

Forest Pest Conditions in Alberta

20th Annual
Western Canada Forest
Health Workshop

Government of Alberta ■
Sustainable Resource Development

Mike Undershultz (P. Bio)
Forest Health Officer

Outline

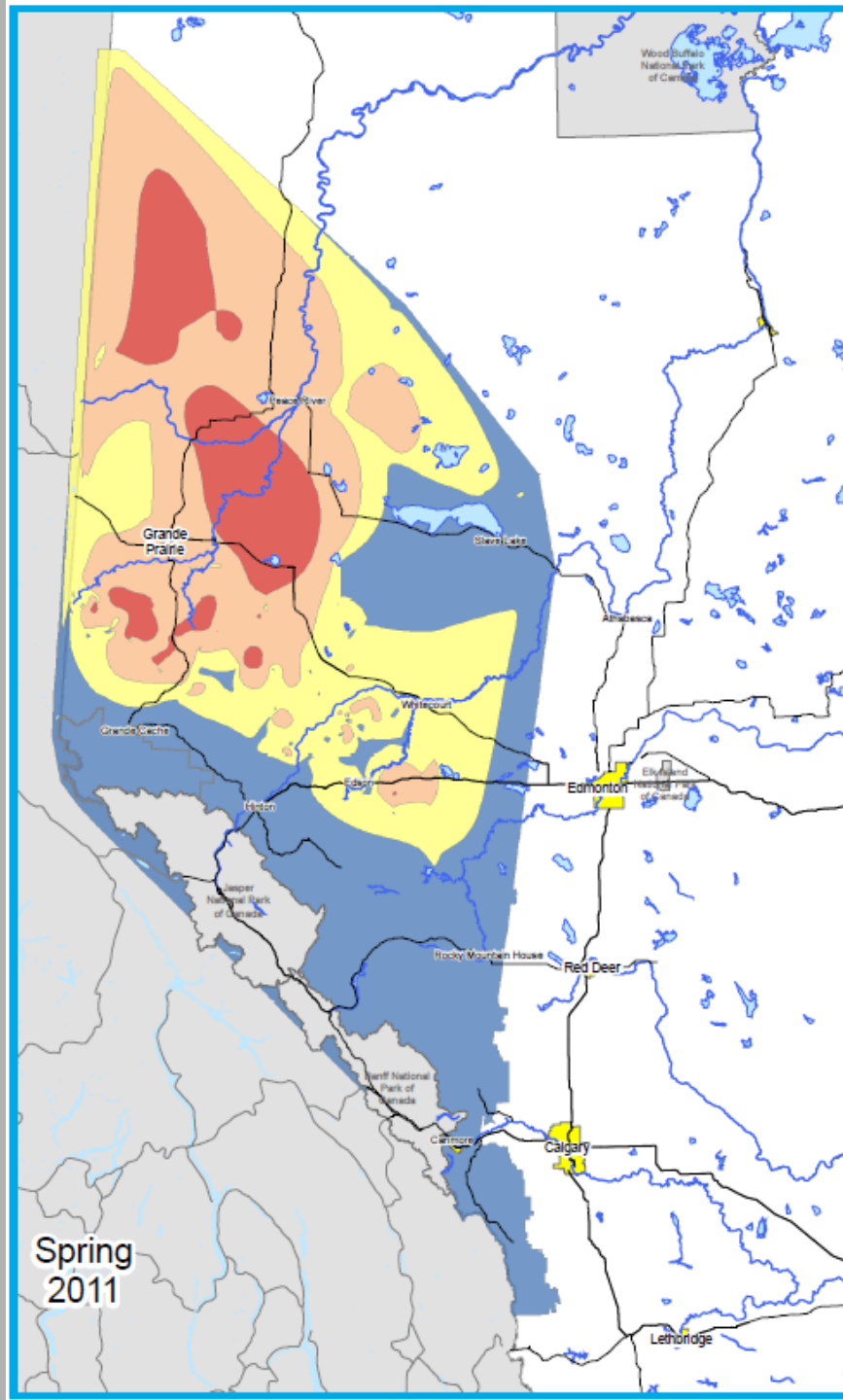
1. Mountain pine beetle
2. Aspen Defoliators
3. Spruce Budworm
4. Other pests
5. Abiotic damage agents

Mountain Pine Beetle



Population forecast 2011

- 208 plots

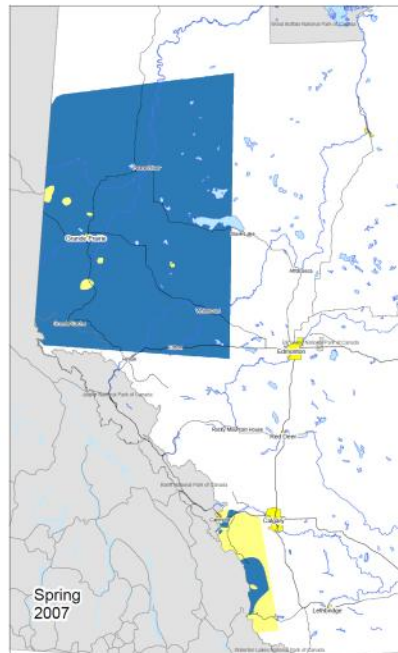
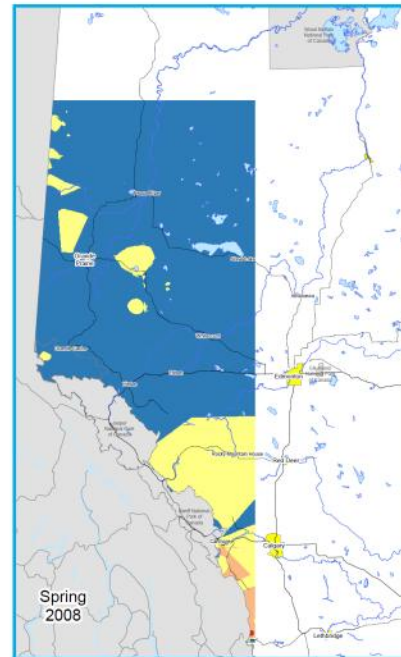
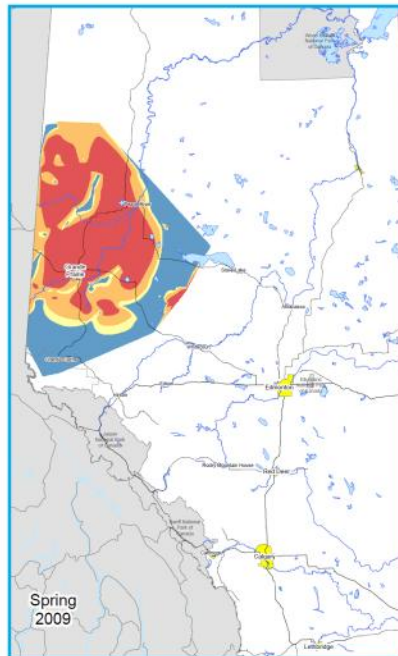
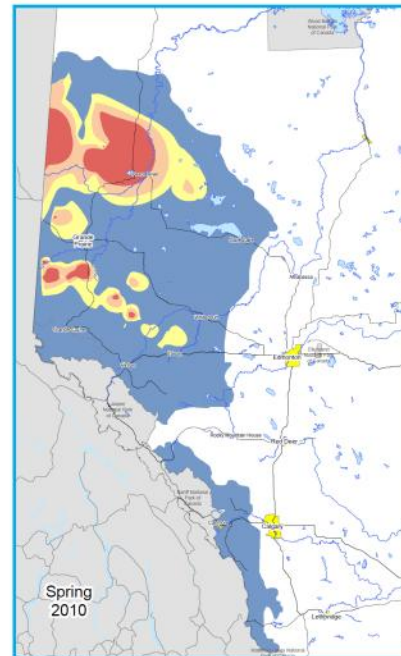


Relative Status of the Beetle Population

	Extremely High Success -indicative of an increasing population		Moderately Successful -indicative of a static population
	Highly Successful -indicative of an increasing population		Low Success -indicative of a decreasing population

Spring
2011

Population forecast 2007- 2011



Alberta's Mountain Pine Beetle Population Forecast Survey 2007 - Present

Mountain pine beetles pose a serious threat to Alberta's forests.

Mountain pine beetles are attacking the province's pine trees. Left unmanaged, MPB could devastate Alberta's pine forests and spread eastward across Canada's boreal region.

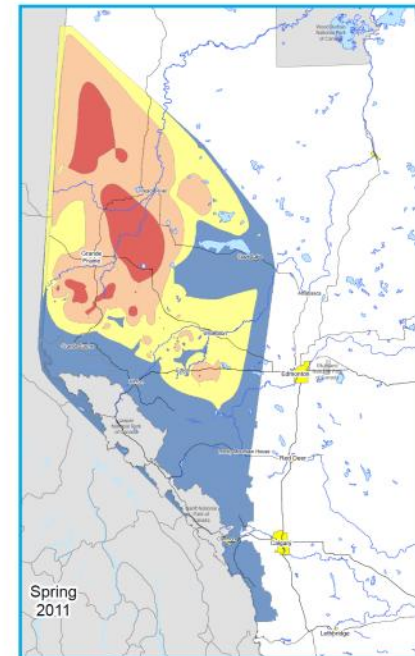
Relative Status of the Beetle Population



