



Prince Albert
National Park



Wildland Fire Management Plan Prince Albert National Park 2018

Approval Page

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Executive Summary

The Parks Canada Agency Wildland Fire Management Directive (PCA, 2017) requires that all wildfire-prone national parks develop a wildland fire management plan. The Prince Albert National Park Wildland Fire Management Plan sets direction for fire management in the park for the next 10 years. This plan replaces the Prince Albert National Park Fire Management Plan (PCA 2000).

As mandated through Parks Canada's legal and policy framework, Prince Albert National Park (PANP) manages fire in a manner that:

- Ensures public safety by minimizing wildfire risk to the park, visitors, neighbouring jurisdictions and adjacent landowners;
- Where possible, maintains or restores fire as a natural process within the boreal forest and aspen parkland ecosystems in the park;
- Facilitates unique visitor experiences and learning opportunities; and
- Incorporates consultation with affected Indigenous communities, stakeholders and neighbouring jurisdictions.

The goals and objectives identified in this plan are largely derived from direction given in the Prince Albert National Park Management Plan (PCA, 2018) and vegetation management strategy (PCA, 2015). Protection of the public and values at risk occurs through sustainable, pro-active risk reduction measures and effective management of wildfires. Ecological integrity is restored through careful, considered application of prescribed fire and through the use of indirect wildfire suppression strategies where appropriate. Addressing risk to both public safety and ecological integrity will be accomplished through the establishment of fire management zones in the park. Zone designation provides wildfire management options appropriate to the location of the fire, time of year and weather conditions.

Recognising the primary mandate to protect the public and values at risk from the detrimental effects of wildfire, the park will:

- Establish intensive (Red, full response) fire management zones where all available suppression strategies can be employed during a wildfire event;
- Ensure the designation of intermediate (Yellow, full/modified response) and extensive (Green, monitored response) fire management zones minimizes risk to the public, park infrastructure and neighboring lands;
- Maintain a full suppression initial attack strategy across 88% of the park's landbase covering both the intensive (Red) and intermediate (Yellow) fire management zones;
- Enhance landscape-level fuel breaks to help protect the communities of Waskesiu and Elk Ridge; and
- Develop a comprehensive community protection plan for the Waskesiu townsite that includes promotion of Firesmart principles, protection of critical infrastructure and effective fuel break maintenance.

Fire is a natural, integral component of the boreal forest and aspen parkland ecosystems. To ensure fire continues to contribute to the integrity of these ecosystems, the park will:

- Establish extensive (Green) fire management zones where, under specific conditions, fire can function in a more natural manner. These zones will be located in areas that present minimal risk to the public, park infrastructure and neighbouring lands;

- Employ indirect suppression strategies to effectively gain control of escaped fires within intermediate (Yellow) fire management zones;
- Use prescribed fire to help achieve area burned targets set by Parks Canada and PANP;
- Ensure the application of prescribed fire accounts for the conservation status of wildlife (bison, caribou) and vegetation communities (fescue grasslands).

Wildfire has the potential to impact people, infrastructure and ecosystems both within and beyond the park. Support for the park's fire management program requires effective communication with PANP's visitors, neighbours and stakeholders. To ensure public safety during wildfire events and to generate support for the ecological use of fire, the park:

- In developing this plan, consults and communicates with key stakeholders including local Indigenous groups, relevant provincial ministries and neighbouring communities;
- Updates the park's fire information plans to help effectively communicate fire danger and potential wildfire impacts to the public;
- Ensures personal and non-personal programs and products are in place to help raise awareness of the beneficial function of fire in the boreal forest and aspen parkland.

In 2013-14, Parks Canada conducted an assessment of fire risk and resource requirements for all national parks. The assessment included an evaluation of wildfire and prescribed fire potential to ensure resource levels are appropriate for a base level of service. Projects associated with many of the goals and objectives in this plan assume current resource levels will continue. Some of the objectives – particularly fuel modification and prescribed fire projects – are dependent on supplementary funding. In all cases, implementation of any project will depend on a reasonable likelihood of sustainability over the long term.

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Introduction

Prince Albert National Park's Wildland Fire Management Plan (WFMP) provides strategic direction for the park's fire management operations for the next 10 years. Development of the WFMP was guided by a legal and policy framework that promotes:

- Ensuring public safety by minimizing wildfire risk to the park, visitors, neighbouring jurisdictions and adjacent landowners;
- Where possible, maintaining or restoring fire as a natural process within the boreal forest and aspen parkland ecosystems in the park;
- Facilitating unique visitor experiences and learning opportunities; and
- Consulting with affected Indigenous communities, stakeholders and neighbouring jurisdictions.

Vision

In Prince Albert National Park, the ecological role of fire is managed in a manner that ensures the safety of the public and enhances visitor experience. Fire regimes in the park are managed for the maintenance and restoration of the landscape composition, structure, and ecological processes representative of the Southern Boreal Plains and Plateaux natural region, while ensuring the protection of the public and park facilities and considering objectives of adjacent land managers.

Protection of the public and values at risk occurs through sustainable, pro-active risk reduction measures and effective management of wildfires. Ecological integrity is restored through careful, considered application of prescribed fire and through the use of indirect wildfire suppression strategies where appropriate.

Area Description

Regional Context

Prince Albert National Park (PANP) (Figure 1) is located on the southern edge of the boreal forest in central Saskatchewan approximately 170km north of Saskatoon, Saskatchewan. The 3875 km² park is roughly centred on 54°N latitude by 106° 20' W longitude. Provincial forest surrounds the northern 2/3's of the park. The remainder of the park boundary lies adjacent to Great Blue Heron Provincial Park, Little Red River Reserve, and private, mostly agricultural, lands within the Rural Municipalities of Lakeland, Paddockwood, Shellbrook, Canwood and Big River. The resort village of Waskesiu Lake lies within the park boundary while the resort areas of Emma Lake, Nesslin Lake, Anglin Lake and Elk Ridge are all within 10 km of the park. Other nearby communities include Weyakwin, Montreal Lake, Christopher Lake and Big River.

Infrastructure and Services

PANP receives about 250,000 visitors annually. A mid-summer weekend can see as many as 15,000 visitors per day in the park. Over 80% of these visitors come to the Waskesiu Lake townsite. Frontcountry campgrounds at the Narrows, Sandy Lake and Namekus Lake are also popular. Most backcountry activity occurs around Kingsmere Lake, Crean Lake and the Westside.

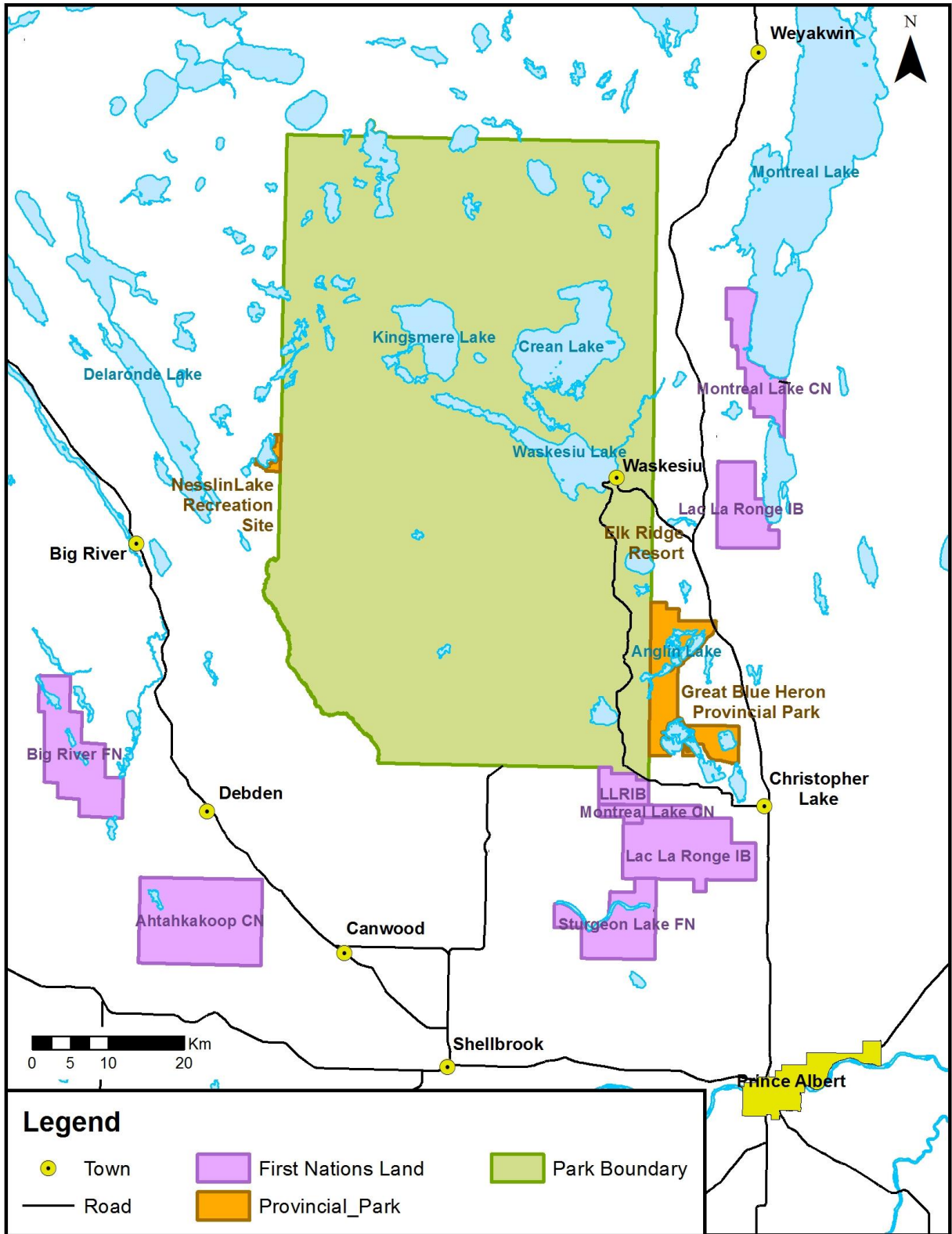


Figure 1: Prince Albert National Park and region.

Within the park, the majority of infrastructure and most significant values-at-risk are located in the community of Waskesiu Lake. This includes park administration buildings, hotels, restaurants, shops, a golf course, campgrounds and private dwellings. In 2001-02, a community fuel break was completed around the townsite to help reduce the risk from wildfire.

The resort area of Elk Ridge is immediately adjacent to the park boundary about 5 km east of Waskesiu Lake. Over 20 years of development, Elk Ridge now includes private homes, rental properties, restaurants, a golf course, and other recreational facilities. To help protect this area, construction of a fuel break in provincial forests and along the park boundary began in 2015/16.

