

# BC

MARCH – APRIL 2015

# Forest

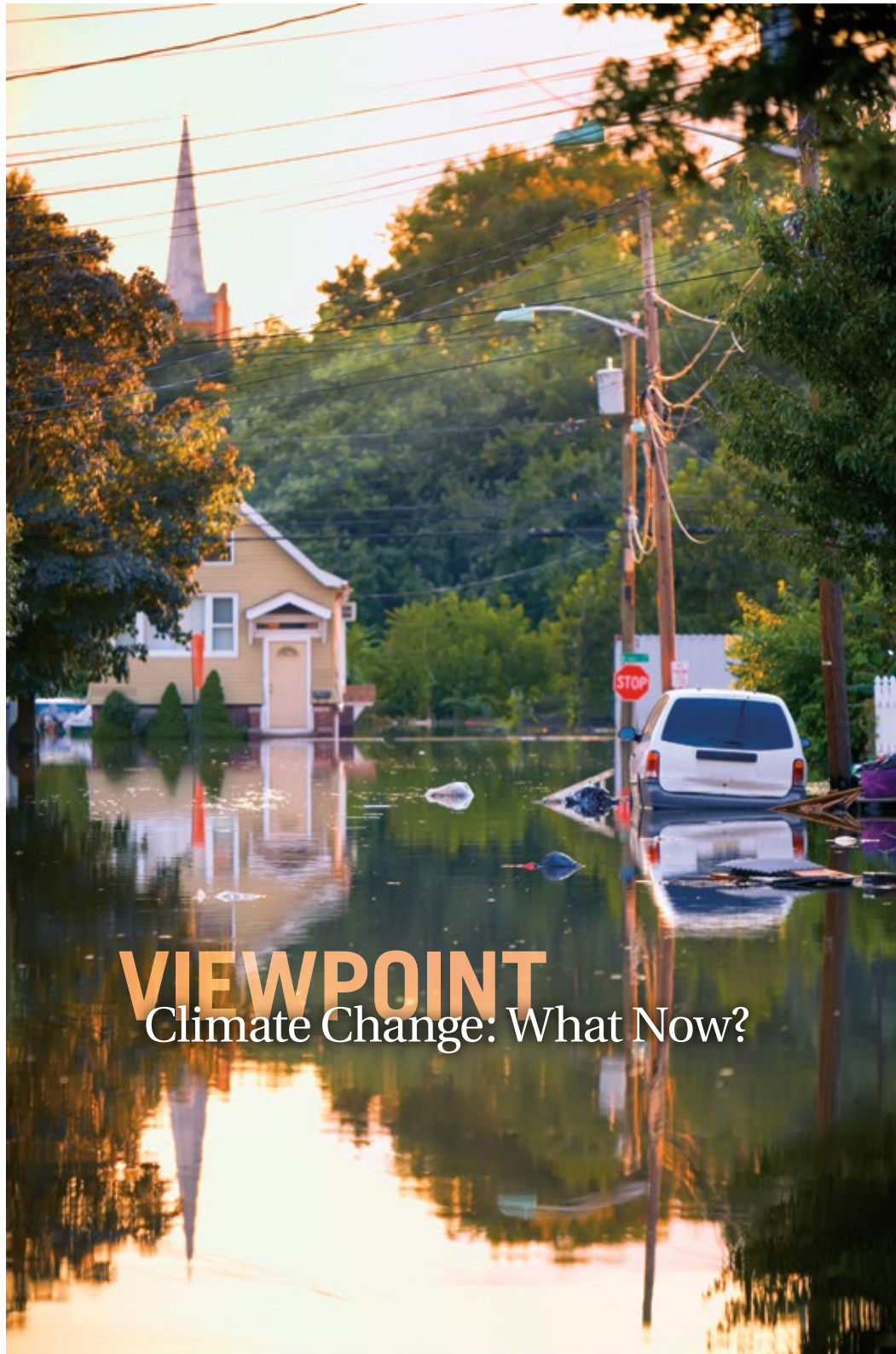
## PROFESSIONAL

A Solutions-Based Approach  
to the Carbon Crunch

**Using Genomics to  
Protect our Changing  
Forests**

A Look at BC Timber Sales'  
Climate Change Strategy

**Member Alert:  
Year-End Statistics  
Released**



## VIEWPOINT

Climate Change: What Now?

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**BC Forest**  
PROFESSIONAL

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*“In the field it has saved us time and simplified field surveys. In the office it has saved us a significant amount of staff time” ...*

Ricardo Velasquez,  
District Silvicultural Forester  
Ontario Ministry of  
Natural Resources



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## Thinking Twice about the Climate Change Debate

In the January/February issue of **BC Forest Professional**, Robert Mohr challenges the link between weather extremes and global warming by offering numerous quotes which he states are drawn from “the latest IPCC Report (AR5 WG1 Chapter 2 on Extreme Weather).”

I had previously read the Working Group 1 “Summary for Policy Makers” (WG1 SPM) report and the message I recalled was wholly inconsistent with Mr. Mohr’s statement so I reviewed the WG1 reports. The “SPM + Longer Report” (which can be found at <https://ipcc.ch/>) presents Section 1.4, entitled “Extreme Events” (ref. pdf reader page 61/138). The overarching conclusion highlighted for this section states:

“Changes in many extreme weather and climate events have been observed since about 1950. Some of these changes have been linked to human influences, including a decrease in cold temperature extremes, an increase in warm temperature extremes, an increase in extreme high sea levels and an increase in the number of heavy precipitation events in a number of regions.”

The full AR5, WG1 report (“AR5: The Physical Science Basis”) cited by Mr. Mohr is located at <http://www.climatechange2013.org/> and accessed via a search on the phrase “UN IPCC.” It is a 365 MB file which the PDF reader describes as 1552 pages in length. There is a Summary for Policy Makers section, Technical Section and 14 chapters with annexes. I could not locate a Chapter 2 titled “Extreme Weather,” however the Technical Section did offer section TS.2.7 “Changes in Extremes” (pdf p. 62/1552) and a Thematic Focus Element TFE.9 titled “Climate Extremes” (pdf p. 125/1552) which includes sections on “Temperature Extremes, Heat Waves & Warm Spells,” “Precipitation Extremes” and “Floods and Droughts.”

I was unable to locate the exact quotations cited by Mr. Mohr. I did find segments of text which matched portions of the quotations offered by Mr. Mohr. The text, when viewed in the full context in which it is presented, does **not** support Mr. Mohr’s claim that “there is no link to weather extremes and CAGW.”

I find Mr. Mohr’s letter in **BC Forest Professional** troubling on a number of fronts but the biggest problem in my view is that these statements divert attention from the real challenge at hand, which Tim Williamson points to in his letter, “Delivering on adaptation and mitigation is much easier said than done.”

Thank you for the opportunity to comment in your professional journal.

**RODGER HAMILTON**

## Have a Compliment or Concern?

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 in **BC Forest Professional**.

## Write us!

Send letters to:  
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## Forestry: Big Rewards and Big Challenges

Forestry is a mix of both natural and social sciences. This mix may be the greatest reward and the biggest challenge for forest professionals. We must understand not only what actions are required for the sustainable management of forests but also what the people of BC want from their forests. A complicating factor is that not everyone in BC wants the same things or values the same things.

I've heard from some members who are substantially satisfied with the current status of forest resource management in BC. They recognize that there is room for improvement in discrete areas, but argue that in comparison with most other jurisdictions we still have a magnificent and well-managed forest resource. I've also heard from others who say that BC's forests have been hugely degraded and that nothing short of a complete overhaul of the forest management regime will save their biodiversity and productivity. Some see the best use of the forests as delivering maximum short-term economic benefits, living by the old maxim that "once you've cut the best, what you've got left is the best." Others see economics as running a distant third to environmental and social considerations.

As forest professionals, we are tasked with striking an appropriate balance and delivering the forest values important to British Columbians today and for future generations. Striking a balance usually does not mean giving equal weight to all considerations — the weighting is influenced by risk management. At its simplest, risk management requires an assessment of the likelihood of negative consequences occurring, the magnitude of those consequences, and the expected costs and benefits of intervening to affect potential outcomes.

Like individual forest professionals, your council also puts time and energy into risk management when it comes to setting direction for the association. Each year, your council puts a great deal of effort into creating or monitoring the strategic plan. We do this to ensure we are assessing risk appropriately and delivering the association's mandate year over year.

Council's strategic planning and staff's business planning processes are attempts to set priorities and to direct resources to those areas where council believes they will best serve the public interest. Some members will generally agree with the priorities as determined by council, others will vehemently disagree. Yet others may think the association is going in the right direction but should be going farther and faster.

Whether you approve or disapprove of the way the association is delivering its mandate, you have many ways of influencing the direction it takes, including:

1. Communicate your priorities directly to council or to association staff. Try writing a letter or article in **BC Forest Professional** magazine. Identify what one or two things the association should focus on over the next year. We love to hear from members and we'll carefully consider your suggestions.
2. Vote. Research the nominees and vote for those you believe best reflect your own priorities. Encourage those who you believe would be good councillors to stand for nomination.
3. Run for council yourself. The association benefits from having a diversity of views on council, and council membership is a satisfying and fulfilling experience.
4. Volunteer. If you're not ready to make the jump to a council seat, have a look at the great work being done by ABCFP committees and volunteer for one of them. You can influence everything from finance, to the magazine to the registration of new members.

No matter how you choose to be involved in the association, your input can be invaluable in ensuring that it pursues the right priorities in regulating the profession and optimizing the public interest in forest stewardship.

I have been very honoured to serve as president of the association for the past year and have enjoyed the privilege of serving the profession. Your incoming councillors are a diverse group of seasoned practitioners. I'm pleased to know I'm leaving the governance of the association in capable hands. 🐾



## Playing Our Cards Right

I'm sure I'm not the only one in forestry who's been feeling a little like the poor second cousin to our colleagues in the oil and gas and LNG business over the past few years. Despite decades of stumpage and taxes revenues flowing into the provincial treasury — and a sector that put tens of thousands of people to work in BC for many years — I couldn't help but feel that the shine had worn off the forestry penny.

While forest professionals were dealing with the devastation of mountain pine beetle and forest companies were doing their best to hang on during the US housing crash, we all dealt with persistent questions about the future of forestry. One especially bothersome memory for all of us was listening to those pundits who described forestry as a “sunset industry.”

While those in the forest sector have been extremely busy these past few years, it seems like we have not been able to communicate this new momentum in the sector until recently. A number of industry associations hired a consulting firm to do an economic impact study of the BC forest industry. And what a marvelous job they did. Here are some highlights that I noted:

- In 2013, total BC forest industry revenue was \$15.7 billion;
- Total estimated employment impacts was 145,817 full-time equivalents;
- Total estimated GDP impacts were \$12.4 billion; and
- Total revenue to the provincial government alone was estimated to be \$1.4 billion.<sup>1</sup>

I can almost see that penny glowing again.

And that brings me to my next point: the price of oil. Many analysts are asking, if high prices helped create the oil boom in the US and Canada, will falling prices throttle it?<sup>2</sup> While analysts all over the world try to answer that question I draw your attention once again to the steady health of the forest sector. According to the forest industry study, in 2013, the industry was BC's largest manufacturing sector and operated production facilities in every region of the province.<sup>3</sup> And, if we play our cards right, the forest sector will continue to lead the way in employment and revenue generation for years to come.

