

# BC

# Forest PROFESSIONAL

MAY - JUNE 2017

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**Everything You Wanted  
to Know About Stumpage  
but Were Afraid to Ask**

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**ON TOPIC**  
Emerging Markets



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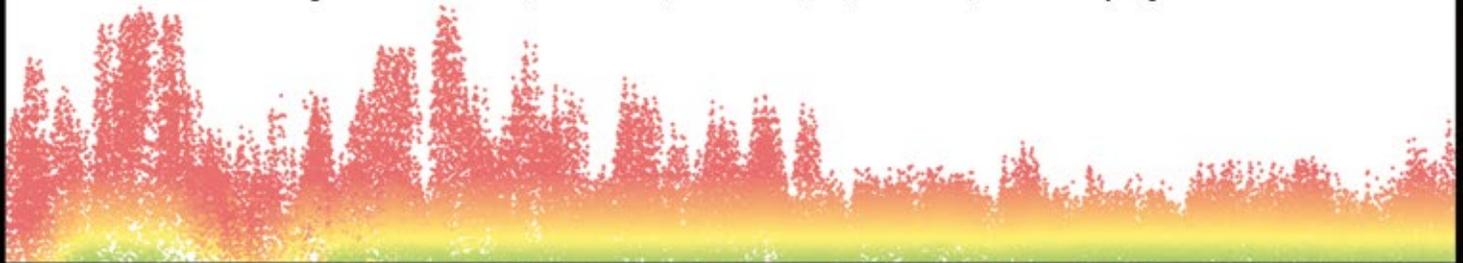


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## Disappointed.

The process of obtaining the signatures of 48 ABCFP members in support of the business resolution asking the ABCFP to stop making political donations was a positive experience. It is possible that for every 10 ABCFP members that we discussed this topic with, that somewhere between 8 or 9 members signed the business resolution. Though disappointed the business resolution failed at the AGM, many — including ABCFP executive and staff — have given assurance the discussion has generated change within the association. Even so, it would have been more comforting had the majority of the 129 members who attended the Business Resolution voted to allow all ~5,000 ABCFP members to weigh in on this important issue.

In support of making the political donations, the ABCFP has stated that paying to access politicians (at political fundraising events) is a cost-effective way to meet numerous elected representatives and decision makers and these individuals provide a willing and interested ear during these events. While I do not doubt this is true, I do suggest **within the context of having the ABCFP act in the public's interest, the ABCFP should find the truth of this rationale most disconcerting.**

A process that enables those with money (including corporations from outside of BC) to gain greater influence over public policy than the regular BC citizen is not in the public's interest. How is it in the public's interest for the ABCFP to participate in this pay-for-access process? Why is the ABCFP not ensuring its hands are kept clean by declaring, as other professional associations have done, to commit to not paying political donations?

It is time for the ABCFP to begin to discuss the many alternatives that can be utilized to access elected officials and decision makers without paying for access.

Yours truly,

**Doug Beckett, RPF**

## 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:

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**RE: Discipline Case Digest, Case 2016-03**

(BCFP, JANUARY-FEBRUARY 2017 ISSUE)

I was deeply disturbed by the implications of the summary of Discipline Case 2016-03 (Jan-Feb 2017 issue of *BC Forest Professional*). It was deemed the member acted appropriately where visual quality objectives were exceeded, in part exacerbated due to poor communication channels between the member and FLNRO. Based on ABCFP bylaws, the ABCFP Complaints Resolution Committee concluded that the member's duty to employer confidentiality trumped his duty to uphold sound stewardship and the public interest, and the committee concluded it was appropriate for the member to withhold information due to confidentiality.

The *Forest and Range Practices Act* (FRPA) is results-based with broadly-based prescriptive requirements. FRPA also rests on professional reliance, i.e. that members have a duty of care to act in the public interest. This means, in effect, it is difficult to actually break the law. I submit that the implication that confidentiality supersedes the duty to the public unless the law is broken means that environmental stewardship and public interest are often not well protected. Moose and caribou declines, inadequate small stream protection, excessively large aggregated clearcuts with minimal retention, and exceeding soft timber supply review (TSR) species targets all come to mind.

Yes, as a professional in these situation, we have a duty to bring up the issue with the member. But often a forest management approach is given implicit or explicit endorsement all the way up the organization's management hierarchy so solutions are illusive.

Situations do occur where members become aware of their employers confidential information and the planned course of action may be detrimental to a greater good. So, given FLNRO has no ability to refuse cutting permits (except for First Nations interests), and given the ABCPF bylaws often give precedence to confidentiality, are the structures remaining sufficient to protect the public interest?

Sincerely,

**Judy Thomas, RPF****Reply to: RE: Discipline Case Digest, Case 2016-03**

(BCFP, JANUARY-FEBRUARY 2017 ISSUE)

Ms. Thomas' letter presents a legitimate concern regarding how ABCFP members balance interests in the course of decision making. ABCFP members have a duty to the public, the profession, the client/employer, and other members. As practising members know, there is often tension between these four poles of our "compass." Further, different members are going to balance these interests based on their experience and professional judgment, which can result in different outcomes on the ground. The decision rendered in this case was not based on employer confidentiality superseding environmental stewardship but rather the Complaints Resolution Committee's assessment of the member's diligence in weighing and balancing a range of considerations.

In resource decisions, the forest professional is one player on the landscape and is only accountable for the decisions that he or she personally makes. However, accountability for the outcome of those decisions on the landscape (and the overall success of the *Forest and Range Practices Act* model) brings into play the actions and decisions of other parties as well, highlighting the need for collaboration and good process. While this case pin-points the challenges of multi-party communication, it is not evidence that the professional reliance model or professional accountability is floundering; it is but one situation. The large majority of professional decisions result in an outcome that balances interests and satisfies the parties involved.

Discipline case digests highlight the major elements in a decision, however they cannot go into the full detail of the facts and details presented by either the subject member or the complainant. They are intended to provide an overview of the complaint while respecting confidentiality and principles of fairness in administrative law.

**Casey Macaulay, MA, RPF, registrar and director of act compliance****REFLECTIONS ON URBAN FORESTRY***By Anna Shcherbinina, PhD, RPF, and Mike Larock, RPF*

More and more forest professionals are being asked to bring the science and knowledge of the practice of forestry to an urban setting. Urban forestry is complex and includes different types of vegetation, critters, and urban development. Is it the city within the forest ecosystem? Or is it the forest within the city? Or is it all one living urban forest ecosystem?

Working in the urban environment requires not only having knowledge of a broad range of disciplines, such as forest ecology, arboriculture, landscape architecture, land use planning, wildlife management, and horticulture, but also the skill of interacting with the public. Urban foresters are unique specialists that serve as liaisons and communicators who help balance the environmental benefits of urban forests and community development. Keep an eye out for the July-August edition of *BC Forest Professional*, focussing on urban forestry.

# Building Trust as a Collective

## During my initial speech at the President's Awards Banquet in

February, I quipped that I was disappointed there was no golden pen available for the president to sign executive orders.

And while I meant that as a joke, it's easy to think of the ABCFP as just the president, council, CEO, and staff. But that simply isn't the case. The association is truly about each and every member collectively. It is about members interacting with the public and First Nations; balancing social, environmental, and economic needs; and putting everything into practice on the landscape. It is about members coming together to solve issues at the local or provincial level. I believe that when there are clear objectives in place, forest professionals, through the professional reliance model, are able to find that balance.

When I initially ran for council, I was interested in doing something to help reduce what I saw as member apathy. When I think about how things have changed over the past few years, I see a big improvement in member engagement. The fact that we have had business resolutions presented to the AGM two years in a row, as well as seeing numerous engaged members meeting with our CEO, staff, and council with suggestions to improve the value of being a member, shows me that our members do care and are willing to get involved.

With 5,300 members, we are unlikely to agree on everything, but fostering debate and having those discussions is very important; we need to engage our fellow professionals in healthy and respectful dialogue. The ABCFP has always relied on a large and dedicated volunteer base for committee work, hosting for AGMs, and numerous educational outreach initiatives including National Forest Week. For each of these, our members continue to step forward. But even though we have made strides in engaging members, I believe there is more we can do.

For example, the new registration process helps new members get off to a great start. Now I know some of you are saying, "I had to write that exam, so should everyone else." I believe the process we have in place where more emphasis is put on mentoring new members in smaller steps will be a much more productive journey for them; encouraging them to get excited about the new professional organization they have joined.

I also want to see us work on keeping existing members engaged and giving our retired members an opportunity to stay connected and share their knowledge and experience.

Enhancing trust with the public and First Nations is also key to our existence; the foundational reason for the ABCFP is to look out for the public's interest in our forests while balancing the needs of our profession and our employers. If we don't have the public trust, we are in jeopardy of ceasing to exist.

In particular, it's vitally important for us as forest professionals to work on building trust with Aboriginal Peoples. Legal decisions, reconciliation agreements, treaty negotiations, and other government initiatives are reshaping the way natural resource industries, including forestry, operate in BC.

While it is clear forestry holds great importance for Aboriginal communities, as the relationship between Aboriginal Peoples and the forest industry evolves, we must ensure the knowledge and skills of practising forest professionals are front and centre. That could be in the form of increased Aboriginal membership in the ABCFP or through the hiring or contracting of ABCFP members by First Nations.

For 2017, I expect the association executive and the CEO will move forward with a planned Aboriginal engagement strategy.

But one point must be stressed: building trust with Aboriginal Peoples requires effort from each and every one of you. It is not something you can leave to the association or your employer.

As forest professionals, we must work as both individuals and community members to build trust on a person-to-person basis with each member of a First Nation community with whom we have contact. When it comes to managing forests and the land base, forest professionals share many of the same values as Aboriginal Peoples.

Only by talking, sharing, and building trust can we ensure these values are captured and incorporated into our work.

It is a challenging time to be a forest professional in BC with all that is going on: declining annual allowable cuts, uncertainty around a softwood lumber agreement, land use pressures, and evolving First Nations rights and title. More than ever, ABCFP members must maintain their competence, independence, and integrity in the tricky balancing act we forest professionals are asked to perform. ✘



# Earning Public Trust is a Shared Responsibility

**Howard Schultz, the outgoing chairman and CEO of coffee giant Starbucks** said, “Great companies that build an enduring brand have an emotional relationship with customers that has no barrier. And that emotional relationship is on the most important characteristic, which is trust.”

That quote strikes me as very appropriate for forest professionals because so much of what we do relies on us having the trust of not just our employers, but our colleagues, our profession, and most importantly, the public. It's why enhancing trust is one of the five goals in the association's strategic plan for 2017-2019, which was released at the ABCFP's annual forestry conference in Prince George in February. The strategic plan is available on our website.

People in BC, whether they live in rural or urban areas, often have an emotional connection to the province's forests. They might live in a forested community; enjoy walking, hiking, camping, or biking in forests; have a personal spiritual connection; or hold one of the one in 16 jobs tied to the forest industry. But if you ask these same people who takes care of BC's forests, they more than likely won't know the answer.



