

**Public Perceptions of Wildland Fire Management in  
Banff National Park of Canada:  
A Summary of Findings**

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## 1.0 Introduction

Managing fire within national parks differs markedly from that of other public lands. Instead of managing for multiple uses (such as forestry, petroleum extraction and processing, and off-road vehicle use), national parks are managed based on the principal of ecological integrity (EI) with the aim of preserving the sustainability of the characteristic species and ecological processes (such as fire) of the natural region. Fire management in national parks uses a combination of fire suppression, mechanical vegetation removal, and prescribed fire, with the goal of returning ecosystems to more natural levels of variation. In addition to achieving ecological objectives, fuel modifications can also reduce the risk of wildfire to local communities and adjacent industrial forest lands. However, to be successful fire management in national parks must have a broad base of public support. In particular it requires understanding and collaboration among local citizens and other jurisdictions such as municipalities and provincial fire management agencies. This requires both the acceptance of Parks Canada's fire management activities and the participation of near-by communities and residents in risk reduction measures (e.g., FireSmart®<sup>1</sup> activities).

How park residents and residents of nearby communities perceive risks from wildfire, their acceptance of fire management strategies (e.g., prescribed burns) within national parks, and their preferences for residential mitigation measures (e.g., FireSmart) were the focus of this study. The objectives of this study were to:

1. Examine public perceptions of fire risk associated with residing in or near a national park, and knowledge and acceptance of fire management strategies and mitigation measures.
2. Examine the influence of perception of fire risk, wildfire experiences, knowledge of fire management and other factors on the acceptance of fire management strategies and the adoption of residential mitigation.
3. Identify implications to assist Parks Canada, municipalities, and fire management agencies to develop strategies to communicate with and engage the public in fire management and mitigation.

This report provides a summary of the major findings from the study.

## 2.0 METHODS

This study used qualitative research methodology. Interviews were conducted with residents and business representatives in Banff and Canmore, municipal representatives of the towns of Banff and Canmore, provincial government representatives familiar with fire management in the Bow Valley, and Banff National Park staff.

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<sup>1</sup> FireSmart refers to activities that individuals and communities can undertake to reduce the risk of wildfire losses and enhance safety.

The intent of the study was not to obtain a statistically representative sample. Rather, due to the qualitative nature of the study and the desire to solicit a range of perceptions related to fire management, a purposeful sample was considered appropriate. A first round of interviews was completed with people referred to us by Parks Canada staff. Other participants were identified using a snowball sampling method whereby interviewees were asked to identify others who might be interested in participating in the study. Finally, some participants were identified by the researchers as being of interest to the study (i.e., we felt they might have a unique or different perspective). Interviews were conducted between July 25 and September 1, 2006. A total of 36 interviews were conducted.

Interviews were tape recorded with permission of the participants and transcribed verbatim. The first step in the analysis involved coding the transcribed text into conceptual categories creating themes which were then used to analyze the data. Once all interview transcripts were coded, the next step involved a comparison of the themes across the interviews. This was aided by the use of NVivo® 2.0, a qualitative data analysis software program.

The study was judged to meet the University of Alberta standards for research involving human participants by the Arts, Science and Law Research Ethics Board, University of Alberta. The research was conducted under Parks Canada Research and Collection Permit JNP-2006-669.

## **3.0 RESULTS**

### ***3.1 Perceptions of Fire Management***

#### **3.1.1 Goals of fire management**

To provide insights to participants' expectations of fire management in Banff National Park, we asked them what they thought the goals of fire management should be. Comments from residents, business representatives, and municipal staff on what the goals of fire management should be were grouped into four themes: Protection, prevention, restoration, and education. The protection theme was prevalent, with most respondents identifying the protection of the community – human life and infrastructure – as being a priority for fire management. The prevention theme refers to being proactive to reduce the possibility of a catastrophic fire. The restoration theme recognizes the role of fire in the ecosystem and the desire to return the national park to a natural fire regime whereby wildfire can be allowed on the landscape with minimal management. Respondents also referred to the goal of rejuvenating the forest and creating new wildlife habitat. The education theme identified the desire to receive more information on fire hazard rating in the park and educating visitors about fire management. Education was considered key to public acceptance of wildfire management to create confidence that prescribed burns can be effective, and to inform people on the ecological benefits of fire and of safe, responsible fire use (e.g., backyard fire pits).