That brings me to my last point. Playing our cards right. We all know the challenges facing the forestry sector in the future — both on the ecological side and on the financial side.

The decrease in available wood due to insects, disease or abiotic elements; the cumulative effects of competing uses on the land base, and adapting our practices to the changing climate, just to name a few. On the financial side, while making an annual profit used to be the goal of most companies — shareholders and boards of directors everywhere now demand that each quarter be better than the last. Short-term thinking at its finest.

So forest professionals in our province have probably the toughest job they've had in years. But there is a solution. And that's back to basics! Focus on the long-term health of our forests and their ecosystems.

The association has been crystal clear in our advice to members and to our government partners. Focus not on mills but on creating and maintaining healthy forests that can drive the secondary use. Whether it's a perspective to government on the mid-term timber supply or on tenure reform, our advice hasn't changed. Focus on forests first. Sound forest management will lead to sustainable forests that can continue to support a vibrant forest sector for the next century.

And for those who are on the treadmill of producing ever more money in the short-term in forestry, I draw your attention to the next shiny penny in financial evaluation of companies called “creating shared value (CSV).” It's a concept that's been developed in the US and is currently taking hold on Wall Street. As an example, from the 50,000-foot level in the forestry context CSV can be about being innovative and investing more in aspects of forest management and community health — that, in turn, generate greater business security and financial opportunity. What a company has contributed towards its CSV will then become part of its financial valuation, redefining productivity, competitive advantage and the value proposition for the company. It requires long-term thinking and innovation for long-term financial benefits, and fits well with the experience of the forestry sector.

Forestry in BC is currently, and has the ability to always be, the province's shiny penny. Thanks to the forest industry's latest report for the reminder. 🍀

<sup>1</sup> BC Forest Industry Economic Impact Study, January 2016, prepared by MNPLLP, pg. 3.  
<sup>2</sup> How far do oil prices have to fall to throttle the US shale boom?, December 3, 2014, Brad Plumer, Vox.  
<sup>3</sup> Op. cit. pg 5.

## Reflections on Ethical Requirements For Our Changing Climate

Climate change affects trees, forests and forest ecosystems by altering their growing conditions as well as historic natural disturbance trends. In order to maintain forest values important to society, forest professionals must implement climate adaptation strategies into their daily practices.

Bylaw 11.3.1 says, *“To advocate and practice good stewardship of forest land based on sound ecological principles to sustain its ability to provide those values that have been assigned by society”* and 11.3.3 *“... to seek to balance the health and sustainability of forests, forest lands, forest resources, and forest ecosystems...”* This means that forest professionals meet their ethical commitment by addressing the climate change effects on forests. Forest professionals improve their knowledge regarding the impacts of a changing climate in their region and then use this experience to modify their practice and provide forest management decisions that support affected forest ecosystems. The ABCFP role is to advocate for policies that further climate adaptation strategies and provide information to forest professionals regarding climate change science.

## Certificates of Professional Development Awarded

Congratulations to the following members for earning a Professional Development Certificate. These members completed 150 hours of professional development over the past five years.

Shawn Mandula, RPF	Dale Likes, RPF
Craig Wickland, RPF	Jill Werk, RPF
Jocelin Teron, RPF	Ian Emery, RFT
Kim Lefebvre, RPF	Greg Mowatt, RPF

Find out how you can earn your certificate by checking out the Continuing Professional Development page of the website.

## Announcing the Results of the 68<sup>th</sup> Council Election

Thank you to all candidates who stood for election and to all members who took the time to vote. We are pleased to inform you of the results of the 68<sup>th</sup> council election.

Please welcome your new council members:

- Vice-President, Chris Stagg, RPF
- Lisa Perrault, RFT
- Jillian Affleck, RFT
- Trevor Swan, RPF
- Morgan Kennah, RPF

These new council members took their seats at the AGM during the *Today's Choices, Tomorrow's Forests* conference in Nanaimo last month.

## New Forest Stewardship Specialist Joins the ABCFP

The ABCFP is pleased to welcome Megan Hanacek, RPF, RPBio, to our professional team.

As the ABCFP's forest stewardship specialist, Megan will work with staff and committees to meet the association's stewardship obligations under the *Foresters Act*. Megan is looking forward to addressing the challenges and opportunities facing the profession in forest stewardship.

Megan has practised professional forestry in operations, forest development, stakeholder engagement, natural resource management and professional training throughout BC. She also has extensive experience in the business of professional regulation and operating a professional consulting firm. Megan lives in Port McNeill with her family. She began her forestry career by obtaining a diploma through the BCIT Natural Resource Management program, then completing her degree at Simon Fraser University and achieving the requirements to become a Registered Professional Forester. Megan is an accomplished professional, skilled at advancing high-profile projects in natural resource management, and we are excited to have her join our team.

## Join Us For Climate Change Webinars

Members are invited to attend a number of upcoming climate change webinars for forest, environmental and biology practitioners.

Upcoming Sessions:

DATE	PRESENTERS	TITLE
March 11, 2015 8:30 to 9:30 am	Lyle Gawalko, RFT, and Sonja Leverkus, PAg, RPBio, FIT, EP, PhDc	Wildfire Management in a Changing Climate – From a Provincial to a Local Scale
April 8, 2015 8:30 to 9:30 am	Greg O'Neill and Kevin Astridge, RPF	Transfer 2.0 and Species Selection, the Art and Science in a Changing Climate
May 13, 2015, 8:30 to 9:30 am	Erik Leslie, RPF, and Ken Day, RPF	Risk Management in a Changing Climate – From Community Involvement to Operations
June 10, 2015, 8:30 to 9:30 am	Dirk Nyland and Andrew Davies, RFT	Engineering Impacts From Two Perspectives – From the Highway to the Bush

Join the webinar by visiting: [www.resolveclick.com/abcfp/](http://www.resolveclick.com/abcfp/) and entering 1794922 as a participant code. Enter your first and last name and click “join.” You will be able to see presentations and listen to the presenters. You can also ask questions using the chat.

## Recordings of Past Webinars

The December 10, 2014 webinar, “Introduction to Climate Change in BC,” is now available online by going to <http://abcfp.adobeconnect.com/p4i1nflhou/>. You can also access the January 14, 2015 webinar, “Silviculture in a Changing Climate,” by going to <http://co19962.omnivia.com/archives/212118> and clicking “login” and entering the required information (first and last name and e-mail address) and clicking “submit.”





## Preparing a toolkit for Climate Change

IN OUR HYPER-CONNECTED SOCIETY, FEW WOULD HAVE MISSED THE MILLIONS OF DRAMATIC tweets, videos and snapshots that came out of the northeastern United States recently. With Winter Storm Juno dumping historic levels of snow in the area — blanketing cars, crushing roofs and rendering residents immobile, it was a graphic example of the potential of Mother Nature. And while many of us living on the west coast scoffed at our eastern counterparts for their choice of residence, the extreme weather points to a significant global phenomenon to which we are all a party: climate change.

Many scientists are attributing major weather events to a changing climate and it's logical to see why. With warming sea surface temperatures producing more moisture in the air, simple physics would dictate that the added moisture would result in bigger rainstorms and snowfall.

While many forest professionals agree that climate change is a culprit behind similarly disturbing changes observed on the forested land base, some stop short of taking action, not for lack of desire or motivation, but because of the absence of practical know-how. Since we are witnessing the environmental effects in real time, there is no tried-and-true prescription to adapt, mitigate and solve. Here is where this issue of **BC Forest Professional** steps in.

Our first climate change issue, the November/December 2014 issue, attempted to illustrate the problem broadly by discussing large concepts. The goal of part two, however, is to provide potential operational advice. We look at climate change adaptation strategies in both a Williams Lake TSA and at BC Timber Sales. One of our writers offers a set of eight succinct solutions to solving the carbon crunch. Another expert provides a glimpse into the use of next-generation genomics tools to fight biotic threats in forests. In short, we have dedicated this issue to providing a no-nonsense, practical toolkit for forest professionals who are looking for a place to start in their climate change adaptation and mitigation efforts.

In addition to our climate change focus, the March/April issue is also home to our largest membership update. With the recent completion of membership renewals, we present up-to-date statistics on your forestry colleagues.

We tackle a lot in these pages and expect our stories will generate questions, concerns and perhaps even passionate rebuttals. We invite you to continue this important dialogue by sending a letter to the editor at: [dsun@abcfp.ca](mailto:dsun@abcfp.ca) 🐾

*EDITORS NOTE: Some of the images used in the January/February issue, "Back to Back Wins for Campbell River NFP's," incorrectly depicted Port McNill events as Campbell River ones. We apologize about the error.*

### The Principles of Stewardship<sup>1</sup> and Climate Change (Part 2)

A majority of our members enter the forestry profession for the love of the outdoors and the ability to apply their education and expertise in dynamic natural resource decision making. Considering potential climate change impacts, our members are now faced with the biggest challenges and uncertainties to the integrity and range of natural variability of forest ecosystems that we cherish. Moving forward, these impacts will be driving many of the tough decisions (spatially and temporally) in forest planning from the block level to landscape unit level.

Under the *Foresters Act*, members must "advocate for and uphold principles of stewardship of forests, forest lands, forest resources and forest ecosystems." Forest planning practices need to incorporate best available science information, collaborate between stakeholder parties, model potential climate change impacts to forest planning decisions and incorporate adaptive management strategies that encourage flexible, innovative ideas that will work to maintain forest ecosystem integrity.

For example, in recent history, many stocking standards were based on a prescription, with little room for creative implementation in longer term projections. Forest stewardship requires members to challenge and advocate for incorporation of new strategies to minimize any detrimental climate change impacts.

The ABCFP is a resource members can rely on when searching for timely science and collaboration (e.g. recent climate change webinars, climate change webpage and other frequent publications). Now more than ever forest professionals will be championed to work with other resource specialists and stakeholders to integrate timely research, the range of values present and to plan for the long-term desired outcomes in forest management planning.

<sup>1</sup> The main document can be seen at [http://abcfp.ca/publications\\_forms/publications/committee\\_reports.asp](http://abcfp.ca/publications_forms/publications/committee_reports.asp)

## Adapting Silvicultural Practices to

**MANY PROFESSIONALS** recognize the range of natural variability for environmental factors has shifted and environmental norms of recent history are no longer reliable as concrete data for timber growth planning cycles.

As professionals, we need to recognize the past is the past and now, climate change requires a new working environment that allows ecological flexibility with incorporation of evolving science and mindsets.

Many adaptation strategies are not novel but the time to act is upon us now individually and as a collective of forest professionals; forest professionals have the challenging task of developing local strategies through informal trials and/or innovative practices. It is important that innovative practices be documented and monitored as learnings from these practices can provide valuable data for other colleagues. Forest carbon sequestration management is a key component as our profession deals with forests' contribution to the carbon cycle. Creative strategies that have global reduction of carbon as the main goal, rather than a byproduct of financial motivations like carbon trading, should be actively pursued. Along with this should be a stronger commitment to monitoring to guide adaptations and manage what will become the largest transition in recorded history.

