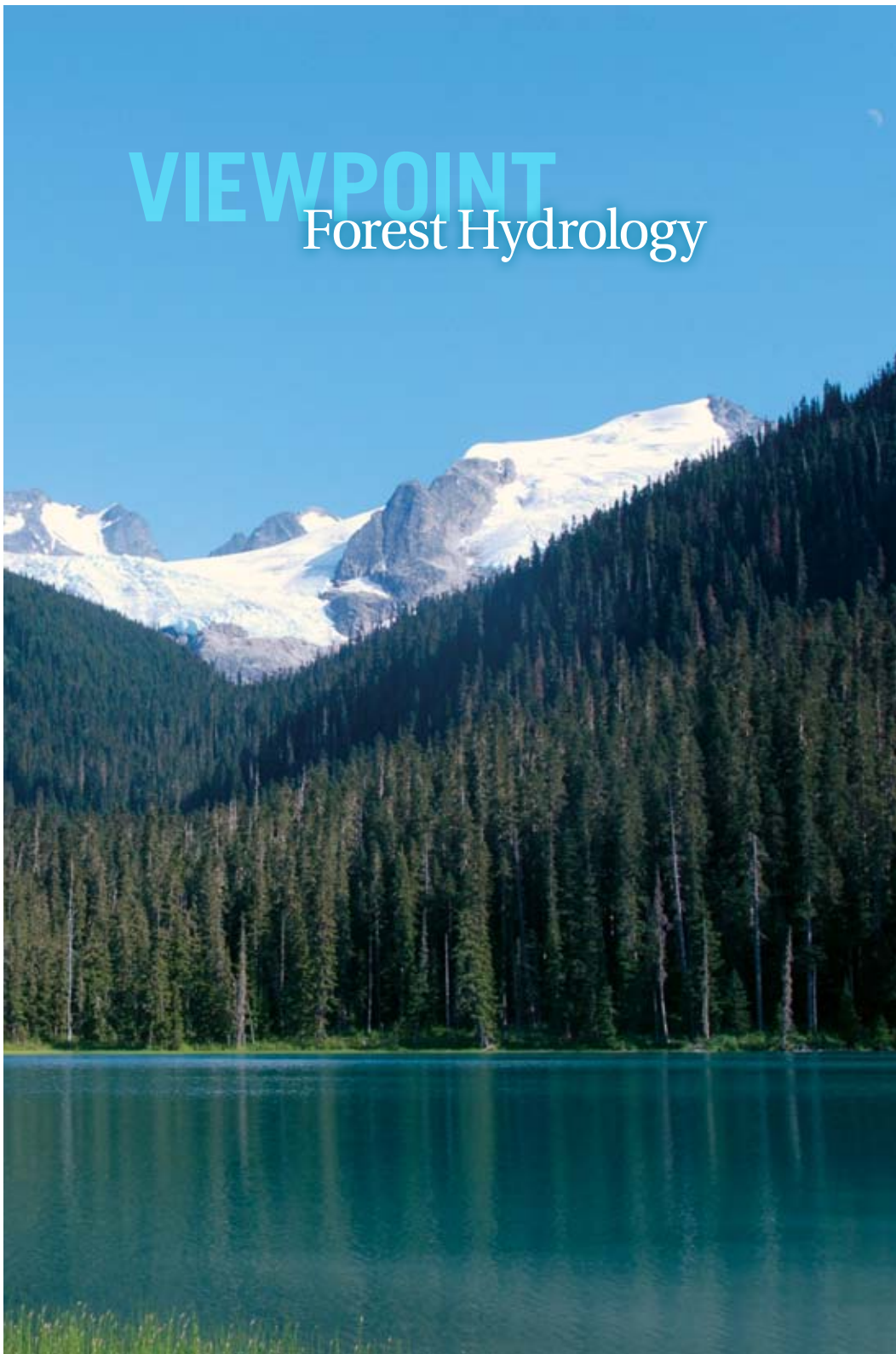
MARCH - APRIL 2011

BC Forest PROFESSIONAL



2010
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Whats the Difference?

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Cover Photo: Sandy McKellar

Developing Professional Development Locally

Continuous learning is important to maintain for BC forest professionals because it promotes innovative forest stewardship, as highlighted by Mike Larock in his article in the July/August issue of **BC Forest Professional**. Continuous learning raises awareness of relevant issues and complex values related to proper forest management. Sharing knowledge is especially important for upcoming forest professionals as more experienced professionals are an excellent source of information and mentorship. Exchanging and sharing knowledge creates opportunities to develop stronger professional relationships.

The cost of continuing education can have a significant influence on the learning cycle. Society has higher expectations for fewer forest professionals whose resources are already expended. Continuing education is a burden for many practicing foresters; it is an expensive and time-consuming task. Therefore, it is important to create local opportunities for forestry professionals to be able to exchange ideas that are relevant to local practice and to motivate individuals to participate. Educational institutions could take on a lead role to try to rekindle enthusiasm for and involvement in continuing education that is lacking for many forest professionals. These institutions would be eligible for funding from the government and could hire personnel to coordinate workshops. Focused workshops that are based on relevant issues faced in local practice and are not a substantial time commitment would enable more professionals to participate. Experts in specific fields could present their thoughts and opinions, thereby opening dialogue between local professionals and academics. For academics and student this may create opportunities for mentorship by professionals. It is critical for the forest professionals to develop and maintain an upsurge in enthusiasm for continuing education programs.

Tara Salmon
UNBC Student

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A Deafening Silence: Building a Case for Advocacy

Rick Brouwer's latest **BC Forest Professional** report compelled me to take action. Government has recently made significant changes to the mission and organization of the ministries involved in forest resource use and management. I expected to see a critical analysis in the BCFP (the voice of BC forest professionals) of these changes. Yet there was nothing other than a vague reference to a growing role that staff plays in working with government to shape policies as part of the Associations' advocacy mandate.

The deafening silence on these recent government changes, and the past squelching of an initiative by a group of foresters that would have been critical of government policy suggest that the Association is unwilling or afraid to take action that could be interpreted as partisan or critical of government – but isn't that part of advocating?

I can understand the reluctance. Government has the authority to change legislation, including the *Foresters Act* and the right to practice, therefore the body that depends on the existence of that Act is motivated to be conciliatory rather than critical. The Association is the only collective voice of BC forest professionals, so if it is not engaging in critical analysis and advocating for change when needed, the profession as a whole becomes ineffective.

I think we need a model that has one body for registration and upholding standards, and another body that takes on the advocacy role. This model aligns with other professions that have a legislated right to practice such as doctors. With due respect to the medical profession, policies and decisions regarding forest management at multiple scales have longer term, and deeper-reaching consequences on our environment and our economy, and ultimately our health than those made in the medical arena.

For the reasons cited above, I do not see the ABCFP, as currently structured, being able to carry out an advocacy role. At the least, we need an independent body whose mandate is to influence the evolution and development of public policy concerning forest resources, but who is not tied to government through right to practice legislation. Maybe we should consider combining with other resource professionals to create a natural resources association that is able to address a wider range of resource issues. Many questions need to be answered. But our forests are too important to continue along the path we are on.

Kathy Lewis, RPF
Prince George

Note: This letter has been edited for length. The unabridged version has been posted on the Discussion Forum.

Take Continuing Education One Step Higher: Reach Beyond

Forest resource professionals should reach beyond maintaining our competency in our areas of practice, especially if we are to overcome the uncertainty that exists today in the forest industry. By this I mean, the retirement of the baby boomers, budgets cuts, reduced staffing, and mid-term shortfalls.

I truly appreciate Chris Hollstedt's viewpoint article, "Staying Current and Embracing Change: The Role of Continuing Education in Emerging Areas of Practice" (July/August 2010). However, to add to this, I feel strongly that new initiatives such as the Resource Management Coordination Project (RMCP) being undertaken by government will allow forest professionals to stay current, embrace change, and expand our minds to incorporate new concepts such as "virtual integration." Some visionary statements expressed by RMCP include: "one entity, single land base, collaborative, proactive and integrative." To me resource management coordination makes sense, it brings to mind the phrase "united we stand, divided we fall."

RMCP will require us as professionals to reach out to each other, promote networking and diversify our knowledge base, thereby reducing the uncertainty in our forest industry and strengthen professional reliance. Are we not seen as stewards of the land? Of course we are. So then we should have no problem reaching beyond a minimal competency level given that we can all access, as Hollstedt's concludes, "a functioning and well resourced system of continuous learning."

So, if you are wondering where to begin in the process of renewing continuing education for forest professionals, start by showing your support for ABCFP's decision to raise fees. Enable them to provide the services that you, as members of the association, need to fulfil your role as forest professionals.

April Bilawchuk
UNBC Forestry Student

Put in Your Two Cents

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.**

Send letters to:

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President's Report

By Rick Brouwer, RPF

A Year in Review

A lot can happen in a year...

- An Olympic party
- A significant reduction in forest industry injuries (especially fatalities)
- Fiscal stability for the association
- A growing recognition of the broad application of the practice of professional forestry
- Lumber industry resurgence
- Partnering of the profession, government and industry to promote and enable professional reliance
- Growing Aboriginal involvement in forest land management
- Acceptance of the Land-Based Management concept (one land manager) as part of the recent reorganisation of government
- A new strategic plan for the ABCFP

All aided by efforts from a bunch of very good people—forest professionals!

I'm very proud of the involvement and influence of the association and the many forest professionals on these and similar items and I'm extremely happy to know much of the work of the past year will ensure that this involvement and influence will continue to grow in the future. I'm also encouraged by the involvement of so many forest professionals in landscape level issues like pine beetle impacts, wildlife and ecosystem management, and wildfire protection.

As my term as president comes to a close, it's very important to me to extend thanks and recognition.

- To each and every one of the members of this great association—thank you for everything that you have done or will do.
- To my fellow council members, who are a diverse, opinionated, engaged, committed and all-round great bunch of passionate people—who also have a sense of humour—thanks for all of that!
- To Sharon Glover, CEO of the ABCFP—thanks for your assistance and adaptability.
- To Jonathan Lok, who is leaving council after five years - thanks for your insight, your wit and your passion.
- To Ian Emery, the ABCFP's incoming president—thanks for your commitment and desire to make a difference: I know you will serve the association and our profession well, and we can do no better in having you as our president.
- To the staff of the ABCFP, who work so hard to meet the needs and expectations of our members—thanks for all the smiles!
- Thanks to previous council members, committee members and network of forest professionals, who provide so much spark and serve the membership so selflessly.
- To distinguished forest professionals, past presidents, valedictorians, and award recipients—thanks for being such inspiring people.
- And lastly, to all our new inductees, thanks for choosing a wonderful profession, and good on you!

Remember: it's about leading, balancing, and knowing what it is to be a professional. It's about promoting the culture of the forest, taking the long view and, in no small part, it's about having fun while you do all those things.

Speaking of fun, I think I'll end with a poem.

Let's not be misunderstood
It's much more than a livelihood
As a source of culture and products and feelings and fellings
So listen now to the tails and tellings
It's trees and bees
ferns and burns
sun and fun
loot and root
chemicals and minerals produced and consumed.
It's cleaning and fixing
dishes and fishes
schools and tools
homes and highways
and health.
It's holiday and work-a-day
Spiritual, cultural, diurnal, nocturnal
Full of all that makes us great while at the same time showing us how insignificant we really are
As it does and dies and lives without love—but is loved
By us.

Trees and soil, work and toil
Time pent behind the thousandth desk
When we really would rather risk
A walk in the woods
And realize that it's all
More than that
It's everyone!
All of us.

