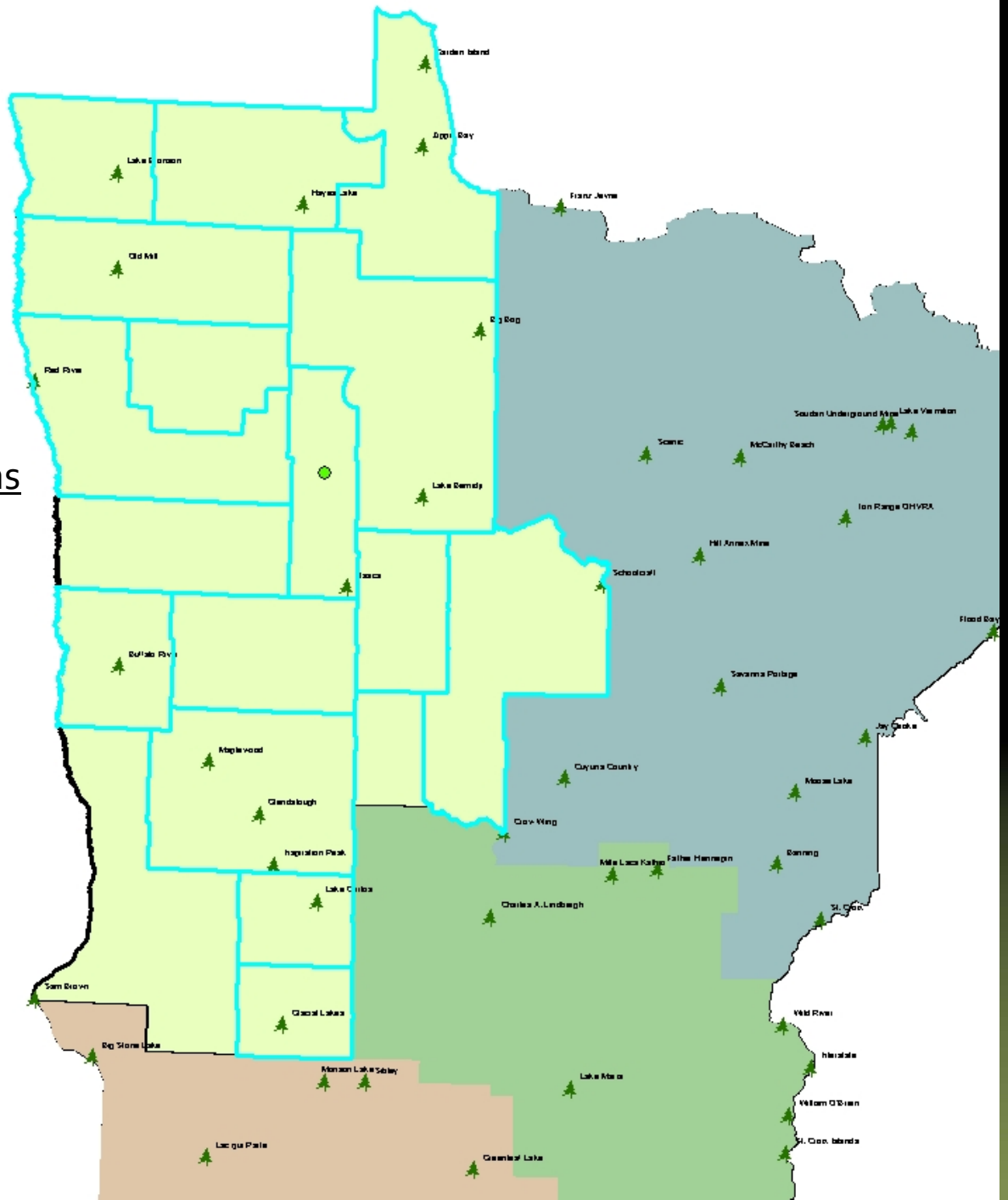
Invasion by materials movement

State Parks with:

<u>Major Infestations</u>
Lake Bemidji
Zippel Bay
Itasca

<u>Moderate Infestations</u>
Maplewood
Glendalough

<u>Limited Infestations</u>
Buffalo River
Lake Bronson
Glacial Lakes
Lake Carlos
Hayes Lake



We wish we had a magic wand…

But we don’t.