### **3.1.2 Awareness of fire management**

To assess if respondents were familiar with fire management activities, they were asked what was being done to manage wildfire. Most of the residents, business owners, and municipal representatives were aware of fire management activities in the Bow Valley. Most were aware of prescribed burns, thinning around the towns and the creation of fire breaks. Although many interviewees were supportive of Parks Canada's fire management strategy, there were some diverging views. Some viewed all fire as a waste of potentially valuable timber and having no positive role on the landscape, whereas others thought that not enough fire was being allowed on the landscape. People who were supportive of the fire management strategy trusted the expertise and experience of Parks Canada staff. They also recognized that there is uncertainty and risk associated with fire management and seemed to accept these risks. In addition, they recognized that fire management occurs under several constraints (resources, environmental conditions, and political pressure), and cited improved communications by Parks Canada as influencing their views.

### **3.1.3 Prescribed fire**

A range of views about prescribed fire was evident in this study. Some people were very supportive of prescribed fire, others were supportive of the concept but had concerns, and a small number of study participants did not support the use of prescribed fire. Interviewees who supported the use of prescribed fire cited its ecological benefits, acknowledged its role in reducing the risk of a catastrophic wildfire, recognized a potential to use it as an educational tool, and saw no other viable alternatives in some cases.

Concerns about prescribed fire included potential health impacts, impacts on tourism (with both health and visibility concerns), the effectiveness of prescribed fire, and the lack of alternatives. Concerns about health impacts focused on the smoke and resulting reduced air quality.

The impacts on tourism were perceived to be both positive and negative. Many business owners and municipal officials were concerned about the impacts of smoke on visitors' experiences and health, and the local economy. However, at least some businesses are adapting to the presence of fire on the landscape. Some business owners described opportunities to integrate fire into their business by providing a unique educational experience for tourists, especially foreign tourists from places like Europe and Asia, thereby enhancing the visitor experience. They saw opportunities both during a fire when visitors could see a fire first-hand and after a fire when there are educational opportunities focusing on forest regeneration.

Related to the impact on tourism was the issue of when to conduct a prescribed burn. Almost all respondents raised the issue of timing. It was a common belief among our study participants that burns should not be conducted in the summer months but rather in the spring or fall when there are fewer tourists. Many business and resident interviewees preferred the fall because they believed it was safer due to the lower temperatures and the eventual snowfall which would extinguish any lingering fire. However, another aspect of

the timing of prescribed burns that was raised was that natural fires often occur during the summer months and conducting lower intensity prescribed burns in the spring or fall does not have the same ecological benefits.

There was doubt about the effectiveness of prescribed burns and the lack of alternatives being considered or presented as options. There were also calls for more research and monitoring so that the effectiveness of the prescribed burns could be evaluated and the results of this evaluation used to improve fire management techniques and educate residents and visitors. Most interviewees recognized that there are risks associated with prescribed fire, especially the risk of the fire escaping the predetermined boundaries set out in the prescription. While some people felt that the risk can be managed and that it is within the range of acceptable risks in society, others felt the fuel loads in the Bow Valley had reached such high levels that any prescribed fire in the valley was too risky. One of the most unique responses that we received was from a Canmore resident who pointed out that perhaps the biggest risk of a prescribed burn is the risk associated with losing the public's support. A few participants raised concerns about environmental impacts from prescribed fire related to soil erosion, the potential for intense fire to degrade the soil, the impact on species at risk such as caribou, and wildlife mortality associated with wildfire.

Public support for prescribed fire depends partly on the public's trust in fire managers' expertise and abilities to keep the fire within prescription, and trust in the information provided to the public. Therefore, we asked participants if they trusted Parks Canada to contain prescribed fire and achieve the fire objectives, and if they trusted the information they received on fire management. Most interviewees felt that park managers could achieve fire management objectives and prevent prescribed burns from escaping. They also acknowledged, however, that there is some risk and mistakes can occur, but most seemed to accept these uncertainties. In terms of trusting the information on fire management, most thought the information was accurate and unbiased. Some recognized that the science and justification for fire management was derived internally in Parks Canada, introducing a potential bias to suit park objectives.