It grows and we grow and grew
And realize there's something to do
With the feeling of the forest
And the need to deliver a steady course
That is the desire to contribute
More than in the absolute

Forest
Forestry
Forester
All grow from the same earth
All go to the same hearth
Of the human word and culture

It exists without definition
And without contradiction
Or borders
It takes no orders
It is the we who define it
And as we refine it
We refine the term
But the worm
Still burrows and shapes the soil
Independent of our verbal toil
But that matters not as by describing
We are also inscribing
And instilling the definition and the part
Of the culture of the forest
Directly into our heart.

CEO's Report

By Sharon Glover, MBA

Making Professional Reliance a Priority

Throughout 2010, the ABCFP worked with government, employers and others to lead the way on professional reliance in forest resource management. What we observed was that forest professionals were involved in almost every corner of the effort to advance professional reliance. As a result, I am convinced that relying on the judgment of forest professionals is the right thing to do in BC's natural resource management.

There are two things in particular that I want to discuss with you.

1. What we have been doing to advance professional reliance in 2010.
2. What we, and you, can do to advance professional reliance in the coming years.

Relying on professional judgment in natural resource management requires a team approach and effective team members. Therefore, it is not surprising that our greatest efforts in the professional reliance initiative this last year were working with government agencies, industry partners and others. For example, the ABCFP chaired the provincial professional reliance steering committee and helped to deliver 11 leadership workshops throughout the province. We supported the development and delivery of the benchmarking professional reliance survey and 1,400 members assisted by completing the online questionnaire.

The foundation of professional reliance in forest resource management is the practice of professional forestry and our 5,500 ABCFP members. The knowledge, skill and experience that the forest professional brings to the resource management team will drive the success of professional reliance. To support our members' practice, the ABCFP continued to develop guidance in professional service, initiate online workshops for members and support emerging areas of practice such as forest fuel management, advancing climate change adaptations in practice and the professional contribution to safety.

Professional reliance will remain one of the important initiatives in the coming years.

The ABCFP's strategic plan charts the course for the profession and that is why your council made professional reliance one of the four key priority areas for the next 2011-2013 strategic plan. It is true; the primary benefit of professional reliance has been the reduction in overlap of management work and the corresponding cost savings. However, in the near future, we think the greatest gains in professional reliance will be through the benefits of increased professional service such as professional innovation, prioritization of natural resource investment and improvement in site-level decisions to protect forest resource values in the face of climate change.

In order to achieve these gains, the ABCFP will continue to support team partnerships and the individual practitioner. You will see professional reliance move ahead through local leadership teams that work on a wide variety of important forest resource issues throughout the province. The ABCFP will focus on increasing our understanding of our roles in professional reliance. For example, the professional reliance concept depends upon the specialized knowledge that the professional brings to their practice. This includes the understanding that the professional, on a regular and consistent basis, maintains a currency of knowledge, has a method of acquiring the current science and incorporates this knowledge into their practice.

You can accelerate the gains of professional reliance by improving your access to knowledge through professional development. One way to do this is through our online workshop, "Professional Reliance: Is It Working? How It Should Work?" This workshop includes information on: professional reliance and what it means to participants, legal foundation and its definition, how it compares to professional deference and how it is related to professional accountability. For more information about workshops and developing forest resource knowledge, read **BC Forest Professional**, **The Increment** and the ABCFP website (www.abcfp.ca).

Your employer and the ABCFP can lead the way on professional reliance. However, the success of professional reliance depends on you. Help us achieve the benefits of relying on professional service in natural resource management by finding out how you can help the leadership teams in your area and by investing in your professional development. Thank you.

Association News

New Communications Manager Joins the ABCFP

Brenda Jones joined the ABCFP as communications manager in November 2010. Brenda filled the role previously held by Amanda Brittain who, after five years with the association, left to join Vancity.

As the manager of communications, Brenda is responsible for all communication functions of the ABCFP including media relations, member relations, print publications, e-communications, social media, event management and membership surveys. In addition, she manages two communication coordinators, Brenda Martin and Michelle Mentore, who are responsible for the member magazine, annual conference and website.

Brenda worked for nine years at the South Coast Transportation Authority – TransLink, and the BC Ministry of Transportation and Highways for six years before that. During her tenure at the Ministry of Highways, Brenda was seconded to work with MOF fire response teams during fire season as a public information officer.

Brenda has a bachelors degree with a focus on international studies and organizational development from McGill University and has built some great communications teams and won numerous communication awards.

Brenda can be reached at bjones@abcfp.ca or 604.331.2321.

Council Election Results

Congratulations to the following members who were elected councilors at large to the 64th ABCFP council for a two-year term. Daniel M. Graham, LLB, RPF with the Ministry of Natural Resource Operations in Victoria; Carl A. vanderMark, RPF, with Canadian Forest Products in Houston; and Carolyn A. Stevens, RFT, with the Ministry of Forests, Mines and Lands in Burns Lake. Stephen W. Lorimer, RPF, of Saltair Consulting in Ladysmith was acclaimed as vice-president. These members took office in February at the Wood is Good 2011, the ABCFP's forestry conference and AGM .

Thank you to all of the members who let their names stand for the 64thABCFP council election and to the more than 940 members who voted.

Now is the Time to Form Your Study Groups

RPF and RFT exam candidates should be forming study groups now to prepare for the 2011 exams. We encourage RPFs and RFTs to study together. You can register your study group on the website so the ABCFP can provide support when we are in your community.

If you would like Brian Robinson, RPF, manager of professional development and member relations, to meet with your study group, please e-mail him at brobinson@abcfp.ca. Brian is also available to meet with any study group by conference call.

The ABCFP Communications team:(left to right) Michelle Mentore, Brenda Martin and Brenda Jones

Professional Development and Online Workshops

The ABCFP has four online workshops available for our members.

- Working Effectively with Aboriginal Peoples™
- Professional Reliance Workshop
- Professional Ethics and Obligations Workshop
- Writing the Best Exam Possible Workshop

The workshops are great for general professional development or for preparing to write the registration exam. For more information about them, visit the Workshops page of our website.

ABCFP's Online Job Centre – Lots of Jobs Available

The ABCFP's online job centre hasn't been this busy since before 2008. At the time of writing, there were more than 20 jobs posted on the online job centre. Be sure to take a look the next time you are visiting the ABCFP website.

Job postings cost $100 per job and can be posted for up to two months.

Can I Read BC Forest Professional Online?

We are now posting **BC Forest Professional** in two formats on the website. As always, you can read a PDF version of the entire magazine. You can now also download individual articles. This option makes it faster for members on dial-up to download the magazine and it is easier to share a favourite article with a colleague.

Would you like a reminder that **BC Forest Professional** has been posted online? Sign up for our BCFP reminder e-mail service by contacting Brenda Martin, communications coordinator and editor, at bmartin@abcfp.ca.

How Can I Stop Receiving A Paper Copy of BC Forest Professional?

Would you like to opt-out of receiving your paper copy of **BC Forest Professional** magazine? It's easy! Simply change your membership profile on our website. For step-by-step instructions, go the magazine page of the ABCFP website. There's a link to it on the Home page.

By Brenda Martin

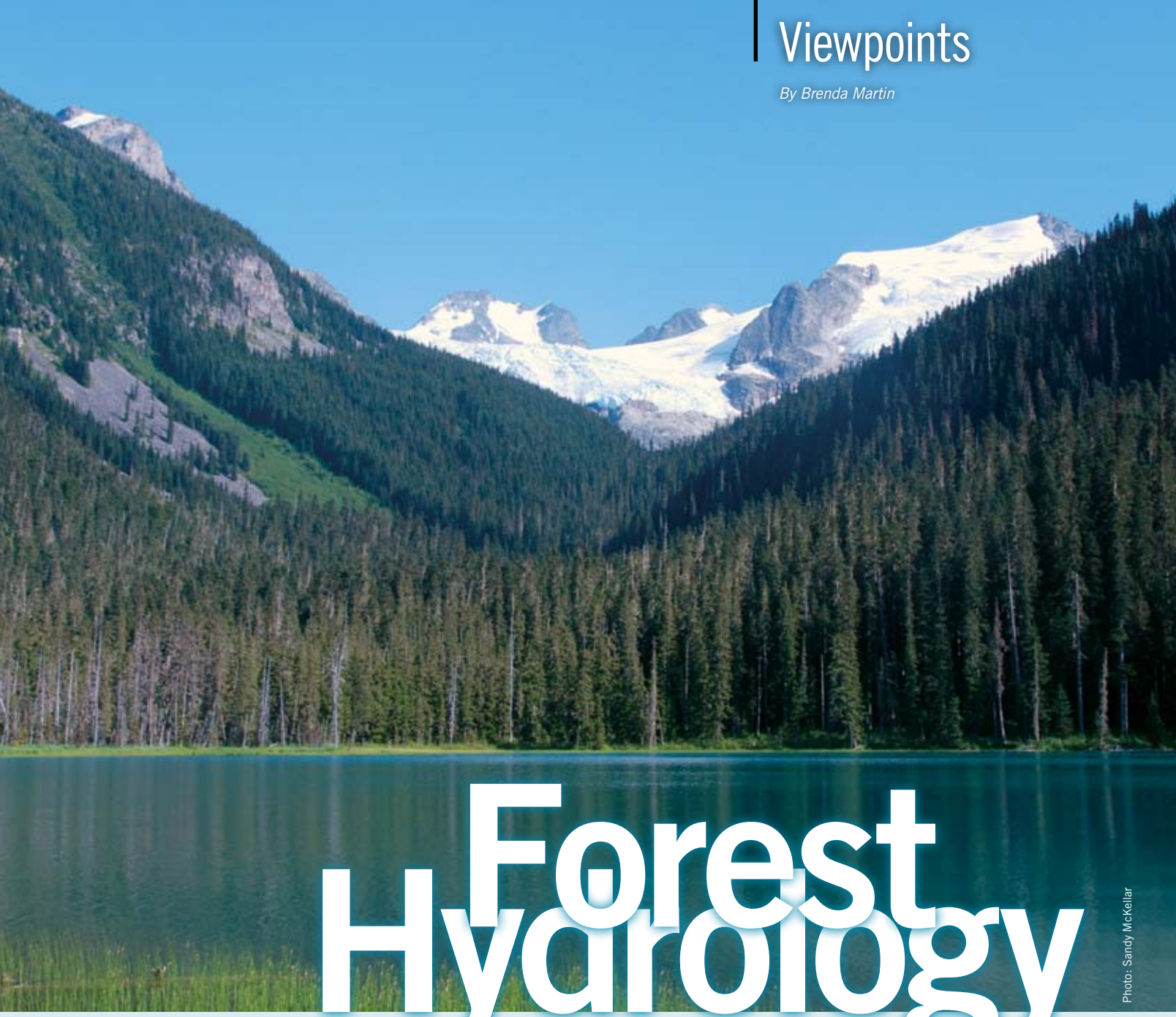

Photo: Sandy McKellar

Forest Hydrology

British Columbia is a province rich in both water and forest resources. Under the umbrella of forest hydrology, these two resources meet. Forest hydrology isn't as talked about as other aspects of forestry, but, as we will see in this issue, it is a key part forest management.

We address a variety of forest hydrology topics in this issue. Rita Winkler, PhD, RPF, starts us off by explaining the importance of data and long-term hydrometric monitoring. Then Bill Floyd, RPF, MSc, discusses the sensitivity of coastal watersheds to climate change due to their rain-snow interface. The final article in our Viewpoint section, Derek Bonin, RPF, talks about the watershed practices in the Greater Vancouver watersheds.

The other two articles in the section address slightly different aspects of forest hydrology. Dave Wilford, PhD, RPF, PGeo, addresses the importance of having a forestry background when practicing in the field of forest hydrology. Rob Wood, RPF, and Steve Baumber, RPF, MSc, talk about water protection and the language forest professionals need to be familiar with.

As I write this, Wood is Good 2011, the ABCFP's annual conference and AGM, is taking place. In our next issue, we will have a Wood is Good special feature so we can share the highlights of the event with all our members.

