

Wildfires on Community Forests: Preparedness, Management, and Recovery



UBC Alex Fraser Research Forest
BC Community Forest Association
11/12/2019

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Cover photo: BCWS fire crews on a prescribed burn, from Les Husband.

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Introduction:

On March 12 and 13, 2019 the BC Community Forest Association and the UBC Alex Fraser Research Forest organized a workshop in Williams Lake, BC to address key topics relating to wildfires and community forests. This workshop covered the four pillars of emergency management: prevention/mitigation, preparedness, response, and recovery.

This workshop was held in response to the record-setting wildfire seasons of 2017 and 2018 in BC, where many communities and community forests across the province were directly and indirectly impacted by wildfires. This workshop was an opportunity for community forest managers to share experiences, challenges and success stories relating to emergency management around the province. In attendance were community forest managers; First Nations and local government officials; industry foresters and consultants; Ministry of Forests, Lands, Natural Resource Operations and Rural Development employees; BC Wildfire Service (BCWS) representatives; researchers/academics; and students. Attendees and presenters traveled to Williams Lake from all over the province.

Over the two full days of the workshop a series of presentations and in-depth audience discussion sessions were organized into four panels - framed around the four pillars of emergency management – entitled “Suppression and Response”, “Preparedness”, “Recovery”, and “New Paradigms for Forest Management”. A complete list of presentations can be found at the end of this document and presentations are available at bccfa.ca/WildfireWorkshop2019.

Suppression and Response

Panel 1a: Firefighting on community forests: experiences of our members

Moderator: Stephanie Ewen, Alex Fraser Research Forest

Presentations:

- Susan Mulkey for Erik Leslie, Manager, Harrop-Proctor Community Forest: *Harrop-Proctor Community Forest 2017 Fires*
- Jason Regnier, Manager, Cheslatta Community Forest: *Cheslatta Community Forest 2018 Fires*

Key messages:

1. Community forests play key role in initial attack and response, particularly in more remote areas
2. Pre-existing relationships and trust are critical for effective communication and coordination
3. Suppression priorities need to consider multiple values on the landscape – requires ability to integrate mapping
4. Impacts to area-based tenures different to those on volume-based tenures

Summary of presentations:

The opening panel shared experiences of wildfires within community forests, including challenges and opportunities for engaging in suppression activities, impacts of wildfires to community forest values, and key lessons learned. Presenting on behalf of Erik Leslie, Manager of Harrop-Proctor Community Forest, Susan Mulkey spoke about the 2017 wildfires that impacted this community forest, and the key role that community forest staff played in communicating between the BCWS and the public. In this highly limited terrain, local knowledge proved key in guiding fire suppression activities, and existing community forest roads were important in providing access.

Jason Regnier then shared his experiences of the 2018 wildfires in the Cheslatta Community Forest, and the unique challenges faced due to this forest's location away from the community and up to three hours from support centres such as Burns Lake. Located in the heart of Cheslatta Carrier First Nation's traditional territory, this community forest holds a range of significant values and cultural heritage values that need to be recognized and incorporated into BC Wildfire Service mapping. After approximately 60% of the community forest tenure burned in 2018, there was even greater need to understand the values that remained and generate revenue (such as through salvage operations).

Looking forward, Jason emphasized the importance of playing a more active role in firefighting activities, both in terms of utilizing local capacities and equipment in mitigation works and establishing initial attack and strike teams to respond to fire events.

“We wear our area-based tenures on our sleeve and have such a connection to our land base” – Susan Mulkey



Photos from Erik Leslie, Harrop-Proctor Community Forest

Case study: 2017 wildfire in Harrop-Proctor Community Forest

On July 27, 2017, a lightning strike ignited a wildfire in the Harrop-Proctor Community Forest, located between Harrop and Proctor in the west Kootenays. The steep topography of this landscape was highly limiting, posing challenges for access and response. From day one, it became clear that BCWS needed to collaborate closely with the community forest in order to access mapping and local knowledge and to effectively communicate with the broader public. Erik Leslie, community forest manager, played a key role in communicating with community members during the fire – for example, utilizing existing listservs to issue daily fire updates - and liaising with the BCWS. These pre-existing relationships and trust were acknowledged as being essential in helping leverage quick decision-making, such as establishing access trails and fire guards in the community forest. Looking to the future, proactive landscape level planning and strengthening relationships between communities and government agencies will be key in managing wildfire risk.

Discussion:

Two key issues emerged from this first discussion session: firstly, the different nature of risk and impact to area-based tenures compared to volume-based tenures, and secondly the need to be able to integrate existing mapping into BCWS's system to communicate where the key values are on the landscape. Stephanie Ewen, manager of Alex Fraser Research Forest, asked Jason how soon firefighting crews were on the ground; in response, Jason said that response was slow due to being deemed a lower priority, particularly when compared to other fires which were posing risks to houses. He also spoke about the need to shift from direct to indirect attack strategies, particularly given how climate change is resulting in larger and more intense fires.

Discussions then shifted to how community forests can support the BCWS to ensure that their investments on the land base are protected. Ken Day, former manager of Alex Fraser Research Forest reflected on his experiences from the 2017 wildfires and the frustration of not being able to effectively integrate their mapping with the BCWS. Both Ken and Lori Daniels emphasized the need to address this issue and develop solutions so that people with existing data can easily input this into BCWS systems, both prior to and during fire events. Finally, discussions touched on how to build local suppression capacity, from liaising with the local Fire Center to coordinate trainings to improving partnerships with local logging contractors to provide machinery and personnel.