Our strategy – *Knowledge, Planning, Action, Tenacity*

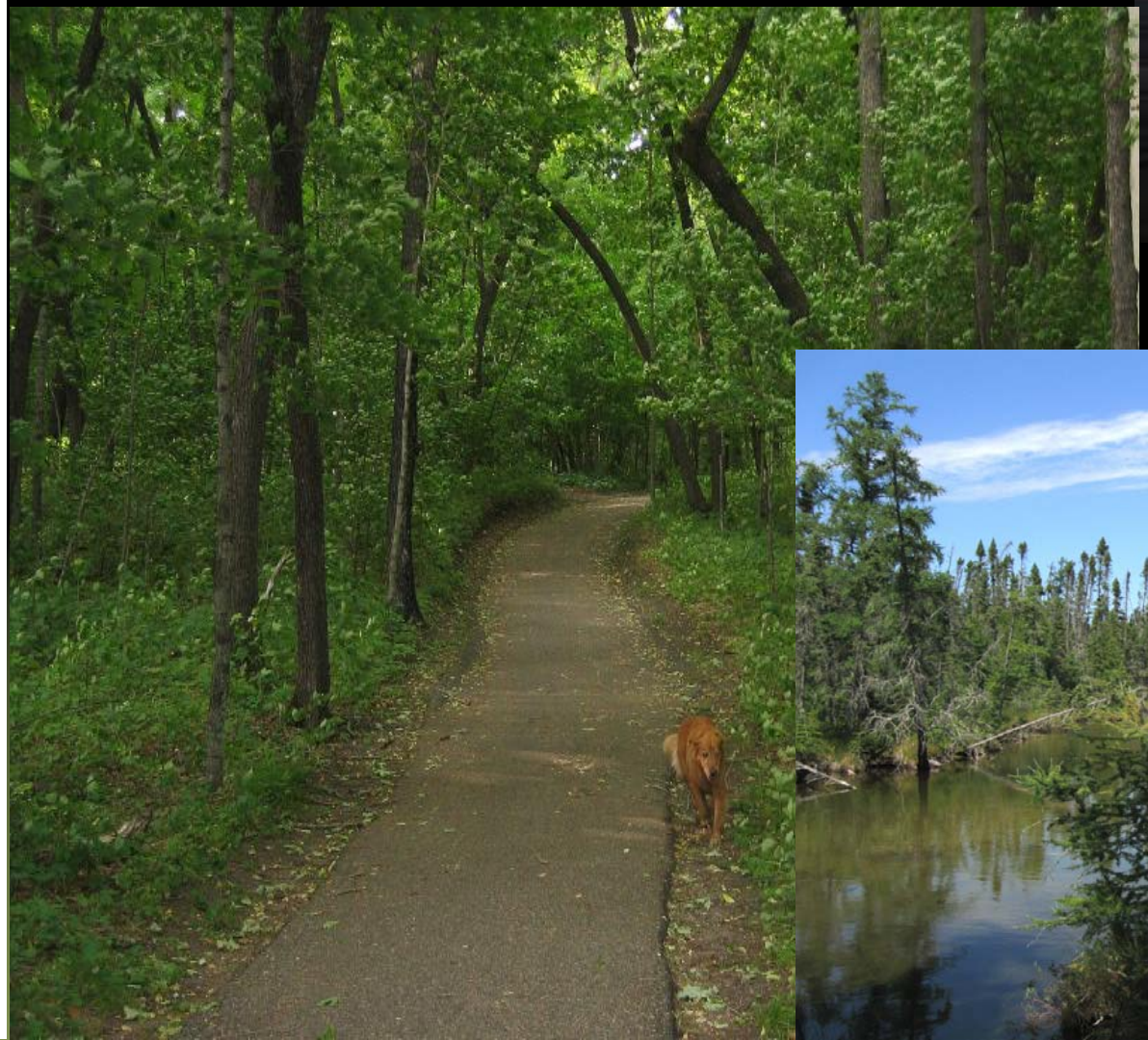
- PAT Resource Management Program

  $1M annually for invasives management - statewide

Controlling Spotted Knapweed

- Control Strategy for State Parks and Trails
- Become knowledgeable about the weed, its impacts, prevention and control information.
- Make a map and a plan of attack.
- Work from pioneering weeds to centers of infestation
- Work high quality areas first
- Target entry points and travel routes to prevent spread
- Use the most effective and selective combination of preventative and containment techniques for invasive plant control.
- Be tenacious in control efforts
- As control is achieved, move from project to maintenance mode