It's important to develop local strategies with counterparts, review them in the field and take everyone's concerns into formulating a plan through a risk matrix. A "no regrets" strategy to promote forest resilience and ecosystem balances is an excellent place to start in every tenure and management unit.

Abandon the concept of tying stocking standard approvals to timber supply and instead reward innovation and development of knowledge in the fight against climate change and drive for maintenance of long-term ecological function. There needs to be flexibility

to allow professionals to integrate their education, past work experience and local knowledge in creative "no regrets" ways that allow for knowledge gains.

In some of the Interior TSAs, concerns regarding forest health impacts now and into the future are driving change around density and tree species composition. These are valid concerns and need to be addressed locally, but with collective decision making and consistent monitoring. All thoughts and ideas should be welcomed, as we can learn as much from failure as success.

Some of the tools available are ClimateBC modelling forecasts to determine future conditions and the ability to utilize orchard class materials from presently different locations but with future similarities. This can also be applied to utilizing species not presently acceptable. Species diversity can also be tested with modelling and should be encouraged through *ad hoc* trials. There are examples in submissions to the Tree Improvement Branch and the former Research Branch for practitioners to review for their specific situations.

These are examples of activities individuals can conduct at site level; however, dealing with issues at landscape levels is more beneficial as jointly agreed-upon decision making at larger spatial scales carries more weight in the fight to minimize climate change and with Delegated Decision Makers (DDMs).

### Williams Lake: A Case Study

In the Williams Lake TSA there are many relevant operational examples. As a group, we reviewed the Stand Development Monitoring plots in our committee meetings and in the field to work on solutions.

The SBS dw1, ICH wk2, ICH mk3 and ESSF wk2 had problems with Lodgepole pine, some forest health-related and some due to form



## Minimize Climate Change Impacts

Photo: AVD – Fotolia

(mainly snow press). As a solution we agreed to reduce the amount of Lodgepole pine and replace it with Douglas-fir and Englemann Spruce in our FSP stocking standards. At the same time we agreed there needed to be a standard for management of Lodgepole pine as a monoculture as an option for forest professionals to use. This was determined to be less than 2,000 stems as a buffer on forest health as well as a timber quality standard.

As we felt this could apply to the other BECs as well, we began to discuss the creation of an enhanced standard to fulfill looming timber supply issues and create opportunities for juvenile spacing and fertilization. These activities were proving problematic to find and model due to present stocking and density.

We then determined that to compensate licencees for the additional expense of complying with our new landscape standards, we would request Appraisal Allowance Consideration for five years to allow for cost collection and averaging to allow the new cost structure to be fully considered.

In addition we will be requesting a Change Monitoring Inventory (CMI) be part of basic silviculture. We included in our submission a request to quantify the public's investment and to ascertain the performance of the new standards and make changes where needed.

Other issues we are dealing with using joint decision making and trials that are related to climate change include:

- Aspen competition by BEC IDF dk3, dk4 and SBPS xc, dc, mk;
- IDF dk4 Pli *Elytroderma* impacts on stem form;
- Maximum density stocking on MS xv, SBPS xc, SBPS dc, IDF dk3;
- Pli Retention MS xk3/ESSF xv2 high elevation sites; and,
- IDF management regimes and LiDAR inventories.

So far, key learnings suggest that adaptive management, which incorporates a “no regrets” strategy with flexibility, monitoring and documentation of findings, is a key consideration and must be maintained on the land base. The funding system has to be embedded in our business to be effective long term in the fight to minimize climate change impacts.

The appraisal system has to be inclusive and flexible to compensate for changing silvicultural systems to engage stand-level participation.

Engagement of research is essential to driving adaptation and is especially effective if done collectively and shared widely.

Stocking standards and survey reporting requires connectivity to growth and yield and hence, timber supply in order to provide the public with assurances that forest investments and adaptation are maintaining ecological services.

While the examples discussed here elaborate on initiatives that have been undertaken at a micro-level in one section of the province, it illustrates that meaningful climate change adaptation is not the result of a few sweeping changes. Rather, a concerted effort by forest professionals to enact numerous incremental changes at the site level is what's key to affecting broad, landscape-level improvements. 🍁

*Since graduating from CNC in 1977 as a Forest Technician and achieving an RPF in the pupil program in 1990, Guy Burdikin has worked in Williams Lake for the Ministry of Forests and West Fraser. Guy has worked as a timber cruiser, assistant ranger, logging supervisor, area supervisor, silviculture forester and silviculture supervisor. He has a keen interest in tree improvement and climate change and participates in provincial committees on those topics. Guy is a director of the Bull Mountain XC ski club in Williams Lake and enjoys many of the outdoor activities the Cariboo provides.*

# Forestry Solutions to

IT IS WINTER IN THE NORTHERN HEMISPHERE AND ALL ACROSS CANADA forests are sleeping. As summer approaches they will drink in new carbon dioxide, locking some of it away as carbon.

It's an ancient process that's been happening ever since life crawled out of the ocean. Since the end of the last ice age the carbon dioxide in the atmosphere had been stable at around 280 parts per million. In today's turbo-charged world, however, we're pouring 1,000 tonnes of CO<sub>2</sub> into the atmosphere every second, increasing the level to 400 ppm. Once in the atmosphere, it traps heat.

If we don't change our energy and forestry habits, the temperature will rise by up to 6°C, bringing disaster to the forests, catastrophe to humans and extinction to one-third of all species. The last time the temperature was three degrees warmer, the sea level was 25 metres higher. This is the future we will leave to our children unless we change our ways.

Forests are hugely important as a carbon sink, but when carbon is lost they become very dangerous from a climate perspective. Earth's forests absorb a quarter of the carbon we release, and the challenge is to increase the rate of carbon sequestration, not reduce it, as BC is currently doing by 20 million tonnes a year. In 2013, the NASA climate scientist James Hansen found that if we are to get back to 350 ppm, as well as phasing out fossil fuels, we will need to sequester 100 billion tonnes of carbon back into the forests and soil, equivalent to a third of the carbon released since the start of the industrial era.<sup>1</sup>

In BC, forest professionals see with their own eyes how climate change is shifting species suitability and increasing wildfires and insect damage. But how can they manage the forest so as to protect its carbon, adapt to climate change and meet a company's economic objectives? It's a difficult three-way challenge.

Right now, our forests are losing as much carbon every year as BC's transportation sector produces. BC has a legislated goal to reduce its emissions by 33% by 2020, and the fact that forest emissions are ig-

nored is a policy error that should be corrected, since the atmosphere certainly counts them. What could reverse the trend, enabling BC's forests to become part of the solution?

**Solution #1: Value and Measure Forest Carbon.** BC should monitor emissions from forest management on a scale that makes carbon management possible on all tenures, and treat actions to reduce carbon loss and increase sequestration with the same emphasis given to transportation, energy and buildings.

**Solution #2: Increase Wood Product Substitution.** A proportion of the carbon from logged timber gets locked up in wood products, so every policy, building code and incentive that increases the use of timber instead of concrete contributes to long-term carbon storage.

**Solution #3: Harvest Bioenergy.** The industry has made good progress in using bioenergy from forest and processing wastes. Live harvesting for bioenergy is not good policy, but using wastes to provide heat makes climate sense when it reduces the use of natural gas, provided forests are not stripped of the brushy debris needed to feed the soil.<sup>2</sup>

**Solution #4: Reduce Slash Burning.** In addition to releasing 8 MT of CO<sub>2</sub> a year in BC, air pollution from slash burning is a serious health threat. Replacing waste assessments and penalties with a volume- and distance-based burn fee would increase the incentive to utilize the wastes.

**Solution #5: Better Information, Education and Planning.** Tailor forest carbon practices and climate projections to each biogeoclimatic zone to reflect regional variations. Forest professionals need regionalized information that builds climate data into forest modeling. They also need



# the Carbon Crunch

Photo: iStock

climate-related training, better planning and funding for research, inventory development, monitoring and adaptation initiatives.

**Solution #6: Shift the Harvest Profile to Second-Growth.** In the Pacific Maritime forests, old-growth forests store an average 375 tonnes of carbon per hectare, about half of which gets lost when it logged. This compares to 323 tonnes in the Montane Cordillera, 266 in the Taiga Plains, 254 in the Boreal Cordillera, and 171 in the Boreal Plains terrestrial ecozone.<sup>4</sup>

BC has 600,000 hectares of unprotected coastal old-growth forest that stores some 225 million tonnes of carbon. In 2011, when 5,700 hectares were logged, this released 3 million tonnes of CO<sub>2</sub> neutralizing 100% of the GHG savings from initiatives such as the carbon tax. Once logged, it takes an old-growth forest 300 to 500 years to return to its previous carbon level. The solution must be to shift the harvest profile from old-growth to second-growth forests, starting with the most productive forests with the largest carbon sinks.

**Solution #7: More Small-Scale Eco Forestry.** On Vancouver Island, Merv Wilkinson managed a 55-hectare woodlot using sustainable selection on a five-year cut cycle. In 1938, his forest had 1.5 million board feet of Douglas-fir, grand fir and red cedar. By 2001 he had harvested 2.1 million board feet, yet his forest had 1.65 million board feet, 10% more than when he started. He was also generating 70% more income from the harvested wood, and five to 10 times more jobs. This small-scale approach stores the most carbon, while also sequestering it in wood products.<sup>5</sup> To replicate its benefits, more licenses could be created for community and privately managed woodlots on Crown lands on condition that they follow this approach.

**Solution #8: Better Forest Carbon Management.** When Carolyn Smyth and colleagues from Natural Resources Canada analyzed management

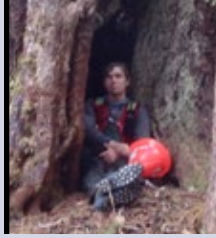
strategies for Canada's forests from a climate perspective, they concluded that the best strategy was a combination of better utilization from harvest cut blocks, increased salvage harvesting, reduced slash-burning and longer-life wood products. This yielded higher carbon sequestration than reduced harvesting, tree-planting or silviculture.<sup>6</sup>

Mark Harmon and colleagues from Oregon State University found that the best carbon storage strategies, in order of importance, are (a) reducing forest densities to reduce stand-replacing fires and insect problems; (b) keeping forest land in forest use; (c) afforestation and reforestation; (d) using harvested wood products in place of concrete and steel; and (e) storing more carbon through thinning and increased rotation lengths.<sup>7</sup>

It's a big challenge, but the sooner people understand that BC's forests have a critical role to play in tackling the climate crisis, the sooner we will get the changes needed to protect the forests, and store more carbon. 🐾

*Guy Dauncey is author of The Climate Challenge: 101 Solutions to Global Warming (New Society Publishers 2009), and founder of the BC Sustainable Energy Association.*

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# Climate Change Strategies and Actions for Practising Foresters

IT SEEMS LIKE EVERY PARTY I GO TO THESE DAYS I HEAR SOMEONE SAY something about 'black swans.' What this means — other than that the recent book *The Black Swan* has been making the rounds and I'm going to the wrong parties — is that people are thinking more about probability and risk<sup>1</sup>. For forest sector professionals concerned about climate change this is good news. The resource we manage is directly tied to the global climate and has an incredibly long planning horizon. It's also 95% publicly owned. So we don't just need to understand where and how climate change will affect our individual areas of practice. We also need the social licence to react.