Panel 1b: Changing approaches to fire operations and co-operation with tenure holders

Presentations:

- Jamie Jeffreys, Director, Partnerships and Indigenous Engagement, BC Wildfire Service, Kamloops: *Partnerships and strategic engagement*
- Les Husband, Deputy Director, BC Wildfire Service: *Wildfire management branch operations*

Key messages:

1. Engagement must occur across all stages of emergency management
2. Human life and safety is primary concern driving operations
3. Capacities, resourcing and planning processes vary across Fire Centers
4. Increasing fire size and intensity pose challenges for initial attack and suppression and changing tactical approaches
5. Prescribed burning is an important tool for managing fine fuels

Summary of presentations:

This panel focused on current and emerging activities of the BCWS in the fields of fire operations and cooperation with tenure holders. Jamie Jeffreys discussed her role within the Partnerships and Indigenous Engagement program, involving engagement with First Nations and other stakeholders and collaborating with the First Nations Emergency Services Society (FNESS) to support capacity building. She then introduced the draft 'Protocol Agreement between BCWS, Woodlot Licenses and Community Forest Agreement Holders' (see case study box below), which is being developed to clearly lay out the partnership between these parties and to form a basis for collaborating across all stages of emergency management and planning.

Les Husband then spoke to the operational side of fire management, including changes in tactical approaches following the 2017 and 2018 wildfire seasons and in response to increases in fire size and severe fire weather conditions, as well as the challenge of responding to multiple fire events across multiple Fire Centers as occurred in 2018. After highlighting the BCWS's four priorities (of, in order: human life and safety; property and infrastructure; high environmental and cultural values; and resource values), Les highlighted the need for proactive fuels management around industrial tenures such as windfarms, the potential role of prescribed burning (including broadcast burning) for managing fine fuels, and the need to collaborate with industry to involve contractors in fire response and suppression activities, particularly with the lengthening of fire seasons and events.

"Fuel loading and conditions of forests are in a volatile state" – Jamie Jeffreys



Slides from Les Husband, Wildfire Management Branch



Case study: Draft Protocol Agreement between BC Wildfire Services, Woodlot Licenses and Community Forest Agreement Holders

This draft agreement has been developed to provide the basis from which BCWS, Woodlot Licensees (WL) and Community Forest Agreement (CFA) holders can build and/or improve their working relationships around emergency management and fire risk mitigation including preparedness, prevention, response and recovery. The document is structured around the key headings of: building relationships between Fire Centers and zones, WLs and CFAs; prevention; preparedness; response; and rehabilitation.

The draft agreement acknowledges the importance of WLs and CFAs in forest management, including supporting fire risk mitigation, and outlines ways in which the parties can communicate and work together across all stages of fire management and planning. These include working together on hazard assessments; ensuring the involvement of WLs and CFAs in the development of Community Wildfire Protection Plans; identifying local fire crews and training needs; engaging WLs and CFAs in fire operations and plans; capitalizing on local knowledge; and supporting WLs and CFAs in conducting rehabilitation in areas of fire suppression activities.

Discussion:

This in-depth and wide-ranging discussion session touched on issues of capacity building and capacity limitations, the role of community forest managers in communications during fires, open burning and smoke regulations, and implementation of the draft protocol agreement across the province. Gord Chipman from Alkali Resource Management stressed the need to have a clear understanding of what community forest managers can and can't say during fire events, and a common understanding of terminology and public communications strategies. In response, Jamie highlighted how the BCWS were more actively communicating updates during the 2018 season, in particular on social media, and recognized that they need to proactively

identify and engage with key local contacts (such as community forest managers) prior to the season.

Another key question related to how smoke management regulations impacted potential mitigation strategies. Les acknowledged that much prescribed burning and broadcast burning was stopped due to smoke regulations, but expressed that he thought people were becoming more tolerant and stated that prescribed burning – resulting in controlled amounts of smoke at defined times as opposed to two to three months of being ‘engulfed’ – is a key part of fire mitigation work. Discussions also touched on how block layout needed to align with broadcast burning objectives, and the opportunities for community forests to collaborate with universities on research into carbon emissions associated with prescribed burning.

The draft protocol agreement was viewed by many as a good start to building partnerships, however questions were raised as to how it would be implemented around the province and what support was available for communities. Jamie said it was intended as an overarching provincial agreement, and that the BCWS would be working with each of the fire zones to ensure it was implemented in a consistent manner. While she spoke about funding opportunities, such as through the recently established Community Resiliency Investment Program (CRIP), Lori Daniels from UBC raised the point that the approach still seemed to place the onus on communities – many of which lack the capacity and expertise to navigate funding programs - to ‘become engaged’. Both Les and Jamie recognized this need to build capacity and noted that each Fire Center has a staff member tasked with providing advice to communities. One recommendation posed was for regional positions to be established with a mandate to actively seek out communities that do not yet have a Community Wildfire Protection Plan implemented and engage with those communities to understand capacity and resourcing needs.

Preparedness: what does it take to be prepared?

