

BC

Forest PROFESSIONAL

SPRING 2020

Glyphosate Use in BC

Enhancing Species and
Habitat Management

Forest Carbon 101

Revitalizing Forestry with
First Nations as Full Partners

ABCFP's 72nd Forestry
Conference



Climate Change: Managing
Harvested Forest Fuels

Full-service forest management specialists

- **Innovative Forest Inventories**

Stand in the forest while working at your desk with hybrid area-based/individual tree inventories.

- **Operational Planning**

Changing the development process allows the value of LiDAR data to be maximized - let us show you how.

- **Thinking of flying LiDAR?**

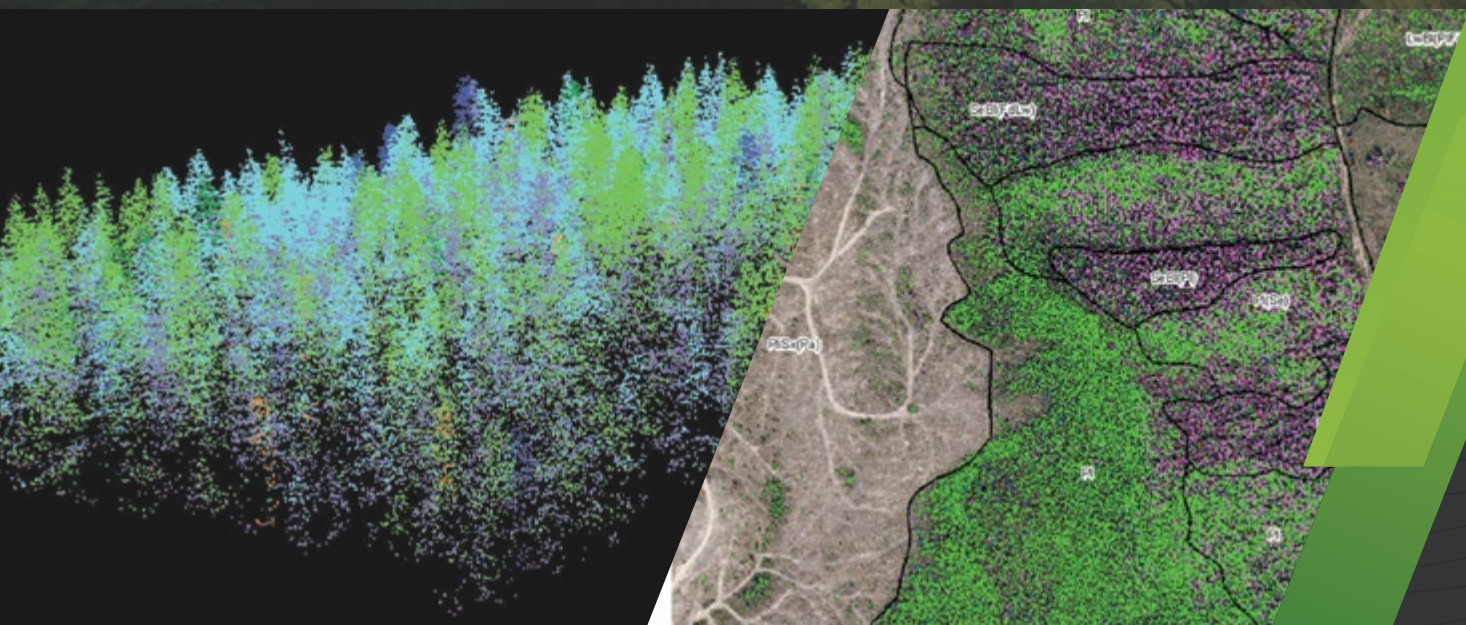
We aggregate smaller acquisitions to get price discounts from providers and support quality control.

- **Wildfire Risk Management**

Wildfire risk management assessments / planning, fuel treatment prescriptions and prescribed burn planning.

- **Silviculture**

Silviculture programs, planting implementation, surveys, and connecting licensees with government programs.



CONTACT US FOR
MORE INFO

Carleigh Drew
250-255-7766
ccdrew@forsite.ca

 **FORSITE**
Forest Management Specialists
FORSITE.CA

Index



Photo credit: Southern Interior Mule Deer Project.

12

Cover Story

- 16** Managing Fuel in Harvested Forests in BC for Multiple Values in the Context of Climate Change
By Doug Lewis, MRM, RPF; Walt Klenner, PhD, P.Ag.; Tom Sullivan, PhD; and Brian Wallace, PhD, P.Ag.

Features

- 10** Glyphosate Use in BC – An Update
By Neil Hughes, RPF
- 12** Enhancing Species and Habitat Management: The FLNRORD Research Program
By Walt Klenner, PhD, P.Ag. and Melissa Todd, MSc, RPBio
- 14** Introduction to Forest Carbon
By Robbie Hember, PhD, P.Ag. and Garrett McLaughlin, MSc, FIT

Opinion

- 19** A Revitalized Forest Sector with First Nations as Full Partners
By Charlene Higgins, MSc, PhD

Professional Interest

- 20** Big Issues Front and Centre at 2020 ABCFP Forestry Conference
By Kelly McCloskey, RPF, Tree Frog Forestry News

- 24** Professional Development and the Forest Professional
By Troy Lee

- 26** A Summary of the ABCFP's Old Growth Strategic Review Response to Public Engagement
By Paul Nuttall, RPF

Columns

- 6** **PRESIDENT'S REPORT** | Embracing Mentorship
By Trevor Swan, LLB, RPF
- 7** **CEO'S REPORT** | The Future of Our Forests
By Christine Gelowitz, RPF
- 9** **THE WATCHDOG'S VIEW** | Conserving Black Bear Dens on Vancouver Island
By Astrid Van Woudenberg, MSc, RPBio

Departments

- 4** Letters
- 8** Association News
- 27** Statistics
- 29** In Memoriam
- 31** Moment in Forestry



forest hydrology
 watershed assessments
 hydrologic modelling
 terrain stability mapping
 natural hazard assessments
 erosion & sediment control

(604) 815-4548

contact@pgeo.ca

www.pgeo.ca



Old-growth Forests as Carbon Storage

In the January-February 2020 edition of *BC Forest Professional*, Christina Howard; Caren Dymond, PhD, P.Ag; and Verena Griess, PhD suggest the dynamics of carbon are complex and that we need more research on whether old-growth forests are carbon sources or sinks. While we don't dispute complexity and always support increasing knowledge, we know enough about forests and carbon to act now — which is when we need to act.

First, carbon *storage* matters most. Carbon bound up per unit time is the metric that counts — not whether a given stand or region is a source or sink at a given time. Forests continue to store carbon even if the trees are dead.

Second, old-growth forests store massive amounts of carbon (many hundreds of tonnes per hectare). Every time you walk through a forest, look around — *everything* you see is carbon storage, and much of what you don't see beneath your feet or high in the canopy is storing carbon. These forests have built their stores over centuries.

Third, BC's most productive old-growth forests store the most carbon per hectare in the province, in Canada, and in the world.

Fourth, disturbance frequency matters. Wetter ecosystems, including coastal and Interior rainforests and high elevation forests, store carbon for longer.

Fifth, time matters. Old forests currently store carbon. Harvesting them releases carbon immediately; net release continues for decades. Replacing persistent old forests with plantations makes no sense.

So, if we care about the climate, we know what to do. Stop logging all wet, productive forests now. Because now is when it matters — not in 30-80+ years when “young thrifty stands” will start accumulating carbon.

Karen Price, PhD; Sarah Jane Railton, RPF; and Michelle Connolly, MSc

All My Relations

With the adverse impacts of climate change, a radical idea is gaining traction to recognize that living and non-living entities in nature have rights similar to those of humans to perpetuate their survival in today's world. Just a few years ago, suggesting that non-human entities or ecosystems in nature ought to have legal rights might have provoked puzzled looks or even ridicule in the eyes of the public.

As divergent as this idea may seem in today's norms, it is not new to the traditional First Nation Peoples' worldview and cultural values which is summarized in the phrase “ALL MY RELATIONS,” which, when spoken by an Elder respectfully and prayerfully, acknowledges and goes far beyond aunts, uncles, and cousins to include rivers, ravens, killer whales, and more.

This Indigenous Peoples' worldview can also be read — to some degree — in the words of Aldo Leopold, who states, “*Nature is not a commodity but is a community where we live, therefore nature has rights similar to what humans have.*” This view is also acknowledged in John Burrow's book entitled *Canada's Indigenous Constitution*, which states that nature's rights are an integral component of many First Nations' traditional laws and governance systems.

You can witness this traditional law and governance system currently being played out with the Wet'suwet'an People's blockade in northern BC.

With Respect, **Gordon Prest, Honorary Member**

Have a Compliment or Concern? Write us!

The *BC Forest Professional* letters section is intended primarily for feedback on recent articles and for brief statements about current association, professional, or forestry issues. The editor reserves the right to edit and condense letters and encourages readers to keep letters to 300 words. Anonymous letters are not accepted.

Please refer to our website for guidelines to help make sure your submission gets published. Send letters to:

Editor, BC Forest Professional
Association of BC Forest Professionals
602-1281 W. Georgia St, Vancouver, BC V6E 3J7
 Email: editor@abcfp.ca

BC Forest Professional is published six times a year by the Association of BC Forest Professionals

602-1281 W. Georgia St, Vancouver, BC V6E 3J7
 Tel: 604.687.8027
 Email: editor@abcfp.ca Website: abcfp.ca/web

Managing Editor: Dean Pelkey
Editor: Cheryl Waddell

Editorial Board:

Ali Araghi-Rahi, PhD, FIT; Sam Coggins, PhD, RPF;
 Janelle Dale, RPF; Tom Hoffman, RPF; Will Sloan, RFT;
 Shawn Tougas, RPF; Jack Woods, RPF; Peter Zhang, FIT

Design: Massyn Design

Printing and Distribution: Met Fine Printers

Advertising Sales Manager: Cheryl Waddell
 602-1281 W. Georgia St, Vancouver, BC V6E 3J7

Tel: 604.639.8103

Email: editor@abcfp.ca

ISSN: 1715-9164

Publications mail agreement no: 40020895
 Return undeliverable Canadian addresses to:
 ABCFP Circulation Department
 602-1281 W. Georgia St, Vancouver, BC V6E 3J7



PRESIDENT • Trevor Swan, RPF, LLB

VICE-PRESIDENT • Trevor Joyce, RPF

PAST PRESIDENT • Morgan Kennah, RPF

LAY COUNCILLOR • Wendy Royle, CPA

COUNCILLORS

Kelly Kitsch (Cameron), RFT; Ken Day, RPF; Jason Fisher, RPF;
 Jamie Jeffreys, RPF; Garnet Mierau, RPF;
 Marina Rayner, RFT; Bowen Sly, RFT

CHIEF EXECUTIVE OFFICER • Christine Gelowitz, RPF

DIRECTOR, PROFESSIONAL PRACTICE AND FOREST STEWARDSHIP
 Mike Larock, RPF

REGISTRAR AND DIRECTOR OF ACT COMPLIANCE
 Casey Macaulay, MA, RPF

DIRECTOR, FINANCE AND ADMINISTRATION • Lance Nose

DIRECTOR, COMMUNICATIONS • Dean Pelkey

DEPUTY DIRECTOR, FOREST STEWARDSHIP AND ENGAGEMENT
 Paul Nuttall, RPF

DEPUTY DIRECTOR, REGISTRATION • Chi Cejalvo, RD(NP)

The Association of BC Forest Professionals and *BC Forest Professional* magazine acknowledge our province of British Columbia is located within the traditional territories of Indigenous nations.

BC Forest Professional is the professional magazine of the Association of BC Forest Professionals (ABCFP). Editorial submissions, comments, letters to the editor, articles, and photos should be sent to the editor, address above. The opinions expressed in *BC Forest Professional* do not necessarily represent those of the ABCFP, its council, or other members. Reprinting and copying of *BC Forest Professional* articles is encouraged. Please include a credit to both the author and *BC Forest Professional*.

Response to Old-growth Forests as Carbon Sinks

Should we conserve the amassed carbon in old growth or should we log it? More broadly, how should we manage forests to mitigate climate change? While we agree evidence is still emerging and not always clear (Jan-Feb 2020 *BC Forest Professional*), a larger challenge is confusion around terminology and framing of the carbon accounting problem.

The basic concepts around carbon dynamics are straightforward. For example, visualize the natural forest landscape as a bunch of leaky buckets storing carbon. Nature pours carbon into the buckets (at varying rates over space and time); the buckets leak; periodically nature kicks one over, spilling about a quarter of the contents (e.g. wildfire or beetles in Interior ecosystems). Thus, both disturbance and net growth determine carbon storage.

Managing carbon means managing the total amount of stored carbon. *Tracking sequestration, respiration, sources, and sinks is complicated, but fortunately largely unnecessary to inform forest management.* Simply put, carbon in the forest is not in the atmosphere; carbon in long-lived wood products is not in the atmosphere. Sequestration can be largely ignored. Replacing slower-growing “decadent” old growth with rapidly growing/sequestering “thrifty” young stands sounds good but ignores the initial decades of carbon loss and is mostly beside the point. Carbon stored per year is the relevant metric. Over a longer period, the average yearly storage is important.

Irrespective of the details, logging emits carbon because it reduces storage. Logging finds a fairly full carbon bucket, pours it into a big jar and hauls it away; but typically spills about half the carbon bucket (decaying stumps, branches, breakage) in the pouring. Then half the jar (of logs) is spilled in the processing that creates long-lived wood products; the original bucket is reduced to one quarter or less. Over the 30-year time period where we are aiming to drastically reduce carbon emissions, most of the spilled carbon will still be in the atmosphere; new growth will have recaptured relatively tiny amounts. After a 30-year window, logged and replanted stands may have roughly 10 per cent of the live volume of the pre-harvest stand.

Refilling the carbon buckets takes time. If a 100-year-old stand is harvested, it may recover its pre-harvest carbon store in the next 100 years, but the *average* storage per century will not have recovered. That could take twice as long assuming no net growth in the pre-harvest stand, or longer if the pre-harvest stand continues to grow. Think of the small contribution of young stands to the average. Average yearly storage over longer periods is the metric that matters.

What if the 100-year-old stand is disturbed by beetles or wildfire? Natural disturbance is not as hard on carbon stores as logging because most of the stem biomass is retained on site. Following logging or natural disturbance, fine dead biomass and warming soil release carbon relatively quickly. Larger dead biomass releases carbon more slowly (e.g. tree boles left from fire have a half-life of approximately 50 years). Post-harvest stands also face threats from natural disturbance.

Logging old growth is folly from a carbon storage perspective. Old stands occur where disturbance is infrequent. Nature had time to amass tonnes of carbon in live wood, then in dead

What's a Forest Worth? Forest Resources, Ecosystem Services and Natural Capital

I'm writing to compliment and thank the host committee for the recently concluded ABCFP Forestry Conference and AGM in Nanaimo, BC.

