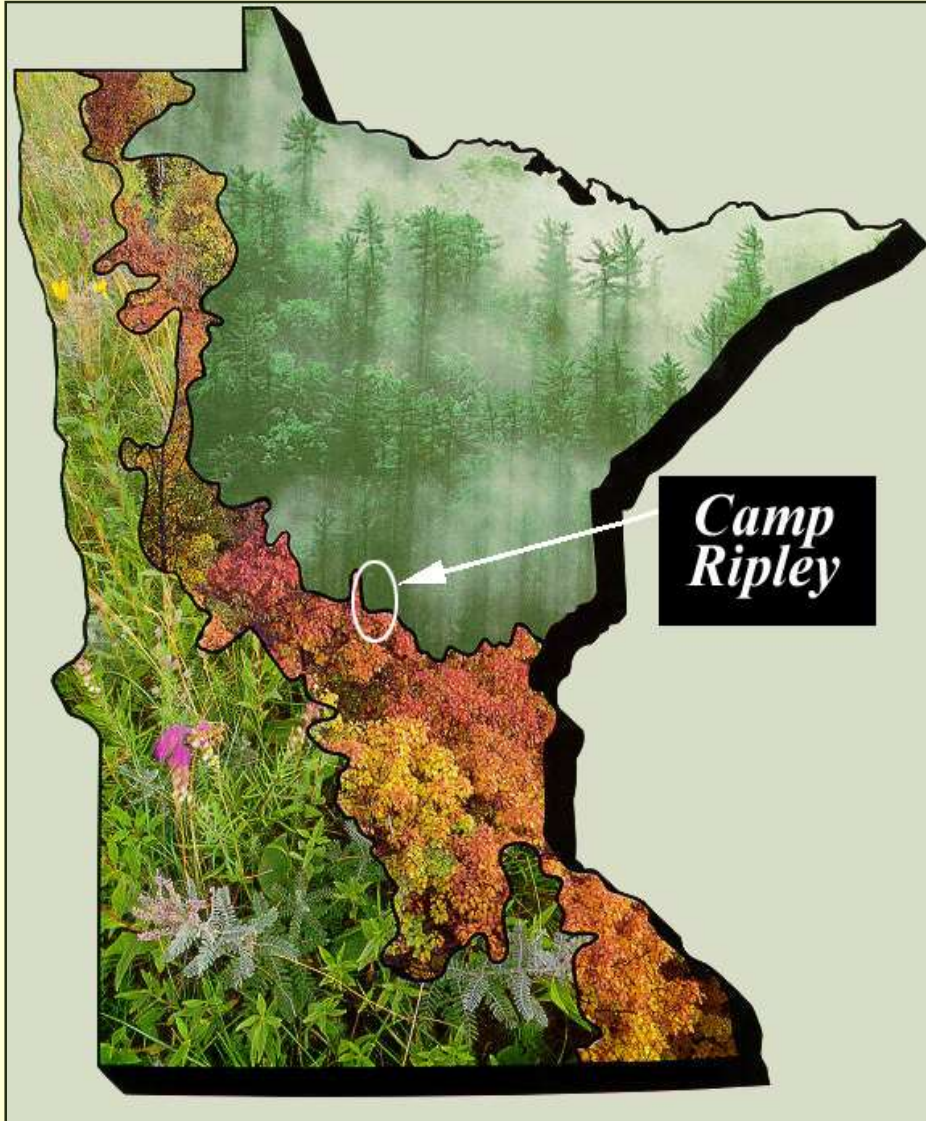


Battle Tactics from Camp Ripley: The War on Invasive Species

Kayla Malone

Laura Donahue

Camp Ripley, MN



Camp Ripley is a 53,000-acre regional training facility for our military, federal, state, local and civilian communities.

Designated wildlife refuge:

- 565 plant species
- 51 mammal species
- 202 avian species

State agencies that utilize Camp Ripley include: MN Department of Transportation, MN Department of Natural Resources, State Troopers, and many more.

Agreement

2002 A Master Interagency Agreement was reached between Camp Ripley and Saint Cloud State University to:

- Monitor and control of invasive species.
- Develop a sustainable management plan.
- Conduct research on best-management practices for control of invasive populations.



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Integrated Invasive Species Management Program

1. Know Your **Enemy**
2. Know Your **Land**
3. Know Your **Program**
4. Know Your **Limitations**
5. Know Your **Objectives**



Know your ENEMY

Confirm identification

- Reproductive strategy
- Dispersal
- Seasonal Phenology
- Treatment options
- *Identify weakness*



Know your LAND

Geography of a site

- Any of the biotic or abiotic characteristics of an area.
 - Land cover
 - Water features
 - Weather
 - Topography
- *Predict potential infestation sites*



Know your PROGRAM

Land uses

- Identify the impact on targeted invasive species.