Outlying facilities in the park include park entry gates, the Federal Heritage Building Review Office (FHBRO) recognised Grey Owl cabin, 3 road-accessible campgrounds, Beartrap firecamp/heliport, and 3 privately operated marinas. Over 25 picnic areas and backcountry campsites are found throughout the park. The park maintains several patrol cabins including Sturgeon Crossing which is occupied for much of the year.

Road accessibility is confined to southern and eastern areas of the park as well as the north and south shores of Waskesiu Lake. Primary access to the park and the community of Waskesiu Lake is via Highways 2 and 264. Secondary access along the park's southern boundary includes Highway 263 and the Cookson Road / Highway 240. Forestry roads provide periodic 4x4 access to a few other locations along the park boundary allowing for limited backcountry access. Most of the interior of the park is accessible only by helicopter, boat, off-road-vehicle, or on foot.

Ecosystem Description

Biophysical

PANP represents the southern boreal plains and the transitional boundary to aspen parkland. Most of the park is comprised of mixedwood boreal, conifer-dominated forest. Primary overstory species in the mixedwood boreal are white spruce (*Picea glauca*), black spruce (*Picea mariana*), jack pine (*Pinus banksiana*), trembling aspen (*Populus tremuloides*), and balsam poplar (*Populus balsamifera*). Tamarack (*Larix laricina*), balsam fir (*Abies balsamea*) and white birch (*Betula papyrifera*) make up a minor component of tree species. The dominant understory in the mixedwood boreal is often mosses, lichen, or regenerating fir and black spruce.

Aspen parkland is limited to the southern and southwestern areas of the park. Open and closed canopied aspen forest is the dominant vegetation cover with smaller stands of pine and spruce. The understory of aspen and mixedwood stands is primarily mixed shrubs, extensive areas of beaked hazelnut (*Corylus cornuta*), or graminoid species. Remnant pockets of rough fescue (*Festuca hallii*)-dominated grassland occur on well-drained sites. In recent decades, areal extent of grasslands has been significantly reduced due to aspen encroachment.

Both the boreal forest and the aspen parkland are disturbance-dependent ecosystems. Most large-scale natural disturbance is fire related. Without fire, disease often becomes the dominant disturbance process. Over the past decade, much of the park (> 175,000 ha) has experienced moderate to severe defoliation by spruce budworm and forest tent caterpillar. Other areas of the park have experienced weather-related mechanical damage including a very large area of blowdown adjacent to the northwest corner of the park.

Elevation in the park ranges from 475m to 750m above sea level. The terrain is flat to gently undulating with very few slopes exceeding 10% grade. Underlying material is predominantly glacial till with some glaciofluvial and glaciolacustrine features. Soils are predominantly Luvisolic with lesser representation of Chernozemic, Brunisolic and Organic origin. Lakes and low-order streams are common throughout the park.

PANP is subject to a continental climate with long, cold winters and short, warm summers. Annual precipitation is about 450 mm with approximately 300 mm as rain in the April-September period (Figure 2). April and May tend to be low precipitation months with drier airmasses producing minimum relative humidities (RH) of 10-20%. June and July are usually the months with the highest precipitation and minimum RH's of 25-35%. Much of this precipitation is convective. Daily average temperatures peak in July at 18°C. Convective activity and precipitation decreases through August and September but long periods of overnight RH recovery are common. Throughout the season, the area is subject to synoptic winds with prevailing westerlies.

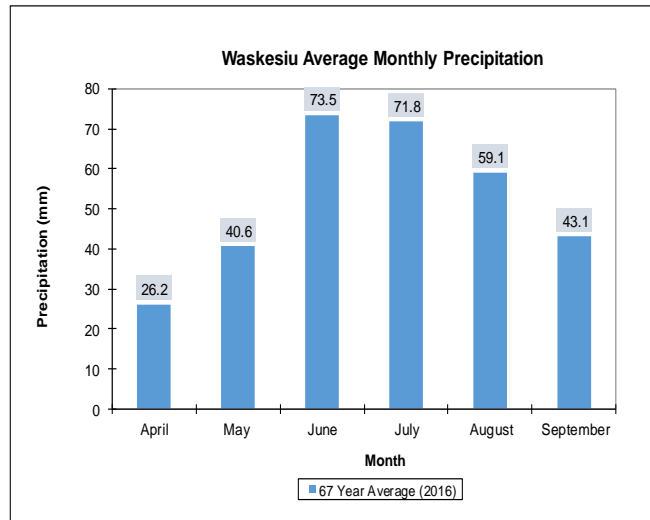


Figure 2: Average monthly precipitation, Waskesiu Lake, SK

The park spans the ecological transition zone from boreal forest to aspen parkland. Climate change is expected to influence this region significantly as the dominant vegetation shifts among species representative of each ecoregion. Consideration must be given to the potential loss of species and how fire could be used as a management tool to address this. Wildfire is influenced by extreme events on various timescales (daily weather vs multi-year drought vs long term hypsior hypo-thermal periods). Accurate weather records for the park span approximately 70 years – a relatively short timeline in relation to many climatological or ecological cycles. Yet even within this narrow window, discernable patterns and great variability are evident. As expected, the extreme events are good predictors of wildfire activity. Changes to the park's fire regime should be expected as climate change brings more extreme events (storms, temperatures, drought, precipitation, severe wind events).

Fire Regimes of PANP's Vegetation Management Units

The Northern Prairies Field Unit Vegetation Management Strategy (Parks Canada, 2015b) partitions PANP into two vegetation management units. The two units are distinguished based on fire regime and dominant vegetation cover. The Mixedwood Boreal unit covers 85% of the park and is comprised of conifer dominated mixedwood, deciduous dominated mixedwood and pure conifer stands. Few pure deciduous stands are found in this area of the park. Along the southern boundary of the park, the Aspen Parkland covers the remaining 15% of the park's terrestrial area. Vegetation in the aspen parkland is more representative of the boreal transition ecoregion and the northernmost vestiges of aspen parkland. Overstory canopy is primarily deciduous or deciduous-dominated mixedwood. In the aspen parkland, remnant fescue grasslands are found on xeric

sites. Decades of fire suppression and reduced herbivory have promoted significant encroachment into these grassland areas by aspen and, to a lesser extent, jack pine.

Historic fire cycles in this area have not been static. Weir (1996) identified distinct periods where changes to climate and land use patterns led to significant changes in fire cycles. These are:

- 1760-1890 Fire cycle 15-25 years; frequent fires likely a result of persistent blocking high pressure systems associated with the Little Ice Age.
- 1890-1945 Fire cycle in the northern part of the park lengthens to 75 years following the end of the little ice age; fire cycle in the south remains near 25 years due to an increase in human-caused starts associated with homestead settlement south of the park.
- 1945-1995 Fire cycle across the park estimated at 645 years; cleared and settled areas south of the park now eliminate northward spread potential (historically the most prevalent direction of fire spread); increased effectiveness of fire suppression.

Despite the large variability in fire cycle, the boreal plains and aspen parkland are fire dependent ecozones. For vegetation management purposes, PANP has established target fire cycles of 40 years for the aspen parkland and 100 years for the mixedwood boreal. This produces an overall, area-weighted fire cycle for the park of 82 years. Figure 3 shows how the current fire cycle has impacted actual area burned compared to an expected area burned under the target fire cycle. In the 30 years prior to 1996, area burned by wildfire totalled about 2800 ha. Under the historic fire regime, this total would have been well over 100,000 ha. In the following 20 years since 1996, prescribed fire use, a more active fire regime, and the use of alternative suppression strategies have increased the amount of area burned in PANP. Over 22,000 ha of wildfire has burned, all within the mixedwood boreal area of the park. During that same period, an additional 8000 ha of prescribed fire burned, largely within the aspen parkland area of the park.

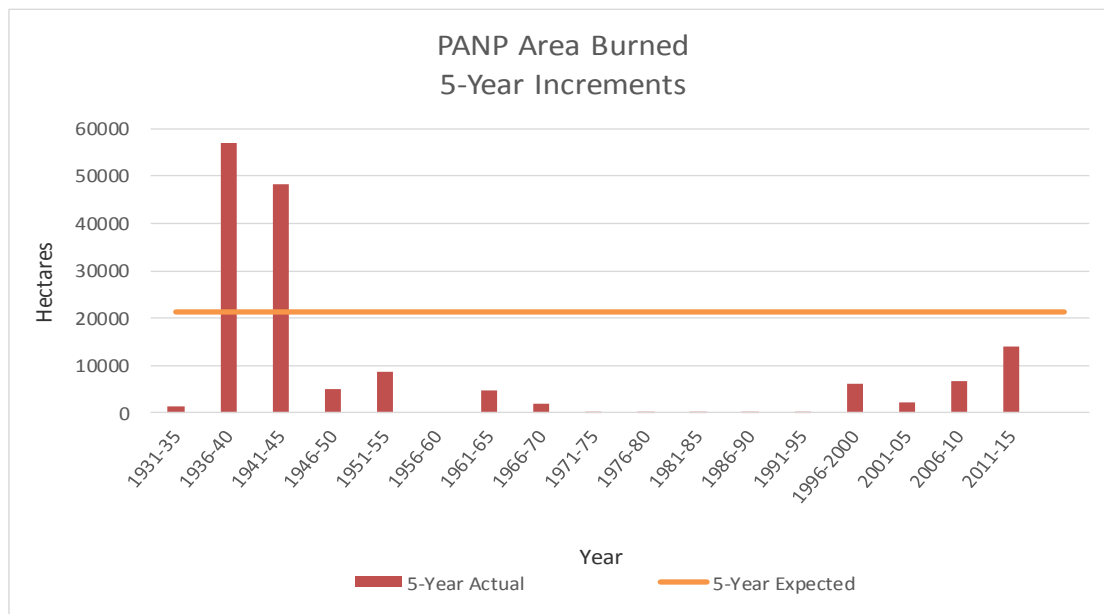


Figure 3: Expected and actual area burned in PANP, 5 year increments.

Weir (1996) and Parisien (2004) describe additional elements of the fire regime (Table 1). The conifer-dominated fuels in the mixedwood boreal are most receptive to fire from late spring through mid-late summer. The greatest occurrence of lightning coincides with this time period. There are few, if any human starts due to restricted industrial and limited recreational access. Provincial lands surrounding the park’s mixedwood boreal unit are heavily managed for silviculture and fire suppression tends to limit fire spread from provincial lands.

Table 1: **Summary of fire regime characteristics for PANP.**

	Mixedwood Boreal	Aspen Parkland
Fire Cycle (years)	Target – 100; Current – 645	Target – 40; Current – 645
Season	June through mid-August	Late April through early June
Cause	Mostly lightning	Human and some lightning
Size, Intensity, Severity	Generally large (>1000ha), high intensity, stand-replacing crown fires	Often large, mixed intensity fires; can be stand replacing at moderate intensities; lower intensity more likely to impact understory spp

Fire season in the aspen parkland is dictated by fuel availability. Dry grass and leafless deciduous-dominated stands become much less receptive to fire following green-up in later in the spring. Since this precedes the typical lightning season, most fire starts in the aspen parkland have traditionally been human-caused. Prehistorically, human starts were likely the primary ignition source and would have included Indigenous use of fire for ecosystem management as well as accidental starts.

