ASSOCIATION OF
BC FOREST PROFESSIONALS

POSITION PAPER (Aug. 2005)

Forest Fires in British Columbia

How Policies & Practices Lead to Increased Risk

Ensuring BC's Forests Are In Good Hands.

Contents

Executive Summary

Through changes to the *Foresters Act,* the Association of BC Forest Professionals (ABCFP) has been given a mandate to play a role in advocating for, and upholding the principles of, forest stewardship, forestlands, forest resources and forest ecosystems. With this mandate, the ABCFP is making a call for changes in government policies and forest practices that have a direct effect on forest fire risk—with specific reference to forest fuel management.

Historic fire management policies focused on protection of commercial forests have resulted in extremely effective forest fire fighting capabilities that usually results in a successful, quick extinguishment of fires. BC's policies have been focused on the societal goal that relates specifically to the protection of important forest resource values because fire has been seen as a destructive force in nature with no apparent benefit. Yet as we begin to understand more about the relationship of fire and the forest, science tells us that policies and practices of the past are having a significantly negative impact on forest ecosystems, especially in fire-dependent ecosystems such as the interior of BC.

Since the Firestorm of 2003, awareness of forest fires and related social, economic and ecological impacts has never been greater. The Honourable Gary Filmon, P.C., O.M. was given the mandate to conduct an examination of 2003 interface fires and the provincial government has accepted all of the recommendations from that report. The ABCFP feels this report was only the first step in addressing a much larger problem that has been quietly growing for decades.

While the Filmon Report addressed a number of issues with regards to the wildland-urban interface (WUI), a number of changes are still required to address the issues now facing forest professionals on forestland not associated with the WUI. Specifically the ABCFP calls for the following:

- development of fire management plans in all forest jurisdictions,
- balancing wildfire and resource management decisions in all forest jurisdictions,
- development of sound risk assessment and fire protection strategies for all forest jurisdictions,
- development of sound fire management research specifically in the areas of fire ecology, forest practices and development of sound fuel treatment strategies,
- establishment of scientifically based fire management and fuel treatment demonstration areas,
- development of sound fuel management practices developed by forest professionals; and,
- maintenance and enhancement of well-funded and well-trained fire management organizations in BC that not only fight fires but also plan and manage fires and fuels.

Decades of forest fire suppression have changed the forests of BC. It will take decades to change those forests back to a more natural state where fire can once again be a part of forest ecology. The ABCFP's specific recommendations include:

Recommendation 1:
Put into place policies that enable a linkage between fire management and land management and encourage practices that adequately manage fuel loading, especially in fire-dependent ecosystems.

Recommendation 2:
Ensure Regional Land Use Plans, Land and Resource Management Plans and other landscape level plans address fire as an underlying management principle where appropriate.

Recommendation 3:
Increase attention and resources to forests beyond the wildland-urban interface. Strategies and priorities need to be developed that allow for fire risk mitigation to be incorporated with land management.

Recommendation 4:
Create a joint federal/provincial funding program to deal with reducing risk starting with the highest priority areas.

Recommendation 5:
Establish funding for research into fuel abatement projects both in the wildland-urban interface and at the broader forest level, including adaptive management trials to assess methods of dealing with fuel loading.

Recommendation 6:
Increase public education. Private land owners must take some responsibility and do what they can to mitigate potential damage from a fire through programs such as FireSmart. The public needs to better understand the trade-offs and links between fuel reduction, risk reduction, protection of human health, safety and private property, and smoke management.

Recommendation 7:
Develop a fire management plan for areas of the province impacted by the mountain pine beetle outbreak to specifically address the increased risk of forest fire. This plan should identify mitigation strategies to protect communities and other important resource values that could be negatively impacted by fire and should cover parks and protected areas as well as forests outside of parks

Recommendation 8:
Ensure a higher level of fire and fuel management content is included in the curriculum of post-secondary forestry programs.