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MOUNTAIN
Pine Beetle
Action

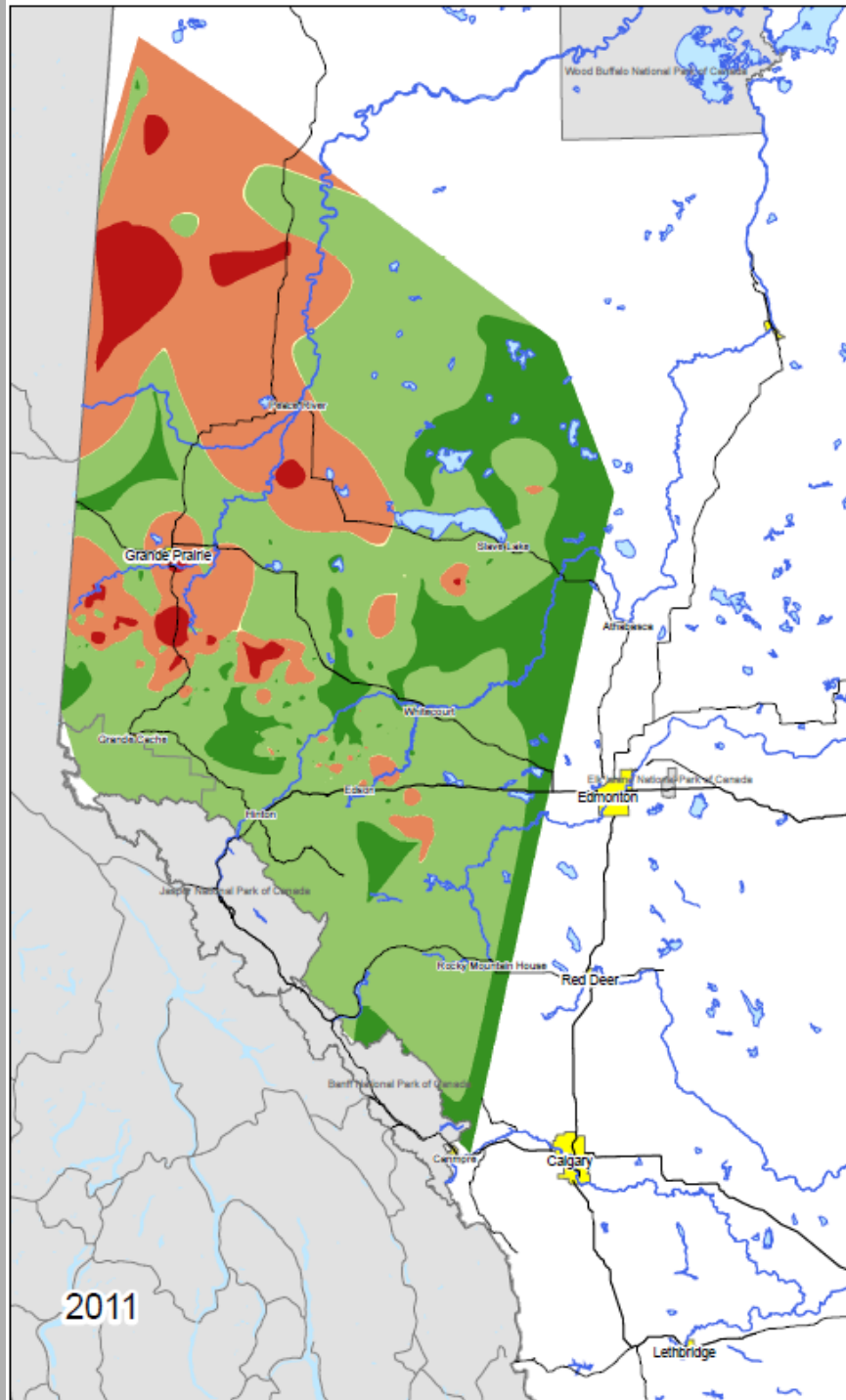
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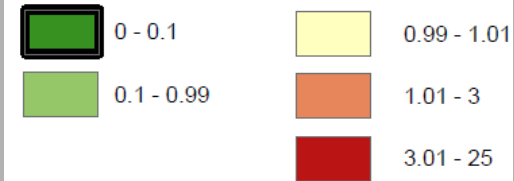
G:R ratio

2011

• 391 plots

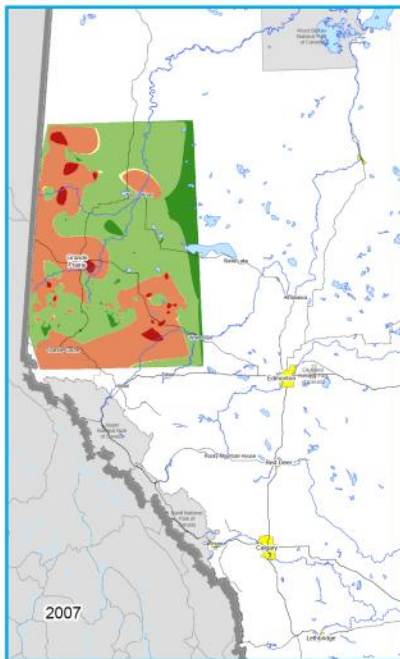
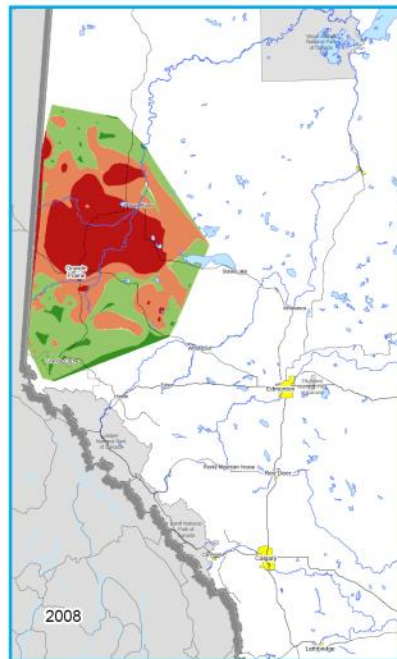
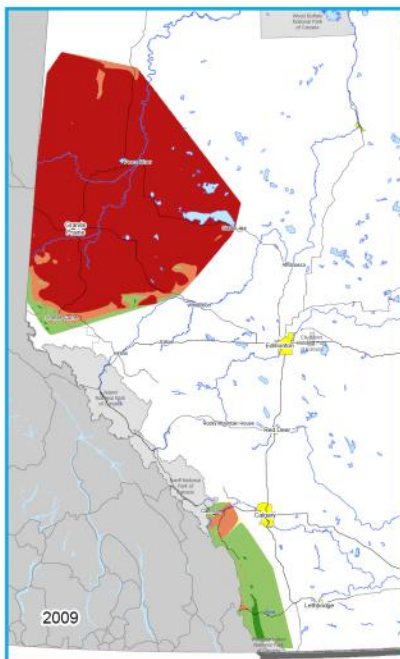
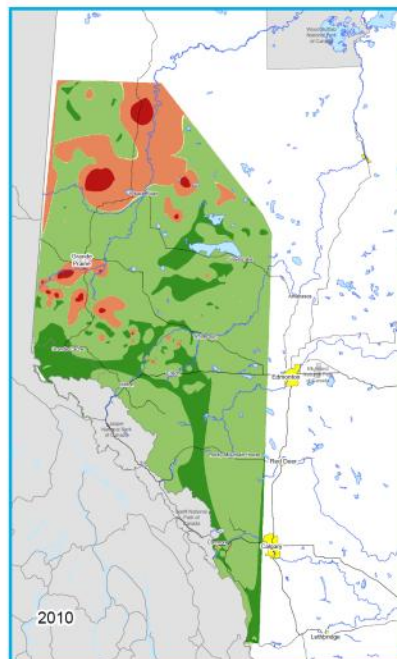


Green to Red Ratio



2011

G:R ratio
2007-
2011



Alberta's Mountain Pine Beetle Green to Red Ratio 2007 - Present

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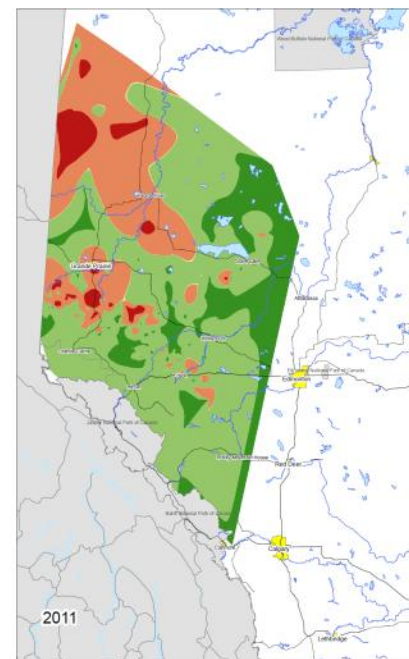
Green to Red Ratio



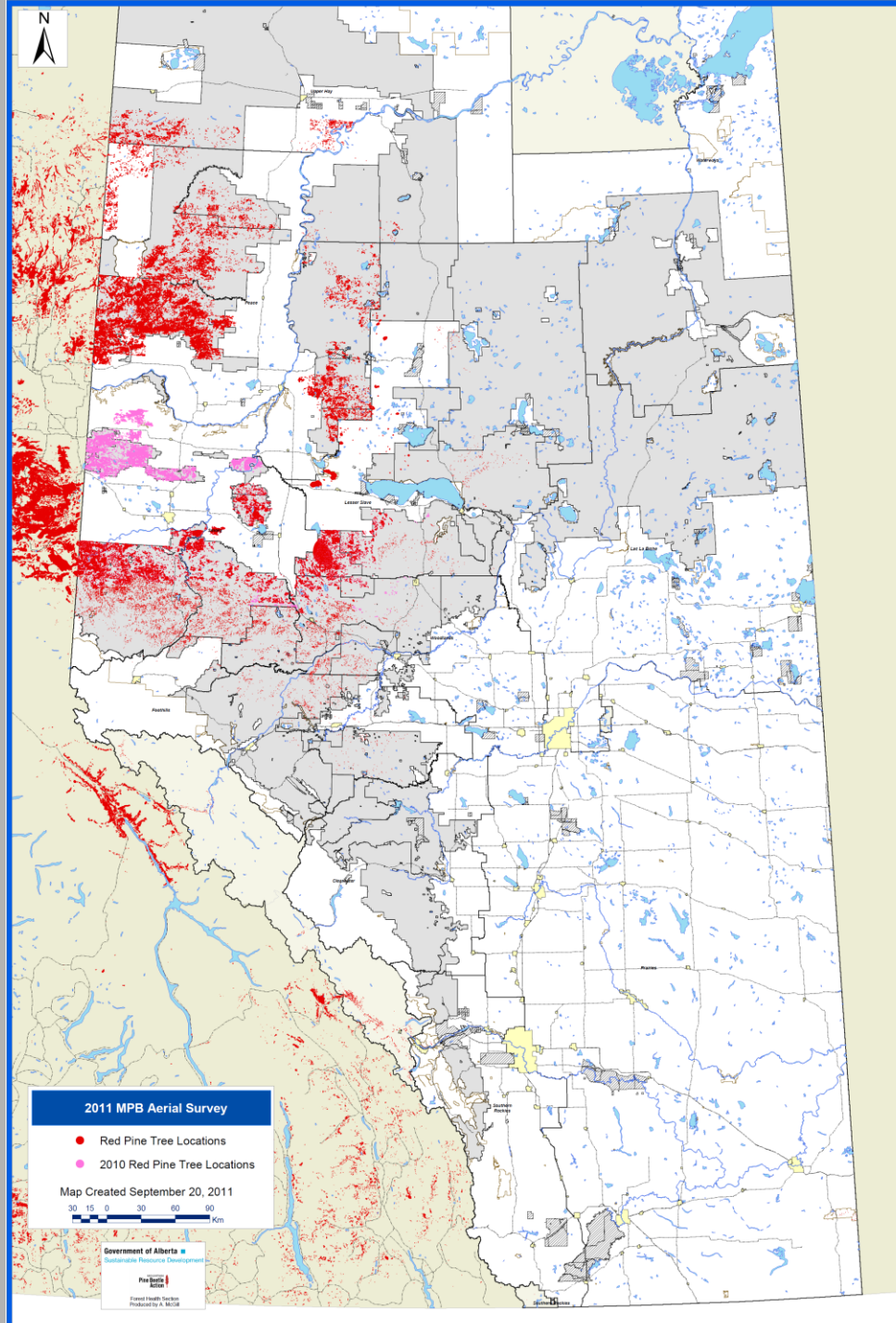
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Aerial Survey 2011