The continuous nature of fuels in both the mixedwood boreal and aspen parkland can result in large (>1000ha) to very large (>100,000ha) fires.

Area Burned Condition Class

For condition monitoring and reporting in forest and grassland ecosystems, Parks Canada uses Area Burned Condition Class (ABCC) and Area Burn Departure (ABD) (PCA 2010). The ABD measurement compares actual area burned to expected area burned over a relatively long time scale – usually the length of the fire cycle. The ABD value then translates into an ABCC of ‘Good’, ‘Fair’ or ‘Poor’. Figure 4 shows the park’s ABD trend and corresponding ABCC category.

Being a smaller area with a shorter fire cycle, the Aspen Parkland’s ABD has been very responsive to a successful prescribed fire program. Continuation of this program should bring the ABCC for this vegetation management unit from ‘Poor’ to ‘Fair’ within 10-20 years. The mixedwood boreal ABD calculations are based on a longer fire cycle and represents a significantly larger area than the aspen parkland. Because of this, the ABD for the mixedwood boreal has been much less responsive to recent increased fire activity – over 22,000 ha since 1995.

With an area-weighted average fire cycle of 82 years, the park’s overall ABD trend has been relatively stable since the 1990’s. This stability will likely be maintained for one more 5-year reporting period before a significant increase in ABD will move ABCC from fair into poor. This rapid change in ABCC is predicted to occur even if the park were to achieve 100% of expected area burned for the next 10 years. The current insensitivity of the ABD measure is a function of a relatively long monitoring period with a ‘front-loaded’ area burned as shown in Figure 3.

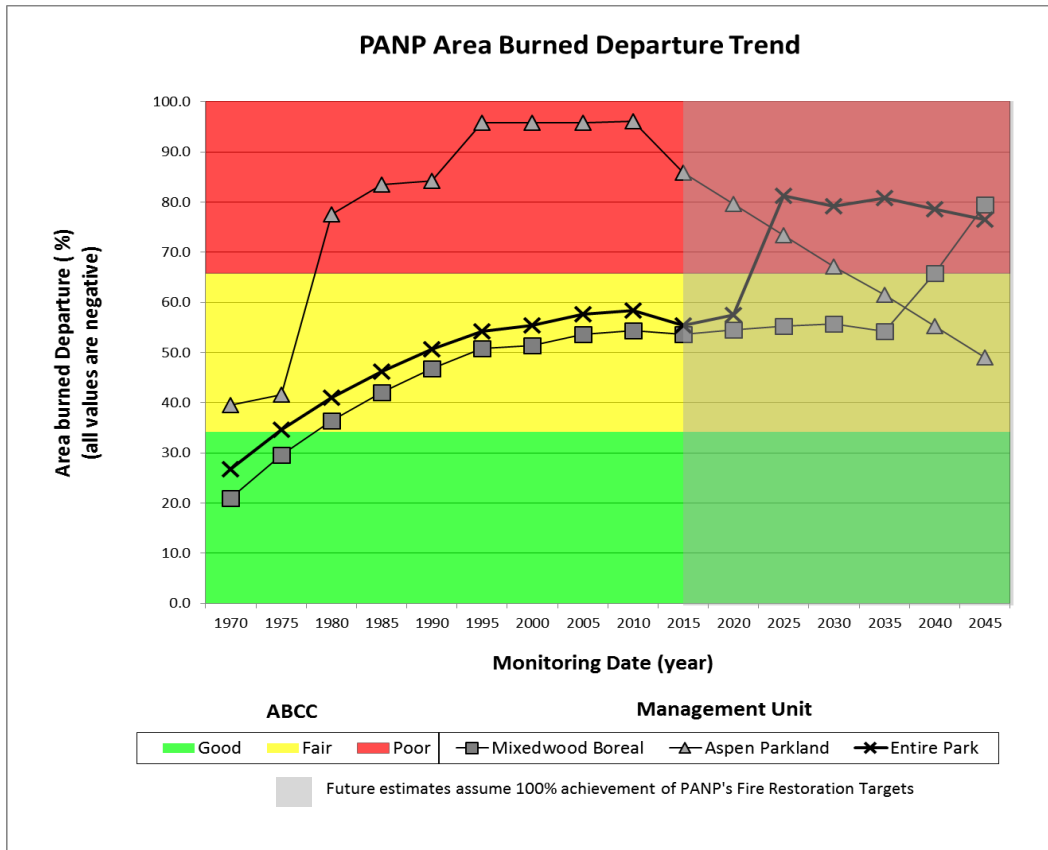


Figure 4: Area Burned Departure trend for PANP including a 30 year forecast

Fire Behaviour Prediction Fuel Types

The Fire Behaviour Prediction system (FBP) is a subsystem of the Canadian Forest Fire Danger Rating System (CFFDRS) (Forestry Canada, 1992). CFFDRS assesses the risk of wildfire based on weather variables and the type of forest or grassland. FBP groups vegetation into defined fuel types that tend to produce somewhat predictable fire behaviour under a given weather scenario.

The key fuel types found in PANP are:

- M2 – Mixedwood 32%
- D1 – Aspen 24%
- C3 – Mature jack pine 23%
- C2 – Boreal spruce 21%
- O1 – Grass 1%

Figure 5 shows the distribution of the various fuel types in the park.

FBP fuel types have been determined for PANP based on forest inventory maps generated from 1967. The age of the source data likely undermines the resulting FBP fuels map to a degree. As such, PANP will:

- Produce an updated fuel map with the most recent sat/ortho imagery
- Adopt geomatics protocols for conversion of future imagery

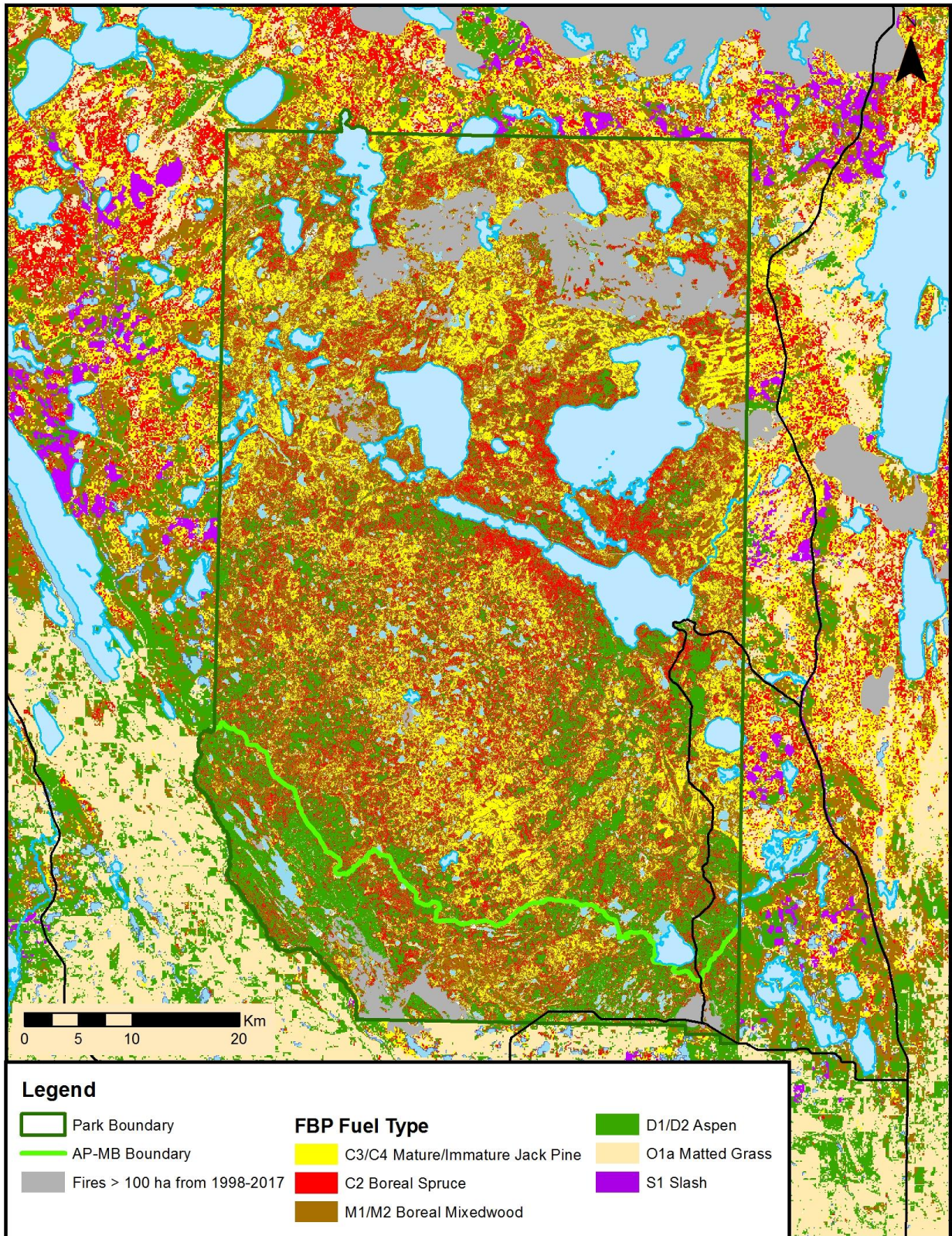


Figure 5: PANP fuel types.

Legal and Administrative

The following is a general breakdown of the legal and administrative framework that guides wildland fire management activities in Parks Canada and PANP.

Canada National Parks Act

Principles underlying wildland fire management at Parks Canada are derived primarily from the Canada National Parks Act, which indicates that:

The national parks of Canada are dedicated to the people of Canada for their benefit, education and enjoyment. Subject to this Act and the regulations, all the parks shall be maintained and made used of so as to leave them unimpaired for the enjoyment of future generations.

Maintenance or restoration of ecological integrity, through the protection of natural resources and natural processes, shall be the first priority of the Minister when considering all aspects of the management of parks.

Ecological integrity (EI) is a “condition that is determined to be characteristic of its natural region and likely to persist, including abiotic components and the composition and abundance of native species and biological communities, rates of change and supporting processes.” The concept recognizes that ecosystems are dynamic and self-organizing entities. What may have been natural in the past may not be the natural state for today. Therefore, the challenge for park managers is to determine the baseline for wildland fire management planning based on the current state of the ecosystem.