Recommendation 9:
Develop clear and concise definitions of what constitutes a fuel hazard. Identify mitigation techniques that provide protection to ecological, social and economic values.

Recommendation 10:
Fund research focusing on operational trials to determine the best way to address fuel hazards.

Recommendation 11:
Increase resources to improve the Canadian Fire Behaviour Prediction system to address the diversity of fuel types within BC.

Recommendation 12:
Develop policies to allow forest professionals to address and manage fire risk, especially in areas adjacent to the wildland-urban interfaces.

Recommendation 13:
The Ministry of Forests and Range must be given the resources to expand its fire management program and training to address the fuel management problem and the Ministry of Environment must be given resources to plan for fire management.

Background

The Association of BC Forest Professionals (ABCFP) represents 4,400 members including Registered Professional Foresters and Registered Forest Technologists (collectively called forest professionals) who are responsible for ensuring good forest stewardship throughout the province of British Columbia.

Since the late 1960s, forest professionals in British Columbia and across North America have used rapid and aggressive initial attack policies and strategies on fires. While these policies and strategies have been very successful in limiting the number of fires, there is a growing trend of higher costs, losses and damage in frequent fire regimes (high frequency of fire usually results in low severity of impact of those fires) where catastrophic fire losses have historically been lower. While forest fire fighters have achieved very high rates of success (over 95 per cent on average) at extinguishing fires quickly within Canada and the U.S., it is a small number of fires (<1 per cent) that account for more than 80 per cent of suppression related expenditures and greater than 90 per cent of the total area burned.

The wild-urban interface (WUI) has been the focus of attention because of the events of the 2003 fire season. The government considers the highest priority to be protection of life and property at greatest risk. While the ABCFP appreciates the strategic need to concentrate on human values such as public safety as well as private and public property, there are numerous other forest values that must be considered in a broader provincial forest fire management strategy.

Firestorm 2003 negatively impacted forest values throughout a large area of British Columbia. The scale and impact of these fires resulted in an unprecedented impact on communities in the post contact era of BC history. The government response to the fire crisis was admirable in the commitment to both human and financial resources. The *Firestorm 2003 Provincial Review* (Filmon 2004) recommended changes to emergency management systems, forest management, interface fire response and interface fire recovery. The report provided a clear mandate for changes to the policy and practise of fire management in British Columbia.

The focus of this paper is to review some of the current challenges associated with fire management in BC and to assist in developing workable solutions to address some of the complex issues associated with the growing fire problem in many parts of the province. This paper goes beyond the Filmon Report and examines forest fire management policies both past and present. The goal of this paper is to foster debate, which will hopefully improve forest policy surrounding forest fires, especially as it pertains to the relationship of fire, fuel management and ecological restoration. It is also hoped that this paper will lead to increased public communication and education on this important issue.

Balancing Conflicting Goals & Objectives

Currently, many of our land management goals and objectives are in conflict with basic principles of fire management. Over the last 25 years, our ability to treat fuels through the application of prescribed fire has been limited by smoke and other environmental management legislation and standards. The multiple goals of maintaining timber inventories, human structures and high air quality have outweighed the need to reduce hazardous fuels and restore altered ecosystems. Yet it is almost unrecognized that large uncontrolled fires may have a far greater impact on air quality when compared with the release of carefully controlled and monitored smoke from prescribed burning. While human health and other values cannot be overlooked, rules and regulations must be balanced to mitigate fire risk.

Human development in the WUI must be carefully planned to ensure those developments are not vulnerable to fire. Some British Columbians learned a harsh lesson during Firestorm 2003. Most of the communities threatened by WUI fire demonstrated that the desire to live within the forest is not without risk. Within high-risk fire communities, consideration must be given to all available protection options including structure protection, vegetation management, emergency response, communication and education, and training.