The sad fact is, too many British Columbians are not aware of the important role forest professionals play in keeping BC's forests sustainable and healthy. They are even less likely to be aware that forestry

is a registered practice, just like doctors, lawyers, accountants, and engineers. And when people are aware the forest profession exists, they are not always sure about the role and function forest professionals play and how we work in their interest to sustainably manage BC's forests for future generations.

That's why we need to continuously engage the public and work to earn their trust, and it's why enhancing public trust is part of our strategic plan. Without public trust, we will continue to face barriers and opposition in the practice of forestry.

While every forest professional has a role in earning and sustaining public trust, the association, on behalf of the membership, also plays an important role. Senior staff of the association regularly seek opportunities to participate in public forums and conferences to discuss the role forest professionals play in managing BC's forests and the importance of our profession to those efforts.

For example, in January I spoke at the Premier's BC Natural Resources Forum in Prince George as part of a panel discussing

forestry as a renewable resource for a stable future. During my presentation, I highlighted the role forest professionals play in ensuring forest sustainability, our obligations as a profession, how professionals are held to account, and the importance we place on sustaining public trust. Earlier that same month, I spoke at the Truck Loggers' Association convention in Vancouver about the important role forest professionals play in balancing conflicts on the land base. And in February, I spoke about the important role of the forest professional during an interview for a video produced by Forestry Innovation Investment about the sustainable management of BC's forests.

Our stewardship and practice department staff also regularly present at conferences and participate in panel discussions. In April, Mike Larock, RPF, took part in a panel discussion on forestry management and old-growth protection at the Vancouver Island and Coastal Communities annual convention in Campbell River; while Megan Hanacek, RPF, RPBio, delivered the keynote speech at the CIF ring ceremony for UNBC and CNC in March and also presented at the APEGBC Hydrology Climate Change Adaptation Workshop.

With a history spanning 70 years, we have a great story to tell as a profession. Public polling the association undertook in November last year also shows the public trusts forest professionals more than any other group when it comes to providing information about BC forests. (We'll have more information about the poll results and the 20-year trends in the July-August issue of *BC Forest Professional*.)

The proof is also in the forests. BC has an enviable record of forest management, which forest professionals have proudly helped deliver. Canada is an international leader in forest certification, with BC contributing more than any other province. At the end of 2016, BC had 52 million hectares (128.5 million acres) of certified lands<sup>2</sup>. We continually strive to do better, to adapt to our changing environment, and to have a management framework that allows for professional judgement to be used to find the best outcome in complicated circumstances.

Forest professionals work every day to ensure BC's forests are in good hands. The public does not always understand what we do, or how we do it, but it is important their confidence and trust in us remains high. I encourage you to look, together with association staff, for opportunities to demystify who forest professionals are, what we do, and to help sustain public trust in our profession. 🌳

## References

1. COFI, Forest industry , <https://www.cofi.org/forest-industry-for-our-province>
2. Certification Canada 2016 year-end statistics. <http://www.certificationcanada.org>

## Forestry Through Your Eyes

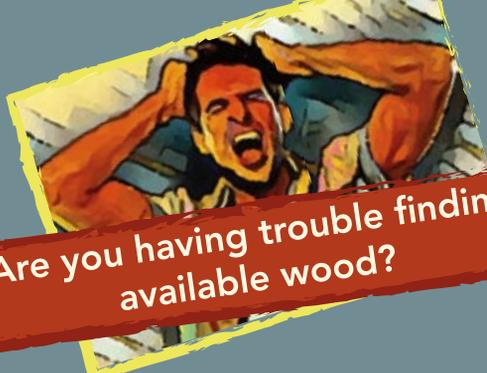
We bet you've seen lots of interesting sights while out in the field. We'd love to see forestry in BC through your eyes. If you capture a great photo and would like to share it with your colleagues, please email a high resolution file to [editor@abcfp.ca](mailto:editor@abcfp.ca) for a chance to be published in our *Moment in Forestry* section of *BC Forest Professional* magazine.

## Volunteers Needed to Speak in Classrooms During NFW 2017

Are you interested in volunteering to speak to school children about forestry and forest ecosystems?

Each year, the Network of Forest Professionals and the BC National Forest Week (NFW) Coalition help match interested schools with forest professionals. This year National Forest Week runs September 24-30. Volunteers are needed to speak at schools across BC, with high interest from schools in the Kootenays, Central Okanagan, Lower Mainland, Gulf Islands, and central and Southern Vancouver Island. There is a tremendous variety in the requests, all the way from kindergarten through Grade 12. It's a chance for you, as forest professionals, to offer students a science-based perspective on resource management and open their eyes to the many possible careers in forestry.

If you are interested in volunteering to speak to a school class, please contact Jim Crover, RPF, practice review specialist.



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## Business Resolution Outcome

A Business Resolution calling for the ABCFP to make no further donations to political parties failed to gain member support and was defeated by a 98 to 26 vote at the association's 2017 annual general meeting held February 23 in Prince George.

In response to a point of information requested from the floor prior to debate on the motion, Christine Gelowitz, RPF and CEO of the ABCFP informed members in attendance that the ABCFP has never provided cash donations to a political party but has purchased tickets to attend events hosted by both the governing party and the official opposition. During the past four years, the ABCFP spent between \$3,000 and \$5,000 per year (for a total of \$16,990) to attend such events.

## Congratulations to the ABCFP Award Winners

Seven forest professionals were honoured by their peers with awards during the February 23 President's Awards Banquet in Prince George.

John Armstrong, RFT, ATE; Paul Lawson, RPF; and Rita Winkler, PhD, RPF, were named as Distinguished Forest Professionals of the Year in recognition of their significant contributions to the profession and study of forestry.

Ian Smith, RPF, was named Registered Professional Forester of the year and John Hopper, RFT, was named Registered Forest Technologist of the year.

*BC Forest Professional* magazine awards were presented to Peter Pearce, CM, BSF, MA, PhD, RPF(Ret), Life Member, for best letter for *Should We Manage Forests for Volume or Value?* while the award for best article went to William Downing, RPF, for *Peeking into the Future of BC's Forest Industry*.

## 2017 AGM Minutes, 2016 Annual Report, and 2017 Strategic Plan All Available Online

The ABCFP 2016 Annual Report was distributed at the February AGM in Prince George and is available on the Publications section of our website. The report also contains the condensed financial statements.

The association's new three-year strategic plan (2017-2019) was also distributed at the AGM and can be found on the Governance section of the website. We have also published the minutes from the 2017 AGM and members can find those in the AGM section of the website.

## UBC Forestry Student Wins ABCFP Sustainable Forest Management Award

The inaugural Association of BC Forest Professionals Sustainable Forest Management Prize — awarded based on a candidate's motivation and aptitude for professional forest land management, scholastic ability, and leadership potential — was recently awarded to Matthew Shields, FIT, a student in UBC's Master of Sustainable Forest Management (MSFM) program.

The award was created in 2016 through a \$30,000 endowment from ForesTrust, the ABCFP's registered charity. "By providing scholarships and bursaries to forestry students through our ForesTrust charity, the Association of BC Forest Professionals is helping support young people who choose to pursue a career in forestry and who will play an important role in continuing to sustainably manage BC's forests for future generations," said Christine Gelowitz, RPF and ABCFP CEO.

# Emerging Markets

**Innovation and investment drive social, economic, and environmental** development. With BC wood and wood products taking centre stage these days, this edition of *BC Forest Professional* explores emerging markets.

The BC market pricing system in 600 words or less? Allan Bennett, RPF, delivers the goods. “If you’ve ever sponsored someone working towards becoming a forest professional, you probably found describing the stumpage system challenging.”

Brad Harris, RPF, and Patrick Russell, RPF, take us through the strokes of the Forestry Fibre Action Plan, highlighting the strategic efforts to support new and emerging industries, and how supporting a diversified forestry sector creates greater sustainability and stability for BC’s competitiveness on the national and international markets.

Diversifying BC’s wood products portfolio is important to market longevity, but there are other valuable reasons to diversify as well. Joseph Aquino, RPF, superintendent of forest biomass at Pinnacle Renewable Energy Inc. writes, “The use of wood pellets as an alternative to fossil fuels will reduce overall global GHG emissions facilitating reduction targets.”

What about threats to our long-term fibre supply? Catalina Lopez-Correa, MD, PhD, MG, shares how genomics and the biosurveillance of alien forest enemies can protect Canadian wood and wood products from being rejected on the global market.

We also have some informative articles from ABCFP staff about peer and practice reviews and what to expect if you find yourself randomly selected for a review; and information to help dispel misconceptions about the ABCFP’s complaints and discipline process. Plus, be sure to check out our 69th annual forestry conference and AGM round-up and our new infographic, because if you’ve ever had someone give you a mystified eyebrow waggle when you tell them you’re a “forest professional,” our new infographic at the back of this issue will come in handy. ✕



## The Principles of Stewardship<sup>1</sup>

By Megan Hanacek, RPF, RPBio

It is an exciting era in the British Columbia forest sector with several emerging markets offering opportunities for increased stewardship of our forested lands and associated markets. Most recently, Canfor Pulp Products has advertised their commitment to convert biomass into biofuel, turning wood waste from its three Prince George pulp mills into biocrude. With financial help from the federal government’s Sustainable Development Technology Canada<sup>2</sup> (SDTC), a \$39 million demonstration project will be formalized.

“We have the opportunity to create a truly renewable biofuel that can easily integrate with conventional fuels to dramatically lower environmental impacts.” Martin Pudlas, Canfor’s vice-president of operations, said in a statement. “This funding from SDTC provides critical support as we look to operationalize this truly transformative green technology.”

This diversity in the market sector provides enhanced options to harness wood waste and provide employment opportunities and community stability in BC using the latest technology to process biocrude to more refined biofuels and biochemicals.

<sup>1</sup> The main document can be seen at [http://member.abcfp.ca/WEB/ABCFP/Practising\\_in\\_BC/Practising\\_in\\_BC.aspx](http://member.abcfp.ca/WEB/ABCFP/Practising_in_BC/Practising_in_BC.aspx)

<sup>2</sup> Reference: Sustainable Development Technology Canada, [www.sdtec.ca](http://www.sdtec.ca)

# Advancements in Preparing and Managing for Climate Change

In the effort to mitigate and prepare for climate change impacts, several advancements are occurring in the management of BC forests. At the end of March 2017, the ABCFP presented at the Association of Professional Engineers and Geoscientists of BC's *Design Flood Hydrology for BC Natural Resource Professionals* workshop in regards to climate change adaptation. Many case studies were shown from around the world in regards to forestry activities (i.e. road building, harvesting, waterway structure design) in a changing climate. The workshop, sponsored by the Ministry of Forests, Lands and Natural Resource Operations (MFLNRO), provided a unique opportunity for natural resource professionals to learn about the latest science, technology, and tools in design flood hydrology; case studies were discussed and gaps were identified for MFLNRO and the associations to consider in the prioritization of climate change mitigation efforts moving forward.