By Rita Winkler, PhD, RPF

In it for the Long Haul: BC's Legacy of Hydrometric Monitoring and Watershed Research

British Columbia is a province rich in water resources. Central to our understanding of the environmental processes controlling the flow and availability of water are research and hydrometric data collection. Although long-term data and the knowledge gained through process-based research are often not valued until a crisis occurs (Stednick et al. 2004), it is our responsibility as professionals to ensure that BC's legacy of hydrometric monitoring and watershed research is sustained providing a solid foundation for forest and water resource management into the future.

To better understand watershed processes and our water supply, a network of hydrometric monitoring sites and research watersheds have been established throughout BC by the federal and provincial governments in collaboration with universities, industry and consultants (Redding et al. 2010). Forest professionals, engineers, geoscientists and biologists rely on the data and knowledge gained from these sites to meet regulated environmental standards, develop sustainability criteria, design safe structures and protect habitat.

Long-term monitoring data provide the baseline necessary to detect the hydrologic effects of changing land cover and climate. Long-term research expands our knowledge of how forests and forest management practices affect water supplies in a changing environment. Although short-term data and research can provide some immediate insight into watershed processes, they may also result in erroneous decisions with potentially irreversible long-term consequences.

A simple example that shows the importance of long-term data is the snow survey record at Upper Penticton Creek, the site of one of BC's long-term watershed experiments (Winkler et al. 2008). The amount of water stored in the snowpack (snow water equivalent) on April 1st of each year is commonly used as an indication of water supply and flooding potential. In the 150+ year old lodgepole pine forest at Upper Penticton Creek, April 1st snow water equivalent has varied from 171 mm to almost double that (373 mm) over the past 15 years. In the clearcut, April 1st snow water equivalent has varied from 233 mm to 415 mm. Expressed as the percent increase or decrease after logging, the data show changes ranging from a 4% reduction to an increase of 36% (Figure 1).

Professionals are often asked to estimate the change in water accumulating as snow once forest cover is removed. If only a single year of data had been available, for example 2004, foresters would have been told that removing the trees might lead to a slight decrease in water. This might raise concerns regarding low flows and water supplies. On the other hand, if surveys had only been completed in 2001, foresters would have been warned that clearcutting could increase the water available to run off by over 30%, raising concerns about flooding. If at least five years of data were available, they would be told that 14% more water would accumulate as snow; which is close to the 15-year average of 13%. However, data from this five-year period also shows that increases in snow water equivalent after logging range from 7% to 21% which does not capture the extreme values in the 15-year dataset.

These results highlight the differences in water input to a watershed from year to year and with changing forest cover. They clearly show how long-term records are necessary to predict extreme changes, high or low, in water supplies. They also suggest the consequences of decisions made using limited data.

Questions remain about the conditions under which changes in forest cover may substantially alter streamflow volumes or the frequency of flow events above or below concern and what the additional effects of climate change might be. Both our understanding of hydrologic processes and our ability to quantify key variables affecting water supplies has increased tremendously over the past 50+ years (Pike et al. 2010). This knowledge has been gained through the efforts of water resource specialists working in roles ranging from hydrometric monitoring and fundamental research to developing policy and advising forest operations.

The advancement of our understanding of hydrologic processes in BC has relied heavily on data from the province's network of hydrometric stations and both short- and long-term research installations. At a glance, these installations seem numerous but on closer examination they represent only a few of the hydrologic regimes and land cover types found throughout BC. Very few research installations, such as Carnation Creek, Malcolm Knapp, Rennel Sound and Russell Creek at the coast, Upper Penticton Creek, Mayson Lake and West Arm in the southern interior and the Bowron River watershed study in central BC, provide more than 10 years of record quantifying key hydrologic processes (Redding et al. 2010). These installations are at continuous risk of being discontinued due to lack of funding.

Whether an individual or organisation's goal is the quest for new knowledge or to sustain water values while harvesting timber, both require data. Precipitation and streamflow are essential

The photo above shows the long-term stream flow gauge in Dennis Creek which is part of the Upper Penticton Creek Watershed experiment.

variables that must be known to quantify the effects of changing forest cover and watershed management on streamflow, for flood forecasting and for water supply management. Understanding how watersheds function also requires measurements of energy, water storage, routing and losses, and changes in forest cover.

Some professionals would argue that the hydrometric network is an essential service while others may argue that this network is too costly. But what are the costs of allowing this legacy to fall into disarray? Data not collected can not be replaced; even by optimistic gap filling based on assumptions that nothing has changed during the lapse in measurement. What if hydrologic models used for flood forecasting and climate change projections were run on one or five years of data rather than a record that adequately captures the variability in watershed processes over space and time? The downstream consequences of decisions based on insufficient data or knowledge could be disastrous.

One of the fundamental building blocks of science, which forms the foundation of professional practice and environmental policy, is data. Although knowing the magnitude and variability of all biophysical variables in a watershed would be ideal; quantifying a few is essential.

Rita Winkler PhD, RPF, is a research hydrologist with the Ministry of Natural Resource Operations in Kamloops. She has worked in forestry and forest watershed management for government, as a consultant and as an instructor and adjunct professor at Thompson Rivers University. Her research focuses on the relationships between forest disturbance, re-growth, snow hydrology and water supplies.

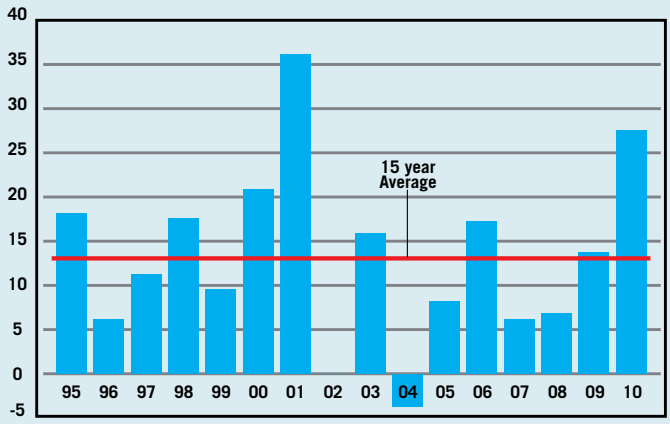

Figure 1. The percent change in April 1 snow water equivalent after clearcut logging at Upper Penticton Creek, BC.

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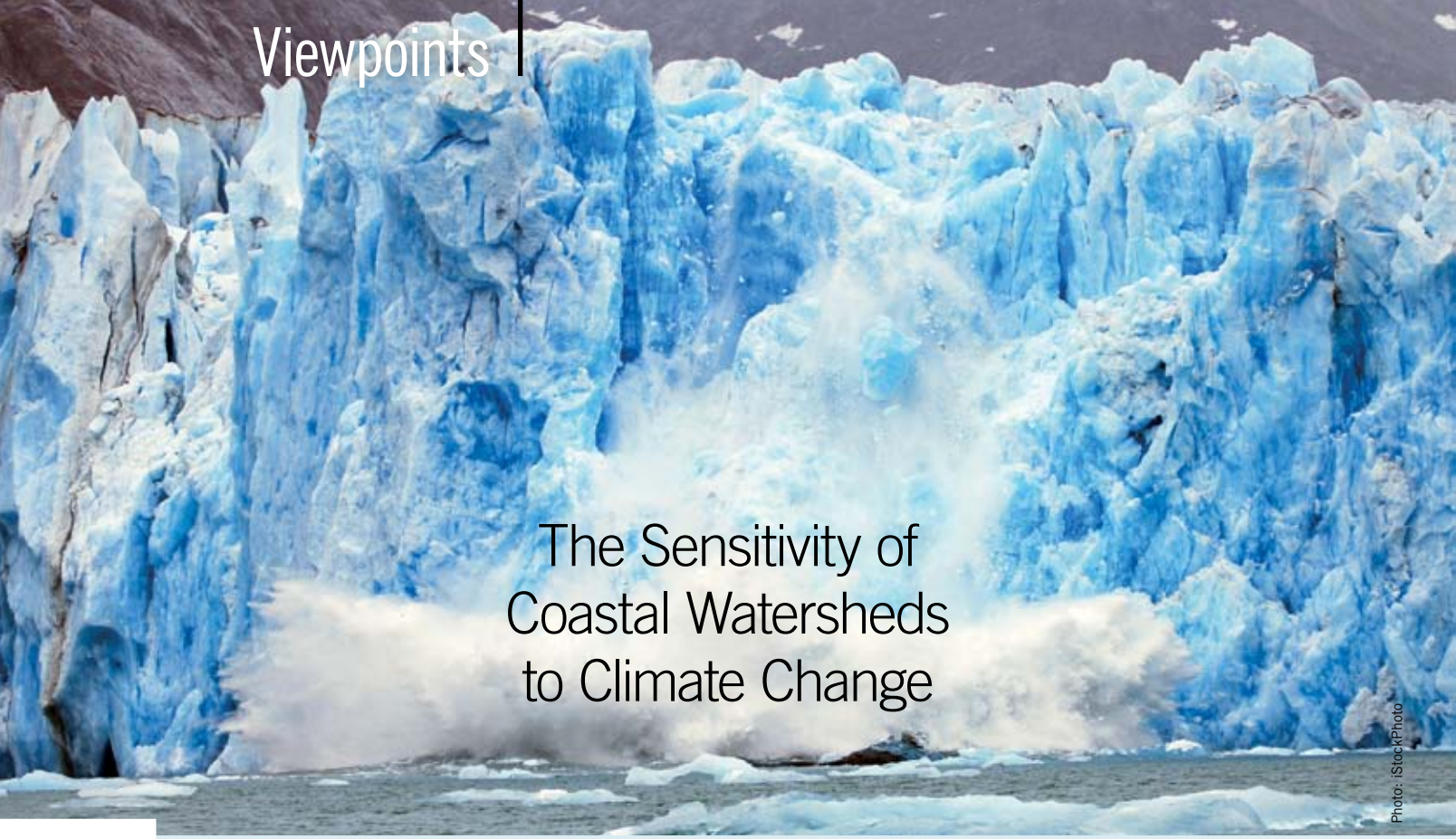

The Sensitivity of Coastal Watersheds to Climate Change

Photo: iStockPhoto

The most pressing question forest professionals face regarding climate change is "how are we going to adapt our professional practices and management strategies?" To adapt, we need to know which areas are the most resilient to climate change and which areas are going to be impacted soonest and to the greatest degree. Because many coastal watersheds sit within the rain-snow interface, any warming or cooling trends, coupled with alteration of precipitation rates, can result in drastic changes to snow levels.

Snow-packs are critical as they play a primary role in many hydrological functions, such as:

- Storage and release of water in the spring and summer (a "free" natural reservoir) to streams for ecological services, domestic water supply, industrial uses, hydro-electric power generation, etc;
- Act as a buffer during short duration extreme rain events, when the snow-pack is sufficiently deep and cold (>2m) to absorb rainfall and energy; and
- Potential to intensify flood and/or landslide events, especially when snow-packs are shallow and can readily melt (rain-on-snow).

Russell Creek Experimental Watershed (Floyd 2010), a Ministry of Natural Resource Operations (MNRO) long-term research installation located on northern Vancouver Island (50° 20' – 126° 22') helps to illustrate the potential impacts of a warming climate on coastal snow-packs. A climate dataset from 2007-2008 combined with modelling shows that even minor increases in average temperature can have major effects on snow-water-equivalent, especially at lower elevations. A warming of less than 1 C results in a 38% percent reduction of peak snow-water-equivalent at the lowest elevations. A 2.1 C warming of the 2007-2008 dataset results in a 60 to 80% reduction in peak snow-pack, with lower elevations being completely snow free by the end of February. When we apply a warming of 3 C, the peak snow-water-equivalent in the alpine (1500m a.s.l.), occurs 3 months earlier and is reduced by 72%, with the lower and middle elevation snow-packs becoming largely transient. This is illustrated in the graphs in Figure 1.