Within the working forest, the government's goal to maximize timber production within dry forest ecosystems is at odds with ecological principles. The goal to fully stock and occupy sites within these ecosystems has substantially increased fuel loadings and fire behaviour potential. Historically these stands were more open and maintained by frequent fire. In addition, where stocking levels are high, competition for moisture and nutrients has increased the stand-level susceptibility to pathogens and disease. Forest professionals must better understand how stand structure is related to fire behavior and in turn link this understanding to development of appropriate policies, prescriptions and practices.

Ecological Effects of Long-Term Fire Exclusion

Fire suppression policy over the last 70 years in North America has been focused on protection of life, property, timber and other important forest related resource values. While these policies have led to very effective fire fighting response, which has limited fire damage, the unintended consequence has been widespread ecological change especially within dry forest ecosystems. These changes have had a direct impact on the ecology of these forests resulting in negative impacts on forest health and biodiversity.

The biggest ecological change in BC is associated with forests and grasslands dominated by medium to short fire return intervals (such as extensive areas of the southern and central interior). The unnatural absence of fire within these ecosystems has resulted in higher than normal levels of biomass which in turn resulted in competition for moisture and nutrients, an overall aging of the forest, changes in species composition, reduction in the area of important grasslands and associated forest health problems. The increased fire risk problem is clearly related to the unintended changes in the ecological condition of these forests and grasslands. Historic timber harvesting and domestic grazing practices, which have also altered ecosystem conditions, have further exacerbated the fire risk problem. Collectively, human influences over the past 70 years have had widespread impacts on the ecosystem and

have substantially increased landscape-level fire risk in large areas (millions of hectares) of BC.

Fire suppression has had two profound effects on the health of fire-dependent forests. Successful fire suppression and the absence of fire within many fire-dependent ecosystems have resulted in an increase in time since disturbance and the subsequent aging of the forest. The current mountain pine beetle epidemic that has to date impacted over 7.2 million hectares, is clearly linked to these forest condition changes. The Canadian Forest Service has estimated that the proportion of the forest age class susceptible to mountain pine beetle will have increased three-fold from 17 per cent in 1910 to 56 per cent in 2010 (Taylor and Carroll 2003). While climate change may be partially responsible for some of this problem, it simply exacerbates the vulnerability of lodgepole pine dominated forests to mountain pine beetle caused by fire suppression.

Other less visible forest health problems associated with fire suppression are developing throughout our fire-dependent ecosystems. These include Douglas-fir and spruce bark beetle-related mortality, increases in dwarf mistletoe infections, the frequency, intensity, and distribution of western spruce budworm attack, and the spread of some root rots. Historically, these forest insects and pathogens were kept in check by ecosystem processes such as fire.

The second significant impact of successful fire control has resulted in increased numbers of trees in dry forests (ingrowth) and grasslands (encroachment). This means there are more trees per hectare, shrinking grassland ecosystems, and more dry forest and grassland species are listed as endangered, threatened, extirpated, or of special concern (red- or blue-listed).

The increased numbers of trees has impacted many of BC's forest and grassland dependent species which have adapted over long periods of time to relatively open conditions that have resulted from frequent fire. In many dry forest ecosystems, open habitat is critical to successful germination and growth of shade intolerant plants and foraging and nesting of faunal species. Forest ingrowth and encroachment negatively affects these open habitats by influencing changes in forest successional pathways, habitat availability and the structure, species composition and function of these ecosystems. Our understanding of these changes and the specific effects on various species is limited.

Some of the policies and practices related to biodiversity protection may in fact be complicating the problem. In reserves such as parks and protected areas and old growth management areas, ensuring fire suppression in fire-dependent forests may increase the susceptibility of forests across the landscape. In addition, catastrophic events are more likely to damage those elements important to the conservation of biodiversity. These areas now require some form of management. This requirement might be active management (e.g. fuel removal) and/or passive management (e.g. let-burn policies) so the functions of these ecosystems can be restored. Biodiversity within parks may not be maintained as expected by society under present status quo fire management policies.