In addition, technologies are advancing in regards to genomics, aiding in the mitigation of detrimental climate change effects and to ensure sustainable harvesting of trees for a healthy BC economy. Genome BC has invested \$77 million in 19 research projects that aim to create biodiversity in BC forests; quantify how trees adapt to extreme environmental conditions of temperature, frost, snow, precipitation, and drought; develop better methods for forecasting timber losses from pest infestation such as the mountain pine beetle and spruce beetle; and define the genetics of wood fibre properties to identify trees species with the best growth and fibre qualities for reforestation, especially in a changing climate. ✕

Photo: AdobeStock

# STAY SHARP



BC Forest Safety

Slips, trips and falls are the second most common workplace injury. Stay on your feet with proper footwear, being aware of where you step and carrying only what is needed. **It's easier to stay well than get well.** [www.bcforestsafes.org](http://www.bcforestsafes.org)

# BC Market Pricing System (Abridged Version)

If you've ever sponsored someone working towards becoming a forest professional, you probably found describing the stumpage system challenging. The appraisal manuals are highly technical and assume one already understands the stumpage system. Providing this understanding is the goal of this article.

Generally, in the United States, sawmills purchase timber at the gate or on the stump in exchange for cash. In BC, when sawmills with tenure purchase timber from the Crown, they provide cash and services. The cash portion of these transactions is stumpage, and the services provided are items like road development and reforestation. At the risk of a gross oversimplification, this difference in how timber is sold, along with who owns the majority of the land, lies at the heart of the current softwood trade dispute with the US.

In order to determine the appropriate level of stumpage, BC has the market pricing system (MPS). The market pricing system, designed based on auction theory and market principles, determines the value of a stand of trees. At its simplest, MPS can be represented as the following equation:

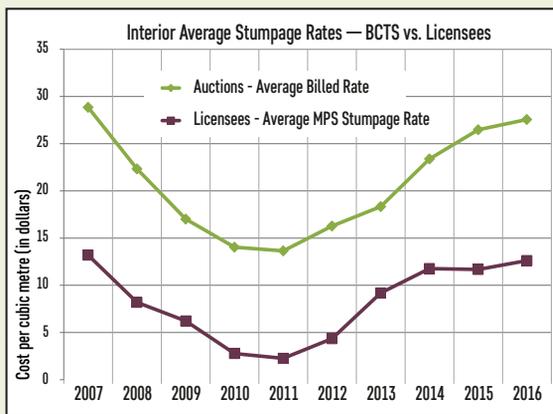
$$\text{Stumpage} = \text{Estimated Winning Bid} - \text{Tenure Obligation Adjustments}$$

## Estimated Winning Bid

Estimated winning bid (EWB) is the value of the timber on the stump. In order to determine EWB, BC auctions approximately 20 per cent of provincial harvest through BC Timber Sales (BCTS). The results of these auctions, through regression analysis, are used to generate the EWB equation. The equation is populated with site specific data like slope, timber quantity and quality, and distance

*Allan Bennett, RPF, is the manager, timber pricing with the Timber Pricing Branch of the Ministry of Forests, Lands, and Natural Resource Operations. Allan has over 20 years of forestry experience in BC and has worked for both industry and government.*

from support centre to simulate the value of a given stand of timber as if it had been put up for auction.



SELECTED MPS EQUATION VARIABLES	
COAST	INTERIOR
Log Values	Lumber Values
Slope	Slope
Helicopter	Cable
Volume per Hectare	Volume per Hectare
Distance from Gambier Island	Cycle Time
Isolated	Grey Mountain Pine Beetle

## Tenure Obligation Adjustments

Tenure obligation adjustments (TOA) represent the value of the services provided to government by the licensee harvesting the timber. Using data collected through the annual log cost survey from licensees and operating cost data from BCTS, specific TOAs are developed for the services tenure holders provide government, which are not borne by BCTS bidders. These services include timber cruising, road development, reforestation, and engineering. The total value of the TOAs is subtracted from the EWB to determine market-based stumpage rates for licensees.

The graph of BCTS and licensee stumpage from BC's Interior illustrates this concept. The BCTS auction line demonstrates the value of the trees on the stump while the licensee stumpage is the value of the trees net of the services the

licensees provide. The majority of the difference between the two lines is the value of the TOAs.

Because the structure of the coastal and Interior forest industries is different, there are two MPS equations in BC. For example, on the coast, log suppliers tend to be separated from sawmills. In addition to unique terrain, extensive water transportation, and environmental issues, coastal tenure holders tend to be focused on the value of logs and log export. In the Interior, woodland operations tend to be tied to sawmills and focus on sawmill conversion costs and the value of lumber. The individual MPS equations reflect these differences.

If this article didn't outline everything you wanted to know about stumpage but were afraid to ask, please have a look at the Timber Pricing Branch's website! ☘

## Reference

1 <http://www2.gov.bc.ca/gov/content/industry/forestry/competitive-forest-industry/timber-pricing>



# Improving Fibre Utilization in BC

**Over the years, much effort has been focused on strategies to maintain and strengthen the global competitiveness of BC's traditional forest industries of timber, lumber, and pulp and paper production.**

The *Forestry Fibre Action Plan* was released by the Minister of Forests, Lands and Natural Resource Operations in September 2015. The goals of the plan are to increase the utilization of lower-quality wood and increase the availability of wood residue for secondary users.

Secondary users are industries that generally do not use whole logs as their fibre source. These include most non-lumber manufacturers such as pulp and paper, oriented strand board, pellet production, bioenergy, and advanced bioproducts.

More recently it has been recognized that supporting a more diversified sector will provide more stability and sustainability to the overall forest sector. This includes supporting new and emerging industries such as pellet and bioenergy production.

Secured, long-term feed sources are critical for these new industries to be successful. The majority of the input to these facilities is the residues produced from the primary sawmilling industry (sawdust, chips, shavings, and hog fuel). This fibre is usually in relatively close proximity to the secondary users' plants and therefore relatively inexpensive to acquire.

The other source of fibre supply is the residual fibre that is left behind and not used during primary harvesting operations. This includes undersized trees, harvest waste, and fines such as needles, branches, and cones that remain on a block after primary harvesting is completed. This debris has traditionally been burned to reduce the fire hazard and to help prepare the site for silviculture activities.

Depending upon the input needs of the secondary users, some or all of this residual fibre can be used as input to their mills. However, comparatively speaking, the costs to chip, grind, and haul this fibre from the bush are significantly higher than acquiring residues from the sawmills. In addition, policies with respect to the rights and obligations associated with primary harvesting and the pricing of timber and special forest products have created challenges for secondary harvesters to gain access to this fibre.

The mortality caused by the mountain pine beetle has and will continue to have a significant effect on the interior sawmilling sector. The province has implemented many strategies to mitigate the reduction in timber supply. However, a reduction in fibre supplies, timber harvesting, and sawmill production cannot be avoided. As it has in the past, this will lead to further rationalization of the sawmilling sector and the closure of certain sawmills.

This rationalization will result in a reduced supply of sawmill waste being available to secondary users and they will have to look to other sources of fibre to maintain operations.

The ability to economically harvest the residual fibre is driven by many factors. Over the past few years, various groups, such as the Working Roundtable on Forestry and the Bio-Economy Transformation Council, have worked on the objective of increasing the availability of residual fibre and increasing the use of low quality wood.

More recently, the Forestry Fibre Working Group has been focusing on this. The working group is comprised of lumber, pellet, non-lumber, pulp and paper representatives, and ministry staff tasked with providing recommendations to streamline and enhance low-quality fibre recovery. Their work resulted in the *Forestry Fibre Action Plan*<sup>1</sup>.

The 13 action items included in the plan cover a broad spectrum from dealing with operational issues, tenure and pricing policy issues, as well as improving means to measure and track the volume of residual fibre (what is available and what is being harvested). Many of the action items have been completed over the past year. The achievements include:

- Completion of guidelines and processes to improve communication between primary harvesters and secondary users.
- Improving business to business relationships between primary harvesters and secondary users.
- Improving the ability for secondary users to acquire short and long term rights to the residual fibre.
- Improving the overall metrics associated with the availability and use of residual fibre.
- Improvements to the pricing of residual fibre as a special forest product.

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*Brad Harris, RPF, worked at various positions within the Ministry of Forests, Lands and Natural Resource Operations for over 25 years. This included more than 15 years with the Forest Tenures Branch developing legislation and policy for the provincial timber tenure system. Over the past three years, Brad has worked as an independent consultant providing services in support of various initiatives focussed on increasing the use of poor quality timber and fibre within the province.*

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*Patrick Russell, RPF, is manager timber tenures with the Ministry of Forests, Lands and Natural Resource Operations Forest Tenures Branch. He has been involved with the implementation of the Forest Fibre Action Plan since 2015. Patrick holds a BSc in Natural Resources Management from the University of Northern British Columbia and has worked with the provincial government since 2001, with stops in Mackenzie, Prince George, and Victoria.*

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### ***Did you know?***

In 2013, in response to concerns raised by ABCFP members and the public about wood fibre waste in the forest, the ABCFP commissioned a policy study to identify actions and initiatives that could increase fibre utilization by all resource sectors working on the forested land base. The association shared the results of its findings with the Minister and FLNRO staff in 2014, which they used to help prompt changes in environmental procedures employed by various users and rights holders on the land.

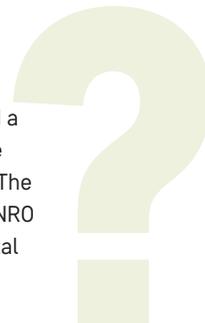


Photo: AdobeStock

- The development of best practices to allow the efficient removal of harvest residuals following harvesting.

Increasing the use of residual fibre is closely integrated with the objectives of other provincial government initiatives such as the *Forest Sector Competiveness Agenda*, the *Rural Economic Development Strategy*, the *Forest Carbon Initiative*, the Forest Enhancement Society of BC, and wildfire management.

To date, the feedback on the *Forestry Fibre Action Plan* from secondary users has been positive. One specific success story has been the Zellstoff Celgar Pulp Mill in Castlegar which has embraced the action

plan and invested new capital in technology and new practices. By implementing changes, 12,000 truckloads of fibre have been used in the pulp mill that would have otherwise been burned as waste.

Improvements in fibre utilization are being achieved where supply and demand exists. By keeping a focus on improving the use of residuals, BC is well-positioned to become a leader in the production of low-carbon, sustainable products by fully leveraging these synergies. ✖

### **References**

1. <https://www.for.gov.bc.ca/hth/timber-tenures/forest-fibre-action-plan.htm>



# Bioenergy, Biomass, and the Forest Industry

## The forest sector has witnessed drastic changes over the past decade.

What was once an endless resource pool now requires careful and considerate management to ensure longevity of timber resources, while balancing the vitality of key ecosystems. The mountain pine beetle (MPB) epidemic is arguably the largest contributor of change in the forest industry. Accelerated harvesting rates, brought on by an urgency to capture value from MPB infested timber, has created mid-term timber supply shortages forecasted for many of the impacted regions. This natural devastation of previously abundant timber resources has shaped innovative government policies, including provincial competitiveness strategies, aimed at strengthening the British Columbia manufactured wood products

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*Joseph Aquino, RPF, is the superintendent of forest biomass at Pinnacle Renewable Energy Inc. His primary work supports the procurement of forest-based and industry-based raw material for seven pellet mills across BC. He carries 10 years of forest industry experience and has worked in the wood pellet and bioenergy sector over the last 18 months. Joseph has a Forest Technician Diploma from Selkirk College and a BSc in Natural Resource Management – Forest Ecology and Management from the University of Northern British Columbia.*

sector. Growth in new sectors, such as wood pellets, will allow BC to diversify its portfolio of wood products, maximize the value from BC's timber resources, and remain competitive at a global scale.