### **3.1.4 Thinning in Banff National Park**

Fire management in the park also involves thinning treed areas to reduce fuel loads (by pruning and selected removal of trees) and the creation of firebreaks. A few municipal, business, and resident interviewees commented on thinning, showing support for this measure and citing the low impact techniques being used. There was concern, however, that not enough thinning or logging has occurred. The firebreaks around Banff and Canmore were also described by some as a "*band-aid*" solution that has not been tested sufficiently.

### **3.1.5 Fire suppression**

To examine participants' views about fire suppression, we asked them their opinion on letting some wildfires burn. Almost all municipal, business, and resident interviewees saw a role for fire in the park and were not opposed to letting some wildfires burn. One participant captured the sentiment with the statement "*let it go and keep an eye on it.*" In

other words, allowing wildfire to run its course was considered acceptable if it was monitored closely. However, protection of the community – human life and infrastructure – was considered paramount by most interviewees.

Conditions under which it was acceptable to let a wildfire burn included: if the fire ignites naturally by lightning, if it is in a remote area not used by residents or visitors, if there is no threat to communities or infrastructure, and if the fire can be used to achieve other objectives such as managing the mountain pine beetle.

### **3.1.6 Improving fire management**

Comments from residents, business representatives, and municipal staff on potential improvements to fire management were grouped into four themes: Research, resources, education, and tree removal. Research in the form of baseline data on ecological impacts and continued monitoring in areas of prescribed burns was identified as essential to evaluating the effectiveness of prescribed fire. Scientific evidence of the benefits of prescribed fire was also viewed as one component in gaining public acceptance for this management strategy. Information about the long-term and cumulative effects of fire on humans (e.g., health and economic impacts) and natural systems were cited as lacking from the current strategy. For example, concerns were raised over the potential for increased human-wildlife conflicts in the long-term as a result of vegetation changes near communities and backcountry areas used by visitors. It was also recognized that more resources are needed to conduct more research and carry out management plans in a timely manner.

Fire management education for residents and visitors was viewed as important. Many participants recognized that communications between Parks Canada and the public have improved significantly over the years and that education is a key component to successful fire management. Although several interviewees acknowledged improvements in communications, some participants still felt that more could be done.

In terms of on-the-ground management, some interviewees thought that the amount of low-impact mechanical thinning should be increased, especially in the valley floor where there is high human use. There were different reasons, however, for this preference. One reason was the issue of safety and protecting the Town of Banff, businesses, and the tourism industry. It was thought that mechanical removal was a safer option than using prescribed fire in the valley. The other reason for favouring more tree removal was to allow larger areas to be burned by prescribed fire.

## **3.2 Mitigation and Preparedness By Residents and Business Owners**

Most residents were aware of mitigation activities that can reduce the risk and impacts of wildfire on their properties, such as fire resistant roofing materials and removing trees and underbrush that are close to houses. Keeping yards clear of debris, safe storage of flammables, watering lawns, and exercising caution when using backyard fire pits, were also mentioned. Business owners were similar to residents in terms of their familiarity

with mitigation. Many were familiar with some mitigation principles that could be applied to their residences or businesses. These measures were primarily related to roofing materials and vegetation management.

Although resident interviewees were familiar with mitigation principles, involvement in mitigation activities on their own properties was primarily confined to general yard maintenance such as keeping their yards clear of debris, storing firewood away from structures, and being careful with backyard fire pits. Many resident interviewees recognized that they have large trees in their yards that are a potential hazard and roofs that are not fire resistant, but only one had taken significant steps to reduce these hazards. Some of the factors that influenced decisions not to undertake mitigation include financial considerations (e.g., homeowners are unlikely to incur the expense of a fire resistant roof until the roof needs replacing), and an unwillingness to cut down trees on their property. The requirement for a permit to cut down trees in Banff was cited as a constraint. There were some cases where interviewees were uncertain about what they should do. Finally, there were also cases where interviewees indicated that they were not worried enough about it “*to do something drastic.*”

Similar to residents, business owners in our study had adopted mitigation to varying degrees. Some had undertaken many activities including thinning trees, removing brush and other flammables, using fire resistant building materials, planting fire resistant vegetation, developing evacuation plans, and having fire fighting equipment such as hoses. Others, although aware of mitigation, had done nothing, would evacuate if a fire threatened their business, and rely on fire agencies to fight the fire in order to protect their property.

