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# Balancing Ecological and Operational Fire Management in Banff National Park

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# Parks Canada's Fire Management Program

## Program Foundations:

- Protection of people, infrastructure and adjacent lands is our first priority
- Fire is a natural and important part of many ecosystems
- Must balance the ecological objectives of reintroduction of fire with socio-economic and operational interests in National Parks



# History of Fire Management in National Parks

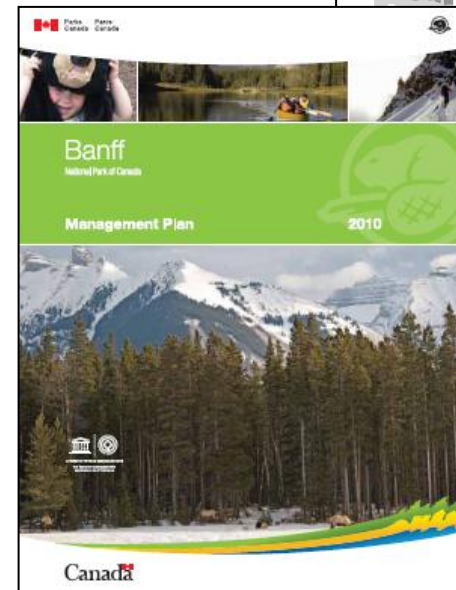
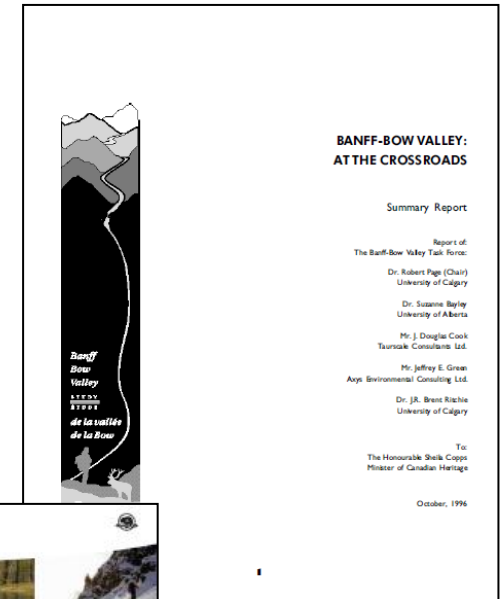
- 1760 -1880 Implementation of forest fire laws in Canada
- 1883 - Banff National Park established
- 1886 – Yoho National Park established
- 1907 – Jasper National Park established
- 1920 – Kootenay National Park established
- 1930s – Fire prevention programs initiated
- 1980s – Parks Canada’s Prescribed Burn Program started

