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MAGAZINE

Summer 2011

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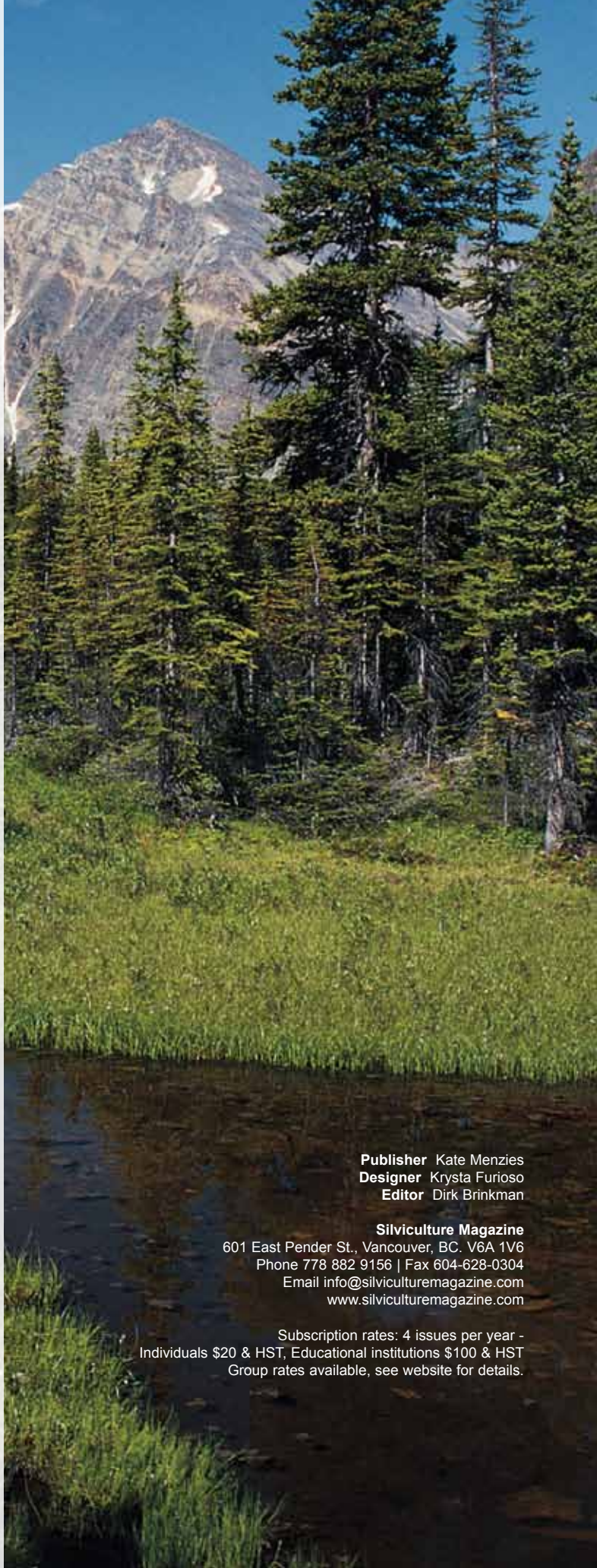

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Subscription rates: 4 issues per year -
Individuals $20 & HST, Educational institutions $100 & HST
Group rates available, see website for details.

Editorial

by Dirk Brinkman

On Restoring Vitality to Rural Development

Over the past century Earth's once largely rural population migrated to cities until now over 50% are urban dwellers. In most developed countries that number is over 75% and this momentum will continue as developing countries progress. But can it? Economic development crisis' caused by rural depopulation threaten the continuing provision of diverse resources to urbanites. The disjunctive layers of international, federal, state/provincial, regional, municipal and local governance create vulnerability that make rural tragedies of the commons inevitable. In that vacuum, today's remaining indigenous cultures offer coherent local grounding-points for aligning overlying governance and recreating ecological sustainability.

Cities concentrate individual specialization and task division, optimizing efficiency and productivity. Cities have the money, services, entertainment and offer social mobility, multicultural diversity, other tangible and intangible forms of wealth, and opportunities enabled by a built infrastructure. A global network of these urban, mega-consumption nodes gird the planet, inhaling through a matrix of supply-lines from rural resource baskets. The cities sustainability depends on sustainable rural communities of resource management specialists. If youth continue to be drawn to the irresistible, consumer economics of cities, who will take care of the farm and forest?

Tim Flannery's new book, Here on Earth, a natural history of the planet characterises the complex interdependent system of global trade and organization as the world's most accomplished super-organism. The most well-known super-organism is the honey bee colony. The largest and most successful super-organism studied by scientists, are the leaf cutter ants. Silviculturalists get the image immediately, like hunter gatherers in a leaf cutter ant colony, they harvest and reforest large forest areas to feed the cappuccino sucking aphids in the super-city.

Flannery wrote to prevent an unfolding Medusa event; the god who came to earth and ended up eating her own children. How do we prevent this globe girdling network of mega-consumer cities from eating their rural children? One of Flannery's first books, The Future Eaters, told paleontological tales of humans in various ecosystems hunting key food species to extinction. A palaeontologist who became a climatologist when he recognized today's great extinction event, Flannery is now an advocate for homo sapiens to live up to its name—wise human.

Some call today's human super-organism 'civilization'. In my hunter gatherer tree planting days, seeing the urban tragedy from the wilderness, we called it *snivilization*. Civilization or snivilization, human ingenuity and adaptability thrived during twelve thousand year of climate and ecosystem stability called the Holocene.

Humans are now changing the way the world works so rapidly, that the International Commission on Stratigraphy is debating if the world is in a new geological period, the Anthropocene. The Economist featured the Anthropocene argument in 'Revolutions that Made the Earth", by Timothy Lenton and Andrew Watson, Earth-system scientists at the universities of Exeter and East Anglia.

'Better to embrace the Anthropocene's potential as a revolution in the way the Earth system works, they argue, than to try to retreat onto a low-impact path that runs the risk of global immiseration …It may seem nonsense to think of the (probably sceptical) intelligence with which you interpret these words as something on a par with plate tectonics or photosynthesis. But dam by dam, mine by mine, farm by farm and city by city it is remaking the Earth before your eyes.'

Finding a leverage point that is strong enough to get the consumer express train of intelligent self-interest to change tracks 'dam by dam, mine by mine, farm by farm and city by city' to a path of intelligent wisdom will be very difficult. But one such fixed point may be found in the remnants of a resilient human relationship with local ecosystem complexity. Local indigenous rights, traditional knowledge and millennia of cultural symbiosis with local ecosystems are increasingly supported by international and national law and judicial precedence.

Yes, that relative still-point is even embedded in indigenous cultures which have been virtually destroyed. Cultures whose children were taken into unsupervised residential schools to have their 'savage nature' disciplined out of them and where some were dehumanized through sexual assault and violence (yet indigenous cultures still exist).

These are cultures whose language, customs, medicines, and foods have been intimately entangled into the complexity of local ecosystems over hundreds of generations. They bring to the human super-organism local micro-wisdom in land management. Terra Petra, the soil building biochar practices developed thousands of years ago in the Amazon, now seen as one of the solutions to climate change, is one such example of local traditional knowledge with global applications.

In the Anthropocene, ignoring the unique opportunity for local stewardship and governance that indigenous people offer would border on insanity. Federal governments whose constitutions allocated authority over natural resources to state/provinces cannot enter into and deliver on international agreements without a principal to reconcile local conflicts. Local indigenous governance offers a still-point against which to align the dishevelled layers of regional, state/provincial, federal and international governance.

While cities begin to collaborate on ensuring their sustainability-- and they can do a lot to reduce their footprint-- they also have to consider entering covenants with the rural regions on which urban well-being depends. Through indigenous cultures, when they follow the old adage, 'think globally, act locally' there is a lens of sustainability through which to see somewhat more clearly. In that small way, the human super-organism may indeed begin to act wisely.