MPB Aerial Survey 2005 - 2011

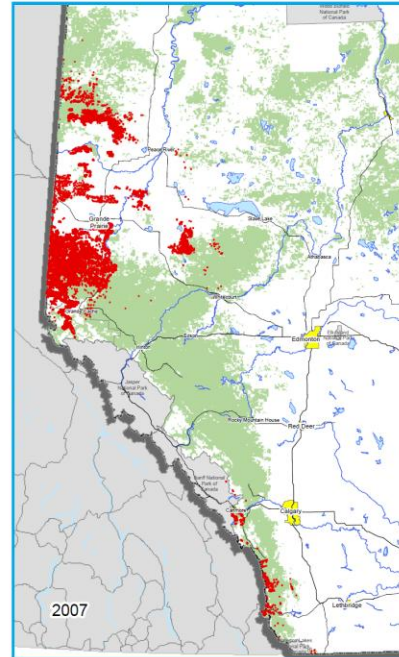
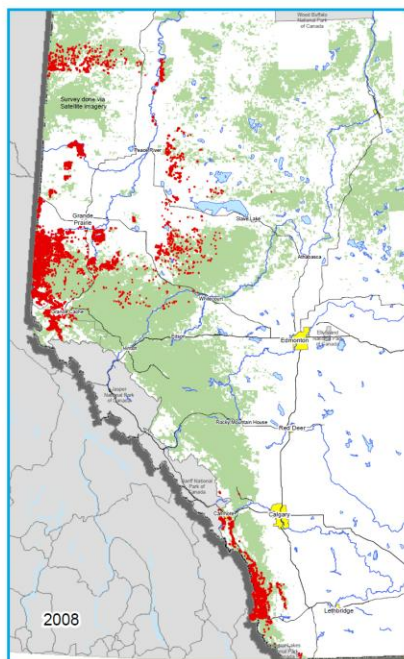
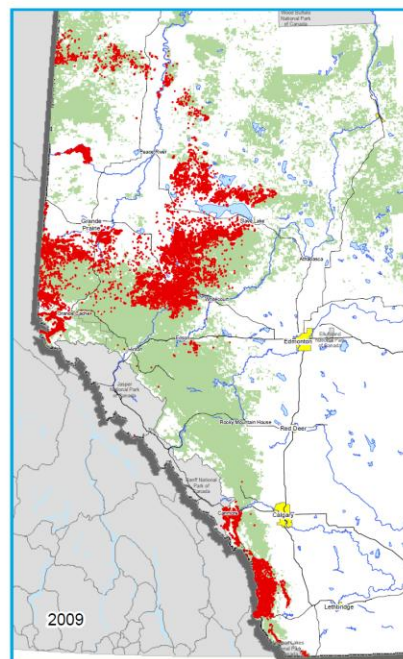
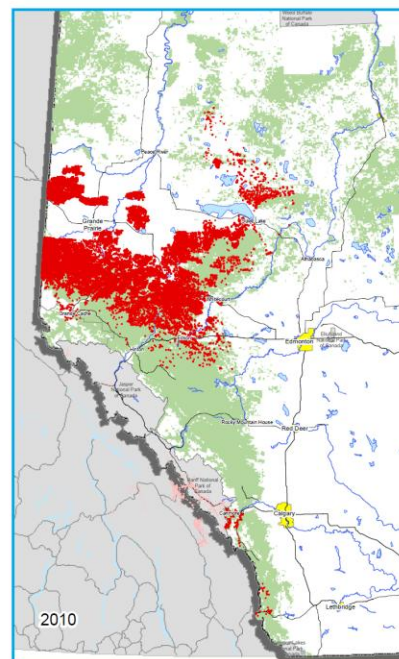
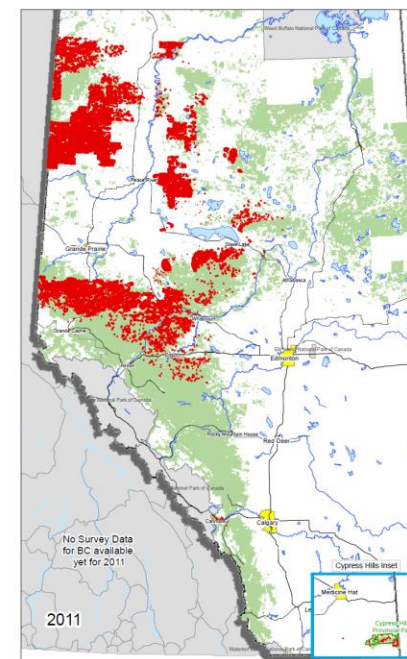


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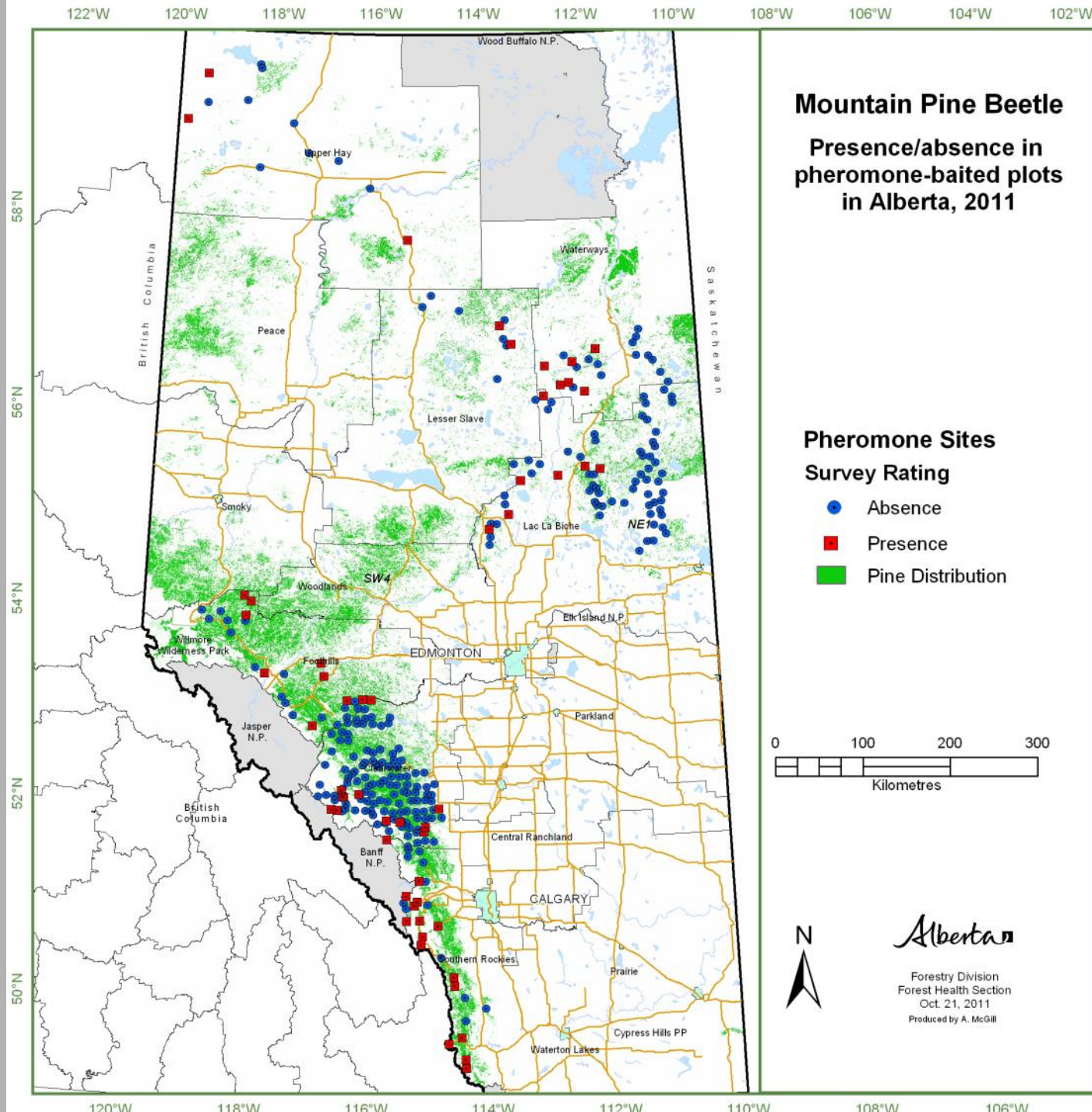
**MOUNTAIN
Pine Beetle
Action**

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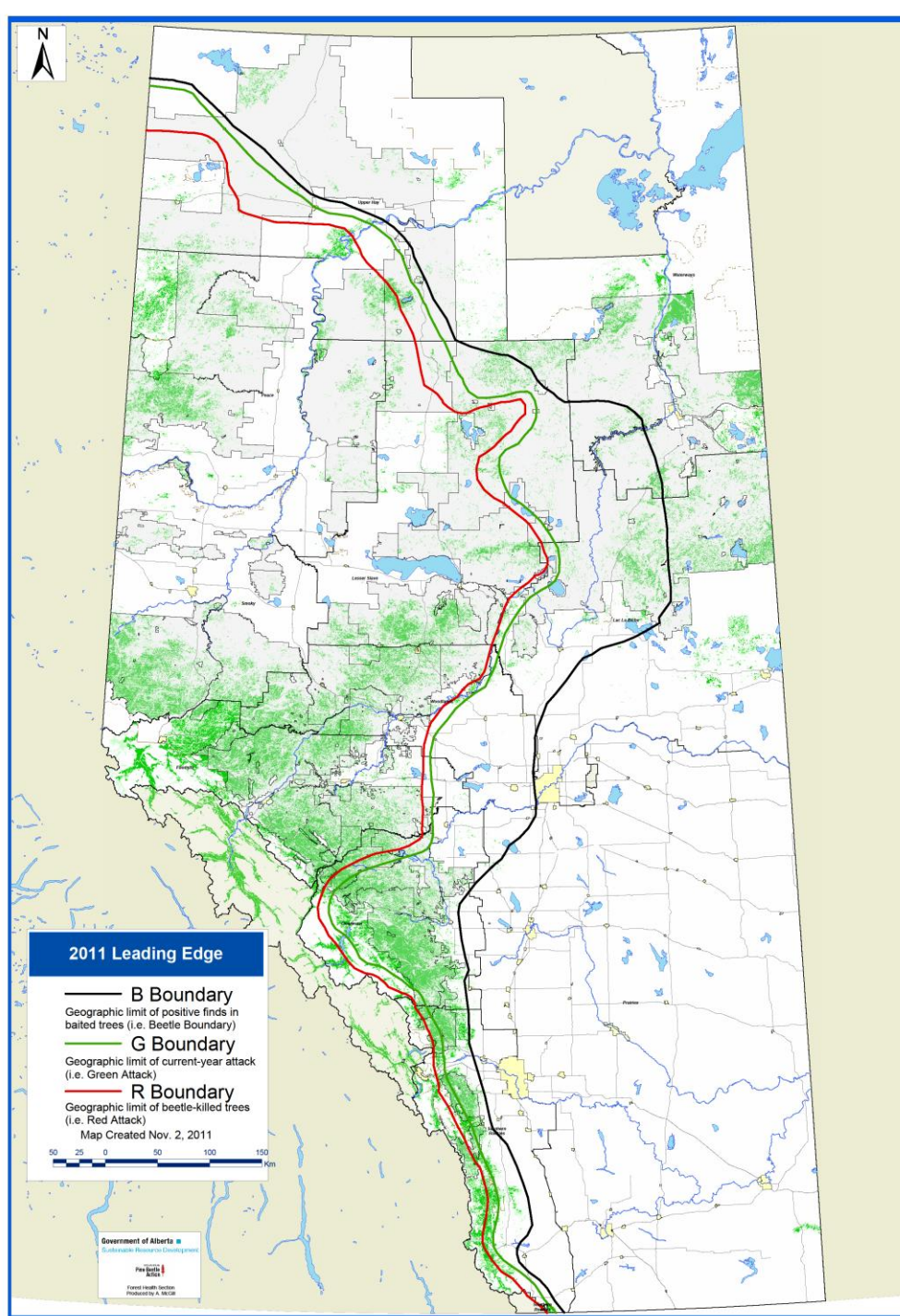
AM



