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Future Forest Ecosystems of BC Symposium Working Group Report: Fire

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Introduction:

This document presents a record of the discussion and conclusions of the fire working group that met on December 7, 2005. This material was generated from a facilitated session using the working group members. There was a limited time period provided for the participants to reflect on this topic area.

The document is structured in the order the questions were discussed. The participants were provided these questions in advance to help focus the Fire working group discussion.

Questions #1 to #5 were discussed using a modified "court yard" facilitation process using a two-group technique with all working group participants getting an opportunity to put forth their ideas on all the questions. Question #6 was handled as a large group exercise using a "challenge wall technique". By using this technique the information is presented in a different format. In addition, an email response was received from Don Dobson who could not be present was incorporated into this document.

1. “How should we manage forests to maintain a natural fuel condition and associated fire impact regime?”

- BC and National Parks present an opportunity to test theories and monitor effects of fire on natural ecosystem processes
- Fire management plans should identify areas where landscape-level (versus site or stand) use objectives are conducive to allowing fire to play more of a natural role.
- Need to know where there are critical age-classes that need protection from fire. The selection of these should be based on forest management objectives and timber supply goals, as well ecological zones that are under-represented by certain age-classes.
- Can we return to “natural” range of stand fuel conditions using only fire given the build up of fuels, especially in the dry forests in the southern BC interior?
- First Nations’ traditional use areas (e.g. berry picking) have changed because they have not been maintained with fire and vegetation succession has reduced their productivity in the case of berries. In some cases, the build up of fuel has created a situation where the areas are not safe to burn and long-term damage could be done to the resources being used.
- Need to define and quantify what is meant by “natural” fuel conditions and its natural range of variability.
- Do we want to manage the “natural” fuel condition? In some cases, such as areas within a wildland urban interface, we may not want to change to the “natural” condition. There may be opportunities such as in a Lodgepole Pine dominated forests outside the interface that are appropriate and desired.
- There is a need to clearly define what are “managed forests” and where they are located since fires do not respect land use boundaries and are more accepted as playing a natural role in the changing fire and forest management regime that is occurring.
- We need to ensure an increased presence of “fire” on the landscape and not to restrict arbitrarily but encourage its presence consistent with values at risk and ecological objectives.
- Do what is good for the land in a more holistic approach. This may not be harvesting in some areas currently planned
- Review leave strips and riparian strategies in view of fire management objectives given there impacts on prescribed fire and fire control
- Review current funding models
- Short-term goals - management of interior forests needs to be re-focused on the forest health issues. As a result of the serious beetle problems the risk of fire will be greater than ever before in recent times. We need to manage with fire as the driver. Develop harvest plans with the primary goal of reducing fire losses. Also do not lose focus on other forest health issues in other species.
- Planning should be focused on:
 - 1) protecting those stands and species that are currently not at risk
 - 2) reducing the risk in stands/species that are at risk
 - 3) salvaging timber from stands that are already dead or dying

- Long-term goals - develop forest management plans, not timber management plans and incorporate the natural dynamics of the stands. Current planning has been primarily focused on timber management and needs to be broadened. Limited attention has been paid to the forest threats of insects and fire over the past 30 years or so. One only has to review higher level plans to find the shortfall and lack of recognition. If higher-level plans drive programs and they do, than we are only at this point due to the lack of recognition of fire's role. There needs to be an established fire management planning process put into place across the province. The planning process must be a living document and be revised based on new information and experience.
- Fuel and land management objectives must be linked (where do we want a natural state or not)
- Fire management objectives as a minimum must be recognized in FRPA
- Focus should be on managing ecosystems rather than fuels

2. "How should we use fire to improve forest health?"

- Applying fire on a landscape level may not be appropriate or practical. Stand level is still appropriate.
- Public has perception that fire represents an unhealthy state and doesn't recognize its value as a tool to improve the health in our forests
- Planning process:
 - o Identify ecosystem and specific needs: e.g. manipulating fuel conditions to change a forest stand from a C-3 Fire Behaviour Prediction System fuel type to a C-7 fuel type implying a reduction in crowning potential and rate of spread.
 - o Need more defined "forest health"-what do we want and where?
 - o Need to determine the range of natural variability for insects (e.g. insect outbreak return intervals)
 - o Forest health must be defined using land management objectives. This may mean maintain some level of insect activity and impacts in some areas
- The risk of allowing some fires to play a natural role on the landscape can be reduced by only allowing late summer fires to burn.
- Organize structure/resources to achieve goals:
 - o fiscal resources
 - o human resources
 - o training
 - o Monitor: a) fire severity b) fire effects