***Nearly 100 years of fire suppression***

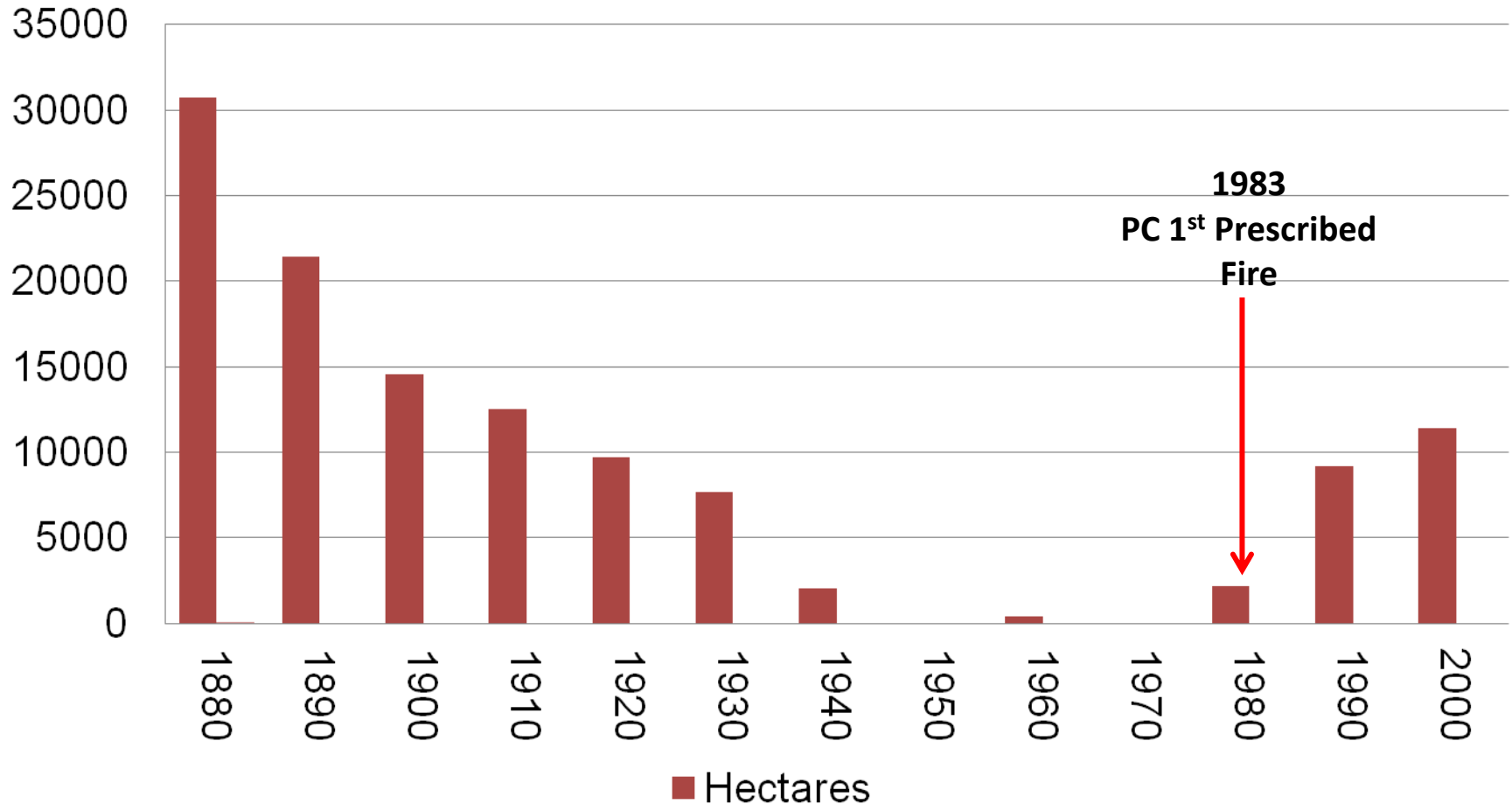


# Parks Canada Fire Policy

- Bow Valley Study 1996
  - Recommendation to use prescribed fire to maintain ecological integrity
- Parks Canada Guiding Principles and Operational Policies
  - *'the manipulation of natural occurring processes such as fire...may take place'*
- Banff National Park Management Plan 2010
  - Restore landscape-scale fire through prescribed fire



# Area Burned in Banff 1880-1999 (acres)



# 100 Years of Fuel Build Up

## Norquay Ski Area



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# 100 Years of Fuel Build Up

## Norquay Ski Area



# Bow Valley Looking West from Banff



En. 114 87  
Crawford - Ross  
Mountain Parks



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# Bow Valley Looking West from Banff