### **3.2.1 Factors that influence mitigation**

Strong interagency collaboration, cooperation, and coordination of activities were cited by municipal, provincial, and federal government interviewees as key factors contributing to the success of fuel modifications in the Bow Valley. Sharing of information, expertise, contractors, and mitigation plans were perceived to contribute to a good working relationship and trust between the agencies and contributed to achieving on-the-ground results. Cross-training with municipal firefighters was viewed as another vital component in a fire management strategy. The inclusion of town firefighters in prescribed burns in the park was viewed as a means to provide firsthand experience and promote understanding of Parks Canada mitigation activities. Collaboration facilitated the use of experienced and qualified people with a diverse skill set (e.g., science, policy experts, landscape architects) in developing mitigation plans and was cited as a factor in the success of mitigation, particularly in the towns. The importance of collaboration in successful fire management was also identified by business.

Among participants from government agencies, communication with business and residents was identified as crucial to gaining public acceptance of fuel modifications. Acceptance of thinning in the Town of Banff was facilitated by door-to-door visits by top-line staff in the fire department. This one-on-one with homeowners whereby fire

department staff explained what was going to be done and why, appeared to give credibility to the mitigation activities and helped generate support from the local residents. Also, hiring local people to perform the thinning provided benefits to the community and helped promote both trust and understanding of wildfire mitigation in the community.

Although collaboration between stakeholders has occurred on the fire management aspects of mitigation, collaboration on communications between the agencies was cited as an area for improvement. Each agency appears to promote its own mitigation activities aimed primarily at gaining public acceptance, which was viewed as a vital component in a successful fire management program. A Banff municipal participant noted, however, that communication needs to be on-going but the town has not implemented a communication plan. Even though communication was identified as an important component of a mitigation strategy, some municipal staff viewed legislation as the most effective way to ensure implementation of FireSmart standards among business owners, developers, and homeowners.

Importantly, resident interviewees' views of how to promote residential mitigation activities differed substantially from those of government. Rather than relying on legislation our study residents preferred a collaborative approach, especially for existing residential developments. Although cooperation between government agencies (i.e., Parks Canada and the Town of Banff), and business were generally perceived as very good, one resident identified the need for more cooperation between government agencies and homeowners. Some suggestions for improving residential mitigation activities included developing a plan to encourage mitigation in residential areas, which should include short-term and long-term goals. They also requested volunteers to help with removal of vegetation on their properties and equipment such as a wood chipper to assist them with tree disposal. Interviewees were also interested in learning about alternate mitigation measures to tree removal (e.g., recommendations for fire resistant vegetation). Finally, there were also requests for risk assessments of residential properties. Residents also commented that those promoting residential mitigation should have fire expertise and credibility in the community.

The cost of implementing mitigation was a common theme identified as a constraint to mitigation. Regardless of where mitigation occurs it was recognized that more resources are needed. Resources for prescribed burns, thinning, structural changes (e.g., new roofs) to businesses and homes were viewed as inadequate. Funding available through the FireSmart Communities initiative offered by the Government of Alberta, was cited as vital in funding mitigation activities in the Town of Canmore.

Several other factors were identified as constraints or obstacles to residents and businesses undertaking mitigation activities. There was a perception that it is difficult to obtain approval to remove trees from properties within the Town of Banff and in the national park. There was also a view that mitigation at the residential level is ineffective



if neighbouring properties do not undertake mitigation, and would not be effective in the event of a big fire. Other obstacles identified by interviewees were: a lack of information being provided to residents on recommended mitigation activities; a reliance on and trust in fuel breaks for protection; and past policies and by-laws on building standards required cedar roofs in some residential and business developments; therefore, until these roofs are ready for replacement, effective mitigation seems unlikely. Lastly, some interviewees felt that mitigation standards and by-laws should apply only to new construction and developments and existing developments should not be required to undertake mitigation.

