Silviculture
MAGAZINE

Spring 2013

Public Attention for Private Forests

Forestry in Taiwan

Mountain Pine Beetle in the Yukon

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Publisher Kate Menzies
Designer Krysta Furioso
Editor Dirk Brinkman

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Silviculture Magazine
601 East Pender St., Vancouver, BC. V6A 1V6
Phone 778 882 9156 | Fax 604-628-0304
Email info@silviculturemagazine.com
www.silviculturemagazine.com

Editorial

by Dirk Brinkman

What is the future of silviculture?

The future of silviculture may be to implement one of humanity's most vital global initiatives, the restoration of degraded and deforested areas. For those of us seeking a life of challenging adventure, this has all the characteristics of a wicked problem, one so difficult it is hard to even know where to start.

The June 2012 Rio Convention survey from a million concerned global citizens designated "a global forest and land restoration program" the second highest priority for nations today. A higher level of consensus than I expected when I participated. Apparently this is an idea whose time has come.

Last fall in Bonn twenty five nations and hundreds of organizations crystalized this initiative through the Global Partnership on Forest Landscape Restoration (GPFLR), committing to restore 150 million hectares of degraded and deforested lands by 2020. IUCN, the secretariat for the Bonn Challenge, has already secured 50 million hectares in pledges. Commitments of this scale sound like the pledges of overreaching dreamers, but the World Resources Institute Forest and Landscape Restoration Opportunities global mapping exercise identified 2 billion hectares of degraded and deforested land that have a potential for restoration. China, a member, held its 2009 Copenhagen commitment to avoid 2°C by increasing forest coverage by planting 40 million hectares over 2005 levels by 2020, outside of the Bonn Challenge. A lifetime challenge for future silviculturists.

But the Bonn Challenge is a truly wicked problem: a 'project with incomplete, contradictory and changing requirements'. The mega-funding for 150 million hectares of restoration presents a difficult problem. This was apparent in the annual UN climate conference, when it took place in Doha. Naderev Saño (chief negotiator for the Philippines) made an impassioned plea describing the recent devastation of Typhoon Bopha--SE Asia's Hurricane Sandy.

"As we … vacillate and procrastinate here, the death toll is rising… heartbreaking tragedies like this are not unique to the Philippines, because the whole world, especially developing countries struggling to address poverty and achieve social and human development, confront these same realities. I appeal to all, please, no more delays, no more excuses. Please, let Doha be remembered as the place where we found the political will to turn things around. Please, let 2012 be remembered as the year the world found the courage, the will to take responsibility for the future we want. I ask of all of us here, if not us, then who? If not now, then when? If not here, then where?"

COP President Al Attiyah of Qatar, COP's host (Qatar has the world's highest per capita GDP and highest CO_2 emissions), replied to a similar appeal the next day.

"I have plenty of time, I can sit here for one year; it is you who does not have much time."

The rich say 'not us, not here, not now' because they fear giant global restoration sinks to remove carbon will be too expensive. Knowing the history of failures, corruption and lack of accountability in developing countries, they are in no hurry to throw money at restoring degraded land.

My example is Haiti, who committed to planting a billion trees last month, to reach the forest cover of Cuba, a regional model of sustainability. The 2009 UNEP Haiti Regeneration Initiative report finds most of Haiti's 400 plus regeneration initiatives failed. If we can solve Haiti's wicked problem, we can solve the global problem (the Environmental Prisoners' Dilemma).

On April 19th, 2013, Haiti celebrated its new billion tree commitment at Haiti's Earth Day Summit. Haiti Regeneration Initiative's recommendations for bold, large scale and top down support and for bottom up small scale design by the local community is both met. And the new commitment recognizes the historic threat to new reforestation – previous projects just fed Port Au Prince's insatiable appetite for charcoal, something that might be solved, at least partially, by more efficient stoves.

The last issue of Silviculture Magazine featured an example of a successful project Planting for Pemba . Over the past seven years, our company's treeplanters have been among those supporting the local

Erik Brinkman presenting on reforestation to a Haiti Earth Summit audience, April 2013. Photo by Zack Embree

reforestation initiative of Community Forests International (CFI) in Pemba, Tanzania. CFI facilitates local community reforestation through education about trees they could plant. It helps them negotiate local land rights, make a plan, build nurseries, grow seedlings, plant, tend and protect the trees. It also teaches families how to build efficient stoves. But communities and families lead this initiative themselves. Because of CFI's approach it has successfully facilitated the reversal of deforestation. Yes it is a smaller island, but it has similar problems. And costs were so low that treeplanters in Canada could fund the program through donating some of their earnings.

Surely Qatar would support Haiti's restoration if those who benefit own the reforestation project, reducing funding costs and ensuring accountability. Good education tools have emerged to help the poorest of the poor develop through reforestation. The Environmental Leadership and Training Initiative (ELTI) is a tropical native species reforestation information clearinghouse recently translated into Spanish and Portuguese.

Enabling successful reforestation on scale is a great opportunity and a great challenge. Because of climate change, regenerating Haiti is urgent. Climate patterns are changing, and consequently, so too is the frequency of windstorms, drought, fire, pests. Because of climate change, resilience will have to be built into forest and community plans.

But yes, there is a future in silviculture and yes, it will give you a satisfying life of challenges.