Panel 2a: Managing our community forest for fire suppression through prevention, preparedness and communication

Moderator: Mike Gash, Manager, Cariboo Fire Center

Presentation: *Managing Community Forests for Fire Suppression through Prevention, Preparedness, and Communication*

- Hugh Flinton, Manager, Williams Lake Community Forest
- Matt Lees, Fuels Specialist, Wildfire Management Branch

Key messages:

1. There is a need to build strong relationships with the fire zone before the fire season
2. Fire preparedness activities can be aligned to the management of other values
3. Layout of treatments is critical for landscape level preparedness
4. Need to be proactive in communicating activities to the public, including local communities

Summary of presentations:

In this combined presentation, Hugh Flinton and Matt Lees spoke about the diversity of approaches to fuels management and wildfire risk mitigation that can be undertaken on community forests, how these activities can and should align with the management of multiple other values on and uses of the landscape (such as providing access to water points serving both suppression activities and cattle grazing), and the importance of communication and relationship building with both local communities and the BCWS.

Both emphasized the importance of landscape level planning and fuel breaks, and of considering block and road layout in light of analyses of fire risk and potential response. Hugh also spoke of the opportunities to align fuels treatments with grassland restoration, and the need to be aware of areas where the absence of fire has resulted in decreased ecosystem resilience (such as infilling of trees in former grassland areas) and increased fire risk. The presenters discussed a range of fire preparedness activities in community forests, such as conducting treatments along roads to prevent spread of fire; additional signage to help with navigation and access; and mechanical treatments to restore open forest and grassland areas.

Finally, the need to improve communications – both in terms of “communicating the good work” being done with local communities, and communication with the local fire zone – was discussed. In terms of relationship building between community forests and the BC Wildfire Service, Hugh outlined a three stage approach of 1) reaching out in March or April to ensure the fire zone is aware of key assets and values on the land base 2) during fire seasons, engaging with the Fire

Center's industry liaison (including joining weekly industry calls) and 3) ensuring early and ongoing engagement to support suppression activities.

"We're dealing with an eventuality. We need to be prepared to manage it when it does [occur]" – Hugh Flinton



Slide from Hugh Flinton and Matt Lees

Discussion:

A key discussion topic raised by Jennifer Gunter and Susan Mulkey, both of the BCCFA, related to the interactions between landscape restoration projects and land use planning, and potential trade-offs with long-term timber supply. In response, Hugh shared his 'optimist' perspective that successful landscape-level ecosystem restoration would result in improvements to ecosystem resiliency, which would in turn result in increased timber supply. In contrast, under declining resilience, there was a greater risk of disturbances such as wildfire negatively impacting timber resources. The question was also raised as to how land use planning and associated land designations is considered when planning for ecosystem resiliency. Hugh spoke of how, as an area-based tenure with a relatively small footprint, there was an opportunity to pilot projects and "get a foot in the door" in terms of shifting from an approach of managing static reserves to managing for ecological resiliency; a conversation that the Williams Lake Community Forest was starting to engage in.

In the context of fire response and suppression activities, Dave King raised the challenge of maintaining relationships and clear communications with fire crews on project fires, particularly

when crews are constantly changing over and/or from out of the region. Hugh stressed the importance of understanding the systems in place for project fires and to work closely with the Fire Center. This was reiterated by Les Husband from the BCWS, who said that since 2017 a new system has been implemented in which Incident Management Teams are required to have check ins at the Fire Center, providing an opportunity for ensuring that messages can be consistent and transferred between teams.

"No management is a form of management, and it's having consequences" – Lori Daniels

Panel 2b: Community contract crews and equipment

Presentations:

- Cedar Elliot and Margaret Symon, Khowutzun Forest Services: *Khowutzun Forest Services Contract Firefighting Crews*
- Gord Chipman, Alkali Resource Management: *Alkali Resource Management Contract Fire Crews*

Key messages:

1. Value of having firefighting crews extends beyond suppression capacities – also builds rapport and self-confidence
2. High costs associated with establishing crews (training, equipment, physicals etc.)
3. Strong interest in sharing information about the process and requirements for establishing crews
4. Communities want to see more (prescribed/cultural) fire on the landscape, but requires close collaboration with the BC Wildfire Service

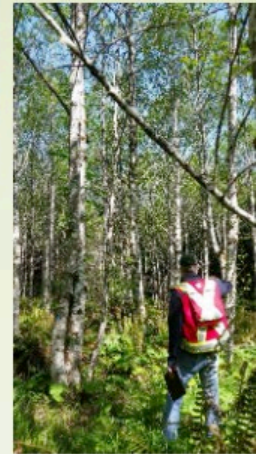
Summary of presentations:

This panel delved deeper into questions of how community forests can build capacity to more actively participate in fire suppression, particularly through the development of contract firefighting crews. Cedar Elliot and Margaret Symon shared the story of Khowutzun Forest Services (KFS), which was established as a partnership with Cowichan Tribes to provide training and employment opportunities for tribe members. In addition to providing silviculture training and services, a key activity of KFS involves establishing and training firefighting contract crews. Through significant investment in trainings – from the S-100 Basic Fire Suppression and Safety to Indigenous Cultural Safety Training and more – KFS established nine five-person crews by 2018, with all crew leaders qualified as strike team leaders. In addition to increasing local fire preparedness and response capacities, this investment has resulted in significant improvements in both employment and self-confidence of tribe members.

