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)

- 1880: 30,000 hectares
- 1890: 20,000 hectares
- 1900: 15,000 hectares
- 1910: 12,000 hectares
- 1920: 10,000 hectares
- 1930: 8,000 hectares
- 1940: 1,000 hectares
- 1950: 100 hectares
- 1960: 100 hectares
- 1970: 100 hectares
- 1980: 1,000 hectares
- 1990: 1,000 hectares
- 2000: 1,000 hectares

1983 PC 1st Prescribed Fire

Hectares
100 Years of Fuel Build Up

Norquay Ski Area
100 Years of Fuel Build Up

Norquay Ski Area
Bow Valley Looking West from Banff
Bow Valley Looking West from Banff
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

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Bringing you Canada's natural and historic treasures
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

• Long history of burning for multiple ecological objectives

• Complex fire with multiple operational complexities
Red Deer Valley Prescribed Fires
1991-2011
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

- 1991: Red Deer I, 11 ha
- 1994: Red Deer II, 1438 ha
- 1998: Red Deer III, 10 ha
- 2005: Scotch/Tyrell, 187 ha
- 2005: Red Deer IV, 1487 ha
- 2008: YHT Hat Mtn, 139 ha
- 2009: YHT 2145 ha
- 2011: Red Deer IV, 1184 ha
- 2011: Hat Mtn, 204 ha

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

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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

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
Results

Total area burned: 4968 ha

- 2008 Carrot Creek PF
- Increased ungulate, wolf and grizzly bear use
- Potential utility for bison habitat
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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