Reader's Lens

Photo by Jeremy Cameron

Photo by Kim Niddery

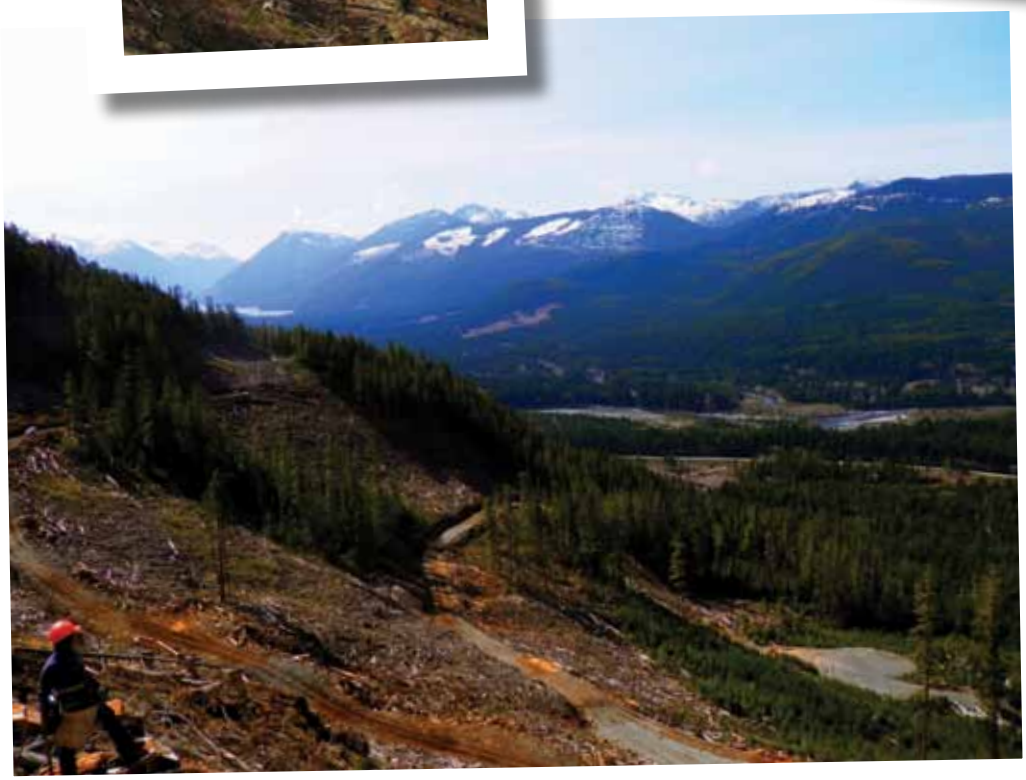

Photo by Kim Niddery

DO YOU HAVE A GREAT SHOT?
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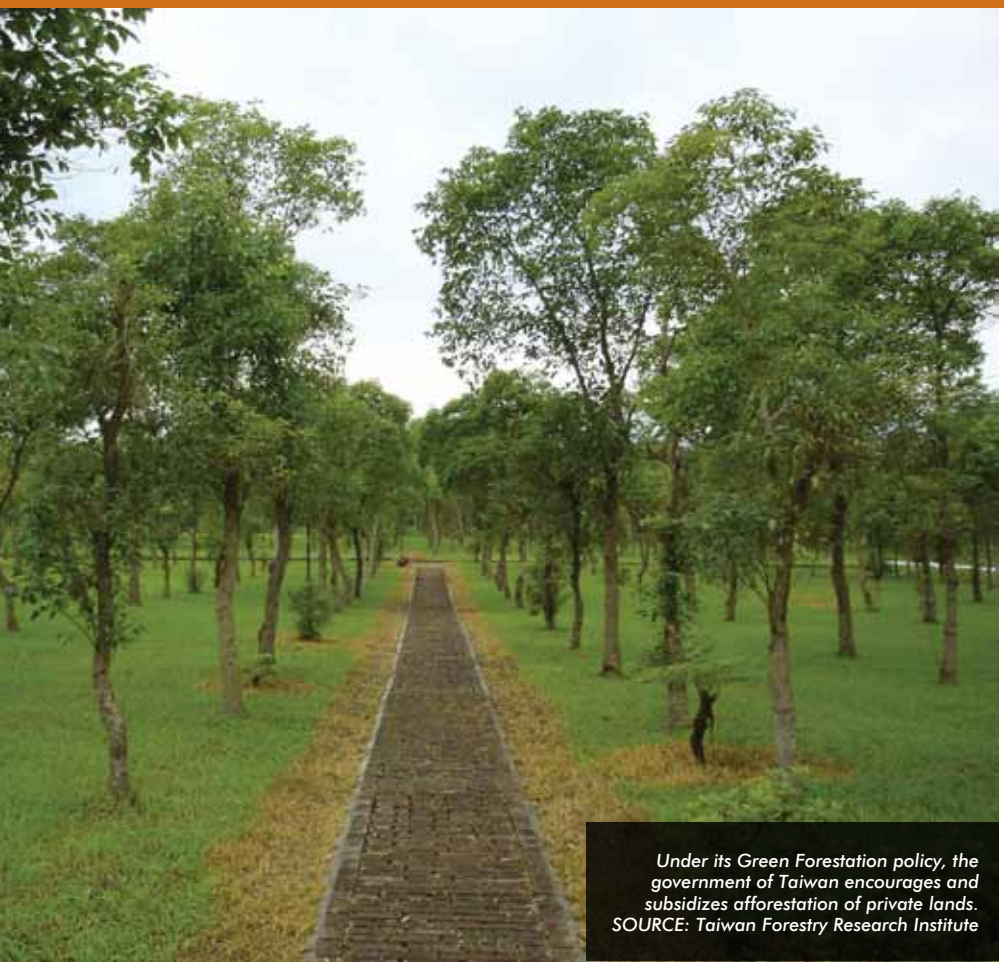
Taiwan Seeks a Balance between Forest Conservation, Forest Carbon Sinks, and Wood Production

By Hwa-guang Shang



Under its Green Forestation policy, the government of Taiwan encourages and subsidizes afforestation of private lands. SOURCE: Taiwan Forestry Research Institute

Taiwan, an island nation in the western Pacific near China, is a surprisingly rich and varied landscape. With an area of just 36,193 square kilometers, slightly less than New Jersey and Connecticut combined, Taiwan has a population of about 23.3 million, making it one of the most densely populated countries in the world. Nonetheless, the island is home to 8,335 flora species, 36,303 fauna species, and 11,432 other species—more than 50,000 different species in total, of which around 30 percent are endemic. Taiwan represents a tiny fraction of the world's terrestrial area, but has about 2.5 percent of the world's species.

Taiwan has rich and diverse forest resources. Vertically, the conditions provide various natural resources for wide spectrum of vegetation, ranging from alpine shrubs (above 3,500 meters), subalpine coniferous forest (3,000-3,500 meters), cold coniferous forest (2,500-3,000 meters), temperate mountainous coniferous forest (1,500-2,500 meters), temperate mountainous broad-leaved forest (700-1,500 meters), subtropical mountainous broad-leaved forest (below 700 meters), and tropical coastal forest. Taiwan has most of the types of forest ecosystems in the world. Although these resources have been developed and exploited since the era of Japanese Occupation in 1895, the Third Forest Resource Census done by the Forestry Bureau in 1995 revealed that some 2.1 million hectares of forests remained in Taiwan, or more than 58 percent the nation's land area.

Administratively, Taiwan's forest lands can be classified into three categories - national lands, county/city lands, and private lands. Of these, 73 percent are undeveloped natural forests, 20 percent (approximately 420 thousand hectares) are planted forests, and the rest (7 percent) are bamboo woodlands. Among these, 1.64 million hectares are national forest lands managed by the Forestry Bureau, which covers 78 percent of the total forest areas in the nation. Forests for research purposes cover 57 thousand hectares, taking up 2.7 percent; and other public and private forests of 404 thousand hectares, taking up 19.3 percent of the total forest area.

Taiwan was also frequently threatened by overexploitation and extreme events such as typhoons or torrential downpours in the past decades. For example, Typhoon Herb in 1996 broke the local record of daily precipitation amount accumulated as high as 1,748.5 mm (about 69 inches). In 2009, Typhoon Morakot struck Taiwan with a 6-day rainfall amount reaching 3,059.5 mm (120 inches). These extreme climate events resulted in enormous losses of lives and property.