Forest Health

By Laura Machial, Staffan Lindgren and Brian Aukema

Warren Root Collar Weevil: A threat to reforested stands in British Columbia after the mountain pine beetle outbreak?

With the recent expansion of the outbreak of mountain pine beetle over the Rocky Mountains into the jack pine of north western Alberta, research eyes have been focused on the potential for eastward progression of the beetle through the boreal forest to the east coast. Meanwhile, salvage harvesting and replanting activities have begun in the central interior of British Columbia, where the outbreak has largely run its course. In young, regenerating cutblocks, however, there has been an increase in damage and mortality caused by Warren root collar weevil, an insect that historically has been of little economic importance.

Warren root collar weevil is a native insect approximately the size of a jelly bean. It will feed on various species of conifer, including pine (preferred), spruce, fir, larch and hemlock. It is very long-lived for an insect, reaching up to seven years of age. Completely unable to fly, adults spend their days hiding in the duff layer. At dusk, they climb trees in order to feed on bark and needles, although nibbling by mature weevils generally does very little damage.

Larvae, however, can kill young trees. Adult female Warren root collar weevils can lay up to 25 eggs per year in the duff layer near the base of trees. When the eggs hatch, the larvae begin feeding in and around trees' root collars. On a small diameter (<5 cm) pine, as few as 1-3 larvae can girdle and kill the tree.

Historically, Warren root collar weevil was of little economic concern in British Columbia. The insect is found in approximately one in five lodgepole pine stands, killing less than 5% of the trees within those stands. Recently, however, in some 4-12 year-old replanted cutblocks, mortality levels have reached 16%. Problems can become compounded when larvae mature in residual stumps post- harvest, providing a further reservoir of weevils that can attack the young trees. Possibly the largest contributor to the increased mortality of lodgepole pines in replanted sites is adult weevils dispersing out of stands of trees killed by mountain pine beetle in search of new hosts, and thus concentrating in young stands.

Current research in the labs of Drs. S. Lindgren and B. Aukema at the University of Northern British Columbia (UNBC) and University of Minnesota (UMN) has focused on the weevil's biology in an effort to develop effective management practices. M.Sc. student J. Robert determined that lodgepole pine tree mortality caused by Warren root collar weevil was most pronounced in planted stock when compared to naturally regenerated trees. Trees with poor lateral spread or poor root cross-sectional area, characteristics of manually planed trees, were more likely to die when attacked by the weevil. Undergraduate student G. Hopkins, investigating feeding preferences of the adults, found that the weevils prefer to feed on lodgepole pine and Douglas-fir, and will not feed on non-conifer trees. M.Sc. student M. Klingenberg, investigating the increase in tree death in replanted areas, discovered that the highest numbers of trees killed by Warren root collar weevil were found at the edges of cutblocks that bordered unsalvaged mature stands of lodgepole pine. He also found that weevils have higher movement rates in habitats with more dead trees, suggesting that migration into cutblocks from unsalvaged stands were of increasing concern. This work was made possible by the work of postdoctoral researcher N. Björklund, who developed a trap to exploit the weevil's ascending/decending tree climbing behaviour to capture live weevils for use in behavioural studies.

Most recently, research has focused on weevil dispersal and host selection. Through the use of harmonic radar technology (which enables the tracking of individual weevils) we have found that movement of Warren root collar weevils is affected by habitat type and temperature. In areas of poor habitat, due to lack of mature trees or shelter, weevils move farther and faster than in habitats where trees and shelter is plentiful. In addition, we have found that weevils are visually attracted to silhouettes of trees. This is unique because many forest insects primarily follow chemical cues. Our next steps include formulating strategies to enhance trap designs, using our recent findings, to reduce weevil movement into plantations and/or sanitize sites with active populations.

Community Forests for Rural Development

By Patricia Macklin

The forest industry plays a significant role in many communities in Canada. One model of forest management is that of community forests. "A community forest is decisions being made by people who have to live with the outcome; finding local solutions to contentious issues; keeping benefits in the community; a very good idea; and one of the hardest things I have ever done," says professional forester John Cathro. The concept of the community forest has been around in British Columbia since 1945, when Mission Municipal Forest was established, but it wasn't until 1998 that the Forest Act was amended to allow for Community Forest Agreements (BCCFA, 2010). Seven Community Forest Pilot Agreements were allocated in 1998 as part of a 5 year pilot of the Community Forest Agreement. By 2004 the pilot had changed to a five year probationary term with opportunity to receive 25 year tenure after the probation. Ten years after the initial pilot, six long term Community Forest Agreements had been awarded; 22 Probationary Community Forest Agreements (PCFA) had been issued and 24 communities had been invited to apply for a PCFA and were in the application process. 2009 marked a watershed for community forestry in B.C. The 5-year probationary period was eliminated meaning that all existing and new community forest agreements will now move to a 25 year, renewable license.

Community forests, typically located on the crown land surrounding a rural community, may take a number of structures. They may be run as co-operatives, by non-profit societies, be corporations wholly owned by municipalities or First Nations, or have shareholders including the municipality or nation, business, non-governmental organizations and/or local individuals. In B.C. a form of forest tenure called a Community Forest Agreement may be held by a municipality, community corporation, co-operative, society, First Nations Band council or some form of partnership between any/all of the above.

The economic value of the forest products from B.C.'s community forests are retained by and for the community. For example in 2010 the Wetzin'kwa Community Forest Corporation helped 31 community groups, sharing out grants to a total of $120,000 and it provides funds to the governing bodies of the towns of Smithers and Telkwa and the Office of the Wet'suwet'en, all of which contribute to running the corporation (www.bccfa.ca).

"The McBride Community Forest Corporation (MCFC) has funded a new community hall, contributed funds to sewer infrastructure updates and funded an economic development officer for three years. That last investment has translated into a further $6 million in grants acquired by that officer for the village of McBride," says Marc Von der Gonna, manager of the MCFC. These cumulative benefits for many communities represent only 1.5% of B.C.'s annual timber harvest. Community forestry takes a minimal proportion of the timber harvest but that proportion translates into significant gains for those communities.

Though B.C. has a longer history and legislative support of community forests on crown land, Alberta is now home to the first community forest in the Prairie Provinces. Early 2008 saw the birth of the Weberville Community Forest Pilot Project, located north of the Town of Peace River. Unlike the community forests in B.C., this one covers both privately owned and crown land, an area of approximately 33,000 hectares. The other significant difference is that Alberta's community forest does not hold forest tenure on the crown land. The crown land is included as it is part of managing the forest landscape.

A brain-child of Doug Macaulay, Woodlot Specialist with Alberta Agriculture and Rural Development's Woodlot Extension Program (now the Agroforestry and Woodlot Extension Society), and Juri Agapow, Forest Operations Extension Specialist with FPInnovations –Feric Division (now FPInnovations Forest Operations Division), the Weberville Community Forest Project was initiated as a pilot in the creation of a landscape level woodlot management plan for the community. "I've always found it quite problematic that we have great woodlots out there and people interested in woodlot management but it's usually on a small scale," said Agapow, "but to really do forest management you really have to look at the big picture."

Macaulay and Agapow pulled together an organizing committee that included representatives from Agriculture and Agri-food Canada, novaNAIT Boreal Research Institute, and Alberta Agriculture and Rural Development, sought funding partners and developed a two year pilot project in the Weberville area. The site was chosen for its defined geographical boundaries, the diversity of forest stand types and its high level of social interaction of community members.

By August of 2009, the agencies that made up the original organizing committee stepped aside into a supporting role, a community board was established and the group became an official non-profit

Society, the Weberville Community Forest Association (WCFA). "Initially people were distant, not too sure what to make of the project," said Agapow, "but they are now at the point where they have taken on the project, bringing in their own ideas and forming the project to suit the community."

Creating a landscape level management plan for the community forests has many advantages. In terms of economic benefits for the individual woodlot owners, Agapow notes that "by working together we have enough volume of logs for local industry to be interested in bringing a truck out to pick up our logs." Similar to B.C.'s Community Forests, environmental and social benefits are also addressed in the plan as the WCFA looks to derive recreation and tourism benefits from the wildlife and natural areas.