Parks Canada's Wildland Fire Management Directive (PCA, 2017) provides guidance to the fire program. Fire management activities will support Parks Canada's mandate by restoring and maintaining EI, minimizing wildfire risk, and providing unique visitor experiences and educational opportunities. At a park level, this strategic direction is implemented through a WFMP that must address:

- Wildfire prevention
- Wildfire risk reduction
- Wildfire preparedness
- Wildfire management and response
- Prescribed fire implementation

The associated Standard Operating Procedure on Wildland Fire Management Planning directs development of a WFMP that incorporates the park's ecological and cultural objectives. The planning process includes an assessment of wildfire risk in consultation with neighbouring communities and jurisdictions.

Species at Risk Act

All fire management planning, actions and monitoring must be fully integrated with the legislative requirements of the Species at Risk Act (SARA). Under SARA the following criteria have been established for all activities including fire that potentially affect a Species at Risk listed under Schedule 1 as extirpated, endangered or threatened:

- All reasonable alternatives to the activity must be considered and the best solution must be adopted;
- All feasible measures to mitigate the impact of the activity on the species, critical habitat or residences must be identified;
- It must be demonstrated that the activity will not threaten the survival or recovery of the species.

Table 2 lists all extirpated, endangered or threatened species that may be present in PANP at the time this plan was written. For species with a completed or proposed recovery strategy, information relevant to fire management is summarized.

Table 2: SARA listed species with a range intersecting PANP

Species	Status	Recovery Strategy Notes
Little Brown Myotis Northern Myotis	Endangered Endangered	<ul style="list-style-type: none"> • No specific references to the impact of fire on either species • Both myotis species have a preference for roosting in older forests • Both species may benefit from edge effect for foraging
Canada Warbler	Threatened	<ul style="list-style-type: none"> • No specific references to the impact of fire • Prefers mature aspen with a heavy shrub layer and dense groundcover
Common Nighthawk	Threatened	<ul style="list-style-type: none"> • Fire suppression considered to have a negative impact due to reduction of open areas and loss of prairie to shrub and forest • Recommendation for prescribed fire replicated on single parcels as well as a shifting mosaic and/or a no suppression policy
Olive-sided Flycatcher	Threatened	<ul style="list-style-type: none"> • Considered a post-fire dependent species requiring open canopy areas in a seral forest and areas where intense fire has created openings • Recommendation for prescribed fire replicated on single parcels as well as a shifting mosaic and/or a no suppression policy
Woodland Caribou	Threatened	<ul style="list-style-type: none"> • Active avoidance of burns less than 40 years old – area burned considered disturbed habitat • The critical habitat range in northern Saskatchewan is being studied as it uniquely shows healthy populations across a range heavily disturbed by fire
Northern Leopard Frog	Special Concern	<ul style="list-style-type: none"> • No recovery strategy
Rusty Blackbird	Special Concern	<ul style="list-style-type: none"> • No recovery strategy

In addition to these SARA listed species, PANP is home to one of the only free-roaming herds of plains bison in North America. This species is listed as ‘Threatened’ by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but is not listed in SARA for economic reasons (SI/2005 – Order Giving Notice of Decisions not to add Certain Species to the List of Endangered Species).

All wildland fire management planning, wildland fire suppression, prescribed fire operations, fuel management actions and monitoring are subject to SARA prohibitions and species at risk considerations. The Environmental Impact Assessment (EIA) for any future prescribed fire and fuel modification plans will contain applicable SARA authorizations and considerations as outlined by an impact assessment satisfying the Canadian Environmental Assessment Act (CEAA). The only exemption from SARA prohibitions applies to emergency wildland fire suppression with the exception of preplanning for park fire and related vegetation plans. While emergency suppression activities are set aside from SARA, every reasonable action is made to reduce effects to and accommodate at risk species during suppression activities. Overall total area disturbance is considered when managing wildfires and prescribed fires on the landscape to ensure minimal effects to species at risk.

Prince Albert National Park Management Plan

The vision for the Prince Albert National Park Management Plan (2018) includes the following statement:

The park hosts a healthy and functioning southern boreal ecosystem, merging with the open grasslands of the aspen parkland along its southern border.

And;

The park is committed to restore and maintain a functional and healthy plains rough fescue grassland ecosystem through an active restoration program.

In pursuit of this vision, the plan recognises that the health of terrestrial ecosystems is in decline and identifies several priorities for action pertaining to fire management:

- The area of aspen parkland burned in ten years is 5,000 ha. (50% of a 40 year fire cycle);
- The area of boreal forest burnt in 10 years is 8,900 ha (30% of a 100 year fire cycle);

Vegetation Management Strategy

The Northern Prairies Field Unit Vegetation Management Strategy was completed in 2015 and further refines PANP's fire management goals. Fire restoration targets for area burned are set at 50% of historic norms for the aspen parkland and 30% for the mixedwood boreal. The park as a whole is expected to maintain at least 20% as per national targets.

The vegetation management strategy's specific fire management objectives are incorporated into the objectives for this plan. These objectives are presented in the following sections covering *Preparedness, Risk Reduction and Response* and *Ecosystem Restoration*.

Preparedness, Risk Reduction and Response

Wildland Fire Risk Analysis

In 2013-14 Parks completed a national analysis of wildfire risk for all fire-prone national parks. The analysis assessed wildfire load and ecosystem restoration load to determine the probability of a fire-related event. Combined with the potential consequences of an event, an overall Risk Level Descriptor was determined. PANP, along with 4 other national parks, was assigned the Highest

Risk level descriptor. This means that an event leading to consequences is ‘Likely’ and the consequences of such an event would be ‘Major’ and could involve the following:

- A high intensity fire impacting a moderately populated area;
- Minor potential for loss of life, serious or extensive injuries;
- Displacement of people for 1-2 days;
- Serious damage to properties and infrastructure, some services unavailable;
- Significant impact on environment with medium to long-term effects.

This risk assessment process is used to determine the numbers and types of resources assigned to manage PANP’s wildfire response, prescribed fire, and forest fuel management capabilities. For all fire management actions, Parks Canada uses the Incident Command System (ICS) to determine the organizational model and resources appropriate to the complexity of potential fire incidents. According to the risk assessment, PANP’s fireline preparedness resources must include a Type 3 ICS organization supported by 1-2 dedicated four-person Type I fire crews and minimum of 8 Type II firefighters and other ICS position resources as shown in Figure 6.

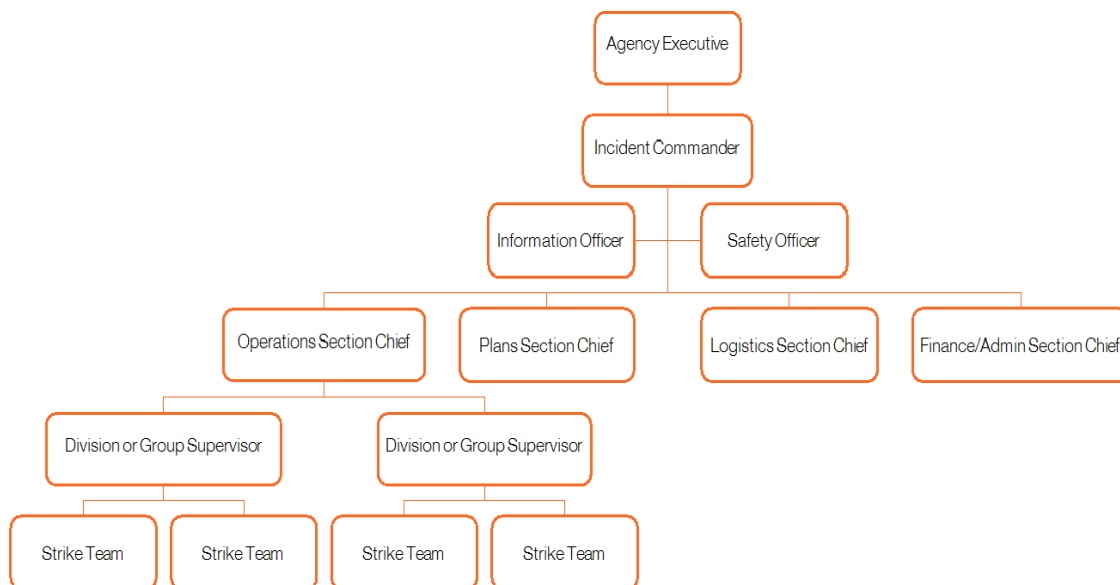


Figure 6: ICS configuration of a typical Type III incident response

As the complexity of a particular fire incident approaches the park’s capacity, resources can be requested through the National Duty Officer and supplied through Parks Canada resources as well as interagency resources. The Mutual Aid Resource Sharing (MARS) agreement and the Canadian Interagency Forest Fire Centre (CIFFC) facilitate these reciprocal exchanges of personnel and equipment across agency lines both nationally and internationally.

The national risk assessment identifies resource requirements for Parks Canada’s National Incident Management Teams. As a ‘Highest Risk’ park, PANP is expected to contribute at least 6 personnel to the teams. The selection of these personnel is reviewed annually and approved by the Field Unit Superintendent.

Wildland Fire Management Zones

Fire Management Zones help determine socially and ecologically appropriate responses to wildfires. Zoning allows fire managers to pre-assess fire risk factors relating to public safety and values at risk (communities, infrastructure and resources). Park managers are able to consider ecosystem risk including the loss of ecological integrity resulting from full suppression and exclusion of fire. An appropriate response to wildfire also considers:

- Weather and Fire Behaviour – weather variables (previous, current and forecast) determine the type of fire which subsequently determines the effectiveness of suppression tactics. Time of year is also a consideration with respect to the spread potential of a wildfire.
- Forest Fuels and Fuel Breaks – depending on time of year, coniferous or deciduous forest types influence fire behaviour. Consideration is also given to the presence or absence of fuel breaks (recent burns, water bodies, roads or fuel hazard reduction areas).
- Resources Available – tactics and resource deployment are subject to availability of personnel / equipment as well as regional / national priorities. Fire managers are expected to make cost effective use of resources.

PANP uses the following zone classifications.

Intensive Fire Management Zone (Full Response; Red) – Wildfires will be managed on a priority basis to minimize fire spread using a full range of tactics. Management actions will be focused on reducing fire risk and restricting fire growth to a very limited perimeter. In these zones, the park:

- Employs full response initial attack for all starts;
- Communicates closely with Ministry of Environment Wildfire Management;
- Can use prescribed fire primarily for purposes of risk reduction.

Intermediate Fire Management Zone (Full / Modified Response; Yellow) – Wildfires will be managed to limit fire spread to a defined perimeter with the possibility of achieving ecological objectives. Acceptable perimeter will be defined based on natural and constructed barriers and operational considerations. In these zones, the park:

- Employs full response initial attack for all starts;
- Considers a modified response in managing wildfires that escape initial attack to help achieve area burned and other ecological targets;
- In most cases, employs suppression tactics that exclude heavy equipment;
- Can use prescribed fire for risk reduction or ecological restoration/maintenance.