- We need to start by really understanding how fire has played a natural role in shaping stand dynamics and thereby forest health. There is a need to predict how climate change may affect forest stands and fire and consider fire as a tool rather than a threat. There is a need to inform the public about fire as a natural process and as a tool. We need to develop a plan to restore fire to the landscape in an organized and planned manner. Most important, there is a requirement for all Forest Districts to develop fire management plans that identify forest values and values at risk. Plans need to be dynamic since fire ignitions and behaviour vary by stand, topographic location and year to year variability in fire weather. If forests are brought back into balance, the forest health issues should be manageable
- We have reduced fire occurrence and area burned for so many years that the forest and fuel complex presents a challenge to use prescribed burning. The forest condition, along with our lack of current prescribed burning experience and ability adds extra complexity to this problem. We need to direct our efforts at training and practical experience to broaden the base of ability.
- We need to assess and understand fuel complexes and the impacts fires can have. We tend to assign fire management teams to fight the fire, rather than managing the fire. We do not usually assign assessment teams to document the fire behaviour and impact so that others can learn more about fire. We don't identify critical areas needed as a water supply or sensitive soil types and avoid them while suppressing the wildfire. After the fire we try, sometimes at great expense, to rehabilitate the site. Fire like harvesting or grazing is a tool to be appropriately applied to meet landscape level goals

3. "How robust is the current management paradigm in enabling the achievement of desired outcomes?"

- We have done a good job of protecting values (life/property, timber, & other values) from the effects of fire but the true desired outcome is resiliency of multiple values which requires a different approach
- We have a different paradigm in different parts of the province, North to South. At times, fire is allowed to burn more freely in the North than the South so increasing fire's presence is less of an issue in some areas of the province
- The current fire suppression system is designed around the negative impacts of wildfire. We will have a challenge in changing this approach due to our long-term investment in attempted fire exclusion. We could spend millions of dollars to suppress the large unmanageable fires, which are becoming more common.
- We need to change our focus in fire management to fire risk assessment, planning and investment to reduce losses over time; we can never eliminate fire losses. If we consider the impacts and changes from global warming in the fire equation, the problem may change before we recognize it is becoming much worse.

4. “How is the current management paradigm preventing us from achieving desired outcomes?”

- The current management paradigm may have short, medium and long-term consequences on effectively protecting future timber supply and still allowing “natural” ecosystem processes to take place. (e.g. Letting fires burn in northern BC)
- Need agreement between all parties (multi-agency) that we are managing for all objectives, not just timber products
- Legislation, political direction currently does not recognize fire management objectives (a quick change, that would have a large impact would be to establish a FRPA objective for fire management)
- Need to bring back land use referrals (Technical Planning Committees)
- Need for land managers (all agencies) to be updated on:
 - o Role of fire
 - o value of fire rather than risk
- Understand “smoke management”
 - o coordinated strategy to manage Air sheds
- Understand and create a “limited liability” policy for companies/agencies conducting prescribed burns that might escape even though they followed the burn plan
- Need public media strategy on communicating the good things we are doing
- Identify other non timber resource values and determine their overall worth not just \$\$ (social values)
- Public perception and education awareness is critical
- Need proper resources for prescribed burning – all agencies – MOE, BC Parks, MOFR as currently these same resources are dedicated to other activities like fire suppression so are not always available to take advantage of prescribed burning windows
- Ecosystems need to drive our paradigm, currently they do not
- Currently no MOFR “systems thinking” to see the possibilities with some changes in fire management
- Since current planning is largely based on the removal of fire from forest management, the present paradigm is dysfunctional and has no chance of achieving the “desired” outcomes - whatever those may be.
- The historical focus to suppress fires isn’t unique to BC but covers North America
- Our paradigm is somewhat restricted by the current system or process

5. “What are the key drivers that can help us achieve these desired outcomes?”

- How can we harness the public’s energy regarding “bad fire years” so that the energy will help us with full array of fire management goals such as a large prescribed fire program
- Increased number of fires experiencing uncharacteristic fire severity (intensity)
- Unhealthy forests are one of the drivers (e.g. Western Spruce budworm, Douglas-Fir Tussock moth, etc.)