The wood pellet sector has grown to be an integral part of the forest sector's strategy of diversifying forest-based wood products.

This sector focuses on utilizing previously considered waste resources to manufacture a value-added product used as fuel to generate green energy. Wood pellets are a relatively new market, considering how long traditional wood products such as lumber have been on the market.

To understand the wood pellet industry, the journey begins with the types of raw material used in the manufacturing process. The optimum fibre types for wood pellet manufacturing are sawmill residuals, which include planer shavings, sawdust, chips, and bark (hog). Sawmill residuals are a by-product of lumber manufacturing and were previously considered waste products disposed of through incineration. Depending on sawmill technology and the type of product being manufactured, the amount of residuals produced by a sawmill can be up to approximately 55 per cent of every log. Secondary users purchase this residual fibre and have been doing so for many years. The market for sawmill residuals is becoming an increasingly competitive space due to a forecasted supply shortage coupled with an increase in overall users.

In the wake of anticipated harvest level reductions and subsequent slowdown in lumber production, current levels of pellet production will be difficult to maintain using only sawmill residuals. Raw material will undoubtedly shift to higher percentages of forest-based fibre such as harvest residuals and low-grade logs.

Harvest residuals, often termed "slash," are typically burned as a means of disposal. Major tenure holders and secondary users are progressively working together to develop ways to further



Photo courtesy of Joseph Aquino, RPF

utilize this waste material for pellet production. Pellet producers can coordinate post-harvest field-based operations to process the harvest residuals into chips and haul the material to a pellet facility. Efficiently coordinating these operations requires concerted effort between licensees and secondary users. However, the result is full utilization of fibre harvested from public lands and a means for pellet producers to supplement gaps in fibre supply.

To increase efficiency in the procurement of forest-based raw materials, major licensees and secondary users are presently developing systems of concurrent harvesting. This process allows the harvest residual to be hauled off-site during initial harvesting operations. Concurrent harvesting allows tenure holders to remain on schedule with road deactivation and silviculture obligations, while still ensuring all fibre is utilized. The log grades utilized for wood pellets are typically non-sawlog grades 4, 6, and Z. The equipment operator sorts the low grade log separately from the sawlog and transports it offsite directly to a pellet facility.

In addition to increasing utilization of BC's forest resources, the wood pellet industry provides a means to reduce global greenhouse gas (GHG) emissions and fossil fuel usage. The leading consumers of wood pellets are European power producers who currently use coal and other fossil fuels to generate power. European union GHG reduction targets, scheduled to be achieved by 2020, have increased demand for cleaner and more sustainable forms of energy. European governments have provided large scale subsidies to power producers as incentive to spend on capital upgrades required to transition from fossil fuels to wood pellets. Using wood

pellets — as opposed to coal — represents substantial GHG savings. After considering the carbon emissions from harvesting trees, manufacturing wood pellets, and transporting pellets to the end user, power producers realize an 80 per cent GHG savings when burning wood pellets as opposed to coal<sup>1</sup>. This translates to a five to one differential or five tonnes of wood pellets to emit the same GHG as one tonne of coal. Wood pellets are a renewable option for power producers using fossil fuels to achieve net GHG reductions without compromising levels of power production.

As the timber supply in MPB impacted areas of the province declines, the cost of logging and transportation will inevitably increase as companies are forced to source timber farther from the point of manufacture. Concurrent harvesting provides an opportunity for major licensees, operating in MPB impacted regions, to increase current timber supply by receiving augmented value in stands containing low sawlog percentages. Continued growth in utilization policies that enable secondary users access to harvest residuals and low grade timber, will generate provincial revenue from resources currently not fully utilized. The use of wood pellets as an alternative to fossil fuels will reduce overall global GHG emissions facilitating reduction targets. The wood pellet sector provides an emerging opportunity for BC's forest industry to generate markets for residual fibre, maintaining a strong forest-based work force as we enter into an era of uncertainty. ❁

#### Reference

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# Biosurveillance of Alien

## Forests Under Threat

In the face of changing climates, the world's forests face unprecedented threats from invasive insects and pathogens that can cause irreversible damage to our trees and significant economic and social impact. In Canada, outbreaks of insects and plant pathogens may threaten our long-term fibre supply, which underpins our annual \$33 billion forest export industry: Canadian wood products could be rejected on the global market if severe outbreaks were to occur. Additionally important ecosystem services such as carbon storage, nutrient cycling, water and air purification, soil preservation, and maintenance of wildlife habitat may be negatively impacted.

Fortunately, genomics offers a competitive edge for BC's forest professionals, helping them ensure BC's fibre supply today and in the future will meet the increasing demand from emerging markets for BC's wood. The key to reducing this risk is vigilant biosurveillance to facilitate early detection of emerging forest invasive alien species which are increasing in number and diversity at an alarming rate.

*Catalina Lopez-Correa, PhD, is vice president, sector development and chief scientific officer at Genome BC. Catalina holds an MD from UPB University in Colombia, a Masters in Genetics from Paris VII/Pasteur Institute, and a PhD in Medical Biosciences-Genetics from KULeuven in Belgium. At Genome BC she is responsible for developing competitive teams for national and provincial research projects, and raising the profile of Genome BC on the global stage.*



## Invasive Alien Species

There are numerous challenges facing professionals who work on prevention of invasive species. Invasive species can arrive by various means including wood products and live plants, through global transport pathways hidden within imported goods, and naturally across the border. Asian long-horned beetle, Asian gypsy moth, Dutch elm disease, and sudden oak death are examples of threats that are not native to Canada but have wreaked havoc where they become established. These non-native species can cause irreversible damage to the natural and urban forests and environments at an estimated cost of \$800 million a year. The best way to fight such invaders is to detect them as early as possible through biosurveillance so they can be eliminated before they establish themselves. Biosurveillance is a process of gathering, integrating, interpreting, and communicating essential information on pests and pathogens that might cause disease and threaten plant, animal, or human health.

Richard Hamelin, PhD, of the University of British Columbia, Cameron Duff of the Canadian Food Inspection Agency (CFIA), and Ilga Porth, PhD, of Laval University are leading a team of scientists

in their *BioSurveillance of Alien Forest Enemies* (BioSAFE) project, valued at \$8.6 million. Their work will be directly translated by partnering with the three most important national organizations mandated to protect Canada's forests: the CFIA, Natural Resources Canada





Photos courtesy of Genome BC

# Forest Enemies

(NRCan), and FPInnovations. These partnerships will help ensure the tools developed will be implemented and deployed operationally.

## Putting Research into Action

Real-time assessment presents a significant challenge because of the diversity of species that professionals have to contend with and the lack of knowledge about the origin and history of traded goods. With their partners, Hamelin and his team will address these challenges by developing a biosurveillance pipeline incorporating genomic tools that will provide:

- rapid and accurate identification of pests and pathogens to ensure a lower cost compared to traditional methods;
- identification of the origins and pathways of pathogen and pest spread using genetic information;
- prediction of invasiveness traits from genomic profiles that can improve risk assessment;
- development of a user-friendly support tool to integrate the risk of invasive species and outcomes with related economic consequences; and
- validation and deployment of the suite of tools for implementation by end-users.

This pipeline will take full advantage of the remarkable technological advances in genomics and bioinformatics to speed up and improve decision-making to inform mitigation and management of invasive species.

## This work is developing novel types of tools:

- Genome decoding using 'target enrichment,' consisting of genes that will provide information on pest and pathogens, their origins, and the risk they pose.
- Decision support systems that will combine genomic data and costs associated with outbreaks to help evaluate costs, risks, and make decisions.
- There are also portable devices for in situ testing in development, which will speed up the process.

## Delivering Cost Savings and Supporting Market Access

The biosurveillance project builds on past investments by Genome Canada and Genome BC and will generate benefits by minimizing, or avoiding altogether, losses in the order of hundreds of millions of dollars annually. The direct and indirect economic, social, and ecological outcomes of protecting our national forest assets against invasive alien species will help us maintain our export markets. This project could enhance Canada's capacity and readiness for early detection and mitigation of forest invasive species incursions and will better inform pest risk assessment and management. ✕

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2. Nelson, H., P. Grace, A. McBeath and B. Stennes. 2009. Estimating the Potential Returns from Developing a National Forest Pest Strategy: the benefits of developing a proactive approach to managing risk. Report prepared for the Canadian Forest Service, Pacific Forestry Centre. Victoria, BC.

# Changing Landscapes, New Opportunities:

## The ABCFP's 69th Forestry Conference and Annual General Meeting in Prince George a Rousing Success

**ABCFP members who attended the ABCFP's 69<sup>th</sup> annual forestry conference, *Changing Landscapes; New Opportunities*, are giving it a big thumb's up.** With more than 350 people in attendance, the conference struck the right balance between professional development opportunities, interesting speakers, and opportunities for networking and socializing.

The three-day event got off to a strong start with Wednesday's pre-conference research symposium drawing a standing-room only crowd to discuss research being done around how wildlife habitat and growth and yield affects timber supply. Breakout sessions following the initial presentations showed forest professionals were engaged and had plenty of comments and questions for the researchers — an indication that members have an appetite for the research being done in these areas.

BC's Chief Forester, Diane Nicholls, RPF, hosted the first plenary session Wednesday evening, sharing the stage with Shannon Janzen, RPF, vice president and chief forester for Western Forest Products, and Shawn Hedges, RPF, director, sustainability and forestry for BC Timber Sales — two members of the Chief Forester's Leadership Team. Afterwards, members had a chance to mingle, network, and check out the extensive trade show during Wednesday's Icebreaker cocktail reception.

Thursday got off to a thought-provoking start with keynote speaker Jay Ingram, former host of CBC's *Quirks & Quarks* and Discovery Channel's *Daily Planet*, challenging our understanding of our own biases towards information. "People take in the same information but form their own conclusions," Jay told the packed auditorium. "The more data you give people, the more their opinions harden."

The breakout sessions that followed were all well attended with Huu-ay-aht Nation Chief Councillor Robert Dennis and Ratcliff & Company lawyer Jeremy Shelford, RPF, drawing a packed house for their presentation on *How First Nations are Building a Forest Industry*.

The Inductees' Recognition Luncheon celebrated the induction of 39 new forest professionals into the association and featured an inspirational address to the inductees from Jon Lok, RFT and ABCFP past president.

Following the ABCFP annual general meeting and council hot seat, where members had an opportunity to quiz council members on association activities, the stage was set for the *Round Table on*

*the BC Forest Sector Competitiveness Agenda*, the provincial government's plan, released in August 2016, to improve the competitiveness of our forest industry.

The panel was composed of Rick Jeffery, RPF, president and CEO of Coast Forest Products Association; Mike Armstrong, RPF, vice-president of the Council of Forest Industries; and Dave Peterson, RPF, assistant deputy minister, FLNRO. Moderated by host committee chair, Kevin Horsnell, RPF, the session used Pigeonhole Live, allowing members to submit and vote on questions for the panel. While members submitted more than 40 questions, there was only time to answer 19.