However, this is not the case everywhere. Similar analysis at Penticton Creek, another of MNRO's long term research installations located in the southern Interior, indicates that interior snow-packs are more resilient to comparable changes in temperature due to the colder winter climate (Spittlehouse 2006).

There are numerous implications to such large changes in coastal snow-packs. The most obvious would be a severe reduction in spring and summer stream flow in watersheds with traditionally deep snow-packs. Combine the above with a prediction of warmer and drier summers and water shortages could become the norm.

In addition, as snow shifts to rain, we will see more frequent mid-winter high intensity rain events, with shallower snow-packs contributing to stream flow rather than buffering rain and energy inputs. In the 2007-08 example from Russell Creek, there was one rain event in which more than 100 mm of rain fell over a 24 hour period over the entire watershed. This intensity is often associated with increased landslide rates and peak stream flows. When we apply a warming of 3 C to the same circumstances and snow shifts to rain, the number of such events triples (data not shown). The implications of this are obvious – more landslides, more peak flow events, increased sediment transport and downstream impacts such as damage to fish habitat, bridge failures, reservoir infilling and flooding.

As a general rule, forest harvesting in watersheds frequented by rain-on-snow events has a higher potential to increase peak flow hazard than in watersheds dominated by either rain or snowmelt processes. As portions of watersheds shift from snow to rain-on-snow dominated, watershed level harvest limits may have to decrease to mitigate the potential increase in frequency of peak stream flow events. On the other hand, as rain-on-snow dominated watersheds shift to rain dominated regimes, additional harvesting opportunities may arise due to a reduction in potential for harvesting to increase peak flow hazard.

Viewpoints

By Bill Floyd, RPF, MSc

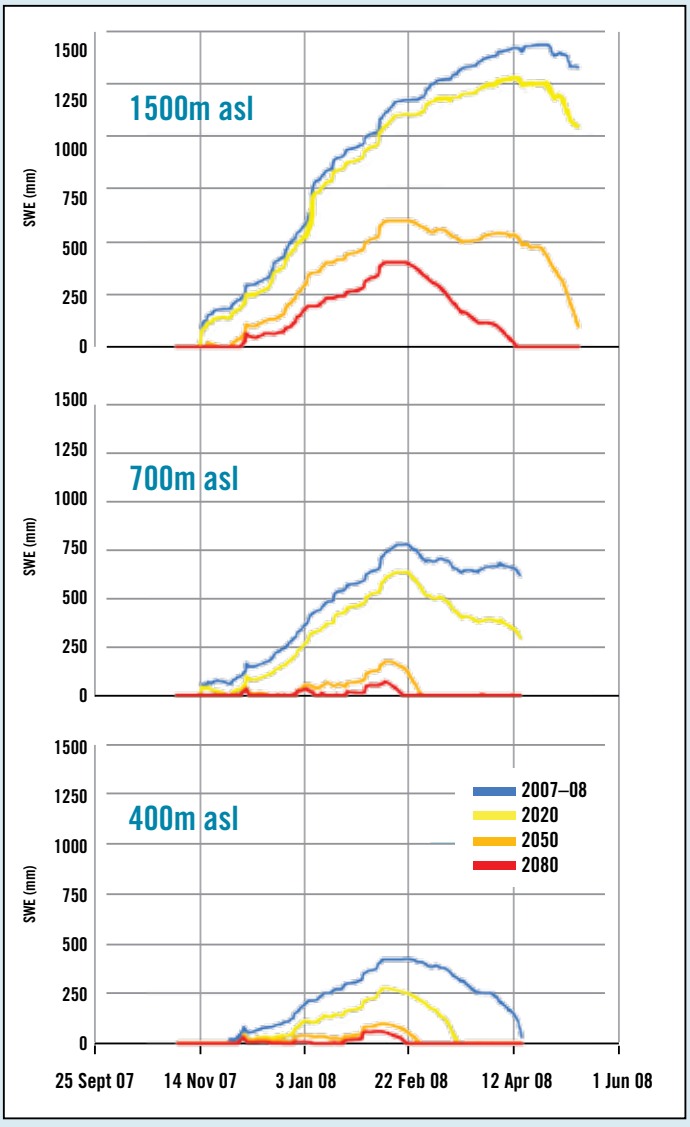

Figure 1. Snow accumulation and melt using the Cold Region Hydrological Model (Pomeroy et al, 2007) and ClimateBC (Wang et al, 2006) outputs for the 2020's (+0.7 C), 2050's (+2.1 C) and 2080's (+3.0 C) to project temperature changes from a 2007-2008 dataset from Russell Creek Experimental Watershed. Model runs for 2007-2008 were validated against snow depth and snow-water-equivalent (SWE) data from 400m and 700m above sea level (ASL) weather stations. Snow-water-equivalent is the depth of water that would result if a column of snow was melted. We were not able to model a complete melt season due to lack of data in the late spring. It is important to note that the changes illustrated in this example are only for one year of data and results should not be considered absolute, but rather as an indicator of snowpack sensitivity to changing temperatures.

There will be other significant changes to plan for. As the number of large precipitation events increase, slope stability assessments may need to evolve to account for increased landslide hazard. As more sediment moves from hillslopes to stream channels and the frequency of peak stream flow increase, bridges may have to be redesigned and road drainage structures increased in number and capacity. It is also likely that road maintenance costs will rise, especially at elevations where rain and rain-on-snow is projected to increase. In addition, as the population increases, there will be more demand for water resources and pressure to build in areas with already high or increased flooding and landslide hazard. With limited resources, it will be important to plan for these changes over time by identifying priority watersheds and targeting infrastructure and harvest planning to mitigate problems associated with climate change.

Currently, forest professionals deal with an immense amount of uncertainty. This makes it difficult to make management decisions, especially when outcomes must be projected 20 to 100 years into the future. A changing climate will only increase this uncertainty. Adapting to climate change will require risk-based analysis to identity areas where change will occur. As change occurs, a robust monitoring and research network must be in place to capture our knowledge and experience and apply it to other areas of the province that are resilient in the short term, but will become more susceptible in the long term.

Russell Creek provides an excellent example illustrating the sensitivity of coastal watersheds to changes in temperature. Unfortunately, there are limited areas within BC that have the data required to run models such as the Cold Region Hydrological Model used in the analysis presented here (Pomeroy et al, 2007). Further, we do not have an adequate monitoring network in many areas fo the province to track changes, verify/validate predictions and refine models.

In a results-based framework, the buck stops with the forest professional. Thus it is imperative for all of us to address the strengths and weakness surrounding our current science, policy and practice to ensure the proper management of water resources in the face of climate change. A critical step in improving our ability to adapt to climate change involves advocating, both as individuals and as an association, for increased support of current research by government, universities and industry, including, acquisition of resources to expand the existing research and monitoring network. Knowledge gained through this increased investment can then be used as the basis of sound climate change related policy and practice.

Bill Floyd, RPF, MSc, is a research hydrologist for the Ministry of Natural Resource Operations based out of Nanaimo, BC. He has 10 years experience in watershed management and research, with specializations in water quality and rain-on-snow processes. He received his undergraduate degree from the University of Northern British Columbia, an MSc from Oregon State University specializing in Forest Hydrology and is currently a PhD candidate at UBC in the department of forest resources. He can be contacted at william.floyd@gov.bc.ca.

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Viewpoints

By Dave WIlford, PhD, RPF, PGeo

Do Professionals Need a Forestry Background to Practice Forest Watershed Management and Forest Hydrology?

Forests can have a significant influence on water in the landscape. The field of science that explores this influence is forest hydrology and the practical application of this knowledge is watershed management. From my experience, it is essential to have a forestry background to practice in this field. A full academic background is not necessarily required but at least an appreciation for a range of factors that influence the movement of water in forested watersheds and that make forests and the forest environment unique.

Here are some examples where knowledge of these factors was important.

In the 1980s, an engineer was working on a project exploring slope stability after forest harvesting. His models predicted that following forest harvesting, tree roots would decay and given the soil texture, the slope would fail. But no landslides resulted. As the years went by his committee pressured him to complete the study. Dejected by the lack of landslides the student sat in a soil pit and scraped at the soil. What he noticed was that the silt-clay textured soil that had fallen onto his notebook looked more like sand texture. He had 'discovered' granular soil aggregation. His fine textured soil drained like sand and this was preventing the development of a destabilizing hydraulic head. His professors thought he was a genius. But had he taken a course on forest soils he would have known the importance of soil structure.

A significant development in forest management over the past 30 years has been the evolution of site-specific terrain stability assessments. What began as a simple slope angle approach to assessing hazards has evolved to include landforms, geology, and terrain complexity as well as forest soils and ecosystem associations. A background in forest ecology has become one of the cornerstones in this work.

In the early 1980s, a research engineer from Oregon developed a computer program to predict slope stability. Applying the program required significant field sampling and lab testing of soils. People with a forestry background understood the variation in forest soils and recognized that intensive sampling would be required to adequately predict slope stability using the program. Given the costs involved, it was apparent that a cost effective and professional assessment was possible using site-specific professional knowledge (including forest ecology) rather than relying on the model.

If a hydrologist is exploring the effects of past and proposed harvesting in a watershed it is prudent to have at least a general understanding of forest health. The current mountain pine beetle epidemic has been recognized as a potentially significant factor influencing watershed integrity, but there are a host of other forest health agents that should be accounted for, including root rots, blights and other bark beetles. Climate change is highlighting the need to understand the influence of forest health in watershed management. Assuming that forests are static entities or that logged areas will regenerate without fail can expose watersheds to unexpected risks.

Research on snow accumulation and melt—key drivers in streamflow generation—has identified the important role of trees. But all trees are not equal—different species have different crown shapes and thus different influences on how snow is caught and sheltered from wind and solar radiation. Appreciating how this translates into watershed management prescriptions requires knowledge of tree identification as well as distributions of species in different ecosystem associations and the spatial distribution of those ecosystems.

Hydrology is a very broad field and some applications such as bridge design may not appear to require a forestry background. However to effectively design structures it is important to know the types of vehicles using the roads, the ecological constraints on forest management, and the influence of watershed processes on peakflow generation and sediment and debris movement. Historically, in my area many drainage structure designs were based on limiting costs rather than fitting structures to the site. The result was operational challenges and modifications to stream hydraulics that in some cases destabilized stream channels. Significant increases in peak flows have been forecast in watersheds with extensive mountain pine beetle attack, leading to concern regarding the security and safety of drainage structures.

One aspect in developing forestry prescriptions on fans requires knowledge of tree response to sediment burial. A key feature on active portions of fans is the lack of butt flare where trees have been buried. However, this feature disappears over time as adventitious roots grow and re-establish butt flare—a process that can take several decades. A geoscience colleague hadn't taken this into account and thus didn't recognize the actual level of activity on the fan. He now uses increment coring and basic forest ecology to explore for evidence of past disturbance events.

It has been my observation that most professionals working in forest hydrology and watershed management today have recognized that a forestry background is essential for their scope of practice. The skills and knowledge they bring benefit our professional practice and have improved our management of forested watersheds.

Dave Wilford, PhD, RPF, PGeo is the forest sciences team leader and research forest hydrologist for the Ministry of Natural Resource Operations. He has been based in Smithers since 1975.

Same Land, Different Acronyms: Understanding

When planning forestry activities within a watershed, ecological services, such as a healthy supply of drinking water, often compete for attention with other water-related values. However, forest professionals must show that they have considered the potential impact that their work will have on water intakes. Forest professionals are often conversant with riparian areas and fisheries, but addressing risks to drinking water can be a substantial challenge. A first step is to become familiar with the legislative requirements and the language of drinking water protection.