- Recognize fire as part of the natural ecosystem and plan to work with it rather than against it. Plans for forest management should not be just for timber. Make the MOFR the leader in defining what forest management is and what are the most appropriate desired outcomes. Then let industry decide on how it can achieve the outcomes
- We are currently directing vast resources toward planning to meet harvesting and Code needs. In the case of fire management there is little if any mention of the issues or options. Politically and publicly the reality of fire impacts must be understood. The current Mountain Pine Beetle challenge will add fuel to the fire, literally but fire losses will become much more critical now that a large part of the forest has been impacted by beetle. Impacts and losses to one species should point out the need to manage and protect the rest of the remaining forest not continue on the same path as was followed for the MPB.

6. “What changes to the current paradigm would be advantageous, or what alternative paradigm would be preferred?”

This question was answered using the “challenge wall” which resulted in the following 5 main themes or categories:

1. *Planning and Implementation*
2. *Legislation Management Framework*
3. *Education and Communications*
4. *Training Expertise/Adaptive Management*
5. *Research*

1. Planning and Implementation

- Combine ecological objectives with Firesmart objectives to reduce impact of fuel treatments on biodiversity.
- Consider needs for appropriate fire management activities in alpine ecosystems
- Consider full array of forest values when developing forest fire management objectives
- During post fire rehabilitation consider full array of forest values not just the ones in the regulations; i.e. soil stability, water quality and human safety
- Ensure that fire objectives are part of timber supply forecasts and protected area management plans
- Use a landscape approach to manage for multiple resources
- Current paradigm limits long-term political commitment in forestry terms. Need this in new paradigm
- Put value on: air quality, water quality, Visual Quality objectives
- Establish appropriate landscape objectives that consider fire
- Ensure not just a provincial view ensure tied to national objectives

- Fire management objectives should be tied into conservation objectives (protected areas, OGMA, WTP) at stand and landscape scales-emulate nature, as well as, maintain over multiple spatial and temporal scales
- Be prepared to adapt to the varied potential impacts of climate change.
- Clear management objectives for fire that are applied across province
- Fire management should be premised on ecosystem processes
- Fire management planning needs to be better defined
- Fire re-introduction can be considered a restoration tool in landscape outside of the historic Range of Natural Variability (RONV) e.g.: East Kootenay Trench-IDF in-growth for trees
- Emphasis on good referral systems
- Require MOFR and other agencies to determine range of fire management objectives and where they can be applied on the landscape
- Need to incorporate fire process into emulating natural processes in the forest management model
- Need ecologically appropriate fire management planning and implementation. Then explicitly identify the links to social objectives to come up with the final fire management objectives
- Need strategic placement of prescribed fire on the landscape. As per Mark Finney, USFS, Rocky Mtn. Research Station, approach in science literature
- Review suppression policy to allow more wildfires to burn in appropriate areas
- Look for support from range/stewardship to increase fire use
- In the high risk areas: 1st question for management should be: how can I help with values protection
- Consider alien invasive plant species in fire management planning and practices
- During fire suppression actions, take into account full array of values (ecosystems, species, fish, wildlife, habitats, etc)
- Consider needs for appropriate fire management in grassland ecosystems
- First Nations' fire is a part of historic disturbance regimes-part of how species and ecosystems evolved. There is a need to ensure they are included in the planning process
- Define clearly our position regarding fire suppression and the need for fire in identified ecosystems
- Need to change now but remember it took 60-80 years to get here

2. Legislation Management Framework

- Adopt regulations that have enough flexibility to cover the changes that will impact the forest and range sector
- Salvage harvesting needs to also fit within Ecosystem Based Management framework.
- Change name of fire branch of MOFR from Protection program to Fire Management
- Remove limitations to prescribed burning and promote it's use for non-silvicultural purposes such as fuels reduction and ecosystem restoration

- Identify the province’s position on the topic of attempted wildfire exclusion and on the economic and ecological consequences in the context of change
- Avoid downloading fire responsibilities to lower level government “smoke” “fuel” “fire” or provide support where necessary
- Non-timber values and objectives for fire can’t be considered “constraints”. Need to be open to changing values

3. Education/Communication

- Facilitate or encourage communication between different agencies or ministries to take advantage of knowledge and consider interactions
- Provide more information to the public on risk of fire in their area (Fire Zone, Earthquake zone)
- Public/industry and stakeholders embrace use of fire and it’s presence as necessary element of ecosystem health
- New TV show “Firesmart makeover” for homeowners
- Promote awareness of the importance of fire management at all planning levels
- Improve prevention program or information to public about fire environments
- Increased public awareness/education regarding fire management (the full array of fire management, from suppression to prescribed fire and restoration)
- Need to extend existing fire-related science to practitioners, land managers, and general public (different extension needs for different audiences)
- New fire prevention icon or mascot
- Need a better understanding of the relationships between “natural” fire, harvesting systems, and silviculture practices-how can we maintain effects of fire in managed landscapes?
- Public education on the need to put fire back into our ecosystems
- Increase recognition of fire as part of high school and university courses

