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Management of a Northern Reclamation Project:

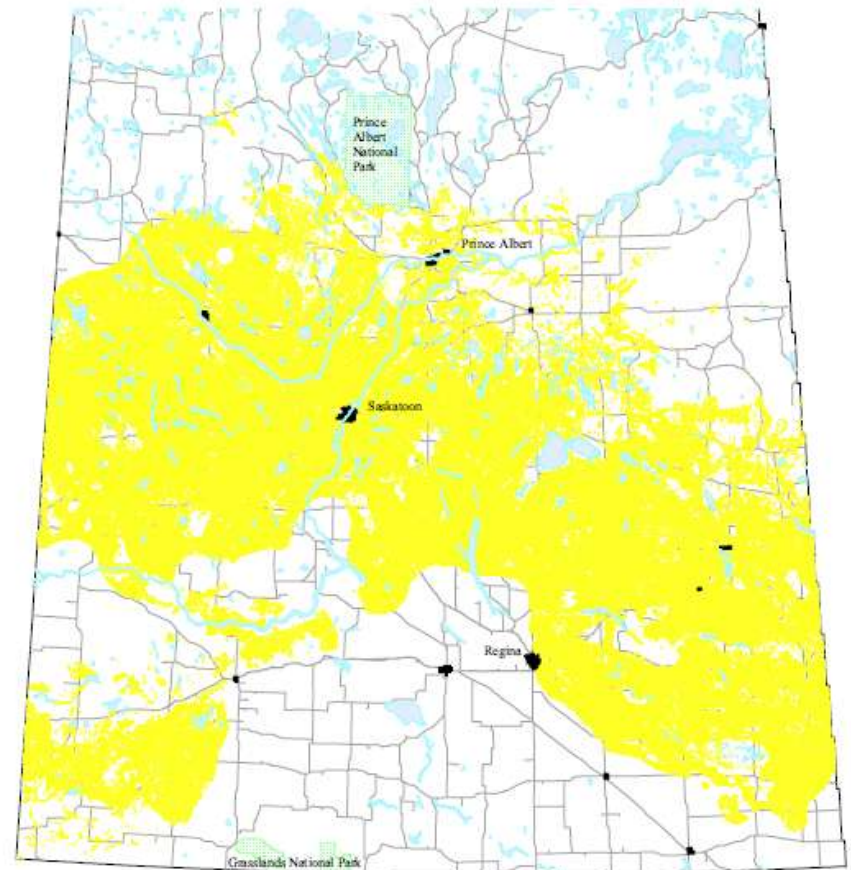
Restoration and Maintenance of Fescue Grasslands Prince Albert National Park

**2012 Native Prairie Restoration/Reclamation Workshop:
Bridging the Gap
February 9th, 2012**

Plains Rough Fescue (*Festuca hallii*) Grasslands in Saskatchewan

- Part of the aspen parkland eco-region
- Historic extent 255,000 ha
- A dynamic mix of fescue grasslands and aspen groves
- Evolved within a fire and grazing disturbance regime
- Floristically diverse community