Within the dry forests of British Columbia and throughout North America the overwhelming effects of human influence and management has been a substantial increase in fuel, potential fire occurrence and catastrophic results. Compared to the United States, the extent of fire-related change in British Columbia is more limited due to the fact that effective fire suppression did not occur in BC until after 1940 (Blackwell et. al. 2003), when the use of

aircraft for fire suppression became more extensive. The fire-related change is also limited due to the fact that BC is further north and therefore experiences longer and generally wetter winters.

Understanding Fire Management Policy in British Columbia

Recommendation 1:
Put into place policies that enable a linkage between fire management and land management and encourage practices that adequately manage fuel loading, especially in fire-dependent ecosystems.

Recommendation 2:
Ensure Regional Land Use Plans, Land and Resource Management Plans and other landscape level plans address fire as an underlying management principle where appropriate.

From a policy perspective in BC, we are putting significant emphasis on managing suppression response, but only a limited emphasis on managing wildfire risk. In some instances, other land management policies and practices may actually increase fire risk. For instance, policies that may be in conflict with minimizing fire risk include current stocking standards, which encourages closely planted trees that must vie for water and nutrients and retention of coarse woody debris, which adds to the amount of fuel on forest floors.

British Columbia has a legislative framework that provides the necessary ways and means to manage fire in BC. The new *Wildfire Act* outlines policy and regulations for the responsibility, compliance and enforcement of fire management and consolidates these responsibilities in both the Act and Regulations. While the Act and Regulations have 'operationalizied' fire management, there is no linkage to land management policies that may be increasing the risk of high probability, high consequence fire. Within the Ministry of Forests and Range, the separation of fire management from land and forest management has created an outstanding fire fighting organization. Unfortunately, it has had the undesired consequence of limiting the advancement of fire science in the implementation of land management policy. Current policies lack a strong mandate to address fuel hazard abatement and must be revised to encourage an improved level of planning and practice.

Over the past twenty years we have developed land management policies that often do not consider fire. Regional Land Use Plans developed throughout the province are a case in point. Of the Regional Land Use plans completed to date, the only plan to adequately address fire as an underlying management principal is the Kootenay-Boundary Higher Level Plan. Other Land Use Plans in fire prone areas of the province (e.g. the Cariboo) lack adequate content on fire management issues. The same statement is true when comparing Land and Resource Management Plans. While we are quickly learning that ecosystem condition is a key determinant in wildfire potential, our land management

policies fail to consider this issue adequately.

There is little doubt that wildfire potential in many parts of the province is increasing, while at the same time there is an increasing social expectation for improved fire protection. Ecosystem condition is the single most important factor in determining wildfire potential that management can address. Our legislation and policy must address the linkage between basic forest ecology, timber harvesting and subsequent silvicultural treatments, and fuel accumulation. Within our policy framework there must be recognition that fire control efforts alone will not solve the growing fuel accumulations, fire severity problems, forest health and biodiversity problems. Fire policies need to be more directly related to fuels policies, and our fuels policies need to be more closely aligned with our forest management policies – all should have a stronger base in ecosystem science.

The Fire Risk Problem—the Challenge

Recommendation 3:
Increase attention and resources to forests beyond the wildland-urban interface. Strategies and priorities need to be developed that allow for fire risk mitigation to be incorporated with land management.

The wildland-urban interface can be described as a region or zone that contains human development and wildland simultaneously. This zone is where a wildfire can easily destroy the human development contained within it. In 2004 the Union of BC Municipalities and the Ministry of Forests and Range Protection Branch undertook a mapping project to identify moderate and high-risk WUI within the province. The analysis found that more than 684,000 ha of WUI were classified as high-risk. The combined area of moderate and high-risk WUI was 1,720,000 ha across all land ownership categories.