Relevant Legislation

Most resource professionals will be familiar with the requirements of the *Forest and Range Practices Act* (FRPA) and its regulations regarding drinking water quality in the context of community watersheds. However, resource professionals also need to be familiar with the provisions of the *Drinking Water Protection Act* (DWPA) when preparing plans and prescribing or supervising activities on the ground.

The DWPA and its regulations are the principle legislative tools governing drinking water in BC. Section 23 of the DWPA prohibits introducing, causing or allowing anything to be introduced into a domestic water system or a drinking water source that results in a drinking water health hazard. This is supported by Section 59 of the Forest Planning and Practices Regulation (FPPR) under FRPA which states that an authorized person who carries out a primary forest activity must not cause material that is harmful to human health to be deposited in, or transported to, water that is diverted for human consumption by a licensed waterworks.

As all water treatment systems have limitations, the forest professional's responsibility to protect source water quality is an essential component in the water provider's role of delivering safe drinking water to consumers. If a drinking water officer (DWO), a government employee who implements and administrates the DWPA, concludes that Section 23 has been contravened as a result of activities in the watershed then they may issue an abatement order or impose punitive actions. Clear communication between forest professionals, water providers and DWOs can help avoid watershed conflicts.

Water Sources and Water Source Areas

A water source, in the eyes of a water supplier, means a stream, lake, spring or aquifer where a point of diversion (a water intake) has been established. The drinking water source area is the watershed or watersheds that connect and feed into the water source. Any activity in the source area that may impact water quality at the intake is of concern to the water supplier.

Domestic Water System or Water Supply System

An individual family may obtain a permit to divert water from a surface water source for drinking. This is called a domestic water system under the DWPA. If the same point of diversion is supplying drinking water to two or more families, it is called a water supply system and requires a construction and operation permit under the DWPA. All resource activities upstream of any water system are prohibited from contaminating drinking water under Section 23 of the DWPA.

Contamination

Contamination is the introduction of deleterious substances into a stream, lake or subsurface water flow. Direct contamination may result from fuel or oil spills, chemical applications, or the introduction of human or animal waste. Indirect hazards may arise from increased human and animal use of the area. For example, road development increases sedimentation, human and vehicle pollution, and creates new corridors for wildlife. This may intensify the levels of contaminants, turbidity, and human pathogens (viruses, protozoa and bacteria) entering into the water network that must be managed by a treatment system.

Turbidity

Turbidity, or cloudiness in the water, is caused by suspended organic and colloidal matter, such as clay, silt, finely divided organic and inorganic matter, bacteria, protozoa, and other microscopic organisms. It is measured in Nephelometric Turbidity Units (NTUs) and is generally acceptable when below 1 NTU and becomes visible when above 5 NTUs. Processes such as sedimentation, erosion or landslides contribute to turbidity in the water. Turbidity, depending on its source, is associated with the potential presence of pathogens in drinking water. Increased turbidity may overload disinfection processes and place human health at risk.

Treatment

Water treatment refers to barriers put in place to safeguard against human health risks. Treatment infrastructure varies depending

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Viewpoints

By Rob Wood, RPF and Steve Baumber, MSc, RPF

the Language of Drinking Water Protection

on the quality of the water source and may include disinfection and/or filtration to remove or inactivate contaminants. A source such as a deep well may need very little treatment, whereas a water intake at a lake, stream or shallow well may require multiple treatment barriers. Treatment systems are based on expected levels of turbidity and contamination. Increases to either have the potential to overwhelm water treatment capabilities.

Filtration

Filtration is a treatment applied to reduce turbidity and human pathogens by removing suspended particulate matter. Increases in turbidity can potentially increase daily filtration maintenance and operating costs. Systems that draw good quality water from protected deep well and surface sources often do not need filtration. Filtration is recommended for unprotected surface intakes and, in some cases, shallow wells. However, even in situations where source water is of uncertain quality, the high cost of filtration technology means that water suppliers may not be able to afford filtration systems. Disinfection is often then the sole method for drinking water treatment.

Disinfection

Disinfection is a treatment process to reduce waterborne pathogens. A water supplier is required to disinfect a water supply to remove potentially harmful microorganisms. Chlorination and ultra violet light (UV) are the most common disinfection treatments in BC.

Chlorination is the addition of chlorine to disinfect drinking water. It is highly effective given sufficient levels of chlorine and exposure time. Residual chlorine in the water after treatment prolongs disinfection throughout the delivery system. Chlorinating water with higher than normal turbidity may not fully treat all pathogens, may produce a potentially harmful by-product, and reduces residual chlorine which increases the risk of contamination in the delivery system.

Ultraviolet light (UV) disinfection is a non-chemical process that inactivates harmful microorganisms by exposing water to UV waves. Increased turbidity can affect UV treatment as large particles in the water can block and absorb the UV light, reducing its ability to inactivate microorganisms. UV is also only effective within the facility and, unlike chlorine, does not guard against contaminants within the water delivery system.

Applying the Language

Forest professionals address multiple values in their forest stewardship plans and site plans, often requiring consultation with experts in other disciplines. Drawing on the knowledge of DWOs, water suppliers, and domestic water users is integral to developing results, strategies and specific forest practices for drinking water protection.

Forest professionals can get the most out of these discussions by maintaining an awareness of the associated terminology and legislation. Refer to the "Comprehensive Source-to-Tap Assessment Guide" (www.health.gov.bc.ca/protect/pdf/cs2ta-intro.pdf) for more information regarding drinking water source area protection.

Two websites supported by the Ministry of Environment may also be of assistance. The BC Water Resources Atlas (WRBC) (www.env.gov.bc.ca/wsd/data_searches/wrbc/index.html) is an i-Map service that can display data regarding Points of Diversion (water licenses). The Water Licenses Query (http://a100.gov.bc.ca/pub/wtrwhse/water_licences.input) can allow you to research water licenses by license number, stream name, and/or purpose.

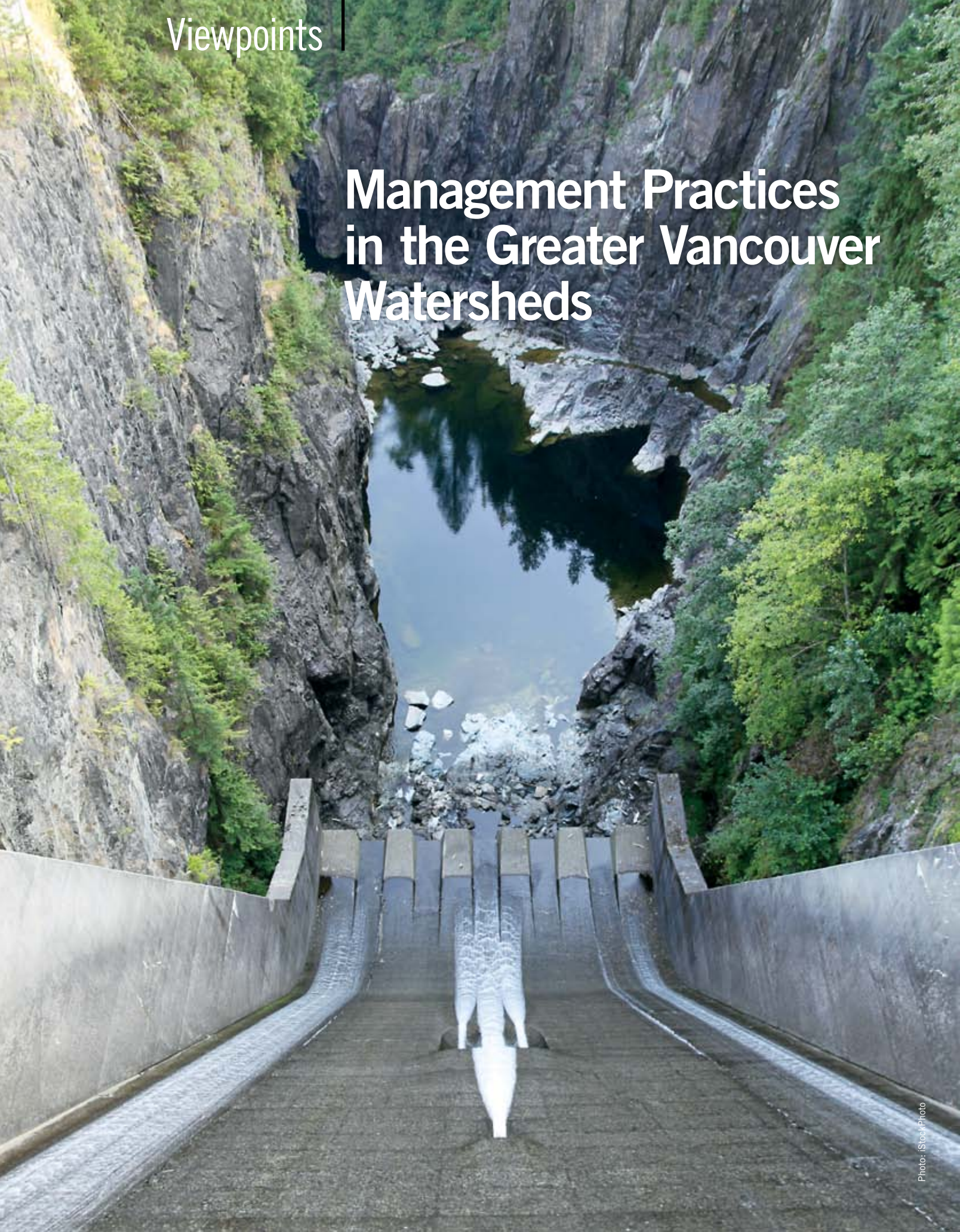
Rob Wood, RPF, is a drinking water policy analyst with the BC Ministry of Health Services, Health Protection Branch. Prior to the public service Rob worked over 15 years in government program administration and natural resource management with industry and consulting firms.

Steve Baumber, MSc, RPF, has worked for many years consulting and contracting in the forest sector. He completed a Masters in Forestry in 2009 and is currently the drinking water spatial data analyst for the BC Ministry of Health Services.

The Role of the DWO

Local implementation and administration of the DWPA is carried out by drinking water officers (DWOs) and their delegates in each provincial health authority. DWOs assess if water delivered by a water supplier poses a risk to human health. This is accomplished through monitoring and assessments of the water supply system from source to tap. DWOs also respond to concerns by water suppliers and the public regarding activities in a source area that may impact drinking water, and their decisions can have operational consequences for forest licensees.

Management Practices in the Greater Vancouver Watersheds



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Viewpoints

By Derek Bonin, RPF

The Greater Vancouver Water District (GVWD) and member municipalities work together to supply clean, safe drinking water for 2.2 million people in the Greater Vancouver region. They do this using three integrated sources—the Capilano, Seymour, and Coquitlam watersheds—which are made up of 580 square kilometres of coastal, forested land.

One key component of clean, safe drinking water is good watershed management. So within Metro Vancouver's Drinking Water Management Plan, is the Watershed Management Plan. It outlines the programs needed to keep the watersheds operating well and involves the following components.

Watershed Security

Watershed security restricts public access by maintaining gates, fences, signage and conducting watershed patrols. Restricting access to the watersheds reduces the risk from microbiological or chemical contamination and risk of fires. This practice is the first barrier of a multi-barrier approach that also includes water treatment and water testing to ensure the best possible source water quality and ultimately clean, safe drinking water at the tap.

Water Monitoring and Forecasting

Water monitoring and forecasting provides reliable and timely information on source water quality, watershed snowpack and stream flows. Turbidity sensors provide early warning of elevated turbidity events that may impact drinking water quality. These measurements of the physical, biological and chemical parameters in the reservoirs ensure water quality. However, collecting this information isn't easy. We maintain and evaluate the network of monitoring stations, add new stations to fill information gaps and remove redundant ones where necessary. Maintenance and upgrade of sensors in the rivers and reservoirs also requires constant attention.