Pheromone Baiting 2011

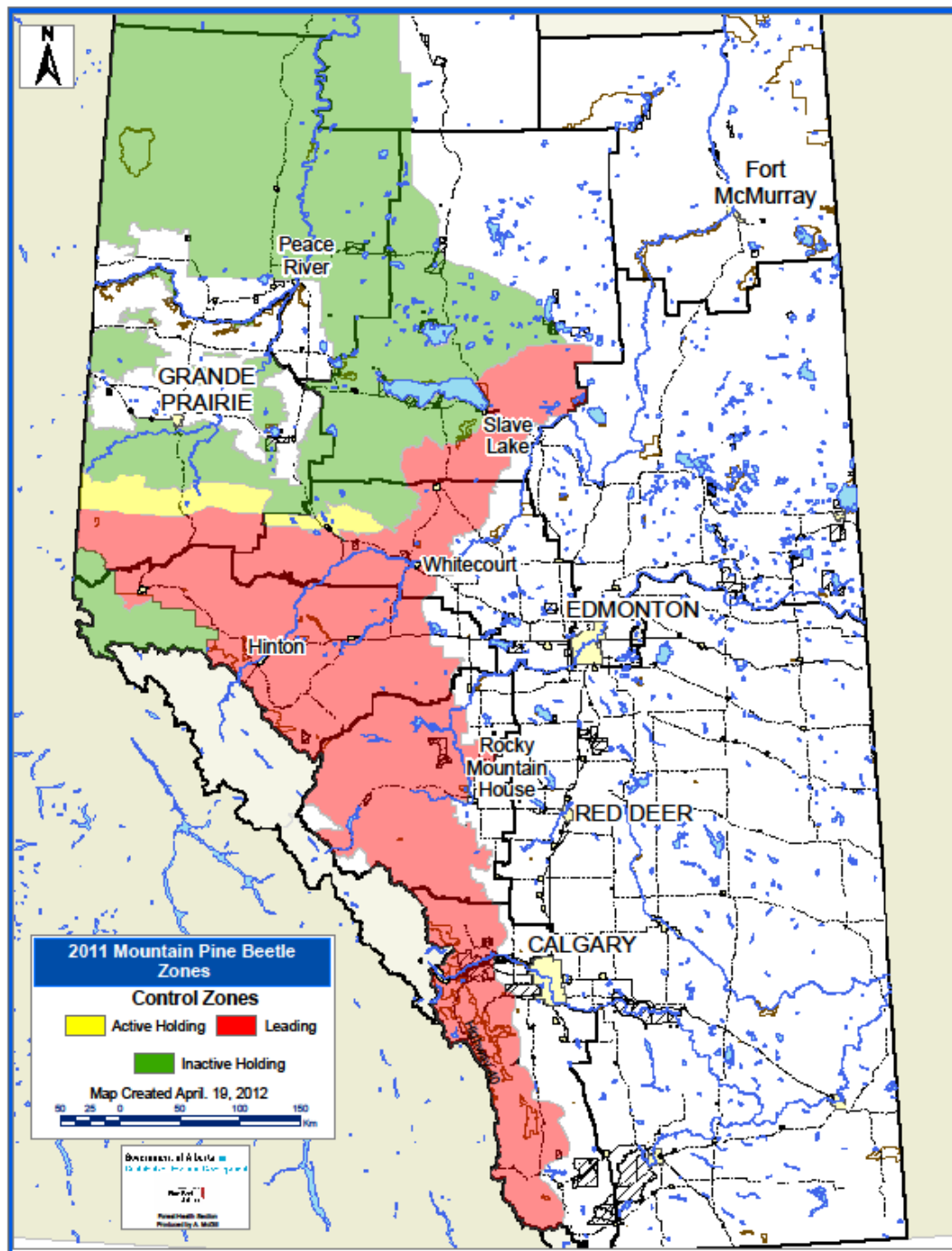


Range of MPB 2011



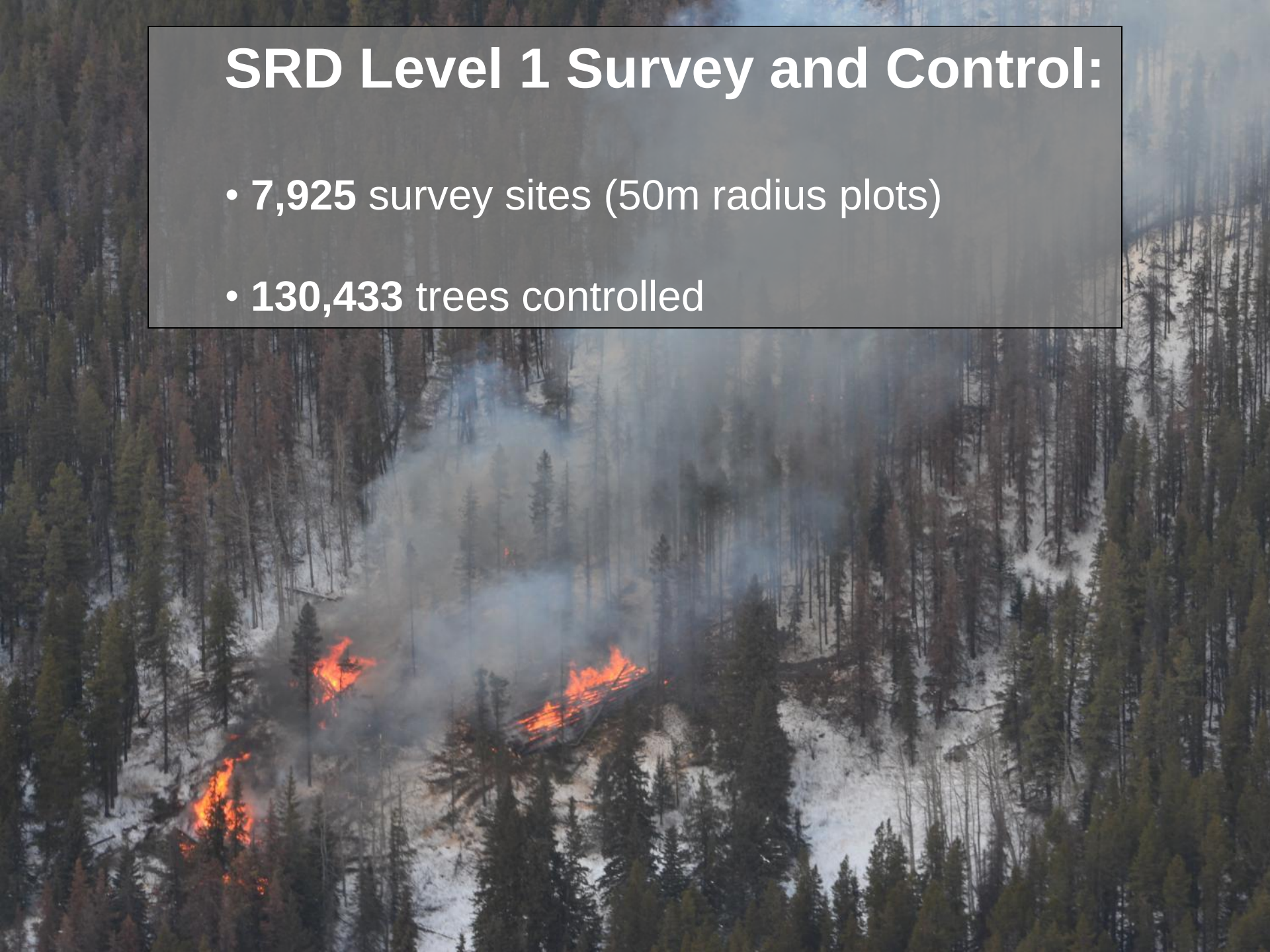
2011

Control Zones



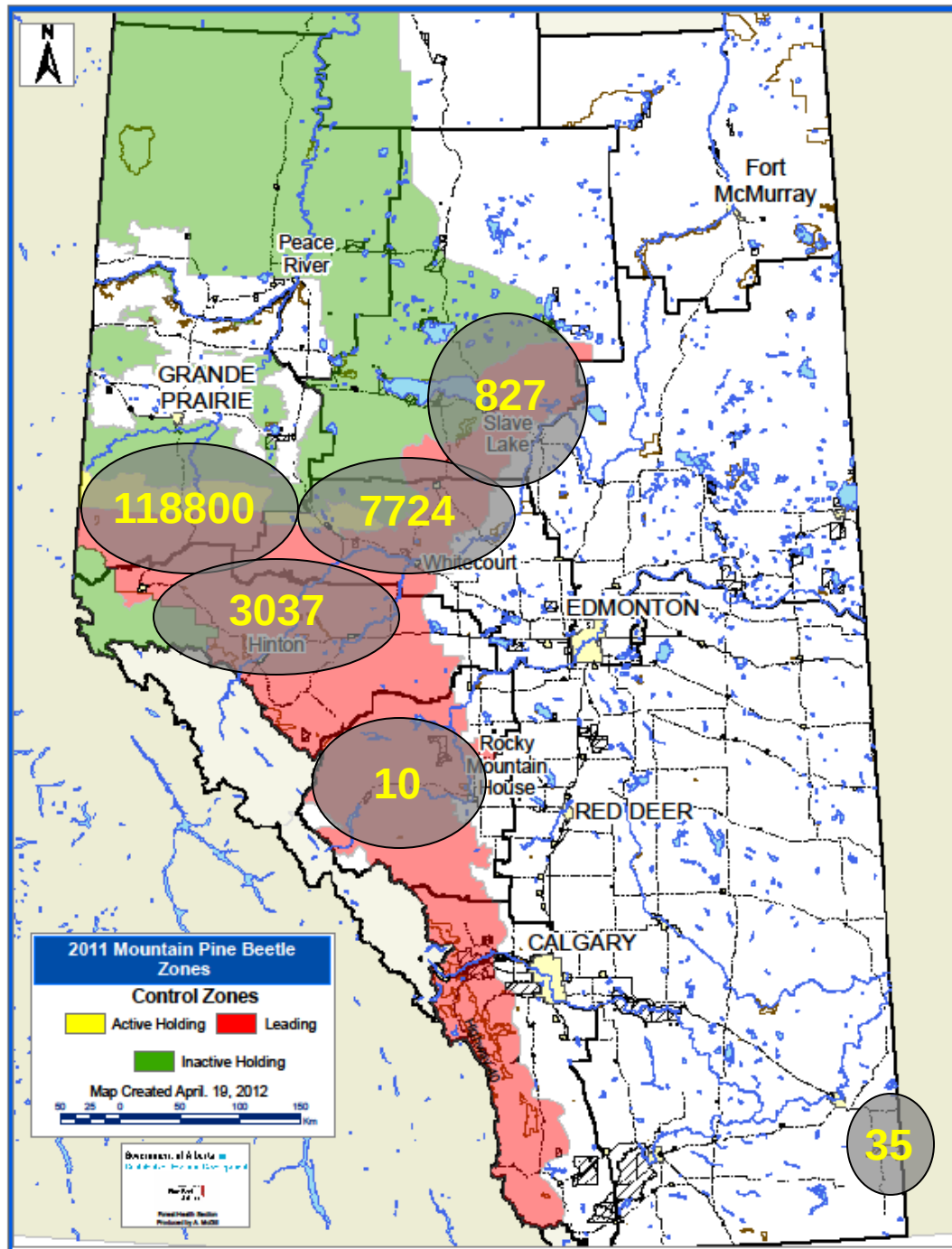
SRD Level 1 Survey and Control:

- 7,925 survey sites (50m radius plots)
- 130,433 trees controlled



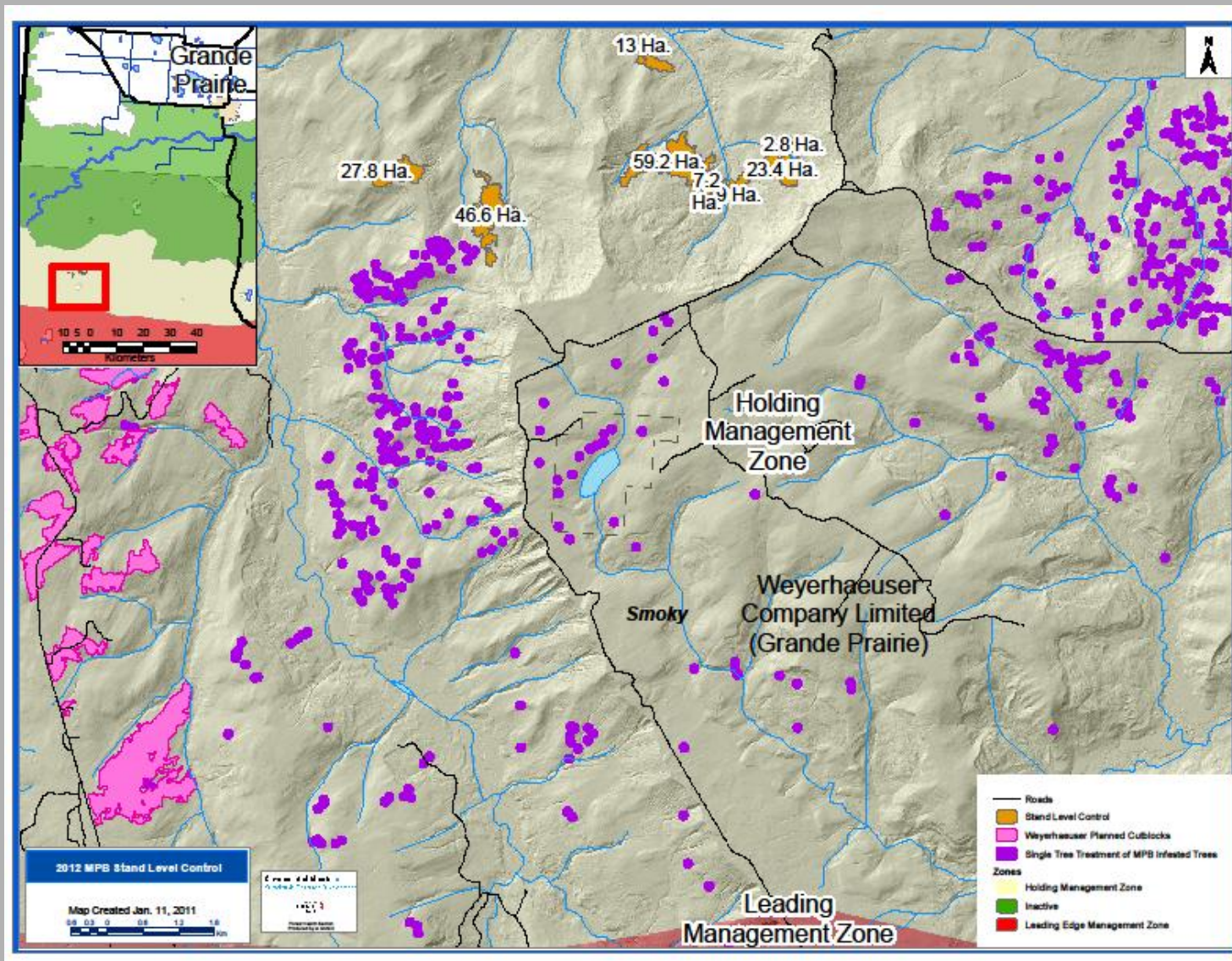
2011

Tree control
numbers



Bunch & Burn

- 190 ha
- 60% - 90% infested



Decision Support System (DSS) used to assign risk based on:

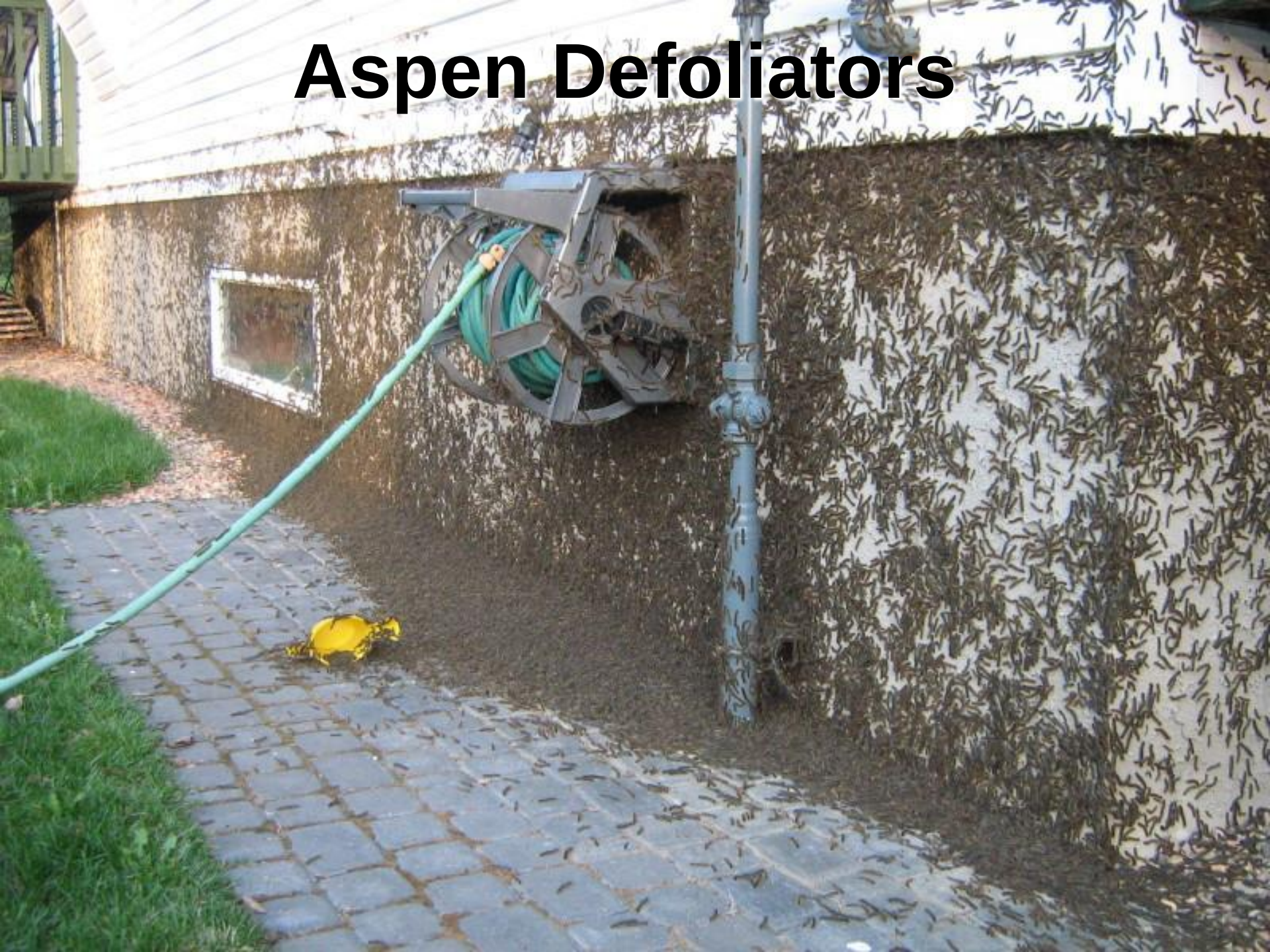
- Number of infested trees in the patch
- R:value and/or Green:red tree ratio
- Susceptibility of the stand
- Connectivity of the stand (within 5 km radius)

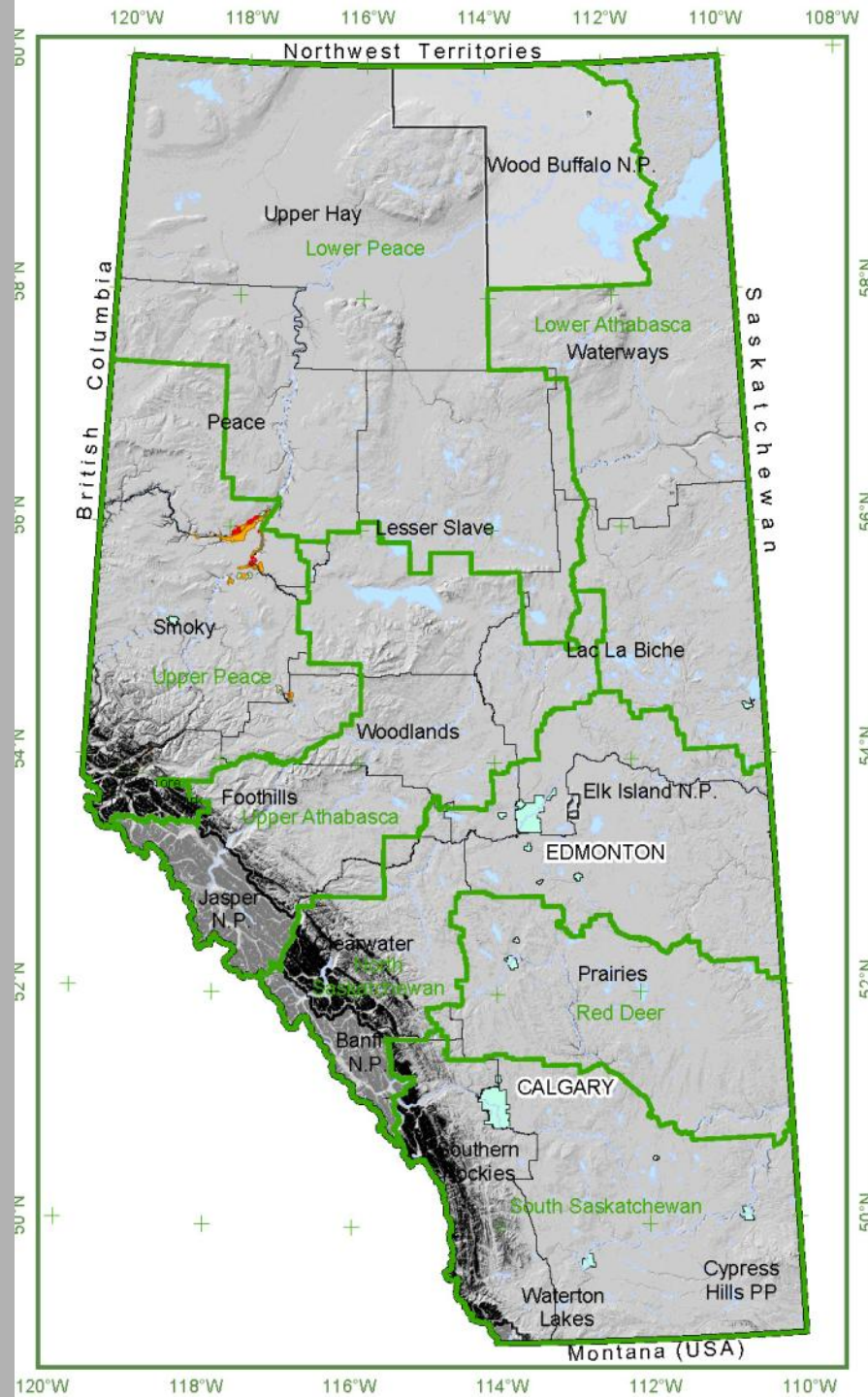


Is the DSS under-estimating growth potential?