Extensive Fire Management Zone (Monitored Response; Green) – Wildfires will be managed with minimal intervention. Management actions will be focused on containing fire growth to within the fire zone. In these zones, the park:

- Considers full response initial attack for all starts depending on time of year, fire weather indices and resource availability;
- In some circumstances, manages fires with minimal intervention to help achieve area burned and other ecological targets;
- Employs minimum impact suppression tactics;
- Can use prescribed fire primarily for purposes of ecological restoration/maintenance.

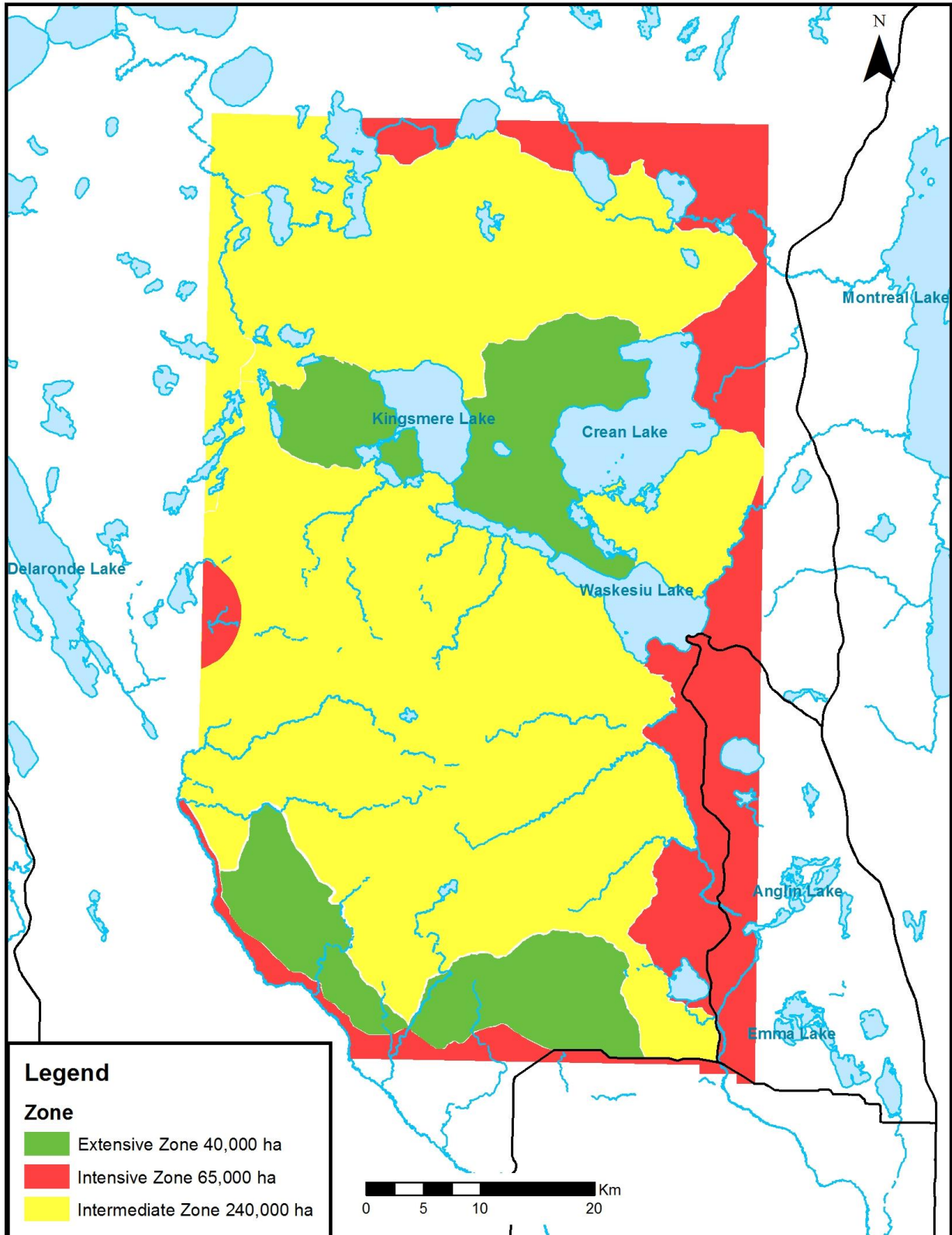


Figure 7: PANP Fire Management Zones

Geographic boundaries of PANP's Fire Management Zones are shown in Figure 7. Zone boundaries largely follow existing natural or constructed landscape features that provide fire managers with options to help contain wildfires. In strategic locations, zone boundaries may need to be enhanced by reducing fuel loads through harvest, prescribed fire (boreal blacklines) or manual trail construction/maintenance. Zone assignments consider values at risk, vegetation community composition, large natural barriers, recent wildfires and historic wildfire spread direction. Zones are used as a guiding tool in determining wildfire response. Final wildfire response determinations are subject to overriding considerations which include:

- Regardless of zoning, cooperative border zone agreements take precedence when determining an appropriate response to wildfire.
- Under spring conditions, all zones are managed under Intensive Fire Management Zone criteria until full green-up and a precipitation event sufficient to reset Duff Moisture Codes to 20 or less.
- For each Extensive Zone unit, prescriptions are developed establishing criteria for a less-than-full response to a fire. Criteria address fire danger code limits and account for the dominant vegetation type of the unit. As an example, a mixedwood boreal unit may be subject to temporal Drought Code limits: full response until June 15; June 15-30 DC must be 250 or less; July 1-31 DC must be 300 or less; Aug 1-31 DC must be 400 or less.
- Any less-than-full response in the Extensive Zone requires both Parks Canada and Ministry of Environment Wildfire Management be at CIFFC Preparedness Level of 3 or less.

Containment strategies for escaped fires are employed which minimize the risk of fire crossing out of the park or entering a more intensively managed zone (i.e. moving from a green to a yellow zone or from a yellow to a red zone). Where feasible, strategies which allow fire to spread into less intensively managed zones are considered (i.e. spread from a yellow zone into a green zone). In all cases, management actions incorporate Parks Canada's fire management priorities:

- Safety of the public and fire personnel
- Protection of property and values at risk including commercial forest outside of the national park
- Maintenance and restoration of ecological integrity

Wildfire Risk Reduction

High intensity, relatively fast spreading fires in the boreal forest can present significant challenges to suppression efforts. Recognising fire suppression limitations, wildfire risk reduction measures help reduce the threat of wildfire to the public and values at risk. At the community and building scale, this can include facility-specific measures (architectural guidelines and building codes), mechanical fuel modifications and low-intensity prescribed fire. Mechanical fuel modification and prescribed fire can also be applied at a landscape level to assist future suppression efforts. Recognising this, PANP continues to implement a proactive, landscape-focussed approach to fire management. PANP ensures its values at risk database is current and integrated with the equivalent provincial database.

The safe use of prescribed fire and indirect containment of managed wildfire in combination with fire breaks is central to long term protection of park infrastructure. In areas where the use of prescribed fire presents unacceptable risk or impacts to the public, fuel management projects are the primary tool to manage fire hazard. Mechanical fuel management consists of the physical manipulation of the vegetation in an area to reduce the risk wildfire, reduce the risk of high intensity

crown fire and also to improve firefighter safety (i.e. increase defensible space). Various tools exist for the management of fuel on the landscape ranging from using ground crews to brush and limb ladder fuels to larger-scale mechanical logging operations. The primary guidance and standard in Canada for fuel management activities in the wildland-urban interface is Firesmart – Protecting Your Community from Wildfire (Partners in Protection, 2003).

Since 2001, PANP has implemented several wildfire risk reduction projects including a community fuel break for Waskesiu and landscape-level boreal blacklines. Continued effectiveness of these fuel management units requires regular monitoring and maintenance. Removal of accumulated fuel through brushing, debris piling/burning, and broadcast burning is ongoing. The Waskesiu Community Fuel Break (CFB) is the largest wildfire risk reduction project in the park. Since 2001, approximately \$750K has been invested into its development and maintenance. Two primary maintenance techniques have been employed with a significant cost differential. Annual low intensity prescribed fires are conducted in areas away from facilities for about \$50/ha. Closer to facilities, crews brush, pile and burn at a cost of about \$3000/ha. Further development of wildfire risk reduction projects must account for maintenance costs recognising that maintenance of existing features is the priority.

PANP's past wildfire risk reduction efforts and future considerations are outlined below. Priority for future projects will be based on the value at risk, current fuel load, future maintenance requirements, consequences of delayed maintenance, and sustainability. A schedule for specific projects are identified in the *Work Program Schedule* of this document.

Townsite of Waskesiu

Most of the park's infrastructure is located in the townsite of Waskesiu Lake. To help protect Waskesiu, a 300 ha Community Fuel Break was completed in 2001/02. Ongoing maintenance includes about 10-20 ha/yr of manual fuel reduction and an annual 30-60 ha of prescribed fire. Within the townsite, a 40 ha hazardous tree / fuel reduction project in Beaver Glen campground was completed in 2014-16. Despite these efforts, the park has experienced difficulty keeping up with manual fuel reduction maintenance needs and hazardous fuels persist within and adjacent to the townsite. Adjacent to the south boundary of the Waskesiu CFB is a 300 ha stand of over-mature and diseased conifer-dominated forest. This is the most likely direction of fire threat and the heavy fuel buildup presents a significant fire hazard. The following measures will be implemented to provide additional protection to Waskesiu from wildfire:

- Create an additional 300 ha expansion of the CFB to the south to remove the hazardous fuel build-up and promote stand conversion to deciduous species;
- Reduce fuel break maintenance costs by expanded use of annual hazard reduction fires;
- Promote Firesmart principles within the Waskesiu townsite; directly approach the larger leaseholders with regards to fuel build-up on their leases;
- Through the building permitting process, encourage architectural designs that conform to Firesmart principles;
- Develop a community protection tactical response plan for a wildfire event that addresses strategies, tactics and responsibilities (unified command, evacuation, WVFD, golf course leaseholder, individual property owners).

Critical Infrastructure and FBHRO Heritage Buildings

Structure-specific wildfire risk reduction measures can help protect public facilities that are considered particularly valuable or essential to the park. PANP has identified facilities considered critical infrastructure during a wildfire event or other emergencies of similar nature. These include

the water plant, water tower, lakeshore pumphouse, cell towers (2), lift stations (3), operations compound, Delworth radio tower and the compound admin building. Another class of structure – heritage buildings – are protected by Parks Canada through the Federal Heritage Building Review Office. Federally listed heritage buildings in PANP include the South Gate Registration Building, Nature Centre, Warden’s Equipment Shed (Grey Owl Centre), Community Hall, Grey Owl Cabin, Assembly Hall, Warden’s Headquarters (Waskesiu Heritage Museum), Anahereo’s Cabin, Superintendent’s Residence & Garage, MacKenzie King Cottage, and Golf Clubhouse. Permanent facility protection measures are stored at Grey Owl and Anahereo cabins ready for deployment in the event of a wildfire. For the remaining facilities, consideration is given to reducing wildland fire risk due to their critical or heritage nature. PANP will:

- Complete a Critical Infrastructure and Heritage Building Protection Plan that prioritizes facilities and identifies local hazard reduction and facility protection measures to be taken.