Although the government of Taiwan tries to spread the conception that forests play a very important role in soil and water conservation as well as in natural disaster mitigation, the abuse and spoilage of forests is common and serious. To protect forests, particularly on mountain slopes, from clear cutting and to provide wildlife habitat, Taiwan's government in 1992 prohibited commercial logging in national, natural forests. Since then, logging of planted forests has typically been less than 50,000 cubic meters annually, which provides less than 1 percent of domestic supply, with the rest coming from imports. Consequently, domestic lumber production in Taiwan is nearly stagnant due to conservation mandates and high production costs. Such a low self-supply rate of wood will, however, create negative views from abroad and loss of economic self-control.

On the other hand, with population growth and the elevation of living standards, Taiwan is placing greater stress on the natural environment. The burning of vast quantities of fossil fuels has resulted in a gradual increase of atmospheric greenhouse gas concentrations, which in turn has led to global warming. According to the report issued by Oak Ridge National Laboratory's Carbon Dioxide Information Analysis Center, Taiwan's CO2 emissions in 2008 was ranked as the 24th highest in the world. Thus, the government and people of Taiwan will need to act quickly to address the ecological risks of global climate change. That is to say, although Taiwan is not a signatory of the "Kyoto Protocol," there is no reason that Taiwan should exclude itself from the trend toward carbon dioxide emissions reduction, given its role as a member of the global community. In fact, wood and paper are necessities of our daily life, and even with conservation, minimal requirements must be met. Importing these materials without using Taiwan's own resources would be tantamount to a mentality of hoarding one's own treasures while raiding those of one's neighbors. Furthermore, unmanaged forests not only tend to become senescent, with raging diseases, insect infestations, and fire hazards, but also contribute little toward the health of ecosystems and biodiversity. They also have low carbon-fixing capacity, therefore having little positive meaning besides letting nature run its own course.

Since the Kyoto Protocol only recognizes a set amount of carbon for planted forests, raising the management efficiency of these forests is an important task. Layers of fallen leaves and the soil under the forest trees also have the capacity to store carbon. As we know, large-scale logging and massive destruction of forests are the main reasons why forests lose their ability to store carbon dioxide. Overgrown forests are also poor at retaining carbon dioxide. Thus, to effectively update the national forests at elevations of 1,500 meters to sea level and under 30 degrees of slope, planned logging or belt cutting will make possible the reuse of trees with low economic value, which can serve as materials for wood products and ensure that the remaining trees have sufficient room for growth and animals have a good living environment. The government should leave remote and steep natural forests alone, but should establish plantations on a large scale in more accessible, safer, or flatter areas, and carry out periodic harvesting. These plantations will then provide the local people with the benefits of timber, carbon sinks, water resources, recreation, and healthy forest ecosystems.

To this end, Taiwan's government developed the Green Forestation policy in 2002 and has encouraged private forest landowners to plant local tree species, such as Cinnamomum camphora, Zelkova formosana, etc., on cleared lands, fallow farms, and damaged forest lands, and to create city/community greenery by which the area of forestation and increase absorption of carbon dioxide will be expanded. The Forestry Bureau provides participators with subsidies for lowland afforestation for as long as 20 years on the basis of USD $3,850 per hectare per year. From 2008 to 2011, the area of planted forest increased by 15,559 hectares, and the goal is to plant up to 60,000 hectares by 2016.

Forests are the terrestrial ecosystems that can most effectively sequester carbon dioxide. Facing the serious challenge of global climate change, the public and private forestry sectors in Taiwan are correcting perceptions and doing their best to conserve natural resources and reduce waste, to love and care for their forests, to regulate and enhance the domestic timber self-sufficiency rate, and to retain a healthy environment with green mountains and clear waters for future generations to enjoy.

Hwa-guang Shang, a researcher at the Taiwan Forestry Research Institute (TFRI), is an International Fellow at the World Forest Institute in Portland, Oregon (wfi.worldforestry.org). Contact him at hshang@worldforestry.org.

Getting Ahead of the Mountain Pine Beetle in Yukon

by Government of Yukon, Forest Management Branch- photos courtesy of Government of Yukon

The mountain pine beetle (MPB), *Dendroctonus ponderosae*, is a native North American bark beetle that is distributed throughout most of the range of lodgepole pine in British Columbia. Although the MPB population has not expanded into Yukon (there are currently no confirmed sightings of the beetle in Yukon), it has moved quickly northward in the last few years within the Rocky Mountain Trench in northern British Columbia.

In the next few years, there is potential for further northward movement of MPB into Yukon. For this reason, Yukon government's Forest Management branch has been monitoring MPB in northern BC by aerial and field surveys since 2009.

In 2011 the Government of Yukon established an interdepartmental MPB committee to assess the risk of MPB to Yukon pine forests. Other responsibilities in the committee's mandate include identifying information and research gaps and management options should the MPB establish in Yukon. One of the recommendations resulting from the committee's work was to complete a pest risk analysis as a response to the potential threat of MPB to novel lodgepole pine forests and to continue monitoring the northward movement of MPB in northern British Columbia.

Risk to Yukon's forests and Monitoring the MPB

A pest risk analysis was completed in December 2012 by a forest health specialist contracted by the Forest Management branch. The first step in developing the pest risk assessment was the identification of risk posed by a specific disturbance agent (MPB). In the case of MPB, the potential risk to Yukon forests was recognized as early as 2003, when pheromone baits trapped beetles for the first time on the east side of the Rocky Mountains near Chetwynd, B.C. Then the Rocky Mountain Trench was recognized as the most direct and geographically the most suitable lowland route for the beetle to move northward toward Yukon. Forest inventory data also indicated an abundance of susceptible pine within the Rocky Mountain Trench.

The only question remaining was whether the beetle could survive the rigours of climate, particularly the increasingly harsh winters, as it moved northward. This question was answered by aerial survey data from British Columbia, which documented the northward movement. In 2010, large areas of continuous beetle-caused mortality were mapped within the Muskwa-Kechika Conservation Area, 150 kilometres south of the Yukon border.

Monitoring the Mountain Pine Beetle

In 2011, after viewing the 2010 aerial survey maps from northern British Columbia, Forest Management branch staff took a proactive approach to managing the threat posed by the MPB. Surveys were conducted to determine beetle movement between 2010 and 2011, as well as an assessment of the size and health of the current MPB population. Aerial surveys in 2011 determined that the beetle had advanced northward and killed small numbers of pine trees as close as 80 kilometres south of the Yukon border. Ground surveys within 13 stands in August 2011 found that severe cold during the winter of 2010/11 had killed the vast majority of broods within the trees but significant recent attacks were seen in three of the 13 stands. Detailed results of these surveys were published in two reports available upon request from the Forest Management branch.

The Forest Management branch will continue to provide updates on the monitoring of the northward movement of the MPB to land managers and the public in Yukon through public reports (such as the yearly Forest Health report), presentations and other information gathering sessions.