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# Banff Townsite

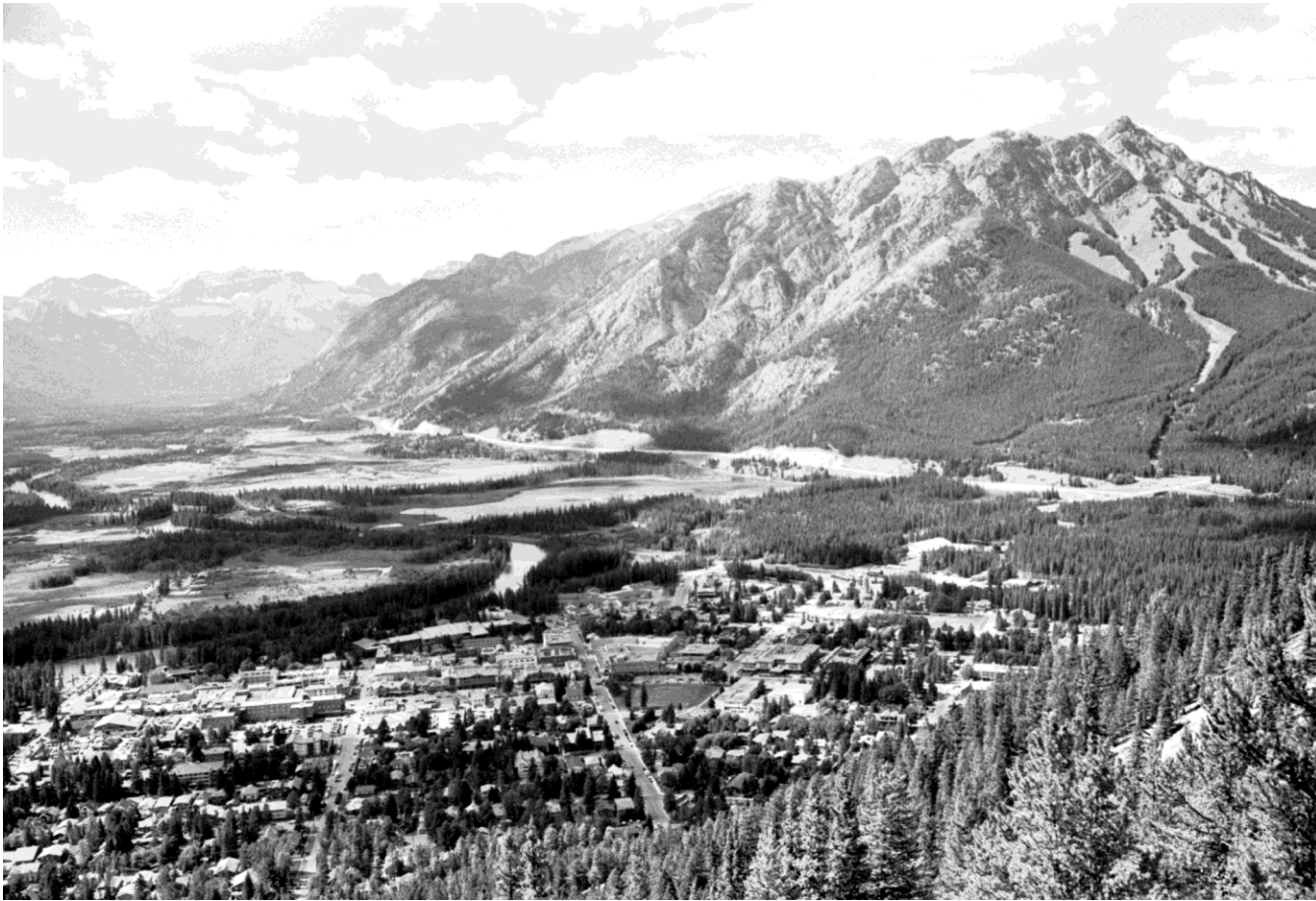


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# Banff Townsite



# Ecosystem Based Fire Management

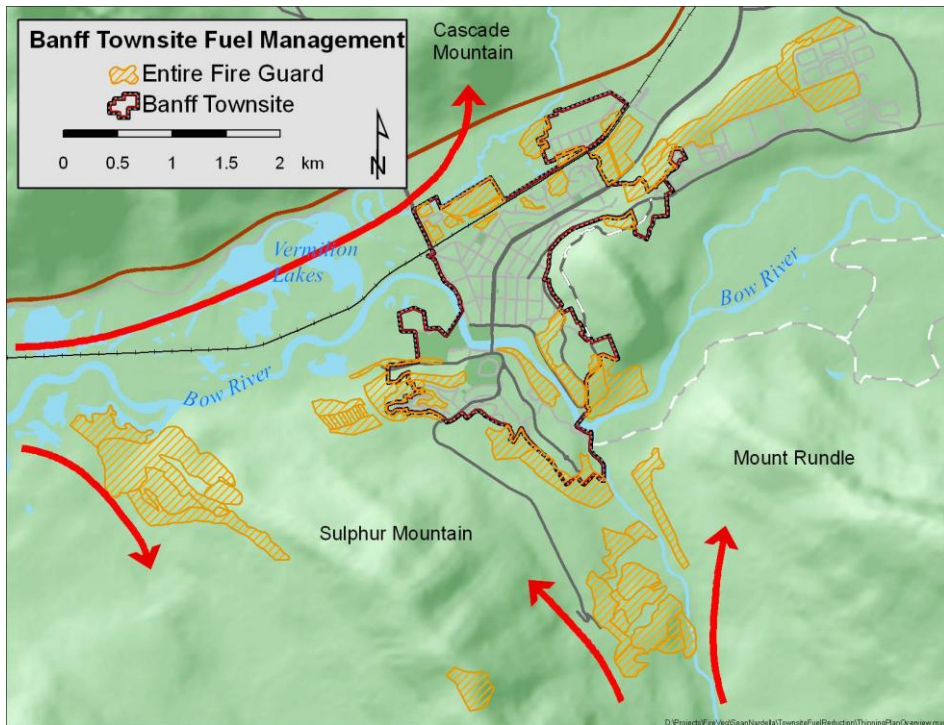
- **Historical range of variation**
  - Overall national goal of 20%
  - Mountain park goal **50%**
- **No single species management**
  - Ungulates
  - Grizzly bears
  - Wolves
  - Whitebark pine
  - Caribou
- **Fire Effects Research and Monitoring**
  - Fescue & elk grazing
  - Grizzly bear habitat
  - Douglas-fir restoration