Model Forests are based on an approach that combines the social, cultural and economic needs of local communities with the long-term sustainability of large landscapes in which forests are an important feature. By design they are voluntary, broad-based initiatives linking forestry, research, agriculture, mining, recreation, and other values and interests within a given landscape. They're a fully working landscape of forests, farms, protected areas, rivers and towns.

From the International Model Forest Network www.imfn.net

Recognizing that WCFA fit the criteria of a model forest, represented nationally by the Canadian Model Forest Network (CMFN), Macaulay approached the CMFN to inquire about the WCFA becoming a member. Weberville fit in every way except their size. The WCFA only covers 33,000 hectares and CMFN bylaws stated that a model forest had to be a minimum of 100,000 hectares. In recognition of the great work happening in Weberville, the CMFN modified their bylaws to be able to include smaller forests. Now the Weberville Community Model Forest is the second model forest in Alberta and the 15th nationwide.

Lisa Ladd, General Manager of the new Weberville Community Model Forest, explains the additional benefits of gaining membership in the CMFN: "There is an opportunity to network with other Model Forests and to partner on national and international projects It also serves to increase the profile of the Weberville Model Forest and acknowledge all the effort community members have put into making the project a success."

The Weberville Community Model Forest has now expanded beyond its original boundaries to include other forest-based opportunities, for example, Ladd's birch syrup operation, currently the only commercial syrup operation in Alberta. By implementing the Template Guide created by the Weberville Community Model Forest, the plan is to assist other communities in developing their own Community Forest. The ultimate goal is to establish a Community Forest Network throughout Alberta.

Having the designation of a model forest is already paying off in terms of wider recognition of the WCFA and a desire to work with the group. Local initiatives looking to develop energy from biomass are now looking to Weberville to supply guaranteed feedstock. A local pulp mill is interested in developing opportunities to plant trees for biomass feedstock and to fertilize the plantation with what is currently just waste product from the mill.

A community forest model doesn't necessarily make resource management decision making easy, but it does mean that multiple values and priorities can be addressed. Whether the model of the community forest is one that is a village owned corporation whose profits are paid back in dividends to the community or a non-profit society where members gain benefit through the diversification of agricultural operations, a community forest is an effective method of rural development, sustaining the social, economic and environmental aspects of communities.

Resources

BCCFA (British Columbia Community Forest Association). December 1, 2010. Submission to the Standing Senate Committee on Agriculture and Forestry. www.bccfa.ca

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For more information on the organizations in this article see their websites:

Weberville Community Forest Association www.wcmf.ca
Canadian Model Forest Network www.modelforest.net

Forest Cooperatives in India are a Model for Community Forestry

By Ashwini Chhatre, Pushpendra Rana and Satya Prasanna.

Forest in India provide a tremendous diversity of benefits to society, ranging from local subsistence uses like fodder and firewood, regional services like water cycle regulation, and global contributions in terms of endemic biodiversity and carbon sequestration. Given this diversity, it is no surprise that Indian forests are managed under an equally bewildering diversity of systems. Some of these can be traced back hundreds of years (sacred forests), while others owe their origins to recent interventions. The patchwork patterns of forest management evident in India today can be attributed to a combination of factors operating over the 19th and 20th centuries, as well as to an evolving set of objectives of forest management. Commercial timber production and biodiversity conservation have been the two most important policy objectives, and consequently, forest management has remained concentrated in provincial and federal agencies until recently. In spite of the heavy and direct subsistence dependence of millions of people on nearby forests across India, larger economic and ecological considerations have dominated forest management systems.

Over the last three decades, new policy developments have shown great promise in correcting this anomaly. Across the country, policy experiments in community forestry – collaborative arrangements between local communities and forestry departments of provincial governments for the management of forests for multiple benefits, including but not limited to timber – have raised the hope that finally forests will be valued (and managed) equally for the diverse roles they play in rural development and livelihoods. Even though the prominence of community forestry is new, there is a wealth of experience for today's initiatives to draw upon in managing forests for a new set of needs. This experience comes from experiments in collaborative arrangements between local communities and forest departments in the first half of the 20th century. In one such initiative, forest cooperatives were set up in the foothills of the Himalayas in northern India during the 1940s. These cooperatives continue to manage forests today, and illustrate the multiple benefits of community forestry.

The forest cooperatives are spread over more than 5,700sq.km of territory in today's Kangra District in the state of Himachal Pradesh. These co-operatives operate under the law governing the constitution of cooperatives that stipulates the basic structure of membership and governance, and manage forests under their control collectively. Rules for forest management are largely left to be decided by members of the cooperative, barring some important prohibitions such as the ban on harvesting green trees without consent of the Forest Department. The cooperatives are also required to maintain clearly-specified records of their transactions and submit an annual report to the Department of Cooperatives, which also organizes the annual financial audit of the business conducted by every cooperative. While this arrangement may appear to be another example of excessive administrative burden on local communities, the structure has allowed the cooperatives to maintain their autonomy from state agencies without compromising the need for collaborative management.

The lack of top-down command-and-control system of management has enabled the cooperatives to align their forest management strategies closely to the requirements of their constituents on the one hand, and to the spatial and ecological heterogeneity on the other.

Researchers collect vegetation data through forest plots. The analysis of this data both helps in current forest management as well as future planning.

From the perspective of narrowly-focused silvicultural operations of the forest department, this has resulted in a bewildering diversity of both the objectives and outcomes of forest management. From another perspective, the forest cooperatives present a model of managing forests for the multiple and diverse needs of local communities in a decentralized and democratic manner. They range from the very small (100 hectares) to the very large (1000 hectares), and small, homogenous communities of less than 50 households to large heterogeneous groups of over 2000 members. The forests they manage are equally diverse – differences in elevation zone range from 300 to 1400 meters above mean sea level, with the low altitude forests dominated by sub-tropical dry deciduous vegetation, giving way to oaks and conifers at higher altitudes.

From the very beginning, the forest cooperatives were not meant to produce timber. Their brief was twofold: controlling soil erosion on marginal uplands and providing subsistence benefits to their members. The cooperatives have been largely successful in the first objective of protecting ecological services from forests. In the first 25 years of their existence, however, the social composition of the membership of forest cooperatives was highly discriminatory, with almost half the surrounding population excluded from participating in forest management. This began to change in the 1970s for a variety of reasons, mostly pertaining to the trickling down of democratic ideals and practices to the community-level. Today, the cooperatives can boast of great social diversity not only in their general membership but also in their leadership structure, with women and low caste representatives steadily increasing in number. More than a quarter of the cooperatives have a woman representative in the elected executive committee, and more than half have at least one low caste representative. That this has been achieved in spite of an absence of legal mandates is a remarkable achievement, given the often severe gender and caste disparities in Indian society, and marks the cooperatives as a model for inclusive forest management even within the universe of community management.

The forest cooperatives have shown admirable creativity in managing the forests for subsistence benefits like grass and leaf fodder, firewood, and occasionally, food for human consumption. Collaboration with

Ashwini Chhatre, one of the scientists working with the forest cooperatives, tackling the thick underbrush during data collection.

local forest department units in regular silvicultural activities like plantation, thinning, weeding, and harvesting trees is common, though the sailing is not always smooth. Many cooperatives divide sections of their forests into small plots and auction them to members for exclusive right to extract grass fodder. Other cooperatives levy user fees on nomadic sheep herders during the winter, providing additional sources of revenue. Even a cursory survey of the annual financial reports of the cooperatives reveals the diversity of sources from which funds have been raised for forest improvement activities. Through a careful marshalling of resources, the forest cooperative have survived more than six decades, while the forests have thrived under their stewardship. The last three of these decades have also witnessed a general increase in the standard of living through economic development and expansion of public services like drinking water, health, education, and transport and communication. While this has led to a gradual decrease in subsistence dependence on the forests, the appreciation of the environmental services provided by these forests has only increased.