I wish to specifically compliment the committee on the breakout session: *What's a Forest Worth? Forest Resources, Ecosystem Services and Natural Capital.*¹ It is good to see ABCFP Advisory Resolutions² can inspire and influence the development of professional development programing.

I suggest that there is a great need to develop alternative means for valuation of natural resources outside of the traditional methods concerning timber values. Developing these alternative means of valuation by focusing specific attention to the terms ecosystems services and natural capital will assist forest professionals, other professionals (engineers, economists, accountants, biologists, etc.), and government agencies in describing and evaluating various uses of forests. It will help clarify the inevitable trade-offs to be made when making land use decisions with input from non-government organizations.

I recommend that council consider utilizing the concepts from this breakout session in future discussions regarding the practice of professional forestry. I also recommend that the presentations be posted, if available, and links to the Municipal Natural Assets Initiative³ and the University of Alberta program⁴ be provided for easy reference by members.

Yours truly, **David K. Haley, RPF**

REFERENCES

1. Session video and presentations are available online at <https://abcfp.ca/web/ABCFP/ABCFP/Members/2020-Conference-Nanaimo.aspx>
2. ABCFP Advisory Resolution 2018-01: Forest Ecosystems Provide Multiple Values; <http://abcfp.ca/WEB/ABCFP/Members/2018-Advisory-Resolutions.aspx>
3. Municipal Natural Assets Initiative, available online at <https://mnai.ca>
4. Department of Resource Economics and Environmental Sociology, Faculty of Agricultural, Life & Environmental Sciences, University of Alberta, available online at <https://www.ualberta.ca/resource-economics-environmental-sociology>

wood and the forest floor. The coastal rainforest has some of the highest carbon densities in the world. Just regrowing the live biomass will take at least a couple of centuries. Restoring the dead biomass and soil carbon could take much longer. Properly accounting for yearly average storage means roughly doubling the biomass recovery period (depending on the shape of the growth curve). Converting old growth to managed forests can cut carbon storage in half, even when off-site storage in wood products is accounted for.¹ Old growth is carbon-storage wealth bequeathed to us by nature and by generations of people before us. We can use it to mitigate climate change (and maintain resilience, biodiversity, and ecological function) or we can make construction lumber that sacrifices 75 per cent of the above-ground stand biomass in the process.

Dave Daust, MSc, RPF and Jim Pojar, PhD

REFERENCE

1. Pojar, J. 2019. Forestry and carbon in BC. Report for Skeena Wild Conservation Trust and Skeena Watershed Conservation Coalition. Available at http://skeenawild.org/images/uploads/docs/Pojar-7mythsfinal-2019_copy.pdf

Embracing Mentorship

Hello everyone. This is my first opportunity to speak to many of you since I officially became president of your 73rd ABCFP Council.

I'd like to begin by saying how much I thoroughly enjoyed the conference and AGM in Nanaimo and to express my appreciation again to Molly Hudson, RPF, RPBio; the rest of the host committee; and ABCFP staff for all of their hard work in putting together such an engaging and thought-provoking agenda. I'd also like to thank the Honourable Doug Donaldson for joining us and for his openness during question period in answering some very difficult questions.

I was very impressed by each of the inductees I had the opportunity to speak with. I am confident that, in time, the future of the profession will be in excellent hands. Thank you to each of the inductees' sponsoring

forest professionals for volunteering their time. I was very moved by the charge to new inductees presented by Shannon Janzen, RPF. I think many of her comments about the profession and professionalism were equally applicable to both the young and more experienced folks in the room and will help each of us to keep our focus.

In my acceptance speech, I mentioned I won't be establishing any new priorities for council and staff this year due to the full implementation of the *Professional Governance Act*, as well as reforms to the *Forest and Range Practices Act*. Staff and council will continue to be very busy with this work and I don't want to create distractions from this foundation work. While this remains true, I do think it is vital the profession recognize the importance of mentorship. I know from experience that mentorship, formal or otherwise, can benefit both the student and the advisor. I benefited greatly from the informal mentorships I've had at different times throughout my career and the timely advice and guidance resulting from those relationships. Thank you to Tom Jones, Gary Mackellar, Jack Toovey, and Gerry Burch – RPFs one and all. These mentors have helped me stay between the professional ditches (although I have still certainly found my share of potholes).

I have been very fortunate to experience a rich and varied career. I've worked in the field and the boardroom, having implemented, formulated, and enforced forest legislation while wearing many different hats along the way. These experiences have helped me gain perspective on many issues and challenges. I would be happy to lend a helping hand to any of the young professionals who may have questions on such things as career paths and forest policy and legislation. I'll leave matters relating to forest operations and practices to those who are much more current in their knowledge. If anyone would like to chat, my contact information is available through the ABCFP.

The profession of forestry is evolving with respect to each aspect of the environmental, social, and economic triple bottom line. In addition, the pace of change appears to be increasing. It is the experienced professionals who know best where we have been in the past, where we are now, and where we will be if the trend lines hold. It will be for inductees to ultimately chart the course for the profession in the future. As we all know, it is impossible to successfully navigate without knowing where you are and where you've been. That is why mentorship is so important.

I would like to echo past president Morgan Kennah, RPF, and the challenge she delivered during the Inductees' Recognition Luncheon; and that is for forest professionals — both seasoned and new — to seek each other out. This is a tremendous opportunity for every individual involved to mutually benefit from the dialogue. The young professional can gain insight into what it means to be a professional and to act in the public interest and potentially avoid some miscues; the seasoned professional can benefit from the youthful enthusiasm and the opportunity to give back. The profession also benefits through the timely and orderly transference of knowledge and through continual improvement.


For those of you who are already acting as mentors, on behalf of the 73rd ABCFP Council, I thank you for your insight and your continued service. I encourage everyone who can, to consider seeking out and embracing mentorship opportunities. It is indeed very rewarding. ✘



The Future of Our Forests

"The forests, the lakes, the rivers, the mountains - they are the heart and soul of the social and economic fabric of this province. Everyone in British Columbia has a stake in their welfare, and everyone is keenly interested in improving the way the activities that impact upon them are managed. Thousands talked to us... one theme underlined virtually everything we heard — the status quo is not good enough... Driving the current level of dissatisfaction is a dramatic shift in society's values. Once valued only for their economic worth, the forest resources now represent a much wider range of values — aesthetic, environmental, social, spiritual, and many more. That shift in values underlies much of the conflict that has dominated the debate over forest resources in the last few years..."

Sandy Peel, Chairman, 1991 Forest Resources Commission Report



As I reflect on this excerpt from a near thirty-year old Royal Commission report, it strikes me these same words could have been written last week. How can it seem as though so much has, and is, changing in our operating environment yet so little has changed?

At the end of February, the UBC Faculty of Forestry brought together more than 60 individuals from a variety of organizations in a neutral

forum to examine the future of BC's forests. The goal of the forum was to work towards developing a shared vision of what BC's forests and forest sector might look like in 50 years and the steps to get there.

As in most strategic visioning exercises, the forum began with contemplating key trends. Guest speaker Dr. David Brand, chair and CEO of New Forests Asset Management — who has over 40 years' experience in timberland investment, forest management, science, and public policy — shared his view on global trends driving the forest sector today, including:

- The rise of sustainability and climate change as economic drivers of forestry;
- The increasingly central role of communities, including indigenous communities, in forest management;
- Restructuring of markets for wood and wood fibre to meet the emerging bioeconomy;
- The changing capital base of forestry and rise of institutional investment;
- Shifting of wood demand driven by the rise of China, and behind it, India and then Africa; and
- Shifting of incremental commodity wood supply to intensive plantations in the southern hemisphere.

In discussing these trends, Brand shared several interesting facts and statistics:

- The 3.7 million hectares of plantation forests in Australia and New Zealand now produce more timber than the 22 million hectares of working forest in BC.
- Forests are a massively mispriced asset. Using a discounted cash flow approach, and a bottom up area time value approach, Brand estimated it would cost \$800 billion (US) to buy the entire forest cover of earth. Comparatively, the real estate value of Manhattan is almost twice the value of the world's forests at \$1.5 trillion (US).
- Less than three per cent of investment to address climate change is being directed into sustainable land use and forestry, yet scientists project 25-30 per cent of emission reductions over the next 15-20 years could come from sustainable agriculture and forestry, conservation, and reforestation.
- In Europe, government and industry have partnered to create an almost Silicon Valley of Forestry with leading companies like Stora Enso who have been said to be earning 70 per cent of its revenue from products it didn't make 10 years ago.

Forest professionals have an important voice and contribution to help articulate a vision for the future of forests and to be leaders in realizing an action plan. To that end, I was pleased to see a quarter of the participants at UBC's forum were either current or formerly registered forest professionals.

I don't know how, or if, the discussion that occurred at the UBC's future forest forum will move forward, but I do know that there is a growing desire to see changes in forest management and the forest sector. In the May-June 2019 edition of *BC Forest Professional*, Jim Girvan, RPF, MBA, and Jeff McWilliams, RPF, wrote that there's a problem of general silence among forest professionals on the key forestry issues of today. I hope when the time comes, you will not be silent. I hope even more that you are already proactively seeking and engaging in opportunities that are available to speak up on policy, forest management, and stewardship issues in your day-to-day work and life. ✕

BC Forest Professional Magazine Moving to Quarterly Publication

Beginning with this issue, BC Forest Professional magazine will shift to quarterly publication (four issues a year rather than six). The new schedule will be: Winter (January), Spring (April), Summer (July), and Fall (October).

The change in the production schedule is a cost-saving move to help offset additional costs the association is encountering from the implementation of the Professional Governance Act. Although we will be producing two fewer issues, we will maintain the same high-quality mix of incisive and technical articles you have come to expect.

Introducing the 73rd ABCFP Council

Two new forest professionals join the ABCFP’s 73rd Council:

- Jason Fisher, RPF (three-year term), and
- Kelly Kitsch (Cameron), RFT (three-year term).

Other members of the 73rd Council carrying forward are:

- Trevor Swan, RPF, LLB – president,
- Morgan Kennah, RPF – immediate past president,
- Trevor Joyce, RPF – vice president,
- Ken Day, RPF – councillor at large,
- Jamie Jeffreys, RPF – councillor at large,
- Garnet Mierau, RPF – councillor at large,
- Marina Rayner, RFT – councillor at large,
- Bowen Sly, RFT – councillor at large,

- Wendy Royle, CPA – lay councillor.

Our sincere thanks for their service to councillors and lay councillor whose terms have expired: Elizabeth (Els) Armstrong, RFT, ATE; Kerri Simmons, RPF; and Gordon Prest, Honorary Member.

New Discipline Case Decisions Published

Three ABCFP registrants have agreed to the terms of a consent order, following complaints into their practice and subsequent investigations:

- Craig Crichton, RPF #3169;
- John V. Zirul, RFT #1354; and
- Robert John Kendall, RPF #2759.

The ABCFP also rescinded Marcus Paquette’s registration as a Registered Forest Technologist in January following a decision by ABCFP Council under Bylaw 14.

Under Bylaw 14, if an ABCFP registrant is convicted in BC or elsewhere for an indictable offence, council may summarily:

- Suspend or rescind the membership of a member so convicted; or
- Place terms and restrictions on that member’s continued membership; as deemed appropriate by council given the individual circumstances of the case.

Paquette is not eligible to apply for reinstatement for a period of two years or until after the end of his prison sentence, whichever is longer. The published decision is available on the ABCFP website.

Conference Speaker Presentations and Video Available on ABCFP Website

Video recordings of three breakout panels along with speaker presentations have been published on the ABCFP website in the Professional Development Offerings webpage of the Members Only section. The livestreamed AGM is available on the ABCFP YouTube channel.

Be sure to save the date for the 2021 conference in Vancouver, February 3-5. Registration will open in September.


Conference Raffle and 50/50 Draw Raise More than \$1,600 for ForesTrust

Thanks to all conference attendees who purchased raffle and 50/50 tickets in support of fundraising efforts for ForesTrust, the ABCFP registered charity that provides scholarships and bursaries to forestry students. In total, \$1,673 was raised during the three-day conference.

Sally Sellars, RPF, was the lucky winner of a Vancouver Canucks package including two tickets to a Canucks game, airfare courtesy of Harbour Air, two nights at the Coast Coal Harbour Hotel in Vancouver, and a \$500 gift card for incidentals. Remember, you can donate to ForestTrust at any time through our website. Donations of \$20 or more are eligible for a tax receipt.

ABCFP 2019 Annual Report and 2020-2024 Strategic Plan

The 2019 ABCFP annual report is now available on our website, along with the full audited financial statements. Also available is the new five-year (2020 – 2024) strategic plan as well as a one-page overview of the plan. The strategic plan sets out four overarching goals of the ABCFP as determined by council. This new plan will guide ABCFP business activities for the coming five years.




You work for our forests. We work for you.

As a member of ABCFP, you can access exceptional Professional Liability coverage (E&O) and pricing.

Contact us today for a quote!

Jordan Fellner, Account Executive

604.269.1888 | 1.800.606.9969
 tos.vanprof@hubinternational.com





Conserving Black Bear Dens on Vancouver Island

Photo credit: Lowe Stock.

The Forest Practices Board recently published a report on its investigation of a complaint about black bear dens on Vancouver Island.¹ The complainant believes government needs to regulate the protection of dens. In this column, we discuss the voluntary practices some licensees use to manage for bear dens on Vancouver Island.

On the BC coast, black bear dens are almost exclusively found in old, large trees and structures derived from them (stumps, logs, or root wads).² As old-growth harvesting continues and because second growth is typically harvested before old features can develop, some biologists are concerned the availability of dens is declining and the Vancouver Island black bear population could eventually be affected.

Government does not consider black bears at risk in BC.³ The Conservation Data Centre (CDC) has designated the species as 'apparently secure' by assigning them to the yellow-list.⁴ As a result, they cannot be included in the category of species at risk under the *Forest and Range Practices Act* (FRPA), which means those habitat protection provisions are not available. Except in some special management zones in Clayoquot Sound, there is no specific requirement for protection of black bear dens on Vancouver Island, even through forest stewardship plans (FSP) results and strategies for wildlife trees.

The Board learned of a few licensees on Vancouver Island who have included den management in their forest practices on a voluntary basis. These licensees have adopted best management practices (BMP) to protect black bear dens. One licensee has since moved its BMP to a practice standard to retain bear dens in a functional state and avoid disturbance to hibernating bears. Some of these licensees maintain internal databases of den locations and have recorded more than 1,000 dens throughout their operating areas.

Some of these licensees also collect data and assess the conservation priority of each den, for example assigning highest management priority

Astrid van Woudeberg, MSc, RPBio, is a manager of audits and investigations with the BC Forest Practices Board. She has more than 25-years' experience working with First Nations, forest and range licensees, governments, and NGOs on species at risk and forest wildlife management.



to maternal dens. In their practices, planners apply a den quality assessment to develop site specific retention strategies, including:

1. Retain a windfirm: leave patch (one hectare minimum) around the den.
2. Retain den 20 metres or more from an edge.
3. Retain shrubs around the den entrance for security.
4. Retain trees and snags around the den to provide escape features to cubs and sows.