MPB Assessments Conducted in 2012

Two MPB assessments were conducted in 2012 and were broken into two stages:

- Stage 1: June ground assessment
- Stage 2: July aerial survey

Stage 1

In early June 2012, a four-person crew accessed nine stands by helicopter to perform "R-value" assessments on trees that were attacked the previous year. The purpose was to determine survival of overwintering broods and estimate the risk for further attacks by emerging broods.

The first three assessments were made at sites where current attacks were found and trees were flagged during the 2011 ground survey. The additional six sites were selected for assessment based upon the presence of "faders" (trees attacked and killed in 2011 and recognized from the air by the yellow-red colour of the crowns), and the availability of a helicopter landing site.

Typical "R value" sample showing no brood survival

The assessment consisted of removing 225cm2 (15 cm X 15 cm) bark samples at breast height (1.3 m) from the north and south sides of each of 10 trees per site and counting the surviving broods. No living progeny were found in any of the 172 samples (Photo 2). Note only six trees were sampled at one site. Heavy woodpecker debarking was seen at all sites. Little or no larval development was seen in most samples.

Any development that was seen had been killed by winter cold. There were signs of woodpecker feeding at most sites, but instead of removing extensive bark in search of larvae, the woodpeckers had made small and evidently targeted feeding holes. We concluded that, in most cases, the woodpeckers had been feeding on the parent adults.

In most cases of severe winter mortality, it was possible to find a small surviving population at or near the root collars of the trees, where the broods were insulated from the severe cold by a layer of snow. Examples of survival were found at some of the sites but time constraints precluded a comprehensive examination to determine frequency and abundance. These progeny will have matured into adults later in the summer, and emerged from the trees to attack new hosts. In addition, examination of a few of the red trees (attacked in 2010) found small numbers of preflight adults that had failed to mature in 2011. These beetles will have emerged within the next few weeks, but the population was small and unlikely to overcome normal tree defenses.

"R value" sample containing broods killed by winter cold

Stage 2

A two-day fixed-wing aerial survey was completed in July 2012 to map "faders." In 2011, south of the confluence of the Kechika and Frog rivers (approximately 150 km south of the Yukon border) MPB had killed almost all of the mature pine. North of there for another 10 km, many large patches of mortality were mapped, but there remained an abundance of available host. All areas mapped in 2011 within this zone contained faders, but in 2012 the attack intensities were generally lower. Farther north within the trench, patches of attacked trees were small and widely scattered and there was no increase in mortality from that recorded in 2011.

Surviving larvae at the base of a tree attacked in 2011

Pine in area of discontinuous attack showing red trees (2010 attacks) and faders (2011 attacks)

A small patch containing a few "faders" was mapped near Aeroplane Lake, approximately 80 kilometres south of the Yukon border. There was, however a significant northern movement to the east of the Rocky Mountain trench. Populations had apparently crossed the height of land between this creek and Matulka Creek to the south, where some mortality had been recorded the previous year.

Bait Traps

Since 2009, Forest Management branch has been setting up and monitoring pheromone bait tree stations in southern Yukon to detect MPB. These pheromone baits do not attract MPB over long distances, but will draw them to the baits if they are already in the area. No presence of MPB was found in 2012.

In summary

It is not known at this time if there will be a sufficient MPB population to attack and overcome the defenses of a significant number of trees and continue the infestation into 2013. It is clear, however, that the northern movement of MPB faces significant challenges in the Rocky Mountain Trench. Two successive winters with prolonged periods of intense cold have killed all of the broods above the root collar. The number of "faders," though surprisingly high, was significantly less than was seen in 2011. This decline in tree mortality is expected to continue in 2013. If favorable weather occurs for a few years in a row (i.e., mild winters and seasonably warm spring and summers), populations could increase. The MPB is well adapted to take advantage of opportunities, and there remains a large pool of susceptible host trees. A possible future scenario could result in small remnant populations surviving and crossing the border into southeast Yukon and killing scattered individual or small groups of trees. This could occur within the next five to eight years. Meanwhile, Forest Management branch will continue the pheromone trapping program targeting pine stands along the Alaska Highway southeast of Watson Lake, to monitor any beetle populations that stray across the border.

Submitted by Government of Yukon, Forest Management Branch. Any questions or feedback can be directed to Robin Sharples, Forest Management Branch, at robin.sharples@gov.yk.ca or 867-633-7908.

Focus on Safety

By John Betts

We should be losing sleep over lack of sleep.

I recently wracked up some sleep debt thinking, at 3:00 am, whether or not tree planters were getting enough sleep; I had just listened to a presentation from Pat Byrne the Vancouver Canucks so-called 'sleep doctor'. In Mr. Byrne's (and many other sleep scientists') view, we are a society that is asleep at the wheel. We aren't getting enough sleep and the consequences are potentially catastrophic.

When asked how much sleep we should try to get each night Byrne replied, "How productive do you want to be?" Since the Canucks began actively managing player's sleep they have won five divisional titles and been one of the best teams in the NHL. Losing sleep means you lose your ability to concentrate and you respond slower. Just being a few percentage points off their best performance means the difference between winning and losing for professional athletes.

When considering the importance of sleep in tree planting and other silviculture activities, the first things that come to mind are drivers, ATV operators, crew bosses and supervisors. If these people are off their game because they have gone days without enough sleep their judgment, concentration and reactions are impaired. Those lapses could lead to injury, or worse, to themselves and the workers they are in charge of.

Generally, we need seven to eight hours of sleep per day and that sleep should be at night. Young workers, people under 24, are still developing and it is common at that age to stay up later and sleep in longer. Even getting up early for work can be detrimental the quality of their sleep. As we accumulate sleep debt there is a corresponding linear decline in some of our critical cognitive functions; the very ones we need to drive vehicles attentively, notice hazards and exercise judgment. In other words the things we perform to keep us alive and safe.

The deeper and more chronic the sleep debt the longer it takes to reduce it. It may take days, if not weeks, of intense, well structured sleep to pay back an accumulated sleep debt. Another key characteristic of sleep debt is that you think you are doing OK, when you are not. We adapt to going without enough sleep but it is an illusion that we are performing well. Individuals studied give grossly inaccurate estimates of the amount of sleep they are getting and their levels of performance. They tend to significantly overestimate their level of sleep and ability. In the workplace that can be disastrous.

The effects of lack of sleep are often compared to the impairment we see with high blood alcohol levels. In fact some jurisdictions in the U.S. and Australia consider sleep impairment legally equal to showing up for work or driving under the influence of alcohol. Their sleep strategy does not just rely on penalties, more constructive approaches include sleep and shift management programs. In some cases it even means letting people sleep on the job. In those circumstances incidents are reduced without losing productivity.