Carrot Creek Prescribed Fire/Fuel Break



# Community Protection

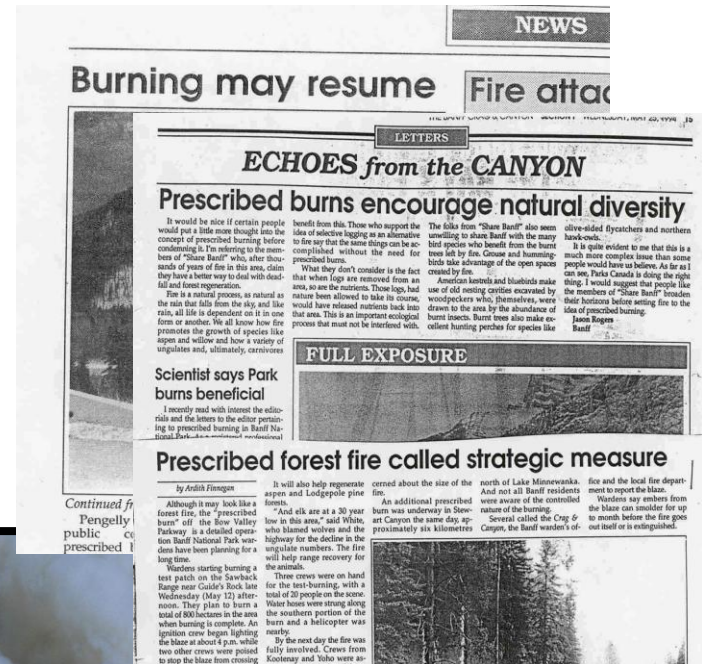


- Need to balance reintroduction of fire with community and public safety
- Fuel management challenging in National Park setting
  - Wildlife corridors, aesthetics, tourism



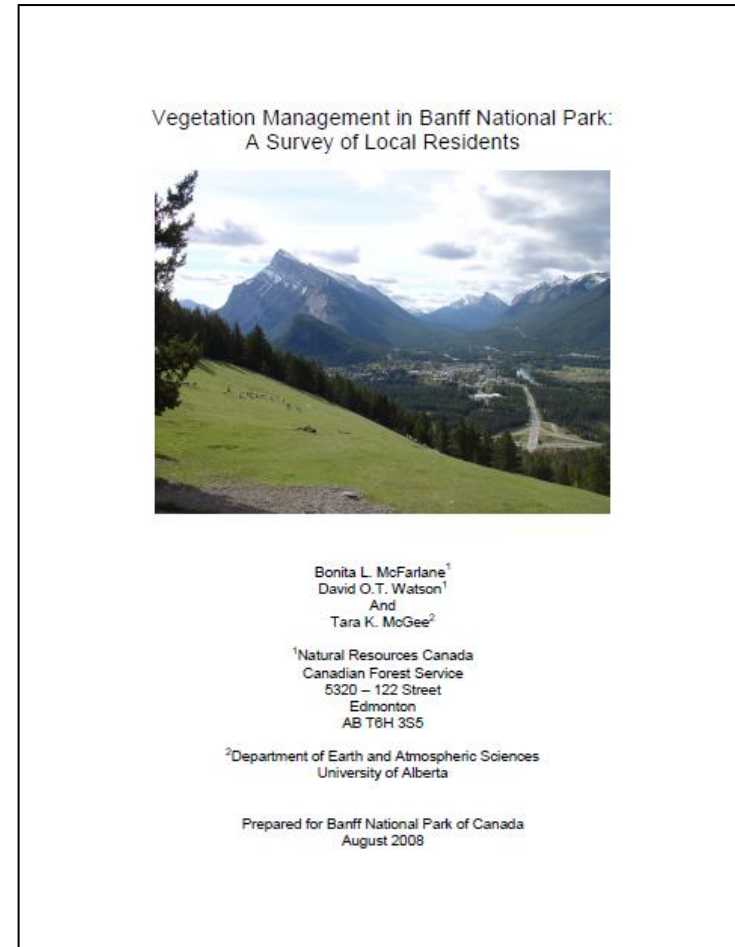
# Public Perception and Communications

- Smoke is primary concern
  - Public health
  - Tourism and recreation
- Understanding management decisions and policies
- Public and stakeholder support is paramount
- Social science provides interesting insights



# Social Science (From McFarlane et al., 2008)

- Restoring park ecosystems and protecting human communities the most important goals
- Over 90% support both fuel management and prescribed fire for these goals
- Few residents support full suppression
- Only viewed as slightly negative for local business



# Examples from Banff National Park

## Red Deer Valley Prescribed Fires (1991-2011)

- Long history of burning for multiple ecological objectives



## Fairholme Prescribed Fire (2003)

- Complex fire with multiple operational complexities





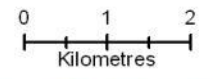
# Red Deer Valley Prescribed Fires 1991-2011