Similarly, Gord Chipman shared how Alkali Resource Management (see case study box below) began the process of establishing firefighting crews in 2010 with a standing offer from BCWS; a program that was rapidly expanded during the 2017 wildfire season that directly impact Esk'etemc Community Forest. In addition to contracting crews around the Cariboo, ARM has collaborated with BCWS to conduct prescribed burns, primarily for ecosystem restoration: a direct response to community-expressed wishes to see more fire on the landscape. After conducting approximately 100 and 300 ha of prescribed burning in 2018 and 2019 respectively, ARM has a long-term plan of implementing approximately 1000 ha of burning across their land base each year.

"Everything has history and value to us, and that's why we do what we do." – Darren Stanislaus, Esk'et/Alkali Resource Management

Khowitzun Forest Services



Slide from Cedar Elliot and Margaret Symon

Case study: Alkali Resource Management Contract Fire Crews

Established in 2001, Alkali Resource Management (ARM) is an integrated forest management company that manages forest tenures on behalf of Esk'etemc, and provides contractor and natural resource management services. In 2011 they were awarded a contract with BC Wildfire Service to provide two five person type III wildland fire crews, and have since continued to expand their fire suppression capacities. In 2017, as the record-breaking wildfire season was just commencing, they recognized there would be a need for increased capacity and quickly expanded to eight five person crews, who were deployed around the Cariboo for the next 10 weeks. During the 2018 wildfire season, ARM deployed an additional two type II crews around the province. Funding for training and capacity building has come from ARM internal funds, with additional funding sought for training and capacity building. A minimum of three five-person type III crews was seen as being needed to justify the investment in providing support systems and logistics.

Working closely with BCWS and the District office, ARM's crews have also been involved in conducting prescribed burns - getting 'fire back on the landscape' - for ecosystem restoration. This close collaboration with the BCWS was emphasized as being key for addressing concerns around liability managing risk.

Discussion:

There was a lot of interest in learning more about the process and requirements for establishing firefighting crews, including training needs and funding models. While Alkali Resource Management has received some funding from government programs that support training and capacity building to complement internal funding sources, KFS funds all aspects of their crews through company revenue. Lori Daniels from UBC commented on the importance of information sharing through fora such as the BCCFA, and inquired as to whether there would be interest in compiling a step by step 'how-to' guide for establishing contract fire crews. While Gord Chipman said that this process was laid out in the BC Bid standing offer, there was broad interest in the BCCFA developing such guide. There were also discussions as to gender representation on crews; within Alkali Resource Management's crews, Gord estimated approximately 10% of crew members are women. Both Darren Stanislaus (ARM) and Jennifer Gunter (BCCFA) commented on the multiple benefits of ensuring gender diversity, and Cedar Elliot noted that many of the younger generation of women (i.e. daughters of long-standing fire crew members) who had grown up around firefighting were now expressing interest in joining.

A question was also raised as to how liability was managed when conducting prescribed burns. Gord Chipman emphasized the importance of working closely with the BCWS, and Matt Lees noted that when burns are considered as ecological restoration burns, and are approved under a burn plan with BCWS, this addresses much of the liability. Mike Gash raised the value of joint training between Indigenous community members and the BCWS to build knowledge and skills in the implementation of prescribed fire. Darren Stanislaus noted the risks associated with prescribed fire, but highlighted the importance of getting fire back on the landscape in order to manage wildfire risk.

Panel 2c: Fuel treatments: celebrating success

Presentation: *Williams Lake Indian Band Fuels Treatments*

- Steve Capling, DWB Consulting
- Chief Willie Sellars, T'exelc (Williams Lake Indian Band)

Key messages:

1. Fuel management has the dual objectives of reducing risk and 'putting people to work'
2. Treatments include danger tree falling, canopy separation (minimum 6 m), ladder and fine fuel removal, debris reduction – leaving some visual screen around homes
3. Land use designations (e.g. OGMAs, Mule Deer Winter Range) and visuals can be constraints to fuel treatments, but amendments possible
4. Following the fires, community members recognize the value of treatments

Summary of presentations:

In this final panel for day one, Steve Capling (DWB) and Chief Willie Sellars (T'exelc/Williams Lake Indian Band) shared the ten-year history of fuel management on the Williams Lake Indian Band reserve and the experiences of responding to and recovering from the 2017 wildfires. Steve spoke about the process for obtaining funding and approvals for conducting treatment on reserve lands and gave examples of prescriptions and objectives such as retaining large junipers (due to their cultural value), removing ladder fuels, danger tree falling, canopy separation, and retaining deciduous species such as willows and aspen. For these forms of manual treatments, conducted with crews of four to five people at a rate of 0.2 to 0.5 hectares/day, costs ranged between \$1000 and \$7000 per ha. While funding for initial works to address Mountain Pine Beetle kill in 2008 and 2009 came from the Canadian Forest Service, subsequent funding has come from both FNESS and internal source revenue from the band.