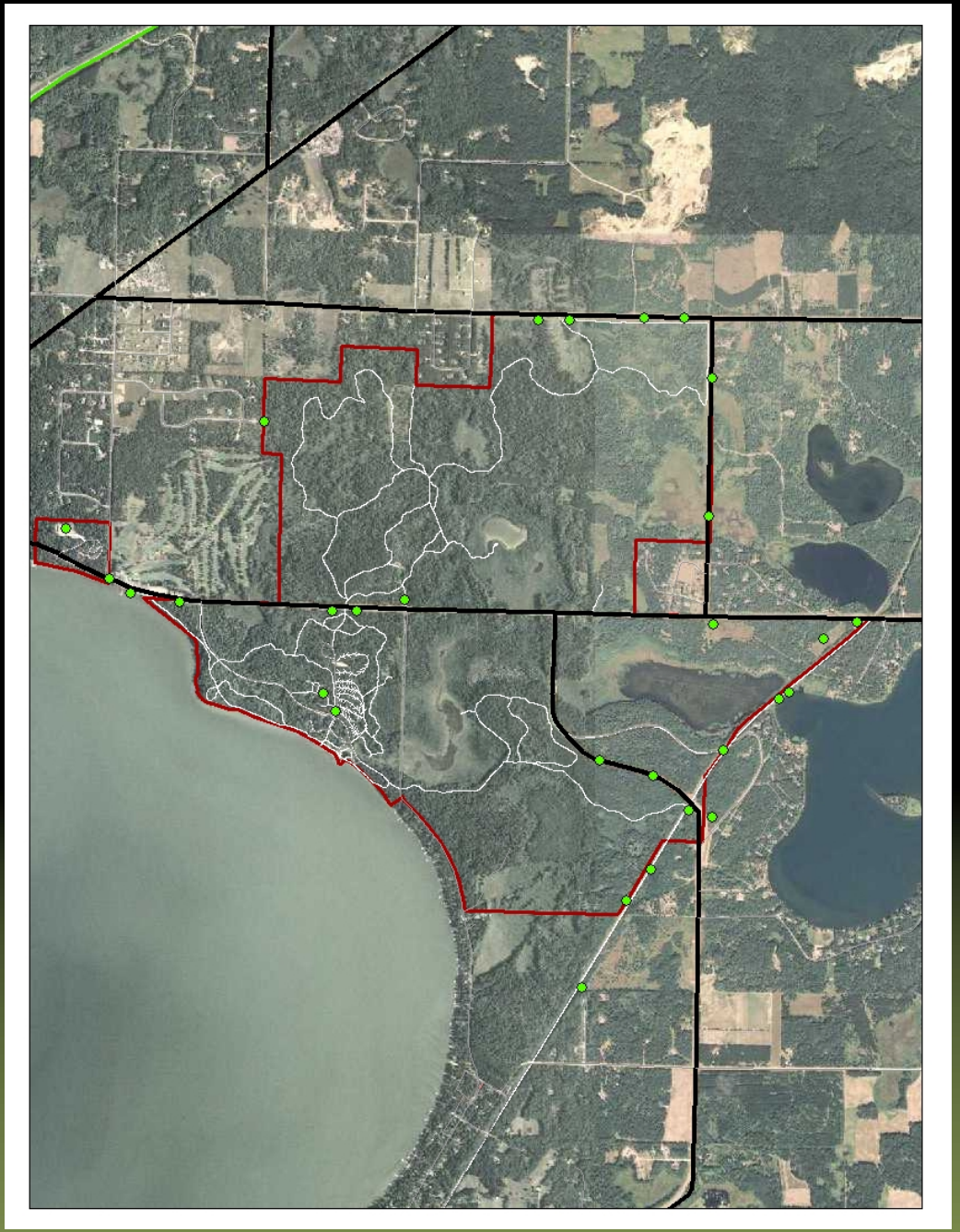
Lake Bemidji State Park



Lake Bemidji State Park and Paul Bunyan State Trail

Spotted Knapweed Locations 2010

- Infestations on roads
  pine plantations
  trails



Controlling Spotted Knapweed

- Map locations
- Visit all known locations annually, search disturbed sites
- Treat rosettes before bolt stage – May-June or Sept-Oct
- Selective spot spraying technique
- Remove pioneering flowering plants before seed set