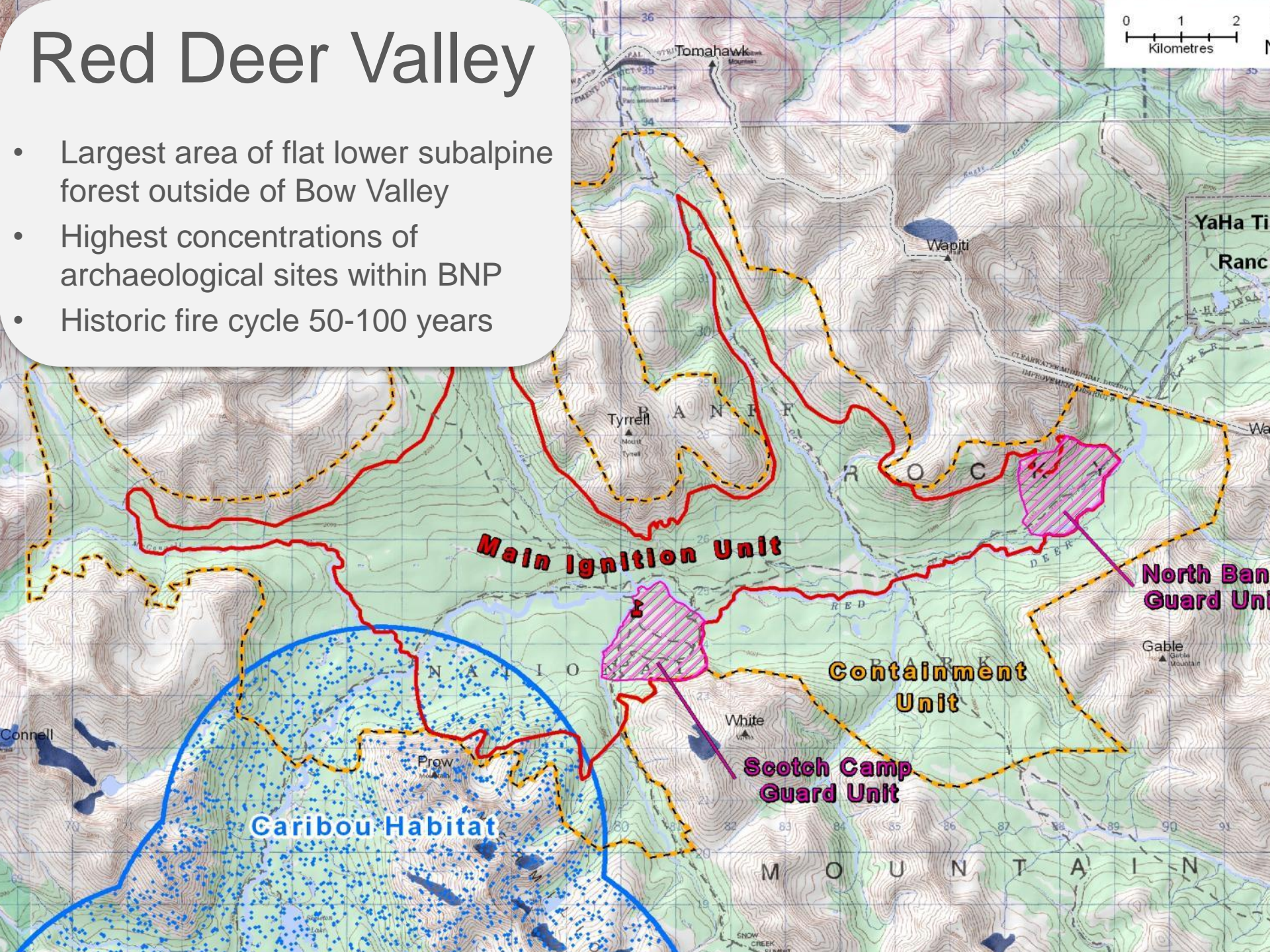
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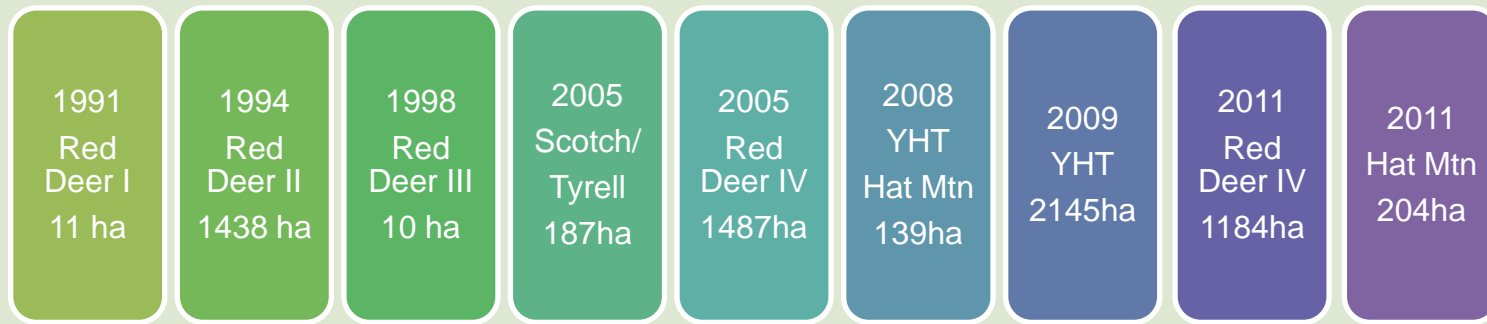
# Red Deer Valley