Forest Ecosystem Management

Forest ecosystem management is achieved by minimizing the amount of human induced disturbances such as logging, road construction and land clearing. Natural disturbances are monitored as to their extent and impact to watershed resources. A past western hemlock looper infestation and occasional blowdown within some second growth stands has resulted in no measurable impacts to the water resource while likely contributing to important ecological functions for habitats and biodiversity.

Fire Management

Fire management involves retaining fire suppression resources, developing fire preparedness plans and emergency response plans, and supporting community wildfire protection plans. Extensive wildfires are rare in the watersheds, although evidence exists of natural fires occurring in the warmer and drier zones located at low elevations in the watersheds. The consequences of wildfires in the drier zones may pose risks to water quality, public safety and property, and air quality.

Road Decommissioning

A network of roads previously designed and built for a sustained-yield, forest management program are being decommissioned. The end of the sustained yield, forest management program and the start of decommissioning logging roads resulted from recommendations from a multidisciplinary team of scientists and public advisors as to the best watershed management practice to minimize the risk to drinking water quality. Non-essential roads are decommissioned by conducting a range of road deactivation practices from complete pullback of road fill to only removing culverts to maintain natural drainage.

Road Maintenance

Road maintenance is a routine but important practice on the remaining essential roads. Roads are maintained to a high standard to undertake watershed management activities over the long-term. High road standards include ensuring a stable road prism, providing sufficient road surfacing and upgrading drainage structures that also facilitate fish passage. Road safety is paramount and is achieved by ensuring the road right-of-way is brushed to maintain visibility, road signage is in place, mandatory radio communication and posting a watershed travel advisory based on weather conditions.

Erosion Control

Erosion control practices are undertaken to avoid potential impacts to the quality of water entering the water distribution system. Practices include stabilizing gullies, revegetating landslide scars and armouring stream banks. We try to find a balance between enhancing aquatic habitat while being protective of drinking water quality.

Water System Infrastructure

Water system infrastructure is required for the storage, transmission and treatment of the water supply while conserving watershed resources to the greatest extent possible. The water system infrastructure within the watersheds includes seismic upgrading of dams, constructing water intakes, installing pipelines and building water treatment facilities. The road network provides access to sources of aggregate and staging areas for the storage of soils and construction materials. Federal and provincial regulations prescribe best management practices in conjunction with project approvals.

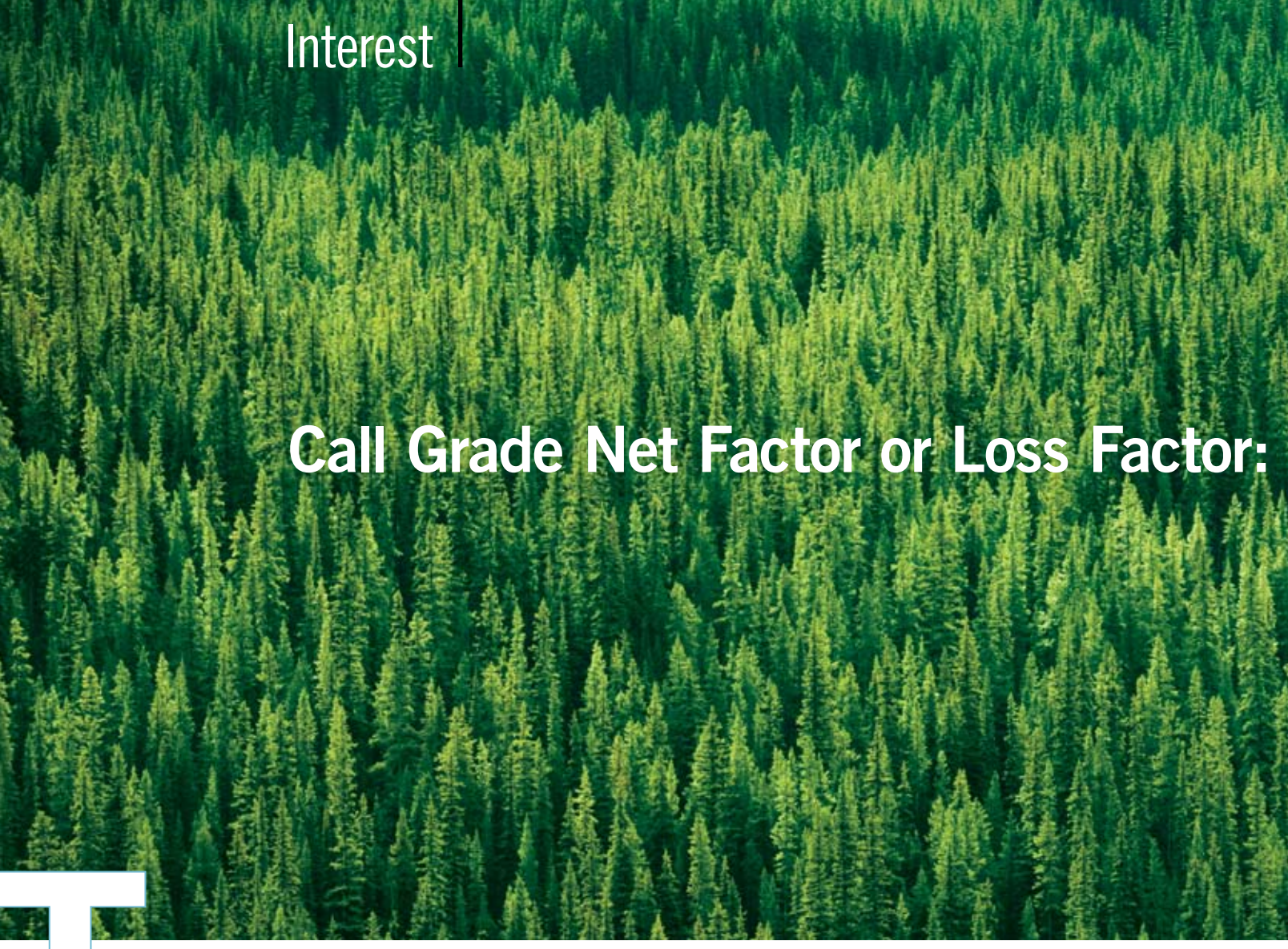
Communication and Education

A public education program demonstrates that watershed resources are managed in an environmentally responsible and cost-efficient manner. The program includes:

- Public review and input on plans
- Watershed data and information on Metro Vancouver's web site
- Public tours of the watersheds and,
- Resources for education.

Currently, a comprehensive environmental management system is being developed by Metro Vancouver for the entire drinking water system. This will ensure that all regulatory requirements are met and the public can be confident that there is a process in place to continually improve the programs used to assure Metro Vancouver's drinking water supply, quality and sustainability.

Derek Bonin's, RPF, 30-year career at Metro Vancouver includes forest management, watershed planning, and developing strategies associated with the fisheries resource and drinking water supply.



Call Grade Net Factor or Loss Factor:

There are two distinctly different methods of cruising currently in use in BC, Loss Factor (LF) and Call Grade Net Factor (CGNF). Both methods have been around for many years and can generate quite different cruise volume and value estimations. Loss factor cruising has been the method used by the Ministry of Forests and Range (MOFR) for over 40 years to determine cutting permit cruise volume and value. CGNF cruising has been around for almost as long in coastal BC and is used extensively in the US and other countries. Both methods estimate the volume and value of a stand. However, they can generate quite different answers. So what is the difference?

Both methods take the 'gross' volume of a tree and reduce the volume to account for rot and other factors to generate a 'net' volume. On the coast, log grades are applied to the net volume by log to get the net volume by log grade within the stand. In the Interior, the lumber recovery factor is calculated from the cruise data to predict the potential volume of lumber available. At the end of this process the numbers on the page are presented in exactly the same format but usually show very different results. CGNF cruising is most common on the coast however, is becoming more frequently used in the interior as it generally produces a better estimate of timber volume and value.

It is also important to note there are two methods of CGNF cruising. Four years ago industry and the MOFR developed a CGNF system for use on the coast that utilizes a set of principle based deductions derived from the Vegetation Resource Inventory (VRI) process. The other (more traditional) method is a system where the cruiser estimates the decay and log grades based on experience, knowledge and scaling conventions. The MOFR system is somewhat regimented in its process and principles while the traditional method leaves the final determination up to the discretion of the cruiser.

Loss factor (LF) cruising uses a set of deductions defined by species, diameter class, Forest Inventory Zone (FIZ), Public Sustained Yield Unit (PSYU) (yes, cruising still uses this land classification) and decay indicators. These tables are summarized into 'risk groups' that are applied to each tree. In general, there are three risk groups for each species. The significant point here, is that the risk group reduction is applied to the entire tree as a whole regardless of where the decay indicators are located. The LF system was initially developed to be used in the inventory field and was later adapted for appraisal cruising. At the inventory level (we're talking TSA, TFL) LF cruising produces quite reliable estimates. The risk group reductions when averaged over large data sets accurately estimate the net volume for the inventory unit being sampled. Log grades used on the coast and lumber recovery factor used in the Interior are calculated on a tree basis. The log grades are determined within the compilation through a set of algorithms using other tree quality remarks recorded by the cruiser. In the Interior, the potential amount of lumber (lumber recovery factor) and other products is calculated within the compilation using a complicated set of criteria applied to the tree attributes within the compilation.

Interest

By Ron Mecredy, RFT, ATE

What's the difference?

MOFR's CGNF cruising uses a set of mathematical deductions similar to scaling deductions combined with tree taper to derive the net volume of each log within a tree. Loss indicators (scars, conks etc) are identified and the loss associated to that indicator is applied to that log. The volume of each log is then summarized to calculate the net volume of the whole tree. These deduction rules are based on well established and tested vegetation resources inventory (VRI) and scaling conventions. Another deduction for net volume adjustment factor (NVAF) is then applied at the compilation level to adjust the volume for taper differences, hidden decay and missing wood. The net volume adjustment factor data is generated from vegetation resources inventory sampling through a very rigorous and statistically proven procedure. During the CGNF process, the cruiser also grades the tree based on scaling rules adapted for cruising. The end result is an estimate of the net volume and value of the tree on a log by log basis as seen by the cruiser.

The principle difference between the two systems is as follows:

The LF system uses a compiled estimate of volume and value based on tabled decay factors with broad averages designed for large inventory level sampling combined with log grade algorithms and complicated formulas to calculate the stand volume and value.

CGNF uses the cruisers visual estimations, knowledge and experience looking directly at each tree combined with scaling conventions to estimate volume and value on a log by log basis.

So how about accuracy?

First, it is important to point out that all results are just an estimate and must be viewed in that perspective. Many factors affect the final net volume of a stand that are beyond the cruisers control. Just to name a few: sampling error, number of plots, taper factors, hidden decay, local conditions, bucking and utilization policies all contribute to differences in volume. Many users take the cruise summary and consider them to be the definitive cruise volume without taking into consideration the above factors. Given the impacts of mountain pine beetle, it is also important to point out that LF cruise volumes are based on normal live forests. They were not designed for cruising catastrophic events such as the mountain pine beetle.

In a general sense, the CGNF cruise will produce a more realistic estimate of cruise volume and value. While considering the factors above, the volume and value are based on visual estimations made by the cruiser. The LF system relies heavily on broad averages compiled inside a computer. There is very little continuity between the cruise data and the results. By comparison, the results from a CGNF cruise can usually be directly compared to the cruise data and the visual estimations made by the cruiser.

Ron Mecredy, RFT, ATE, is president of Mecredy Cruising and Forest Consulting Ltd. and lives in Campbell River, BC.