While community protection planning is of primary importance, the province must expand its efforts to reduce fire risk across a much broader spectrum of forestland. Our watersheds, protected areas, commercial forest, flora and fauna, and tourism and recreation resources all face similar fire risks. Significant fire related losses to these resources could also severely impact the economic, social and biological values of the province as well as public health. A broader approach means the province must engage all stakeholders in developing priorities and risk mitigation strategies that are compatible with land management objectives.

The Complexities

As a province, we face many challenges in addressing the fire and fuels problems already described. One of the most difficult issues is dealing with the scale of the problem. As identified in the Filmon Report, the province must develop strategic priorities and set reasonable targets and goals to reduce risk in the highest priority areas. The resources and dollars required to reduce risk are limited and yet the estimated funds needed to fix the problem

seem overwhelming. Funding hazard-reduction treatments requires a significant commitment from all levels of government including municipal, regional, provincial and federal. The Association of BC Forest Professionals endorses the creation of a joint federal/provincial funding program to deal specifically with this problem.

Recommendation 4:
Create a joint federal/provincial funding program to deal with reducing risk starting with the highest priority areas.

Recommendation 5:
Establish funding for research into fuel abatement projects both in the wildland-urban interface and at the broader forest level, including adaptive management trials to assess methods of dealing with fuel loading.

Along with funds and resources there must be more consistent approaches to dealing with the fire and fuel problems. Currently, there is only limited coordination in research and application of fuel treatments. Since the 2003 fire season, there have been a number of pilot treatment proposals and some active work on the ground. To date, many of these treatments can best be described as trials with limited data collection, analysis and reporting to facilitate continuous improvement and understanding. Without proper research and active adaptive management trials, the probability of success is diminished. Typically there is a lack of clear management goals and objectives and a poor understanding of the strategic placement of treatments, such as what scale of treatment is required, how treatments will alter vegetation, dead fuels, and soils, and how long treatments will be effective. These uncertainties can lead to creation of unanticipated problems.

The United States has expertise we can draw upon. Joint ventures could be established for cross-border sharing of knowledge and expertise.

Recommendation 6:
Increase public education. Private land owners must take some responsibility and do what they can to mitigate potential damage from a fire through programs such as FireSmart. The public needs to understand the trade-offs and links between fuel reduction, risk reduction, protection of human health, safety and private property, and smoke management.

Land ownership further complicates the ability of fire managers to develop a comprehensive and consistent strategy within all jurisdictions. Private land ownership often precludes addressing identified fire issues. Different levels of government are limited in capacity by barriers associated with funding, legislation and regulation, technical knowledge, and staff and equipment resources. First Nations treaty negotiations also complicate jurisdiction and responsibility for fire management.

All of the issues described above highlight the complexity of the fire problem in BC and the need for strong leadership. Leadership is required within academia, stakeholders, and governments. The Association of BC Forest Professionals members can play a strong role in helping to solve this problem. Foresters and technologists, as professionals, have a mandate to manage and protect forestland and forest resources through application of prescribed fire and other practices to reduce fire potential and fuel build-ups, and by prevention and suppression of unwanted fires. Unfortunately the current culture in our society does not support prescribed fire as a tool to help augment other activities that reduce the risk of unwanted fires.

Recommendation 7:
Develop a fire management plan for areas of the province impacted by the mountain pine beetle outbreak to specifically address the increased risk of forest fire. This plan should identify mitigation strategies to protect communities and other important resource values that could be negatively impacted by fire and should cover parks and protected areas as well as forests outside of parks.

The current mountain pine beetle (MPB) epidemic expanding through the central and southern interior of the province is an additional concern that must be considered in addressing fire risk. Up until 2004, the primary goal of MPB management was been to minimize the spread of the beetle outbreak, while at the same time maximizing the extraction of the highest economic value from the forest. Since 2004, the focus has been on salvaging the dead and dying timber at the heart of the attack and efforts to control the spread are concentrated at the extreme edges. In particular, control will be focused near the Alberta border and the boreal forest. Another essential focus would be to consider the environment in these heavily MPB impacted areas. Wildlife habitat, species at risk and hydrology are being impacted by the epidemic.