- Largest area of flat lower subalpine forest outside of Bow Valley
- Highest concentrations of archaeological sites within BNP
- Historic fire cycle 50-100 years



# Prescribed Fire in the Red Deer Valley



**20 Year Total – 7045 ha**



# Ecological/Operational Objectives

- Restore fire to lower subalpine
- Restore forest diversity, structure, composition
- Restore and maintain fescue grasslands
- Improve grizzly bear and ungulate habitat
- Reduce threat of wildfire to neighbouring lands
- Few values at risk



Fescue meadow burning



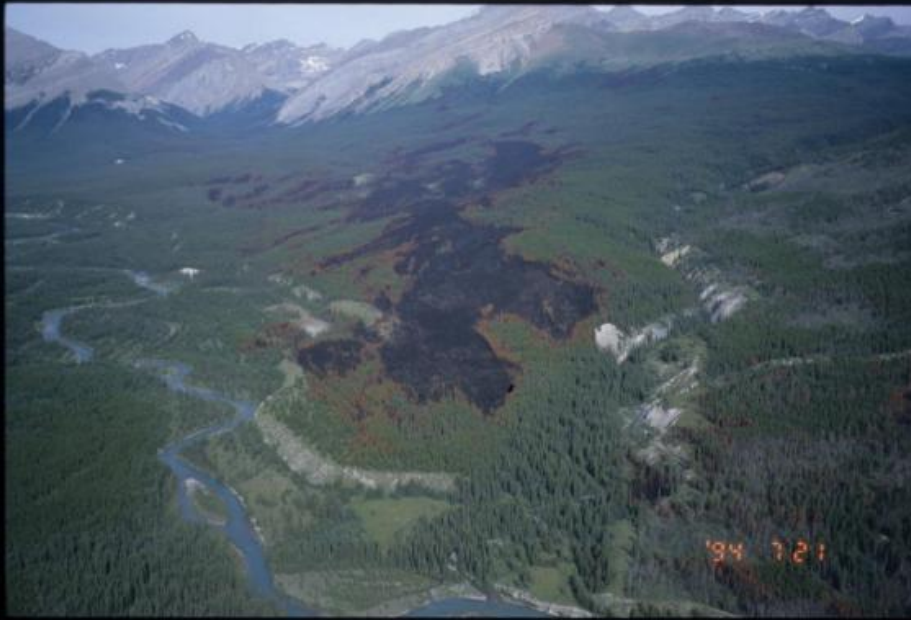
# Red Deer III- Scotch/Tyrell Meadows 1998/99



- 10 ha + 187 ha
- Fescue restoration



# Red Deer IV - 2005



- 372 ha
- Reburn previously burned areas
- Fescue restoration



# Red Deer V 2011 - Objectives

- > 30% reduction in canopy cover on south facing sub alpine slopes
- 60% mortality of lodgepole pine regen in previously burned areas
- Improve grizzly bear, ungulate and wolf habitat



## 2011 Results

- 1200 ha burned
- 12 days with significant ignition
- August 29 – October 16, 2011

Hat Mtn

A topographic map of a mountainous region, likely in the Canadian Rockies, showing elevation contours and terrain. The map is color-coded by elevation, with greens and blues representing lower elevations and reds and oranges representing higher elevations. Two specific areas are highlighted with green outlines. The first area, in the upper right, is labeled 'Hat Mtn' and contains several red patches. The second area, in the lower left, is labeled 'Red Deer V' and contains a large, irregular red area. A black line on the right side of the map indicates a boundary, possibly a provincial or national border.