This is a two-part problem, and in this issue we try to take a step forward on the professional competency side. There's a lot of work ongoing in British Columbia and across the country to develop climate change-related tools for the forest sector, but they're generally not yet widely known or user-friendly. For most of us the question of how to integrate climate change considerations into our day-to-day practice is still wide open. I'm hopeful this won't be the case for much longer as BC has the knowledge, ability and passion to lead the charge in forest sector adaptation. The most recent ABCFP survey, for example, found 84% of members thought climate change was an important consideration for forest management.

Underlying the diverse ways in which a changing climate impacts members' practices is a common problem: the underlying information. Understanding how the climate works today is already a complex problem — predicting what it might be like in the future would give Einstein a headache. Fortunately there is a growing body of guidance we can draw on as we try to make sense of it.

The first thing to understand is the potential scale of the issue. Predictions from modern computer models average out to a 2-3 °C increase in mean annual temperature across the province by the 2080s.<sup>2</sup> To put this into perspective, the mean annual temperature difference between Kelowna and Prince George is 3.7 °C. And those modelling runs assume aggressive, international efforts to curb greenhouse gas emissions — a continuation of the current slow progress on the international stage would put us in the range of 3-5 °C.

It's pretty clear that this kind of warming would have large impacts on BC's complex mosaic of ecosystems. Lowland coastal temperate forests and drier areas in the South are likely to experience substantial decline of their native species<sup>4</sup>. Some biogeoclimatic (BEC) zones (Mountain Hemlock, for example) could have no overlap with their current locations as early as 2055. Some trends are generally agreed on, for example, that the role of forests as water regulators will probably become more important as BC's glaciers retreat and winter snowpack reduces, or that the frequency of stand-replacing fires will likely increase. Others, and this includes the swans, are harder to foresee.

This sounds like a lot, and in my experience the human brain tends to boggle when contemplating systemic change on this scale. We've evolved, after all, to be relatively 'conservative' thinkers who learn best from past experience. This brings me to my second point, which is precaution. Not being able to absolutely, definitively prove that something is going to happen is a bad reason for not acting on the overwhelming likelihood. And despite the discrepancies amongst model predictions, the evidence is really starting to stack up. The mean annual temperature in BC, for example, has gone up by -0.7 °C in the last decade alone, more or less in line with predictions made by early generation climate models in the 1990s<sup>4</sup>.

A good place to apply precaution is in interpreting model outputs, and this is my third and final point. Learning how to make important decisions based on uncertain predictions is currently a critical bottleneck in planning for climate change across our industry. This is largely because there are many different models, based on a number of standardized assumptions about economic and social development<sup>5</sup>. How can a forest manager decide which data source to use? One way around this problem is scenario analysis. This approach hedges against risk by selecting the outputs of a number of models, developing corresponding scenarios of what their management area would look like under each and figuring out a plan that handles each contingency. Scenario analysis is also a fundamental component of vulnerability assessments, which are essentially structured guidance for assessing and mitigating the operational or organizational risks that come with climate change. The Canadian Council of Forest Ministers (CCFM) recently published an eight-part series of introductory guidebooks that includes issues on scenario analysis and vulnerability assessments (available under the 'Climate Change' tab on the CCFM website). For those who are interested I would highly recommend heading over to the data portal on the Pacific Climate Impacts Consortium for projections of what a changing climate will likely look like in your operating area. The Forest Change initiative of the Canadian Forest Service is also in the process of creating a web portal to house climate data, as well as a large number of adaptation tools.

A lot more can be said about the resources available to help ABCFP members integrate climate change planning into their professional practice, some of them in these pages. Managing risk, whether known unknowns, unknown unknowns, or the known knowns of having to listen to the full list all over again because you got cornered by the refrigerator, is only one part of the systemic overhaul of how we do forestry that a changing climate necessitates. We're currently in a transition stage where easily accessible tools are still catching up, requiring us to take the initiative and learn about working with this evolving flow of information. But isn't that what professional development is all about? 🐾



*With mean annual temperatures expected to increase by 2-3°C will places like Prince George start to resemble Kelowna in the next half century?*

# Climate Change Impacts on Forests — Limitations to Adaptation

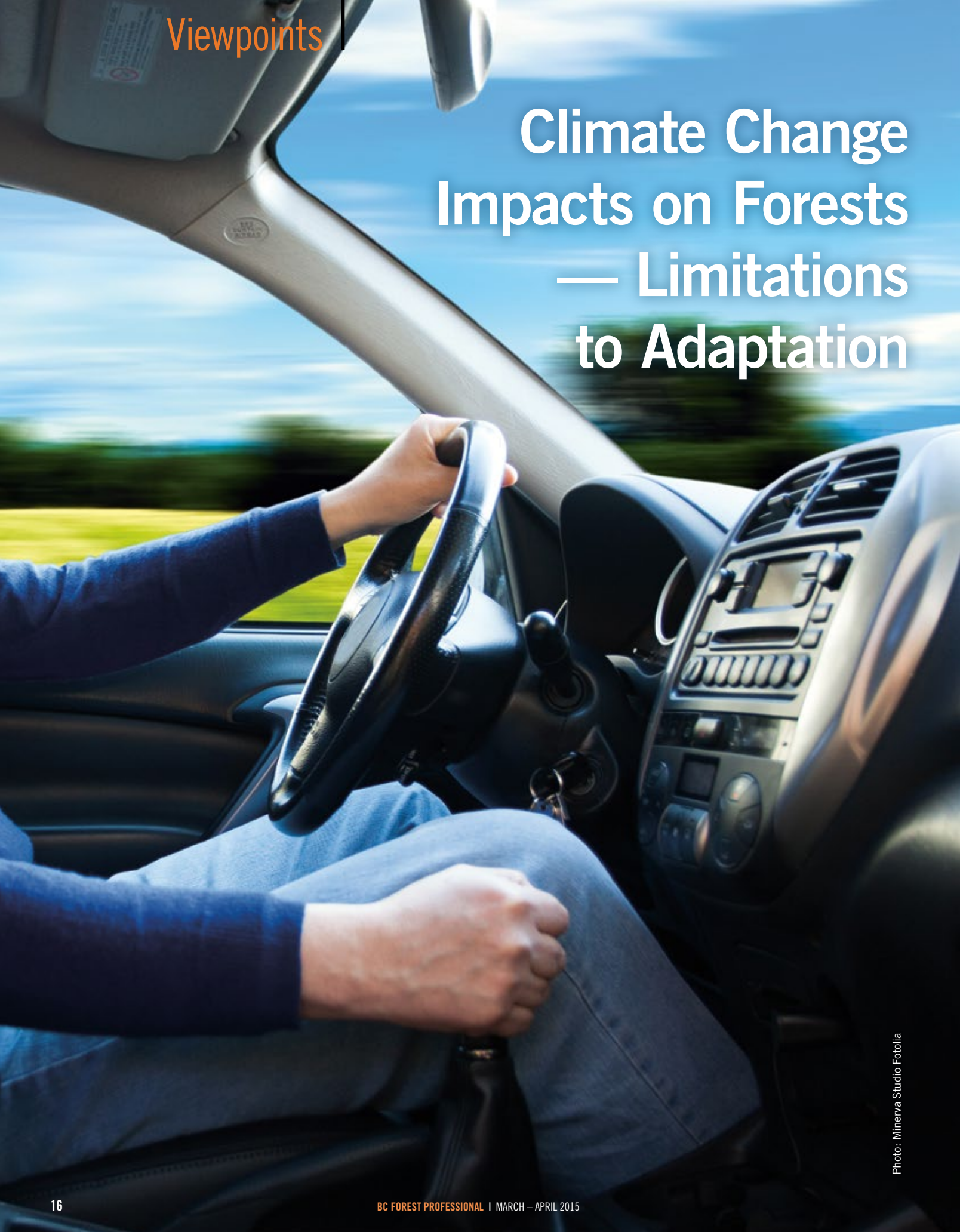


Photo: Minerva Studio Fotolia





### ADAPTING TO CLIMATE CHANGE IS LIKE WEARING A SEAT BELT IN A CAR.

It can help save your life — but only at moderate speeds. In a head-on collision at 50 km per hour a seat belt gives a 97% chance of surviving, but at 80 km per hour the odds drop to just 35%. Above 110 km per hour, death is virtually certain.

Similarly, in forestry, the opportunity for successful adaptation depends on how much and how quickly the climate changes from historical norms. For example, the Intergovernmental Panel on Climate Change (IPCC) rated the risks to ecosystems, property and human life due to wildfires in North America. If warming is limited to 2°C for the period 2080 to 2100, adaptation can reduce the risks from ‘very high’ to ‘high.’ However, with 4°C of warming, the risks are assessed as “very high” regardless of adaptation measures.<sup>1</sup>

Beyond about 2050, adaptation of forest management to climate change will be of limited value unless global greenhouse gases (GHG) emissions soon begin to decrease and eventually fall to near zero. But the current trend is exactly the opposite: emissions are increasing exponentially, rising 2.3 percent over the previous year in 2013, and approximately another 2.5 percent in 2014<sup>2</sup>. The present trajectory of GHG emissions is tracking above the IPCC RCP8.5 scenario which is forecast to raise Earth’s average temperature by 3.6°C to 5.0°C above pre-industrial levels in the period 2080 to 2100.<sup>4</sup>

One proposed adaptive measure is to reforest disturbed areas in BC with species that we expect will be adapted to the future climate. A limitation of this strategy is that if GHG emissions are not reduced, new climate regions are forecast to develop in parts of British Columbia by 2060 that will be unlike any that exist today, such that “there are no places to look for determining what the most suitable future vegetation might be.”<sup>5</sup> In any case, since less than one percent of BC forest land is reforested each year, much of BC will not be treated in time to provide resistance to climate change.

Even if we could replant the entire province with species better suited to warmer climates, forests would still be increasingly vulnerable to disturbances<sup>6</sup> such as fire or insect outbreaks that may kill vast areas of forest even where the individual trees are suited to the climate. For example, the recent mountain pine beetle epidemic killed millions of lodgepole pines that were growing within climatic areas still considered suitable for that species. Given that this massive event was triggered with an approximately 0.6°C rise in global mean temperature to date<sup>7</sup>, how can we be confident of adapting to disturbances that may arise with 3°C to 5°C degrees of warming?

The ABCFP is required by the *Foresters Act* to “advocate for and uphold principles of stewardship of forests, forest lands, forest resources and forest ecosystems.” In my view, this means our association has a duty to inform the public that large reductions in global GHG emissions are urgently necessary if future generations are to enjoy the economic and ecological benefits currently provided by BC’s forests.

Humanity is speeding down the highway of climate change. We have spotted an oncoming vehicle in our lane. It’s too late to avoid a collision, but there’s still a chance to survive if we slam on the brakes. Except — that’s not what we are doing. Every year, our species increases the amount

## Two Perspectives on Climate Adaptation and Mitigation

In January 2014 the ABCFP released a *Position Paper on Climate Change, Forests and the Practice of Professional Forestry*, emphasizing the need for forest professionals to consider climate change in all aspects of our work. Regarding adaptation, the position paper states that:

“Forest managers can reduce impacts to forest ecosystems, ecosystem services and infrastructure investments by adapting forest management practices to promote forests and forest-based industries that are resilient and adaptable in a changing climate.”