Community forestry spread across India during the last two decades of the 20th century and has since consolidated itself as an important element of the overall strategy to manage forests in the country. During this initial period, older initiatives such as the cooperatives were considered anachronistic by the forest department as well as the non-governmental organizations actively promoting community forestry. The tide is beginning to turn now, with a growing realization of the wealth of experience that resides in the forest cooperatives. The focus of forest management in India is slowly moving away from a singular emphasis on timber production, with greater attention being paid to management for optimizing the multiple benefits supplied by forests. Community forestry adds another dimension to this changed objective – inclusive governance. Forest cooperatives are an excellent example of a sustainable institutional mechanism for inclusive governance of forests for multiple benefits that suit a diversity of changing local needs.

Ashwini Chhatre has been working for 20 years with local communities involved in forest management across India. Pushpendra Rana is a serving officer of the Indian Forest Service, currently on academic leave at the University of Illinois. Satya Prasanna has been working closely with the forest cooperatives and Forest Department in developing management plans for multiple benefits. Questions or feedback can be directed to Ashwini Chhatre at achhatre@illinois.edu.

Western Canada

by John Betts, Executive Director, Western Silvicultural Contractors Association

WSCA and Ministry Review BC Planting Inspection System

The B.C. Ministry of Forests, Lands and Natural Resources has begun a review of its thirty-year-old planting inspection system after WSCA contractors questioned whether the standard reflected current practices across the industry. Contractors have alleged that there are in fact two standards in place: one used by industry and one by government. Furthermore, they say, the requirements described as required under the old standard may not always reflect the best science and experience on the ground regarding establishing vigorous plantations.

"The current system only counts the planted trees (plantable spots) rather than the total trees, so the planter gets no credit for identifying and spacing off acceptable naturals."

"There is an assumption that the standards are self evident. But they are open to interpretation. And in today's bidding environment viewing meetings are rare and the pre-work meeting might be the first time that standards are clearly discussed," said Zanzibar Holding's Tony Harrison chair of the WSCA Forest Policy Committee. "Most foresters seem to think that the way they do it is the way everyone does it. But this couldn't be further from the truth." According to Harrison in-the-field supervisors and foremen will insist there is a lot of variation and subtlety when it comes to checking and tree quality standards in actual practice. The demands range between traditional screef, acceptable soil media, compaction around seedling roots, planting depth, level of disturbance, microsite, selection etc. All these requirements have become common and are open to interpretation around BC. Contractors are calling for more clearly defined inspection specifics prior to the contract award as a way of ensuring the standard is not interpreted unexpectedly when the trees start going in the ground.

The calculation of excess trees is a particular problem on the many fill plants that now are undertaken as licensees risk-manage their regeneration obligations. "When a planter works through a fill plant, they are being asked to identify and space off of good existing naturals," said Timo Scheiber of Brinkman & Associates. "The current system only counts the planted trees (plantable spots) rather than the total trees, so the planter gets no credit for identifying and spacing off acceptable naturals." Contractors say the simple solution is to count both trees planted and the existing well-spaced naturals in the calculations for excess. This gives credit to the planter for identifying and spacing from acceptable naturals, but does not overly penalize them for working to achieve good overall density around existing regen. Many Industry clients favour this method of calculating excess, because it delivers better results said Scheiber.

According to contractors F layer planting represents the greatest divergence between Licensee practices and Ministry practices. The WSCA states that MOFLNR is currently falling behind best practices in some parts of the province. "Many districts still seem stuck on older methods with a heavy screef, exposed mineral soil, and deep tight trees. A good example of this is air pockets," said Harrison. "Prevailing research clearly favours looser trees with more air around the roots." The WSCA is asking why more progressive methods of planting are not being discussed in the MOF literature and fault code descriptions? The WSCA is currently trying to find funding for literature and planting trial review of F layer planting. If funded it would include the research of David Lloyd and Ron Elder. "Considering the possible benefit to future plantations this research should be essential," said Harrison. He goes on to say, "It continually props up as statistical issue on contracts. Frankly, the calculations do not work on un-uniform blocks with regen, retention or variable harvesting methods, which are more the norm these days. The contractors' bane of unaccounted for trees is often an inaccurate calculation because of the "edge effect" – the amount of ground gained or lost around the perimeter of a cut block. "If the block is a simple shape (square or rectangular) and large, then the effect is less," said Harrison. "However, add in wavy edges around leave strips and riparian zones, and reduce the block size and the edge becomes a huge statistical question mark which makes the 10% mark an unrealistic margin between area planted and trees claimed." This statistical artefact needs to be addressed to make the planting inspection valid in varying conditions. That one simple measure does not accurately cover the range of latitude is something contractors have been saying for years. Honest contractors who have planted to density are facing expensive and dangerous 'unaccounted for tree' fines (basically they are being accused of stashing) because the statistics fail to recognize the variability in actual ground based on the variable perimeters of blocks. Ancient Egyptian mathematicians identified solutions to dealing with the "edge effect" to more accurately predict crop yields. "Evidently this technology has been around for a while. The MOF should adopt it," said Harrison.

Yukon

by Chris Wearmouth, Communications Analyst, Department of Energy, Mines and Resources

Yukon Introduces New Forest Resource Legislation

On January 31, 2011, the Government of Yukon introduced new legislation to guide forest management in Yukon. The *Forest Resources Act* is the first home-grown resource legislation to be prepared in Yukon since the devolution of federal powers to the territory in 2003.

In a news release to mark the occasion, Minister of Energy, Mines and Resources Patrick Rouble remarked that the new legislation reflects "the importance of forests to the Yukon way of life" and that it would enable "modern forest management that supports viable and sustainable forest-based industries."

Approximately 28 million hectares (or 58%) of Yukon is forested. It is the job of Yukon's department of Energy, Mines and Resources' Forest Management Branch to manage these forests for their long-term health and provide opportunities for Yukon citizens to benefit from these resources.

Forests are important to the Yukon way of life including outdoor recreation, hunting, trapping and wilderness tourism. Forests are also the source of cultural and traditional values for Yukon's First Nation people. Even though the timber industry in Yukon is small, focusing mainly on fuel wood for heating, building logs and rough timber for local use, opportunities to develop a larger economic base in timber harvesting is possible.

Since 1962, forests had been managed by the federal government under the Yukon Timber Regulations of the *Territorial Lands Act*. This regime was an out-dated system that managed the resources through annual permits for timber cutting without recognizing the need for long term tenures and management models that would ensure sustainability.

By comparison, the new legislation includes strong commitments to planning that considers all forest users and mandates dialogue with First Nations and the public on the management of forest resources. It provides industry with more secure tenure opportunities and with a fair and transparent allocation process. Finally, it provides forest managers and enforcement staff with the management tools and standards they need to steward Yukon's forests.

This legislation has been more than a decade in preparation. In 1998, while control of forest management was still in federal hands, the Yukon government organized a public workshop which resulted in a vision document for forest management: the "Yukon Forest Strategy." In May of 2002, the federal department of Indian Affairs and Northern Development (DIAND) released a report by George Tough titled "Yukon Forestry Issues – A Reality Check and a New Direction" citing 19 recommendations for improving the management of Yukon forests, including the development of new forestry legislation was drafted in consultation with First Nations, stakeholders and the general public.

In early 2003 the first Forest Policy Framework Workshop for First Nations, local Renewable Resource Councils and government participants was followed by a second workshop for timber industry participants.

On April 1, 2003, the Yukon forest water, lands, and minerals management responsibilities were transferred to the Yukon government and Yukon adopted legislation to mirror the federal *Territorial Lands (Yukon) Act* and Timber Regulations until new legislation came into effect.

Through 2003 and 2004, several more workshops and community meetings resulted in the discussion paper "Towards a Forest Policy Framework for the Yukon." In 2005, the Yukon government approved policy principles on which the new forest act would be based and established the Successor Resource Legislation Working Group, comprising three First Nation organizations and government representatives.