Chief Willie spoke of the value of conducting these treatments, not only in terms of managing fire risk – the majority of areas that were treated did not burn in the 2017 wildfires – but also “putting people to work”. Following the 2017 fires, Williams Lake Indian Band were able to partner with Tolko to salvage approximately 200,000m³, however Chief Willie estimated that these fires resulted in a loss of up to \$3M in value; the band are now seeking additional tenures throughout the region. On the whole, both presenters emphasized the importance of engaging with community members to proactively manage risk, and with the BCWS to collaborate in fire suppression activities.

“Firefighting is something we’ve done forever.” – Chief Willie Sellars

Before - After



Photos from Steve Capling

Discussion:

The discussion period offered an opportunity to learn more about the fuels treatment prescriptions developed for the Williams Lake Indian Band reserve, and how these are balanced with the multiple objectives and land use planning designations in the region. Steve clarified that of the approximately 800 hectares that burned immediately around the reserve, perhaps only 30 ha were in areas that had previously been treated. The presenters also clarified that treatments were modified when in close proximity (e.g. 10 metres) from homes, with only minor pruning conducted so as to leave a visual screen. Since 2017, Chief Willie said there had been a large uptake of the FireSmart program and associated principles, with the band working with homeowners (who provide contributions in terms of labour time) to maintain homes and backyards. While this has been funded from band revenue, Chief Willie noted that they have been trying to access funding to conduct these and other fuels treatments.

Stephanie Ewen (Alex Fraser Research Forest) observed that, from the pictures shown, there appeared to still be relatively high densities of trees around houses. Steve commented that budget and timelines constrained the intensity of some treatments, and that they had focused on taking out smaller stems. However, he noted that they will ideally go back and re-treat, particularly as opening up stands has resulted in greater grass growth and growth from side shoots. The goal was to achieve approximately six meter crown separation, and to incorporate prescribed burning as a maintenance tool.

Finally, Lori Daniels from UBC noted that fuels treatments in the Wildland Urban Interface were often constrained by conflicting or overlapping policies, and raised the possibility of establishing

zones around communities in which community protection was the primary goal. Ken Day noted that “the day of having a single use value on the land is gone” and stressed the need to integrate treatments with other objectives. While Mule Deer Winter Range, Old Growth Management Areas, trails and visuals were all noted as the main constraints to conducting fuels treatments, Steve Capling noted that it is possible to seek land use order amendments to allow for certain treatments, and that while values on the landscape don’t always align the overarching goal should be managing for ecological resilience – and that the BCCFA could play a key role in emphasizing this goal.

Recovery

Panel 3: Reducing rehabilitation costs by changing operation practices

Presentations:

- Kyle Miller, Fire Rehabilitation Coordinator, Cariboo Region, BC Wildfire Service: *Reducing Rehab Costs by Changing Fire Operations*
- Stephanie Ewen, Manager, Alex Fraser Research Forest: *Fire Recovery Operations on Area-based Tenures*
- Rob Ballinger, Planning Superintendent, West Fraser: *Salvage Operations and Log Values*
- Tim Giles, Geomorphologist, FLNRORD: *Mitigating Mass Wasting and Downstream Impacts*

Key Messages:

1. Post-fire recovery includes timber salvage operations and rehabilitation of fire guards
2. Need to consider compound risks associated with post-fire landscapes: hydrological and geomorphological changes, insect attack (e.g., Douglas-fir bark beetle), archaeological impacts, other landscape objectives (e.g., MDWR)
3. Preventing and mitigating ground disturbances during fire suppression activities is critical to reduce costs of rehabilitation
4. Rehabilitation efforts will be led by FLNRORD going forward
5. See *Wildfire Recovery in BC Community Forests - A guidance document* (http://bccfa.ca/wp-content/uploads/2019/07/WildfireRecoveryForCFAs_20190601.pdf)

Summary of presentations:

This panel highlighted the challenges and successes around post-fire recovery, including timber salvage operations and rehabilitation of fire guards while considering the multitude of other objectives and potential risks on the land base. Kyle Miller, Fire Rehabilitation Officer from the BCWS emphasized the need to mitigate ground disturbance during fire suppression activities through the use of existing infrastructure, narrowing the mineral guard, building guard in areas of minimal values, and placing sumps adjacent to streams rather than directly inside. Stephanie Ewan, Manager of the Alex Fraser Research Forest, indicated several efficiencies of area-based tenures to manage the landscape post-fire (see *Case Study* below). For salvage operations, Rob Ballinger, Planning Superintendent of West Fraser, discussed the impacts on timber supply in the Elephant Hill wildfire and the Joint Leadership Council formed between First Nations and the government to provide guiding principles for fire salvage, including a precautionary approach prioritizing salvage in high-intensity burn areas with previous logging history while avoiding areas of sensitive cultural and ecological values. Tim Giles, Research Geomorphologist with FLNRORD, spoke to the use of Post-Wildfire Natural Hazards Risk

Analysis on the 2017 Plateau Fire to identify mitigation recommendations, including regenerating forest floor to protect soil layers, re-establishing plant cover, and supporting natural regeneration.