- Forestry
- Recreational trails
- Public roadways
- Construction

Determine High Risk actions



Know your LIMITATIONS

Available Resources:

- Cost
- Equipment
- Labor
- Land use
- *Determines scope of work*



Know Your OBJECTIVES

Program Success

- Based on ENEMY, LAND, PROGRAM, LIMITATIONS.
- What is feasible.
- Used to determine data collection methods.
- *Prioritization of action*

Stage 1: Preliminary Work

- 2002-2009
- Focus on individual research projects
- 5 graduate students
- Selection of three primary targeted species
- Identified targeted invasive species locations
- Some treatment combinations were tested for: Spotted knapweed and Common Tansy.
- Little to no consistency between students.



Stage 1: Preliminary Work

2009

- Integrated management plan was needed.
- Initial camp-wide mapping efforts.



Stage 2: 2010-2012

- Limited resources
- Focus on mapping, strategy development, education, & outreach.

Executive Order 13112:

Prevent the introduction

Early Detection

Rapid response

Monitor invasive populations

Provide control and restoration of degraded sites

Conduct research

Promote education

Knew:

- Enemy
- Limitations

Unknown:

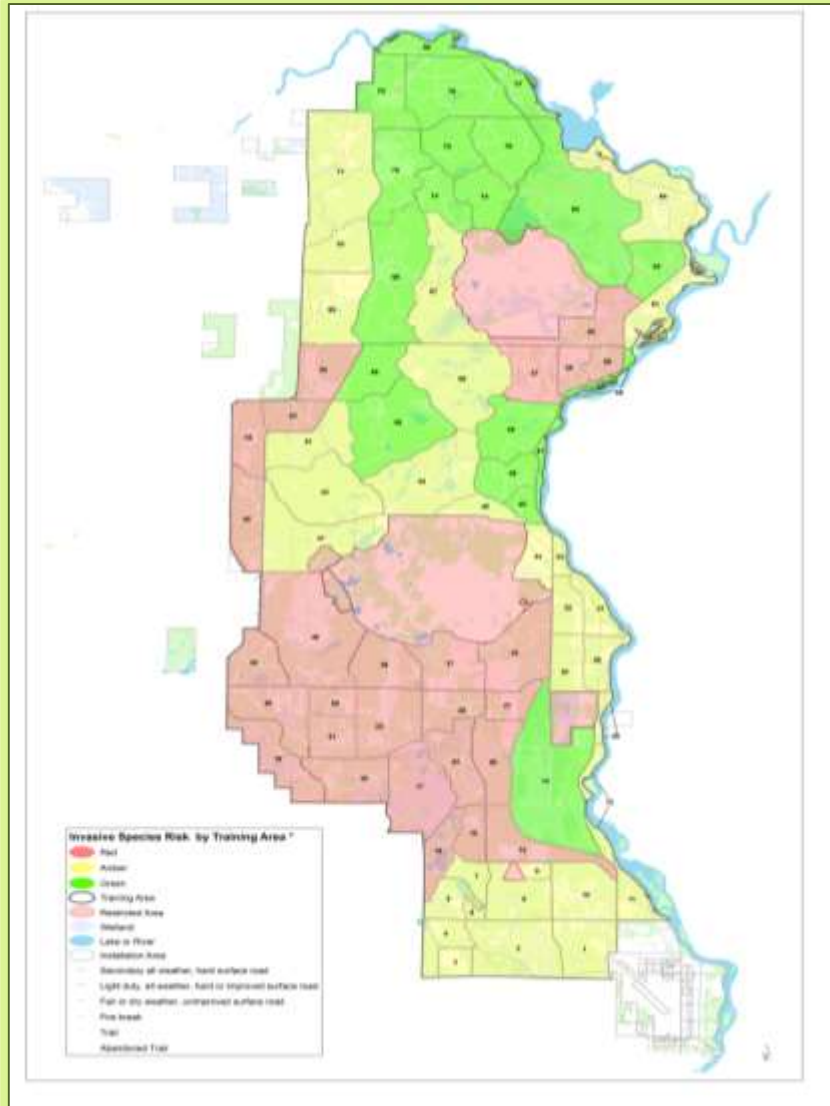
- Land
- Program
- Objectives

Stage 2: 2010-2012

- Updated population distribution maps.
- Determined primary land usage and land cover.
- Identified additional targeted species.
- Began treatment of small, isolated, known targeted populations.
- Provided recommendations for Camp-wide procedures to prevent invasive species spread.
- Outreach and education with stake holders.