Further rounds of wide public consultation and targeted consultation with First Nations, Resource Councils, industry and forest values focus groups were held which finally lead to the *Forest Resources Act* being presented in the 2008 fall sitting of the Yukon Legislative Assembly. .

While the act was being finalized in late 2008, Forest Management Branch staff engaged further consultative discussions to prepare an accompanying regulation, best management practices, policies and procedures, and new processes and forms required to be in place for the legislation to work.

Just over two years later, Yukon's *Forest Resources Act* and all its accompanying pieces, came into force.

It has been a long journey, but with the *Forest Resources Act* now in place, there is optimism that opportunities exist for the Yukon forest industry to grow and strengthen in an environment of greater certainty and in one that recognizes the importance of forests to Yukon and its people. With new forest tenures the act requires prompt reforestation and will create some new opportunities for silviculture.

Québec

par Shanie Lévesque-Baker, Association Des Entrepreneurs en Travaux Sylvicoles Du Québec

Dévoilement du Plan Nord
Un plan de développement pour le Nord québécois

Le 9 mai dernier, M. Jean Charest, premier ministre du Québec, en compagnie de madame Nathalie Normandeau, vice-première ministre, ministre des Ressources naturelles et de la Faune et ministre responsable du Plan Nord, ainsi que d'autres de leurs collègues, dévoilait le tant attendu Plan Nord.

Ce plan de développement annoncé comme l'un des plus ambitieux projets du Québec, vise à mettre à profit le potentiel du Nord québécois, sous les axes social, économique, et environnemental, tout en s'harmonisant avec le milieu et les communautés.

> "Bien que ce territoire occupe près des trois quarts du territoire québécois, ses ressources naturelles n'ont pas fait l'objet de grands projets de développement jusqu'ici."

Le territoire

Au Québec, au nord du 49e parallèle se trouve un territoire de plus d'un million de kilomètres carrés qui s'étend sur les régions administratives du Nord-du-Québec ainsi sur que la majeure partie des régions administratives du Saguenay–Lac-Saint-Jean et de la Côte-Nord. Ce territoire représente plus de 72% de la superficie totale de la province, et plus de 120 000 personnes y habitent, regroupées en 63 villes, villages, ou communautés.

Ce territoire comprend également plus de 500 000 lacs, des milliers de rivières, et plus de 200 000 km2 de forêts commerciales. À elles seules, ces forêts représentent 53 % de l'ensemble des forêts exploitables au Québec.

Bien que ce territoire occupe près des trois quarts du territoire québécois, ses ressources naturelles n'ont pas fait l'objet de grands projets de développement jusqu'ici. L'accès limité et le manque de moyens financiers et humains sont probablement deux des causes les plus probables à ce retard de développement, auquel le Plan Nord tentera de répondre.

Le projet

Étalé sur les 25 prochaines années, le projet prévoit des investissements de l'ordre de 80 milliards $, une création ou consolidation de plus de 20 000 emplois, tout en rapportant des revenus d'environ 14 millions $ à la province.

Froidement accueilli par les autres partis politiques, par certaines communautés autochtones, ainsi que par des groupes environnementaux, le Plan Nord fait cependant des heureux auprès des investisseurs de l'industrie minière et de l'énergie. En effet, le Plan Nord prévoit principalement de nombreux nouveaux projets miniers (plus d'une dizaine déjà en développement), et une augmentation massive de la création d'énergie verte, soit en hydroélectricité, éoliennes, et autres sources comme les hydroliennes, tandis que des budgets plus modestes sont réservés à d'autres fins, comme l'éducation et la pénurie de logements.

Il ne faut cependant pas taire les investissements importants reliés à l'accès routier, pour lequel des prolongements de routes et des réfections sont au menu. Ceci devrait avoir comme effet d'améliorer l'accès au territoire, et par le fait même de valoriser le développement de projets supplémentaires.

Le secteur sylvicole en attente

Bien que tout présageait des investissements pour le secteur forestier, la première phase du Plan Nord ne réserve finalement aucun projet concret en ce sens, outre la valorisation des infrastructures en bois et des projets de reboisement dans certaines régions.

En effet, rien dans le panier d'actions proposées ne semble annoncer une augmentation des activités sylvicoles sur ce territoire, contrairement aux attentes des entreprises sylvicoles. Les secteurs du Québec qu'englobe le Plan Nord représentent un fort potentiel forestier, que nos entreprises s'attendaient à ce qu'il soit mis à profit. L'absence de mise en valeur de ces régions forestières déçoit donc les attentes des acteurs du secteur, d'autant plus que les ressources naturelles du territoire semblaient être au cœur du projet.

Par ailleurs, les opportunités attendues par le secteur sylvicole sont peut-être seulement remises à plus tard, puisqu'une stratégie d'aménagement durable des forêts sera développée afin d'encadrer la gestion durable des ressources forestières de ce territoire. Cette dernière devrait prendre en compte toutes les particularités propres au territoire du Nord québécois et peut-être ainsi permettre à nos entreprises de se développer davantage dans cette région du Québec.

C'est pourquoi nous devrons donc rester à l'affût de futures annonces concernant le secteur sylvicole, qui jusqu'à maintenant semble avoir été oublié par le Plan Nord.

Quebec

translated by Claudine St-Cyr Premont

The disclosure of the North Plan
A plan of development for Northern Quebec

On May 9, 2010, accompanied by their colleagues, Quebec Premier Jean Charest and Deputy Premier Nathalie Normandeau, Minister of Natural Resources and Wildlife and Minister responsible for the North Plan, disclosed the awaited North Plan.

This development plan announced one of the Quebec's most ambitious projects which aims to utilize the potential of social, economic and environmental resources in Northern Quebec in cooperation with regional communities.

The Territory

In Quebec, north of the 49th parallel, there is a territory of more than one million km^2 which includes Northern-Quebec administrative regions in addition to most of the Saguenay-Lac-Saint-Jean and Côte-Nord administrative regions. This represents more than 72% the total area of Quebec and includes more than 120,000 people distributed between 63 communities.

This territory also contains more than 500,000 lakes, thousands of rivers, and more than 200,000 km^2 of commercial forests. These forests represent 53% of the commercial forests of Quebec.

Northern Quebec occupies nearly three quarters of provincial territory, yet its natural resources have not been the subject of any significant development projects so far. Limited access and lack of financial and human resources are plausible causes of underdevelopment which the North Plan aims to rectify.

> "Northern Quebec occupies nearly three quarters of provincial territory, yet its natural resources have not been the subject of any significant development projects so far."

The project

Over the next 25 years, the project foresees an investment of $80 billion, a creation or consolidation of more than 20,000 jobs, and the potential of generating $14 billion in revenue for the province.

While there was resistance from other political parties, some First Nations communities and environmental groups, the North Plan was received favourably by mine and power industry investors. This is because it principally envisages several new mine projects (more than ten in development) and a massive increase in the creation of green power, such as hydroelectricity, wind power and other sources. More modest budgets are also incorporated into the plan to address issues such as education and lack of housing.

Investments in the improvement of road access as well as maintenance and repairing of roads is included and considered a way of increasing access to the territory and encouraging the development of additional projects.

The forestry sector on standby

Other than reforestation in specific areas and infrastructure development, the first phase of the North Plan does not contain any substantial announcements for forestry projects in the region, contrary to the expectations of forestry businesses.

The territory represented by the North Plan is an area with strong silviculture potential that local industry was hoping to expand; the absence of future development projects in the Plan is considered a disappointing oversight by many professionals in the region. Omitting plans for development of this sector is not consistent with the emphasis that was given to the importance of the region's natural resources.

However, the opportunities expected by the silviculture industry are perhaps only temporarily on standby. A sustainable forest management strategy for Northern Quebec will be put in place to help the management of these resources. This approach would consider all the particularities of Northern Quebec and might allow local businesses to further develop. Hence, we should remain on the look-out for future announcements concerning the forestry sector, which seems to have been forgotten so far.