The sports world is one in which we toy with risk and uncertainty. If a sports team loses a game, the real world consequences (not withstanding the odd riot and bruised partisan sentiment) are actually trivial. But in the work world, if a driver loses control of a truck full of workers the consequences are potentially fatal. The silviculture sector will do well to learn from the Canucks sleep culture. It is no stretch of the imagination to figure that with our seasonal industry, the pressures for production, the levels of exertion, the general accumulation of fatigue, the environments we sleep in, the age of the workforce, the social life and so forth, managing sleep is critical for production and safety.

Owners, supervisors and workers can find out more about sleep management by visiting the excellent site at Mayo Clinic or Byrne's site. If silviculture companies are not already operating sleep management strategies, they should begin with key workers who have critical safety functions. Unfortunately just telling people to go to sleep doesn't work. They need to understand the symptoms and consequences for themselves and their workers. For that you need to study and demonstrate sleep debt. The WSCA, through the BC SAFE Silviculture Program, is looking into the kind of research necessary to create a better sleep culture for the silviculture sector. If it is working for the Canucks it should work for industrial athletes too.

John Betts is the Executive Director of the Western Silvicultural Contractors' Association and can be reached at hotpulp@gmail.com.

Western Canada

Western Silvicultural Contractors Association

By John Betts, Western Silvicultural Contractors' Association Executive Director

BC needs an updated inventory and a clear purpose to apply it.

A look at a map showing the vintage of our B.C. forest inventory shows much of it is at least ten years out of date. Now is a good time to get things current. With the mountain pine beetles running out of wood we have to make sense of the dead and degraded bug-attacked forests that cover millions of hectares of the province. We also have to closely monitor our second growth plantations, particularly young pine stands that are showing serious forest health problems. And we probably have to play some catch up on adopting the latest methodologies for gathering and sorting the information needed. It is hard to argue against the providence and necessity of getting our forest inventories on track.

Nevertheless, in setting our inventory in order, we need to outline to what larger purpose we intend to apply this information. Inventorying the forest is a means not an end. In fact we may need to set our goals before we begin measuring. Just as our information has fallen behind events on the ground, so has the overarching forest management regime that required it. In this post mountain pine beetle setting we need a new defining doctrine that will actually identify the kind of information we include in the next inventory. There is the strong possibility that data will need to be both deeper and wider and that it will serve a different set of purposes than its predecessor.

> "Terms like forest health, resilience, and restoration are gaining some currency in both political and administrative circles."

Just what the next management regime looks like is beginning to take shape. Terms like forest health, resilience, and restoration are gaining some currency in both political and administrative circles. But they will need to be shaped into a coherent set of objectives in order to guide practices. The WSCA in its Green Plan recommended we make all management activities, including the harvest, move us towards creating forest conditions that will be able to better resist, and not repeat, the kinds of events we have just seen devastate much of the province. Call it restoring forest health. Or building resilience back into ecosystems. But it needs to be defined so it can point us in a new and clear direction. To update our inventories and then apply that information to the previous practices and purposes will be disappointing.

Notwithstanding the latter necessity we are far past the point in the unfolding, or the unraveling, of events on the ground to put things on hold while we undertake the inventory. The need for some activities is self evident. For instance managing the fire threat to communities, infrastructure and the existing productive forests doesn't need a lot of study. We can be accomplishing constructive work creating jobs and restoring key traits to our forests while we undertake the inventory. Over time that can all be brought together under the overarching direction that government and forest shareholders need to elaborate soon.

Ontario

Ontario Forestry Association

By Ontario Forestry Association Staff

Peter Schleifenbaum, owner and manager of Haliburton Forest and Wild Life Reserve, was asked to open the recent OFA conference with a presentation on his perspectives of what a working forest is. His positive message and outlook kicked off the annual OFA conference off with enthusiasm and set the tone for the day. As a private landowner with a variety of activities taking place on his property, Peter has a unique perspective on what a working forest really means.

Upon failing to find a definition of what he thought described a working forest accurately, Peter developed his own.

"A working forest is a forest where the sustainable production of timber is balanced with other consumptive and non-consumptive uses while contributing to the non-quantifiable benefits received by society"

Peter believes that there are 3 key parts of every working forest: timber production, multi-use and sustainability as an over-arching goal and strategy. A working forest works to balance all of these three components.

To Peter, all of the different components of timber production are part of a working forest- including the process of harvesting, the hauling and the delivery to the mill. He believes the challenge is that in Ontario we are too disconnected with what we are producing from the forest. There should be a greater integration between mills and forests, especially in southern Ontario where we have very high value wood. The harvesting and regeneration should work as an integrated unit, so that we are planning for future healthy forests.

Peter expressed his concern with the challenges that the Ministry of Natural Resources has faced over the past 20 years and the impact that this could have on our working forests. There either needs to be more confidence put in the MNR or a new model may need to be created for forestry in Ontario. Our resources are valuable and we need to start treating them this way.

What is sustainability and what does it mean in the concept of the working forest? There is no ecological sustainability without economic sustainability. You have to pay for what you are doing, including holding some land aside for conservation. Our working forests are providing ecosystem services to the people of Ontario, including clean air, water and wildlife habitat. He sees that the Managed Forest Tax Incentive Program (MFTIP) is a way for the public to pay back for those services. Therefore working forests are entitled to MFTIP and we should focus away from it being a tax benefit, and more about it being an entitlement.

"A working forest is a forest where the sustainable production of timber is balanced with other consumptive and non-consumptive uses while contributing to the non-quantifiable benefits received by society"

In looking to the future of our forests, Peter spoke about 4 major challenges for the working forest: economics, government, climate change, and invasive pests. Beyond these challenges we need to look at our forests as a sustainable resource, and really the only sustainable resource on this globe, if we manage them well. Forests are not just about trees- we know what they are doing and where they will be tomorrow- rather, on a daily basis, we are dealing with people interacting with the forest. People are both the asset and the challenge.

Our working forests provide great benefit to society and balancing various needs from the forest is the goal of sustainability.

Québec

Association des Entrepreneurs de Travaux Sylvicoles

Par Isabelle Miller-Cantin

Depuis plusieurs années, le 1er avril 2013 était sur toutes les lèvres. Voilà maintenant quelques semaines que le nouveau régime forestier est en place. Ce virage majeur au sein de l'industrie forestière et sylvicole du Québec emmènera son lot d'adaptations pour tous les acteurs du milieu, particulièrement pour les entrepreneurs et le ministère des Ressources naturelles.

Le changement le plus important sera sans aucun doute que les entrepreneurs changeront de clients. Dans l'ancien régime, le bénéficiaire de contrat d'approvisionnement et d'aménagement forestier (BCAAF) était le responsable de la remise en production à la suite de la récolte. Dorénavant, c'est le ministère des Ressources naturelles (MRN) qui octroiera les contrats pour la réalisation des travaux sylvicoles. Les deux futurs partenaires devront apprendre à travailler ensemble et surtout à se faire confiance. Le dialogue sera probablement un incontournable afin que chacun réalise quelles sont les contraintes de l'autre. Chacun a déjà ses préoccupations : l'entrepreneur de réaliser des travaux de qualité tout en rentabilisant ses opérations et le MRN de s'assurer que les fonds publics soient bien gérés et qu'une reddition de comptes efficace soit faite.