From time to time, these licensees also bring in professional biologists with bear expertise for staff training purposes or to look at dens found by field crews that require expert assessment.

Given the proactive practices by these licensees, some of the timber harvesting landbase on Vancouver Island can be expected to have protections for black bear dens. However, these are only a few of the operating licensees, so there is inconsistency in bear den management. A standard approach to identify, assess, and retain dens could reduce the number of dens lost to harvesting.

The Board report concludes there are uncertainties on the population status of black bears and potential impacts from declining availability of old-growth forest attributes. Given the uncertainty, it is encouraging to see the proactive and voluntary steps being taken by some licensees on Vancouver Island to manage black bear dens. In the Board's view, these licensees can provide useful insights into black bear den management and the effectiveness of stand-level strategies within harvested areas. The approach being taken on Vancouver Island may be of interest to licensees and professionals dealing with black bear dens elsewhere in the province. ☘

REFERENCES

1. Available online at <https://www.bcfpb.ca/wp-content/uploads/2020/01/IRC229-Black-Bear-Dens.pdf>
2. Longevity and Reuse of Black Bear Dens in Managed Forests of Coastal British Columbia. 2011. *Journal of Wildlife Management* 9999:1-5. H. Davis; A.N. Hamilton, A.S. Harestad, R.D. Weir.
3. Black bears in British Columbia: Ecology, conservation and management. Ministry of Environment, Lands and Parks. <http://www.env.gov.bc.ca/wld/documents/blackbear.pdf>
4. BC Conservation Data Centre reports Provincial Conservation Status of species and assigns listing designations accordingly as red-, blue-, and yellow-listing, where red is most imperiled and yellow is apparently secure, not at extinction risk. Available online at <http://www.env.gov.bc.ca/atrisk/help/list.htm>

Glyphosate Use in

Glyphosate — one of five herbicides

registered for use in forest management in Canada — is by far the most commonly used in BC. The governing body for pesticide use in Canada, the Pest Management Regulatory Agency, reconfirmed registration of glyphosate in 2017 and stated, “products containing glyphosate do not present risks of concern to human health or the environment when used according to the revised label directions.” This decision was reconfirmed in 2019, based upon an expanded evaluation of their 2017 decision. Despite this, there is a growing number of groups and individuals campaigning to stop the use of glyphosate in our provincial forests.

In 2019, in response to this increased public concern over glyphosate use, Resource Practices Branch contracted FP Innovations to help them complete another review of herbicide use in forest management in BC. The use of herbicides in BC is directed by the *Integrated Pest Management Act* and its regulation and forest tenure holders choosing to use herbicide as a vegetation management tool are required to produce and get approved a Pest Management Plan (PMP). Glyphosate is a broad spectrum, systemic herbicide used in forest management primarily as a tool

Area	Region	CA	CG	Total
North Area	North East	4,290	342	4,632
	Omineca	5,828	584	6,412
	Skeena	-	138	138
South Area	Cariboo	821	448	1,269
	Kootenay-Boundary	-	267	267
	Thompson Okanagan	256	250	506
Coast Area	South Coast	203	986	1,189
	West Coast	62	1,252	1,314
Total Amount		11,460	4,267	15,727

FIGURE 2. Average area (hectares) of herbicide treatment in the last 10 years by natural resource area and region. Credit: Dan Turner, RPF.

herbicide called triclopyr can be used.

Any study of stand establishment over the last 40 years in BC will immediately identify some common trends. The area of site preparation and brushing treatments have decreased considerably. Figures 1a, 1b, and 1c clearly identify peak and higher levels of all activities in the 1980s and 1990s followed by a steady decline continuing right up to the current year. Herbicide use has dropped from approximately 30,000 hectares per year to less than 15,000; broadcast burning has all but disappeared;

and disc trenching has fallen by over a half. Of course, over that period we have introduced improved (A class) seed for faster tree growth and improved nursery culture so that our planted stock is more vigorous and can establish quicker, but is that enough to justify the reduction in intensive establishment practices?


Knowing that herbicide use has fallen considerably over the last 30 years, what can we say about its current use over the past decade? There are currently about 50

PMPs active for provincial land in BC and in 2019 there were 29 licensed organizations who can apply herbicide. During the past decade, 157,000 hectares were treated with herbicide, an average of 15,700 hectares per year; of that 11,460 hectares were aerial applications and 4,267 hectares were backpack applications. Drilling down deeper into the data to identify where herbicide is used, Figure 2 tells us that the vast majority of use is in the north, followed by much smaller amounts on the coast and the southern Interior.

Within the north, the majority is used in the Omineca followed by the north east. However, even in the Omineca the area treated has dropped considerably since the 1990s and has held steady between five and 8,000 hectares over the last few years.

When we start to think about landscape level impacts of glyphosate applications, just how much area is being treated in the managed forest land base? Timber harvesting has remained fairly steady over the past few decades even given the uplifts for mountain pine beetle (MPB) salvage. We can say on average 180-200,000 hectares are harvested every year. The “Stop the Spray” campaign accurately states that 500,000 hectares have been treated in BC since 1992, but what they failed to state is this represents only about 10 per cent of the area harvested. Another way to consider this is if we have a running total of around two-and-a-half million hectares of plantations Not Free Growing at any one time (which is the total population within which herbicide application could occur), then a 13,000 hectares per year spray program is 0.5 per cent of that population. Looking just at the Omineca, over the last ten years, one to two per cent of the Not Free Growing area is treated every year.

Currently, the main argument against the use of glyphosate is it is removing our broadleaf species from managed forests resulting in conifer monocultures. Knowing what we do about the scale of



Neil Hughes, RPF, is the forest establishment leader with the BC Government. Neil works on early stand development and looks after the Forests For Tomorrow program, which is investing \$48M annually around the province. Neil has spent 21 years of coastal work in industry in a variety of roles, mostly around silviculture and planning but including engineering and harvest supervision. For 15 years, Neil was in the hardwood business and he is the provincial advocate for red alder management and has dealt with more than his fair share of rich and brushy sites to regenerate.

to improve crop tree growth and survival by reducing vegetation competition for light, moisture, and nutrients; it is most commonly used against grasses, and early herbaceous and smaller broadleaf competition. For larger, older broadleaf competition, either glyphosate or another

BC — An Update

treatments, we have used the RESULTS database to determine the quantity of broadleaf species being recorded in herbicide treated blocks at Free Growing and beyond. In the Omineca and north east — where many of the treatments target aspen — 15-25 per cent of the reported inventory is still composed of broadleaf species in blocks where aerial applications occurred and 20-25 per cent for ground-based treatments. Although we may know less about the distribution of this broadleaf component, by simply using the RESULTS database there is the suggestion that broadleaf species are actually increasing in our young plantations across the province as a whole. Given we have seen a drop in both the amount of site preparation and brushing being carried out, maybe this is not surprising?

The questions I feel we need to be asking, as professionals, relate to stocking standards, management objectives, and ecosystem function. Herbicides are a tool used to help us achieve our (legislated) goals around the stocking levels, species composition, and vigour of future crop trees. At the end of the day, if there are concerns about what our current establishment practices are creating, I suspect we should be debating the fundamental issues of our management objectives and not the pros and cons of using small amounts of herbicide in our forests. Having said that, through 2020 and beyond, Resource Practices Branch will continue to assess herbicide use and vegetation management in general at the landscape level in consideration of drought impacts, invasive species, wildlife and wildfire in an effort to improve our understanding of the impacts on our forest inventory and the vegetation communities in treated areas. ☘

Special thanks to Jim Hunt, RPF, for his work on the FP Innovations report in 2019 and to Dan Turner, RPF for compiling the tables and charts.

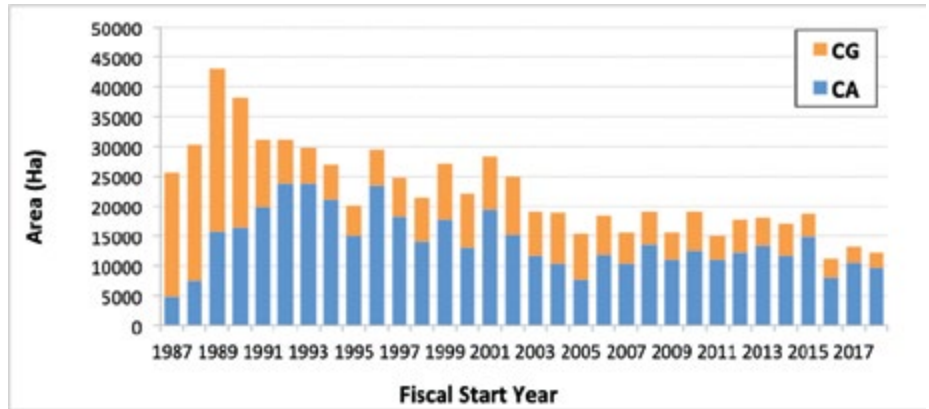


FIGURE 1A: *Herbicide treatments in BC since 1987; aerial applications (CA) and ground based backpack (CG).* Credit: Dan Turner, RPF.

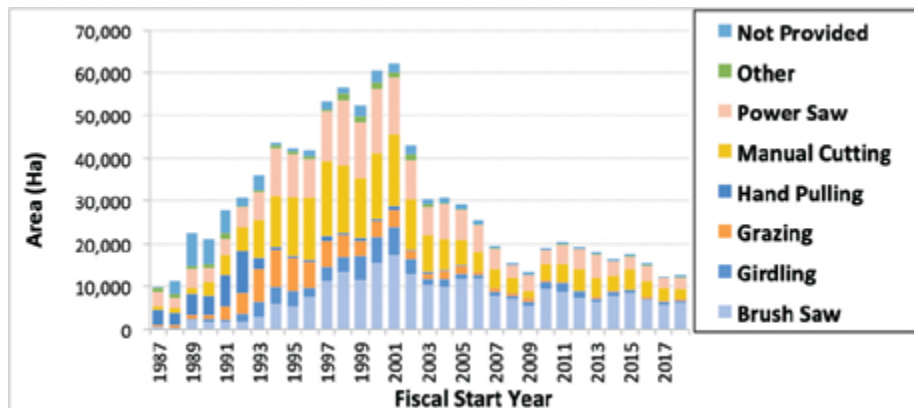


FIGURE 1B. *Manual brushing activities in BC since 1987.* Credit: Dan Turner, RPF.

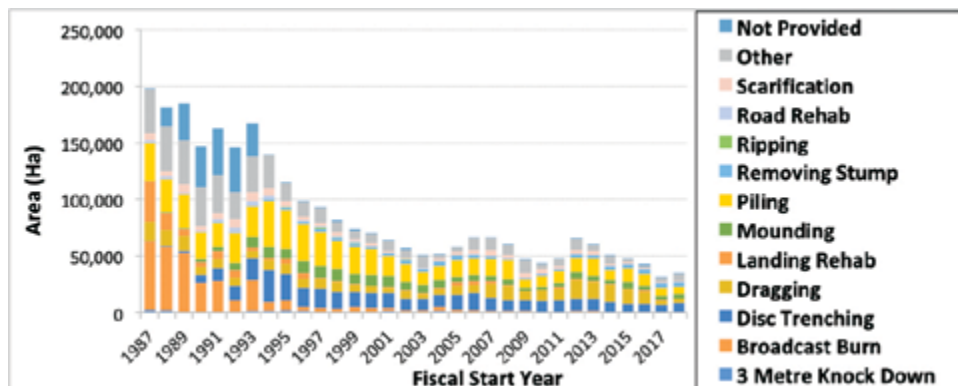


FIGURE 1C. *Site preparation treatments in BC since 1987.* Credit: Dan Turner, RPF.

ENHANCING SPECIES AND HABITAT MANAGEMENT: The FLNRORD Research Program

This article is the fourth in a six-part series about the important body of scientific research and achievements from more than 70 researchers and technicians contributing to the Ministry of Forests, Lands, Natural Resource Operations and Rural Development's Research Program. The six main research portfolios we'll be covering in this series are: ecosystem stewardship, ecosystem health and disturbance, water, species and habitat, timber supply, and bioeconomy.

Species and Habitats is one of six research portfolios of the

provincial Research Program in the BC Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD).

This portfolio oversees and delivers research projects to improve the management of aquatic and terrestrial species and their habitats affected by human natural resource use and the emerging effects of climate change.

Applied research in this portfolio provides science and technical information to help FLNRORD decision makers comply with and improve the policy, legislation, and regulations applicable to species and habitat management. Knowledge, guidance, and decision tools from this research provide both short-term support for immediate decision making as well as the scientific foundation to develop policies for emerging impacts and issues affecting fish and wildlife populations in BC.

There are three main research initiatives in the strategic plan:

1. Harvested Species: research to inform management of harvested fish and wildlife populations and their habitats;
2. Listed Species: research to identify factors that cause the decline and limit the recovery of listed species in BC; and
3. Biodiversity and Habitat Structure: research to understand environmental and biophysical factors that promote the biological diversity of fish and wildlife species, communities, and habitats on the landscape.

Studies of demography, behaviour, spatial distribution, movement, and patterns of habitat use for a wide range of harvested and listed fish and wildlife species improve the scientific basis for population and habitat management and the recovery of listed species. The suite of species currently under study ranges from steelhead to grizzly

bears, and moose to marbled murrelets. Other studies investigate the impacts of disturbance, land and resource use, and climate change on habitats and habitat features.

The following are examples of two applied research studies underway in very dry, hot Interior Douglas-fir (IDF_xh) forests near Kamloops.

Three years after the 2003 establishment of a uniform partial-cut harvest trial at the Isobel Lake Silvicultural Systems research site, comprised of twelve 20-hectare blocks assigned a gradient of post-harvest green tree retention from 100 per cent (control) to 20 per cent (open), site preparation treatments were applied to replicate 0.4 hectare plots within the harvest blocks. The objective of the study was to determine the effects of harvest and site preparation on the survival of post-harvest retention trees. Over a 10-year period after either prescribed fire, mechanical screefing, or no site preparation (control), 5,500 Douglas-fir retention trees were monitored to determine treatment effects on mortality. Few trees died in control or mechanically screefed plots (less than seven per cent), but 43 per cent of trees died in the prescribed burn treatments, where retention tree mortality was inversely proportional to the basal area

of retained trees; i.e. more open stands had higher mortality. Most of the fire-related mortality occurred within two years of treatment, and more than half the stems were killed in the smallest diameter class (7.5 – 15 centimetres diameter at breast height), likely due to tree scorch. Bark beetles preferentially attacked larger trees in prescribed burns; 34 per cent of the Douglas-fir trees greater than 45 centimetres diameter at breast height died due to Douglas-fir bark beetle (*Dendroctonus pseudotsugae*). Results indicate that in the IDF_xh, the use of prescribed fire to meet a management objective of open stand conditions with large live trees may be frustrated by the increased likelihood of bark beetle or other insect attacks on retained trees. However, a combination of low retention harvesting, prescribed fire, and no planting can be used to create very open canopy conditions with a vigorous understory when the objective is to provide abundant summer forage for livestock and

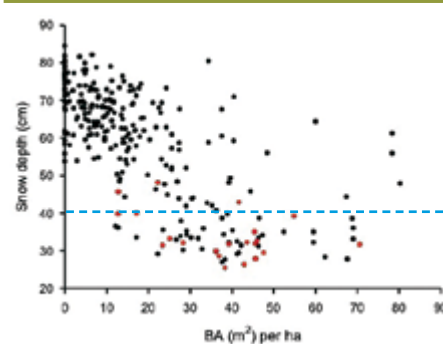


FIGURE 1. The relationship between snow depth, basal area, and the presence of mule deer tracks in plots at Goose Lake in 2017 and 2018 (deep snowpack years). Black indicates snow depth measurements where mule deer tracks were not observed, red indicates snow depth measurements where tracks were observed in the plot. The horizontal blue dashed line indicates a snow depth of 40 centimetres, above which mule deer movements are greatly restricted and energetically costly (MDWRSC 2017).