The paper does not mention reductions in GHG emissions, and in that respect presents a very different perspective from a peer-reviewed assessment by the International Union of Forest Research Organizations (IUFRO) titled *Adaptation of Forests and People to Climate Change*:

“Even if adaptation measures are fully implemented, unmitigated climate change would, during the course of the current century, exceed the adaptive capacity of many forests. Large reductions in greenhouse gas emissions from fossil fuels and deforestation are needed to ensure that forests retain their mitigative and adaptive capacities.”<sup>8</sup>

Forest professionals take pride in our role as advocates who have the knowledge and passion to speak for the forests. We have a responsibility to let the public know that that BC forests won’t be able to adapt to runaway climate change, and we must act now to rapidly reduce greenhouse gas emissions.

*The ABCFP position paper can be found on our website, under Publications & Forms/Stewardship & Practice Reports*

of greenhouse gases we put into the air. We are racing towards a crash with the accelerator jammed to the floor. Seat belts won’t do us much good. 🐻

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## Fighting For Our Forests:

Protecting Canada's Resources  
Using Next Generation  
Biosurveillance — New  
Challenges; New Tools

Photo: Nightman1965 - Fotolia



CANADA'S FORESTS AND URBAN TREES COVER MORE THAN 400 MILLION hectares and provide a huge variety of economic, social and environmental benefits. A changing climate along with dramatically increased international trade has seen unprecedented expansion of domestic forest pest outbreaks (e.g. mountain pine beetle) and a number of serious introductions of non-native pests. Invasive Alien Species (IAS) pose an increasing threat that can cause irreversible damage to the environment. IAS can have an impact on forestry and agriculture, altering both urban and natural environments. These pests are responsible for losses of hundreds of millions of dollars to the Canadian economy. Increased efforts to design and implement programs that protect Canada's forest and trees are crucial. Genomics provides new tools in this battle.

Two IAS that represent urgent threats to Canada's forest and agricultural resources are the invasive Asian gypsy moth (AGM) and *Phytophthora ramorum* (PR), a pest and a pathogen that have in common the ability to evade detection and attack many host plant and tree species. The establishment of these two species in Canadian forests could disrupt or impact trade due to their quarantine status with trade partners. Economists predict immediate trade and pest control impacts of up to \$90 million annually. Developing and implementing genomic tools that can rapidly and accurately identify and detect these pests will assist in preventing their establishment while protecting Canadian jobs through uninterrupted global trade. A new \$2.4m project funded by Genome BC and Genome Canada proposes to do that.

In practical terms genomic tools are having a noticeable impact on day-to-day forestry practices. The ability to provide better identification tools for insects and pathogens helps to determine what species are causing epidemics. With a changing climate, Canada is now a more receptive environment for pests that previously couldn't survive its harsh extremes. Maintaining forest health, already challenging, is now that much more complex requiring accurate and timely diagnosis of new and often foreign pests and their relationship to tree hosts. A major challenge in forest health is to conduct a proper diagnosis on dead or dying trees. Much like in human medicine, a prescription for forest pest management cannot be written without an accurate diagnosis. This is especially important when multiple pests and pathogens cause similar symptoms or when closely related insect or pathogen species are impossible to differentiate. A definitive diagnosis is a prerequisite before applying management tactics, tailored to the biotic agent attacking the trees. In the not-too-distant future handheld devices that can be taken out into the forest to identify pests and pathogens will become a reality. Although this may sound like a dream, bringing the laboratory to the field is a significant challenge that is being tackled. In the meantime, DNA analyses can be conducted in laboratories that can provide rapid and accurate pathogen and pest identification.

Genomic tools are being used by government and industry in forests today. Dr. Richard Hamelin, professor in the Department of Forest Sciences at the University of British Columbia and senior research scientist at Natural Resources Canada (NRCAN), and his team offer diagnostic support to the Ministry of Forests, Lands and

Natural Resource Operations (FLNRO). Dr. Hamelin's group has developed tools tailored for FLNRO needs. During an outbreak of poplar canker the team was contracted to develop genomic tools and map this invasive pathogen to inform an eradication plan as a means of preventing contamination of native poplar. FLNRO has limited research capacity in-house so university laboratories are where much of the DNA analyses happens. Dr. Hamelin has also worked with Alberta Sustainable Resource Development when a case of pine blight occurred in Alberta — the question, answered by genomic tools again, was did a new strain of the pathogen appear in Alberta? Or did the same strain, observed in BC, move to Alberta? Genomics told us that it was the same strain, which meant that the groups affected knew what they were dealing with.

The threat of IAS is compounded by the changing climate. We know that pests and pathogens can cause extensive damage to native ecosystems because there is often no natural resistance or natural enemies. Climate change is broadening the geographic spectrum for pests and pathogens — something that can be puzzling to forest professionals and scientists. One example is *Dothistroma* needle blight of pine, caused by the fungus *Dothistroma septosporum*, which can be directly linked to climate change. In the mid-2000s there was heavy mortality and not just needle losses and crown thinning that is typical for pine blight. The tree mortality occurred because consecutive seasons with higher humidity created ideal conditions for infection and pathogen spread. Management of this pine blight outbreak was informed by rapid DNA analysis of the pathogen. On the ground, forest professionals didn't know if they were dealing with a new invasive species of pine blight. The DNA tests confirmed that this was not a new IAS but indeed the expected *Dothistroma* needle blight pathogen that had expanded its range due to climate change. A full analysis of the genome of the pathogen should inform forest managers on whether the pathogen has adapted to changes in the climate.

Establishing a link to origin of outbreak is crucial to the reliable source tracking of pests, and genomics tools enable this. Trade is vitally important to the Canadian economy and now Canadian officials will have verifiable evidence when tracking the route of an IAS, allowing for a targeted approach to management, rather than implementing measures like a total trade ban. The introduction of genomics tools in standard monitoring protocols could accelerate the access of authoritative diagnostic information, aiding decision making for risk assessment and minimizing foreign threats to Canadian forests and trees.

Next generation biosurveillance using genomics tools is definitely the way of the future to better protect our forests and monitor and eradicate unwanted invasive pests and pathogens. 🐾

*Gabe Kalmar joined Genome BC in August 2004 with a history of leading strategic consulting activities which included overseeing operations, implementing technology development and providing merger and acquisition planning. Dr. Kalmar obtained his undergraduate science degree from the University of British Columbia and his PhD in Biology from Simon Fraser University.*

## Implementing a Climate Change Strategy — An Example from BC Timber Sales

Photo courtesy of Marie-Lou Lefrançois, RPF

FOR AT LEAST A DECADE NOW, FOREST PROFESSIONALS HAVE BEEN ON THE receiving end of the climate change gospel which included regular reminders about uncertainty, scary model predictions etc. It's often difficult to navigate new science and act based on high-level guidance and existing business processes. In a discipline where expectations of professional reliance are high, the threat of climate change is without a doubt an additional pressure on forest professionals. Nevertheless, incorporating climate change in our work can provide us with exciting opportunities to engage in new partnerships and innovative projects.

BC Timber Sales (BCTS) recently completed a Climate Change Action Plan as a means of promoting and integrating climate change in its business and where the overarching goals include fostering resilient forests and protecting infrastructure as well as future harvest opportunities. As highlighted by the BC Ministry of Forests, Lands and Natural Resource Operations' Climate Change Strategy (2013-2018), BCTS and all other business areas of the Ministry are required to develop such a plan by March 2015.

BCTS operates province-wide with each region facing its own set of climate change-related challenges and opportunities. Ensuring that the Action Plan was harmonizing the efforts in a meaningful way was imperative.

"The plan has overarching goals and objectives, but is also translated at an operational level where specific actions and targets are identified and tagged to various positions in BCTS," remarks Kerri Brownie, leader of the BCTS Climate Change task team. For larger organizations, accountability is a key step often determining if your efforts will yield results. For Brownie, the success of the plan's implementation also rests on the integration of the new targets into current responsibilities rather than adding to the professional's workload. This allows implementing change following the path of least resistance in the context of existing workflow.

The Action Plans reflect many actions that BCTS has already been taking in light of climate change. For example, to address changes in the water regime resulting from increased temperatures and



*"We have found that planting seedlings while the plug is still frozen can counteract the effects of additional freeze and thaw cycles in the spring."*

drought, practices foresters and contractors have been implementing a 10 metre buffer on both stream sides (S4-S6) and wetlands in some regions to mitigate additional stress on streams and to protect habitat. The engineering group, on the other hand, has been evaluating where infrastructure is at risk of sustaining extreme weather events and if the size of culverts and bridges are sufficient.

Updating silviculture strategies is not only essential — it is at the core of climate change adaptation for the forest sector. This has different implications regionally and locally, and as we establish the starting conditions for tomorrow's forests, we need to keep in mind future stand conditions, species adaptability and vulnerability to disturbance. In the Nadina Forest district, multiple efforts have been invested towards silviculture to address the constant pressure exerted by insect outbreaks and fires in the last years. Important changes were introduced in stocking standards; species diversity was broadened and planting densities were increased. Within its operating areas in the district, BCTS has decreased the proportion of lodgepole pine in order to leave room for newcomers, species



## Viewpoints

Marie-Lou Lefrançois, RPF

that will be performing well under future conditions and that have been historically left out of stocking standards. As a pioneer species, lodgepole pine can withstand harsh conditions and is very resilient; however, it is now targeted by so many pathogens that the species became very vulnerable in the area. New players in the 'preferred species' now include Douglas-fir, and the poster child of assisted migration, Western larch.

Interested in deploying new species in your area? Inform yourself regarding variances allowed within the seed transfer guidelines in your Forest Stewardship Plan and start evaluating new prospects using the Tree Species Selection Tool (<http://www.for.gov.bc.ca/hfp/silviculture/TSS/tss.htm>). Despite the growing awareness towards the benefits of assisted migration, these variances are seldom used.

As the BCTS lead of the silviculture program in the Babine business area, Frank Varga, RPF, not only recommended the implementation of new standards and practices but supported fruitful collaborations (namely with the College of New Caledonia for an assisted-migration project). In order to monitor growing conditions in the development units, he installed small, low-cost devices (iButtons®) that provide temperature data. This way, we are informed on the factors limiting species performance, and, as a result, planting strategies can be reviewed annually. Frank also demonstrates that solutions to climate change problems such as increased freeze and thaw cycles might come in a very simple form: "We have found that planting seedlings while the plug is still frozen can counteract the effects of additional freeze and thaw cycles in the spring."

Ultimately, it comes to our individual ability to embrace change in a positive and creative manner. Some key factors for success in managing for climate change in our organization include:

- Forest professionals are encouraged to develop and share best management practices based on their expertise and area.
- Building strong rationales when proposing new course of action, know your forest and know your options.
- Offer a platform for discussion and review tools available for staff.