“How we fight fires affects values” - Kyle Miller, Fire Rehabilitation Officer, BC Wildfire Service



Photo from Tim Giles, Research Geomorphologist, FLNRORD

Case Study: Post-fire rehabilitation in Alex Fraser Research Forest

The Alex Fraser Research Forest in the Cariboo Region is an area-based tenure with over 1000ha burned and over 50km of fire guard constructed during the 2017 wildfire season. Rehabilitation efforts were supported by a thorough inventory of resources (including timber and other values) and participation in fire-fighting efforts in 2017, improving the efficiency of planning and prioritization. Challenges arose because of a lack of planning guidance (how much rehabilitation is “enough”?) and balancing conflicting values on the land base (e.g., mule-deer winter range).

Discussion:

One primary question was the reality of rehabilitation around what the obligations are for BC Wildfire Service, FLNRORD, and the land manager, including who bears the costs, planning priorities, and activities included. Kyle Miller from BCWS clarified that rehabilitation only targets ground disturbance from fire suppression activities and is confined by legislation about what is and is not funded, but highlighted that a lot of trust is given to the land manager in the planning phase because they know the values and priorities on the land base. While this flexibility can be beneficial, several individuals expressed concerns over a lack of consistency around the province for specific rehabilitation and recovery efforts, including re-seeding, density and species re-planting, and monitoring for post-fire insects and disease.

New Paradigms for Forest Management

Panel 4A: First Nations and Fire History

Presentations:

- Dr. Lori Daniels, UBC Tree Ring Lab: *Fire History and the Role of First Nations: “Two-legged fire histories: Where tree rings and Indigenous knowledge meet”*
- Francis Johnson, Esk’etemc Councilor for Lands and Resources and Economic Development: *Incorporating Traditional Values in Forest Management*

Key Messages:

1. Fire plays an important role for First Nations and fire ecology, although fire suppression has altered this role
2. Incorporating First Nations values into forest management should be done at the landscape-level: most closely related to an ecosystem-based management approach
3. Tree-ring based fire histories provide evidence of higher frequency of fires prior to fire suppression, which resulted in more dense forest stands
4. Restoring fire to the land requires transformative change in silvicultural practices, informed by First Nations’ traditional values and fire histories

Summary of presentations:

The two speakers in this panel offered complementary perspectives on the importance of historical fire to First Nations and ecosystems. Lori Daniels, Professor of Forestry at the University of British Columbia, provided three case study examples of how tree-ring based fire histories complement the oral histories of First Nations’ use of fire in dry forest ecosystems in BC. These case studies indicated a higher frequency of historical fire that was likely maintained by First Nations’ burning.

Francis Johnson, Hereditary Chief from Esk’etemc, discussed the broad ways in which Indigenous knowledge should be considered in landscape-management and how unique that knowledge is to each First Nation. He indicated that traditional values include not only fire, archaeological sites, food and medicine, but also the morals and stories associated with different areas on the land base. Both presenters highlighted the importance of using the past to guide appropriate future forest management informed by both Indigenous knowledge and Western science.

“To understand First Nations’ values, you first need to understand the culture, governance and history of the local First Nation.” - Francis Johnson, Esk’etemc Hereditary Chief



Photo from Francis Johnson, Hereditary Chief of Esk'etemc - reintroduction of traditional First Nations' burning practices on the Esk'etemc traditional territory

Case Study: Fire histories of West Vaseaux Lake

The fire history of West Vaseaux Lake in the Sylix First Nation traditional territory in the Okanagan region is a prime example of complementary oral histories and Western science. The tree-ring based fire history indicates that prior to 1865, the fire return interval was approximately every seven years, with 27 fires recorded from the late 1500s to 1865, many of them patchy and early-season. The traditional use of fire in this landscape is recorded in the oral histories of the Sylix Fire Keeper, Annie Kruger and her son, Pierre Kruger. After 1865, concurrent with the second smallpox outbreak which severely impacted First Nations communities, there was an absence of fire until the late 1800s. Fire returned to this landscape with the building of the Kettle Valley Railway - however, these fires tended to burn much larger areas and occur less frequently than prior to 1865 (with a ~14 year fire return interval). With the decrease in fire frequency, more trees established and survived, leading to dense forest conditions of today. Restoration of fire to this area is ongoing, informed by the oral histories of the Sylix and the tree-ring fire histories.

Discussion:

The discussion centered around better understanding the insights that can be learned from working with First Nations and the fire histories revealed through tree-rings. Several people asked Francis Johnson what the role of fire was for Esk'etemc and how contemporary practices may try to reintroduce that role. Francis indicated that the key objectives should be managing for specific plant species (including for food, medicine, and deer forage), but with modern forest conditions having over-dense stands, mechanical thinning will probably need to come first before reintroduction of fire. He also highlighted that the most respectful approach to working with First Nations includes following their protocols, respecting their intellectual property and

cultural knowledge, and working with them to help support their own objectives through research. Another focus of the discussion was understanding other reasons for forest mortality through tree-rings, including interactions of fire with other disturbances (such as bark beetles) or increased density of stands leading to competition and moisture stress. The evidence from both Indigenous knowledge and the tree-rings indicate how important site-specific research and practice is for restoring forest resiliency.

What does a resilient forest look like to you?

Over lunch time on day two, attendees were asked to write down a statement that defined what resiliency meant to them. The word cloud below represents the responses received, with word size scaled to frequency of response.