- 5,226 red tree (≥ 3) sites from 2010 Aerial Survey in the Leading Edge that DSS ranked 'no action'
- 497 red tree (≥ 3) sites were picked up during 2011 aerial survey within 50 m of a 2010 'no action' site
- 10.51% of 2010 'no action' sites had ≥ 3 red trees in 2011

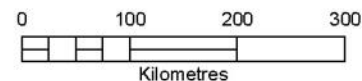
Aspen Defoliators





Insect caused aspen defoliation in Alberta, 2011 by Land Use Framework Area

Defoliation severity



Data source:
Digital sketch mapping. Sketched from
aerial survey in a fixed wing aircraft.
Surveys for Wood Buffalo National
Park were carried out by the Canadian
Forest Service and Parks Canada.

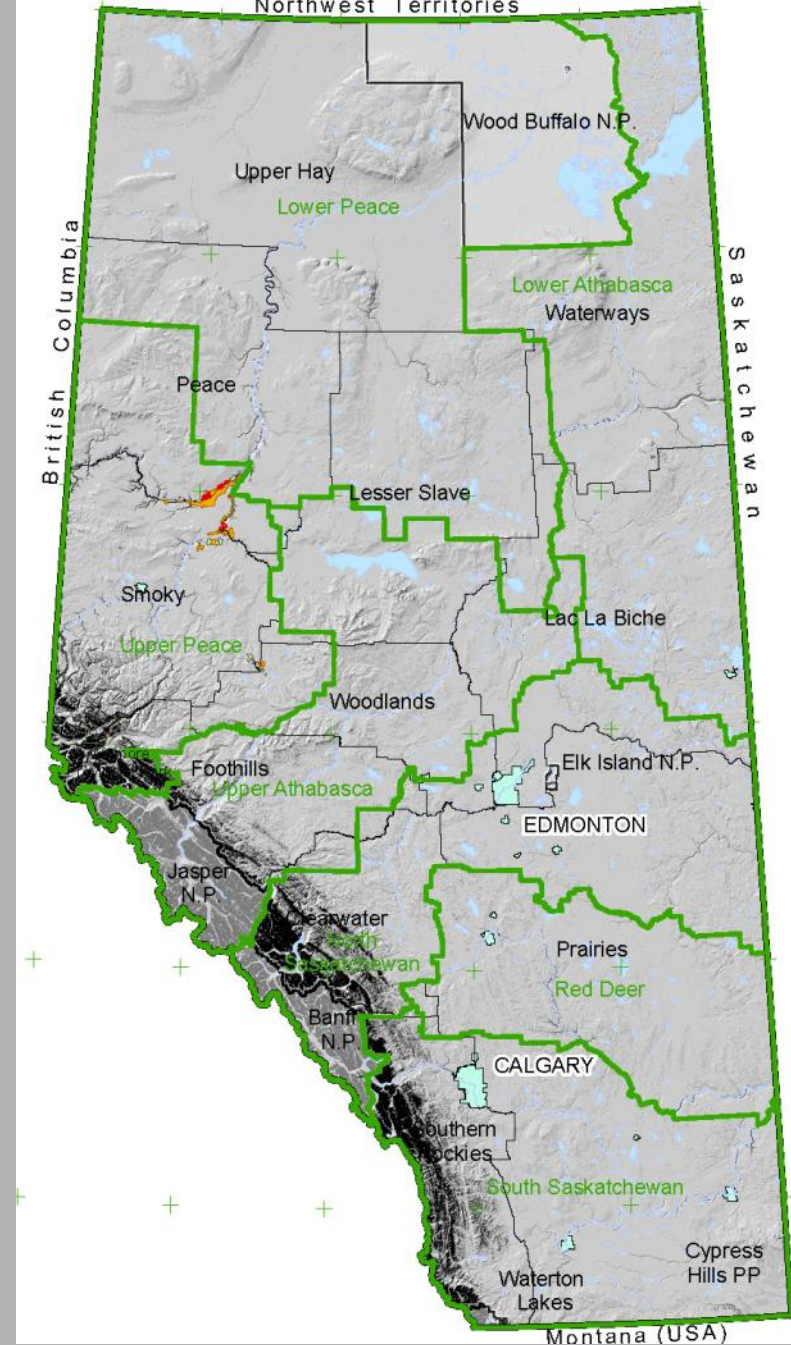


Alberta

Forestry Division
Forest Health Section
Oct. 11, 2011
Produced by A. McOll



2010



2011

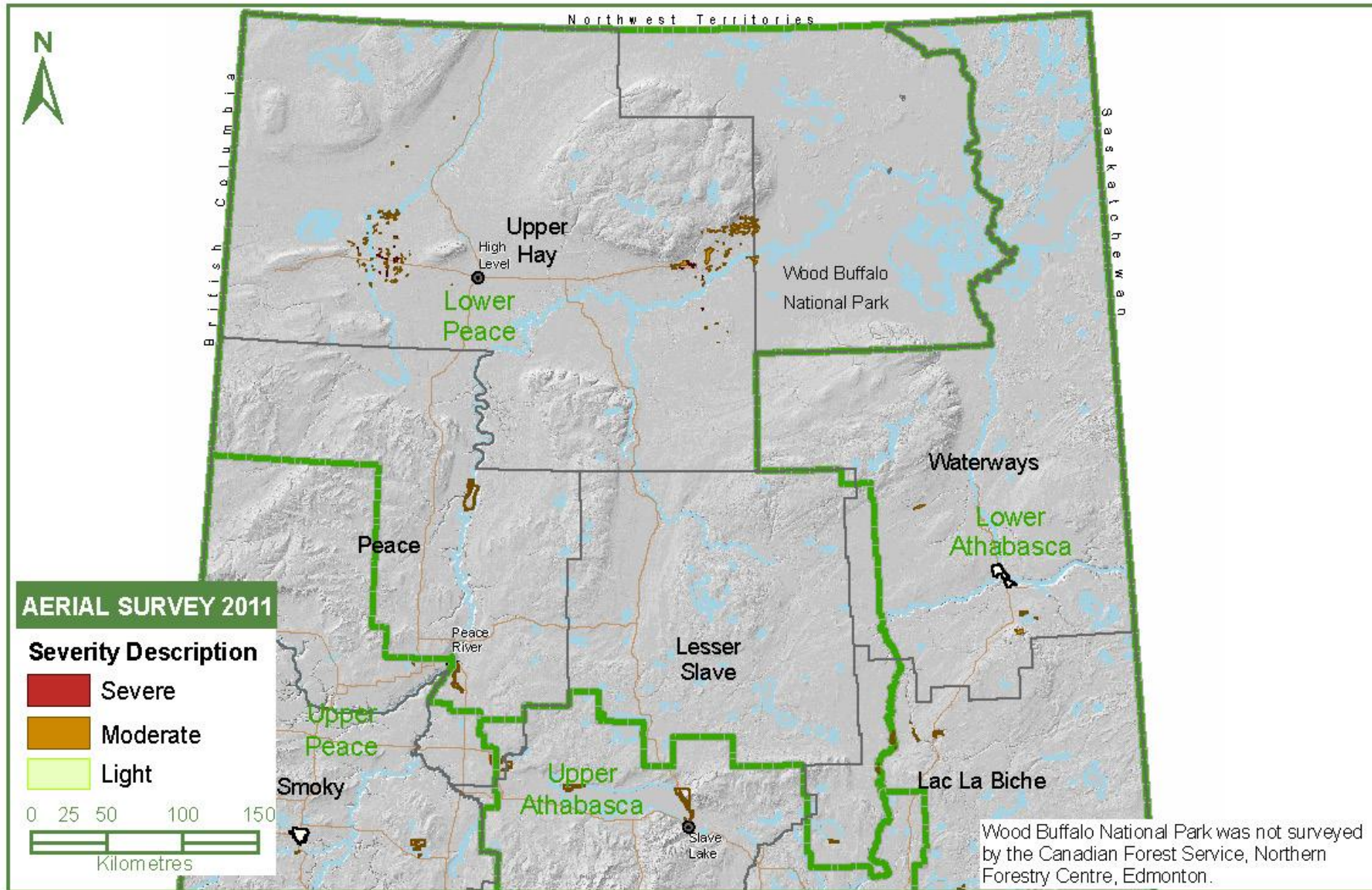


Pest	Light	Moderate	Severe	Total
Bruce Spanworm	17,688 ha	259 ha	0	17,947 ha
Forest Tent Caterpillar	18,482 ha	42,321 ha	10,667 ha	71,470 ha
Large Aspen Tortrix	1,797 ha	0	0	1,797 ha
Total	37,967 ha	42,580 ha	10,667 ha	91,214 ha

2010 total = **62,658 ha** (excluding Wood Buffalo NP)