Climate change is certainly complex, and based on new information and existing practices can create a 'wicked problem' where values compete and no solution is optimal. For example, lower planting densities could create favorable grizzly bear habitat but could also jeopardize other values, such as future timber supply. Taming the issue will necessitate flexibility from organizations and professionals and will require an expansion of our toolbox. Accommodating competing values will not only be important in order to satisfy stakeholders' demands but also because more diverse practices over the landscape will be vital for ecosystem resilience in the face of increased disturbances (Campbell et al. 2009). It is up to us to build on our risk management portfolios, engage in meaningful conversations and keep the door open for change. 🐾

*Marie-Lou Lefrançois, RPF, is a planning forester for BC Timber Sales (Bulkley Valley TSA) with a research background and a keen interest for emerging forest stewardship problems.*

Reference  
Ecological resilience and complexity: a theoretical framework for understanding and managing British Columbia's forest ecosystems in a changing climate, 2009. Campbell, E.M., Saunders, S.C., Coates, K.D., Meidinger, D.V., MacKinnon, A., O'Neill, G.A., MacKillop, D.J., DeLong, S.C. and D.G. Morgan. Technical Report 055, Forest Science Program, Ecosystems.

## About Face! Why the World Needs More Carbon Dioxide The Failed Science of Global Warming

### AUTHORS

Arthur Middleton Hughes  
Madhav Khandekar  
Cliff Ollier

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Two Harbor Press,  
Minneapolis, MN.,  
ISBN – 13-978-1-62652-989-2

The first thing that struck me about this book was the three authors, Arthur Middleton Hughes, an American; Madhav Khandekar, a Canadian; and Cliff Ollier, an Australian — all with interesting and relevant academic backgrounds. However I must say that like many things built by a committee, the structure and flow of this book is not the greatest. The book has been written as a collaborative effort but with some sections written specifically by one or another of the authors. The changes in style combined with some quite complex science made some parts difficult for this layman to follow. There are also a few minor typographical errors that may be annoying to some. Nevertheless the key points are strongly made.

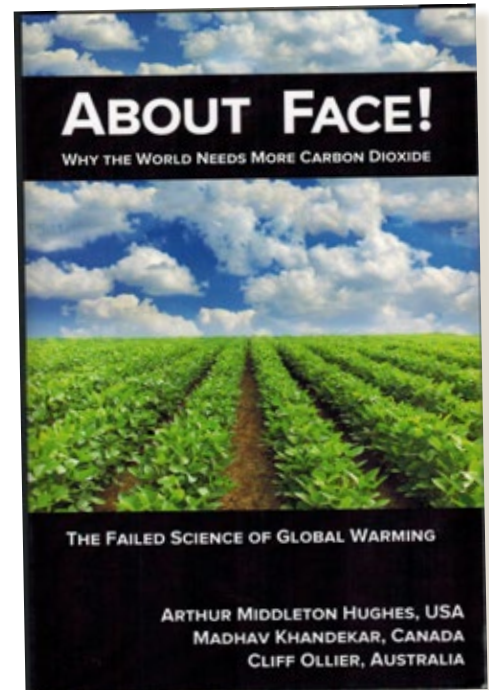
The book starts by making the point that people for centuries have been led down some dangerous, costly paths by impassioned rhetoric, bad science, powerful publicity and a tendency for people to have a weakness for doomsday projections — the more potentially disastrous the better. As a detailed example the authors used the case of DDT. The beneficial early uses of DDT, the impact of the book “Silent Spring,” the banning of DDT in 1972, the millions of deaths that resulted because of the ban and finally the partial lifting of the ban by the World Health Organization in 2006. It is now accepted that the science behind the banning of DDT was weak to nonexistent and that Rachel Carson was wrong but millions died unnecessarily.

What does this have to do with global warming and carbon dioxide? The authors develop an interesting thesis that calls into question many of the conclusions of the Intergovernmental Panel on Climate Change and many of the findings of scientists that support the assumptions of the IPCC. They make a very plausible case to support their opinion that the world needs more carbon dioxide, not less.

A key point they make is that climate has always been changing and

varying amounts of CO<sub>2</sub> in the atmosphere had little if anything to do with it. The section on glaciers was particularly interesting to me because they introduced some information that put the whole issue of glaciers

and collapsing ice sheets into a new perspective. The discussion on the acidification of the world’s oceans was also a bit eye opening. Coal is also a contentious topic in the authors’ exploration of the need for more CO<sub>2</sub> in the atmosphere. Their examination of extreme weather events and worldwide statistics on these events suggests there has been no



significant increase in extreme weather events but the events that occur get a lot more publicity.

The explanation of the benefits of increased levels of CO<sub>2</sub> in the atmosphere gave pause for thought and when considered in light of the number of studies that have been done requires greater consideration.

An important point that is emphasized by the authors is that “climate science is not settled.” More and more reputable scientists are questioning a wide range of postulations being made regarding CO<sub>2</sub>, the demonization of carbon, global warming and climate change. They also make the case that climate models are not scientific proof. Another issue is the vast amount of money in the form of grants being distributed to prove the IPCC pronouncements are factual — not that the science is factual. They also discuss the billions of public dollars being committed to implement public policies directed towards trying to control climate change with virtually no possibility of success and little if any benefit.

They also explore the possibility of going into a cooling period, if not another ice age, and the dangers associated with global cooling.

A case is made that we should prepare for climate change. The climate may get warmer or it may get cooler and we need to prepare for this change but trying to manage natural change is not within our power. The benefits associated with increasing the level of CO<sub>2</sub> in the atmosphere appear, according to the authors, to be beneficial in either event.

Having read several books on both sides of the issue of climate change and global warming, I feel that this book at least introduces a bit of new science and some new ideas. 🍌

Review by Jack Carradice, RFT(Ret)

## Issue Avoidance in Contracts and the Organizing Principle of Good Faith

The Supreme Court of Canada's recent decision in *Bhasin v. Hrynew* underscores the virtue of not leaving uncertain outcomes in contracts. *Bhasin* concerned a contract that allowed the plaintiff (Bhasin) to operate a business that sold education savings plans (ESPs) offered by one defendant (Can-Am) in Alberta. The contract had a three-year term and provided for automatic renewal unless either party delivered a written notice to the contrary at least six months in advance. The contract did not expressly require a party to act 'reasonably' or in 'good faith' if it exercised its right not to renew.

Can-Am wanted to merge the plaintiff's business with one of the plaintiff's competitors (Hrynew) who was also Can-Am's biggest distributor of ESPs. The proposed merger would effectively have had the plaintiff work for Hrynew. The plaintiff opposed the merger so Can-Am elected not to renew the plaintiff's contract and issued the requisite six-months' notice. Hrynew managed to capture almost all of the plaintiff's business as a result.

The evidence before the Court was that Can-Am acted dishonestly with the plaintiff when it exercised its right not to renew the contract. Can-Am had actively concealed its intentions from the plaintiff with respect to the merger and provided misinformation to the plaintiff regarding the role of Hrynew in Can-Am's business. The Court accepted that Can-Am's dishonesty was 'directly and intimately' connected with its election not to renew.

In ruling that Can-Am was liable to the plaintiff in damages for breach of contract, the Court determined that a general 'organising principle' of contract law is good faith performance. A party to a contract cannot seek to undermine the interests of its counterpart in the contract through bad faith.

The Court explained that 'good faith' itself is not a stand-alone rule; instead, it is a standard that finds manifestation in other, more specific, legal doctrines. In this case, the Court held that one such manifestation is the 'duty of honesty.' Parties to a contract must not lie or otherwise knowingly mislead each other about matters directly linked to the contract. The Court found that Can-Am had breached this duty in relation to its election not to renew the contract.

Few are likely to take issue with a 'duty of honesty' or expect a court to countenance dishonesty. The problem is that courts may resort to the 'organizing principle' of good faith to give meaning to a contract that the parties did not intend. The principle of good faith is most likely to arise when a contract provides for uncertain outcomes

when it provides a discretion to a party, or requires cooperation among parties. But the reality is that contracting parties will often leave outcomes uncertain either to punt a difficult issue down the road or to give some non-binding sense of comfort to a party. For example, contracts in the forest industry often contemplate that the parties 'will agree' upon rate adjustments for unforeseen circumstances, or that they 'may agree' to a renewal. In these circumstances, the parties often just want to avoid an issue.

Uncertainty leads to problems of enforceability — whether a court will attempt to enforce a contract in the face of uncertainty and, if so, *how*. If a contract explicitly leaves a particular outcome uncertain (for example: "will the parties renew or won't they?"), the courts may turn to the organizing principle of good faith to supervise how the parties manage that uncertainty. In *Bhashin*, the Court appears to have invited additional, as of yet unknown, common law duties under the 'organizing principle' of good faith, with potentially unexpected results. The best way to avoid any unexpected results is to ensure that the door to uncertainty is not left open for the courts to step through. By way of example, if the contract in *Bhasin* simply had a fixed term without a discretionary renewal clause, then no issue of good faith could have arisen with respect to the question of renewal: the contract would simply have expired in accordance with its terms. The parties could then have agreed to renew had they wanted to do so. 🍌

*Jeff Waatainen is an adjunct professor of law at UBC, has practised law in the forest sector for nearly 20 years, and currently works in the Forestry Law Practice Group of Davis LLP's Vancouver office.*

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# Community Capacity Building

**THE COMMUNITY PARTICIPANTS IN THE *Healthy Forests-Healthy Communities (HFHC): A Conversation on BC Forests*** dialogue identified concerns over the future of BC forests. They also asked for more information on forests, forest management and the forest industry. It was their view this knowledge would allow them to have a more informed influence on strategic-level decision making regarding their local forests. The HFHC community recommendation was to:

*Assist communities in building a forest culture knowledge base so they can provide informed input into strategic, long-term forest lands stewardship decisions.*

It has been known for years that positive opinions of the forest and forest sector begin at an early age and continue through grade school. A survey by the Forest Products Sector Council of Canada, *Reviewing Canada's Greenest Workforce — A Labour Market Intelligence Report*, very clearly indicated students and youth are being discouraged from selecting forestry as a career.

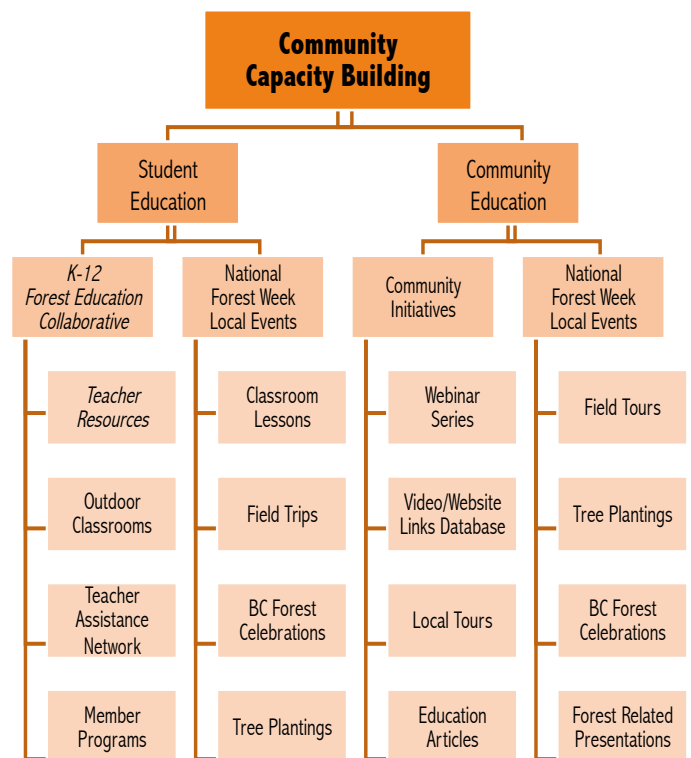
The reasons were the image of the sector is being portrayed as environmentally unfriendly and lacking job sustainability. Although not reality, these perceptions have manifested into resistance of youth to enter into the forest sector at a time when a large workforce deficiency is expected.