Dans un autre ordre d'idées, il est à noter qu'il y aura maintenant des ententes de travaux techniques forestiers (ETTF) ainsi que les traditionnelles ententes de réalisation de travaux sylvicoles (ERTS). Voici les éléments qui seront compris dans la planification opérationnelle : recherche de terrains, confection du plan de sondage de l'inventaire avant traitement, prise de données de l'inventaire avant traitement, balisage (rubanage), proposition de prescriptions, réalisation des inventaires de qualité d'exécution (après traitement), compilation et analyse des inventaires après traitement et traitement des données géographiques, et finalement confection du rapport d'exécution signé par un membre de l'ordre des ingénieurs forestiers du Québec.

Tout bon projet ou grand changement emmène son lot d'imprévus, d'ajustements ou de retard dans sa mise en place. Le nouveau régime n'en diffère pas. Au départ, 25% des travaux devaient être aux enchères. Devant la réduction de budget pour la réalisation de travaux sylvicoles en 2013 ainsi que le surplus de travail demandé au MRN afin d'être prêt, le volume de travaux qui sera mis aux enchères devrait avoisiner les 10%. Cela diminuera la charge de travail du ministère pendant la période de mise en place du régime.

De plus, le portrait de la certification sera modifié. En effet, le ministère a confirmé le retrait de l'obligation aux entreprises réalisant des travaux sylvicoles non commerciaux de détenir un certificat ISO-14001. Par contre, les entreprises devront encore détenir la certification sur les Pratiques de Gestion des Entreprises Sylvicoles (PGES) pour les travaux non-commerciaux. Afin de respecter l'article 62 de la loi sur l'aménagement durable du territoire forestier (« Les activités d'aménagement forestier planifiées sont réalisées par le ministre ou par des entreprises d'aménagement détenant un certificat reconnu par le ministre ou inscrites à un programme pour l'obtention d'un tel certificat[…] »), l'obligation d'une certification est tout de même maintenue. Pour la saison 2013-2014, les entreprises auront le choix entre la certification ISO 14 001, ou une nouvelle certification de gestion environnementale adaptée à la sylviculture qui serait annoncée incessamment. Par contre, cette dernière serait prête seulement à l'automne, donc les entreprises sylvicoles devront s'engager à avoir des pratiques respectueuses de l'environnement durant la saison. Dès l'an prochain, les entreprises sylvicoles devront être dans le processus d'un système de gestion environnementale (SGE), soit ISO-14001 ou la nouvelle norme qui sera préparée par le Bureau de Normalisation du Québec (BNQ). Le ministère s'engage à consulter les associations tout au long de l'élaboration de cette nouvelle certification. Finalement, l'option de bonifier le PGES d'un volet environnemental, qui rencontrerait les mêmes objectifs, sera privilégiée au lieu de l'ajout d'une deuxième norme pour les travaux sylvicoles non commerciaux.

Afin d'assurer le bon déroulement de la nouvelle dynamique qui s'installera inévitablement, il devrait y avoir une réflexion commune alliant le ministère des Ressources naturelles, le Conseil du Trésor et certains représentants des entrepreneurs sylvicoles. Ces discussions serviraient à redéfinir les différentes tâches pour mieux les distribuer. L'objectif de cette redistribution serait de gagner en efficacité. On y ferait donc l'analyse de chacun des acteurs pour leur imputer les tâches dans lesquelles ils sont les plus efficaces. La présence du Conseil du Trésor rassurerait les entrepreneurs sylvicoles puisqu'il jouerait en quelque sorte le rôle du partenaire financier qui autoriserait les budgets sylvicoles pour le futur.

Quebec

Association des Entrepreneurs de Travaux Sylvicoles

Translation by Teri Shaw

For the last several years, the first of April, 2013 has been on all of our minds; for the last few weeks, the new forestry scheme has been in place. This signals a major shift for the logging and forestry industry in Quebec and will bring its share of adjustments for all parties involved, particularly for entrepreneurs and for the Ministry of Natural Resources.

The most important aspect will undoubtedly be that the contractors' customer has changed. Under the old system, the holder of a forest management permit was responsible for the reforestation after the harvest. From this point forward, the Ministry of Natural Resources (MNR) will grant contracts for the implementation of silviculture. These two future partners must learn to work together and moreover, to trust each other. Dialogue will be essential so that each party realizes the objectives and constraints that exist for the other. Each has its own concerns; the contractor to perform quality work while making its operations profitable and the MNR to ensure that public funds are well managed and that effective accounting takes places.

Also, it should be noted that the companies will have to sign "ETTF" (ententes de travaux techniques forestiers) as well as the usual "ERTS"(ententes de realisation de travaux sylvicoles). On another hand, there are the elements included from now on for the operational planning : surveying for land, making a survey of the inventory before treatment, taking inventory data before treatment, beaconing (taping), proposal requirements, conducting quality control inventories (after treatment) and compilation and analysis of inventories after treatment, processing of geographical data and finally tailoring the report to be signed by an engineer member of the *Ordre des ingénieurs forestiers du Québec*.

All new systems experience unexpected challenges, adaptations, and delays while being implemented- this new forestry regime will as well. In the beginning, 25% of the projects were supposed to be auctioned. However, with the budget cuts to silvicultural work in 2013, as well as the extra work the MNR must undertake to be prepared, the volume of work to be auctioned is more likely to be around 10%. This will decrease the amount of work required by the ministry during the period this new regime is put into place.

What's more, certification requirements will be modified. In fact, the ministry has confirmed that companies doing non-commercial silvicultural work will no longer be obliged to hold an ISO-14001 certificate. On the other hand, companies will still be required to hold a PGES (pratiques de gestion des entreprises sylvicoles) for non-commercial work. In order to respect article 62 of the law on sustainable forest development ("Les activités d'aménagement forestier planifiées sont réalisées par le ministre ou par des entreprises d'aménagement détenant un certificat reconnu par

le ministre ou inscrites à un programme pour l'obtention d'un tel certificat[…]")*, the obligation for certification will still be upheld. For the 2013-2014 season, companies will have the choice between ISO 14001 certification, or a new environmental management certification adapted for silviculture that is expected to be announced in the fall. However, given that this certification will not be ready until then, silviculture companies will have to take it upon themselves to maintain environmentally sound practices in the meantime. Starting next year silvicultural companies will be held to the requirements of environmental management system, or ISO-14001, or the standard that will be prepared by the Quebec Standards Service. The ministry agrees to consult associations throughout the tabling of this new certification. Improving the Environmental Management System component and keeping its primary goals consistent is preferable to adding a second standard for non-commercial silvicultural work.