Risk Assessment Map



Provides recommended actions to reduce seed dispersal across Camp Ripley.

Green: Low risk for the transfer of invasive species material from area to area. These areas are relatively free of target invasive plant species and this status should be maintained.

Amber: Moderate risk for the transfer of invasive species material from area to area. Amber areas have small, widespread, sparse populations of Spotted Knapweed and Common Tansy.

Red: High risk for the transfer of invasive species material from area to area. Red areas have large, dense populations of Spotted Knapweed and Common Tansy. These areas are a source of seed that can be spread.

Stage 3: 2013

- Increase in total resources available.
- Multi-year consistency with staff & employees.

Executive Order 13112:

Prevent the introduction

Early Detection

Rapid response

Monitor invasive populations

Provide control and restoration
of degraded sites

Conduct research

Promote education

Knew:

- Enemy
- Land
- Program
- **Limitations**
- Objectives

Stage 3: 2013, 2014 & Beyond

- Treatment based on plant phenology & seasonal variables (Enemy & Land).
- Adjustments in accessibility to equipment, chemicals, vehicles, and labor (Limitations).
- Focus on roadsides and other frequently travelled pathways (Program).
- Coordinate survey and treatment activities based on training activities associated with a high-risk of spreading invasive species (Objective).

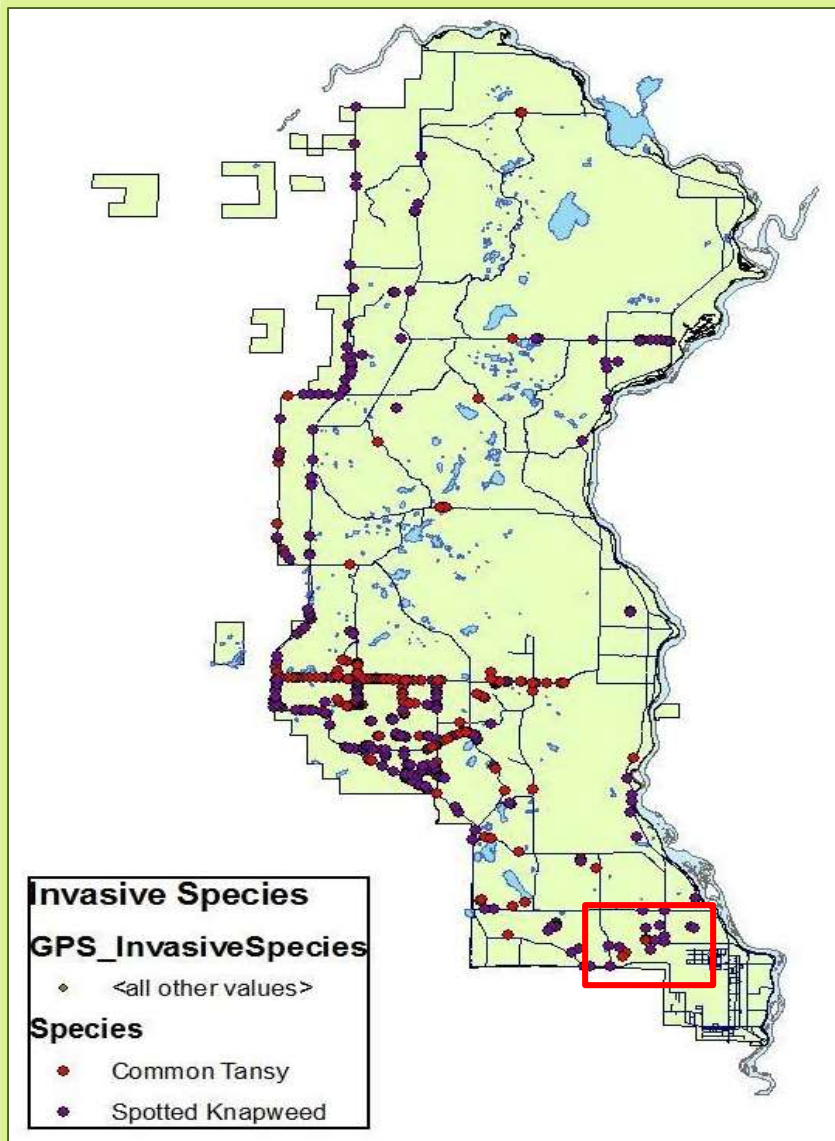


Invasive Species List

- Leafy spurge
- Common tansy
- Buckthorn
- Baby's breath
- Japanese Hops
- Yellow Flag Iris
- Purple Loosestrife
- Spotted knapweed
- Canada thistle
- Bull thistle
- Musk thistle
- Cypress Spurge
- Queen Anne's Lace
- Giant Hogweed

Species in **Red** were mapped and treated during the initial control and management stage of this program. Species in **Blue** have been mapped and actively controlled beginning in Field Year 2014. Species in **Green** are high priority watch list species.