Controlling Spotted Knapweed

- Herbicide control 2004-2010
  - Dicamba (Banvel) 2003 (< 50% reduction)
  - Clopyralid (Transline)
  - Aminopyralid (Milestone) > 90% reduction
    - Some control of germinating seeds
- Removal of scattered plants

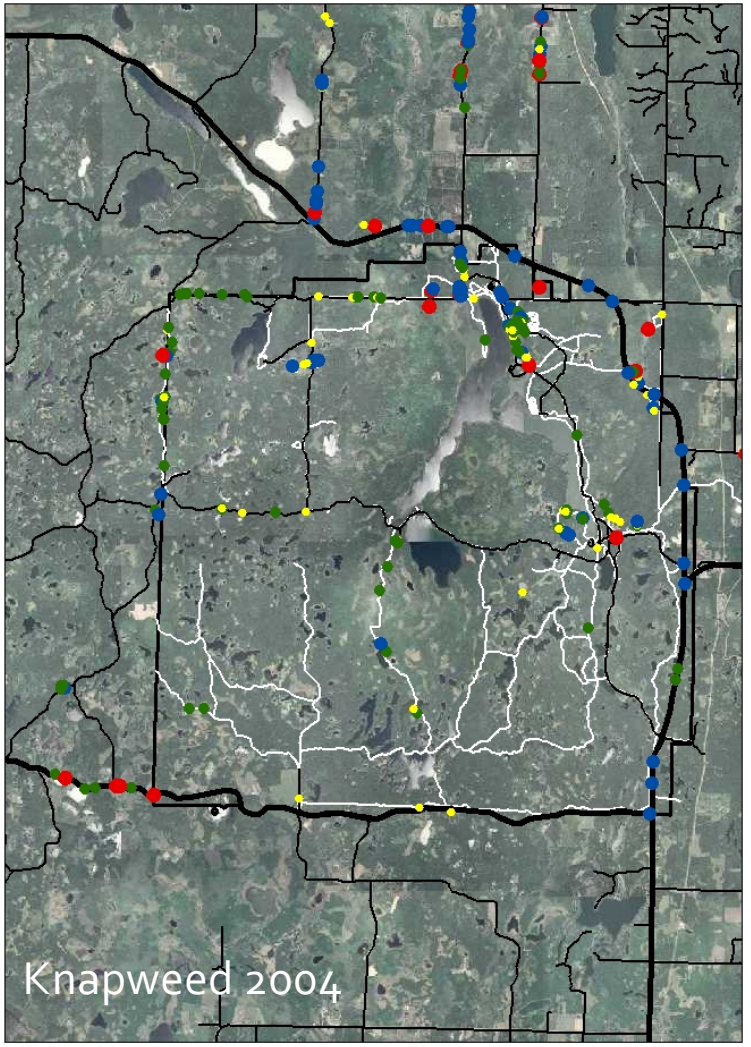
Itasca State Park

Controlling Spotted Knapweed

Itasca State Park

Control methods used

Biocontrol (Dept of Ag tests)
Mowing
Pulling
Grazing
Herbicide



Controlling Spotted Knapweed

Mowing

Plants readily re-flower and survive, even with repeated mowing (10 years +)