While the ABCFP supports this approach in principle, there is a need to be more aggressive concerning strategic planning and actions to address beetle-caused fire risk. Current fire science suggests that significant beetle related changes in forest fuels are not likely for 15 to 20 years and that there is a window of opportunity to plan for, and mitigate this hazard. Once a substantial portion of the dead lodgepole pine begins to fall, it is expected that fire behaviour potential will be greatly increased. During this period there is increased risk and our ability to control beetle-related fires is significantly reduced. The scale of the problem and our inability to deal with large areas of the current infestation suggest that we need fire management planning and practices that address the impact of the beetle outbreak on forest fuels.

The Various Roles & Responsibilities in Managing Fire Risk

Educators: Improve Current Level of Understanding of Fire Risk in BC

Recommendation 8:
Ensure a higher level of fire and fuel management content is included in the curriculum of post-secondary forestry programs.

Forest professionals practising forestry in BC have been exposed during their education and training to the principles of fire management and more specifically fire suppression. However, pressures on the forestry curriculum at the college and university forestry programs have reduced the hours and exposure of students to the broad discipline of fire management. Should this trend continue, it will result in a general reduction in the level of fire knowledge in the profession of forestry in BC and a poorer understanding of the implications of forest planning and practices on fire-maintained ecosystems. A strong foundation of education is key to understanding the multiple roles of fire and the complexities that fire exclusion can cause in an ecosystem.

Identification & Quantification of Fire Risk & Fuel Hazards

Recommendation 9:
Develop clear and concise definitions of what constitutes a fuel hazard. Identify mitigation techniques that provide protection to ecological, social and economic values.

For the purpose of this discussion, wildfire risk is defined as the probability and consequence of wildfire at a specified location under specified conditions. This definition is often inconsistent in the wildfire literature, perhaps as a legacy of the fact that most wildfire research has been broken down into specialty topics such as fire behaviour, fire effects, and fire history/occurrence. Hazard is differentiated from risk as an inherent property of a situation, substance, or operation that can have unwanted, adverse effects. Hazard and risk concepts are often confused, leading to problems in both hazard identification and risk analysis.

Assessment of fire risk should consider two components:

1. The probability of fire. The probability can be measured as a function of three components: ignition, fire behaviour and suppression response capability.

2. The consequence of fire. The consequence involves the determination of values at risk based on input of land managers and stakeholders. Typically, values at risk are determined based on land management objectives and goals that fall within three broad categories: social, economic and environmental.

Mitigating any fuel hazard involves understanding the relationship between fuel, potential ignition sources, potential fire behaviour and the ecosystem. Fire hazard depends on fuel characteristics including: loading, depth, arrangement, species composition, proportion of fuels dead and live, and piece size class distribution. All of

these attributes are affected by the frequency of fire and the productivity of the ecosystem. Some contemporary fire regimes have been altered substantially compared to historic conditions. This is the result of reduced fire occurrence, past timber harvesting and grazing practices, or of burn intensity and severity that exceed historic levels. Prolonged interruption of fires, especially in short return interval fire regimes, results in both an increase in fuel loading and a change in fuel characteristics. Recognizing the historic and contemporary context of fuels relative to their effects on the ecosystem is therefore key to recognizing a fire hazard.

Knowledge of historic and contemporary fire effects on an ecosystem should be applied to mitigation of fuel hazards and the safe design of any human developments in fire-prone ecosystems. Land management practices must consider the creation and accumulation of fuels, the type and distribution of fuel and must recognize a fuel hazard.

Treatment of Fuels Related to Fire Risk

Recommendation 10:
Fund research focusing on operational trials to determine the best way to address fuel hazards.