Potential Historic Fescue Grassland Distribution
for Saskatchewan



Scale 1:2,700,000

50 0 50 100 150 200 Kilometers

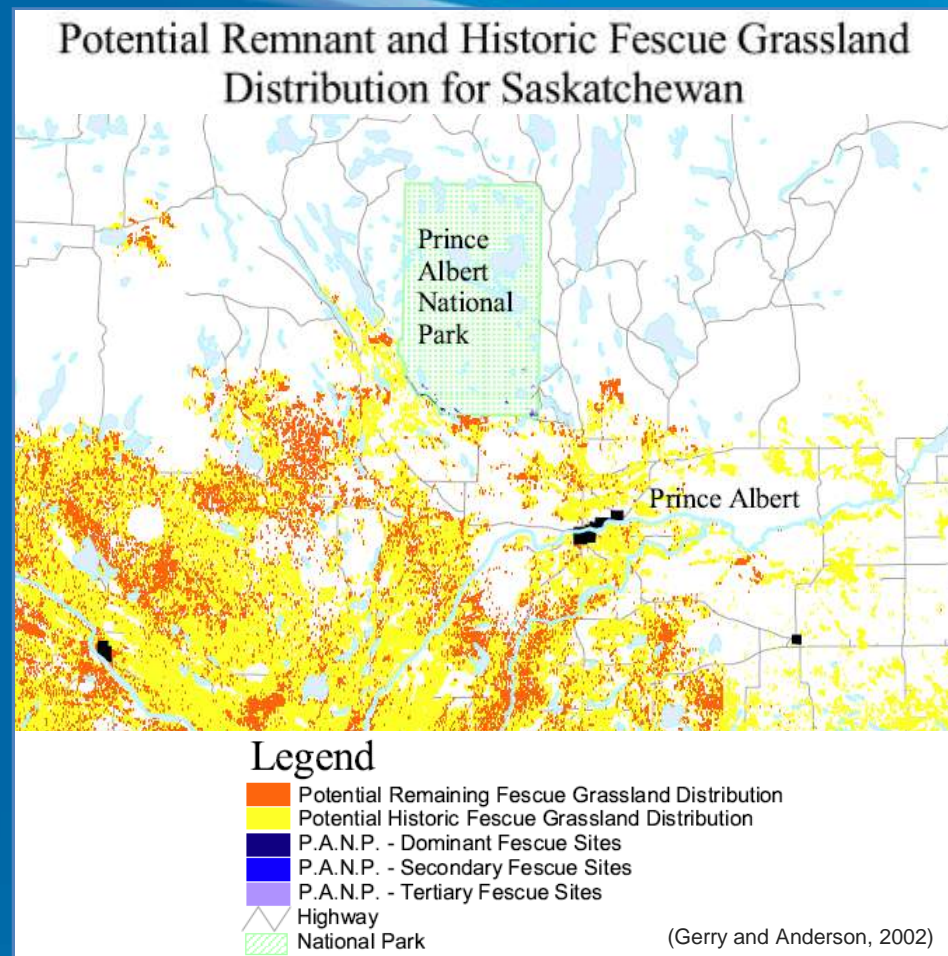


(Gerry and Anderson, 2002)



Current Distribution in Saskatchewan

- ~ 5% of the historic grassland remains in Saskatchewan
- 85 % of the remaining patches are less than 65 ha in size
 - Small and highly fragmented
- Ongoing threats to fescue grasslands:
 - Settlement
 - Cultivation
 - Lack of fire disturbance
 - encroachment of aspen
 - Invasive non-native plants
 - Overgrazing
 - Reduction in species richness and genetic isolation of remnant patches