## Capacity Building Framework

In responding to the need to increase forest-related knowledge, the following capacity-building framework was developed to guide activities and build on existing initiatives and knowledge.

### K-12 Forest Education Collaborative

Other provinces have single, stand-alone coordinated programs, e.g., Forests Ontario (Ontario) and Inside Education (Alberta), to



There many projects on-going across BC with following those focused upon by HFHC.

provide K-12 forest environmental education materials. The Canadian Forestry Association (CFA) had a series of programs in BC before they were dissolved in the late 1990s. The need has been filled by what are now over 30 organizations across the province who provide specific,





Photo: iStock

focused programs. It would not be cost-effective to resurrect the CFA model in BC. However, we need to be innovative in capitalizing on the BC asset that exists through these organizations to provide the necessary teaching materials and services to educate BC students about forests and the environment. Twenty-seven of the BC forest-related education organizations have committed to working together as a K-12 collaborative with a vision to create an educated public with sufficient knowledge of the environment and forests to participate in an informed and constructive public dialogue on related issues.

### Community Initiatives

An opportunity exists to utilize current initiatives and tools in building knowledge capacity within communities and the general public. The strategy is to develop a series of projects capitalizing on existing materials with the priorities being:

The knowledge-building will focus on:



- Basic forestry, forest management and land use knowledge regarding BC forests
- The provincial forest management framework (e.g. legislation, regulation, policies, practices and processes)
- Basic knowledge regarding the state of local forest lands

### Video/Website Links

A considerable amount of basic forest information for layperson consumption is available through short (<6 minute) videos. Unfortunately, not all aspects of forests, forest management, land use, etc. are available in this mode but the gaps can be partially

filled through information on various websites. Those not familiar with the sector will find it difficult and time-consuming to search through the websites to get the necessary information to become informed about the subject. Compiling an easily accessible database of videos and key links would be more attractive in getting the public interested and informed about forestry and the forest sector. The database will be posted on the HFHC website for ready access.

### Webinar Series

The webinar tool is a very effective way of informing people about issues, technical knowledge, etc. The Canadian Institute of Forestry (CIF) has provided a webinar service for the last several years to forest professionals and others interested in forestry at the technical level. HFHC, in partnership with the CIF, will capitalize on this expertise in applying the tool to building knowledge capacity within communities and the public.

The service is provided by the CIF and priority topics, presenters and presentations are coordinated by the HFHC with advice from knowledgeable people in BC communities, academia and forest professionals. The presenters will be experts in their fields with the skills to communicate to laypersons. One webinar will be provided per month, excluding July and August. The presentations will be archived and available on the HFHC website to interested persons at any time following each presentation.

### National Forest Week

National Forest Week is a critical part of the capacity building framework and provides an opportunity to focus on celebrating BC forests. It provides a formal means of educating students, teachers and the public

**Correction:** Our Jan/Feb 2015 issue incorrectly listed Shaun Michael Da Silva, RPF, as not entitled to practice professional forestry in BC. Shaun transferred his status from RFT to RPF after passing the RPF registration exam. The ABCFP's registration department apologizes for the error.

## Membership Statistics

### ABCFP — December 2014

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Matthew Scott Williams, RPF

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Alan Matthew Chapla, TFT  
Beverly Grace Chelsea Hutchinson, TFT  
James Richard Dickinson, FIT  
Alycia Lavinia Fennings, FIT  
Nichola Maria Gilbert, FIT  
Mylene Labonté, FIT  
Jan Nojszewski, FIT  
Allan Douglas Prest, FIT  
Nives Ramadani, FIT  
Adam Paul Sullivan, FIT

#### NEW ASSOCIATE MEMBERS

Devesh Bahuguna, ATC  
Mario Philip Cottone, TNRP

#### NEW LIFE MEMBERS

Peter W. Ackhurst, RPF(Ret)

#### REINSTATEMENT REGISTERED

William I. Thibeault, RPF

#### REINSTATEMENTS FROM LEAVE OF ABSENCE

##### (ENROLLED MEMBERS)

Brier Adrienne Cadden, FIT  
Jocelyn Marie Ciarniello, FP

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Todd Alexander Smith, RFT  
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Paul James Toovey, RPF  
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 Michael George Zaklan, RFT(on LOA)  
 Abdel-Azim M.A. Zumrawi, PhD, RPF(on LOA)

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Alireza Araghi-Rahi, FIT(on LOA)  
 Jillian Jane Atmore, FIT(on LOA)  
 Dillon Bay Chrimes, PhD, FIT(on LOA)  
 Boris Sebastian Egli, FIT(on LOA)  
 Grant Kurt Huettmeyer, FIT(on LOA)  
 Qinglin Li, PhD, FIT(on LOA)  
 Daniel John Scholey, TFT(on LOA)  
 Shiloh Michael Zayac, FIT(on LOA)

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 Felix Brochu Marier  
 Thomas William Cummings  
 Gerald L. Kennah  
 Daniel Lagace  
 Murray N. McPhail  
 Edward T. Murray  
 Raymond Paul Pike  
 John Andrew Powers  
 Lawrence S. Redfern  
 Jessica Meren Sorg  
 Duncan S. Stewart  
 Robert Macrae Weaver  
 Donald Wilson  
 John Steven Wilson

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 Gregory Allin Cawston  
 Frederick A.H. Diedrichsen

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Wayne Edward Henke  
Mark A. Laforest  
Andrew A. Neigel  
Otto Henry Pflanz  
William I. Thibeault,  
Jonathon E. Vivian  
Stephen M. Willis

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Vicki Lynn Bobbie  
Benjamin Alexander Filewod  
Nicole Beth Luchanski  
Yue Shi  
Scott Thurston  
Yuanyan Yang

### RESIGNATIONS (ASSOCIATE MEMBERS)

Michelle L. Hayhurst

## ABCFP — January 2015

### NEW REGISTERED MEMBERS

Danielle Stephanie Gnoyke, RFT  
Hayley Erin Letchford, RFT  
Martin Douglas Lewynsky, RPF  
Marc Vincent Rowan, RPF  
Andrew John Vanden Dool, RFT

### NEW ENROLLED MEMBERS

Christine Lynn Brown, TFT  
Sheri Lynn Connolly, FIT  
Earl John Franklin Heath, FIT  
Kingsley Kyere-Donkor, FIT  
Corey Andrew Plester, TFT  
Diego Luis Sanchez Gonzalez, FIT  
Jesse Lee Seniunas, FIT  
William Alexander Sperling, FIT  
Matthias Splittgerber, FIT  
Kelsey Delaina Syfchuck, TFT  
Raymond Steven Thiessen, TFT

### REINSTATEMENTS FROM LEAVE OF ABSENCE (REGISTERED MEMBERS)

Kim G. Allan, RPF  
Marilyn L. Cherry, PhD, RPF  
Barry W. Hunter, RPF  
Shelley Kathleen Maitland, RPF

### REINSTATEMENT

Andrew Freeman Ellis, RFT

### DECEASED

Irvin J. Penner, RPF

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

#### NEW RETIRED MEMBERS

Michael J. Buirs, RPF(Ret)  
Kenneth Theodore Guenter, RFT(Ret)  
Evert Kenk, RPF(Ret)  
Susan L. McDiarmid, RPF(Ret)  
Ross M. Porcheron, RPF(Ret)

#### LEAVE OF ABSENCE (REGISTERED MEMBERS)

Drew Marshall Alway, RPF(on LOA)  
Pieter J. Bekker, RPF(on LOA)  
Conrad Earl Browne, RFT(on LOA)  
Suzanne Cairns, RPF(on LOA)  
Brandon William Carter, RFT(on LOA)  
R. Bruce Catton, RPF(on LOA)  
Adam Clynel Cooke, RFT(on LOA)  
Stephen W. Dodds, RPF(on LOA)  
Fred R. Elsaesser, RPF(on LOA)  
Anne Marie Emily Fonda, RFT(on LOA)  
Amanda Elizabeth Fouty, RPF(on LOA)  
Mark D. Greene, RPF(on LOA)  
Elizabeth Mary Grilo, RPF(on LOA)  
Stephanie Nadine Haight, RPF(on LOA)  
Barbara Aline Harrison, RFT, FP(on LOA)  
Wade Jarvis, RPF(on LOA)  
James Ryan Jordan, RPF(on LOA)  
Sharon Michele Mandrusiak, RFT(on LOA)  
David Amos Maxwell, RFT(on LOA)  
Robert A. McDougall, RPF(on LOA)  
Susanne Marie McElroy, RPF(on LOA)  
Mark Messmer, RPF(on LOA)  
Anne Margaret Molony, RFT(on LOA)  
W. Frederick Oliemans, RPF(on LOA)  
Leslie Olsen, RFT(on LOA)  
Grant G.L. Parnell, RPF(on LOA)  
Greg L. Rawling, RPF(on LOA)  
Deepa R. Tolia, RPF(on LOA)

#### LEAVE OF ABSENCE (ENROLLED MEMBERS)

Aleksandar Ognjanovic, FIT(on LOA)  
Sean David Nomme Pledger, FIT(on LOA)

#### RESIGNATIONS (REGISTERED MEMBERS)

Paul Erik Rasmus Andersen  
David E. Baird

David G. Beaton  
Leigh-Ann J. Fenwick  
Shawn William Housden  
David Arnold Jansen  
Grant Eric Johannesen  
Tara E. Leduc  
A. Jackson MacDonald  
J. Paul Marquis  
Anne M. Mauch  
Carmen Aldea Minor

### RESIGNATIONS (RETIRED MEMBERS)

Hal C. Reveley  
Stanley Alexander Smethurst  
Anita R. Wolfe

### RESIGNATIONS (ENROLLED MEMBERS)

Francis Paolo Brassard  
Dacen Edward Brooks  
Nicholas Richard Thomas Hogg  
Carolyn Anne Stevens, RFT, ABCFP  
Limited Licensee\*

\*resigned FP, entitled to practice as an  
RFT and ABCFP Limited Licensee

## ABCFP — February 2015

### NEW REGISTERED MEMBERS

Krista Leigh Blades, RFT  
Kurtis Pieter John Buyze, RFT  
Joshua Richard Klok, RFT  
Brett Joseph Musa, RFT  
Anthony Ryan Nickel, RFT  
Blase Jordan Orchard, RFT  
Dylan Andrew Young, RFT

### NEW ENROLLED MEMBERS

Jennifer Christine Andrews, FIT  
Pierre Jean Aubin, FIT  
Jeffrey David Bleach, FIT  
Sile Mairead Gaughan, TFT  
Thomas Oben Hart, TFT  
Christopher Paul Leitao, FIT  
Tory Grant Ross, FIT  
Nicholas Osborne Soverel, FIT  
Gary James Tatlock, TFT  
Olivia Angeline Van Jarrett, FIT  
Crystal Wilson, TFT, SAS