Elk Ridge Resort

Elk Ridge Resort lies immediately adjacent to PANP’s east boundary. In 2015, PANP and the Ministry of Environment Wildfire Management completed about 20 ha of manual hazard reduction along the south and east boundaries of the resort. In 2016/17, SME constructed an additional 150 ha community fuel break south of Elk Ridge. Park lands to the west require some additional fuel modification to tie in with existing features. No hazard reduction steps have been taken within the boundaries of the resort. To help protect the resort of Elk Ridge from wildfire, PANP will:

- Construct a ~100 ha mechanically harvested CFB west of the resort
- Maintain the CFB as an open area by limiting all regeneration through manual brushing/piling or with low intensity broadcast prescribed fire

Outlying Facilities

Beyond the Waskesiu townsite, Parks Canada operates several outlying facilities including 3 campgrounds, about 25 picnic and backcountry sites, Beartrap firecamp/heliport, a year-round station at Sturgeon Crossing and several backcountry cabins. The Waskesiu, Heart Lakes and Narrows Marinas are park-owned but privately operated. Several hazard reduction prescribed fires were conducted for the Paspewin Cultural Site, the Sturgeon Crossing Station and the former South End Station. Fuel reduction around the Sandy and Narrows Campgrounds has begun but is incomplete. Subject to funding, future wildfire risk reduction initiatives for outlying facilities will include:

- Continue fuel reduction activities in conjunction with hazardous tree removal projects at outlying campgrounds
- Site-specific values protection as determined by management

Landscape Features

A landscape-level approach to fire management includes natural and constructed fuel breaks. Generally, fuel breaks help delineate fire management zone boundaries. Caribou critical habitat considerations may limit broad scale prescribed fire or mechanical harvesting for landscape fuel breaks in the mixedwood boreal. Boreal blackline and selective thinning techniques can mitigate some of the negative impacts for these species. Currently, boreal blacklines are in place between Tibiska and Wassegam Lakes. Large wildfires in the last 20 years have created a continuous fuel break across much of the northern areas of the park (Figure 5). Previously burned areas would help to slow the advancement of a wildfire. To enhance natural features in key areas, PANP will:

- Use various techniques to strengthen fire management zone boundaries on the interior of the park or along critical sections of the boundary

Preparedness and Response to Wildfire

PANP uses the Fire Weather Index component of the CFFDRS to predict and assess wildfire danger (Forestry Canada, 1992). Throughout the season, fire weather indices are calculated using weather data from seven weather stations within or near the park (Figure 8). Once calculated, the park's fire danger rating can be determined and preparedness levels are set as per Table 3.

In establishing a preparedness level relative to the fire danger, additional consideration is given to time of year and potential ignition sources:

- Under early spring conditions, fire risk is generally confined to southern areas of the park along the boundary. Cured grass in the aspen understory is the primary fuel and ignition sources are almost exclusively human-caused. In northern areas, the conifer understory is still frozen or moist and limited access removes the threat of human ignitions.
- During late spring and early summer, aspen green-up largely removes the threat of fire across the southern boundary of the park. Fire risk shifts to the mixedwood and conifer dominated areas of the park where lightning becomes the primary ignition source.
- By mid-August, short days, reduced lightning occurrence, and increased overnight humidity limit fire risk.

Wildfire Suppression

A full suppression policy applies to the park's Intensive and Intermediate Zones as well as the Extensive Zones unless specific prescription criteria are met. Under this policy, the suppression objective is to provide initial attack on all fires in the Park and gain control by 1000 hrs the following day. Any fire that is not expected to be held by 1000 hrs the following day requires a fire analysis. Suppression objectives for fires that escape initial control efforts are outlined in the section discussing Wildland Fire Management Zones. When the park has ongoing fire suppression actions, the FDO briefs the RCM and NDO daily.

Cooperative Agreements

While Parks Canada maintains jurisdiction within Prince Albert National Park, the Province of Saskatchewan shares a boundary zone around much of the park. The Ministry of Environment Wildfire Management is a valued and essential partner in the park's management of wildland fire. A Fire Cooperation Agreement is in place to outline management of wildland fire in the border zones (PCA-SK 2002). This document outlines cooperative fire management with respect to:

- Fire reporting/discovery
- Definition of the cooperation zone
- Initial suppression responsibility / single and dual jurisdictional control responsibility
- Fiscal relationships and reimbursement conditions; Liability
- Fire management planning

The park will update the MOU with Ministry of Environment Wildfire Management as required. PANP will explore opportunities to move beyond the MOU's operational aspects and address some landscape issues. This could include using harvest / silviculture plans to produce more effective landscape fuel breaks.

PANP also borders Little Red River Reserve, Great Blue Heron Provincial Park and private agricultural lands within the Rural Municipalities of Lakeland, Paddockwood, Shellbrook, Canwood and Big River. Currently, no formal agreements with these jurisdictions are in place.

Table 3: PANP fire management preparation guidelines

Prep Level	Operational Strategies	Resources
<p>Low FFMC < 80 ISI < 3 BUI <25 FWI <5</p>	<ul style="list-style-type: none"> • Routine duties • Normal pre-suppression operations • No attack time requirement • Regular hours • Sharepoint updated weekly 	<ul style="list-style-type: none"> • Park Initial Attack Crew (IAC) • Fire Duty Officer (FDO) • Long term helicopter if available
<p>Moderate FFMC 80-85 ISI 3-7 BUI 25-40 FWI 5-17</p>	<ul style="list-style-type: none"> • Initial attack (IA) within 80 min (including flight time) • Initiate loaded patrols after severe lightning storms with spotty precipitation, otherwise regular duties and hours • Sharepoint updated weekly 	<ul style="list-style-type: none"> • As above
<p>High FFMC 85-90 ISI 7-10 BUI 40-60 FWI 17-30</p>	<ul style="list-style-type: none"> • Initial attack within 50 min (including flight time) • Fire personnel on standby after lightning storms • Review resource availability daily • Loaded patrols dependent on potential ignition sources • Extended and/or standby hours for IAC and FDO dependent on potential ignition sources • Evaluation of prescription status for Extensive Zones • Resource request to National Fire Management Division • Resource Conservation Manager (RCM), National Duty Officer (NDO) and Sharepoint updated daily 	<ul style="list-style-type: none"> • As above • Short term intermediate helicopter if no long term available and if potential for ignition exists • May request additional resources based on current regional fire situation
<p>Extreme FFMC > 90 ISI > 10 BUI > 60 FWI > 30</p>	<ul style="list-style-type: none"> • Initial attack within 20 min (including flight time) • IAC and pilots on standby at heliport during alert times • Fire and backcountry travel bans and restrictions consonant with province • Fire personnel on standby after lightning storms • Loaded patrols dependent on potential ignition sources • Extended and/or standby hours for IAC and FDO dependent on potential ignition sources • Evaluation of prescription status for Extensive Zones • Resource request to National Fire Management Division • RCM, NDO, Provincial Duty Officer (PDO) and Sharepoint updated daily • Review resource availability daily with NDO and PDO • Standby / Type II in-park resources identified and availability cleared with managers • Pre-position ground resources; Communication activated (media bulletins, visitor info, interp programs) 	<ul style="list-style-type: none"> • As above • Short term intermediate helicopter if no long term available • Short term medium helicopter or second intermediate if potential exists for ignition or if resource shortages are anticipated • Additional crews depending on ignition potential • May request additional resources based on current fire situation • May have standby Incident Command team

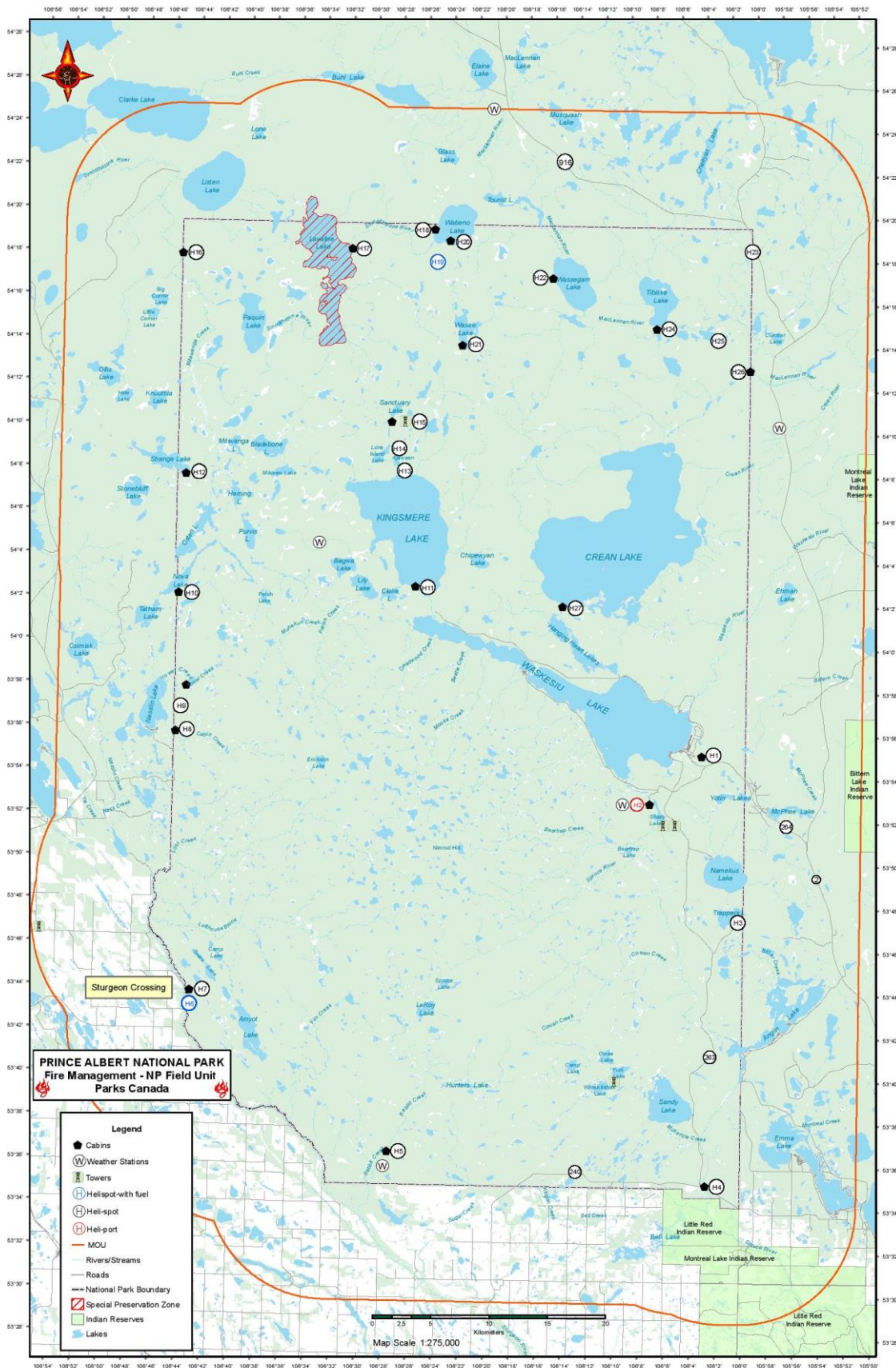


Figure 8: PANP operational fire map.