### **3.3 Risk and Experience**

Perceiving a risk from wildfire, knowing the factors that contribute to wildfire risk, and people's experiences with wildfire, have been cited in the literature as factors that influence their views of fire management. We asked the study participants several questions related to these concepts and explored if these influenced their views of fire management or their involvement in mitigation on their own properties.

We explored how people perceived the current risk, past risk and future risk of a wildfire in BNP and areas near the park. Almost all residents, business, and government representatives perceived that there was a potential risk of wildfire in the Bow Valley. Park residents and business owners cited the age of the forest and accumulating fuel loads (due to forest fire suppression), increasing human use of the park, human carelessness (such as campfires and cigarettes not extinguished), mountain pine beetle, climate change, and increased development in the Bow Valley (encroachment at the wildland-urban interface, especially in Canmore) as factors that contribute to wildfire risk in the Bow Valley. The risk of wildfire, however, was not necessarily judged as a threat.

To examine if participants felt that the risk of wildfire had changed in the past decade, and to explore if people perceived that fire management strategies (prescribed burning and thinning) had reduced the risk we asked them to compare the risk today to the risk 10 years ago. All participants from the government agencies (municipal, provincial, and Parks Canada staff) perceived the current risk to be the same or less than it was a decade ago. None of these interviewees thought the risk had increased in the last 10 years. Residents and business owners, however, showed greater variation in their assessment of the risk today compared to a decade ago. In particular, the Banff business community was the most divided, with half thinking that the risk had increased over the past 10 years and half thought it had decreased or it was the same. Most of the residents perceived the risk as the same or reduced but a few thought that it had increased. Some interviewees who perceived that the risk was greater today recognized that fuel breaks and prescribed burns might have decreased the risk but cited the mountain pine beetle, increased human use and development, an older forest with more dead and dying trees, and decreased road access to the backcountry which can hinder suppression efforts as factors that have increased the risk. In other words, they viewed the factors that contribute to risk as outweighing the risk reduction efforts.

We also asked participants their thoughts about how much of a wildfire risk there would likely be in 10 years, to determine if they viewed fire management as being effective in reducing future risk. Interviewees expressed considerable uncertainty about the future wildfire risk. Participants from the government agencies, business, and residents were similar in their assessments, with some from each group thinking the risk will increase, some thinking it will decrease (or “*hoping it will decrease*”), and some thinking it will remain the same. Factors cited as contributing to an increased risk included increasing human use and development, mountain pine beetle, forest age, the amount of fuel, and climate change. Prescribed fire and thinning, and greater public awareness of safe fire practices were cited as factors that might contribute to a decreased risk in the future.

We explored participants’ personal experiences and how they felt their experiences might have affected their views on fire management and involvement in mitigation. All interviewees had some experience with a fire event either directly or indirectly. Indirect experience included news reports about wildfires in other places such as the Yellowstone fires in the 1980s, and the Kelowna (BC) and Lost Creek fires (Crownsnest Pass, AB) in 2003. Direct experience included prescribed burns that had occurred in Banff National Park several years ago that had turned into a wildfire, direct experience with the Kelowna or the Crownsnest Pass fires, working as a firefighter or being present at a prescribed burn, witnessing fire from a distance (e.g., seeing smoke rising from a prescribed burn), and seeing firsthand the regeneration from past fires.

Although many spoke of several of their own experiences with wildfire, the one event that almost all experienced and was the most salient was the “*summer of smoke*.” This term was used to describe the summer of 2003 when several fires were burning in or near the Bow Valley. Interviewees spoke of the poor visibility, the ashes falling from the sky, the poor air quality that forced some residents to leave the valley, the closure of the Trans-Canada Highway, and the impact on tourism.

Several interviewees spoke of how the summer of 2003 reinforced or changed their views in support for prescribed fire and thinning activities because their awareness of the risk increased and potential for a catastrophic wildfire suddenly became “*very real*.” However, the summer of 2003 had the opposite effect on some, who viewed the fires as evidence that prescribed fires are too risky.