In order to ensure progress of this new system there must be a common goal of developing a positive dynamic between the Ministry of Natural Resources, the *Conseil du Trésor*, and representatives for silviculture contractors. These relationships will redefine the various tasks in order to better delegate them and maximize efficiency. The presence of the *Conseil du Trésor* is reassuring to silvicultural contractors since it will, in some respect, play the role of financial partner by authorizing all future silvicultural budgets in the future.

** Translated as: the activities of planned sustainable forest development will be executed by companies holding a certificate recognized by the ministry or enrolled in a program to obtain such a certificate*

PEI
Forest, Fish & Wildlife Division

By Ken Mayhew - Government of PEI, Fish, Forest and Wildlife Division

PEI Hosting Agroforestry Conference

Canada has a vibrant and growing agroforestry sector and this June people from across North America will be coming to Prince Edward Island to learn, share and discuss many facets of this fascinating field. Running from June 19 - 21, 2013 at the University of Prince Edward Island, the 13th Annual North American Agroforestry Conference (NAAC) will focus primarily on the role of trees and shrubs in areas such as biofuels, willow riparian zone plantings, hazelnut production and more.

Agroforestry may include the production of wood products, biofuels, nuts, berries, syrup, edible mushrooms, decoratives and medicinal products. These products may be produced by planting suitable trees and shrubs in hedges and plantations, thinning native forests to create growing conditions for other plants and/or allowing domesticated animals to forage in the forest on the natural food sources that grow there. Agro-forestry is well suited to private woodland holdings and small volume, high value production methods.

The 2013 NAAC conference will feature a special speaker on agricultural landscapes in Brittany and Normandy and the value and impact of trees in those landscapes. With its blend of farm, forests and water, PEI has a similar landscape so Island land owners could benefit from these insights. Many useful trees and shrubs grow in Island hedges and forest edges and these plants could provide new product lines and income for land owners, while maintaining the benefits of healthy buffers. Other topics may include potential climate change impacts and the adaptive capacity of agriculture, ecological sustainability of biomass and biofuel production systems, and carbon sequestration through agroforestry systems.

Test site of willow hedgerow, photo courtesy of PEI Dept of Agriculture and Forestry

The NAAC will also serve as the venue for the annual conference and meetings of the Poplar Council of Canada. This group is interested in the genetics of poplar and willow species and promoting their use for wood biomass production, windbreaks, riparian buffers and phytoremediation. Willow and poplar species and hybrids have been used in many parts of the world to create effective wind buffers, control soil erosion and produce wood biomass to heat farm operations.

Field tours will visit a variety of sites including planted willow riparian buffers, windbreaks in blueberry production systems, hazelnut and biomass plantings, and a biomass harvester display.

A one day pre-conference tour is also being offered on June 18. This scenic tour will depart for PEI from Fredericton NB and make stops at the Hugh John Flemming Forestry Centre, home of the Canadian Tree Seed Bank, as well as several farms where forestry and agriculture have been successfully integrated with a focus on Non-Timber Forest Products (NTFP).

The NAAC conference is still seeking posters and presentations and as additional information becomes available it will be posted on their web site. For more information or to register visit: www.2013naac.com

Newfoundland
Forest Ecosystem Management Division

by Basil English, Forest Ecosystem Management Division, Department of Natural Resources

Tree Planting in NL: A Planning Perspective

Looking out a window in Corner Brook on the island's west coast one can still see snow in the woods and on the cutovers surrounding town. I just hope the snow will be mostly gone by month's end and a distant memory a month from now. Since the fall our silviculture staff has been working towards a May 21st start date for DNR's 2013 planting program. If we have any chance at all of holding to that schedule, the snow will have to disappear off our cutovers and our access roads will need to dry out. Same story every year: plan, plan, plan and hope that the weather gods smile on us.

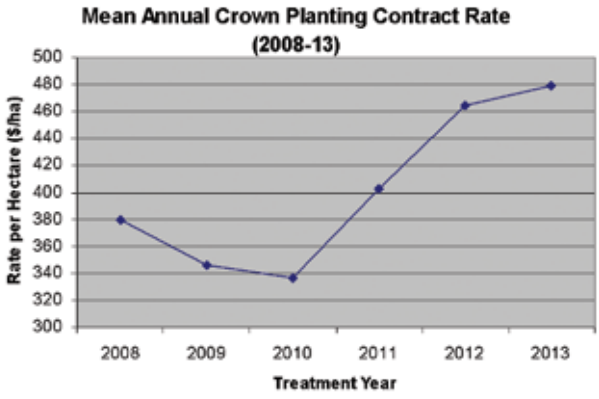
Assuming we start on May 21st, our goal is to plant all the way through until September 20th- an 18 week season. Hopefully, we'll get just over 3,000 hectares planted under contract this year, which is a fairly typical program. If weather was no consideration we would start earlier and if the labour pool were different, we would finish earlier as well. In Newfoundland and Labrador, the planting community is primarily comprised of seasonal workers, only a few of them students who return to study come September. Planting contractors in this province have never developed a good strategy of recruiting post-secondary students.

To retain seasonal workers requires that we design our annual program to ensure people qualify for EI and earn a decent living. So we tender all of our planting contracts in early spring, a month or so before planting commences, allowing each contractor to cobble together a program that will keep him active all through the season and to tailor the size of his crew to fit the ground he's won in the tendering process. We work with our contractors on a contract completion schedule that works for both of us. If we pushed hard to get the majority of our contract area planted by mid-summer (for example, by forcing small contractors to implement multiple jobs simultaneously), most planters would not quality for EI and next year our contractors would have a difficult time finding any planters at all.

In any case, we are forced to run a long season because of a chronic labour shortage. Contractors struggle to get all of their ground planted in17 – 19 weeks. During each of the past five seasons, we have had to shut down contracts in late September, leaving contract ground unplanted. The unplanted area went back into the pot to be tendered again the following year.

That labour shortage appears to have positively affected planter wages and contract rates. Despite a fairly competitive bidding process, we've seen our contract rates rise rapidly over the past number of years (Figure 1). With most of our tendering completed for 2013, it appears contract rates may be stabilizing somewhat, at least for now.

Usually, once the season starts it progresses uninterrupted until the end. Our seedling production and shipping program is a well oiled machine so continuous tree supply is rarely an issue. Last year, however, a long, hot, dry stretch in June forced us to stop shipping trees. The program was shut down for a week while we waited for Mother Nature to relieve the situation. As a Newfoundlander, I have to say it goes against my nature to pray for rain but you do what you gotta do. Such unscheduled stoppages are tough on everyone, particularly on planters. Fortunately, such events are rare.