Ecosystem Restoration

Fire Vegetation Management Goals and Objectives

The majority of PANP's terrestrial ecosystems depend on fire disturbance in order to maintain structure and function and to preserve ecological integrity. Decades of fire suppression, especially in areas that are known to have short fire return intervals, is having long term impacts including the loss of species diversity, the loss of individual plant and animal species, and the alteration and loss of open grasslands that were historically shaped by frequent fire events.

Parks Canada's national fire management directive and PANP's park management plan direct a partial restoration of fire cycles to help slow or reverse the negative impacts of fire exclusion. In response, the Northern Prairies Field Unit Vegetation Management Strategy (Parks Canada, 2015b) provides clear fire management objectives related to ecosystem restoration. These are:

1. Implement a fire management plan for PANP with a fire management strategy that allows wildfire to function as an ecological process, yet protects identified values that are located within and adjacent to the park.
2. Define fire management units outlining appropriate responses and tactics for controlling wildfires, guidelines for fuel management, and the use of prescribed fire within each unit.
3. Manage with a minimum target of 20% historical area burned over a 20 year period (rolling window) in conjunction with National Fire Management area burned targets for restoration.
4. In the aspen parkland, restore and maintain aspects of the historic fire regime including
 - burn 50% of the historic fire cycle of 40 years
 - burn a majority of area burned in the spring
 - maintain an age structure with approximately 35% and 15% of the unit older than 40 and 80 years respectively.
5. In the mixedwood boreal, restore and maintain aspects of the historic fire regime including
 - burn 30% of the historic fire cycle of 100 years
 - maintain an age structure with approximately 10% and 5% of the unit older than 100 and 150 years respectively.
6. In both the aspen parkland and mixedwood boreal, maintain a landscape age patch distribution that supports numerous, small, compact shaped patches of older forest that are distributed throughout the unit in a matrix of large irregularly shaped patches of young forest.

Fire Restoration Target

To evaluate progress towards area burned targets, Parks Canada uses Fire Restoration Target (FRT) as a measure for management effectiveness monitoring. FRT's are assessed annually based on a rolling 20 year evaluation window. National targets and assessment methodology are outlined in the Standard Operating Procedure on the National Fire Restoration Target (Parks Canada, 2015a). PANP's specific targets can be found in the field unit's Vegetation Management Strategy (Parks Canada, 2015b). In each case, the cumulative area burned over the previous 20 year period is compared to what would have been expected under an historic fire regime. Targets are:

National Fire Restoration Target	20% of historic – approximately 850 ha/yr
PANP Aspen Parkland	50% of historic – approximately 650 ha/yr
PANP Mixedwood Boreal	30% of historic – approximately 890 ha/yr

Figure 9 shows fire restoration back through 1970. Initial, near-zero datapoints are a result of a long period of fire exclusion. Increased fire restoration since 1996 in the mixedwood boreal is a result of a more active fire regime and the use of alternative suppression strategies. In the aspen parkland, an active prescribed fire program is responsible for fire restoration increase since 2006.

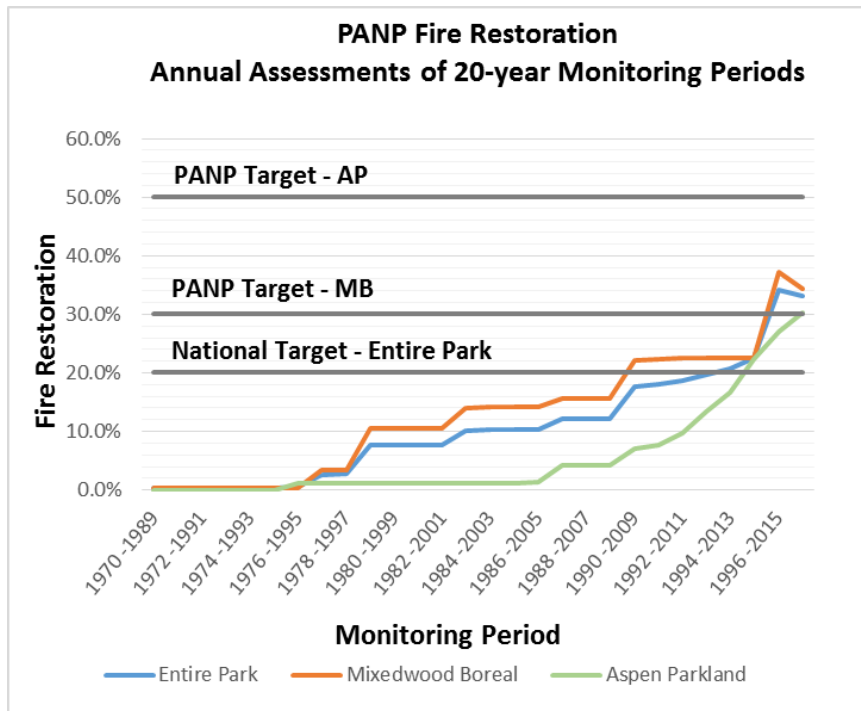


Figure 9: Fire restoration assessments for PANP

FRT uses a rolling 20 year evaluation window to smooth out large fluctuations in area burned due to climate or budgetary influences. Significant changes to fire restoration are still possible following a large fire year or if a previous large fire year is dropped off the front-end of the 20-year window. In some cases, anticipated area burned losses can be compensated for with prescribed fire planning. In this manner, the 20 year window for fire restoration is more responsive to management action than ABCC/ABD which is based on time frames much longer than 20 years.

To achieve its fire restoration targets, PANP:

- In the aspen parkland, focuses on using spring prescribed fire to increase area burned
- In the mixedwood boreal, focuses on using alternative fire suppression strategies in line with fire management zone criteria to increase area burned

Habitat Management

In some circumstances, Parks Canada conducts resource management activities targeting particular species or ecological communities. Current targeted management plans that are particularly relevant to fire management operations include the national recovery and provincial conservation strategies for boreal populations of woodland caribou (Environment Canada, 2012 and Saskatchewan Ministry of the Environment, 2013), the Sturgeon River Plains Bison Management Plan (Parks Canada, 2013), and the Prince Albert National Park Fescue Grassland Management Plan (Parks Canada, 2012).

Woodland Caribou

The woodland caribou recovery strategy (Environment Canada, 2012) suggests that, despite being a natural process, forest fires can threaten caribou recovery especially in areas with significant anthropogenic impact. Impacts on long term management of caribou range should be assessed. Short- and long-term considerations should be factored into forest fire management. The national recovery strategy identifies critical habitat that includes areas of the park north of Waskesiu Lake.

The subsequent provincial conservation strategy has been approved but range-specific recovery plans have yet to be developed. The conservation strategy highlights a need for functional, large-scale ecosystems where natural processes function wherever possible. While wildfires should progress naturally, caribou habitat should be considered as a value at risk in high-risk areas of significant human disturbance. Some temporary fire protection for caribou habitat may be considered. Range plans will likely provide a finer resolution of critical habitat and clarify fire management options for areas of the park designated as critical habitat. Meanwhile, PANP:

- Implements suppression strategies consistent with the appropriate fire management zone;
- Limits larger scale prescribed fires to areas of the park not designated as critical habitat;
- When conducting wildfire risk reduction fuel management in areas identified as critical habitat, considers recommendations and adheres to requirements outlined in future caribou range plans;
- Will conduct a boreal fire/caribou literature review and a more detailed analysis of potential critical habitat in the park:
 - identify areas that may be suitable for enhanced suppression/protection;
 - identify potential stands in the park that have become 'overmature' for caribou use due to excessive downed/dead trees;
 - investigate the possibility of using prescribed fire to convert underutilized habitat to future (40 years) habitat through stand conversion (e.g. overmature white spruce to black spruce/pine).

Plains Bison

The core bison range in PANP is located in the southwest corner of the park and includes an area of private agricultural lands outside the park. Bison-caused damage to crops and infrastructure on adjacent lands is creating ongoing bison-landowner conflicts. Within the park, vegetation communities used by bison are mainly aspen parkland, wet sedge meadows, and small pockets of dry fescue and stipa dominated meadows. Bison prefer less forested habitats that account for a small percentage of their in-park range. In an effort to reduce landowner-bison conflict, it is speculated that using fire as a renewal agent will reduce forest cover and increase forage habitat. Improved bison habitat in PANP may influence bison distribution patterns. Therefore, as identified in Sturgeon River Plains Bison Management Plan, PANP:

- Augments bison habitat within PANP with prescribed burning during spring season to promote the expansion of meadows and to prevent aspen suckering;
- Evaluates the use of prescribed burns in meadows within PANP during late summer for reducing bison landowner conflicts.

Fescue Grassland Communities

The goal of PANP's Fescue Grasslands Management Plan (FGMP) is the preservation and maintenance of the park's plains rough fescue grassland communities. Beyond the park and across the historic range, approximately 95% of fescue grasslands have been converted to agriculture. The grasslands that exist in PANP are at the northern extent of the range and are small and highly fragmented. Since 1947, the areal extent of these remnant grasslands has decreased by 2/3 due to tree and shrub encroachment. To address the loss of grassland due to encroachment, the FGMP set goals related to fire cycle restoration in the aspen parkland area of the park. These goals were updated and included in the field unit's vegetation management strategy and are discussed above. The FGMP outlines additional goals related to the aerial extent of some of the parks larger fescue meadows. To achieve these goals, PANP will:

- Use short interval prescribed fire to restore South End, Sugar Creek, and Wasstrom's Flats grasslands to between 50 and 100% of their 1947 distribution

Communication, Outreach, Education and Visitor Experience

Objectives

Two chief objectives guide communication, outreach, and education and visitor experience as it relates to fire management:

- The effective transmission of information to internal and external audiences, stakeholders and partners before and/or throughout planned and unplanned fire related incidents;
- The increase in awareness, understanding and appreciation for Parks Canada Fire Management Program among internal and external audiences.

Separate plans will guide the implementation of the above-mentioned objectives. For the purpose of this plan, however, roles and responsibilities among ERVE functions are described below.