Treatment of fuels requires a strategic approach that focuses on the highest-hazard areas. Two distinct types of fuel hazards need to be addressed: a) fuel hazards resulting from current and future land management activities and b) fuel hazards resulting from past practices.

The treatment of all fuel hazards will require an investment in research and operational trials to determine the most acceptable economic, social and environmental approach to remove or reduce the hazards.

Understanding the Relationship Between Forest Practices and Fire Risk

Recommendation 11:
Increased resources to improve the Canadian Fire Behaviour Prediction system to address the diversity of fuel types within BC.

The science of wildfire is based on the fire triangle, which describes the elements of fire – fuel, heat and oxygen. All three elements are required to continuously sustain fire. In developing plans and prescriptions, forestry professionals and planners can restrict or manage human ignition (heat) sources (for example, by de-commissioning roads and implementing back-country closures). This has some influence over fires started by humans. Forest professionals in all aspects of their practice are also fuel managers. Yet in so many areas of the forestry profession, this aspect is often overlooked or policies do not allow for the proper management of the fuels. Forest professionals need to consider the manipulation of vegetation in the context of fuel and associated fire risk, considering the impacts on surface and crown fire potential, fire intensity and rates of spread. It takes the appropriate education and experience as well as the application of policy to allow the range of planning and practices needed to affect the fuels. Application of policy, planning and practice, and the resultant alteration of fire behaviour attributes can influence fire fighters' ability to control and suppress a fire, and greatly influences fire severity and associated impacts.

Our BC ecosystem classification system provides a reasonable measure of fire probability. While we have confidence in understanding where fires are more likely to occur, our ability to predict fire behaviour requires improved information on fuel types. In Canada, prediction of fire behaviour is based on the Canadian Fire Behaviour Prediction system. This system recognizes only 16 forest types in all of Canada, four of which are restricted to boreal forests. Consequently it does not adequately describe the diversity of fuel types in BC and work is required to upgrade this system.

Recommendation 12*:*
Develop policies to allow forest professionals to address and manage fire risk, especially in areas adjacent to the wildland-urban interfaces.

The more difficult task in defining fire risk is in understanding the potential consequences of a fire. The Okanagan Mountain Park Fire in 2003 completely altered our perception of consequences by burning into a large wildland-urban interface community of homes. In addition to the WUI, other fires damaged important watersheds, habitats, community infrastructure, businesses, valuable forest inventory and silviculture investments.

While a fundamental goal of forest fire fighting professionals has been the protection of all forest resources including life and property, historically our forest protection efforts have been focused on the protection of commercial forests. In British Columbia, the impacts of wildfire on other non-timber resources, until recently, have been limited. Since the Garnet Fire of 1994 (in Penticton) there has been a growing awareness that the fire risk profile (the combined probability and consequence of fire) in BC has been dynamically changing. This change in risk profile requires forest professionals to think outside traditional boundaries and expand risk assessment to include a much broader suite of values. Forest professionals are also responsible for management of non-timber values such as a watershed and forestland adjacent to a WUI; they must address fire risk to these values through plans and prescriptions in a meaningful way.

While it is the responsibility of the Ministry of Forests and Range to manage and suppress fires, it is the responsibility of practising forest professionals to identify, minimize and manage fire risk.

Development of Sound Risk Reduction Strategies

Recommendation 13:
The Ministry of Forests and Range must be given the resources to expand its fire management program and training to address the fuel management problem and the Ministry of Environment must be given resources to plan for fire management.

If forest professionals are to successfully manage wildfire risk, we must begin to integrate sound risk reduction strategies at all levels of planning and practice. For example, the forest-planning framework typically allows for the designation of static or relatively unmanaged reserves in landscape and topographic positions that poorly consider the dynamic nature of fire as well as climate change. At the stand level, practices such as preserving coarse woody debris or the creation of spacing and pruning slash, are often inconsistent with wildfire hazard and risk principles.