Tender openings for our remaining planting contracts are scheduled to open over the next week or so and I'm anxious to see how this season unfolds. Did we budget enough to cover this year's program? What if the final bids come in high? Will we get all our contract area planted this year? And if we don't, how many surplus seedlings will we be forced to carry-over next winter? I will have to wait a while before we have answers to these questions; thankfully this slow-melting snow has taught me patience.

Basil English is the Supervisor of Silviculture Section with the Newfoundland and Labrador Department of Natural Resources. He can be reached at benglish@gov.nl.ca.

Clockwise: Lugging Trees; Flagging planting strips in early June; Cutovers in spring; Cutovers in early May near Corner Brook

Public Attention for Private Forests

by Rod Bealing

In a province where 95% of the land is publicly owned, it's not surprising misinformation persists about the policies and programs in place to ensure the responsible stewardship of the roughly 2% of B.C. that is privately owned forest land.

Most people support sustainable forest management, but given the preponderance of publicly owned forest land they're used to thinking about forest management in the context of a Crown land model. As private forest owners, we're in the business of growing and harvesting trees. We strive to balance environmental values, community interests and economic realities, and take every opportunity we can to educate the public about the unique contributions that private forestry makes to the overall landscape of forest management in the province.

Private managed forestry basics

With roots as far back as the 1940's, private managed forest land is a property assessment classification designed to encourage forest owners to manage their land for long-term forest production. Offering competitive property taxes as an incentive to encourage responsible farm and forest stewardship is a common policy tool used across North America and throughout the world.

As a public policy instrument, the model is essentially a partnership between forest owners and the provincial government whereby landowners assume the associated risks of investing in land and management activities, while the province offers stability in carrying costs and forest practices regulations.

As of March 31, 2012, the Private Managed Forest Program comprises 823,582 hectares, approximately half of BC's private forest lands, or less than 1% of the total land base. Roughly 75% of private managed forest land occurs on the coast (primarily on Vancouver Island).

To receive the managed forest land classification a property must be at least 25 hectares and managed as a single unit. Managed forests range from small family-owned properties of a few dozen hectares to large-scale forestry operations with thousands of hectares.

Forest owners commit to follow provincial forest practices standards and environmental protections in order to obtain the managed forest classification. Land assessed as managed forest land is regulated by the Private Managed Forest Land Act and owners are bound by law to protect the following key public environmental values:

- Fish habitat
- Water quality
- Soil conservation
- Critical wildlife habitat
- Reforestation

Successive independent audits demonstrate the protection of these values, on managed private forest land, meets or exceeds the standard of protection, for the same values, on managed Crown land.

The Minister of Forests, Lands and Natural Resource Operations is responsible for the Private Managed Forest Land Act which enables the program and creates the Private Managed Forest Land (PMFL) Council—an independent agency in charge of administering the program. The Land Tenures Branch acts as the liaison with the PMFL Council and addresses any public concerns.

Regulatory requirements of the private land model

BC's private managed forest lands are governed by a regulatory model that works in harmony with over 30 federal and provincial acts and regulations to protect public values. Operating under an approved management commitment, owners follow specific, results-based regulations.

Owners are required by law to report their forest management activities annually and are subject to regular forest practices audits. In fact, active private managed forest owners are audited more often (usually annually) than the Forest Practices Board audits public land licencees.

Penalties for failing to meet environmental laws on private land are financially significant, comparable to public land penalties, and government can take immediate measures to prevent further regulatory non-compliances by imposing stop-work and remediation orders.

Forest owners have additional incentives to meet or exceed legal requirements to protect environmental values. For example, a single non-compliance event can risk valuable third-party forest management certification. This is detrimental to forest owners who rely on third-party certification to maintain the confidence of neighbouring communities and satisfy their customers' demand for sustainably managed forest products.

Recognizing the urban interface: howdy neighbour!

Today, much of private forestry is practiced right next door to some of Canada's fastest growing communities. With an annual growth rate of 1.4% over the past 5 years, the population of Vancouver Island now surpasses 750,000—a staggering increase over the 1981 population of 495, 000 people. With more people comes more development—communities, subdivisions, parks, shopping malls, grocery stores, soccer fields, hiking trails—none of which existed decades ago when forest owners planted the trees they're harvesting today.

As stewards of second and third growth forests in the urban interface, owners face unique challenges as community members share their views and expectations about appropriate measures to safeguard water supplies, manage viewscapes, or obtain access to recreation opportunities—hiking, biking, horseback riding, off-road vehicles. As a result, private forestry operators engage residents, elected officials, water management staff and other interested and affected parties to ensure key audiences clearly understand the detailed steps taken to balance the needs of the forest management operation with the needs of the community. Simply put: good, old-fashioned neighbourly behavior.

Reforestation: a legal obligation and a logical conclusion

Managed forest owners are the only landowners in BC legally obligated to reforest after timber harvesting. We're also the only land managers (including the Crown) who are legally obligated to reforest where timber was destroyed as a result of natural events like fire, windstorm or insect infestation. Even without legal obligations, forest owners have a vested interest in replanting as soon as possible. Think of it this way: we're tree farmers. Growing timber is our crop. It's what we do. Can you imagine a regulator telling a farmer how and when to feed the cows, or how and when to plant the potatoes? It's not necessary. That's what farmers do.

That's why there's no NSR on private managed forest land. It's just not a problem. The legislation allows up to five years for reforestation, but typically delays on managed forest land are measured in months (usually within 6) rather than years. Fast, efficient reforestation ensures the harvested site is quickly re-colonised with commercially valuable trees, of our choice, rather than non-commercial brush or slower growing, less valuable tree species. Prompt reforestation gives tender young tree seedlings a jump on brush that aggressively competes for light, moisture and nutrients.

A Success Story Worth Telling

In the end, it's not about determining whether there's sufficient government oversight on private land, but rather a matter of understanding a completely different model of ownership and responsibility. A results-oriented regulatory approach, like the private land model, leverages a dynamic unique to private land: owners are held fully responsible for their actions. In contrast, the multiple and overlapping licencees, authorizing agencies and users, found on public land, often make it difficult to determine who's responsible for what.

It's this combination of sensible government incentives, continued private investment and a strong desire, on the part of the owners, to steward the land responsibly that creates a model of private forest management where roughly 10% of the annual timber harvest comes from just 2% of the land base. Private forests are a key component of B.C.'s forest industry, and with the right public policy environment we'll continue to tell the success story of private forestry, to the benefit of all British Columbians, for a long time to come.

Rod Bealing is the Executive Director of the Private Forest Landowners Association. He draws on over 26 years of experience, in a variety of progressive forest management, communications and advocacy related positions on a range of private and public land situations in the UK and BC, to provide policy development support and advocacy to the diverse group of owners and operators on 823,000 hectares of private managed forest land in British Columbia. He studied forestry and business management in the UK, Finland and Canada. He can be reached at rod.bealing@pfla.bc.ca