Walt Klenner, PhD, P.Ag. is a research wildlife ecologist. He is involved with wildlife habitat and integrated forest management research initiatives, including biota in relation to forest management options, climate change and landscape modelling, and the utilization of harvested forest fibre.





A mule deer collared by the Southern Interior Mule Deer Project research team.

Photo credit: Southern Interior Mule Deer Project.

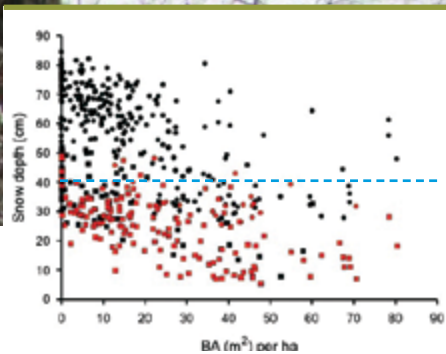


FIGURE 2. The relationship between snow depth, basal area, and the presence of mule deer tracks in plots at Goose Lake and two sites at Isobel Lake. Circles represent snow depths in 2017 and 2018 (deep snowpack years) and squares, snow depth measurements in 2019 (a relatively shallow snowpack year). Black indicates snow depth measurements where mule deer tracks were not observed, red indicates snow depth measurements where tracks were observed in the plot. The horizontal blue dashed line indicates a snow depth of 40 centimetres, above which mule deer movements are greatly restricted and energetically costly (MDWRSC 2017).

2017 to 2019, snow depths were measured two days after snowfall in late February or early March along transects in unharvested forest, clear-cut openings, and a range of uniform partial-cut basal area retention conditions, and the presence/absence of mule deer tracks was recorded in 5.64 metre radius plots along the snow depth transects. In 2017 and 2018, snow depths

native ungulates.

In a second study conducted near Isobel and Goose Lakes at approximately 1,050 metres above sea level, the objective was to determine how the need for forested snow interception cover by mule deer (*Odocoileus hemionus*) in the southern Interior of BC varies with snow depth. From

in openings averaged 75 centimetres; snow accumulation was variable in unharvested, mature forest retention strips due to the naturally 'gappy' nature of dry IDF stands but did not exceed an average of 35 centimetres. Snow depths were less in 2019, with an average of 50 centimetres in clear-cut openings.

In the deeper snowpack years of 2017 and 2018, most mule deer tracks were observed at snow depths less than 40 centimetres in areas of greater than 30 square metres of basal area (Figure 1). With less snow in 2019, mule deer moved through a wider range of basal area retention conditions, indicating that it is the deeper snow they avoid in years of greater accumulation (Figure 2). Results support the 40-centimetre snow depth threshold set by the Mule Deer Winter Range Strategy Committee (MDWRSC 2017) as conditions that impede or largely exclude mule from habitats and demonstrate that greater than 30 square metres of basal area retention provides suitable snow interception cover.

A wide range of species and habitat research studies are currently underway. Along with the authors of this article, research scientists serving as the advisory team for the Species and Habitats portfolio include Gabe Danyagri, PhD, FIT; Trevor Davies, PhD; Gerald Kuzyk, PhD, RPBio; Tracy Michalski, BSc, RPBio; Garth Mowat, PhD, P.Ag.; John Rex, PhD, P.Ag.; Anne-Marie Roberts, BSc, RPBio; and Louise Waterhouse, MSc, RPF, RPBio. ☒

REFERENCES

Mule Deer Winter Range Strategy Committee. 2017. Information Note #3. Basal area requirements for initiating group selection harvest in transition and deep snowpack zones. Report to Cariboo-Chilcotin Land Use Plan, Ministry of Forests, Lands, Natural Resource Operations and Rural Development, Williams Lake, BC. 13pp.

Melissa Todd, MSc, RPBio, is a coastal research wildlife ecologist. She studies the cumulative interaction of land use strategies and climate impacts on coastal wildlife communities and habitats, with a current focus on dead wood and riparian habitats and their associated fauna.



INTRODUCTION TO **Forest Carbon**

Forests are inextricably linked to the atmosphere through the

carbon cycle. Growth, mortality, disturbances, and anthropogenic impacts all affect the rate and amount of carbon that is sequestered from or emitted to the atmosphere. This sequestration from forests has been shown to be an essential tool for meeting global emissions reduction targets in order to mitigate climate change impacts.¹ Land managers therefore play an important role in combating climate change by influencing the overall carbon balance of forests via management decisions. Through altered forest practices, managers can help change the carbon balance of a forest for climate benefit.

From CO₂ Gas to Biomass and Back Again

The sun rises each day triggering microscopic pores in the surface of leaves to open and air to pour in. For every million molecules trees breathe in, roughly 400 will be a carbon dioxide (CO₂) molecule. Trees take the carbon atom from the CO₂ molecules and, along with energy from the sun and hydrogen atoms from water, build more complex carbohydrate molecules, eventually forming bark, branches, fruits, foliage, roots, and stems.

However, for every two carbon atoms that are fixed in biomass, one will be spent on metabolism and respired right back to the atmosphere as CO₂. Turnover of finer tissues such as roots and foliage, transfer carbon from tree biomass to pools of dead organic matter, where bacteria and fungi feed, releasing CO₂ back to the atmosphere through heterotrophic respiration.

In addition to this pattern of annual turnover and renewal, trees also periodically experience a wide array of abiotic and biotic disturbances. Wildfires and prescribed burning lead to combustion of organic matter, releasing a mix of CO₂ and other greenhouse gases (GHGs). Sometimes, carbon is also removed from forest ecosystems by foraging wildlife and by humans working in the forests.

Robbie Hember, Ph.D., P.Ag., is a forest carbon modeller with the Ministry of Forests, Lands, Natural Resource Operations and Rural Development. He has worked on forest carbon research in British Columbia since 2007 and has been part of the Forest Carbon Initiative team since 2017.

Garrett McLaughlin, MSc, FIT, is a forest carbon modeller with the Ministry of Forests, Lands, Natural Resources Operations, and Rural Development. Garrett has a MSc in Forest Modeling and a BSc in Forest Resource Management from UBC. He has worked in forest ecosystem modelling for nine years, first in carbon offset project development and now for government as part of the Forest Carbon Initiative.

Carbon Balance

Each year, the sum of carbon “fluxes,” including growth, respiration, combustion, harvest removals, and operational emissions, determines the annual carbon balance of a given forest. This balance, in turn, dictates whether forests are carbon “sinks” or carbon “sources.” As large amounts of biomass and salvaged dead wood are harvested from forests each year, the GHG balance must encompass the whole forest sector, including the forest ecosystem itself, as well as mills, wood products, and landfills. Further, if wood products displace the use of other non-renewable energy sources, then this too should be considered in the GHG balance.

These fluxes apply to any scale (or system), whether it be a small woodlot or all the planet’s forest biomes. Over millions of years, these processes led to the fossilization of dead organic matter, creating the vast deposits of coal, oil, and shale that have fueled the expansion of modern civilization. Since the industrial revolution, these processes have buffered us from greenhouse warming, as they drove the terrestrial biosphere to act as a net carbon sink, taking up roughly half of all CO₂ that humans have emitted through combustion of fossil fuels.² Today, the same processes are motivating land managers to shift practices in ways that will boost carbon storage even further to combat climate change.³

Forest Management for Carbon

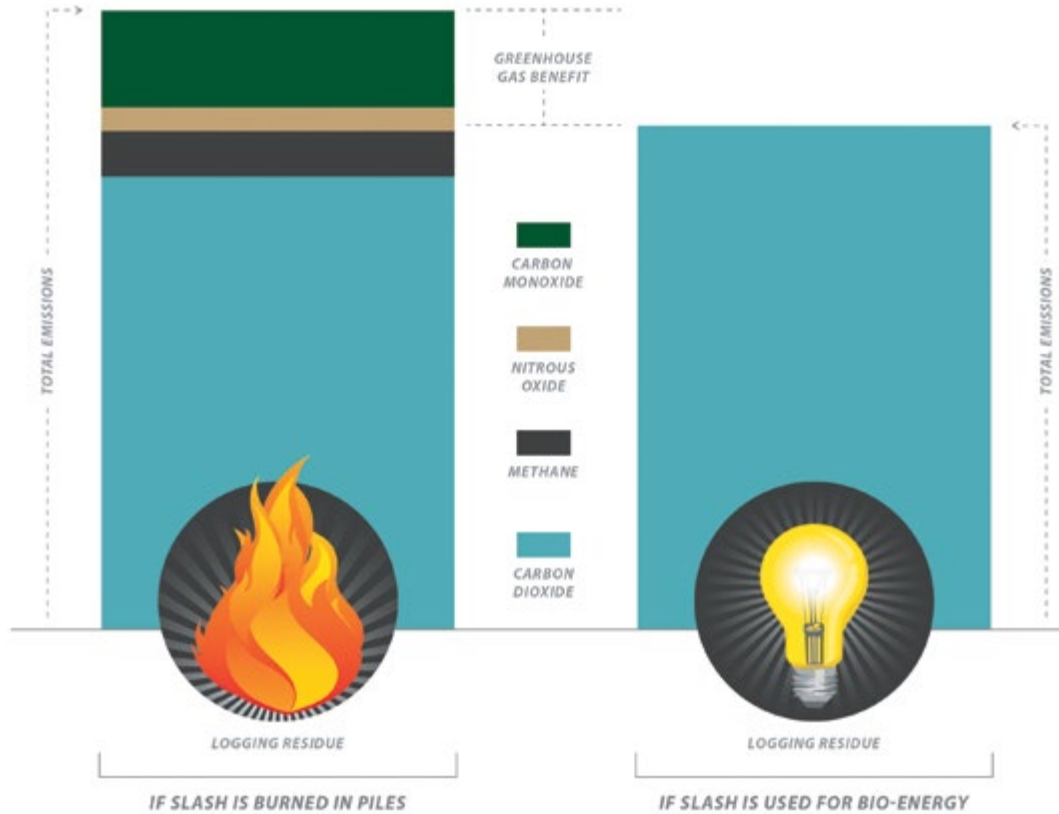
That said, climate change mitigation is easier said than done. The carbon storage capacity of the forest sector and the respective advantages and disadvantages of management promoting storage of carbon in forest ecosystems versus wood products are big topics of debate. The carbon balance is governed by biophysical processes, some of which are under the partial control of land managers, and some of which are partially or entirely governed by powers beyond human control. Not surprisingly, carbon-friendly management is not a “one-size-fits-all” solution, as the carbon implications of management decisions can vary dramatically by forest type.

For example, left intact by humans, the temperate rainforests of BC have a high carbon residence time (i.e. the amount of time a carbon atom remains stored) compared to other forests globally. Although massive organic soil carbon sinks contribute to this, it is primarily the rare ability of trees to grow to extraordinary size that shapes the potential for forest ecosystem carbon storage in this biome. Here, leaving healthy forests intact is a more effective climate change mitigation strategy when compared with harvesting and storing of that removed fibre in wood products.⁴ That said, storing carbon in forests comes with risk and a responsibility to better understand both the resilience of these ecosystems under an uncertain future climate and the economic importance of forests.

Conversely, in colder and drier parts of BC, that boundary between optimal storage of carbon in forest ecosystems versus wood products is much less clear. To further complicate things, the boundary may



FOR AN EQUAL AMOUNT OF HARVEST RESIDUES, BURNING IN SLASH PILES RELEASES MORE GHGs THAN USING THEM TO PRODUCE BIO-ENERGY.



be shifting. There is no longer any question that climate change and globalization are affecting carbon residence times and the potential to store carbon in forest ecosystems; trees are increasingly maladapted to temperature⁵, drought impacts are intensifying⁶, and natural disturbance regimes are changing.^{7,8}

However, some changes to management practices, such as the avoidance of slash burning, demonstrate a clear GHG benefit and should be promoted wherever possible. Logging produces residual waste that must be managed for wildfire risk abatement, but the historic practice of burning fibre in slash piles has significant negative impacts on climate, as well as air quality. Utilizing residual fibre to produce short-lived products, such as bioenergy and pulp products can be part of the solution.^{9,10} Better still, to successfully implement an optimal combination of forest ecosystem- and product-based storage strategies, industry must find ways to convert what was traditionally perceived to be waste into products that will keep felled carbon out of the atmosphere for generations.

The impacts of forest management on forest carbon balance are complex and to some degree, not fully understood. However, working towards incorporation of carbon as a forest value and changing forest practices to reduce emissions are important steps towards realizing the potential of forests as a climate mitigation tool. ✘

REFERENCES

1. Masson-Delmotte, V., Zhai, H.-O., Pörtner, D., Roberts, D., 2018. Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty. IPCC.
2. Ciais, P., Sabine, C., Bala, G., Bopp, L., Brovkin, V., 2013. Carbon and Other Biogeochemical

BC's Forest Carbon Initiative (FCI) develops and implements projects that reduce greenhouse gas (GHG) emissions and increase carbon sequestration — or storage — in BC's forest sector through investments on the land base, changing practices, and education and outreach. Funded in part by the Government of Canada's Low Carbon Economy Leadership Fund, FCI invests in stand fertilization, reforestation of areas affected by natural disturbance, tree improvement, road rehabilitation and better use of wood fibre to reduce the burning of wood waste in slash piles. Learn more at <http://bit.ly/ForestCarbonInitiative>.

Cycles, in: Climate Change 2013: The Physical Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, New York, USA.