4. Training Expertise/Adaptive Management

- Maintain expertise in all aspects of fire management, not just fire detection and suppression
- Applying fire to the landscape will not always solve the problems
- Reward alternative approaches rather than restrict ability to experiment
- Training needs to focus on better fire managers rather than fire department
- Need to build on research we have and on bridging gaps between science and management
- Better integration of fire management with post-fire actions such as salvage logging
- Build capacity for parks and protected areas to implement their own fire management program. Currently they plan but MoFR “signs” documents and sometimes implements fire, if they have time.
- Need to consider fire in terms of Range Of Natural Variability – historically and as anticipated to change with climate
- Create incentives to take risks with the use of fire, consider models in other jurisdictions for this

- Improve capacity and understanding of past fire experience ecology to drive future paradigm
- Create organization and resources that provides for fire use to take advantage of burning windows. Currently it is an add-on
- Accept mistakes and risk of increased fire. Learn from them as opposed to current “failure mentality”
- We need to be willing to experiment with fire on the THLB. Trying things to restore ecosystems keeping in mind some of the potential timber supply impacts that may be necessary
- Need increased burn window opportunities (spring and fall prescription burn windows, prescribed natural fire use, etc)
- Ensure download of fire knowledge from staff retiring from the Protection Program

5. Research

- More fire research pre and post-burn
- More studies needed in fire behaviour relationships between landscapes/topography, species vegetation composition and riparian values
- Capture information and experience from veteran fire management staff. From that information research hypotheses can be formed that can be tested via rigorous fire research
- Research and monitor
- Understand fire regimes and fire effects to achieve desired outcomes. Fire is not a means to an end nor an end in itself
- Identify the main interactions and feedback mechanisms that may exist between natural resources, land use and disturbances. How will they be affected by climate change?
- Capitalize on First Nations knowledge (record)
- “Do back casting” studies looking at 10-20 year old fires to learn what has happened in the ecosystem (succession info) especially in parks and contrast with wildfire followed by salvage logging
- Impact of climate change on future fuel loads

Identify Key Information Needs:

- There is a great deal of information available on which we can make better long-term decisions. The information isn’t readily available or shared very well
- The US data sharing system is very different, the data is public domain. We should adopt this model
- Need specific fire ecology studies to fill information gaps
- Capture First Nations’ knowledge of historical use and results (critical short-term need as most of this knowledge is in elders); review some of these sites to collect data
- Need better information on natural role of insects and disease versus fire objectives
- Better data on conditions required to achieve objectives for use of prescribed fire

- Need understanding of relationships of fire to forest health issues:
 - Armillaria to fire
 - Western Spruce Budworm to fire
 - Douglas-fir Tussock Moth to fire
- Current and anticipated changes to fire regimes
- Need to identify all of the values relative to fire
- Need long term monitoring of post-fire effects. We do/did prescribed fires but have not learned long-term effects and implications
- Existing information regarding disturbance types/ fire impacts/ regimes/ fire cycles need to be better conveyed to all
- Need social science to find out about public perceptions and how to best work with public to build social acceptance of fire use
- Develop a fire ecosystem inventory

Summary Recommendations:

These recommendations are a high level extension from the summary discussion presented above.

- Change thinking to see fire as an ecosystem process, and where appropriate increase the presence of fire, including prescribed fire on the landscape.
- Develop a provincial fire management strategy with clear vision and objectives with consideration in all land use plans including a connection to other provinces and jurisdictions.
- Incorporate fire management into Forest and Range Practices Act objectives.
- Improve risk management, training, understanding of First Nations' experience and fire related management capacity.
- Determine how to make fire management decisions based on a broader spectrum of values than just timber.
- Address social science questions about public perceptions and acceptance of fire and improve communications on the role and value of fire on the landscape.
- Improve the understanding of fire ecology, including the relationships between fire and insects and disease.
- Improve knowledge and capacity to deliver on research needs and operational implementation of fire management planning and objectives.
- Improve our understanding of how climate change may impact future fire regimes and possible adaptation strategies.