PEI

by Ken Mayhew, Fish, Forest and Wildlife Division, Department of Environment, Energy and Forestry

Temporary water crossing bridge design challenge

The PEI Model Forest Network and the Department of Environment, Energy and Forestry, in cooperation with the University of Prince Edward Island, have just completed a temporary water crossing research project. Conducted by second and third year engineering students as part of their design course, the project examined several different bridge design options and developed recommendations to provide private woodlot owners with the information required to build cost-effective and efficient reusable temporary crossings for small streams on their properties.

> "...the province is committed to demonstrating applicable forest certification systems on public lands..."

Prince Edward Island has thousands of small streams and waterways and it is not uncommon to encounter several on one property when conducting forest management or harvest operations. The smallest province in Canada, also has strict riparian zone regulations including one of the smallest riparian buffers - a 15m buffer along all Island streams and ponds. All crossings, temporary and permanent, require a permit and must meet a set of regulations and standards. For most land owners, building a permanent structure is too expensive and it can lead to greater environmental impacts. Many want to install a crossing that can meet temporary needs.

The final report is expected soon.

Certification of All PEI Forests

Prince Edward Island recently announced its commitment to have all publicly-owned lands eventually certified under the Forest Stewardship Council system. In order to ascertain costs and possible changes to management and record keeping processes, a pilot program has been undertaken at a public property in southeastern PEI.

Efforts are also underway to certify several other public land properties in western PEI under the Canadian Standards Association system. Under Prince Edward Island's Forest Policy, the province is committed to demonstrating applicable forest certification systems on public lands and using the information gained to help interested land owners make certification choices that are right for them and their properties. With this in mind, attention is also being paid to obtaining group certification status for some private? lands to enable interested land owners to certify their lands without incurring significant costs.

P.E.I. Wildlife Conservation Fund approves 24 communiuty conservation projects

The Wildlife Conservation Fund Committee approved $120,000 in funding for 24 community-based conservation projects across Prince Edward Island. The Prince Edward Island Wildlife Conservation Fund was created in 1998 to support fish and wildlife conservation projects in Island communities. Money for the fund is raised through a $20 yearly contribution from licensed anglers, hunters and trappers and allocated by the Wildlife Conservation Fund (WCF) Committee. The committee is made up of representatives of conservation groups, including hunters, anglers, trappers, other recreational users and watershed groups. The community conservation program is administered by the Island Nature Trust.

"Although we have more projects than we are able to fund, we are extremely pleased with the level of interest in conservation in our Island communities." said Bruce Smith, chair of the WCF committee. While this is a small iniative, as we can read elsewhere in this issue of Silviculture Magazine, community forest opportunities can lead to great change in how forests are managed.

Nova Scotia

by David Sutherland, Association for Sustainable Forestry

Leaving a Legacy: Quality Improvement Silviculture in Nova Scotia

The Association for Sustainable Forestry (ASF) is in its tenth year of administering silviculture and extension activities for small private woodlot owners in Nova Scotia. With funding made available through the Nova Scotia Department of Natural Resources, 552 ha of pre-commercial thinning, 50 ha of commercial thinning, 688 ha of selection management, 143 ha of crop tree pruning and 35 ha of crop tree release have been completed during 2010.

The December announcement of six new natural resources policy directions by the NS government includes reducing clear cutting to 50 percent of total harvest over the next five years. Presumably this will result in an increase in selection (uneven-aged) management, and will be a challenge to execute on the ground. The current silviculture funding assistance rate of $500/ha for selection management leaves little room for contractors and woodlot owners to negotiate stumpage.

As partial cutting evolves over the next five years, extension activities will need to keep pace with demand for information on selection management. On this note, the expansion of a user-friendly provincial Forest Ecosystem Classification system is proving to be of great benefit to forest professionals. The NSDNR Ecosystem Management Group is to be commended on the development of this great tool, which can be used to predict management implications on ecosites across the province. Recently released as a three-volume set, the FEC guide is easy to carry for reference in the field.

A dozen workshops for woodlot owners were hosted by the Outreach Project of ASF during 2010. These proved to be successful in promoting Category 7 silviculture, which includes selection harvesting, crop tree pruning and crop tree release. The one-day workshops, which had classroom and field components, introduced the audiences to initial crop tree selection, tree marking and quality improvement silviculture. Three additional workshops were held for forest contractors in the eastern, central and western regions of the province.

A video for woodlot owners, titled "Leaving a Legacy: Quality Improvement Silviculture in Nova Scotia" was produced by ASF during the past year. The footage includes interviews with several woodlot owners who have been carrying out Category 7 silviculture work on their properties.

"...the expansion of a user-friendly provincial Forest Ecosystem Classification system is proving to be of great benefit to forest professionals."

The woodlot owners discuss their experiences with these treatments without excessive technical detail, and the resulting video has a balanced and common-sense approach to woodlot management. While clear cutting will continue to produce much of Nova Scotia's wood volume in the future, this video discusses alternatives where they are practical.

Copies of the video are available from: Association for Sustainable Forestry, PO Box 696, Truro, NS B2N 5E5, or visit our website at www.asforestry.com.

Editor's note: While the NS Dept of Natural Resources has paid for 1468 Ha of various treatments, the forest industry is being expected to pay for most of the costs on the other tens of thousands of hectares worked on each year in Nova Scotia. Either the industry will find a way to do selection cuts for less than $500. per Ha while paying stumpage or else uncompetitive wood costs may drive many of the remaining mills out of Nova Scotia.

Newfoundland

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

A Story of Fire and Fir

On the island of Newfoundland, prescribed burning has been employed as a silvicultural tool for more than half a century, long before we started operational-scale planting or pre-commercial thinning. Back in the 1960's, and earlier, the Anglo-Newfoundland Development Company out of Grand Falls-Windsor routinely burned their cutovers to encourage natural black spruce regeneration. In recent decades we've used it very successfully to prepare sites for planting, particularly in western Newfoundland. Here, as elsewhere, "PB" does a great job of reducing slash loading, reducing the humus layer somewhat, and making the planting job that much easier. However, the primary purpose of prescribed burning in Newfoundland these days is the removal of natural balsam fir regeneration.

Balsam fir is the dominant tree species on the island. It grows well on the more productive site types and regenerates abundantly following insect and wind disturbances, and following harvesting. The species has served us well for more than 100 years, being the mainstay of the local sawmilling and newsprint industries. However, we've had our share of challenges in the management of fir. As Boreal conifers go, the species is a real wimp: it has an Audubon field guide's worth of insect pests and is highly susceptible to various root and stem rots, making it the island's shortest lived native conifer. Of particular note here is the balsam woolly adelgid, an introduced insect pest that has colonized much of the island since its introduction a century ago. This insect, for which there is no operationally feasible control measure, reduces tree and stand growth, and decreases fibre quality for both newsprint and lumber. A further aggravation with fir is its invasiveness: it frequently muscles its way onto black spruce sites after harvesting even though it often performs poorly on such sites.

Enter prescribed burning. Here on the island we've been quite successful in using fire to eradicate fir regen on select cutovers where we'd prefer to manage spruce plantations. For many years we used aerial and ground drip torches but it just wasn't operationally efficient. For the past three-four years we've been using the "ping-pong" ball aerial ignition device mounted in a helicopter and the results have been great. With it, we've been able to treat significant area in very short periods of time. Once we've burned off the logging slash and eradicated the fir regen, we plant spruce.

Prescribed burning isn't the perfect site prep tool. From a program management perspective, it has its issues. These include:

Reliability: Burning is weather dependent and many proposed burns have had to be cancelled due to weather (e.g., high or low indices, or the wrong winds). And if you have to push a burn off to the following season, it may not go ahead at all due to the loss of fine fuels and excessive green-up.

A ready-to-plant cutover in western Newfoundland, one month after prescribed burning

Budgeting: Burning costs can be highly variable. If you are fortunate enough to have wet weather move in immediately after the burn, you can save a lot on suppression. If, however, you don't get rain and the wind picks up, you can bust your budget trying to control reburns and hotspots.