Mowers spread seed effectively

Knapweed can out-compete cool season turf grasses

Controlling Spotted Knapweed

Pulling

Leaves a disturbed spot for seeds to germ

Time consuming, labor costs

Works for individual pioneer knapweeds

Eliminates the plant

Controlling Spotted Knapweed

Grazing

Impacts on native vegetation

Costly

May reduce knapweed seed production

Drew public interest to invasives problem

Knapweed re-flowered readily

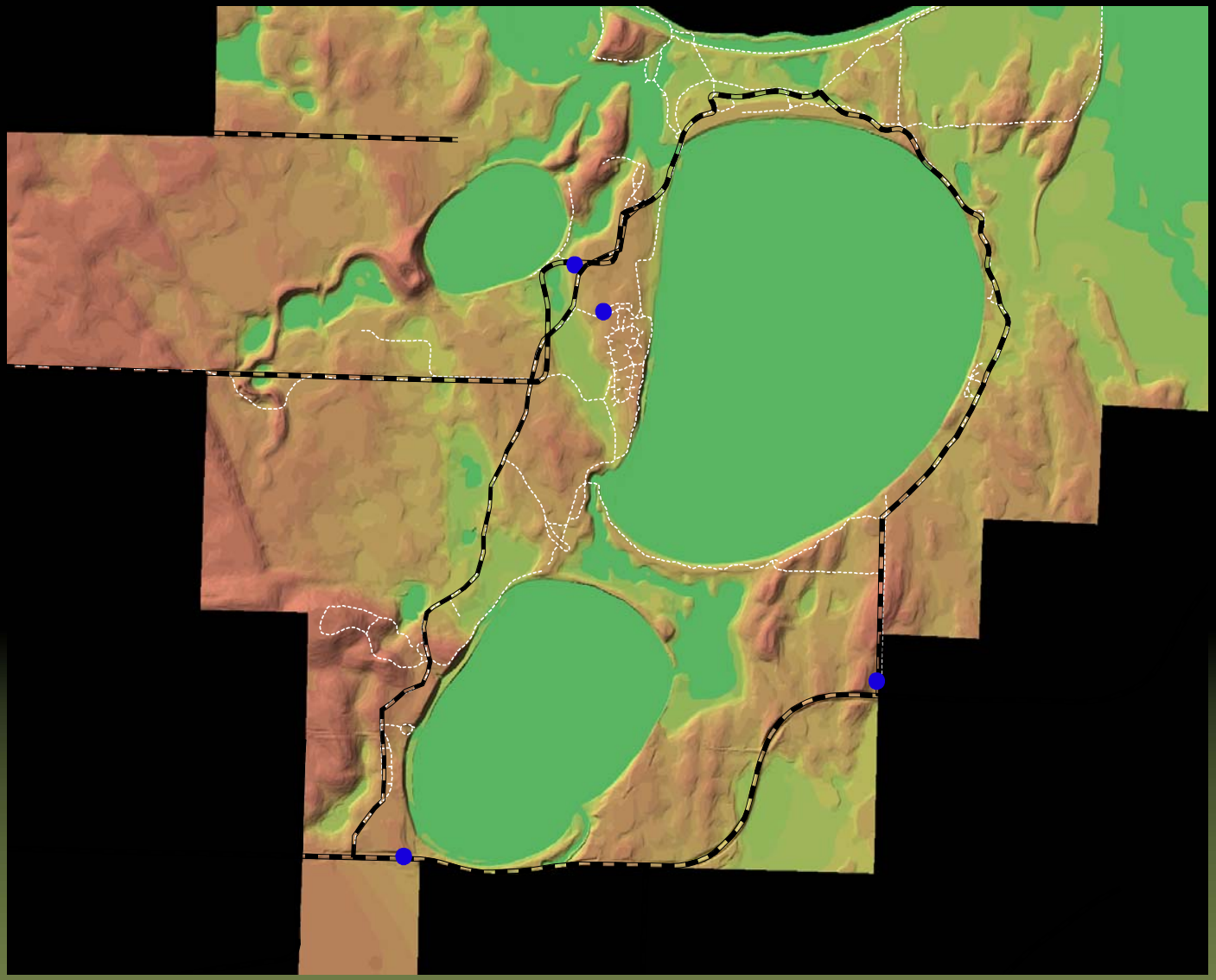
No decrease in knapweed after 2 years grazing

Controlling Spotted Knapweed - Itasca

- Aminopyralid (Milestone) - 2007-2009
- Reduced knapweed > 90%
- Knapweed seed bank still viable
- Knapweed suppressed vegetation is more vigorous after chemical release
- Currently using aminopyralid/metsulfuron combination (Opensight) for tansy/knapweed control.
- Followup restoration in bare areas