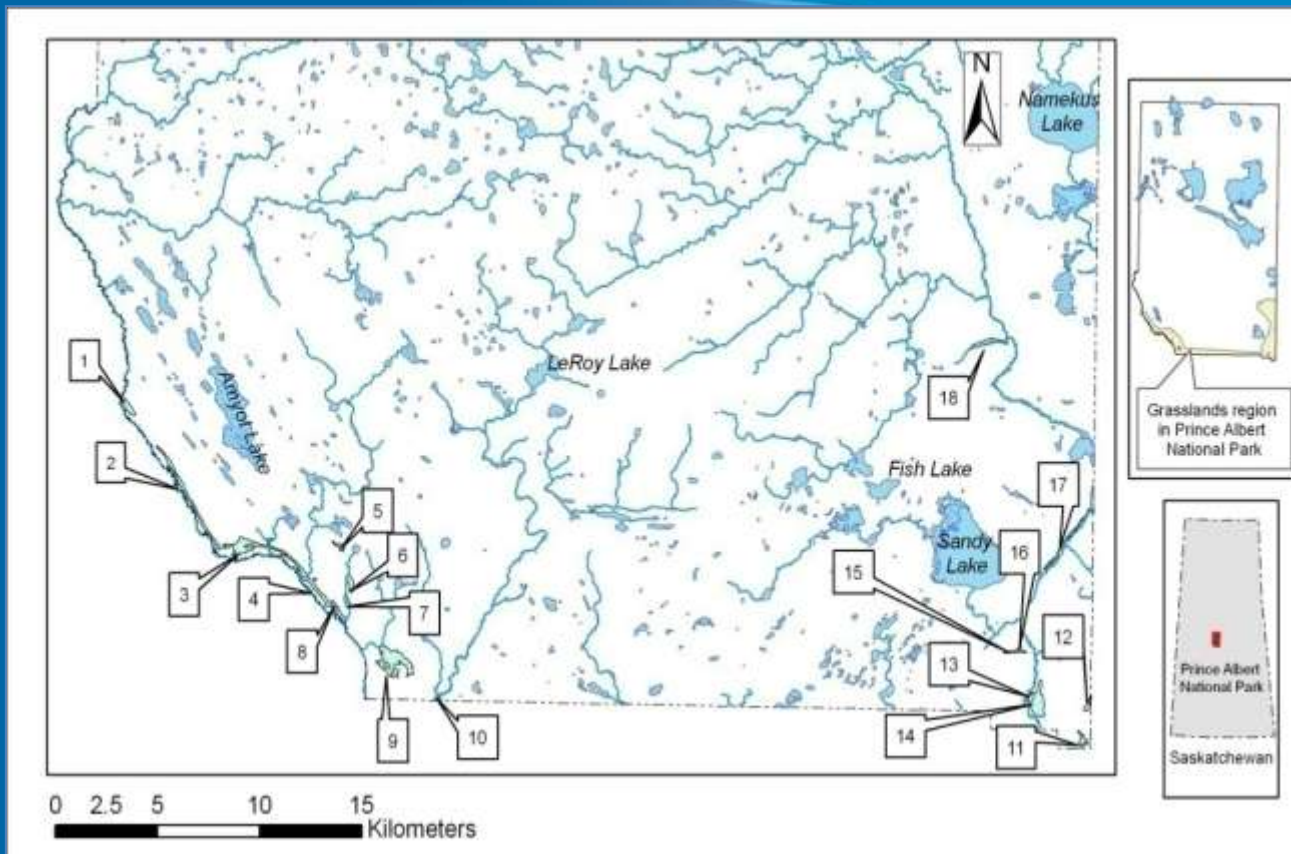


Fescue Grasslands in Prince Albert National Park:

- Northern outliers of contiguous aspen parkland eco-region
- Ongoing threats to fescue grasslands in PANP:
 - Lack of fire disturbance
 - Encroachment of aspen
 - Small and highly fragmented
 - Genetic isolation
 - Reduction in species richness
 - Potential for local extinctions
 - Invasive non-native plants
 - Disturbed sites
 - Trails and roadways
 - Lack of public understanding of the dynamic nature of native grasslands



Fescue Grasslands in PANP:

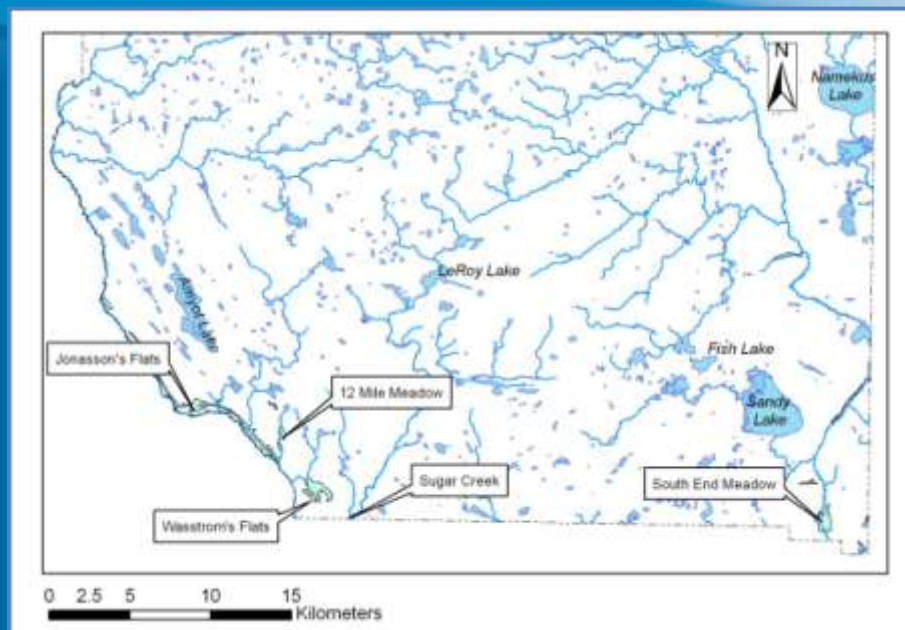


Map shows the location of the 18 largest (12-115 ha) grasslands. Many smaller patches are located in this area



Fescue Grasslands in PANP:

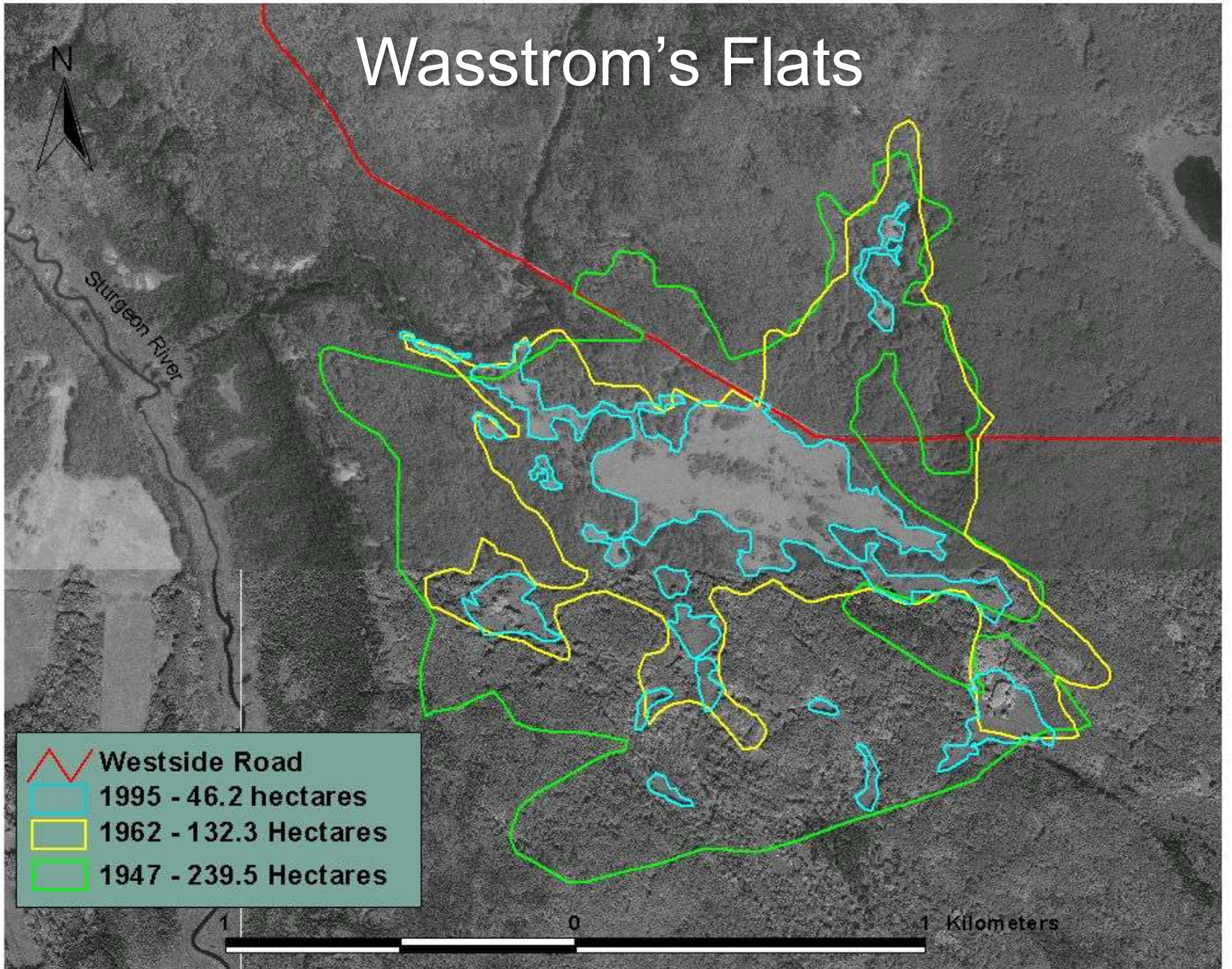
- Approximately 67% of the fescue grassland in PANP was overgrown by aspen forest from 1947 to 1995
- 1968 extent ~670 ha
- 2012 extent unknown
- Currently:
 - Only “Core” grasslands remain
 - “Seral” grassland support mature forest (>50 years)







Name of Meadow	1947 area (ha)	1995 area (ha)	Decrease in area (%)
Jonasson's Flats	95.0	40.6	57%
Twelve Mile Meadow	9.5	5.4	43%
Wasstrom's Flats	239.5	46.2	80%
South End Meadow	79.9	16.0	80%
Sugar Creek Meadows	88.5	20.1	77%
Average decrease (%)			67.4%



Wasstrom's Flats



	Westside Road
	1995 - 46.2 hectares
	1962 - 132.3 Hectares
	1947 - 239.5 Hectares

PANP - Restore and Maintain Fescue Grasslands

- Fescue Grassland Management Plan for Prince Albert National Park

Actions:

- Re-introduce a representative fire regime to the area known to support fescue grasslands – 40 year fire cycle
- By 2025, restore select fescue grasslands to between 50 and 100% of their 1947 distribution
- Reclamation of disturbed sites within fescue grasslands
- Invasive non-native plant species control
- Increase public awareness , understanding and appreciation of fescue grasslands



Restoration of Disturbed Sites Within Fescue Grasslands of PANP

- Gravel pits are located in 12 Mile and South End grasslands
- No rehabilitation efforts have been made since extraction activities ceased in 1977
- Areas are now:
 - Sparsely vegetated with large patches of bare ground
 - Support non-native plant species
 - Negatively impact the public perception of natural areas



12 Mile Meadow Restoration



- Restoration plan was completed in 2010
- Area: 0.75 ha
- Goals:
 - Remove the steep slopes and remaining topographic features
 - Eliminate non-native plant species and the potential for them to spread into the surrounding area
 - Restore native vegetation
 - Involvement of volunteers to engage the public and to create awareness of native prairie conservation



12 Mile Meadow Restoration - 2010

- Baseline monitoring
 - Establish restoration perimeter
 - Monitoring grid
 - Inventory of non-native plant species
 - % cover of bare soil
 - Slope and aspect
 - Overburden and capping material



12 Mile Meadow Restoration - 2010

- Initial Non-native species control:
 - Identify species present
 - Smooth Brome
 - Yellow Toadflax
 - Kentucky Bluegrass
 - Application of Glyphosate in July 2010
 - Spray at 5% concentration throughout the pit
 - Wick at 20% concentration along edge and roadway



12 Mile Meadow Restoration - 2010

Grading/Capping of Restoration Site:

- Grading to reduce slopes
 - Goal is to achieve slopes < 25%
- Cap site with overburden
- Occurred September 2010
 - Vegetation on overburden site was felled and mulched
 - Woodchips and stumps used as fill
 - Excavator and dozer to remove steep slopes and push overburden
 - Grader used to contour the restoration area



12 Mile Meadow Restoration - 2010

Native Seed Collection:

- Hand held seed harvester
 - Collection of local grass and forb seed from grasslands within the park
 - Seed collected over several weeks
 - ~30 kg of seed collected
 - Dried, sieved through screens, cold storage
- Selective hand picking of fescue seed
 - Ensure of pure fescue seed
 - ~0.45 kg of seed collected
 - Contracted to greenhouse for storage





12 Mile Meadow Restoration - 2011

Seeding June 13-17th:

- Area harrowed
- Broadcast seeding of native seed and chaff
- Planting of fescue plugs
 - 8000 plugs grown (PRT Prince Albert)
 - 1 plug/m²
- Additional seeding Oct 18th
 - Aid in native plant establishment
 - Compete against non-native species
 - Reduce amount of bare ground



12 Mile Meadow Restoration - 2011

- Volunteer Projects
 - Fescue plugs grown in offices of park staff
 - Northlands College students involvement
- Irrigation
 - Use of fire pumps, hoses, and sprinklers
 - Water drawn from adjacent beaver pond
- Electric fence
 - Used to persuade wildlife to avoid area





12 Mile Meadow Restoration - 2011

Monitoring:

- The average slope is now 3.8%
- Topsoil has average depth of 17.5 cm
- Germination rates for native seed was low
 - Need higher amounts of clean seed
- Plug establishment was high
 - Will monitor in spring 2012 for overwinter success
- Vast improvement in the overall condition of the area
 - Contoured gentle slopes
 - Area capped with local topsoil
 - Establishment of native grasses and forbs