Public Acceptance: You can't hide a burn and sometimes it can create public inconvenience and backlash. It's a challenge trying to sell the public on prescribed burning when our primary media message during the fire season is that all woodland fires are bad.

Burning carries with it other baggage as well. It results in the rapid release of carbon into the atmosphere and can affect air quality. Perhaps most importantly, in the Newfoundland context, is that we are conducting much of our prescribed burning in a balsam fir-dominated ecosystem where fire is an uncommon natural disturbance type. Is the application of fire, and the subsequent replacement of fir with spruce, an acceptable management practice in such an ecological setting? At the scale at which we are currently burning (less than 1,000 ha per year) this may not be anything to worry ourselves about just yet. But it is something we are mindful of.

Despite the hiccups, our intent is to continue to use fire judiciously. It's a wonderful silvicultural tool when applied in the appropriate circumstances.

Reader's Lens

Urmston Mountain view from the block near Creston, BC | Photo by Jane Boles

Brett catching a sling | Photo by Hugh Stimson

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Email info@silviculturemagazine.com

Notes from the Field

By Robin Claire McCullough

Morning meeting, Johnny's Crew, Nechako 2006

Two springs ago – in May of 2009 – I left my shovel in the shed. For the first time in 14 years, I paid rent in the city, and neither reprised the dance of planting nor the crewbossing of the last nine seasons. Instead, silvicultural work became the spring and summer focus of my MA thesis which shifted me from fourteen seasons of 'doing' to one season of articulating the labour of implementing the forester's prescriptions. The thesis traced the ways treeplanters, and treeplanting management staff, function as invisible transcribers on the map of reality of these paper and digital prescriptions. The thesis explores the point past which foresters are no longer able to implement – to actually make material – their prescribed renewal program. From this beginning point until the trees are in the ground, the thesis explores how the outcomes foresters prescribe are wholly in the hands of the silvicultural workers and so highlights the role of professional silviculture practitioners.

My research was not intended to determine which group – foresters or treeplanters – was the most "responsible" for the new, scientific forest, nor did I wish to evaluate who had the greater claim on the future trees. What I wanted to do was to make visible the ways in which silvicultural workers – treeplanters, crewbosses, tree deliverers and supervisors – function as an interface between industrial forest renewal as it appears on paper, and industrial forest renewal as it appears in the world. Because silvicultural workers have learned to read and write the language of the cutblock, they are able to translate the foresters' prescriptions – their scientific documents – from a series of ideas on paper, to a series of things in the world.

My investigation extended out of reviewing 80 hours of video footage, five years of planting, nine years of crewbossing, and my substantial collection of the transitional artifacts of that era—the maps and notes. The following is an abridged version of the thesis.

Treeplanters are contracted by a forest company to perform the renewal aspect of a multi-faceted forest management plan. The foresters' professional responsibility requires that they utilize their education and experience to determine how best to manage the flow of change in the forest lands of their Crown license; the silviculture worker's professional responsibility is to implement what foresters determined. It is one thing to prescriptively apply scientific knowledge to abstract, two-dimensional representations of a Crown license; it is quite another to materially enact these prescriptions.

The prescription documents are sometimes contained in the contract, and sometimes passed along later, but the contract tender relies on the process of de-abstracting these documents. Between the two-dimensional symbols of the future forest unit – the maps, spreadsheets, and texts – and the newly planted trees in the ground, stands the labour of silvicultural workers. This labour is a complex process of translation and inscription, and making this complexity visible has been the principle ambition of my research. I say make visible, because often, when it comes to the professional methods of evaluating forest management, treeplanters are invisible. The labour which they perform is labour done on behalf of the forest company to which they are contracted, and if they have done their job properly, perhaps being invisible is as it should be.

Planter Lukas 'obstacle planting' according to prescription

This invisibility was highlighted, by the document formally evaluating the forest management practices of a particular Crown license. In accordance with provincial legislation, in order to ensure that the technical aspects of forest management are compliant with the applicable regulations, independent evaluations of all management practices are conducted at least once every five years. The resulting audit documents are made available to the public; it is one of these audit reports which set the stage, so to speak, for my investigations.

After my 1996 rookie season in the eastern foothills, in May of 1997 I began work on the Spruce River Forest, Sustainable Forest License # 542526. The SRF is in the Northwest Region of the Ontario Ministry of Natural Resource's Thunder Bay District. Until 2008, it was administered by the Fort William Division of the Abitibi Consolidated Company of Canada[1]. I worked on the SRF as a planter until 2000, beginning work as a crewboss in 2001. In the spring and summer of 2006 I recorded the footage that formed the bulk of my research material; 2006 was also the year in which the previous five years of Abitibi's obligations as a Crown license holder were independently audited. This evaluation was conducted by a team organized by BioForest Technologies Inc., consisting of a lead auditor and two other Registered Professional Foresters, a biologist-ecologist, a socio-economist, and a secretariat. BioForest's 105-page document concludes, in essence, that not only were the "technical aspects of forest management...completed in a highly satisfactory manner," but that the performance of Abitibi's "very small staff... was among the best the audit team had viewed anywhere in the Province" (65). Furthermore, the auditors of BioForest formally reported that they witnessed a "very effective renewal program, where sites were treated promptly and with appropriate prescriptions" (30).

Nowhere in BioForest's report, however, is there direct mention of the actual people or practices through which the Spruce River Forest's renewal program was very effectively materialized. As far as the audit of one professional forester by another is concerned, what the foresters prescribed is what the auditors witnessed; the means by which this was achieved were invisible.

Perhaps this is how it should be. If the silvicultural workers have done their job correctly, not one of the numerous

translations and re-inscriptions which they performed should be visible. The final draft – the material version – of the future forest unit does not need to reveal the concrete practices by and through which the science of industrial forest renewal was inscribed upon the land. The treeplanter's job is to make the world of things equal the world of paper; to make it so that the foresters' management operations are not found by an independent audit to have failed to conform to the provincially legislated principles of sustainable forest management. The imperative under which treeplanters labour is: 'as the future forest unit has been packed into words, so must they unpack these words'.

This must be done, furthermore, in a manner which is not only legible with regards to the science of industrial forest renewal, but which operates at a high degree of fidelity to the originary prescriptions. The final inscription – the trees in the ground – must read as if it has not, in fact, been translated at all. The abstract and symbolic representations of the new forest prescription must be made into real, substantive marks in the world, through the work the treeplanters perform at the meeting points of the physical and the paper worlds. My investigation traced this process of de-abstraction through four particular channels: textual, graphic, conversational, and performative; it is at the conversational point of the shift from abstract to material that the engagement of the labourers begins to rapidly accelerate.

The great majority of the translations performed for the labourers, and by management staff, happen via spoken language. Conversational engagements between the foresters and the labourers are largely question-and-answer period at the beginning of the season after which they shift to management staff's pre-commencement meeting with the foresters, and regular communications throughout the contract. After the initial meeting, the verbal translations guiding the labourers' daily operations are almost entirely the province of management staff. What the foresters communicate in textual and graphic form, supervisors and crewbosses translate into field conversations, in order that the silviculture practitioners may faithfully – legibly – inscribe the prescriptions upon the land.

For the foresters, the license is a scientific object of knowledge, and they characterize it conversationally as such. They speak of allowable harvest volumes, seed zones, and codes of practice, riparian reserves; for the foresters, trees are professionally meaningful as collectivities – as, for instance, "jack pine working groups." For the non-scientist treeplanters, on the other hand, the cutblock is almost entirely experienced via a non-abstract, one-to-one correspondence. Their knowledge of the cutblock comes (at least initially) through their physical engagement with it, and not through the abstract or representative terms by which the technical aspects of forest renewal proceed. Though there are of course certain originally scientific, and representative, terms which have worked their way into the everyday speech of the labourers, for the most part the languages in which these two groups speak are too disparate to enable an effective exchange of content. It is into this conversational gap that silvicultural management staff enter, in order that they may perform the work of translation which guides the activities of the labourers. Instead of speaking of riparian codes of practice, for example, crewbosses speak of seedlings which "don't like to get their feet wet," vs. seedlings which do. All this is to achieve invisibility: to quietly enact the movement from symbol to thing, from sign to referent, from paper to earth. The labour of the treeplanter has disappeared into the land.