Prior to the 1980s, there was greater recognition of fire risk and a common practice was to provide large fuelbreaks

that crossed complete drainages. At the stand level, many clearcuts were prescribed burned (for hazard abatement and plantation site prep). The forest industry and government were highly skilled in the practice of prescribed fire and knowledgeable in consideration of the hazards and risk associated with both prescribed and wild fire. Today much of this knowledge and expertise has been lost within industry and government. While the Ministry of Forests and Range's Forest Protection Program does an admirable job of prevention and suppression of wildfires, they lack the training and resources to deal with the scale and complexity of fuel management in BC. Similarly, forest licensees and contractors with fuel management expertise are lacking.

Despite the fact that the Ministry of Environment is responsible for a substantial portion of British Columbia (approximately 12 per cent of the province) there is little planning done on those lands for fire management. While the Ministry of Forests and Range implements fire management on these lands on behalf of the Ministry of Environment, the Ministry of Environment should also be given the resources to plan for fire management.

Responsibility for Risk Reduction

The regulatory framework for determining a fire/fuel hazard is currently contained within the *Wildfire Act* and the *Wildfire Regulation*. Responsibility for current and future abatement of a fuel hazard, once identified, is the responsibility of the party that created the hazard. Responsibility for the abatement of fuel hazards resulting from historic practice and policy should be the responsibility of the landowner, which for the majority of BC is the provincial government.

Required Changes in Management of Fire Risk

The *Firestorm 2003 Provincial Review* by Gary Filmon highlighted the need to:

- promote more advanced ecology and specifically fire ecology training within all agencies; and,
- support public communication and education programs related to improving the public's understanding of the role of fire in our ecosystem.

It cannot be stressed more strongly that public education and awareness of fire management issues must increase. The most obvious avenues are through media events such as National Forest Week as well as through policy and position papers like this one. Other venues include public service prevention campaigns. Specific messages of public education programs should include:

- wildfire is a natural process that needs to be reintroduced into the ecosystems of British Columbia,
- where fire cannot be safely reintroduced, alternative treatments should be conducted to reduce fuels; and,
- fire management, and particularly fuel management, is a key component of forest management.

Through recent changes to the *Foresters Act,* the Association of BC Forest Professionals has a role to play in advocating and upholding the principles of sound forest stewardship. To accomplish this, changes are required to fire management on crown, federal and private land throughout British Columbia. Specifically the association calls for the following:

- development of fire management plans in all forest jurisdictions,
- balancing wildfire and resource management decisions in all forest jurisdictions,
- development of sound risk assessment and fire protection strategies for all forest jurisdictions,
- development of sound fire management research specifically in the areas of fire ecology, forest practices and development of sound fuel treatment strategies,
- establishment of scientifically based fire management and fuel treatment demonstration areas,
- development of sound fuel management practices developed by forest professionals; and,
- maintenance and enhancement of well funded and well trained fire management organizations in BC that not only fight fires but also plan and manage fires and fuels.

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Glossary

Wildland-Urban Interface (WUI)
A region or zone that contains human development and wildland simultaneously

Fire-Maintained Ecosystem
Where the structure, function and ecosystem process is maintained by a given fire regime.

Fire-Maintained Stand
A stand of trees where the attributes that describe the stand are maintained by fire.

Fire Regime
The combination of fire frequency, predictability, intensity, seasonality, and extent characteristic of fire in an ecosystem.

Wildfire Risk
The probability and consequence of wildfire at a specified location under specified conditions.

Dry Forests
Mainly biogeoclimatic zones PP and IDF.

Hazard
Hazard is differentiated from risk as an inherent property of a situation, substance, or operation that can have unwanted, adverse effects.

Risk Profile
Describes the combined probability and consequence of fire within a given management unit.

Forest Stewardship
This term has many definitions in the literature but for the purposes of this discussion it can be defined as the protection of important environmental, social and economic forest values.