3. Carlson, M., Chen, J., Elgie, S., Henschel, C., Montenegro, A., Roulet, N., Scott, N., Tarnocai, C., Wells, J., 2010. Maintaining the role of Canada's forests and peatlands in climate regulation. *For. Chron.* 86, 434-443.
4. Law, B.E., Hudiburg, T.W., Berner, L.T., Kent, J.J., Buotte, P.C., Harmon, M.E., 2018. Land use strategies to mitigate climate change in carbon dense temperate forests. *PNAS* 115, 3663-3668. <https://doi.org/10.1073/pnas.1720064115>
5. O'Neill, G.A., Hamann, A., Wang, T., 2008. Accounting for Population Variation Improves Estimates of the Impact of Climate Change on Species' Growth and Distribution. *Journal of Applied Ecology* 45, 1040-1049.
6. Hember, R.A., Kurz, W.A., Coops, N.C., 2017. Relationships between individual-tree mortality and water-balance variables indicate positive trends in water stress-induced tree mortality across North America. *Glob Change Biol* 23, 1691-1710. <https://doi.org/10.1111/gcb.13428>
7. Daigle, P.W., Dymond, C.C., 2010. The carbon conundrum - fire and fuel management in fire-prone forests. Extension Note - British Columbia Ministry of Forests and Range.
8. Woods, A., 2011. Is the health of British Columbia's forests being influenced by climate change? If so, was this predictable? *Canadian Journal of Plant Pathology* 33, 117-126. <https://doi.org/10.1080/07060661.2011.563908>
9. Smyth, C.E., Stinson, G., Neilson, E., Lemprière, T.C., Hafer, M., Rampley, G.J., Kurz, W.A., 2014. Quantifying the biophysical climate change mitigation potential of Canada's forest sector. *Biogeosciences* 11, 3515-3529. <https://doi.org/10.5194/bg-11-3515-2014>
10. Ter-Mikaelian, M.T., Colombo, S.J., Chen, J., 2016. Greenhouse gas emission effect of suspending slash pile burning in Ontario's managed forests. *The Forestry Chronicle* 92, 345-356. <https://doi.org/10.5558/tfc2016-061>

Managing Fuel In Harvested Forests In BC For Multiple Values In The Context Of Climate Change

In the September-October 2019 edition of *BC Forest Professional*, authors Gray et al.¹ discuss the extensive use of post-harvest slash burning to diminish future wildfire risk, facilitate ecosystem resilience, and increase long-term carbon storage. We agree a “rethink” of forest fuels and approaches to wildfire management is necessary to address climate change and the fire weather concerns raised by scientists.² We recognize we are moving into, or are in, a

social-economic-ecological environment with a different climate, greater population, more extensive infrastructure, and greater commodity and protection expectations than 50 years ago. However, there is considerable evidence to indicate a widespread policy of post-harvest slash burning would compromise many forest values, and so we outline some fuel management activities we believe would be effective at managing future wildfire extent and severity on harvested sites.

the availability of biologically relevant nutrients in the short-term, while reducing the overall nutrient capital of a site through the oxidation of organic matter. The greatest impact to soil function following fire comes from the removal of forest floor and soil organic matter that maintains soil structure, potentially leading to the formation of hydrophobic layers that negatively impact a soil’s ability to receive and regulate incoming precipitation.

Slash burning invariably affects the post-harvest structure on a site, consuming or charring retained snags and downed wood and altering their habitat value to a wide range of biota that require these structures. The impor-

In many areas, extreme fire weather is more important than fuel in creating the conditions for large, uncontrollable wildfires³ that affect the greatest area, lead to large economic losses and threaten lives and investments. Wildfires in BC are characterized by a high degree of spatial and temporal variability strongly influenced by regional summer drought or other aspects of weather (e.g. wind, ignitions, etc.⁴). As fire weather and topography are largely beyond our control, forest and grassland fuel conditions remain an important component of the “fire behaviour triangle” (weather, topography and fuel) to manage wildfire behaviour. However, effective and spatially appropriate fuel management can be challenging due to:

1. The spatial and temporal uncertainty associated with wildfires; some areas will burn and others won’t, regardless of treatment;
2. The need to address the rapid re-growth of fine fuels following many treatments (Example 1); and
3. The many forest values that can be compromised by fuel management practices.

Slash burning is one approach to managing post-harvest fuels, and like any treatment, there are consequences associated with its application. Increased fire frequency can have a strong negative effect on soil microorganisms and micro- and mesofauna that may last for as long as a decade.⁵ The effects of fire on soil properties and processes vary widely with ecosystem, pre-fire vegetation structure and composition, and the intensity and frequency of fire. Fire often increases



EXAMPLE 1. *Rapid regrowth of fine fuels (Pinegrass; Calamagrostis rubescens) in a three by three metre plot showing unburned grass and thatch in the background. The burn plot was charred to mineral soil in mid-May 2018 and the photo taken July 16, 2018.* Photo credit: Walt Klenner, PhD, P.Ag.

tance of downed wood to forested ecosystems is well established,^{6,7} and more recent work clearly links post-disturbance structural legacies with necessary habitat for biota, community organization and ecological resilience.⁸

We believe alternatives to slash burning exist to address unacceptable post-harvest fuel conditions, without many of the constraints and negative consequences associated with prescribed fire. Six key post-harvest fuel characteristics can exacerbate fire



Doug Lewis, MRM, RPF, is the stewardship evaluation forester for the Resource Planning and Assessment Branch, FLNRORD. His background is in integrated forest management applied research, assessment, and management related to forest biodiversity, watershed hydrology, and wildlife species.



Walt Klenner, PhD, P.Ag. is a research wildlife ecologist. He is involved with wildlife habitat and integrated forest management research initiatives, including biota in relation to forest management options, climate change and landscape modelling, and the utilization of harvested forest fibre.



Tom Sullivan is professor emeritus of wildlife ecology and conservation in the Department of Conservation and Forest Sciences, UBC, and director of the Applied Mammal Research Institute. He has worked more than 35-years on wildlife-forestry interactions.



Brian Wallace, PhD, P.Ag., is a research soil scientist. His background includes organic amendments on soil and plant community dynamics in rangelands, soil water dynamics in dry forests, and soil greenhouse gas emissions from forage production systems.



EXAMPLE 2: *The burning of unwanted piles of forest fibre following harvest represents potential unwanted ignitions if they occur during fire season, such as the loss of downed wood and snags for wildlife habitat and biodiversity; the loss of energy and nutrients for soil biota and site productivity; a rapid release of carbon and other greenhouse gases; and the loss of potential commercial products and economic opportunities.*

Photo credit: Rex Wholster.

behaviour include fuel amount, fuel size, horizontal fuel continuity, vertical fuel height, understory vegetation, and risk of ignition.

Fuel Management Treatments

Fuel size and fuel amount can be a key post-harvest fuel hazard concern requiring abatement, particularly near important values at risk (e.g. communities, infrastructure).⁹ Whole tree logging and processing at roadside creates slash accumulations (“cull piles”) that if left untreated, may lead to human-origin ignitions and high intensity fires (Example 2). Increased commercial utilization of fibre on a harvest block should be pursued to manage fuel accumulations. Practices such as

“processing at the stump” harvesting avoids slash accumulations in cull piles but should be complemented with additional practices to redistribute or manage high slash accumulations within the block (see below).

Efforts to maintain and redistribute large diameter fuels can help manage fuel accumulations and maintain habitat values. Large boles represent the structure with the greatest and longest-term habitat value,^{5,6,7} and contribute less to the rapid spread of fire. Redistributing non-merchantable large boles during skidder return trips into piles and windrows can provide important habitat features and “stepping stones” used by mammals to access or cross otherwise inhospitable

habitat (Examples 3, 4).⁸ Creating piles away from main access roads and on wetter sites and north aspects can help balance habitat needs while maintaining post-harvest fuels in a relatively low hazard condition.

Compacting slash using large, modified land rollers with cutting blades and pulled by skidders could effectively help address both vertical fuel height and horizontal fuel continuity. Vertical fuel height facilitates the rapid drying of fuels and slower decomposition of slash material. Slower decomposition of slash prolongs the period during which logging slash can increase fire intensity and maintains horizontal fuel continuity. Compacting slash fuels can reduce growth of grass and



EXAMPLE 3. *Creation of woody debris piles in association with green-tree retention.* Photo credit: Tom Sullivan, PhD.



EXAMPLE 4. *Piles and windrows of woody debris 12 years after construction.* Photo credit: Tom Sullivan, PhD.

forbs on areas with high amounts of slash, and in dry ecosystems, increase soil moisture and improve seedling growth on these sites.¹⁰ Implementing practices to compact slash is especially important on dry sites where seedling survival is often limited by soil moisture, and in many areas in BC, this coincides with high and severe fire risk areas.¹¹

Fine fuels represent a difficult post-harvest fuel management issue as they grow rapidly where the canopy has been opened or completely removed, increasing the amount and continuity of fuels that promote rapid fire spread.¹² Prescribed fire treatments offer a short respite, as fine fuels often increase in vigour following low-moderate severity fire (Example 1). In high wildfire risk areas, fine fuels will need to be managed on harvest blocks for 20+ years or until forest stand development reaches the stage where canopy shading diminishes understory productivity and overstory shading creates the equivalent of a shaded fuel break. Well-managed

livestock grazing is the most cost-effective and effective tool to reduce the amount and continuity of fine fuels.

Post-harvest road deactivation and access management needs to be carefully undertaken to balance the risk of ignitions with access for fire suppression crews. Unwanted ignitions in post-harvest blocks is often related to public access. Near roads, the frequency of ignitions increases¹³ but roads are also fuel breaks and facilitate suppression efforts. Complete road deactivation or rehabilitation would likely reduce human-origin ignitions but would also slow initial and subsequent suppression work on the fires that do start.

Well-designed fuel reduction treatments can markedly reduce the proportion of a landscape that needs to be treated to reduce the rate of fire spread.^{14,15} Extending this concept to site-level fuel management suggests the practices identified above, if applied to appropriate areas representing 20-30 per cent of the harvest block, can reduce the fuel and fire hazard. Similarly, scaling upward to create large, well-designed and spatially-explicit fuel management zones will be necessary to address current and future wildfire management issues. When viewed together, co-ordinated stand and landscape practices can address issues like vehicle access, water sources, and fuel reduction treatments that can diminish issues like spotting during extreme fire weather.

Viable solutions to addressing concerns over future wildfire extent and severity will only come through the use and integration of systems thinking in developing solutions; identifying and applying appropriate treatments to strategic areas that can serve as barriers to the expansion of large

wildfires; understanding the ecological processes involved; and structured dialogue between practitioners, policy specialists, scientists, professional foresters, ecologists, and wildfire management specialists. 🌱

REFERENCES

1. Gray, R., Cardinal Christianson, A., Hessburg, P., and Prichard, S. September-October 2019. Slash Burning Can Be a Beneficial Tool in Mitigating the Influence of Climate Change on Wildfire Behavior. BC Forest Professional. 12-13.
2. Flannigan, M.D., K.A. Logan, B.D. Amiro, W.R. Skinner and B.J. Stocks. 2005. Future area burned in Canada. Climatic Change. 72, 1-16.
3. Bessie, W.C. and E.A. Johnson. 1995. The relative importance of fuels and weather on fire behavior in subalpine forests. Ecology. 76, 747-762.
4. Meyn, A., S. Schmidtlein, S. Taylor, M. Girardin, K. Thonicke and W. Cramer. 2010. Spatial variation of trends in wildfire and summer drought in British Columbia, Canada, 1920-2000. International Journal of Wildland Fire. 19, 272-283.
5. Pressler, Y., J.C. Moore and M.F. Cotrufo. 2019. Belowground community responses to fire: meta-analysis reveals contrasting responses of soil microorganisms and mesofauna. Oikos. 128, 309-327.
6. Elton, C.S. 1961. The pattern of animal communities. Springer, Dordrecht.
7. Sullivan, T.P. and D.S. Sullivan. 2019. Long-term functionality of woody debris structures for forest-floor small mammals on clearcuts. Forest Ecology and Management 451: 117535.
8. Seidl, R., Rammer, W., and T.A. Spies. Disturbance legacies increase the resilience of forest ecosystem structure, composition and functioning. 2014. Ecological Applications 24(8): 2063-2077
9. Wildfire Management Branch. 2012. A guide to fuel hazard assessment and abatement in British Columbia. Province of BC, 19pp.
10. Harrington, T.B., R.A. Slesak and S.H. Schoenholtz. 2013. Variation in logging debris cover influences competitor abundance, resource availability, and early growth of planted Douglas-fir. Forest Ecology and Management. 296, 41-52.
11. Harrington, T.B., D.H. Peter and R.A. Slesak. 2018. Logging debris and herbicide treatments improve growing conditions for planted Douglas-fir on a droughty forest site invaded by Scotch broom. Forest Ecology and Management. 417, 31-39.
12. Graham, R.T., S. McCaffrey and T.B. Jain. 2004. Science basis for changing forest structure to modify wildfire behavior and severity. USDA Forest Service. RMRS - GTR 120.
13. Narayananaraj, G. and M.C. Wimberly. 2012. Influences of roads on the spatial patterns of human- and lightning-caused wildfire ignitions. Applied Geography. 32, 878-888.
14. Finney, M. 2001. Design of regular landscape fuel treatment patterns for modifying fire growth and behavior. Forest Science. 47, 219-228.
15. Finney, M. 2003. Calculation of fire spread rates across random landscapes. Design of regular landscape fuel treatment patterns for modifying fire growth and behavior. Forest Science. 47, 219-228. International Journal of Wildland Fire. 12, 167-174.

A Revitalized Forest Sector with First Nations as Full Partners



Photo credit: Nalidsa

The Interior forest sector is undergoing a transition because of the impacts on mid-term timber supply caused by the mountain pine beetle epidemic (MPB) and two severe wildfire seasons. Although devastating for many communities, this provides an opportunity to revisit forest management and look for ways to manage forests differently. Meaningful inclusion of First Nations in this process has the power to facilitate a climate for investment based on sustainable resource development. With a deep connection to the land and a knowledge that goes back generations, Indigenous peoples need to be key players in the transformation of the forest sector in BC.

In the spring of 2019, the BC First Nations Forestry Council (the 'Forestry Council') co-hosted a series of workshops alongside the Ministry of Forests, Lands, Natural Resource Operations and Rural Development with Interior First Nations' communities. Discussions helped identify key changes to forest policies and legislation needed to advance reconciliation and implement the *United Nations Declaration on the Rights of Indigenous Peoples* (the "UN Declaration") to develop a stronger, more inclusive forest sector. The resulting report produced by the Forestry Council, *First Nations as Full Partners: Recommendations to Support the Revitalization of the BC Interior Forest Sector*, provides 30 actions the province can take towards fulfilling their commitment to reconciliation with First Nations as full partners. This report identifies four key areas of work.

I. Shared Governance and Land Use Planning

Changes to forest legislation, policies, and regulations are needed to increase the role First Nations play in the governance and stewardship of forest lands and resources. First Nations emphasized the need for land management frameworks and plans that reflect their visions and management objectives for their territories. Research undertaken by the Forestry Council has shown that 50 per cent of Nations in BC don't have their own land use plans

(LUPs). Having their own LUPs would allow Nations to identify their values and stewardship objectives.

II. Tenure Reform and Fibre Supply

Control of tenure by a few large companies is a shared concern for First Nations and many British Columbians. Working together to do more with less volume, and developing policies and practices to support increased access to fibre, and utilization through incentives for small First Nations' tenure holders is in everyone's best interest. Small First Nation tenure holders, as market loggers, do not control what mills will take, and don't have the flexibility or scales of economy to address costs to move residual fibre. For First Nations to become full partners in the forest sector, they require increased access to volume and tenure opportunities to level the playing field.