Panel 4B: Silviculture for Wildfire Resilience

Moderator: Dan Bedford, DWB Consulting

Presentations:

- Kerri Howse, Land and Resource Section Head, Cariboo Region, FLNRORD: *Translating into Practise*
- Ken Day, K. Day Consulting: *Observed Effects of Silvicultural Treatments on the Alex Fraser Research Forest*

Key Messages:

1. Forest management paradigms changing in BC - shifting towards increased collaboration with First Nations and industry
2. Upcoming changes to FRPA will help to enable new paradigm, including through possible wildfire objectives for all tenure holders
3. Silvicultural decisions matter for reducing fire behavior - especially commercial thinning and retention of the deciduous component
4. Existing tools include incorporating maintenance schedule into site plans, considering species selection and distribution in stocking standards, and others outlined in the Tools for Fuel Management website (<https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/fire-fuel-management/fuel-management>)
5. Attendees requested more flexibility around stocking standards for different objectives - there is an option under FRPA to certify stocking standard that do not need later approval, but this has not yet been utilized

Summary of Presentations:

Continuing the theme of new paradigms of forest management, Dan Bedford of DWB Consulting, stressed the importance of collaboration and co-management with First Nations to accomplish adaptive management goals - “try, fail, try better.” Although there is resistance to embrace new paradigms due to uncertainty, risk aversion and complacency, collaboration can provide momentum for identifying key issues, envisioning a collective future, and developing prescriptions to meet those goals. Kerri Howse, Head of Land and Resource Section, Cariboo-Chilcotin Natural Resource District, FLNRORD, identified key needs to enable a new paradigm, including spatial landscape objectives (e.g., through Community Wildfire Protection Plans), cost-effective tools for hazard reduction (prescribed fire and fibre utilization), wildfire objectives that apply to all tenure holders and recognition of a shared, community responsibility.

Immediate opportunities for implementation include through Forest Stewardship Plans, stocking standards, site plans, and existing funding sources (e.g., Community Resiliency Investment Program, Forest Enhancement Society). Ken Day identified some key silvicultural prescriptions which focused on thinning in the Alex Fraser Research Forest that had the effect of reducing fire behavior and minimizing fire effects during the 2017 wildfires (*see Case Study below*). His suggestions for managing for resilience include building permanent roads, more commercial thinning, keeping deciduous stands, and using low flammability as a management objective.

“Community Forests are perfectly poised to be champions... you’re reflective of your community and Indigenous values, are connected to local economies, and are located in wildfire interface areas.” - Kerri Howse, Head of Land and Resource Section, Cariboo-Chilcotin Natural Resource District, FLNRORD



Photo from Ken Day, K. Day Consulting - aftermath of the 2017 wildfires on the Alex Fraser Research Forest, Gavin Lake Block

Case Study: The role of silviculture in mitigating fire risk

Ken Day of K. Day Consulting offered lessons learned from the impacts of silvicultural prescriptions on fire behavior and effects during the 2017 wildfires at the Alex Fraser Research Forest. From the 10 previous cutblocks that were affected by fire, Ken highlighted the different thinning techniques that reduce fire effects, including leaving more herbaceous species, removing fuel, and having a lower crown bulk density and a higher crown base height. He also noted that pine salvage, pre-commercial thins and remaining deciduous components had a similar effect to reduce fire behavior. In contrast, group selection and strip thinning had little perceived benefit, while residual cedar and subalpine fir components resulted in burnt out natural and supplemental regenerated stands. Ken’s primary takeaway from the 2017 wildfires was that silvicultural decisions matter, and having low flammability as an objective can help to achieve wildfire resilience.

Discussion:

Many of the questions from the discussion were around silvicultural prescriptions - attendees indicated that there is currently not enough flexibility built in to allow them to achieve objectives

for wildfire resilience. More broadly, attendees questioned whether the current metrics for “success” of stocking standards are still appropriate if they are solely focused on timber value. Kerri Howse responded that more flexibility should be built in to allow for timber objectives and others as well - this is actually the case under FRPA currently, although has been difficult administratively to achieve. Ken Day highlighted the “fatal flaw” to stop silvicultural practices at age 15 (or after free-to-grow), but that a long-term site plan can include prescriptions (such as maintenance thinning) to support more resilient stands. Jennifer Gunter queried why FRPA is not encouraging innovation as it was intended to do, and the panelists agreed that there is resistance to innovation that can only be overcome through persistent pressure. Kerri Howse also indicated that a wildfire-related objective that applies to all landowners that is legally mandated under FRPA would go a long way for supporting the innovation needed.

Closing Statements - Forest Management for Resistance and Resilience

Rodger Stewart closed the workshop by an insightful thought exercise of what could be accomplished for communities through recovering the proper ecological structure and function of forest ecosystems. Symptoms of a lack of forest resilience include overstocked, stagnated, uneven-aged stands in the dry belt and widespread even-aged stands that represent a loss of patch, age, and species diversity.

The main issue with overcoming these existing challenges is the public perception that ecosystems have always been static - and public engagement is needed to build a common understanding of the required shifts in forest management. This can be accomplished through starting work in the Wildland Urban Interface, assessing current forest conditions, engaging with the Ministry and Indigenous governments, reviewing land management designations, determining desired forest conditions, and developing prescriptions to focus on the recovery of a healthy forest ecosystem. These practices will help achieve healthy, resilient forest ecosystems that are resistant to the influences of natural disturbance and provide for stable communities with a desirable quality of life.