Social activities kicked off Thursday night with alumni receptions on the second floor hosted by UBC, UNBC, and for the first time, CNC; this in addition to the general reception on the main floor. The President's Awards Banquet saw awards handed out to seven members (a complete list of winners can be found in Association News), as well as the introduction of incoming ABCFP president Mauro Calabrese, RPF, RPBio, and the 70<sup>th</sup> ABCFP council. By the end of the night, the silent auction raised almost \$7,000 for ForesTrust, the ABCFP charity which provides scholarships and bursaries to forestry students.

Friday morning kicked off with Professor Sally Aitken, PhD of UBC speaking to a large crowd about how research into genomics is helping identify traits that will help us find tree species that are better adapted for growing in a changing climate. Professor Aitken's talk then segued into a panel discussion on new and emerging uses for wood as well as a Forest Practices Board sponsored technical session on road construction on steep terrain. The day — and the conference — came to a close with the Minister's Luncheon, which saw Jason Fisher, RPF and associate deputy minister, FLNRO, ably pinch-hitting for Forest Minister Steve Thomson who was unable to attend the conference at the last moment.

But perhaps the most enduring symbol of the conference was host committee chair Kevin Horsnell, RPF, who, following a hockey injury, hobbled around the Prince George Conference and Civic Centre on crutches, MC'ed several events, and made all of the social receptions. In his own way, Kevin epitomized the dedication and persistence of forest professionals.

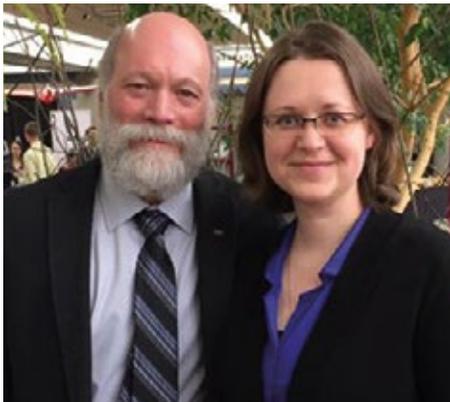
Planning is already underway for the 2018 conference and AGM, scheduled for Victoria, February 21-23. We hope to see you there. ❀





CLOCKWISE FROM TOP: *Attendees listen to a research symposium breakout session; Jay Ingram delivers a thought-provoking key note address; Marvin Hawke pipes in the inductees; a member chats with SilvaGro reps at the trade show; and Huu-ay-aht nation Chief Councillor Robert Dennis shares his experiences on how First Nations are building a forest industry.*





TOP ROW (L TO R): *70th ABCFP Council* - Mauro Calabrese, RPF, RPBio; Robin Modesto, RPF, PEng; Chris Stagg, RPF; Trevor Joyce, RPF; Morgan Kennah, RPF; Mason McIntyre, RFT; Cliff Roberts, RFT; Kerri Simmons, RPF; Trevor Swan, RPF; Rod Visser; Tom Walker; and Lisa Perrault, RFT.

SECOND ROW (L TO R): Mike Larock, RPF, with Anna Shcherbinina, PhD, RPF, after her induction into the ABCFP; and the Prince George Conservatory of Music performing at the Icebreaker.

THIRD ROW: A bustling Icebreaker reception on the trade show floor.

FOURTH ROW (L TO R): Prince George Mayor Lyn Hall speaking at the opening welcome; and Professor Sally Aitken, PhD, presenting *The Right Tree in the Right Place: Adapting to a Changing Climate*.



All conference photos by Chuck Nisbett

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*If you would like to be involved with our 2018 conference in Victoria as a sponsor, exhibitor, host committee member, or silent auction donor, please contact Cheryl Waddell at [cwaddell@abcfp.ca](mailto:cwaddell@abcfp.ca) for more information.*

# Increased Standard of Care in Spruce Forests Necessary: Questions and Response

**Omineca spruce beetle project manager, Helen Wiebe, asked the right question, “Will we be successful?” in her article, *Combating the Spruce Beetle*<sup>1</sup>, in the November-December 2016 issue of *BC Forest Professional*.**

The measure of success will be the condition of the forest. Health is measured by a forest’s capacity to recover. If the consequence of our actions is a resilient, resistant, less vulnerable, vigorous, diverse, and productive, self-renewing forest, we will be successful. If the opposite occurs, we will fail.

“Combating the beetle” will not be enough. Ecosystems change over time in response to both successional and disturbance forces, such as insect outbreaks and climate change. Success requires prevention, not suppression.

Important questions to resolve, include:

1. What have been the consequences on forests where bark beetle outbreaks have occurred, over and over again?

Forest scientist Negron wrote, “Bark beetle infestations create patches of forest that have trees of various ages, densities, species, and successional stages. This variation helps keep the forests healthy.”<sup>2</sup>

Tree physiologists Waring and Schlesinger similarly observe, “Historical analysis of wind, fire, insect and disease induced disturbances do not usually alter the long term mortality rates associated with intense competition...once a forest is established, frequent disturbances tend to remove stressed trees.”<sup>3</sup>

Taken as a whole, consequences of beetle infestations on rates of tree mortality are minimal. Regular mortality is caused by competition. Irregular mortality is caused by insects, disease, etc. Compensating factors typically enable forests to adapt and adjust to normal tree loss.

2. Are the program’s goals achievable?
  - a. If the goal is to prevent the bark beetle “problem” from re-occurring, this is unlikely, and the problem will likely remain.
  - b. If the goal is only to reduce short-term financial impacts of beetle outbreaks, what are the longer term costs of reduced

annual allowable cuts on mill closures, employment losses etc.?

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*Ray Travers, RPF(Ret), has a Bachelor of Science in Forestry (1966) from the University of British Columbia (silvics option) and a Master of Forestry (1970) from Oregon State University (major forest management, minor silviculture). Ray is an advocate of ecologically-based forestry and growing high-quality wood. You can e-mail Ray at [rtravers@islandnet.com](mailto:rtravers@islandnet.com).*

3. Have root causes of the spruce beetle problem been diagnosed? (If not, little will be achieved.) Stressed trees, vulnerable to bark beetle attack are the symptom, not the cause of outbreaks.
4. Are there unintended consequences? (If so, are they serious?)

It is very serious when consequences of a loss of diversity are degraded forest productivity, increasing cumulative effects at landscape scale, reduced timber supply, lost wildlife habitat, and long-term hydrological impacts.

The fire-fighting model for “combating the spruce beetle” is not working. Beetles, like fire, are an integral part of forests. Putting out fires (i.e. fire suppression) was the goal. Now fire’s ecological benefits are recognized.

A prevention strategy, based on enhancing tree vigour, has a better chance of success than salvage and sanitation logging. Prevention is preferred to suppression because it is often easier and cheaper to stop something negative from happening rather than restoration afterwards. It is more effective risk management to control the costs of what is predictable and beneficial before a beetle outbreak occurs, than being forced to accept the unpredictable costs, impacts, and losses of what cannot be controlled. Fire suppression, for example, became very effective in reducing the annual area burned, while at the same time it was increasing the probability of catastrophic fires (and beetle outbreaks) under difficult to control conditions.

New tree classifications (Figure 1) are helping field foresters better determine which trees to leave and which to remove in silvicultural prescriptions<sup>4</sup>. New insights are also being provided by research on rates of natural tree mortality from forest inventory data<sup>5</sup>.

Landram identified a clear relationship (Figure 2) for a number of conifer species, between probability of tree mortality and stand density index (SDI). The SDI is the trees per hectare in a fully stocked conifer stand when the quadratic mean diameter at breast height (DBH) of these trees is ten inches (25 centimetres). SDI is independent of stand age and site quality.

Maintaining ecosystem function while adding organic matter from tree mortality, in moderation, is a large ecological benefit. Live host spruce trees with enhanced vigour, resilience and form are the goal.

The best decision makers have foresight. Late management consultant, educator, and author Peter Drucker defined success when he said, “The best way to predict the future is to create it.” ✕

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5. Landram, Dave. No Date. *The Influence of Stand Density on Mortality in California’s Forests. An Analysis of Inventory Data*, Regional Silviculturist, USDA Forest Service, R-5 [http://caforestpestcouncil.org/wp-content/uploads/2004/11/1004%20Landram%20Stand%20Density\\_Compressed.pdf](http://caforestpestcouncil.org/wp-content/uploads/2004/11/1004%20Landram%20Stand%20Density_Compressed.pdf)



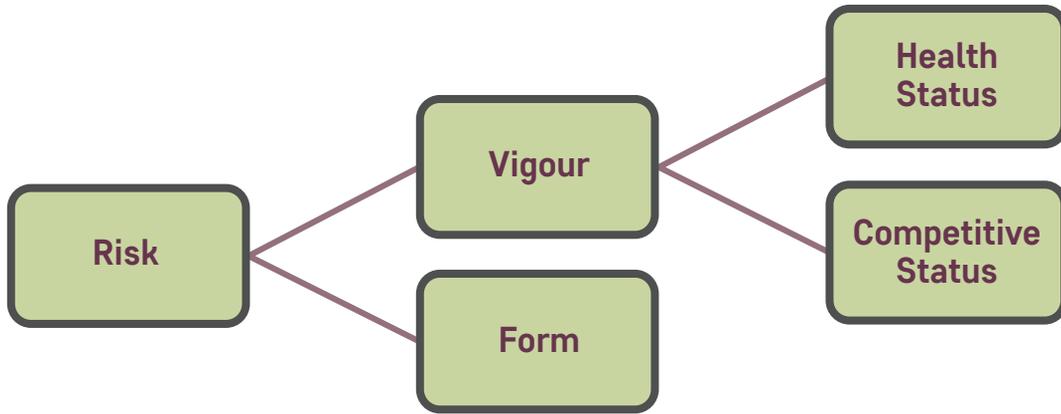


Figure 1. Importance and impacts of tree vigour.