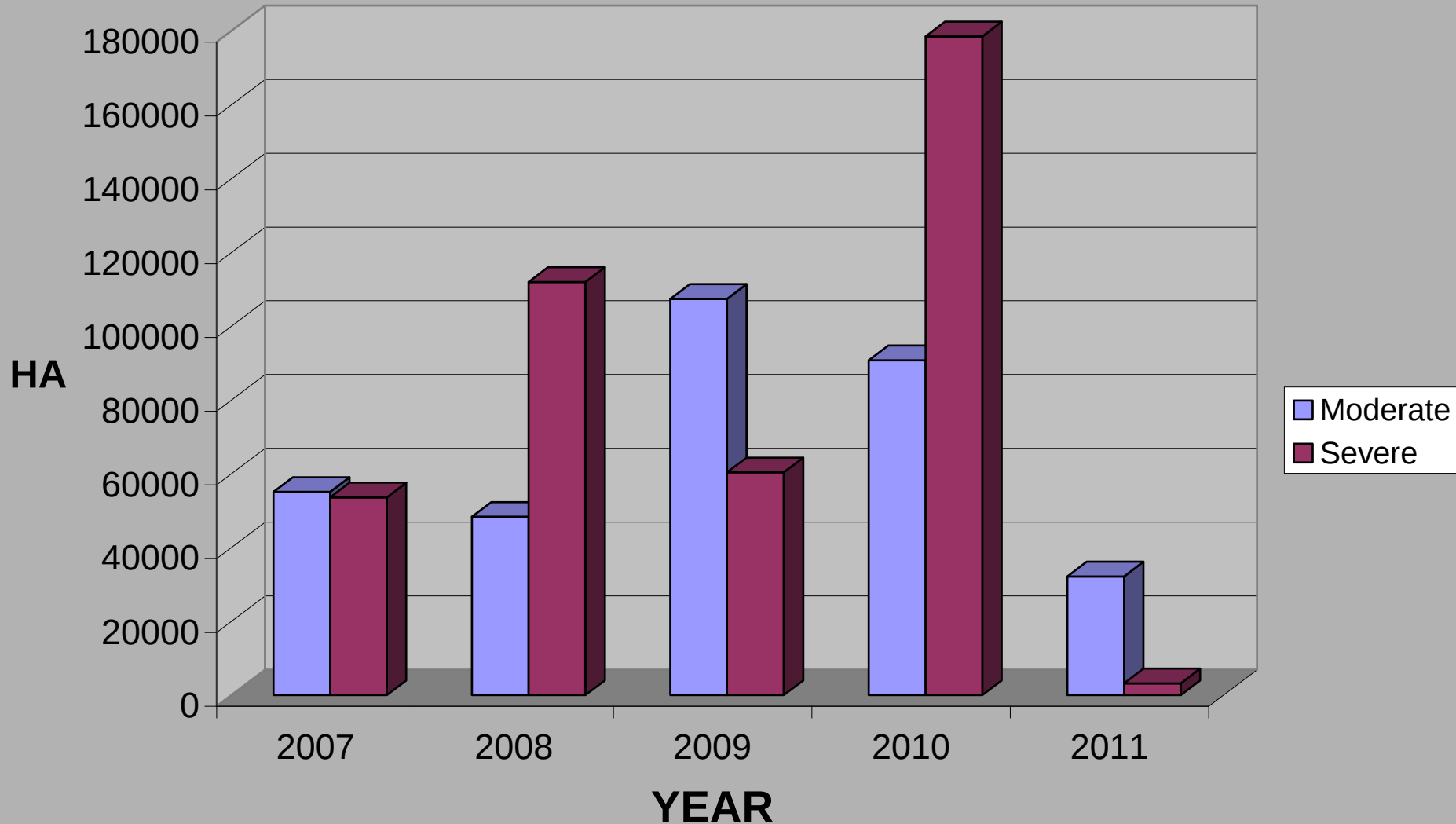
Eastern Spruce Budworm

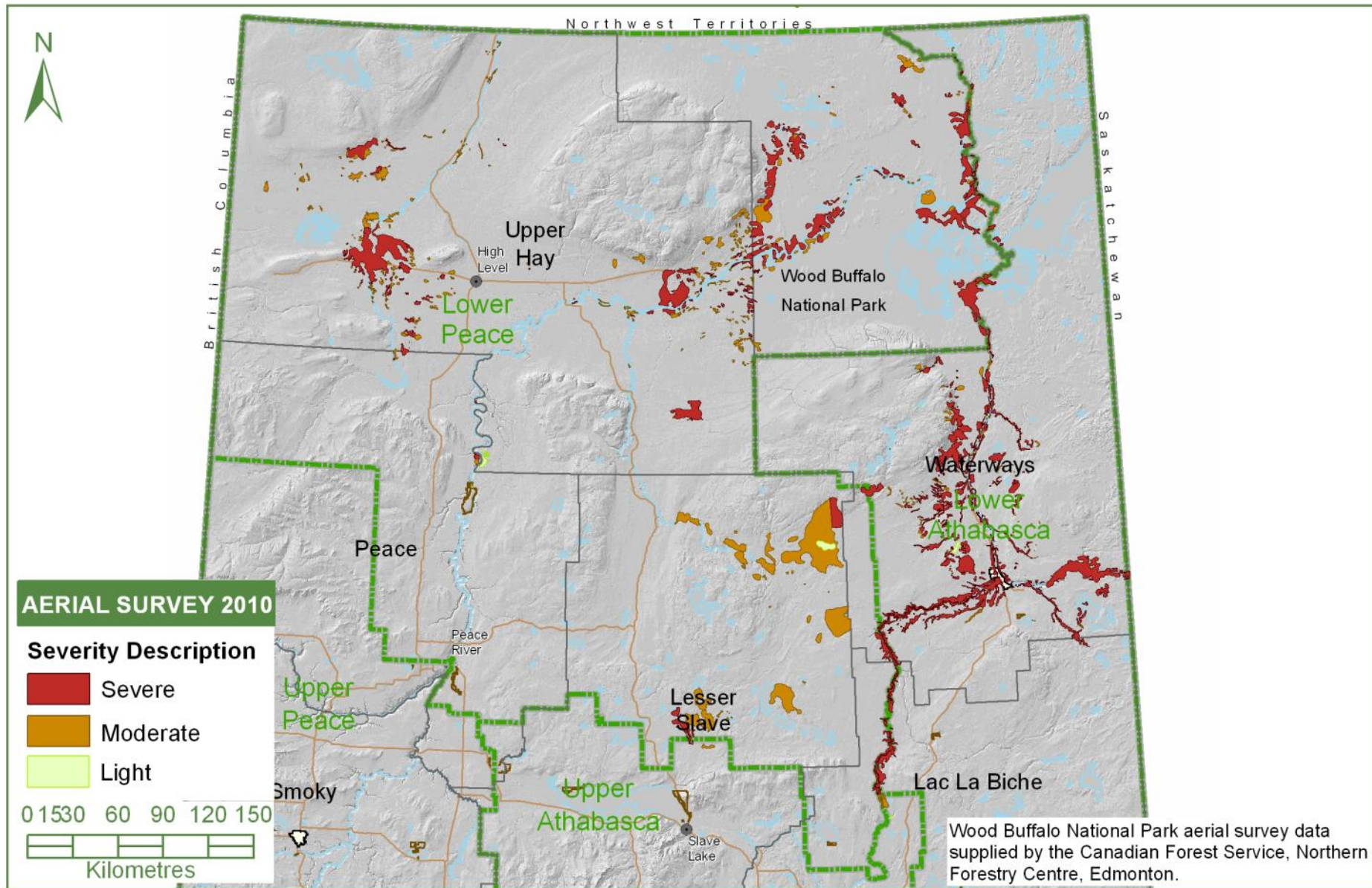




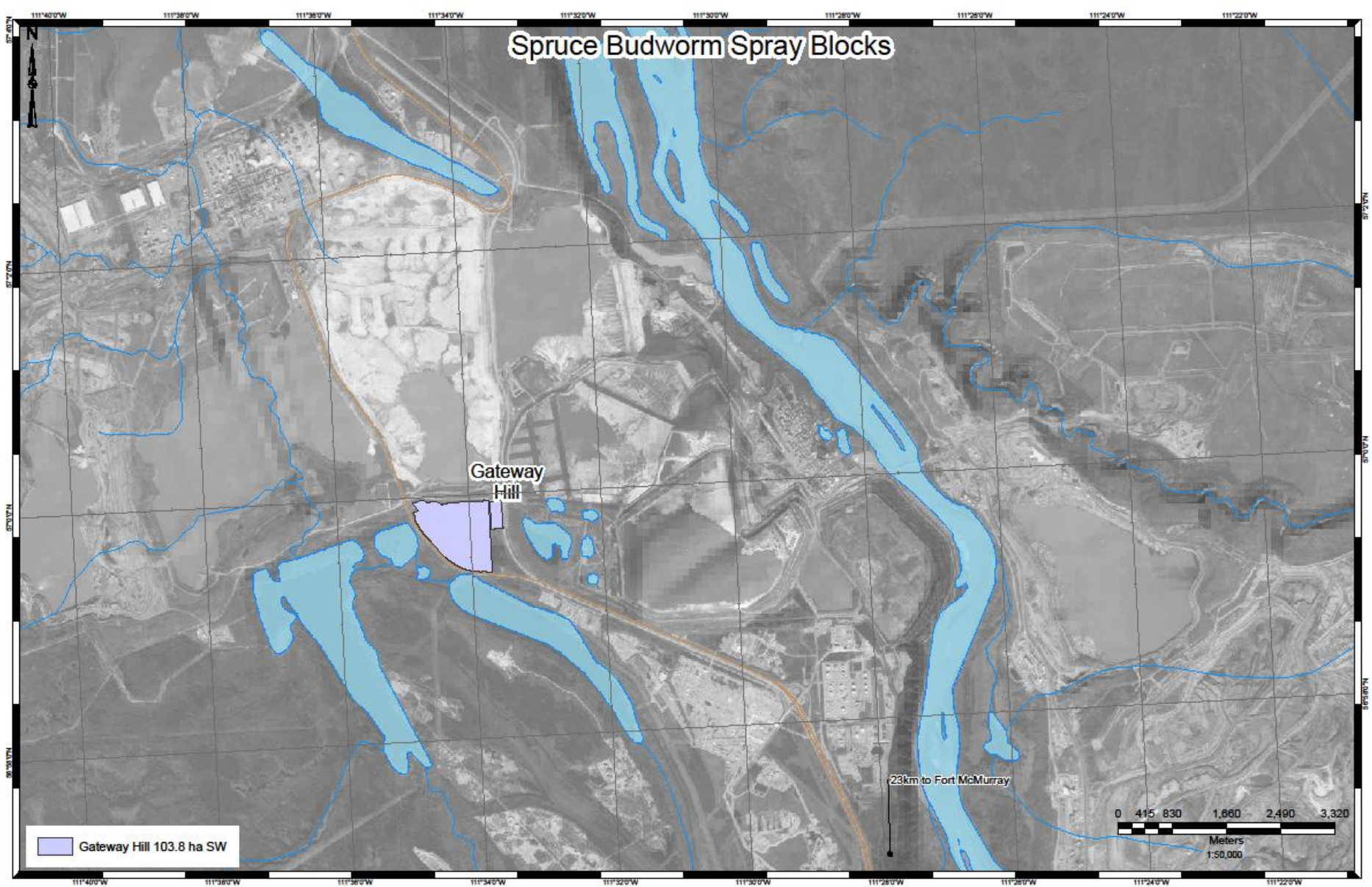
35,403 ha

Spruce Budworm Defoliation in Alberta





269,365 ha



Gateway Hill (348 ha block)

Spruce Budworm Spray Blocks

22km to Fort McMurray

Hanging Stone
5316 Ha.
Spray
Block Area
Rec Area
Spray Base

Stony Mountain
7028.1 Ha.
Block Area

Spray Base

- ★ Rec Area
- ★ Spray Base

Spray Areas

- Hanging Stone 946.8 Ha. Sw
- Stony Mountain 1454.4 Ha. Sw
- White Spruce Stands