Glendalough State Park

Glendalough State Park 2005

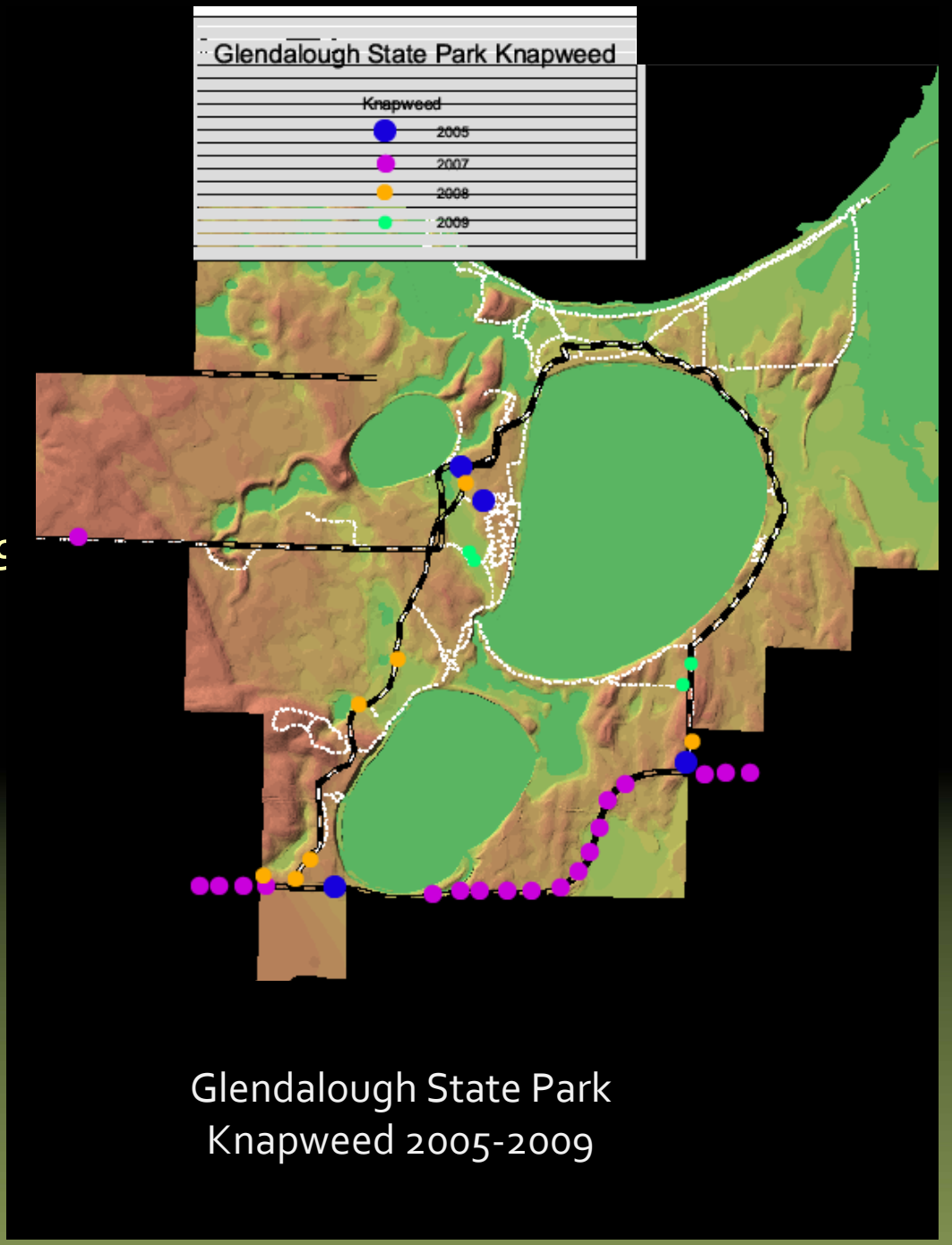


Controlling Spotted Knapweed

Controlling Spotted Knapweed

2006 – interior knapweed invasion

Transline/Milestone herbicide spot treatments 2006-2009



Glendalough State Park Knapweed 2005-2009

Controlling Spotted Knapweed

2010 checked all mapped sites, hand pulled only

Glendalough State Park, 2010 No Spray Points

Controlling Spotted Knapwee

Biocontrol release in adjacent road ditches, near infested fields.

Preventing Spread of Spotted Knapweed

DNR Guidelines for preventing spread of invasives

- Clean off equipment to reduce transfer
- Require weed-free materials (sand, gravel)
- Require contractors to enter with clean equipment
- Inspect and control weeds on stockpiled materials

One knapweed, 1,000 seeds

Preventing the spread…

Work with others to spray their pits
Clearwater County does!!

Questions?