2010 map



Objective:

To determine the distribution of primary targeted species Common Tansy and Spotted Knapweed.

Data Recorded:

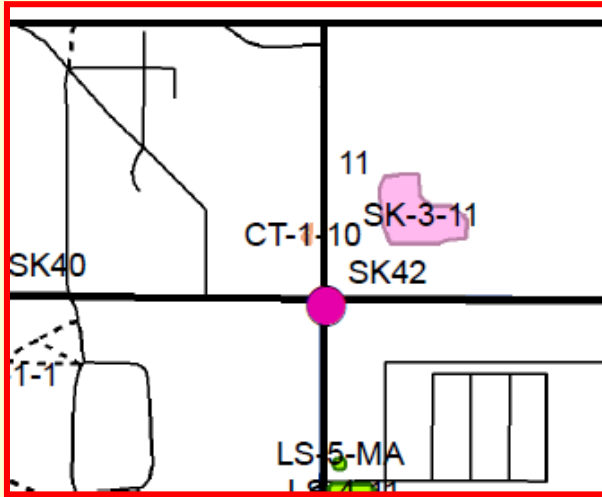
- Species identity
- Physical location only.

Monitor invasive populations

Conduct research

Promote education

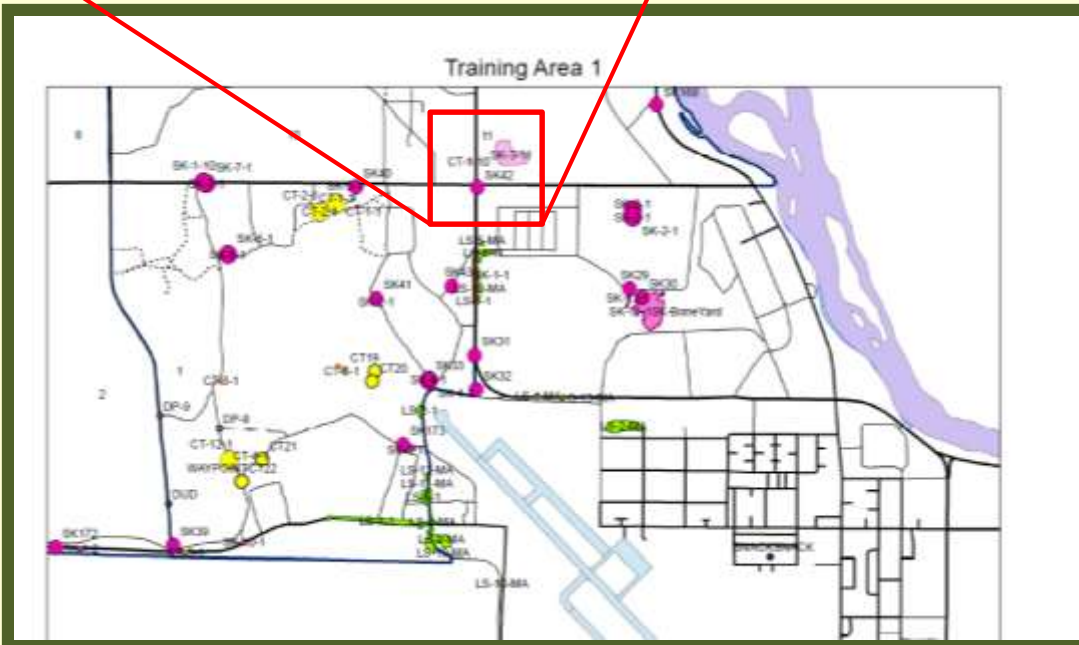
2013 map



Objective: To track all methods, efforts, treatments, and actions applied to targeted invasive species populations.