III. Revenue Sharing

The forestry economy has a role to play in closing the socio-economic gap, supporting and rebuilding strong, healthy Indigenous communities. Meaningful sharing of stumpage revenues supports the modernization of government-to-government relationships, the well-being of First Nations communities, the development of governance capacity, and increases the ability of Nations to participate in the forest sector.

IV. Increased First Nations Participation in the Workforce

In 2018, the Forestry Council launched a *BC First Nations Forestry Workforce Strategy* in collaboration with industry to help connect First Nations talent to forest sector opportunities. As recognized by the 2009 Working Roundtable on Forestry, a robust forest sector will require stronger and more meaningful collaboration between Nations, industry, and the province. The strategy paves the way for achieving sustainable and meaningful career, employment, and business outcomes for Indigenous Peoples in the BC forest sector through collaborative partnerships among forest companies, Indigenous Skills and Employment Training Program and the Forestry Council.

In order to increase certainty, encourage future investments, and ensure the economic and environmental longevity of the sector for generations to come, the transformation of the forest sector must recognize First Nations as full partners and support collaborative partnerships within the industry. Only then can we find a way towards developing a stronger, more sustainable and inclusive forest sector.

You can read the full report at <https://www.forestrycouncil.ca/cpages/interior-renewal>. ✎

Dr. Charlene Higgins has worked with the BC First Nations Forestry Council since 2009 and has more than 20 years of experience working with BC Aboriginal communities and organizations on the recognition and incorporation of Aboriginal title, rights, and cultural values in the management and use of natural resources. She holds a MSc and PhD in Ecology from the University of British Columbia. Charlene has expertise in provincial, national, and international policies and practices related to the management and sustainable use of forest lands and resources.





All conference photos by Sandy McKellar, Honorary Member

Big Issues Front and Centre at 2020 ABCFP Forestry Conference

For the third year in a row, the ABCFP forestry conference sold out. The 2020 event saw more than 500 delegates gather in the Vancouver Island Conference Centre in Nanaimo to hear from experts debating some of the most critical issues facing the profession. Kelly McCloskey, RPF, from Tree Frog News provides summaries of some of the panel discussions.

Forest Minister Doug Donaldson Updates Foresters on Actions to Regain Public Trust

Doug Donaldson, BC's Forests, Lands, Natural Resource Operations and Rural Development Minister, provided an update on the second phase of government's Forest and *Range Practice Act* review, which recently completed its public input process. According to Donaldson, "The key themes include the need for more oversight and accountability, integration of non-timber resources, and forest landscape-wide plans to reduce cumulative effects and help address climate change." Donaldson said the related legislation is being drafted with the hope of introduction in spring 2020.

With respect to the government's Old Growth Strategic Review, the Minister noted the pending independent report by Al Gorley, RPF and Gary Merkel, RPF, on the public's ecological, economic, and cultural perspectives on old growth. Expected at the end of March, Donaldson said that once received, "the government will engage in the required government to government and First Nation discussions before the new strategy is determined."

Other government actions addressed by Minister Donaldson include:

- Greater Utilization of Forest Residuals. Donaldson noted the economic hurdles in getting waste wood out of the forest and his Ministry's actions to make it easier, such as alternative scaling methods. He also noted the importance of renewed cost sharing with the federal government — currently between the Canadian Carbon Initiative and the Forest Enhancement Society of BC — which he was confident would materialize in one form or another.
- Declaration on the Rights of Indigenous Peoples Act. Donaldson said the first step is to develop an action plan with First Nations

to determine what pieces of legislation will be looked at first — with forestry being a likely candidate. He also noted the government's legal commitment to be 100 per cent transparent and thus the action plan will be a public document.

- Coast Forest Sector Revitalization. Donaldson noted some of the actions taken, such as the "fee in lieu" policy change to drive more timber to domestic facilities and the "lumber based stumpage model" to increase rate responsiveness. Although he noted recent stumpage rates had come down significantly, the labour dispute and lack of data make it too early to assess overall progress.
- Interior Forest Sector Revitalization. Donaldson commented that the community engagement process announced by the Premier last year is underway, with similar topics being raised, such as fibre utilization, tenure diversity, wildfire resilience, and value-added — but also the need for sensitivity to industry economics.

Are Herbicides Getting a Bad Rap?

Dr. Len Ritter, a professor of environmental toxicology at the University of Guelf and Chair of the Council of Canadian Academics Expert Panel on the Integrated Testing of Pesticides, walked the audience through the many studies and proclamations that governments and research bodies have done on glyphosate.

An engaging speaker, he pointed out times when research and/or governments quoted suspect statistics or used poor math when reporting on herbicide exposure and incidents of cancer. Explaining that hazard is not synonymous with risk, and that without exposure, you only have risk, not hazard. Dr. Ritter demonstrated with clear graphics that the levels of chemicals present in our environment are not high enough to be hazardous. Although data does show an increase in cancer diagnoses, Dr. Ritter demonstrated that the population dynamics show a larger, older demographic, where incidence of illness is higher with age, and at the same time, better diagnostic tools for cancers (including some that rarely cause death) are adding to the statistical data. It sounded like Dr. Ritter indeed felt that herbicides (when applied correctly) are getting a bad rap.

ABCFP 2020 Nanaimo

OPPOSITE PAGE (L TO R):

Old Growth: How are We Managing the Resource and the Expectations? session presenters Allen Banner, RPF(Ret), RPBio; Alan Gorley, RPF; Shannon Janzen, RPF; MLA Sonia Furstenau; and Jordan Benner, FIT, PhD Candidate.

Neil Hughes, RPF, a forest establishment leader with the Resource Practices Branch in the Ministry of Forests followed Dr. Ritter with a demonstration of the effectiveness of herbicides in forest regeneration. He said one of the biggest criticisms he hears is that these chemicals are eliminating deciduous trees from the forest inventory. However, analysis has shown that at least 15 per cent of the forest cover after application remain deciduous. A more pressing concern is the effect of glyphosate on the mammals and the soil microbes in the food chain. Where ungulates browse on herbs that have absorbed chemicals they pass them along to their predators. Hughes says he sees the focus moving from the impact on humans to the impact on the animals in direct contact. More investigative work will be required to expose the answers.

Old Growth: How are We Managing the Resource and the Expectations?

Ecologist Allen Banner, RPF, RPBio, set the stage with the science behind establishing old-growth definitions for field managers in the Great Bear Rainforest and its applicability to neighbouring forests. Banner also emphasized the value of maturing second growth forests given the need to plan for a forest 100 to 500 years from now.

Shannon Janzen RPF, VP and Chief Forester at Western Forest Products, spoke of her appreciation of concern over climate change and the growing awareness of the positive role forests can play. For Janzen, this includes the significant volumes of coast old-growth forests not available for harvest, the retention harvesting undertaken to mimic natural disturbances, and management of the working forest to protect important ecological features. Key for Janzen are clear objectives and not trying to manage for the same thing in every forest.

Jordan Benner, FIT, PhD Candidate and research advisor for the Nanwakolas Council, brought the First Nations perspective to the discussion. This includes the import of syncing First Nations' history and experience with current forest practices but also the challenge



Snuneymuxw First Nation Elder Lorraine (Lolly) Good leading attendees in a rendition of 'Uy' skweyul, which means "good day" in Island Hul'q'umin'um.



Keynote speaker Jordin Tootoo, retired NHL player, and 2020 Host Committee Chair Molly Hudson, RPF, RPBio.

of scale — where the lines on a map lie versus their geographic interests.

Finally, Green Party MLA Sonia Furstenau spoke of the public's passion for old-growth, the lack of trust in government management, and the policy makers challenge with its four-year election cycle. In Furstenau's view, we need to decide what the forests 100 years from now will look like and take prompt action to move forward.

Thinking Locally: BC Communities and Forest Management

This panel on the role of BC communities and forest management included three mayors and a councillor from the Snuneymuxw First Nation. Gary Foster, Mayor of Fort Nelson, spoke of the foreclosures and bankruptcies following the closure of two sawmills and collapse of their oil and gas sector. Key to recovery was the establishment of partnerships with local First Nations, the securing of a community forest, and a reinvented public with increased say on local influences. Clearwater Mayor Merlin Blackwell spoke of similar challenges and solutions but also the ongoing uncertainty and frustration on waiting for government to decide on Canfor's tenure sale to Interfor. Sharie Minions, Mayor of Port Alberni, spoke passionately of her community's history and attachment to the forest sector but also the challenges, such as dealing with watershed issues when the area is dominated by private forest land interests, but also supporting opportunities, such as the San Group's new mills that diversify the products produced from the forest.

Wrapping up the panel discussion was Douglas White III, BA, JD, councillor with the Snuneymuxw First Nation and director for the Centre for Pre-Confederation Treaties and Reconciliation. White opined on the 'defining moment' the recent federal appeals court represents in Indigenous reconciliation. In White's view, the decision ignores all the previous rulings on Aboriginal title, rendering the reconciliation process 'broken or dead.' Given the importance of the First Nations historic and future role in BC's forest economy — as noted by all the mayors — the urgency of action was paramount. ❖



TOP, 73RD ABCFP COUNCIL, FROM L TO R: councillor at large Bowen Sly, RFT; councillor at large Marina Rayner, RFT; councillor at large Garnet Mierau, RPF; immediate past president Morgan Kennah, RPF; vice president Trevor Joyce, RPF; councillor at large Jason Fisher, RPF, LLB; councillor at large Jamie Jeffreys, RPF; councillor at large Ken Day, RPF; councillor at large Kelly Kitsch, RFT; and president Trevor Swan, RPF, LLB. (Missing from photo: lay councillor Wendy Royle, CPA.)

MIDDLE (L) FROM L TO R: Diversity in Forestry: Why Should I Care? session presenters Diane Nicholls, RPF; Kelly Cooper; and Jonathan Lok, RFT.

MIDDLE (R): Four of 24 Forest Carbon Initiative members – all winners of the Climate Change Innovator Award. FROM L TO R: Melanie Plett, RPF; Brian Watson, RPF; Michael Madill, RPF; and Leith Mckenzie, RPF.

BOTTOM (L): 2019 inductees Erika Driedger, RPF; Joel McLay, RPF; John Stechyshyn, RPF; Megan MacGregor, RPF (2018 inductee); Joanne Ranson, FIT; and George Simpson, RPF.

BOTTOM (R): 73rd ABCFP Council President Trevor Swan, LLB, RPF and Immediate Past President Morgan Kennah, RPF.





2020 HOST COMMITTEE, FROM L TO R – FRONT ROW: *Tom Walker; Molly Hudson, RPF, RPBio (chair); Ione Brown, RPF; Melinda Morben, RPF; Laura Gilbert, RPF; Pam Jorgenson, RPF; Andres Enrich, RPF.* From L to R – back row: *Stephen Lorimer, RPF; Nicola Dickson, RPF; Chelsey Toth, RPF; Shaun Mason, RPF; Jeff Kerley, RFT, ATE; Yurgen Menninga, RPF.* Missing from photo: *Theresa Denton, RFT; Kindry Mercer, RPF; Brendan Mohan, RPF; and Orrin Quinn, RPF.*

THANK YOU TO OUR 2020 ABCFP CONFERENCE SPONSORS

SIGNATURE SPONSORS

Forestry Innovation Investment
Interfor Coastal Woodlands
Mosaic Forest Management
Natural Resources Canada

SOCIAL SPONSORS

BC Ministry of Forests, Lands, Natural
Resource Operations and Rural
Development
DLA Piper (Canada) LLP
DWB Consulting Services Ltd.
Forsite Consultants Ltd.
Genome British Columbia
JRP Solutions Ltd.
Strategic Natural Resource Consultants Inc.

SESSION SPONSORS

B.A. Blackwell & Associates Ltd.
BC Forest Safety Council
TD Insurance
West Fraser
Western Forest Products Inc.

STUDENT SPONSORS

Canfor
Ounce of Prevention Solutions

FRIENDS

A&A Trading Ltd.
Arbutus Grove Nursery
Finning
IRL Supplies Ltd.
Ledcor Forest Products Partnership
Meridian Forest
Paper Excellence
Shifting Mosaics Consulting
Still Water Consulting
Western Forestry Contractors' Association

MEDIA SPONSOR

Tree Frog News

RAFFLE SPONSORS

Coast Hotels
Harbour Air Seaplanes
ISO Metrix Inc.
Mosaic Forest Management

CONGRATULATIONS 2019 AWARD WINNERS

- Distinguished Forest Professional: Dave Bedford, RPF; John Drew, RPF; Diane Nicholls, RPF; Cheryl Power, RPF; and Kathryn Willis, RPF
- Forest Technologist of the Year: Barb Drennan, RFT
- Jim Rodney Memorial Volunteer of the Year Award: Bill Bourgeois, PhD, RPF
- Forest Innovation Award: John Russell, PhD, RPF (awarded posthumously)
- Honorary Membership John Betts, Honorary Member
- Forest Engineering Award of Excellence: Del Ferguson, P.Geo., Eng.L
- BC Forest Professional Magazine Best Article: Tracy Andrews, RPF and Sally Sellars, RPF
- Climate Change Innovator Award: Ministry of Forest, Lands, Natural Resource Operations and Rural Development's Forest Carbon Initiative members Brendan Brabender, RPF; Laura De Carolis; Caren Dymond, PhD, P.Ag; Heather Stober; Rejan Farley; Robert Hember, PhD, P.Ag; Kristin Hendry, RPF; Kathy Hopkins, RPF; Jason Hutchinson, RPF; Sara Lazaruk, RPF; Qinglin Li, PhD, FIT; Michael Madill, RPF; Leith McKenzie, RPF; Garrett McLaughlin, FIT; Meggin Messenger, RPF; Tim O'Rourke, RPF; Dennis Paradine; Melanie Plett, RPF; James Sandland, BSc, MEB; Darius Tolkien-Spurr; Nicholas Ukrainetz, RPF; Brian Watson, RPF; Thomas White; and Brent Ziegler, BSF, RPF;
- TD Insurance Meloche Monnex Professional Development Award: Jeffrey Palatnick, RPF; Jocelin Teron, RPF; and Rory Wing, RFT.

FROM L TO R: *Cherilyn Drew, 2019 Distinguished Forest Professional award winner John Drew, RPF; Karen Day; and ABCFP Councillor-at-Large Ken Day, RPF.*





Professional Development

“One child, one teacher, one book, one pen can change the world.” – Malala Yousafzai

Malala Yousafzai, a young educator and Nobel Prize winner (2014), knows first-hand the value of learning.¹ I too consider learning empowering and have committed myself to intellectual and professional development. Learning is something I get to do, not have to do.

