The Waskesiu Community Fuel Break
Prince Albert National Park
15-year review of a fuel modification project in the boreal forest
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Parks Canada
Prince Albert National Park
Townsite of Waskesiu Lake, SK

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Parks Canada
The Waskesiu Community Fuel Break
15-year review of a fuel modification project in the boreal forest

• Background
• Community fuel break
  – development
  – maintenance
  – current status
• Applying lessons learned
• Questions
Parks Canada
Fire Management

• Protection of life and property; recognizes ecological role of fire
• Strategy to restore fire cycles through alternative wildfire management methods and use of prescribed fires
• Prince Albert NP has a full suppression management strategy
Prince Albert National Park

- Mixedwood, conifer dominated boreal forest
- Stand-replacing, high-intensity fires
- Significant departure from the natural 100-year fire cycle
- Over-mature, high fuel loading, insect and weather damage/mortality
Waskesiu Lake

- High value resort community
- Summer population up to 10,000
- Significant wildland-urban interface
- Last wildfires in 1896, 1911 and 1919
A Community Fuel Break

Objective – Create a feature that would reduce intensity, spotting potential and rate of spread of an advancing wildfire

Starting Point:
- Lake provides protection to the west
- Development restrictions under national park policy – compact landbase
- Roads encompass 80% of the perimeter
A Community Fuel Break

Prescription – 2 Components

1. Fire Guard (30 ha)
   - 30 m wide, surrounding the townsite
   - Road allowances, cleared/treeless corridor

2. Fuel Break (300 ha)
   - Fuel Mod - thinned forest 150-300m either side of the fire guard
   - Remove 75-90% of the conifer
   - Outer boundary managed as recreational trail

Environmental Impacts and Aesthetics a Primary Concern
A Community Fuel Break

Construction Techniques

- Winter harvest
  - modified traditional methods
  - low-impact equipment
  - dispersed slash
- Broadcast prescribed fire
- Hand piling / burning
- Mulching, stump grinding
Fuel Break Maintenance

Hand thinning / piling / burning
• Goal – 30ha/yr
• Achieved - 18ha/yr at $5,000/ha
• Most areas showing significant spruce regeneration

Broadcast prescribed fire
• Goal 40ha/yr
• Achieved 37ha/yr at $50/ha
• Little to no spruce regeneration
Fuel Break Maintenance
Prescribed Fire
Fuel Break Maintenance
Hand Thinning, Piling and Burning
Fuel Break Maintenance

Hand Thinning, Piling and Burning plus Broadcast Prescribed Fire
Fuel Break Maintenance

Comparison of Maintenance Regimes

- Prescribed Fire
- Thin, Pile and Burn by Hand

Waskesiu Community Fuel Break
September 2012 Google Image Maintenance Regimes
Fuel Break Maintenance

Prescribed Fire

- Annual prescribed fire in early spring; 40-50 ha
- Snow or wet fuels in adjacent forest
- Units bounded by roads and trails
- Matted grass fuel type with a heavy fuel load (~3-5 t/ha)
- 8-10 people burn day; 2-4 people burn day +1
- Annual cost approx. $2,000
Waskesiu Community Fuel Break

Maintenance – Prescribed Fire

Embedded 3 minute video of the 2016 CFB prescribed fire
Current Status of Fuel Break

Southern portion of the fuel break in good shape:
- regular use of prescribed fire
- regeneration of aspen and grass

Concerns about effectiveness in other fuel break areas:
- conifer regeneration
- pinch points, islands of mature conifer
- heavy fuel build-up adjacent to the fuel break
Waskesiu Community Fuel Break

Conifer Regeneration 2003 - 2016

Site 1 – 2003
Waskesiu Community Fuel Break

Conifer Regeneration 2003 - 2016

Site 1 – 2016
Waskesiu Community Fuel Break

Conifer Regeneration 2003 - 2016

Site 1 – 2016
Waskesiu Community Fuel Break

Conifer Regeneration 2003 - 2016

Site 2 – 2003
Waskesiu Community Fuel Break

Conifer Regeneration 2003 - 2016

Site 2 – 2016
Waskesiu Community Fuel Break
Conifer Regeneration 2003 - 2016

Site 2 – 2016
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Weak points and interior islands

2003
Waskesiu Community Fuel Break

Weak points and interior islands

2012
Waskesiu Community Fuel Break

Insect Defoliation

- Spruce budworm mortality in adjacent stands (2003-04/2012-13)
- Forest tent caterpillar outbreak removed aspen canopy (2014-16)
Waskesiu Community Fuel Break

Concerns about effectiveness

- 2015 wildfire / smoke threats to regional communities
- Evacuation of communities adjacent to PANP
- Impaired visibility – no flying
- Critical assessment of the fuel break
Waskesiu Community Fuel Break
Applying Lessons Learned

A focus on expansion and sustainable maintenance:

- fuel break expansion plans (south of Waskesiu, Elk Ridge)
- address the maintenance deficit of the existing fuel break
- expand the use of prescribed fire as the primary maintenance tool
Waskesiu Community Fuel Break
Applying Lessons Learned

Expansion of the Fuel Break:

• south of Waskesiu
  – most probable direction of wildfire threat (historic fire patterns and fuel type)
• development outside the park adjacent to the boundary
• alter prescription
  – 100% conifer removal
Waskesiu Community Fuel Break
Applying Lessons Learned

The maintenance deficit:

• expand use of mechanical thinning (mulcher)
• increase prescribed fire treatment area from 40 ha to 200 ha
  – Reduce annual maintenance costs from $5,000/ha to $50/ha
• regularized maintenance funding

LONG TERM SUCCESS DEPENDS ON A COST EFFECTIVE MAINTENANCE PLAN
Waskesiu Community Fuel Break

Questions?

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