The *External Relations (ER) function* is responsible for:

- Designating and training a Fire Information Officer (FIO) as required. In the event of a wildfire or prescribed burn, the Fire Information Officer is part of the incident command organization and reports to the Incident Commander. She or he is responsible for communicating incident related messages to the Field Unit, National Office, the public, stakeholders and the media.
- Creating and implementing proactive communication plans and materials in preparation for prescribed fires, wildfires and wildfire risk reduction projects. This involves liaising with specialists and counterparts to develop effective external relations tools including proactive media pitches and information bulletins for upcoming prescribed fires.
- Increasing awareness and support of Park's Canada's Fire Management Programs by creating communication products intended for off-site audiences on the items found in the key messages section found below.
- Maintaining up-to-date stakeholder lists, and, in-turn, updating and engaging with stakeholders and Indigenous partners about fire activities when required.

The *Visitor Experience (VE) function* is responsible for:

- Providing front-line delivery of information to visitors as it relates to fire management incidents and events. This includes providing key messages and accurate information at entry gates, campgrounds and the information centre, as well as putting up information signs supplied by the FIO where required. Information is to be solicited from the designated Fire Information Officer.
- Conveying general messages to visitors relating to the park's fire program and incident-specific messages through personal and non-personal products and programs.

Key Messages related to fire management include:

- Fire management programs reduce wildfire risk to people and infrastructure through the careful planning and implementation of fuel reduction and prescribed fire projects.
- Fire is a component of a healthy ecosystem – it renews forests and grasslands by reducing fuel, releasing nutrients and allowing for a mosaic of ecosystems that support the wildlife and vegetation found in the park.
- PANP is committed to maintaining or improving ecological integrity through the restoration of fire and reducing the risk of wildfire to the public, infrastructure and other values at risk.

Work Program Schedule

Parks Canada’s Standard Operating Procedure on Wildland Fire Management Planning indicates that all fire management plans must include a 10 year fire management activity schedule. The following section outlines proposed prescribed fire and fuel management plans (completed and conceptual) for this planning period. Because of their large scope and expense, many of these projects cannot be funded through the regular fire management operating budget – generally, national funding is required.

Priorities for prescribed fire and wildfire risk reduction are based upon guidance from the park’s management plan and vegetation management strategy. In PANP, prescribed fires are used to achieve multiple objectives that range from ecological (e.g. habitat improvement) to operational (e.g. wildfire risk reduction). Wildfire risk reduction projects are primarily operational in scope. Prescribed fires and wildfire risk reduction are carefully planned using established methods of fire behaviour prediction as well as experience from fire management specialists. Plans include a site description, fire history, prescription, operations, contingency plans and public communications. Concurrent to the development of the prescribed fire plan or wildfire risk reduction plan, a basic impact assessment is also developed. Plan approval resides with the Field Unit Superintendent following recommendations from the RCM and the National Fire Management Division.

Prescribed Fire

To date, PANP has conducted 40 prescribed fires totaling over 8000 ha. Prescribed fire priorities are based on a number of factors, including but not limited to: wildfire preparedness and values at risk protection (e.g. prescribed fire to reduce fuel load in the wildland urban interface); ecological objectives (e.g. Bison, grassland restoration); and landscape level fire restoration objectives (e.g. 20/30/50% fire cycle restoration objectives). Prescribed fire is playing a key role in the on-going implementation of several current, multi-year ecosystem restoration and risk reduction projects (Table 4). Implementation of these fires will continue to be a priority until the respective projects have concluded.

Table 4: PANP planned prescribed fires.

Prescribed Fire Unit	Size (ha)	Purpose	Vegetation Management Unit	Year & Season	Status
Waskesiu CFB	Various	Risk Reduction	Boreal	Spring Annual	Plan Completed and Approved
Paskwaw Mostos	Various Meadows	Ecological	Parkland	Spring Annual	Plan Completed and Approved
Wasstrom’s Flats	800	Ecological	Parkland	Spring	Plan Completed and Approved
Sugar Creek	700	Ecological	Parkland	Spring	Plan Completed and Approved
South End Meadows	700	Ecological (multiple burns; 3 yr rotation)	Parkland	Spring	Plan Completed and Approved
Millard	1800	Ecological	Parkland	Spring	Plan Completed and Approved

Additional prescribed fire plans will be developed to meet the following objectives:

- Achieve the ecological objectives of the park’s vegetation management strategy including area burned / fire restoration, forest age structure, and fescue grassland restoration;
- Achieve ecological objectives related to the management of bison, woodland caribou or other wildlife species as identified in an approved management strategy;
- Achieve visitor experience objectives that may relate to wildlife viewing, viewscales and educational opportunities as identified in an approved plan;
- Fuel hazard reduction as identified in an approved wildfire risk reduction strategy.

Wildfire Risk Reduction

PANP undertakes projects that reduce wildfire risk to communities, individual facilities and landscape features such as timber resources in adjacent Forest Management Areas. PANP will work with stakeholders to encourage modification to their facilities to reduce wildfire risks. Wildfire risk reduction projects might involve facility design, manual/mechanical reduction of fuels, and/or prescribed fire. Generally, fuel reduction projects require ongoing maintenance. Table 5 outlines planned wildfire risk reduction projects that are currently approved or at the conceptual stage in priority order. Prescribed fire wildfire risk reduction projects can be found in Table 4.

Table 5: PANP planned wildfire risk reduction projects.

Project	Size (ha)	Location	Type	Year & Season	Status
Waskesiu CFB	300	Waskesiu Townsite	Manual brushing, piling and burning	Annual	Plan Completed and Approved
Waskesiu CFB Expansion	300	South of current fuel break	Mechanical harvest and prescribed slash fire	2019-20	Plan Completed and Approved
East Boundary CFB	100	Adjacent the Elk Ridge development	Mechanical harvest, manual brushing, piling and burning	2017-19	Plan Completed and Approved
Outlying Facility Protection	Various	Narrows and Sandy Campgrounds Marinas	Manual brushing, piling and burning	Fall/Winter	Concept – subject to funding and FU priorities
Fire Management Zone Boundary Fireguards	Various	FMZ Boundaries	Mechanical and manual harvest/thinning in strategic locations to protect adjacent values; enhance zone boundaries		Concept – subject to funding and FU priorities

Operations

The national directive requires an outline of a park's fire management resources within the FMP and commits to a nationally cohesive and functionally integrated program. Core, dedicated fire staff are in the Resource Conservation function and include:

- Fire Management Officer
- Fire Technician
- 2 – 4 person Type I Initial Attack Crews

Additional resources may be available for periodic fire management tasks:

- Ecologist Team Leader (Resource Conservation)
- Resource Management Officer (Resource Conservation)
- Public Relations and Communications Officer (External Relations)

During periods of critical fire management, additional resources may be required:

- 2 – 4 person Type II Sustained Action Crews (Resource Conservation, Asset Management and other sections)
- Communication support (External Relations, Visitor Experience)
- Logistical support (Asset Management, Resource Conservation)
- Finance and admin support (Finance)

PANP's fire season runs from April 1 – September 30. The prescribed fire season usually lasts from April 1 – May 30 in the spring with a rare fall window from September 1 – October 15. Subject to additional funding, planning and fuel management activities occur from October 1 to March 31. The park has Type I fire crew coverage for the full 6 months of the fire season. The park's Fire Technician and Fire Crew Leaders have 7 month seasons. A Fire Duty Officer is scheduled from May 1 until the September long weekend. The Time-action plan in Table 6 shows the general schedule of fire management activities.

Table 6: PANP fire management time action plan

Action	Responsible Person	Due Date
Archive previous year's weather data	Fire Tech	Oct 31
Fire history and area burned updated	Fire / Veg Officer	Feb 1
Submit prescribed fire and risk reduction plans for review	FMO	Feb 1
Seasonal recalls sent out	FMO / HR	Mar 1
Long term R/W contract in place	NDO / FMO	Mar 1
Review and amend approved PF plans	FMO	Mar 25
Update fire control and fire management plans as required	FMO	Mar 31
IAC on strength	FMO	Apr 1
Amended Prescribed Fire Plans approved	FMO	Apr 1
Medicals and fitness testing complete	FMO / all fire staff	Apr 10
All fire equipment tested and operational	Fire Crew	Apr 15
Spring training complete	all fire staff	Apr 30
Wildfire risk reduction funding request to National Office	FMO	Jun 1
Fire equipment winterized	Fire Crew	Sep 25
Year end financial wrap-up	FMO	Oct 31
Critique of fire season	all fire staff	Oct 31
Fire equipment inventoried	Fire Crew Leaders	Oct 31
Annual reports, prescribed fire reports	Fire Tech	Oct 31

Summary of WFMP Objectives

As a 10 year strategic document, this WFMP outlines a number of objectives and action items. These commitments are summarized below:

Ecology, Science and Monitoring

- ✓ Implement fire management strategies consistent with zone designations
- ✓ Increase aspen parkland area burned primarily through spring prescribed fire; increase mixedwood boreal area burned primarily through alternative fire management strategies
- ✓ Implement prescribed fires consistent with ecological goals and objectives in the park's vegetation management strategy and other approved ecosystem management documents
- ✓ Implement and adjust fire management practices to incorporate recommendations and requirements of the forthcoming woodland caribou range plan
- ✓ Capitalize on potential late summer burning windows to enhance late-season habitat in the bison meadows on the west side of the park
- ✓ Adopt geomatics protocols for conversion of future area burned imagery

Wildfire Prevention and Risk Reduction

- ✓ Wherever possible, maintain a reduced fuel load in the constructed CFB's and the fuel reduction areas primarily through low intensity prescribed fire
- ✓ Reduce maintenance costs in the existing fuel break by expanded use of annual hazard reduction fires
- ✓ Implement the wildfire risk reduction projects outlined in Table 5 subject to available funding and field unit priorities; include a commitment to ongoing maintenance
- ✓ Develop a community protection wildfire tactical response plan for Waskesiu Lake
- ✓ Complete a Critical Infrastructure and Heritage Building Protection Plan
- ✓ Develop site-specific values protection plans for facilities with no fuel reduction in place
- ✓ Promote Firesmart principles within the Waskesiu townsite; directly approach the larger leaseholders with regards to fuel build-up on their leases
- ✓ Use various techniques to strengthen fire management zone boundaries on the interior of the park or along critical sections of the boundary
- ✓ Update Values-at-Risk database and integrate with the provincial database
- ✓ Through the building permitting process, encourage architectural designs that conform to Firesmart principles

Fire Management Operations

- ✓ Produce an updated fuel map with the most recent sat/ortho imagery
- ✓ Continue to meet the in-park and National Incident Management Team resource requirements as identified in the national wildfire risk analysis
- ✓ Establish fire management zones
- ✓ Update the cooperative agreement with the Province of Saskatchewan as required

Communication, Outreach, Education and Visitor Experience

- ✓ Update fire communication plans
- ✓ On the park's website, include generic messages as well as current information on fire danger, fire bans or travel restrictions
- ✓ Include fire messaging in personal and non-personal programs and products

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