“As Community Forest managers, we have a real opportunity to demonstrate leadership toward multiple beneficial options.” - Rodger Stewart, Director of Resource Management, Cariboo Region

Summary of Key Messages:

Prevention/Mitigation

1. Prescribed burning is an important tool for managing fine fuels
2. Layout of treatments is critical for landscape level preparedness
3. Communities want to see more (prescribed/cultural) fire on the landscape, but requires close collaboration with the BC Wildfire Service
4. Fuel management has the dual objectives of reducing risk and 'putting people to work'
5. Treatments include danger tree falling, canopy separation (minimum 6 m), ladder and fine fuel removal, debris reduction – leaving some visual screen around homes
6. Land use designations (e.g. OGMAs, Mule Deer Winter Range) and visuals can be constraints to fuel treatments, but amendments possible
7. Following the fires, community members recognize the value of treatments
8. Historically, fire had role for First Nations and for forest ecology
9. Incorporating First Nations values into forest management should be done at the landscape-level - most closely related to an ecosystem-based management approach
10. Tree-ring based fire histories provide evidence of higher frequency of fires prior to fire suppression - which resulted in more dense forest stands
11. Restoring fire to the land requires transformative change in silvicultural practices, informed by First Nations' traditional values and fire histories
12. Forest management paradigms changing in BC - shifting towards increased collaboration with First Nations and industry
13. Upcoming changes to FRPA will help to enable a new paradigm, including through possible wildfire objectives for all tenure holders
14. Silvicultural decisions matter for reducing fire behavior - especially commercial thinning and retention of the deciduous component
15. Existing tools include incorporating maintenance schedule into site plans, considering species selection and distribution in stocking standards, and others outlined in the Tools for Fuel Management website (<https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/vegetation-and-fuel-management/fire-fuel-management/fuel-management>)
16. Attendees requested more flexibility around stocking standards for different objectives - there is an option under FRPA to certify stocking standard that do not need later approval, but this has not yet been utilized

Preparedness

1. Pre-existing relationships and trust are critical for effective communication and coordination
2. Engagement must occur across all stages of emergency management
3. Capacities, resourcing and planning processes vary across Fire Centers
4. Need to build strong relationships with the fire zone before the fire season
5. Fire preparedness activities can be aligned to the management of other values
6. Need to be proactive in communicating activities to the public, including local communities

7. Value of having firefighting crews extends beyond suppression capacities – also builds rapport and self-confidence
8. High costs associated with establishing crews (training, equipment, physicals etc.)
9. Strong interest in sharing information about the process and requirements for establishing crews

Response

1. Community forests play key role in initial attack and response, particularly in more remote areas
2. Suppression priorities need to consider multiple values on the landscape – requires ability to integrate mapping
3. Human life and safety is primary concern driving operations
4. Increasing fire size and intensity posing challenges for initial attack and suppression and changing tactical approaches

Recovery

1. Impacts to area-based tenures different to those on volume-based tenures
2. Post-fire recovery includes timber salvage operations and rehabilitation of fire guards
3. Need to consider compound risks associated with post-fire landscapes: hydrological and geomorphological changes, insect attack (e.g., Douglas-fir bark beetle), archaeological impacts, other landscape objectives (e.g., MDWR)
4. Preventing and mitigating ground disturbances during fire suppression activities is critical to reduce costs of rehabilitation
5. Rehabilitation efforts will be led by FLNRORD going forward
6. See *Wildfire Recovery in BC Community Forests - A guidance document* (http://bccfa.ca/wp-content/uploads/2019/07/WildfireRecoveryForCFAs_20190601.pdf)

List of Presentations:

(Available at bccfa.ca/WildfireWorkshop2019)

1. Jennifer Gunter – *Introduction*
2. Susan Mulkey – *Harrop-Proctor Community Forest 2017 Fires*
3. Jason Regnier – *Cheslatta Community Forest 2018 Fires*
4. Jamie Jeffreys – *Partnerships and Strategic Engagement*
5. Les Husband – *Wildfire Management Branch Operations*
6. Hugh Flinton and Matt Lees – *Managing Community Forests for Fire Suppression through Prevention, Preparedness, and Communication*
7. Gord Chipman and Darren Stanislaus – *Alkali Resource Management Contract Fire Crews*
8. Margaret Symon and Cedar Elliot – *Khowutzun Forest Services Contract Firefighting Crews*
9. Steve Capling – *Williams Lake Indian Band Fuels Treatments*
10. Kyle Miller – *Reducing Rehab Costs by Changing Fire Operations Practices*
11. Stephanie Ewan – *Fire Recovery Operations on Area-Based Tenures*
12. Rob Ballinger – *Salvage Operations and Log Values*
13. Tim Giles – *Mitigating Mass Wasting and Downstream Impacts*
14. Lori Daniels – *Fire History and the Role of First Nations: “Two-legged fire histories: Where tree rings and Indigenous knowledge meet”*
15. Francis Johnson – *Incorporating Traditional Values in Forest Management*
16. Ken Day – *Observed Effects of Silvicultural Treatments on the Alex Fraser Research Forest*
17. Kerri Howse – *Translating into Practice*
18. Rodger Stewart – *Conclusion: Forest Management for Resistance and Resilience*