The increased awareness of a potential catastrophic fire and fear were cited by some interviewees as motivators to undertake mitigation activities on their own properties and many indicated that they became more cognizant of the potential risk that they themselves posed in starting a wildfire causing them to be more careful with their own activities (e.g., using backyard fire pits).

## **4.0 DISCUSSION**

This qualitative study of public perceptions of fire management in Banff National Park and near the adjacent town of Canmore reveals how the public and government agency staff view the risk of wildfire, the factors that influence it; their acceptance of fire management strategies (including prescribed fire and thinning in a national park); and

views on mitigation measures that can be implemented on private properties. It also provides some insights into factors that influence acceptance of fire management and residential mitigation.

We found evidence that knowledge of fire management, trust in fire management agencies to implement a responsible and effective program, and perception that management agencies provide good information may play a role in public acceptance of fire management in the Bow Valley. Our study participants were well informed of risk factors and fire management options. Interviewees who trusted Parks Canada's expertise and who viewed information from Parks Canada as timely and accurate were the most supportive of prescribed burns. However, those who were less trusting of Parks Canada's information and expertise were also less supportive of the current strategy and were advocates of more mechanical tree removal. In addition, perception of risk of a catastrophic wildfire and having witnessed a potentially threatening wildfire first-hand seemed to also influence acceptance of wildfire management strategies in our study. Perceived risk and wildfire experience of study participants both increased and decreased support for management strategies. Some interviewees who perceived a risk and some who experienced the 2003 fires in the Bow Valley were supportive of prescribed burns because they viewed them as a means to decrease the risk. Others who perceived a risk were not supportive because they felt that prescribed burns only increased the risk of a catastrophic wildfire. Similarly, some who experienced the 2003 fires viewed these fires as evidence that fuel loads are too high and that any prescribed burning is too risky.

These interviews suggest that although residents and business owners are aware of mitigation activities to reduce the risk and impacts of wildfire on their own properties, many are not undertaking substantive mitigation activities and are not adequately prepared for a wildfire event. Several factors emerged from the study that may serve to motivate or constrain adoption of residential mitigation activities. Direct experience with a wildfire heightened awareness that their homes could be in danger and in some cases was a motivator for action. However, being aware that there was a risk did not seem to be a key factor in motivating residents to make changes to their properties. Some interviewees were willing to accept the risk, were not willing to make substantial changes to their properties, and viewed the risk as the price of living in a forested environment or a national park. Interviewees who attributed responsibility for mitigation to the homeowner had made changes or had plans to make changes to their properties. Several other factors were identified that could contribute to participation by residents. These included: collaboration among residents and government agencies to build a community FireSmart plan; providing information and resources (such as expertise and equipment) to facilitate implementation and reduce the cost; providing incentives to encourage use of fire resistant materials (e.g., roofing material) for existing houses; incorporating fire resistant vegetation; and convincing residents that mitigation is effective.

The importance of communications in public acceptance of fire management was recognized by all groups in the study. Communications about fire management in Banff National Park was viewed as improving substantially over the last decade and contributed to public acceptance. Although study participants seemed well informed about fire

management activities, they were less aware of why specific areas are chosen for prescribed burning, and if the goals of prescribed burns are achieved. Providing on-going communications on the outcomes of fire management activities might reduce skepticism. It was suggested that developing a collaborative communications program among the various agencies involved in fire management could provide the public with a more integrated view of fire management in the Bow Valley and consistent messaging by agencies.

This study has provided insight into public perceptions of fire management in Banff National Park and within the adjacent town of Canmore. The interview approach allowed respondents to express thoughts in their own words and raise issues that were most salient to them. This facilitated the respondent, rather than the researcher, defining salient issues in fire management. The interview approach, however, does not allow us to make statistical inferences about the broader population. By identifying salient issues, the interviews have provided the foundation for development of a survey which could be administered to a random sample of residents, business owners, and government agency staff. A survey would provide an indication of how prevalent the perceptions from the interviews are shared among the population and should be the next step in understanding public perceptions of fire management within national parks.

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