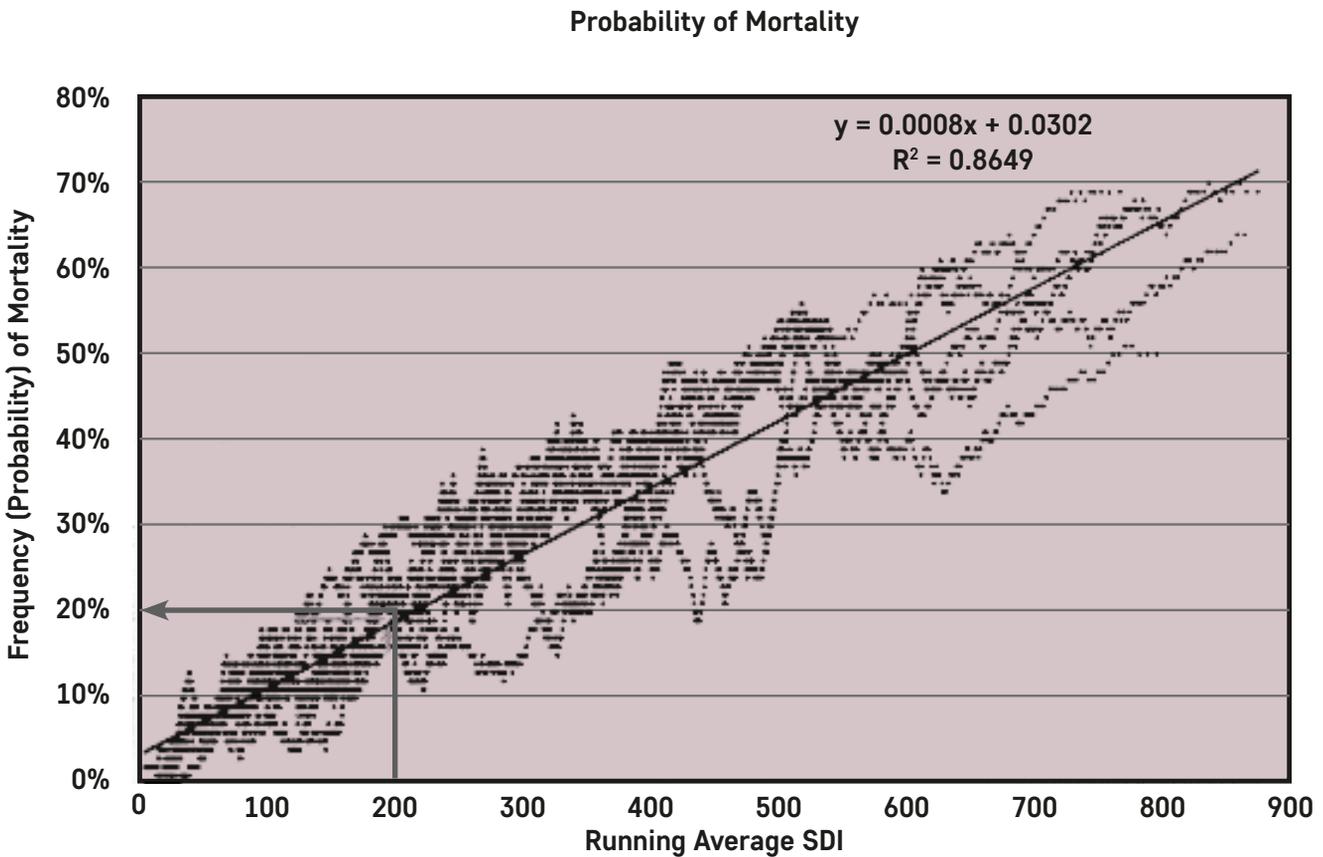
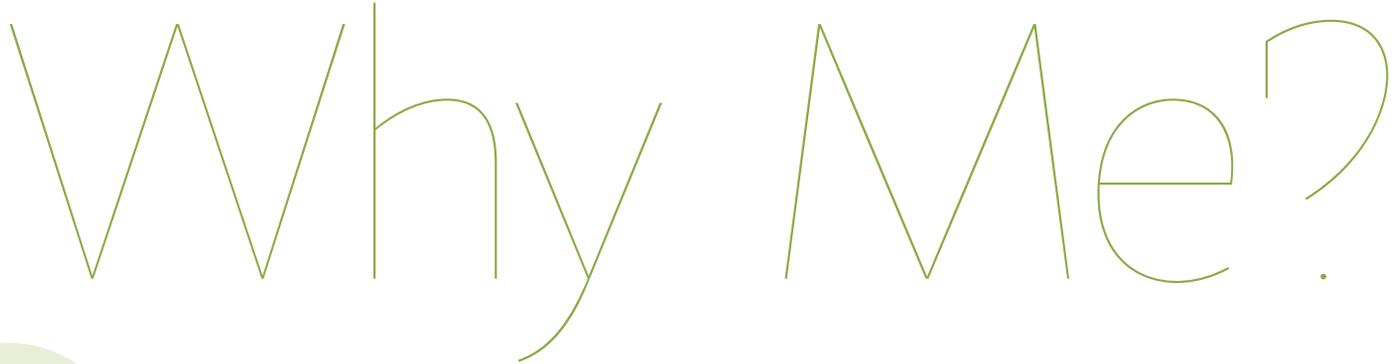


Figure 2. Stand Density Index (SDI) 200 (Imperial, 500 metric) results in 20 per cent probability of mortality.

# Peer and Practice Reviews:



**One day, out of the blue, you receive a phone call from the association** advising you that you've been randomly selected for a peer review. When you hear the selection process includes "professional practice risk," two thoughts may cross your mind: "Why me?" and "Oh, great. More work!"

A member recently asked "Why me?" and we thought the answer worth sharing. We select members randomly for peer reviews. However, it is a stratified random sampling of our membership. There are three stratifications:

## **A. Members who have identified their aspects of practice.**

The "professional practice risk" refers to the area of practice voluntarily identified by the member. Certain aspects of practice involve work that can have far-reaching implications on the work of other professionals, public safety, or resource management. In the past, we have focused on appraisals, cruising, forest stewardship planning, silviculture, and watershed management. Recently, we have concentrated primarily on members who are involved in roads and stream crossings. The focus is determined annually through consultation with the continuing competence committee (CCC), which is a volunteer committee of active forestry professionals. For 2017, we intend to concentrate on members who are working in areas where forest health, visual management, or wildlife management have been recent concerns. We randomly select about one-third of the proposed reviewees from the members who meet our selection criteria.

## **B. Members who have not identified their aspects of practice.**

As you know, members are not required to identify their aspects of practice. About half of members don't provide the data. To ensure these members are also reasonably sampled, we randomly select about one-third of the proposed reviews from this group.

## **C. Members in early to mid-stage of career.**

We used to randomly select members at any stage of their career, which meant that we were as likely to select a member within a year of retirement as we were to select someone with one year of practice completed. We checked with the members who were reviewed, as well as the CCC, and both groups felt the greatest value to members would be if we targeted early-to-mid-career professionals. The reason for targeting these members is that if there are areas of a person's practice that can be improved, newer members will benefit for a longer period of time than the person within a year of retirement. In response to the advice of the CCC and the peer reviewed members, we have taken two steps. First, for the members identified in either A or B above, we look

at their ages and their years of practice since registration. We try to focus our random selection in these categories on members who are 55 years old or younger, or those who have been registered for between five and 20 years. Second, to reach the newest members and provide the greatest benefit to their professional careers, we have chosen to select about one-third of the potential reviews from members who have become registered in the past five years. We try to choose people who have been registered for at least a year, because newly registered members have just gone through all the stress of becoming a registered member. They also need a chance to explore their skill set and their practice in order for the review to be meaningful to them.

If a member has completed a peer review or a practice review within the past 10 years, we will not select them for a random review. Meaning, if we draw the name of a person who has completed a review during that period, we will draw another name.

When we do contact a member about a review, we confirm with them they are currently actively practising forestry and that there are no extenuating circumstances (e.g. a health condition) that would make it difficult for them to participate in a review. In these situations, a review may be deferred to another year, or it may be noted that the member is not eligible for a review at this time.

There is one other situation which may involve a forestry professional in either a peer or a practice review. Where an issue of professional discipline has arisen, a review may be used as part of the process to help the member correct their practice. This is rare, but it can happen. Since the program's inception, we have completed approximately 500 reviews, of which three fall into this category.

The process we use is a stratified random sample of our membership. We conduct between 80 and 100 reviews annually; this includes both peer and practice reviews. Our current active membership is about 4,400 members, so we sample about two per cent of members annually. Selection has no reflection on the member as an individual or on their professional practice. The reviews are intended to provide information the ABCFP can use to demonstrate to the public their forests are in good hands and to help the member reach their potential as a forestry professional.

More detailed information about peer reviews can be found on our website at Home > Members > Professional Development > Continuing Competency > Peer Review<sup>1</sup>. ✖

## **Resources**

1. [http://member.abcfp.ca/WEB/ABCFP/Members/Professional\\_Development/Continuing\\_Competency/Peer\\_Review/ABCFP/Professional\\_Development/Peer\\_Review.aspx](http://member.abcfp.ca/WEB/ABCFP/Members/Professional_Development/Continuing_Competency/Peer_Review/ABCFP/Professional_Development/Peer_Review.aspx)

# Dispelling Misconceptions about the ABCFP's Complaints and Discipline Process

The ABCFP has been around for seven decades and has gone through many stages of evolution; continuing to make changes that increase scrutiny and transparency in its disciplinary practices. Despite this, not everything in these processes can be broadly shared, which has sometimes led to misconceptions about the complaints and discipline process. These misconceptions can flow from past experiences that a few members have had with the process or from a lack of knowledge about how the complaint mechanisms work. This results in comments like “The association doesn’t hold its members accountable,” or “No one ever gets kicked out of the association.” As it turns out, both of these comments aren’t supported by the track record of complaints.

The ABCFP is like other regulatory bodies in that it has a definitive complaints and discipline process. This process can be used by the public or by association members to seek accountability for actions that may not be in compliance with the *Foresters Act*, bylaws, or resolutions of the ABCFP. Each year we received eight to 10 complaints against members; an amount that is in proportion to other regulators, given the size of our membership. Approximately one quarter of these cases result in some form of disciplinary action since the investigation process often reveals significant mitigating factors in the defense of the member, resulting in complaint dismissal or the use of alternate complaint mechanisms. The purpose of a complaints process is ultimately tied to the maintenance of public trust in the profession. Public trust requires that the regulator use its knowledge and expertise to analyze the circumstances and get to the bottom of the professional service in the issue. We are compelled to procedural fairness and truth on each specific circumstance. Along with the ABCFP’s standards for registration and continuing competency, disciplinary processes are a public indication that professionals have a social licence to practice.

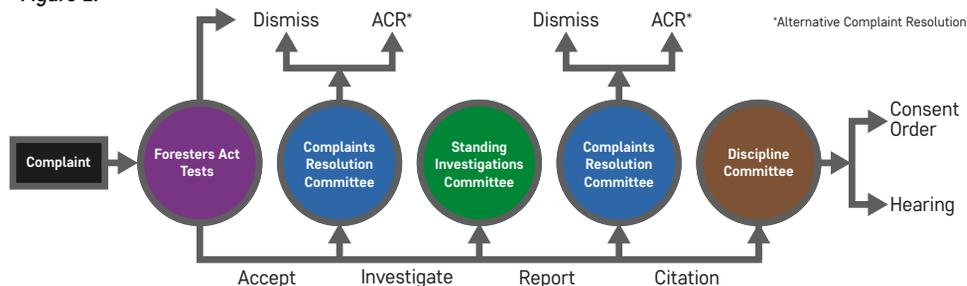
Our complaint process has five key stages and is based on principles of fairness in administrative law (Figure 1). This means that a subject member is innocent until proven otherwise. The process also provides the member with an opportunity to respond to the initial complaint and the subsequent investigation report — should the case be investigated. Because there are multiple stages of review and response, the process can take one to two years to complete. In some cases it takes longer because of additional complexities or scheduling challenges during an investigation. This is not unusual across regulatory associations.