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Craig Konst, RFT
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Timothy Jarrett Moser, RFT
Gary Lee Phillips, RFT
Dan Pituskin, RFT
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Micheal Leonard Scarff, RFT
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Gregory David Samuel Zenuk, RFT

*Has work experience remaining to complete as of February 3, 2011. Section 7.0. of the Registration Policy, allows a candidate to write within 6 months of completing articling/ work experience requirement as at the date of the exam. Must meet this requirement before he/she may apply for RFT status.

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Hugo Ian McLeod, RPF
Matthew James Merritt, RPF
David Douglas Miller, RPF
Grantly Richard Nishio, RPF
Daniella Oake, RPF
Matthew James A. Peasgood, RPF
Nicholas Roy Plett, FIT*
Melanie F. G. Plett, RPF
Andrew Robert Preston, RPF
William Redhead, RPF
Jeffrey D. Rensmaag, RPF
Gregory David Rose, RPF
Sally Marlene Ann Sellars, RPF
Daryl Sherban, RPF
Kristofer David Sigalet, RPF
Karl Arthur Eric Sommerfeld, RPF
Wesley David Staven, RPF
Peter Ethan Strickland, FIT*
Kathleen Isabel Swift, RPF
Kevin Russell Trott, RPF
Matthew Tutsch, RPF
Stephanie Mary Wilkie, RPF
Scott Bryce Witbeck, RPF

*

*Has work experience remaining to complete as of February 3, 2011. Section 7.0. of the Registration Policy, allows a candidate to write within 6 months of completing articling/ work experience requirement as at the date of the exam. Must meet this requirement before he/she may apply for RPF status.

2010 Exams

By Randy Terise, RPF, ABCFP Registrar

Building a Forest Professional Workforce:

The 2010 Registration Exams

Congratulations to everyone who wrote and passed the 2010 registration exams.Friday October 1, 2010, in 28 locations throughout BC.

The ABCFP had a special exam sitting in 9 locations in late November, for people who were unable to write the first exam because, they were on fire duty during the long 2010 fire season, or were otherwise unable to attend the regular exam sitting in October. The ABCFP also administered one oral exam which was held in December 2010 and an exam for an RPF who transferred to BC under federal labour mobility provisions. A total of 128 people wrote the registration exams – 55 RFT candidates and 73 RPF candidates.

Each year, coordinating of the entire multiple exam locations is a colossal task. But three very dedicated ABCFP staff makes it happen, by coordinating all the aspects required to set up exams in many different locations across the province. At each location we are very fortunate to have excellent volunteer invigilators, who do a wonderful job of ensuring the exam is written according to the ABCFP exam rules. After the exams are written, the invigilators then collect the exams, and ensure that they are promptly delivered to the ABCFP office for marking. The exams are then marked by a dedicated group of volunteers from the board of examiners (BOE). The BOE understands that exam writing is stressful for most people. With that in mind, they make a special effort to ensure that every exam is fairly assessed.

This year we have three excellent valedictorians—two RFTs and one RPF. The highest mark on the 2010 RFT registration exam part A was earned by Rory Alexander Smith, RFT, who scored 78%. The highest mark for those who wrote both parts A and B of the RFT exam was achieved by Etienne Noel Cote, RFT, at 78.5%. The top mark on the RPF registration exam was 80.9% and was scored by Bruce William McClintock, RPF. Congratulations to this year's valedictorians.

The names of the 2010 successful examinees are available on page 22. These new RPFs and RFTs will be welcomed into the profession at the Inductees' Luncheon at the ABCFP Annual General Meeting and Wood is Good conference. This year, the conference is being held in Vancouver from February 23-25, 2011.

Registration Exam Statistics

2010 RFT Exam

RFT	# of Writers	Average Mark	2010 Pass Rate	2009 Pass Rate
PART A ONLY	10	53%	60%	97%
PART B ONLY	17	55%	53%	50%
BOTH A AND B	22	63%	59%	68%
OVERALL	49	n/a	57%	89.50%

A total of 49 candidates wrote the RFT registration exam in October and 28 of those candidates passed the exam for an average pass rate of 55%. The pass rate for the 10 candidates who only wrote Part A, was 60%. The pass rate for the 17 people who wrote part B only was 53%, and for 22 people who wrote both Part A and Part B the pass rate was 59%. The overall pass rate was 57%.

A total of 6 candidates wrote the RFT special registration exam in November. Of those 1 wrote part A only and passed, 2 wrote part B only and neither of them passed, and 3 wrote part A and B and 1 person passed.

2010 RPF Exam

RPF	# of Writers	Average Mark	2010 Pass Rate	2009 Pass Rate
SIT DOWN ONLY	6	68%	83%	100%
TAKE HOME ONLY	12	68.50%	75%	83%
TAKE HOME AND SIT DOWN	51	67%	78%	78%
OVERALL	69	n/a	78%	81.30%

The overall pass rate for the 69 candidates who wrote the RPF exam in October was 78%. Candidates had the option of writing a take-home exam. If they chose this option, they were only required to answer seven of the 14 questions on the October 1st exam. The pass rate for candidates who chose to write both the take-home and sit down exams was 78%. The pass rate for the 6 people who wrote just the sit down exam was 83%, and the pass rate for writers of only the take home exam was 75%.

A total of 2 candidates wrote the RPF special registration exam in November, and 1 of these candidates passed. We also had one candidate complete and pass an oral examination, and one candidate passed the examination for RPF's who transfer to us from another province under federal labour mobility provisions.

By Jeff Waatainen, LLB, MA, BA (Hons)

Forestry Manuals: **Legally Enforceable or Not?**

Numerous manuals are used to administer public forest tenures in British Columbia. The most commonly referenced of these are probably the coast and interior appraisal manuals used to determine stumpage rates in BC. That said, many others are also used in the day-to-day administration of BC's forestry resources. These include the *Ministry of Forests and Range Policy Manual*, the *Provincial Logging Residue & Waste Measurement Procedures Manual* (the Waste Manual), the *Cruise Compilation Manual*, and the *Scaling Manual*—just to name a few. These manuals are voluminous, technical and require a high degree of professional expertise to understand. A little Zen-like knowledge of the universe also helps. Those who are experts with these manuals often receive the designation of 'guru' as in, "Larry's our appraisals guru."

Given the ubiquitous use of manuals in the BC forest industry, free-thinking individuals might reasonably ask, "Are these things legally enforceable?" Of course, my lawyerly answer is that it depends.

In terms of regulatory law, legally enforceable rules within provincial constitutional jurisdiction (such as forestry) must flow from the Legislature in the form of statutes or validly enacted 'subordinate legislation.' (That is legislation that the Legislature has statutorily authorized another body to enact.) The important thing to note is that while the Legislature is free to enact any legislation it wants within constitutional constraints (former Minister of Forests Dave Zirnhelt was absolutely right in this regard), a subordinate legislative body is only authorized to enact regulations that fall strictly within the grant of authority that the Legislature bestowed upon it. A subordinate legislative body is, in effect, a proxy that exercises a narrowly defined slice of the Legislature's jurisdiction on behalf of the Legislature.

While subordinate legislation most often takes the form of regulations enacted by the provincial cabinet, authority to enact subordinate legislation is commonly granted to other bodies as well. For example, the Legislature has granted municipalities the authority to enact municipal bylaws, a form of subordinate legislation. Closer to home, the Legislature has authorized the council of the ABCFP to enact bylaws under the *Foresters Act* with respect to the practice of professional forestry, also subordinate legislation.

Some of BC's forestry manuals, in whole or in part, contain subordinate legislation that our courts will enforce. Section 105(1) of the *Forest Act* requires the Ministry to determine stumpage rates "in accordance with the policies and procedures approved ... by the minister", and the Minister approves these policies and procedures in the appraisal manuals. The BC Court of Appeal held in MacMillan Bloedel Ltd. v. Appeal Board (1984) that the power to approve policies and procedures under section 105(1) is akin to regulation-making. The courts and administrative tribunals of BC have consistently enforced the appraisal manuals as subordinate legislation ever since.

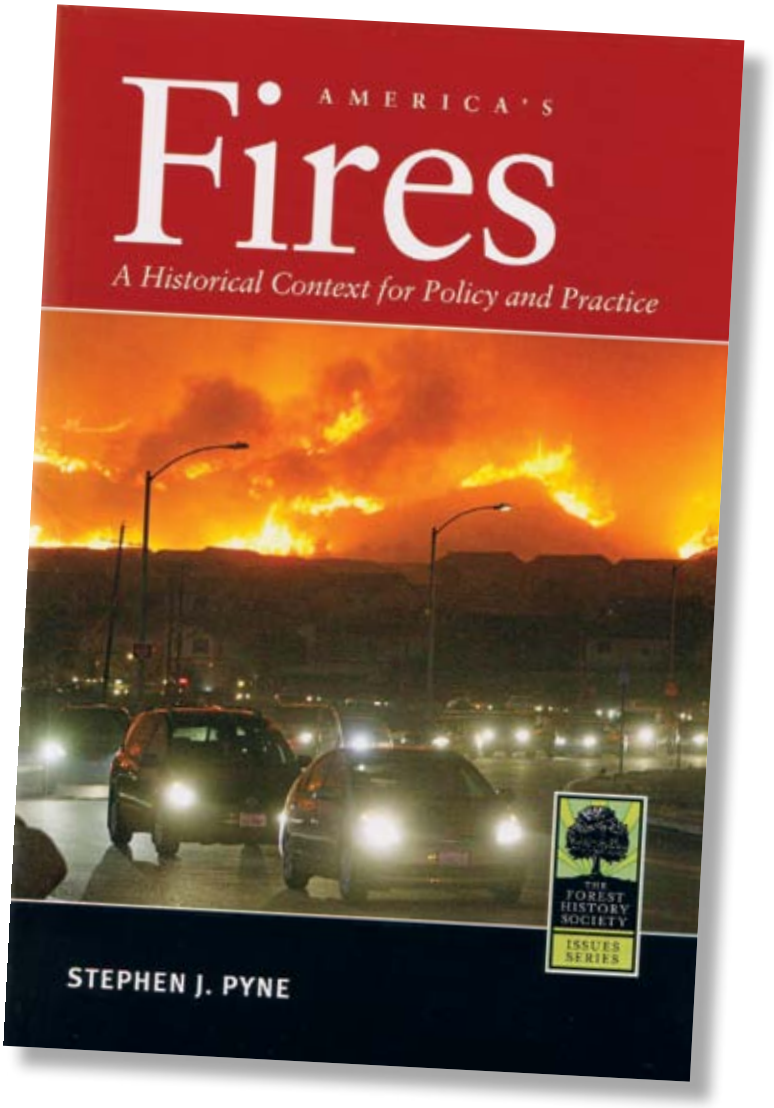
Manuals can also obtain legal enforceability as a matter of contract law (as opposed to regulatory law). For example, a forest tenure is a contract and most forest tenures will expressly provide for the assessment of waste under the tenure in accordance with the *Waste Manual*. Through referential incorporation into the forest tenure document, the requirements of the *Waste Manual* with respect to the assessment of waste become part of the contract between the licensee and the government. This allows the parties to enforce the *Waste Manual* in the courts as a matter of contract law. The same is true for the requirements of any other manual to the extent that those requirements are referentially incorporated into a contract.

Nevertheless, those who make their livelihood in the forest industry are right to cast a suspicious eye towards the legal significance of any manual. The Ministry has no inherent authority to create legally enforceable rules: "ministry policy" is not synonymous with "legal requirement." As the Forest Appeals Commission has noted on several occasions, Ministry policy, on its own, does not have the force of law. Unless ministry policy is created as subordinate legislation validly authorized under a statute of the Legislature, or is referentially incorporated into a forest tenure or other contract, ministry policy is simply guidance with respect to the Ministry's approach towards a given matter.

Jeff Waatainen is a past adjunct professor of law at UBC, has practiced law in the forest sector for over a dozen years, and currently works as a sole practitioner out of his own firm of Westhaven Forestry Law in Nanaimo.