Red Deer V





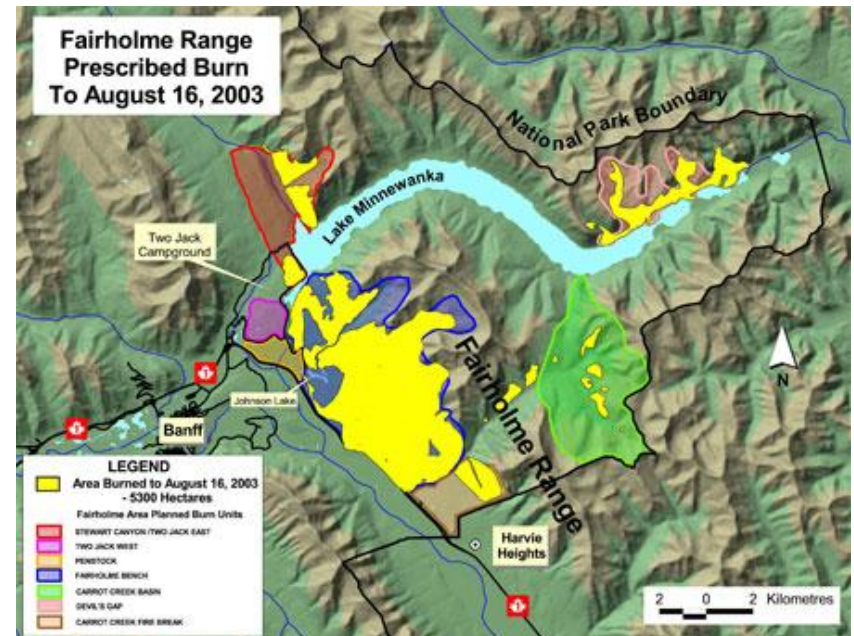




# Fairholme Prescribed Fire (2003)

## Operational Considerations

- Large scale prescribed burn unit
- Main valley for frontcountry recreation in Banff National Park
- Directly upwind of Harvie Heights and Canmore, AB
- Adjacent to the Trans Canada Highway and CP Railway



# Fairholme PF Objectives

- Reduce the threat of wildfire to adjacent communities
- Restore Douglas-fir grasslands
- Reduce the susceptibility of stands to mountain pine beetle
- Stimulate the reproduction of aspen and poplar during period of reduced herbivory pressure



# Public and Stakeholder Support

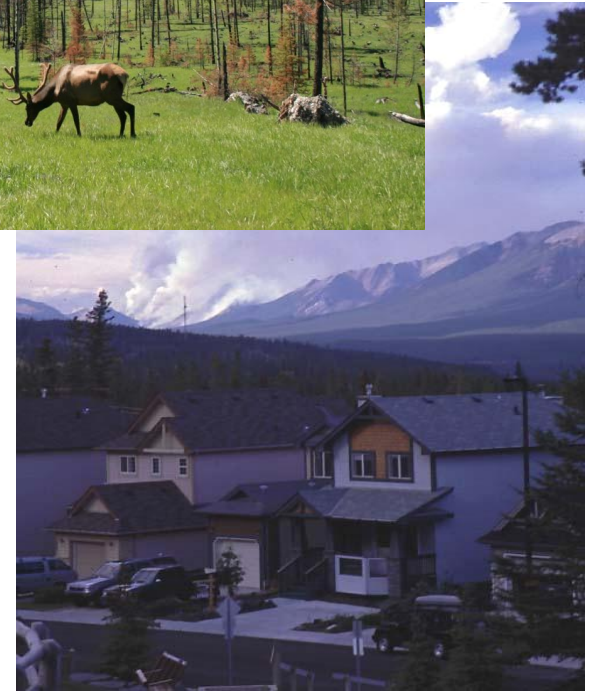
- Many public open houses
- Media attention
- Roadside interpretive trailer
- Increased awareness of importance of communications