12 Mile Meadow Restoration

Non-Native Vegetation

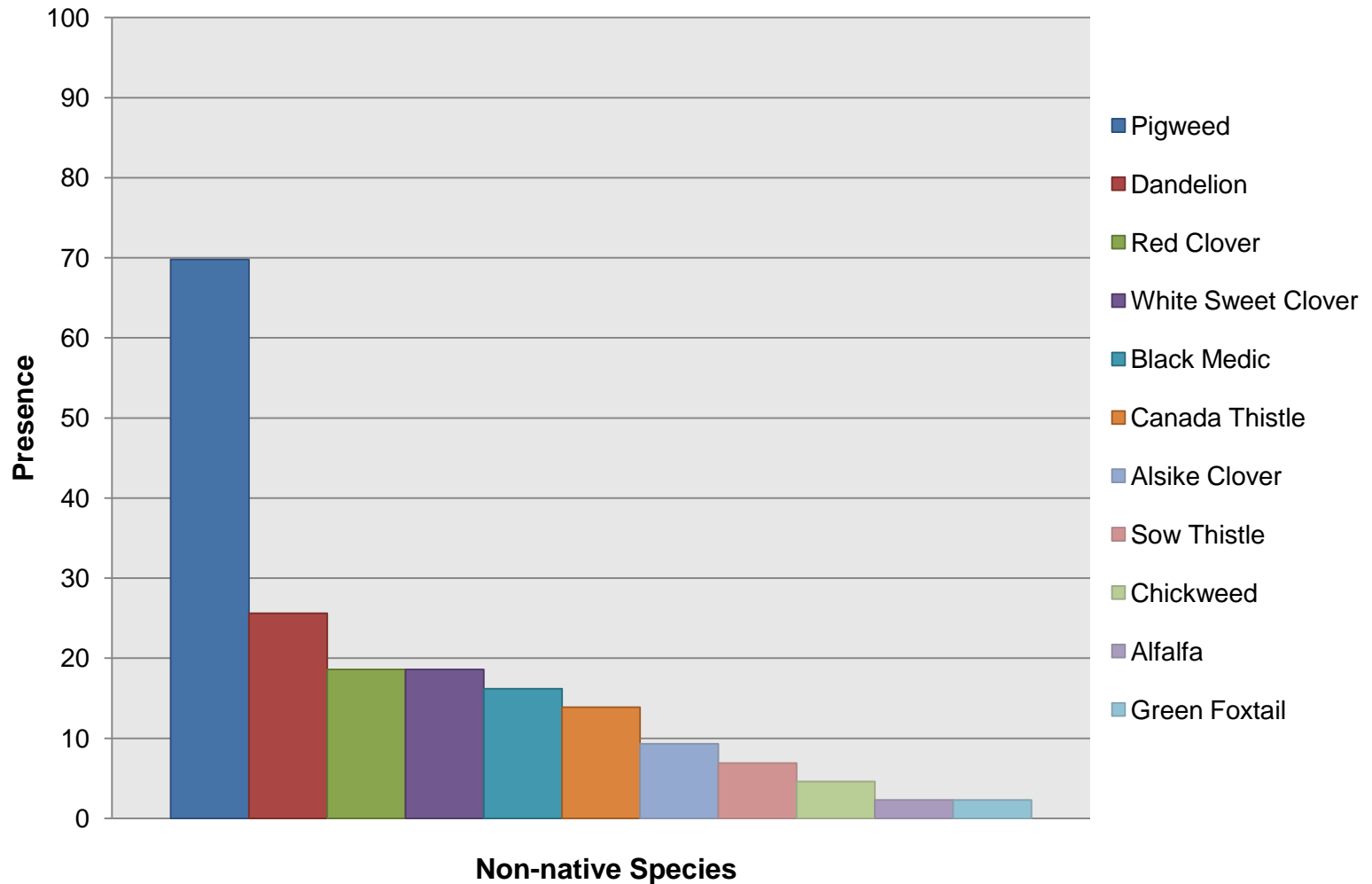
- Improvement in distribution
 - 15% decrease in the amount of monitoring plots with non-natives found
- Increase in non-native species present
 - 4 species identified
- Control Methods
 - Chemical control
 - Mowing
 - Seeding of native species



12 Mile Meadow Restoration

Non-Native Vegetation

Percentage of Plots Containing Non-Native Species



12 Mile Meadow Restoration

Discussion

Trials and tribulations:

- Logistics of getting to the remote location – travel time
- Adverse weather conditions
- Trail conditions
- Time involved to do workload
- Native seed establishment
 - Seed viability
 - Soil conditions – sandy/gravel
- Dealing with Non-natives
 - Establishment
 - Introduction from equipment and in-fill from other areas
- Patience



12 Mile Meadow Restoration

Moving Forward



- Increase public awareness of the dynamic nature of native grasslands
- Continue with control of non-natives
- Utilise the experience and monitoring of 12 Mile Meadow for future restoration projects
 - Use more native seed
 - Planting methods and equipment
 - Diligence in non-native species control



For more information :

Please contact:

Dustin Guedo
Fire/Vegetation Specialist
Prince Albert National Park
Box 100
Waskesiu Lake, Sk.
S0J 0N0

Phone: (306) 663-4544
Email: dustin.guedo@pc.gc.ca