America's Fires: A Historical Context for for Policy and Practice

By Pyne, Stephen J.
2010 The Forest History Society Issue Series - revised edition
xvii & 93pp., illustr.
ISBN978–0–89030–073-2 (pbk)



Ranking: 4.5 out of 5 cones

Probably no one is better qualified than Pyne to describe developing changes in attitudes to fire and burning in the United States. His introductory foreword, note, overview and prologue explain the desirability for this revised edition and show how, over the centuries, mankind has viewed, used and misused fire as a land management tool at the same time paying little regard to fire as a biochemical process.

The first four chapters recount the history of fire use and fire fighting in the United States from aboriginal times until the mid-1960s when re-thinking about fire began. In Chapter Five, Pyne details a revolution in thinking about the pros and cons of fire suppression and exclusion. Continuing the military metaphor he'd used earlier he notes, "The war on fire soon confronted multiple insurrections...": costs, beginning understanding of ecological effects, perceived Forest Service arrogance and stubbornness, scepticism about officialdom and technical experts and, inter-agency differences all contributed to these insurrections centred on Tall Timbers Research Station in Florida and Berkley campus of the University of California.

Chapter Six contrasts the four options of letting fires burn, excluding or suppressing fires as much as possible, using prescribed burns, and altering the landscape so as to ensure fires will burn as desired. Suppression remains a key factor but without the former 'out-by-10:00 am' requirement. With the Nature Conservancy playing a significant role, there is no longer a clear distinction between policies for public and private lands as is shown in the problem of wildland–urban interface, or 'intermix' fires. The author interestingly suggests "... a kind of fire militia..." to assist with them. Restoration of a suitable fire regime requires reconciliation of fire behaviour with the local landscapes, which vary widely across the US. Lastly he looks beyond his country to the rest of the world and the UN-sponsored Global Fire Monitoring Centre in Germany. An epilogue pulls all these threads together.

It's only the final chapter which has more than general interest for BC foresters. Here there is food for thought and ideas which might have local application. Very readable, the book lacks an index and I was surprised to read that "...decades of fuel accumulated because of overgrazing..." and it is surely incorrect to equate fire regimes in lodgepole pine and coastal Douglas-fir. Finally, am I the only one who is irked when 'America' is used as a synonym for the US?

Reviewed by Roy Strang, RPF (Ret)

Forestry Team in Action

Yesterday's Forest Professionals – Today's Weed Warriors

Since inception, the Invasive Plant Council of BC (IPCBC) recognized that forest professionals' skills are a great fit for managing invasive plants in our province. As a group, forest professionals have a sound background in ecology and plant biology, enjoy the outdoors, can handle a GPS, map out a site, wield a shovel and care about the environment.

Approximately one third of the IPCBC's full-time staff is currently comprised of forest professionals. They work on a wide range of projects: managing operational weed control; developing and delivering training programs; presenting workshops and speeches; designing industry best practices programs; and facilitating public and professional education initiatives.

The IPCBC's forest professionals are thrilled to be working with various government agencies, non-profit organizations, and industry groups to limit the establishment and spread of alien plants that threaten our province's biodiversity. In fact, invasive plants directly impact forest resources when they limit natural and artificial regeneration, and increase wildfire intensity and soil erosion.

If you are interested in learning more about invasive plants, how they threaten BC, or how you can help minimize their spread, please visit www.invasiveplantcouncilbc.ca, or call 250-392-1400.

Project Team

Elaine Armagost, RFT; Heather Davis, RPF; Pam Jorgenson, RPF

Contact

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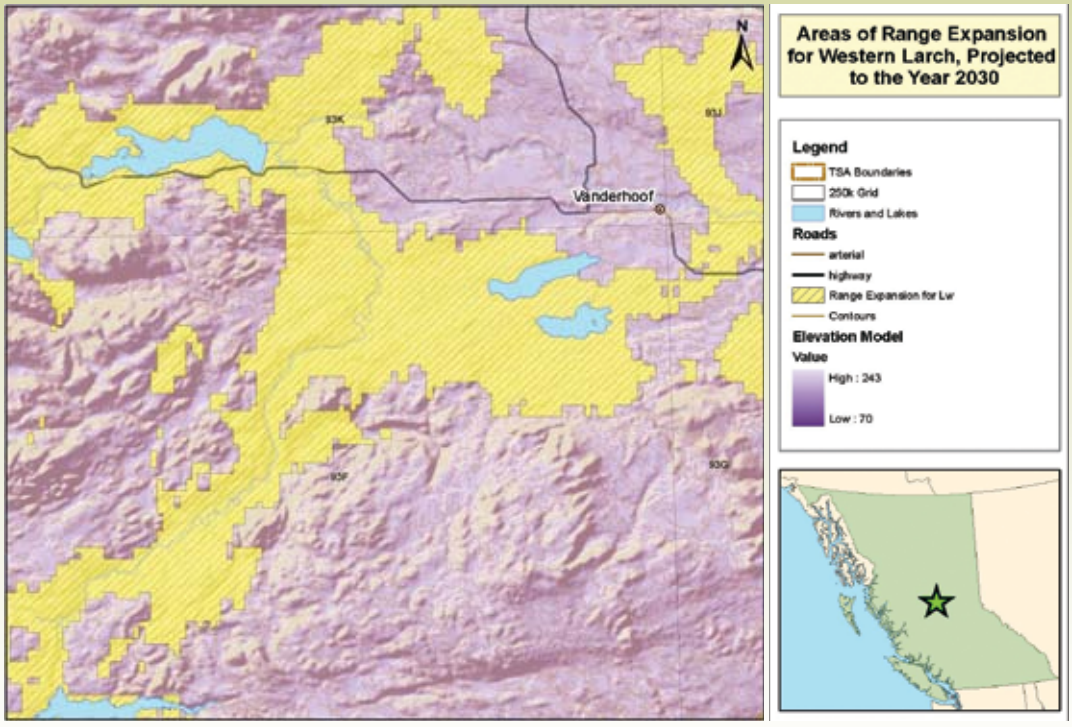
Funding

Community Development Trust, Invasive Alien Species Partnership Program, Ministry of Agriculture and Lands, Ministry of Transportation and Infrastructure, Western Economic Diversification

Forestry Team in Action



Assisted Range Expansion of Western Larch

In June 2010, amendments to the Chief Forester's Standards for Seed Use were made to provide resource managers and forest practitioners the flexibility, innovation and adaptive capacity to expand western larch beyond its contemporary range across British Columbia.

These amendments, which come into effect on October 3, 2010, are based on recent scientific research (Rehfeldt and Jaquish, 2010) that uses a bioclimate approach to match seed sources with areas projected to be climatically suitable in the future. A policy approach and risk assessment framework, which was further modified based on stakeholder review and input, was also developed by a multi-disciplinary team of forest professionals, researchers and other specialists in the Ministry of Forests and Range."

Climate change adaptation strategies such as these support the BC Climate Action Secretariat's vision to "make adaptation a part of the BC Government's business, ensuring that climate change impacts are considered in planning and decision-making across government."

The latest amendments serve as "interim measures" to be used until the development of a more comprehensive climate-based tree species selection and seed transfer decision support system is completed for all species (over the next five years). The intended outcome of this policy initiative is to maintain or enhance ecosystem resilience and forest productivity, reduce tree species vulnerability (through increased tree species diversity) and to improve the chances that tomorrow's plantations are well adapted to the future climate.

Research results are published in the journal, Mitigation and Adaptation Strategies for Global Change, Gerald E. Rehfeldt and Barry C. Jaquish, March 2010, ISSN 1381-2386, Vol. 15, No. 3, p 283-306.

Organizations Involved

Association of BC Forest Professionals, BC Community Forest Association, Centre for Forest Conservation Genetics, Federation of BC Woodlots, FGC Interior and Seed Transfer Technical Advisory Committees, Forest Genetics Council of British Columbia, FRPA Implementation Team, Ministry of Forests and Range

Project Team

Kevin Astridge, RPF; Lee Charleson, RPF (Co-Lead); John Harkema, RPF; Kathy Hopkins, RPF; Barry Jaquish, RPF; Matt LeRoy, RPF; Shirley Mah, RPF; Leslie McAuley, RFT; Denise McGowan, RPF; Greg O'Neill, RPF; Barrie Phillips (Co-lead)

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E-mail: Leslie.Mcauley@gov.bc.ca
Websites: http://www.for.gov.bc.ca/code/cfstandards/ http://www.for.gov.bc.ca/hti/climate_based_seed_transfer/index.htm

Professional Listings

The Regional District of Mount Waddington - Forest Capital 2010 *- did an amazing job of celebrating their title last year. In this photo, some of the key players in the team celebrated at the closing ceremony.*

The Regional District of Mount Waddington includes Woss, Alert Bay, Sointula, Hyde Creek, Port McNeill, Port Hardy, Port Alice, Coal Harbour, Winter Harbour, Quatsino, Holberg and Kingcome Village.

In Memoriam

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 **BC Forest Professional**. The association sends condolences to the family and friends of the following member:

Randall (Randy) Gregory Sulyma

RPF #2824 | 1967 - 2010

Randy Sulyma, MSc, RPF, RPBio, was a project manager and forester/biologist who conducted research and inventory projects throughout northern British Columbia. He passed away at the young age of 43.

Randy's enthusiasm for life was passionately expressed as: husband, dad, coach, ecologist and student. He pursued all aggressively and was determined to improve himself and everything he touched. In doing so, he has enriched the lives of all those who knew him.

During the many conversations we've had while working together away from home, Randy always spoke of recent events with his family (wife Sandra and children Joel and Emily). We traded stories about the philosophical nature of coaching and it was obvious that Randy had a relentless dedication to teaching sport and bringing joy and laughter to not only his own children but to those of other families as well.

Randy's career as an ecologist just kept getting stronger and brighter – and he deserved the opportunity to contribute so much more. He had an insatiable appetite to challenge dogma, investigate the unknown, and dream innovation. This all began as a young forester with the BC Ministry of Forests in Fort St. James (1991-1994, 2006-07) and continued with the BC Ministry of Environment (1995, 2005-06). Intermittent through this time Randy worked as a consultant with Forest Floor Contracting Ltd. (1994-2004), together with his wife Sandra in their own business Resource Interface Ltd. (2004-2006), and then finally Wildlife Infometrics Inc. (2007-2011). I first met Randy when he was a student studying the ecology of terrestrial lichens (the primary food supply for woodland caribou during winter). Even before he finished his master's degree at the University of Northern BC (2002), Randy's knowledge and genuine interest in the science of ecology led him to participate in habitat supply modeling and recovery planning for woodland caribou populations around north central BC. Thus began an ambitious, accomplished and fruitful part of Randy's career that was focused on adaptive management of terrestrial lichens, vegetation ecology, caribou population biology and habitat supply modeling. His many technical reports, published papers and adaptive management installations concerning this work represent a legacy that will provide benefit for other biologists and lichenologists to follow.

Randy absolutely loved field work – and was good at it. But he brought an unusual ability to be as adept at office tasks as those in the field. Although uncommon, once one knew Randy, his breadth of abilities was no longer surprising. Randy had such a love for life that he was an accomplished student of anything he put his mind to. This curiosity always led to many deep discussions and debate, always serious, but usually with a note of humour that brought smiles and laughter – and Randy's laughter was infectious.

Randy will be remembered always by his family, friends and colleagues.

Submitted by Scott McNay, RPF, RPBio

A Moment in Forestry

Submit your moment in forestry to Brenda Martin at: **editor@abcfp.ca**

This photo was taken in November 2010 in the Kennedy Siding area, near the Pine Pass. (Approximately 150 km northeast of Prince George.)
Submitted by Mike Darin, RFT, Prince George

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