Indeed, continuous professional development (CPD) is an important part of competency maintenance (Bylaw 12) and protecting the public interest (*Professional Governance Act, Part 6 (57)*). Competencies, or the knowledge, skills/abilities and behaviors one must repeatedly demonstrate in order to do their job, are not given but built and maintained over time. Research in the 1990s indicated people over-rate their competencies; the least experienced, rating them the highest.² Moreover, rapid technological, environmental, and social change has resulted in some significant gaps in hard skills and interpersonal competencies.

However, CPD can be time consuming, costly, and may not be supported by some employers. Not surprisingly, 62 per cent of ABCFP registrants reported spending only one to five hours per month in CPD.³ A lack of capacity for professional practice area-based learning, since the demise of the Forest Continuing Studies Network, hasn't helped.

Fortunately, there has been a paradigm shift in approaches to CPD based on advances in the neuroscience of learning and adult education. The most

Troy Lee is the ABCFP's manager of member competence and engagement. He holds a BSc in Forestry (UBC) and a MA in History (UNBC). Passionate about books and bikes, Troy spends his free time reading and exploring BC's backroads, backcountry, and trails.

effective CPD is learner focused (what you need to know, when you need to know it), outcome based (focused on what you learned and can apply) and delivered in small chunks using a range of methods.

Neuroscience has demonstrated that learning in small chunks, followed by repetition and recall, is highly effective.⁴ This is critical given that 75 per cent of what we learn is forgotten if not applied within six days.⁵ Adult professionals learn best when engaging in real-world problem solving, often in teams, and on the job. In fact, recent research indicates 68 per cent of employees prefer this approach.⁶ Moreover, according to Deloitte, 80 per cent of workforce learning happens this way.⁷

In light of this research, I recommend forest professionals employ a three-fold approach to CPD that is strategic, intentional, and outcome based.

Strategic CPD focuses on what you need to know to do your job. You don't need to know everything. Align your learning with these three key professional learning categories:

1. professional practice area competencies;
2. professional competencies (bylaws, ethics, standards of professional practice); and
3. interpersonal competencies.

If you don't know all your practice area competencies, review your job description or consult a senior professional. Think carefully about conferences and workshops you attend and resources you consult (including other professionals). While the content may be interesting, does it align with your practice? Does it fill gaps you may have or address issues you are encountering? If you are





and the Forest Professional

Photo credit: David Johnson

a young professional, consider your career trajectory. Align some learning with other practice areas you would like to develop. Mid to late career professionals may be at arm's length from technical operations. In this case, align your learning with key business and interpersonal competencies.

Intentional CPD focuses on assessing, planning, implementing, and tracking your learning activities. Once you have identified key competencies, assess your level of mastery. Are you below, meeting, or exceeding standards? Ask a peer to assess you. Utilize the Self-Assessment Guide and Evaluation form⁸ regularly (not just prior to renewal) and consult the numerous competency assessment tools online.⁹ Also, consider a formal, peer-led general practice review.¹⁰ Registrants report this is an overall positive experience.

If you have gaps, create a plan to fill them. Set aside focused time for learning or do it on demand. After a learning activity, record your key learning outcomes in your professional development plan. Recording learning activities is not simply administrative: it is an important part of the learning process. Recall and repetition is critical. If after attending a conference, you cannot identify key learning outcomes, consider your approach. Perhaps a few concentrated, interactive sessions aligned with your practice area(s) would be better than passively sitting all day listening to talking heads.

Outcome-based CPD focuses on what you have learned rather than the amount of content consumed. Arguably, a fifteen-minute chat with another professional leading to a light-bulb moment aligned with a key competency has equal if not greater value than a one-hour webinar of uncertain application. If you focus on the outcome, how you learn is secondary. A conversation with an expert, an online micro-course (less than 30 minutes), or attendance at a field workshop can be legitimate learning activities that achieve an outcome(s).

Another helpful tool is a learning style assessment. Take the free VARK test online¹¹ to better understand if you are a visual, auditory,

reading/writing, or kinesthetic (movement) learner. Most people are a combination of these indicators. Consider tailoring your learning activities to your dominant learning style. Consult the ABCFP Member Competence and Professional Development webpages.¹² These pages have numerous online courses, downloadable resources, links, and tools to help you build and maintain competencies.

Forest professionals work in a complex, dynamic, and often disruptive environment. Keeping abreast of best practices, current forest science, legislative changes, First Nations issues, and public engagement is challenging. However, an intentional, strategic, and outcome-based approach to continuous professional development, coupled with some old-fashioned effort, will ensure ABCFP registrants maintain and build the competencies to ensure BC's forests are managed responsibly. ✕

REFERENCES

1. "One child, one teacher, one book, one pen can change the world" with Malala Yousafzai. Available online at <https://www.youtube.com/watch?v=IXxdsb6jT7o>
2. <https://www.psychologytoday.com/ca/blog/pop-psych/201705/more-about-dunning-kruger>
3. ABCFP Continuous Professional Development Survey 2019.
4. Learning How to Learn: Powerful Mental Tools to Help you Master Tough Subjects, Coursera e-Course; available online at <https://www.coursera.org/learn/learning-how-to-learn>
5. Hermann Ebbinghaus, The Forgetting Curve, in Where Companies Go Wrong with Learning and Development, HBR Oct 2, 2019.
6. 2018 Workplace Learning Report, LinkedIn Learning Solutions.
7. Leading in Learning: Building Capabilities to Deliver on Your Business Strategy, Bersin by Deloitte, 2018.
8. Self-Assessment Guide and Evaluation form, available online at https://abcfp.ca/WEB/ABCFP/Professional_Development/Self-Assessment.aspx
9. ABCFP competency assessment tools; available online at http://abcfp.ca/WEB/ABCFP/Professional_Development
10. ABCFP peer led general practice review: https://abcfp.ca/web/ABCFP/Members/Professional_Development/Continuing_Competency/Practice_Review/ABCFP/Professional_Development/Practice_Review.aspx?hkey=4cc58fe3-5c24-4c22-948c-00c831bb35b5
11. VARK test, available online at <https://vark-learn.com/the-vark-questionnaire/>
12. ABCFP Member Competence and Professional Development webpages, online at https://abcfp.ca/web/ABCFP/Members/Professional_Development/ABCFP/Professional_Development/Professional_Development_Overview.aspx?hkey=b04d3c54-d6f0-4bdd-99bc-c297786f01c4

A Summary of the ABCFP's Old Growth Strategic Review Response to Public Engagement

In January, the ABCFP submitted a response to the BC government about old growth management in BC. This article highlights government's intentions for the engagement and next steps, as well as the ABCFP recommendations. The response is available on the ABCFP website.¹

What was this Engagement About?

On July 17, 2019, the BC government announced the appointment of an independent, two-person panel as part of an Old Growth Strategic Review. The purpose was two-fold: engage the public on old growth and to provide a report to the Minister of Forests, Lands, Natural Resource Operations and Rural Development.

Panelists Garry Merkel, RPF and Al Gorley, RPF, visited communities across BC and provided opportunities for the public, organizations, and professionals to share their thoughts on old growth management in BC. On December 20, ABCFP staff met with the panel to share our initial draft response and to hear feedback and perspectives from others.

In February, the panel highlighted more than 200 meetings in 36 communities with roughly 700 participants, equating to more than 350 written submissions, thousands of emails, and more than 18,000 online surveys completed.

Why a Strategic Review of Old Growth Management?

Government set the stage for the review by acknowledging *"the management of old-growth forests has been a contentious issue in this province for decades. Satisfying the public's interest in deriving economic benefits and employment from our forests – while also maintaining ecological and cultural values – has been challenging."* More specifically, because of the review, *"government intends to provide more clarity about old-growth management and about balancing economic, conservation and cultural values."*

The ABCFP supports the province's review of old growth management. Stewardship responsibilities are core elements of the ABCFP's response. These responsibilities will help government implement recommendations to improve the balancing of diverse interests and provide the clarity expected by forest professionals and many others from government about old growth management in BC.

for context. This included how government defines old growth, how much old growth has recently been harvested, the area of land available for timber harvesting, biodiversity objectives (national and provincial), and the amount of old growth protected today.

While this information is useful to understand old growth forests in a provincial context, a more narrow (e.g. biogeoclimatic zone/sub-zone/variant) focus is necessary for government to establish objectives and provide clarity about definitions of old growth forests that balance economic, conservation, and cultural values. Forest professionals and the ABCFP play an important role to help inform government about choices for old growth management.

There were also specific questions in the government survey the ABCFP addressed directly (e.g. definition of old growth, why old growth is important, and risks to old growth). To engage registrants in the ABCFP response, a survey of the questions and answers posed by government about old growth was made available to ABCFP volunteers. In summary, the ABCFP recommended the BC government should:

- Provide clear objectives for its forest landscape level choices and definitions and characteristics of old forests and large trees for the many diverse, dynamic forests and forest ecosystems in BC.
- Provide the information, data, and interests considered (e.g. forest science, Indigenous knowledge, public, and economic) in establishing forest landscape level biodiversity objectives to the public.
- Continue investment in research and development of new and innovative forest management practices to help achieve existing and future forest landscape biodiversity objectives.
- Increase BC government investment in monitoring changing forest conditions, inventories, LiDAR, and Growth and Yield data and modelling to ensure the public and forest professionals have up-to-date information.

The challenge and opportunity ahead for government in old growth management is in continually understanding the diversity of forests, forest lands, and forest ecosystems across BC and implementing forest stewardship policies that balance the wide range of interests expressed.

What's Next?

Merkel and Gorley will submit a report to the BC government by April 30, 2020. The government has committed to making the report available to the public in the following six months. ABCFP staff will continue to engage the panel and government about old forests to ensure our recommendations are understood and fully considered. ✖

LINK

1. [https://abcfp.ca/web/-/Home » About Us » Forest Stewardship » Stewardship Activities](https://abcfp.ca/web/-/Home»AboutUs»ForestStewardship»StewardshipActivities)



What was the ABCFP Feedback?

In preparing the response, it was important to consider the information provided by government

Paul Nuttall, RPF, is the ABCFP's deputy director of forest stewardship and engagement. Paul works in Campbell River and helps the ABCFP and registrants develop strategic direction and deliver annual business plan activities in forest stewardship, Indigenous and member engagement, and the continuing competence program.

STATISTICS

Note: Individuals may have applied for a change to their status since this posting. Check the directory on the ABCFP website at www.abcfp.ca/web for the current list of registrants. Names may also appear more than once if the individual has/had multiple designations or multiple changes within the same month.

January 2020

NEW REGISTERED

PROFESSIONAL FORESTER

Barry Tyler Jonat, RPF
Heidi Patricia Marks, RPF
Nicole Elizabeth Richardson, RPF
Lee Tyler Williams, RPF

NEW REGISTERED

FOREST TECHNOLOGIST

Kathleen Megan Harfman, RFT
Samantha Glynis Nuyens, RFT
Alexandra Louise Vallée, RFT
Hannah Lynne Vander Meer, RFT

NEW HONOURARY MEMBER

John N. Betts, Honourary Member

NEW FORESTER IN TRAINING

Meghan Elizabeth Anne Burke, FIT
Shamus Alexander Jamieson, FIT
René Magnus Jarosch, FIT
Brittany Elizabeth King, FIT
Randy Jeffrey Mitton, FIT
Monica Frances Nederend, FIT
Marino Giuseppe Somerville, FIT

NEW TRAINEE FOREST TECHNOLOGIST

Mary-Anne Ashley Amos, TFT
Willow Ellsworth, TFT
Lee-Anne Fournier-Beck, TFT
Patricia Lynn Heisler, TFT
Dawson Brett Hughes, TFT
Lochlan Robert Munro, TFT
Quentin Stefani, TFT
Katyryna Leigh Trakalo, TFT
Marco David Wagner, TFT

REINSTATEMENT - RPF

Suzanne Cairns, RPF
Melvin A. Zwierink, RPF

DECEASED

Norman S. Denmark, RPF(Ret)
Roger M. Marshall, RPF(Ret)
Colleen Joanne Pedrotti, RPF
Conrad F. Smith, RPF(Ret)

The following people are not entitled to practice professional forestry in BC:

NEW RETIRED RPF

Helena L. Adamowicz, RPF(Ret)

James Edward Heppner, RPF(Ret), RFT(Ret)
Robert J. O'Neal, RPF(Ret)
Patrick J. Salm, RPF(Ret)
Glenn Shapendonk, RPF(Ret)
Bruce T. Storry, RPF(Ret)
Roger D. Tailleur, RPF(Ret)
Leonard Vanderstar, RPF(Ret), RPBio
Gary J. Veitch, RPF(Ret)
James R.C. Wilkinson, RPF(Ret)
Diana M. Wood, RPF(Ret)

NEW RETIRED RFT

Christopher Charles Betuzzi, RFT(Ret)
Lisa E. Hanna, RFT(Ret)
James Edward Heppner, RPF(Ret), RFT(Ret)

LEAVE OF ABSENCE

(REGISTERED MEMBERS)

Peter Dodic (on LOA)
E. Jane Miller (on LOA)
Aynslie Ogden (on LOA)
Corey Andrew Plester (on LOA)
William Redhead (on LOA)
Jeremy Richard Siewert (on LOA)

LEAVE OF ABSENCE

(ENROLLED MEMBERS)

William Isaac Kaufman (on LOA)
Sana Valliani (on LOA)

RESIGNATION - RPF

Roderick Lloyd Hillyard
Neil Alexander MacEachern
Gordon D. Nigh
Frank Scheithauer
Kristin Anne Storry

RESIGNATION - RFT

Courtney Mari Lyn Kenny
Katelyn Rae McMahon
Wesley John Ogloff

RESIGNATION - RPF RETIRED

Kevin J. Hardy
Douglas H. Herchmer
Paul F. Scott

RESIGNATION - RFT RETIRED

Sharon Anne MacDonald

RESIGNATION - TFT

Mark Jeffrey Dyer
Mike Elwert
Terri Mina Maggie MacDonald

REMOVAL (DISCIPLINARY) - RFT

Marcus Paquette*
*See the ABCFP website for details at abcfp.ca/web

February 2020

NEW REGISTERED

PROFESSIONAL FORESTER

Nolan Mikhail Buis, RPF
Jemina Clare Coutu, RPF
Kirstin Marie Eyolfson, RPF
Brett Harrison Marshall, RPF
Nicola Kylie McGrath, RPF
Ashley Maj Sutherland, RPF
Olivia Angeline Van Jarrett, RPF

NEW REGISTERED

FOREST TECHNOLOGIST

Trevor J. Harder, RFT

NEW FORESTER IN TRAINING

Nathanial Francis Atkinson, FIT
Andrea Bittencourt Moreira
Cameron, PhD, FIT
Alan Gregory Eschuk, FIT
Dan Catalin Henegar, FIT
Christopher Howard, FIT
Sierra Elizabeth Macleod, FIT
Zoltan Krisztian Mityok, FIT
Sidney Elizabeth Potter, FIT
Xu Jian Yu, FIT

NEW TRAINEE FOREST TECHNOLOGIST

Brendan Robert Allen Christenson, TFT
Benno Wolfgang Durfeld, TFT
Samuel Angelo Gigliotti, TFT
Julia Elisabeth Hasenauer, TFT
Shawn Samuel Langford, TFT
Tyler Jake Lemke, TFT
Katelynn Angelena Steeves, TFT

REINSTATEMENT - RFT

Donald George Rosen, RFT

REINSTATEMENT FROM RETIRED - RFT

Christopher Charles Betuzzi, RFT

REINSTATEMENT FROM LOA - FIT

Kayla Marie Brock, FIT

DECEASED

Helmut Bradatsch, RPF(Ret)
John R.D. Cuthbert, RPF(Ret)
J. Norman Godfrey, RPF(Ret)
Michael T. Landers, RPF

The following people are not entitled to practice professional forestry in BC:

NEW RETIRED RPF

Paul M. Albu, RPF(Ret)
Kerry J. McGourlick, RPF(Ret)
John M. Morrison, RPF(Ret)
Wojciech Szczesniak, RPF(Ret)

NEW RETIRED RFT

Jeanine Michelle Hudson, RFT(Ret)

LEAVE OF ABSENCE (REGISTERED MEMBERS)

Peter M. Graff (on LOA)
Mark Andrew Pedersen (on LOA)
Alina Janina Skiba (on LOA)
Kimberly Kyla Strange (on LOA)

LEAVE OF ABSENCE (ENROLLED MEMBERS)

Matt William Engel (on LOA)
Melissa Gauchier (on LOA)
Devin Keith Kite (on LOA)
Stephane Andre Louis Leger (on LOA)
Anne Nitsa Lumumba (on LOA)
Tristan Lee Sjoden (on LOA)
Heather Charmaine Wakita (on LOA)

RESIGNATION - RPF

Stephanie Marie Sambo

RESIGNATION - RFT

Michel Lucien Gareau
David Adrian Bernard Hobbs

RESIGNATION - ATC

Kenn Dietz

► *CONTINUED next page*

STATISTICS

Note: Individuals may have applied for a change to their status since this posting. Check the directory on the ABCFP website at www.abcfp.ca/web for the current list of registrants. Names may also appear more than once if the individual has/had multiple designations or multiple changes within the same month.