Complaints against ABCFP members originate equally from the public and from other members. In some cases the complainant

is actually upset about a specific forest management practice or outcome on the ground. This is often not tied to the actions of a forest professional and cannot be accepted under Section 22(6) of the *Foresters Act*. The ABCFP cannot accept a complaint against an organization. Complaints between members also arise and are often tied to long-standing disputes that have been left unresolved in the workplace. These complaints can be difficult to adjudicate and may be better served by workplace mediation, alternative complaint resolution, or the ABCFP’s non-disciplinary professional accountability process. Discipline by the profession can come in many forms, since the ultimate goal is to seek remediation and corrective action.

The complaint resolution process engages three primary committees that make recommendations and decisions regarding complaints. These committees are empowered by the bylaws and work with the registrar to seek appropriate resolution or disciplinary action. The case digests published on our web site and in *BC Forest Professional* make reference to these committees and include as much detail as possible regarding the circumstances and decisions,

Figure 1.



respecting the privacy of the parties involved, and the confidentiality of evidence. It is important not to make assumptions about the complaint allegations and considerations that are made during these proceedings, given the limitations of disclosure. These committees hold the public interest paramount in their deliberations and recommendations to the registrar.

Lastly, the complaints resolution process only works if you choose to use it. As a professional community, in addition to the public, we must also actively engage the process. Many of us live in small communities or work in circles that rely upon strong working relationships. This can get in the way of talking to each other about professionalism or engaging the association about a concern. However, the only way to improve accountability is to plug into those hard conversations. Don't be afraid to engage with members about unprofessional conduct and stand up for the importance of adherence to our *Code of Ethics*. This is how we maintain our place as a trusted body of professionals. ✕

# Reconnecting Fish Habitat Starts with Good Data Management

## British Columbia's Fish Passage Technical Working Group (FPTWG)

has spent the past nine years coordinating and overseeing the assessment and remediation of resource road infrastructure that negatively impacts fish passage and developing best practices for stream crossing infrastructure. To be eligible for *Land Based Investment Strategy* (LBIS) funding, the focus of this work has been on stream crossing culverts installed pre-1995 that are no longer under forest licensee obligation. To date, the FPTWG has funded the reconnection of approximately 770 km of fish habitat, with major benefits for fish. In two previous articles<sup>1,2</sup> published in *BC Forest Professional* magazine, we've explored the remediation program itself, and highlighted a specific case study. This article examines the data generated by this program.

The Provincial Stream Crossing Inventory System (PSCIS) is a key component of the government's strategic plan to address fish passage issues, and contains information about crossing structures and the streams they traverse. The dataset is freely available to everyone, from government employees to the general public, via the BC government's online iMap geographic data platform<sup>3</sup>.

Data is collected during each of the four program phases<sup>4</sup>: fish passage assessment, habitat confirmation, design, and remediation. Phase 1, the fish passage assessment phase, requires field data collection on stream channel properties (width, slope, observed fish and beaver activity, habitat value, etc.) and the existing stream crossing infrastructure (structure type, dimensions, slope, outlet drop/pool depth, etc.). This data is used to calculate a score for each

crossing that indicates whether or not the structure is likely to allow fish passage. Contractors are provided with training as well as a standardized field data collection template which lists the required measurements and observations. Once populated, this Excel template is then submitted online for import into PSCIS.

Phase 2 is the habitat confirmation phase. Only stream crossings identified in Phase 1 as failing to pass fish and potentially having upstream fish habitat (identified using a habitat model) move on to this stage. Field data is collected to assess both habitat quantity and quality. Indicators include channel type (riffle-pool, step-pool, etc.); flow type (perennial, ephemeral, intermittent); substrate; and presence of woody debris, undercut banks, aquatic vegetation, and riparian vegetation overhanging the channel. Data from the habitat confirmation also include maps and photos of the upstream habitat and the crossing site, as well as road tenure information and future access plans for the area, all of which is submitted to PSCIS via the web interface.

The FPTWG examines crossings assessed in Phase 2 to select those where the cost of habitat restoration will provide the best return on investment for improving both the quality and quantity of accessible fish habitat. Phase 3 then involves designing the new infrastructure for those sites. Data uploaded to PSCIS at this point is engineering related: site plans, design drawings, and cost estimates. Following the final infrastructure installation in Phase 4, data uploaded to PSCIS via the web interface includes final as-built plans and costs, plus photos of the site with the new infrastructure in place, and a final report.

All data in PSCIS is linked to the specific geographic coordinates of each stream crossing site. The data is quality controlled during the submission process using either macros built into the submission spreadsheet or specifically defined pull-down menus on the website.

The PSCIS database is used by a wide range of groups. The FPTWG itself uses the data to continually refine their understanding of the scope of the fish passage problem across the province. Each year they re-run their analysis using new assessment data to see which types of crossings or structures are the biggest problem, and to develop remediation priorities. They are currently updating the information on the number of stream crossings on resource roads, the percentage that are closed bottom structures (CBS), and the known failure rate of these CBS based on collected data.

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*Sarah Boon, PhD, FRCGS, has 15 years' experience as a cold regions hydrologist and hydroecologist, and as a freelance science writer and editor.*

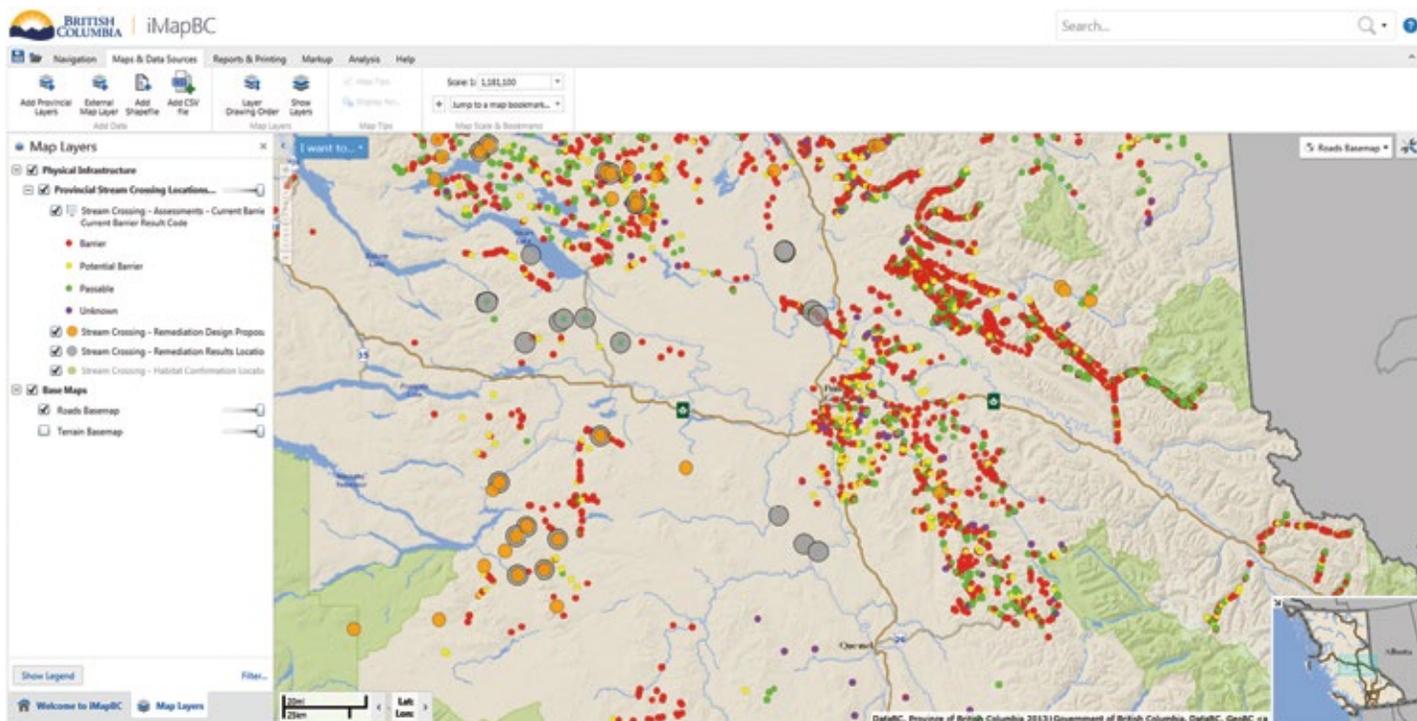
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*Craig Mount, MSc, PGeo, is the aquatic habitat geomorphologist with the BC Ministry of Environment. He has been on the Fish Passage Technical Working Group since its inception in 2007. Craig specializes in the study of fish habitat through the combination of the physical earth sciences and spatial technology such as GIS and modelling.*



### **FPTWG**

The Fish Passage Technical Working Group (FPTWG) includes Sarah Boon, PhD, FRCS; Brian Chow, PEng; Dave Hamilton, RFT; Dave Maloney, PA; Craig Mount, PGeo; Holly Pulvermacher; Richard Thompson; Peter Tschaplinski, PA; Sean Wong; and Terje Vold, RPF.



*Provincial layer in iMapBC depicting provincial stream crossing locations (PSCIS), including stream crossing assessments - current barrier result locations, remediation design proposals locations, remediation results locations, and habitat confirmation locations in Northern BC.*

Within government, staff in the Cumulative Effects Framework Program include the data in their analyses, as does the *Forest and Range Evaluation Program* for multiple resource value assessments (FREP-MRVA). The State of the Environment Report group also uses summary statistics from the program in its regular reporting, while the Forest Practices Board has used the data to report on the problem of fish passage at road crossings across the province.

Non-government groups using the data include the Pacific Salmon Foundation, which has incorporated PSCIS data from the north coast into their Pacific Salmon Explorer online tool, which focuses on the Skeena and Nass watersheds. BC Hydro has used PSCIS data through the Fish and Wildlife Conservation Program, in partnership with the FPTWG. First Nations also access the data to determine the impact of stream crossings on aquatic

habitat in their traditional lands, and to help them prioritize sites for restoration.

Steps to access PSCIS data are included in *Using iMapBC 2.0 to Access Fish Passage Data*<sup>5</sup>, created by FPTWG. Other iMap datasets that users of the fish passage data may be interested in include stream networks, fish observations, and fish obstacles. ☒

#### **Resources**

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5. [http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/land-based-investment/using\\_imapbc\\_to\\_explore\\_fish\\_passage\\_pscis\\_data.pdf](http://www2.gov.bc.ca/assets/gov/environment/natural-resource-stewardship/land-based-investment/using_imapbc_to_explore_fish_passage_pscis_data.pdf)

# FORESTRY

## What's a forest professional?

Forest professionals sustainably manage BC's forests for future generations.

### Two main types of forest professionals:

- **Registered Professional Forester (RPF)**
- **Registered Forest Technologist (RFT)**

#### What does an RPF do?

**RPFs** design forest management plans, often in partnership with other natural resource professionals, to ensure the ongoing sustainability of BC forests. They make decisions such as when, where and how to harvest and replant areas, how to protect or restore ecosystems, and how to protect fish, wildlife, water, and recreation uses.

#### What does an RFT do?

**RFTs** perform technical forest management activities within a team of resource professionals to ensure the growth and development of forests. They make decisions such as locating prescribed harvest boundaries, implementing planting projects, and carrying out forest fuel treatments to protect ecosystems and communities from fire.