0 625 1,250 2,500 3,750 5,000
Meters
1:75,000

2011 Spray program details

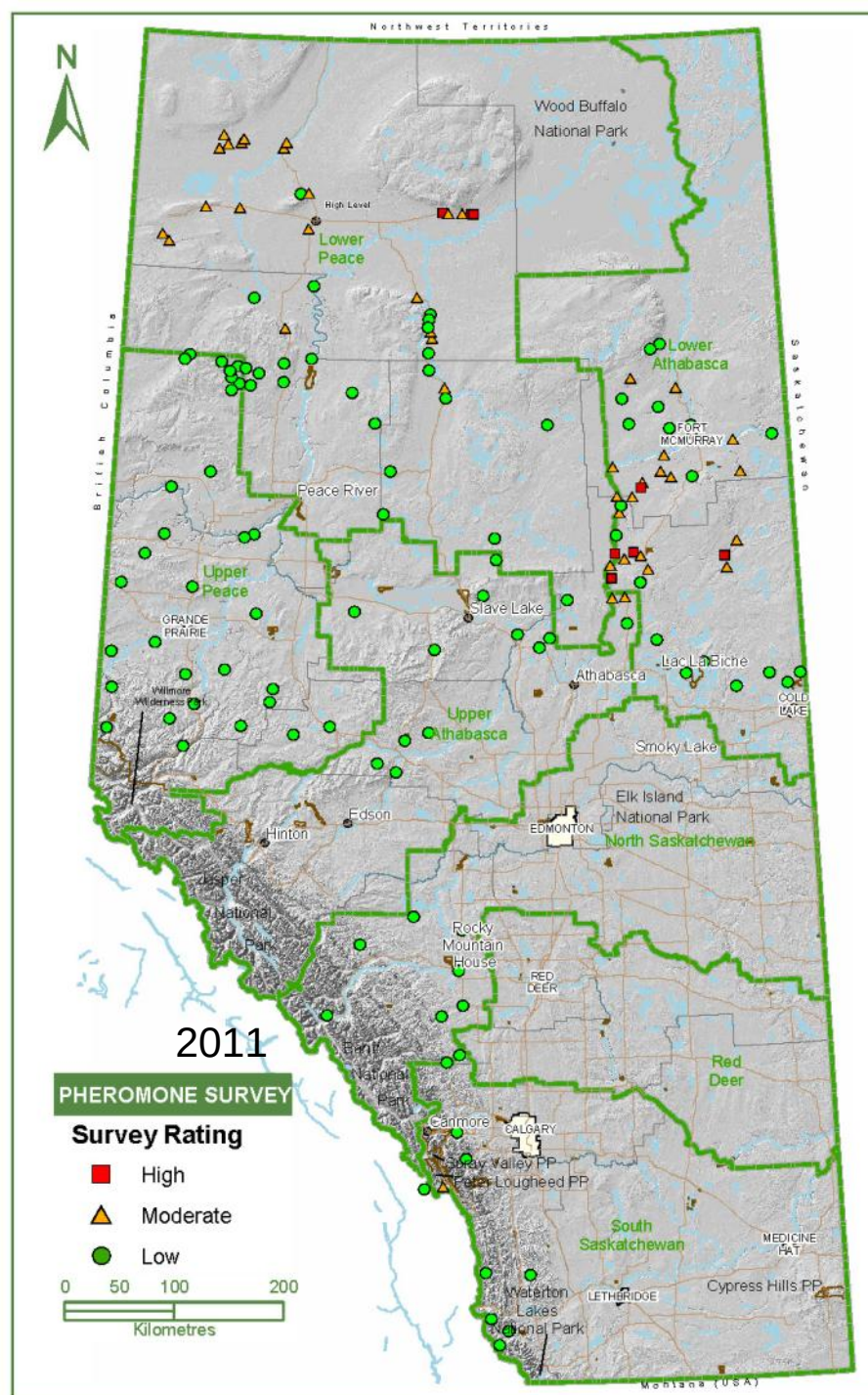


- Pre-spray sampling June 5
- Spray targeted 5th instar
- Btk formulation - Foray 48B®
- 2 applications at 2 L/Ha
- Application June 6 - June 12
- Post-spray sampling June 21

Efficacy

Plot No.	Pre-spray Average larval count per 10 m ² of foliage	Post-spray Average larval count per 10 m ² of foliage	Per Cent Larval Mortality Per Tree	Mean Per Cent Larval Mortality per spray plot
Gateway Hill				83.1
1	1,345	354	73.7	
2	10,797	825	92.4	
Hangingstone				85.9
1	2,658	145	94.5	
2	3,743	276	92.6	
3	871	255	70.7	

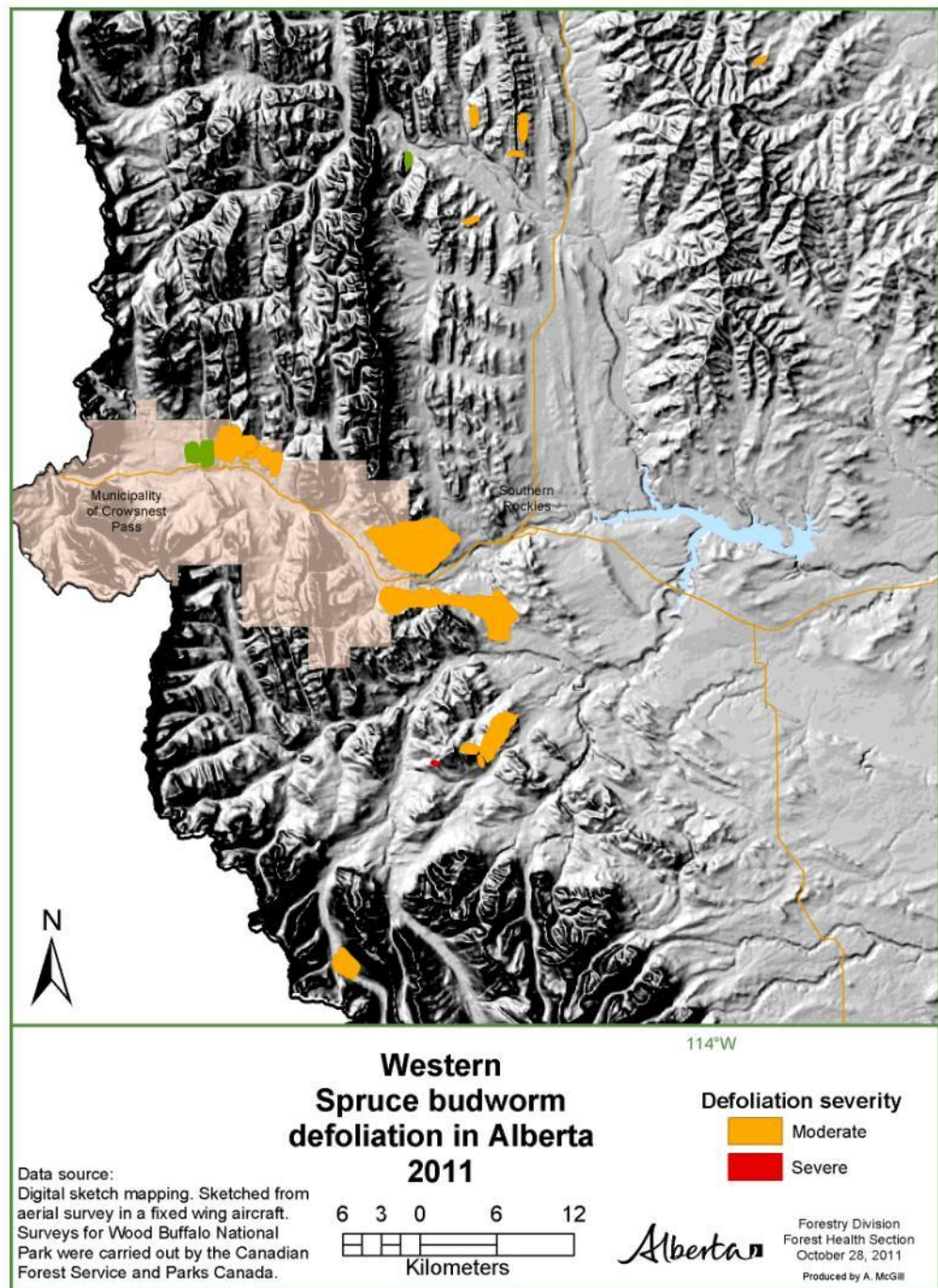
2012 SWB outlook



Western Spruce Budworm

2011 - 6,914 ha

2010 - 2,893 ha



Willow leafminer

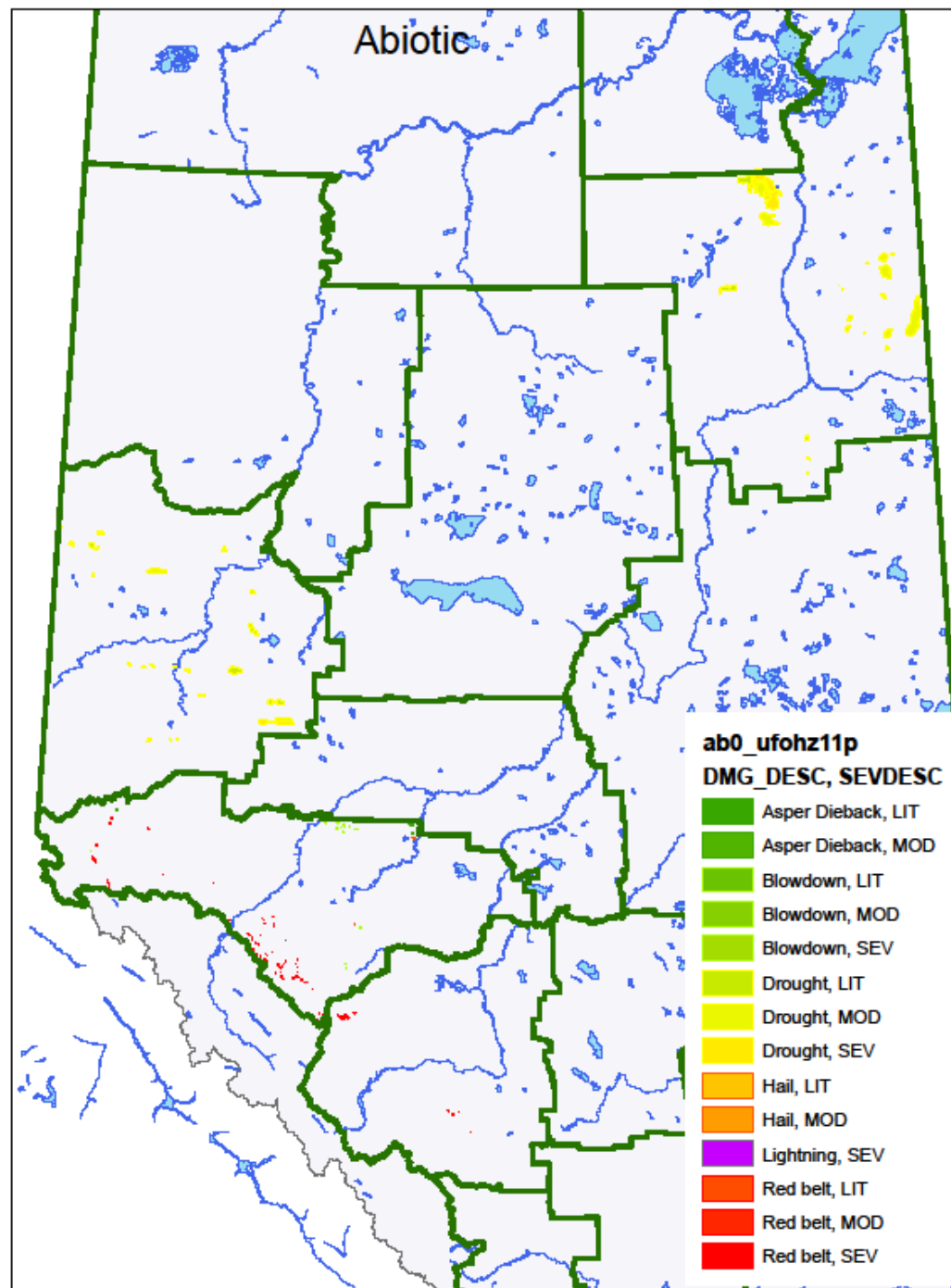
(*Micruapteryx salcifoliella*)

Clearwater River - NE Alberta

Abiotic Damage Agents



- Aspen dieback (1,855 ha)
- Drought stress (713,929 ha)
- Hail (6,377 ha)
- Red belt (30,567 ha)
- Blowdown (491 ha)





Thank You
Questions?