RESIGNATION - FIT

Lukas Peter Malvet

RESIGNATION - TFT

Kelsey Jane Lemoine
Chad Michael Tales
Helen Elizabeth Turner

RESIGNATION - RPF RETIRED

ROBERT M. CLARKE

Jeffrey J. Fukumoto
Catherine D. Harris
Nelson J. Harrison
John R. Masai
Susan L. McDiarmid
Dan Motisca
James Trenton Nash
Donald J. Norris
Richard A. Prill
Kenneth I.M. Rymer
Shawn M. Switzer
John K. Waring
Xiaoping Yuan

RESIGNATION - RFT RETIRED

Brian Gregory Pate
Ronald David Stephen

REMOVAL - RPF

Jonn G. Bertramm
Nigel B. Fletcher
Peter M. Graff (on LOA)**
Peter Sean Gregory Hale
Stanley R. Holmes
Jason Otto Hooft
Julien Ménard
Robert J. Oran
John R. Stace-Smith
Wade James Watson

REMOVAL - RFT

Myles Elliot Alexander
Barry Peter Comin
Kirk Ellis Daley

Kathlyn Lauri Deveau
John Jeff Hatch
William George Hazard
Kevin Jock Honeyman
Kelly Peter Houlden
John Brian McPherson
David Charles Llewel Morrow
Leslie Olsen
Ralph Bert Ottens
Stewart Gordon Pyper
Donald George Rosen, RFT**

REMOVAL - ATE

Francis Edward Lennard

REMOVAL - FIT

Benjamin Patrick Allen
Hailin Cao
Cory John Alan Davis
Andre Andrew Ho-Lyn
Thomas Mark Jurek
Kasperkiewicz
Christine Kuizema
Yuda Liang
Beata Opalinska
Kathryn Elizabeth Shaw

REMOVAL - TFT

Jeffrey Read Davies
Nicole De La Mare
Joshua James Dick
Joseph John Charles Doran
Cody Alexander Dunbar
Louis-Karl Gilles Fuchs
Robert John Harry
Douglas Eric Nelson
Samantha Christine Quinn
Alexander Ross
Kevin Lonie Ryan
Lauren Ann Sheedy
Craig Jonathan Shintah
Tanner Daniel Sulentich

**reinstated membership within the same month

March 2020

NEW REGISTERED

PROFESSIONAL FORESTER

Alireza Araghi-Rahi, PhD, RPF
Nicholas Arthur Barry, RPF
Cody John Turner, RPF

NEW REGISTERED

FOREST TECHNOLOGIST

Blair Spencer Cassels, RFT
Alexander Allan Tranq, RFT

NEW FORESTER IN TRAINING

Theresa Craveiro, FIT
Mikayla Paige Roberts, FIT
Colin Neill Taylor, FIT
Kayla Rose Topping, FIT
Nolan James Wallace, FIT

NEW TRAINEE

FOREST TECHNOLOGIST

Noah James Foster, TFT

REINSTATEMENT - RPF

Nigel B. Fletcher, RPF
Christopher E. Roddan, RPF

REINSTATEMENT FROM LOA - RPF

Mona Nicole Desgroseilliers, RPF
Leonard B. Eddy, RPF

REINSTATEMENT FROM RETIRED - RPF

Kim G. Allan, RPF

REINSTATEMENT FROM LOA - TFT

Josee Monique Andrea Trudeau, TFT

DECEASED

Alexander J.H. Harper, RPF(Ret)

The following people are not entitled to practice professional forestry in BC:

RESIGNATION - RPF

Steven P. Legge

RESIGNATION - TFT

Shaun Thomas Berryman

REGISTRATION WITHDRAWAL

Peter E. Jurasz
John A. Marlow

Statistics: Totals (Year-to-Date)

Professional Foresters								Professional Technologists				Associate Categories						Net Effect	
RPF	RET	LIFE	FIT	FP	SP(V)	SP(T)	SP(L)	RFT	RET	LIFE	TFT	ATC	ATE	TNRP	NRP	SAS	AM	HM	
2612	545	129	447	0	0	0	6	1223	130	3	277	92	56	1	2	9	0	21	5553

It is very important to many registrants to receive word of the passing of a colleague. Registrants have the opportunity to publish their memories by sending photos and obituaries to editor@abcfp.ca. The association sends condolences to the family and friends of the following registrants:

Colleen Pedrotti, RPF #4630

May 14, 1969 —
November 17, 2019



It is with profound sadness we announce the passing of our dear friend and colleague, Colleen Pedrotti, who was taken from us far too soon. Born and raised in Kimberley, BC, Colleen showed her love for animals and the outdoors at an early age and after graduating from high school in 1987, she began working with horses in southern Alberta.

In 1993, Colleen started her technical diploma in forestry at Selkirk College and began her forestry career in earnest in 1995 when she joined the BC Forest Service. Based out of Bella Coola, Colleen spent much of her time working in silviculture in a district where only 10 per cent of the land base was accessible by road. This meant many adventures accessing areas by boat, floatplane, and helicopter. Colleen transferred to the BC Forest Service in Quesnel in 2000 where she continued to practice silviculture. A few years later, Colleen embarked on the arduous journey known as the “pupil program” with the ABCFP, spending many extra hours doing course work in Prince George as well as by correspondence, all while continuing to work and run her ranch. She obtained her RPF in 2009. Over the past few years, Colleen was working in the provincial woodlot program.

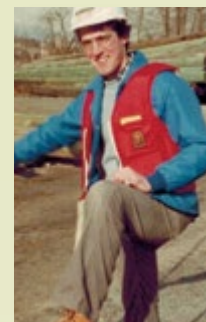
In her spare time, when she wasn't tending to or spending time with her horses and dogs on her ranch, Colleen could be found watching hockey — especially the Detroit Red Wings, or spending quality time with her friends and family. Colleen was always ready to laugh and was a kind and loyal soul, as anyone who met her will tell you. Colleen's love of forest stewardship was evident throughout her 25-year career in forestry. She will be greatly missed.

Colleen leaves behind a sister, two nieces, two nephews, and a close-knit group of friends in Quesnel and throughout the province. Once a friend, a friend forever! Colleen did not want any flowers, service, or memorial. If you wish to honour Colleen, a charitable donation can be made to either the Canadian Society of the Andalusian Horse or the Great Dane Rescue Society. Salute!

Submitted by Tammy Baerg, RPF #4423 and Jennifer Martin, RFT #1151.

Roger Michael Marshall, RPF #1762

March 1, 1952 —
November 23, 2019



Roger Michael Marshall passed away on November 23, 2019, surrounded by his loving family after a courageous battle with cancer. He is survived by his devoted wife Michelle, children Kevin and Kara, siblings John and Jane, and many other family members and friends.

Roger was born in Vancouver and spent his early years in the Lower Mainland, growing up in Port Moody and Coquitlam. He graduated from Centennial High School in 1969 before attending the University of British Columbia, where he received his Bachelor of Science (BSc) degree in 1974.

Following university, Roger backpacked through New Zealand, Australia, and Southeast Asia. This would be a precursor to a life full of travel and outdoor adventure. He was drawn to work that allowed him to be closer to nature and upon returning to BC, he began work in Tahsis in bridge and road construction.

In 1978, he returned to UBC to complete a year of education in forestry, and then obtained his scaler's license. Roger began work with Crown Zellerbach in 1979, flying in and out of logging camps on Gilford Island, Alder Bay, and Innes Bay. He joined Canfor Forest Products in 1980, where he worked in log supply for seven years. During this time, he completed his RPF. He then moved to Western Forest Products in 1987, taking on the role of log supply manager before joining Canadian Overseas as a senior log marketer in 1992.

In his role at Canadian Overseas, Roger covered the entire Pacific Northwest from Washington to Alaska. He also travelled as far as China, Korea, and Japan to develop business relationships. He thrived in a role that was always changing — for each spell of office work there was a day on the river, at the mill, or on the road. While his unwavering work ethic made for many long hours, Roger found great enjoyment in finding solutions for the sales and supply challenges of his customers.

Roger will be terribly missed by everyone that knew him. Memorial donations may be made in Roger's name towards pancreatic cancer research at the BC Cancer Foundation.

It is very important to many registrants to receive word of the passing of a colleague. Registrants have the opportunity to publish their memories by sending photos and obituaries to editor@abcfp.ca. The association sends condolences to the family and friends of the following registrants:

Conrad Ferris Smith, RPF(Ret), Life Member #579

December 15, 1937 —
January 5, 2020

Conrad was born in Nelson, BC. He attended the University of British Columbia and graduated in 1961 with a BSF.

Conrad began his working life with the BC Forest Service and soon moved to international consulting, which continued until his retirement. Since 1963, Conrad worked on projects in 18 countries: Scotland, Kenya, Uganda, Tanzania, Sudan, Zimbabwe, Somalia, Gambia, Iran, Ecuador, Brazil, Peru, Chile, Belize, Dominica, Indonesia, Papua New Guinea, and Myanmar. He worked for several consulting firms: C D Shultz, Charnell and Associates, SNC Cellulose, and General Woods and Veneers. Conrad also worked for a number of governmental and international organizations: External Aid Department for Canadian Foreign Affairs, Canadian International Development Agency, Food and Agriculture Organization of the United Nations, Asian Development Bank, Commonwealth Secretariat – Commonwealth Fund for Technical Cooperation, Government of Zimbabwe, U.S.Aid, and Government of Papua New Guinea.

Conrad met and married his wife of 54 years, Pamela, in Nairobi. In the early 90's Conrad and Pamela settled on Pender Island and they divided their time between Pender Island and Thailand.

Conrad is survived by Pamela; his son, Murray; his daughter, Katrina; and three granddaughters. He is also survived by one brother and two sisters. Conrad will be sadly missed.

Submitted by Pamela Smith.



John Robert Duff Cuthbert, RPF(Ret) #492, Life Member

June 19, 1938 —
February 19, 2020

John Robert Duff Cuthbert died on February 19, 2020, at the age of 81. John worked in the BC Forest Service for over 33 years, and he was Chief Forester from 1985 to 1994. John always described his career in forestry as rewarding and interesting. He saw most of BC, met fascinating people, and travelled to many other forested countries.

He was born to Robert and Zanda Cuthbert in his beloved Summerland, where he formed many lifelong friendships. An avid outdoors fan, John studied forestry at UBC and graduated in 1961.

He started his career in Terrace with the BC Forest Service as a deputy forest ranger. A year later, he was transferred to the Inventory Branch, until he was transferred to Prince Rupert in 1963. Not long after, he met the love of his life, Marlene, on a blind date. They married in 1964 and had their two oldest children in Prince Rupert.

John was transferred to Prince George in 1970, where his youngest was born, and from there to Nelson in 1974. He went back to Prince George in 1980, and then returned to Nelson in 1982.

He was offered the position of Chief Forester in 1985. During this time, there were many environmental issues and pressures. He worked under seven forest ministers, seven deputy ministers, and three premiers, all of whom supported different policies and had different management styles and thoughts on what the chief forester should do. John remained well-respected during this tumultuous time in BC politics — a testament to his character.

After more than 33 years in the Forest Service, John retired in 1994 to Summerland and took on some consulting. In 1997, he was appointed to the Forest Practices Board and served there until 2003. He also served on the Select Seed Board, a small company set up to deal with improved tree seed.

In their retirement, John and Marlene took many wonderful trips together. They loved retired life and kept busy volunteering and spending as much time as possible with their grandchildren. They were always ready to lend a helping hand to anyone who needed it.

John leaves his loving family, Laura, David (Dana), and Anne (Chris); his grandchildren, Maya, Owen, Rilke, Chloe, and Matthew; and his sisters Mary and Vicki and their families. He was predeceased by his wife Marlene in June 2019.





A Moment
in **Forestry**

An aerial photo taken with a drone of the keynote luncheon at the ABCFP's 72nd annual forestry conference and AGM.

Photo credit: Richard Sullivan, Hummingbird Drones

Bringing Tactical Planning Software to the Forest Industry



FOREST OPS™

Simplify. Organize. Manage.

Forestry operations today require detailed forecasting of woodflow and financial outlooks.

FOREST OPS™ takes the guess work out of **tactical planning** by making it simple to update your **schedule**, visually confirm you are meeting all of your operational **targets** and analyze **profitability**. **FOREST OPS™** gives better control to forest managers by reducing the time and complexity associated with detailed operational harvest planning.

QUICK OVERVIEW

Planning

Checklist of operational planning tasks with milestones.

Scheduling

Assigning harvesting dates, contractors, and delivery destinations.

Targets

Compare log production with target mill consumption or sales obligations.

Profitability

Review and adjust default contract rates, and forecast log values.

Mobile

Access your **FOREST OPS™** data anywhere on our mobile app.

To set up a meeting contact sales@jrpltd.com

forestOPS.jrpltd.com

For more information and online demos on all our products, visit jrpltd.com



JRP SOLUTIONS LTD.

Professional Software Solutions