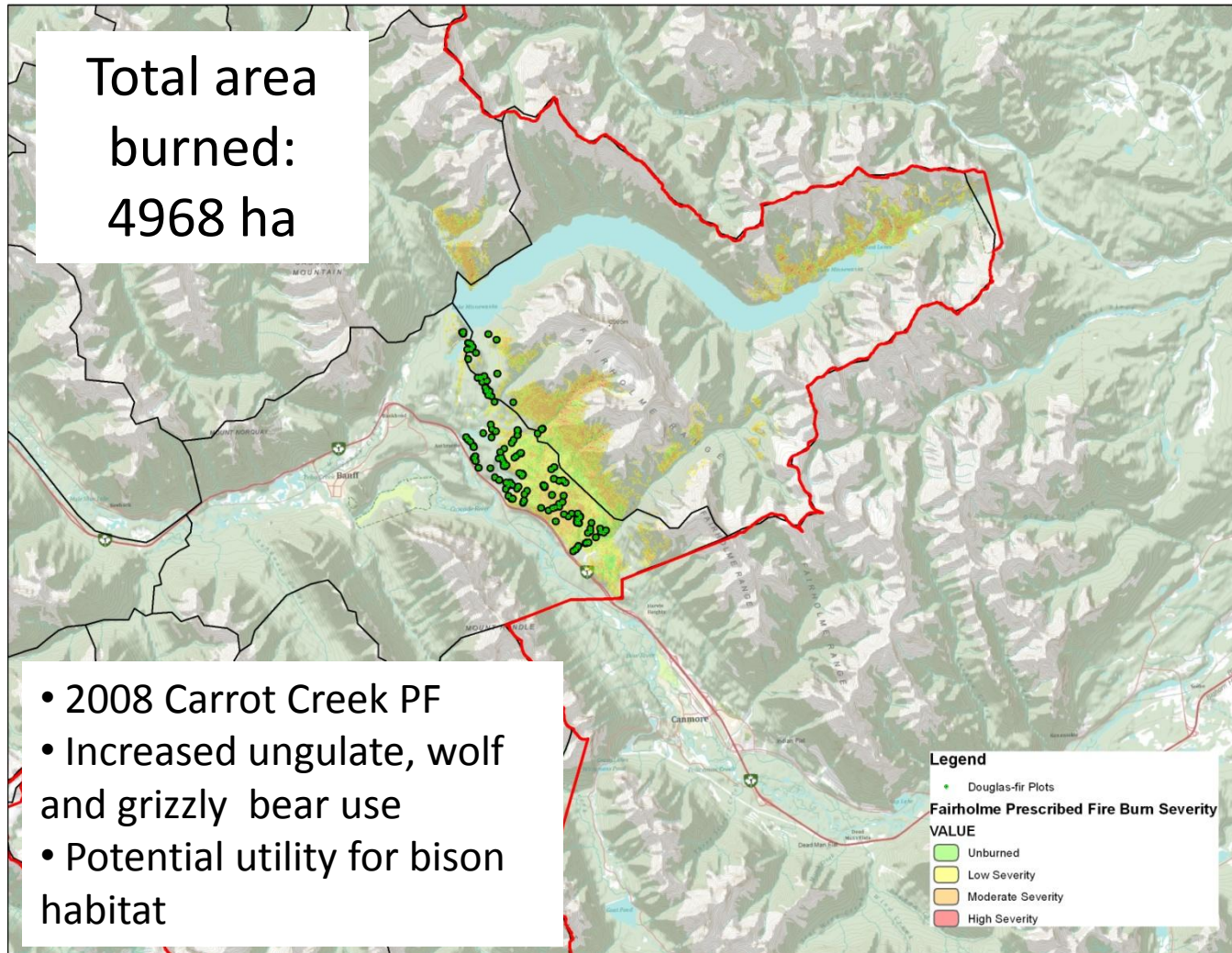
# Community Protection

- Landscape scale fuel break downwind of prescribed fire and adjacent to Harvie Heights
- Maintenance prescribed fire in 2008
- Result in prime ungulate habitat and long term fuel break for Harvie Heights

Carrot Creek Prescribed Fire/Fuel Break 2008



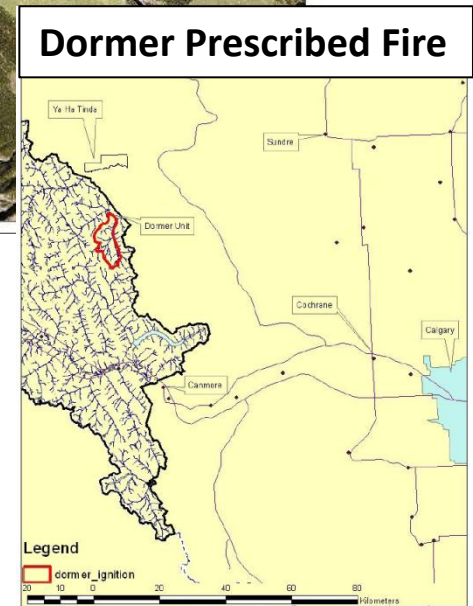
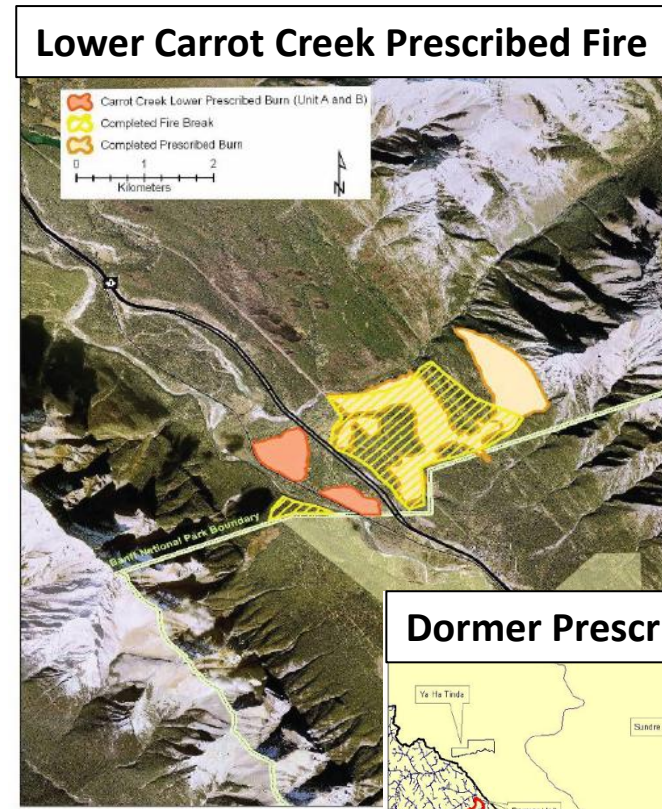
# Results





# Next Steps.....

- Continue to conduct landscape level prescribed fire to achieve both ecological and operational objectives
- Collaborate with neighbouring agencies on boundary units
- Work with research agencies to further the state of knowledge on fire behaviour and ecology



# Thank-you.....



## Questions?

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