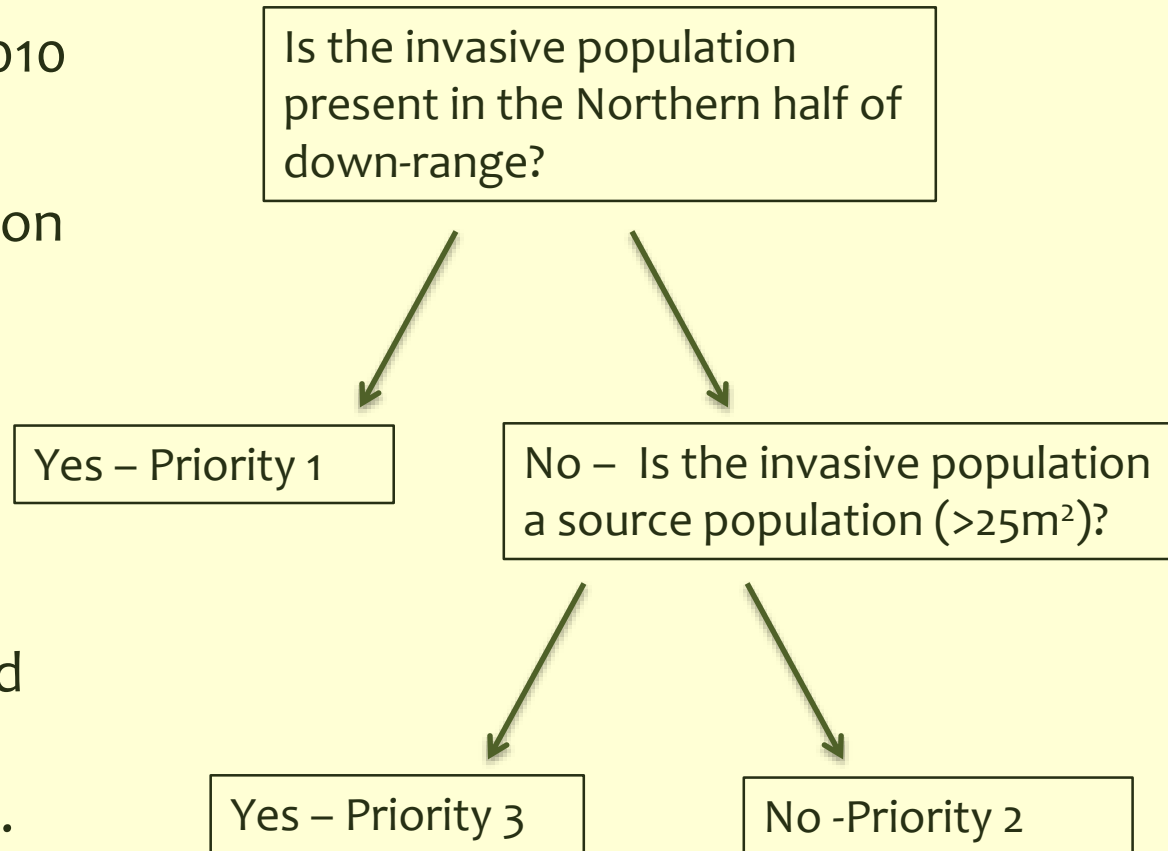
Data recorded:

- Unique population identity
- Physical location
- Size
- Previous unidentified populations
- Treatment methods applied
- Dates treated
- Surveyor (identification)
- Additional notes



Daily Prioritization 2010

- System developed in 2010
- Dependent on infestation size, location, physical accessibility, and treatment equipment accessibility.
- Only addressed Spotted knapweed, Common tansy and Leafy spurge.



System of prioritization is based on the framework provided by Lynn Maguire's "What Can Decision Analysis Do for Invasive Species Management" - Risk Analysis, Vol. 24, No. 4, 2004

Daily Prioritization 2014

All Decisions are dependent on Enemy, Land, Program, Limitations, Objectives


Evaluate Land Factors – *weather, climate*



Check the ongoing land uses - *accessibility*



Determine Daily limitations - *weather, labor, equipment, accessibility, time*



Set Daily objectives - *chemical treatment, mechanical removal, mapping/survey work*

Annual Program Development

1. List & research all invasive species.
 - Evaluate potential risks, impacts, and costs associated with each species.
2. Update current distribution maps.
3. Develop annual plan based on land-use and treatment successes.
4. Update program materials for all interested parties.
5. Consistently record data based on objectives.



Recommendations



Objectives

Limitations

Program

Land

Enemy

Thanks to:

- MN Department of Military Affairs,
- Camp Ripley Environmental Office,
 - Saint Cloud State University,
- Camp Ripley Department of Public Works,
 - MN Department of Agriculture,
 - MN Department of Natural Resources,
- And many others who have assisted with
this project!

Questions? Comments?



Kayla Malone

maka0811@stcloudstate.edu

Graduate Student

Saint Cloud State University,
St. Cloud, MN

Laura Donahue

mala1201@stcloudstate.edu

Graduate Student

Saint Cloud State University,
St. Cloud, MN