### REINSTATEMENTS (REGISTERED MEMBERS)

John Edward Beddows, RFT  
Joseph James Kotai, RFT

## Membership Statistics

### REINSTATEMENT FROM LEAVE OF ABSENCE (REGISTERED MEMBER)

Wade Jarvis, RPF

### DECEASED

Joseph C.F. Braz, RPF(Ret)

George S. Nagle, PhD, RPF(Ret)

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

#### NEW RETIRED MEMEBERS

Glen William Allan, RFT(Ret)

John C. Bartlett, RPF(Ret)

Hilmar Foellmi, RPF(Ret)

Leslie A. Milne, RPF(Ret)

Ralph Winter, RPF(Ret)

Paul M. Wood, PhD, RPF(Ret)

#### LEAVE OF ABSENCE (REGISTERED MEMBERS)

Wade Russel Anderson, RPF(on LOA)

Timothy D. Baines, RPF(on LOA)

Kenneth H. Baker, RPF(on LOA)

A. Paul Blueschke, RPF(on LOA)

Susann Melissa Brown, RPF(on LOA)

Krista Anne Dunleavey, RFT(on LOA)

Bradley John Eckford, RPF(on LOA)

Patrick George Ellis, RFT(on LOA), ATE

Monika Fern Eriksen, RPF(on LOA)

Dennis Arthur Heigh, RFT(on LOA)

Kurtis Randolph Isfeld, RFT(on LOA)

Jason Richard Kennedy, RPF(on LOA)

Steve Kozlowski, RPF(on LOA)

Brendan MacDonald, RPF(on LOA)

Roger M. Marshall, RPF(on LOA)

Ayrilee Palm McCoubrey, RPF(on LOA)

Shawn M. Meisner, RPF(on LOA)

Dan Motisca, RPF(on LOA)

Wesley John Ogloff, RFT(on LOA)

Anand Pandarinath, RPF(on LOA)

Patrick Milton Sproule, RFT(on LOA)

Paul James Toovey, RPF(on LOA)

Kona Lynn Van Diest, RPF(on LOA)

James Adam Veley, RFT(on LOA)

Lia Catherine Wallace, RPF(on LOA)

Wade James Watson, RPF(on LOA)

Angela J. White, RPF(on LOA)

#### LEAVE OF ABSENCE (ENROLLED MEMBERS)

Betsy Cranmer, FIT(on LOA)

Candace Paige Dow, TFT(on LOA)

### REINSTATEMENTS TO RETIRED STATUS

Peter E. Levy, RPF(Ret)

Heather A. McMahon, RPF(Ret)

### RESIGNATIONS (REGISTERED MEMBERS)

Michael A. Dietsch

Joseph Long

Brian John O'Neill

Paul Ricketts

Colin W.G Templeton

### RESIGNATIONS (RETIRED MEMBERS)

David M. Armit

Edward J. Armstrong

John M. Bakewell

Michael S. Barron

Delvin Hunter Blackstock

Robert F. Bowden

Allan E. Collins

Gary J. Corrie

E. Alexander Ferguson

Arthur Andrew Hammerton

Robert L. Helfrich

S. Graeme Hynd

Gerry A. Kramer

Peter E. Levy, RPF(Ret)

Heather A. McMahon, RPF(Ret)

Hakon V. Nielsen

Carol Patricia Price

Reg E. Thurlborn

Kenneth G. Westfall

Ralph L. Wood

Michael M. Yamada

### REMOVALS NON-PAYMENT (ENROLLED MEMBERS)

Brett Terence Beauregard

Colleen Joan Braconnier

Alison Jing-Yi Cabana-Wong

Matthew Neil Cuscianna

Maximilian Dietmar Gerth

Eleanor Eileen Dupont

Brendan Michael Flanagan

Joel Christopher John Grant

Kevin Pentti Kurkiniemi

Stephane Andre Louis Leger

Simon Alonso Moreira-Munoz

Florian Matthias Noll

Desiree Adele Powell

### REMOVALS NON-PAYMENT (REGISTERED MEMBERS)

Darral Kenneth Alexander

Douglas Ernie Anweiler

Nathan Noah Bauman

John Edward Beddows

Derek A. Challenger

David J. Cobb

Cheryl Mandy Crumblin

Jerry Joseph Daoust

Janice A. Edwards

Darren Edward Fedorenko

John Tait Glaspie

Byron Robert Goertz

Michelle Ann Goodkey

Laurence M. Hanlon

Bruce G. Hartley

Bruce Healey

Robert E. Hyde

Darrin Richard Humber

Flint Plett Knibbs

Joseph James Kotai

David Lewis

Dennis A. Lloyd

John G. McPherson

Roderick B. Meredith

Andrew Lawrence Muma

Michael J. Murray

Warren D.M. Nimchuk

Steven George Payne

Denis A. Petryshen

Kerry Lee Phillips

Patric John Pictin

Mircea Rau

Gordon Earl Rutherford Robertson

Philippa M.J. Rodrigues

Stephen Wilhelm Schmid

Christopher Douglas Shallow

Todd Alexander Smith

Alan G. Smith

Barry Gerald Soderstrom

David Allen Steele

Troy Stanley Sterling

Roger A. St. Jean

Richard Turgeon

Barbara Ann Watson

Robert James Wellsman

Chad John Yurich

### REMOVALS NO SELF-ASSESSMENT

Les G. Barlow

Michael Stuart Wall

## In Memorium

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

### Jose Carvalho Figueira (Joe) Braz

RPF #850

October 30, 1946 – January 18, 2015

Joe Braz died from a fall while clearing hangers from his trees on January 18, 2015. His friends, classmates, colleagues and members of the local Portuguese community lost a true gentleman giant.

Joe was born in Silves, Portugal on October 30, 1946. At the age of nine, Joe immigrated with his mother, Maria, and younger brother Carlos to join his father Antonio in Osoyoos. Joe's youth was spent working in the orchard with his family, school in Osoyoos followed by a forestry degree from UBC graduating as a member of the class of 1971. Joe married the love of his life, Jeane, in May of '71 with a typical three day Portuguese wedding in Osoyoos. Joe and Jeane moved to Victoria in September of 71, where they resided and raised their family.

Joe spent 35 years with the BC Forest Service Forest Inventory Division working through entry-level positions of forest classifier until retirement as manager of the Provincial Growth & Yield Databases. Under Joe's direction, in the time before iPod, iPad and smart phones, he developed the first handheld data entry and validation software for the growth and yield program. The result was a database of consistent quality that is the backbone for the yield predictions tools employed across a range of applications in BC.



Joe's greatest joy was his growing family Philip, Kristina and Steven. Joe, Jeane and the kids travelled and camped extensively throughout western Canada, and the Washington, Oregon and California coasts during summer vacations, where Joe would quiz the kids on the types of trees they drove by. They also travelled extensively through the Caribbean and Europe. Joe was a pillar of the local Portuguese community. Under Joe's leadership as chair of the building committee, Our Lady of Fatima Parish

was built in 1994; subsequently, Joe was president of the Parish. Joe played accordion in a band, 'os quatro sem nome' (the four without a name), with three other family members and often played at festivals at the church hall.

In retirement, Joe, Jeane and friends travelled extensively. Joe was known as 'Avo' to his five grandchildren; he was a regular at day care whether picking up his grandchildren or helping out.

Joe leaves behind Jeane, Phillip (Mishelle), Kristina (Ricardo), Steve (Blair), mother Maria, brother Carlos (Carmen) and five grandchildren; Mateo, Aryana, Cristiano, Nikolas and Matias.

As Joe left us too soon, it is tragic reminder to be safe, whether at work, play or at home.

*Submitted by the Braz family & friends of Joe*

### George S. Nagle

RPF #939

1936 – May 17, 2014



George died at age 77 on May 17, 2014 at home. His childhood was spent in Manitoba. He earned his BSF from UBC in 1958. He married his wife Mary in 1959. They travelled with their young family to Bangladesh where George worked from '61-'63. They lived in Connecticut from '63-'67 while George attended Yale. The family lived in Rome from '71-'74 when George was working for FAO. George's work took him to over

40 countries over the years, which he enjoyed immensely. He was a consultant primarily in tropical forestry, working for World Bank (USA), UN FAO (Rome) and CIDA (Ottawa).

Upon his retirement in 2002, he and Mary spent each winter in California to golf and enjoy the warmth, returning home to Summerland for the summer months. George is survived by his wife of 55 years, their two sons, David and Geoffrey, and five wonderful grandchildren. He was predeceased by his only brother Patrick in 2006. He led a very full life and achieved many goals (including in hockey). He was also a proud Rotarian. His family and friends from around the world miss him greatly, especially his subtle sense of humour.

*Submitted by Cathy Dennis and Mary Nagle*

## A Moment in Forestry

Submit your Moment in Forestry photo or artwork to Doris Sun at: [editor@abcfp.ca](mailto:editor@abcfp.ca)

### BIOGRAPHY & FOOTNOTES from Page 14

*Prior to his current position working on forests and climate change policy in Ottawa, Ben Filewod worked for Chartwell Consultants in Vancouver. His background includes academia and international development work. Among other things, he's interested in how to understand and apply uncertain projections of a future climate. He also likes skiing and shinny.*

- 1 A black swan is essentially an unexpected outlier we can't predict from past experience. For more detail see Dan Graham's excellent article in the May/June issue.
- 2 *State of BC's Forests*, 3rd edition
- 3 Johnston, M., Price, D., L'Hirondelle, S., Fleming, R., and A. Ogden. 2010. Tree species vulnerability and adaptation to climate change: final technical report. SRC Publication No. 12416-1E10.
- 4 Hamann, A., and T. Wang. 2006. Potential effects of climate change on ecosystem and tree species distribution in British Columbia. *Ecology*, 87(11): 2773-2786.
- 5 See Montreal-based Ouranos' 2014 *Guidebook on Climate Scenarios* or Box 2.2 in *Climate Change 2014: Synthesis Report* from the IPPC for an in-depth look at these assumptions. The 2012 CCFM publication *Adapting Sustainable Forest Management to Climate Change: Scenarios for Vulnerability Assessment* provides a more concise introduction.

### COMMUNITY CAPACITY from Page 13

about forests and the environment and the impacts they have on personal lives. The NFW BC Coalition and the local events organizers contribute significantly to this objective.

The education of students, teachers and the public is not restricted to one week in the year. There are many local tours, classroom presentations, field trips and communications products provided by people and organizations within the forest sector throughout the year. All of these are very important to building knowledge capacity within the communities.

Forest professionals and partner organizations are encouraged to become more involved in implementing the framework. 🐾

*Bill Bourgeois, RPF, has invested 40 years in improving forest land management, especially in BC. During this period, Bill has been a research scientist, a terrain stability specialist, an industry supervisor, a manager, a general manager, an associate with the Commission on Resources and Environment, a company vice-president of forest policy and sustainability and a private consultant. Bill is currently the president of New Direction Resource Management Ltd.*



## Because I'm Happy

Andrew Tyrrell, RPF

A smiling log discovered by a member while he was scanning a log deck examining overall quality.

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