### Forest professionals are highly educated.

**RPFs** hold bachelor degrees or higher from nationally-accredited forestry programs at Canadian universities such as UBC or UNBC.

**RFTs** hold a technology diploma from nationally-accredited programs offered by Canadian institutes or colleges such as BCIT, CNC, Selkirk College and VIU.



To become an RPF or RFT, candidates must meet educational requirements and undertake an articling process for a minimum of 24 months.

Forest professionals must abide by a Code of Ethics and standards of practice.



ABC FP by Numbers  
**5,300+**  
Members Strong



Under BC's *Foresters Act*, anyone practising forestry in BC must be a member of the **Association of BC Forest Professionals**, which registers and regulates forest professionals. The ABCFP is the largest professional forestry association in Canada.



### Types of work commonly performed by forest professionals:

- Chief forester
- Industry manager
- Resource manager
- Resource inventory management
- Urban forestry
- Vegetation management
- Harvest planning and reforestation
- Wildfire management
- Conservation
- First Nations tenure management
- Park forest management
- Forest hydrology
- Resource roads planning and construction
- Compliance monitoring
- Geographic information management and analysis
- Forest modelling
- Forest research
- Climate change adaptation and mitigation



WE'RE NOT LOGGERS, LUMBERJACKS,  
OR TREE PLANTERS. BUT SOMETIMES  
WE DO WEAR PLAID.

## Occupational Health and Safety and the Forest Professional: Wildfire Season and Safety – Ensuring Forest Professionals are Prepared

By Carole Savage, RPF, and Mike Larock, RPF

The BC Wildfire Service estimates BC's forests and wildlands cover over 94 million hectares and that approximately 2000 wildfires occur each year in BC. With many of our forested ecosystems in BC originating from fire, forest professionals consider this a key factor in their professional practice and forest management planning. They also consider the potential risk of wildfires and other emergencies on the job in the course of work. The ABCFP's *Code of Ethics* speaks to the need to have proper regard for the safety of others in all work (Bylaw 11.3.10).

Have you considered your emergency response planning as part of this? For the forest professional, it is an ethical obligation, as well as a legal requirement under the *Occupational Health and Safety Regulation* to keep workers safe. A proper emergency response plan (ERP) will focus on all potential risks for serious injury and will outline plans and procedures to address those risks — whether they be an injured worker or natural disasters like flood, earthquake, landslide, or wildfire. Although proper first aid assessments and procedures are key components of any ERP, first aid is only one part of an effective emergency response plan.

Forest professionals are often working or have people working for them in remote places, spread across different locations on the land base. These situations can make timely rescue and evacuation of injured or endangered workers more complex. Giving due consideration to how workers will be contacted for a possible evacuation and how they will be evacuated is key.

Areas you or your staff may be working in, the hazards for injury, the potential natural disasters that could pose a risk, and how these will be monitored should all be addressed as part of a comprehensive ERP. Plans should be site specific, well-practiced, and understood by everyone involved.

WorkSafeBC has developed resources for employers to consider when creating and testing emergency response plans, including a wildfire evacuation checklist. For more information go to [www.worksafebc.com](http://www.worksafebc.com) or contact your local prevention officer.

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**MEMBERSHIP  
STATISTICS**

Note: Individuals may have applied for a change to their status since this posting. Check the member directory on the ABCFP website at [member.abcfp.ca/web/ABCFP/Members/directory.aspx](http://member.abcfp.ca/web/ABCFP/Members/directory.aspx) for the most current list of members. You will need to sign in to access this page.

**ABCFP February 2017****NEW REGISTERED PROFESSIONAL FORESTERS**

Nicholas John Niddrie, RPF  
Dale Dietrich Offermann, RPF  
Anna Shcherbinina, PhD, RPF

**NEW REGISTERED FOREST TECHNOLOGIST**

Thomas Oben Hart, RFT

**NEW FORESTER IN TRAINING**

Benjamin Patrick Allen, FIT  
Shelley Barlow, FIT  
Clayton John Franz, FIT  
Cameron John Graham, FIT  
Marie-Josée Hudon, FIT  
Christopher Stephen Konchalski, FIT  
Garrett Victor Macklam-Harron, FIT  
Brett Harrison Marshall, FIT  
Anthony James Melnick, FIT  
Chaozhi Wu, FIT

**NEW TRAINEE FOREST TECHNOLOGIST**

Jeffrey Read Davies, TFT  
Cory John Alan Davis, TFT  
Trevor J. Harder, TFT  
Mark Allan Roy Kellar, TFT  
Shelby Paige Oe, TFT  
Yin Zhang, TFT

**REINSTATEMENT FROM LOA (REGISTERED)**

Stephen Paul Temple, RPF

**DECEASED**

John Michael Finnis, RPF(Ret)  
Allan C. MacPherson, RPF(Ret)

**THE FOLLOWING PEOPLE ARE NOT ENTITLED TO  
PRACTICE PROFESSIONAL FORESTRY IN BC:****NEW RETIRED RPF**

James W. Goudie, RPF(Ret)  
Ian B. Johnston, RPF(Ret)  
Richard A. Prill, RPF(Ret)  
Steven J. Thorpe, RPF(Ret)

**NEW RETIRED RFT**

Michael Edward Malin, RFT(Ret)  
Robert James Wellsman, RFT(Ret)

**LEAVE OF ABSENCE (REGISTERED)**

Drew Marshall Alway, (on LOA)  
George Dennis Buis, (on LOA)  
Peter Dodic, (on LOA)

Sonja Jane Efford, (on LOA)  
Samuel Dennis Flanagan, (on LOA)  
H. Signy Fredrickson, (on LOA)  
James Ryan Jordan, (on LOA)  
Colin John Kravontka, (on LOA)  
Jeremy Stephen Lafontaine, (on LOA)  
John Alexander MacKenzie, (on LOA)  
Andrew Eric Oetter, (on LOA)  
Jody Robert Rhodes, (on LOA)  
Alan G. Smith, (on LOA)  
Robert G. Windeler, (on LOA)

**LEAVE OF ABSENCE (ENROLLED)**

Sile Mairead Gaughan, (on LOA)

**RESIGNATION - RPF**

Mark Robert Balogh  
Nello Cataldo  
Christopher Nowotny  
Grant G.L. Parnell  
Lauren G. Waters

**RESIGNATION - RFT**

Randall Weldon England  
Robert William Udy

**RESIGNATION - RPF RETIRED**

L. Michael Casey  
Greg R. Coleman  
S. Michael Gatenby  
Eric P. Johansen  
Wayne L. Martin  
Suzanna Matovich  
James A. Maxwell  
Dale Lorne McLean  
Jeffrey Louis Monty  
Allen G. Prelusky  
Brent J. Sauder  
Lester W. Vermiere

**RESIGNATION - RFT RETIRED**

Michael Fred Dittaro  
W. Warren Fowler

**REMOVAL NON-PAYMENT - RPF**

Robert J. Brand  
Sharon P. Dow  
Jeffrey G. Fournier  
Michelle Ann Goodkey  
Sam Otukol  
Russel Garry Smith  
Brian Michael Stewart

Gregory Stephen Thompson

**REMOVAL NON-PAYMENT - RFT**

Jeffrey Yoshio Aoki  
Kevin Scott Bradley  
Howard Richard Briscoe  
Wayne Cameron Brown  
Trenton John Gainer  
Murray Wayne Henry  
Kevin Edwin Howard  
Thomas Martin Lenarcic  
Diane B. Lewthwaite  
Terrence Dale Mackay  
David Amos Maxwell  
Sean Peter McLean  
Steven David Mooney  
Lawrence George Musgrave  
Gerard Louis Nachtgeale  
Herbert William Noren  
Greg Donald Spence

**REMOVAL NON-PAYMENT - ATC**

Richard John Reeves

**REMOVAL NON-PAYMENT - FIT**

Cassandra Michelle Bott  
Dillon Bay Chrimes  
Michelle Janette Connolly  
Hanlu Huang  
Alesia Dedaa Ofori  
Graham D. Rohrmoser  
Haojing Xie

**REMOVAL NON-PAYMENT - TFT**

Neil Stuart Barnetson  
Cody Joseph Campbell  
Alan Matthew Chapla  
Dak Giles  
Martin Gerhard Hahn  
Anthony Marc Hawkes  
Mathew James Hodgkin  
Christopher P.N.R. Joseph  
Victor Inocencio Serrania  
Katelyn Christa Stevens

**ABCFP March 2017****NEW REGISTERED PROFESSIONAL FORESTER**

Patrick Graham Parmelee Ferguson, RPF  
Brent Elliot Fukumoto, RPF  
Andrew James Greschner, RPF



## A Moment in **Forestry**

**Springtime in the Okanagan ponderosa pine ecosystem, depicting splashy Balsam Root in full bloom.** *By Bernie Kaplun, RPF(Ret)*

Britney Lynn Grunerud, RPF  
Tory Grant Ross, RPF  
Wayne Edward Sim, RPF  
Frank Richard Tiramani, RPF  
Bradley Allen White, RPF

**NEW FORESTER IN TRAINING**

Marisa Ashley, FIT  
Chandra KC, FIT  
Dev Khurana, FIT  
Katelyn Ann Kotska, FIT  
Tyler James McDivitt-Vandermolen, FIT  
Joel William Mortyn, FIT  
Laysa L. Rodrigues, FIT  
Miroslav Stepan, FIT  
Martina Tekelova, FIT

**NEW TRAINEE FOREST TECHNOLOGIST**

Brandon Geldart, TFT  
Darren Earl Kelly, TFT  
Tyler Smith Lindberg, TFT  
Jonathan Victor Locs, TFT  
Kayla May Read, TFT  
Kathleen Donena Smith, TFT

**REINSTATEMENT FROM LOA (REGISTERED)**

Danielle Stephanie Gnoyke, RFT  
Shane L. Berg, RPF

**REINSTATEMENT (REGISTERED)**

Alan N. Chatterton, RPF  
Trenton John Gainer, RFT  
John W. MacNaughton, RPF

Lee Edward Newsome, RFT  
Lorne Ernest Thomas, RFT

**REINSTATEMENT (ENROLLED)**

Graham D. Rohrmoser, FIT

**THE FOLLOWING PEOPLE ARE NOT ENTITLED TO PRACTICE PROFESSIONAL FORESTRY IN BC:**

**RESIGNATION - RPF**

Marc A. von der Gonna

**RESIGNATION - FIT**

Donna Lee Brochez, RFT\*

\*resigned FIT, entitled to practice as an RFT

# Bringing Tactical Planning Software to the Forest Industry



**FOREST**  
**OPS**<sup>TM</sup>

*Simplify. Organize. Manage.*

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

**FOREST OPS**<sup>TM</sup> 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**<sup>TM</sup> 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**<sup>TM</sup> data anywhere on our mobile app.

To set up a meeting contact [sales@jrpltd.com](mailto:sales@jrpltd.com)

[forestOPS.jrpltd.com](http://forestOPS.jrpltd.com)

For more information and online demos on all our products, visit [jrpltd.com](http://jrpltd.com)



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