This introduces a break-down of the process and in the second excerpts to be published in Silviculture Magazine and in the next issue, I will highlight the physical translations performed by the labourers themselves, and the particular skills required to enact these translations faithfully.

[1]In 2008, Abitibi Consolidated merged with Bowater; the company which administers the Spruce River Forest is now AbitibiBowater.

Silviculture: The Dilemma

By Jeff & Jim McWilliams

British Columbia (BC) has been developed, in large part, by exploitation of natural resources, including large tracts of mature forests. While forest management has evolved to provide reasonably sustainable harvest levels, including protecting (or minimizing damage to) many key non-timber values and assuring reforestation of logged areas, the system is based on deriving short-term economic values from forests. The primary beneficiaries have been corporations, who hold the harvesting rights, and the BC public, through jobs and stumpage/tax revenue used to fund infrastructure and government initiatives. While this system has shortcomings, overall it has served BC well.

As the availability of mature, merchantable forests has been greatly diminished by logging, natural disturbance and the establishment of forest reserves, a tipping point has been reached. The new era will depend on managed forests and a new framework is needed to maximize the benefits from growing trees on core crown forest lands.

As highlighted by Pat Bell (the previous Minister of Forests) soon after taking office: "The first (objective) is really maximizing the growth opportunity of our forests. For a long time we have given great thought to cutting trees down. Now it is time to give more thought to growing trees."

Opportunities

There are many reasons to be optimistic about the long-term economic, social and environmental benefits from investing in growing trees:

- Wood is an excellent material for buildings and other industrial uses and has fewer environmental impacts than alternative products.
- Forests are natural with the potential to provide tangible, direct economic non-timber values and services.
- The imminent, substantial decrease in supply from most of the world's mature forests may lead to higher wood product prices.
- As more low quality rapidly grown plantation wood becomes available, the high quality fiber from BC will command a premium.

As a result, growing trees on a portion of BC's forested land base could become a viable business opportunity that will require sizeable investments in forest management.

The Dilemma

Government expenditure is needed to reduce the fire hazard associated with the mountain pine beetle infestation, inadequate stocking of some previously harvested and naturally disturbed areas, and the poor health, resiliency and quality of some managed forests. Funds are also required for updated inventories, monitoring and research and development. Finally there are opportunities for viable incremental investments in treatments which grow trees and/or other ecosystem related products and services, faster and better.

On the other hand harvest levels are decreasing, resulting in reduced revenues to government. With public revenues almost entirely directed to health care, education, infrastructure and other essential services, government is not able to provide adequate funding to maintain and enhance the forest resource.

Licensees have little incentive to invest in growing trees when tenures are not appropriate to assure a return on discretionary expenditures. Additionally, the stumpage system promotes cost minimization of key aspects of silviculture (instead of investment) and directs the majority of the future benefits achieved by the investments to government.

The crucial dilemma is that neither government, who owns the timber harvesting land base, nor licensees, who are responsible for most of the key aspects of forest management, will make significant investments to increase forest values. This quandary will not be resolved without structural change.

Limitations of the Existing Framework

Silviculture is the set of techniques of harvesting, regenerating and tending a forest crop; the continuum of change to achieve desired timber and non-timber products and services.

Making investments in growing trees viable requires forest and stand-level objectives, full rotation plans which minimize the risks of losses and a basis for adjudicating results. Given the long rotations in most parts of BC, even with increased future real prices for wood products, silviculture treatments face marginal economics, with little room for error. Consequently, it is essential to promote an integrated approach to investments in silviculture .

Major tenure in BC consists of volume based and area based licences. Volume based licences account for about 60% of the total harvest. As licensees are business

competitors, the holders of volume based quotas have an incentive to harvest the best wood available in a timber supply area first and can have little long term interest in the new forest, following logging and planting. In addition, cost minimization of harvesting and reforestation activities promoted by the stumpage system undermines long term management initiatives for growing trees.

Major tenure holders are responsible for planning and executing harvesting and are required to reforest logged areas and tend the new forest until it is free to grow. From this point forward until the trees are ready to harvest again, the Crown assumes responsibility for management. This separation of responsibilities is not conducive to long term integrated silviculture.

Growing higher value forests would be supported by open, competitive markets for forest products. Unless value recovery from forests is maximized by open market based pricing of the whole range of products and services that can be generated from the forest it is not possible to forecast the future viability of integrated silviculture programs. Open markets will also favor increased differentiation in log values and increased utilization.

Under the current system, the majority of timber supply is controlled by few licensees, whose manufacturing facilities produce commodities at minimum cost. This results in partial utilization of the timber supply profile and low value recovery. A lack of available fiber supply has slowed the development of bio-energy and value added manufacturing and has contributed to the difficulties in assessing the opportunities for investments in silviculture.

Opportunities for Change

1. New long term, secure, area based licences for core areas of the harvesting land base (areas that are likely to support continuous, economically viable forest-based operations) which would:

- be the platform for the development of regionally-based forest and stand level objectives for timber and non-timber products and services,
- provide the basis for integrated planning and optimization of practices throughout the rotation,
- be the basis for assessing accountability for the results of forest management,
- include provisions for compensation to tenure holders for investments in improvements to forest land forgone by government changes in land use or forest policy.

This will require Crown rationalization of some existing tenures to provide space for these new tenures.

2. Development of fully competitive markets, so that the optimum value of different products from the managed forest profile can be realized by tenure holders and the public alike, and whose free market prices can be used for analysis of silvicultural investment opportunities by tenure holders. This likely requires further separation of tenures from manufacturing facilities.

3. Promotion of viable investments in silviculture by tenure holders, or other third parties, by ensuring that investors receive the benefits arising from the investment. This may be in lieu of payment of stumpage, which is not appropriate for this business model.

4. Development of accounting and taxation principles and policies which accommodate the unique characteristics of forest management and manufacturing enterprises.

To conclude, unless forest policies and practices which promote increased productivity and value on designated crown lands become an essential component of forest management in BC, the forest sector will continue to diminish.

Jeff McWilliams, BSF, RPF, is a senior associate with B.A. Blackwell & Associates Ltd. Jeff has over 24 years of experience in forest resource management in BC.

Jim McWilliams, BSF, MA, RPF (ret), has worked in the BC forest industry for 45 years, primarily in executive positions with manufacturing facilities

Focus on Safety

By Barbara McFarlane, New Brunswick Forest Safety Association

Ahhhh, springtime in New Brunswick! Be Aware.

As the snow melts away to grass and the Robins chirp, silviculture contractors and employees are busy gearing up for another busy season.

In preparation for the 2011 season, all silviculture employers and employees are encouraged to make safety a priority this season.

Workplace incidents are always financially and emotionally costly, especially when the work season is so short. So it's disappointing, to say the least, that here in New Brunswick silviculture activities still provide a significant portion of the recordable incidents in our industry. To put this into context, consider that in 2009 New Brunswick logging and silviculture contractors…

- paid out $4,000,000 to compensation,
- paid out $457,000 in accident costs,
- lost 2000 work-days,
- had an average accident cost of $4200
- had a lost-time accident frequency 2 times higher than the provincial average.

The above indicates only the direct costs associated with these incidents; however, the total cost of any incident includes both direct and indirect costs. The direct costs of an incident are often insurable and include things like compensation payments, ambulance costs, property and equipment damage and/or clean-up costs. Indirect costs to forest business on the other hand are not insurable and include things like production downtime, replacement worker costs, worker rehabilitation, investigation costs, and reduced morale. Spin-off costs include the emotional impact on the crew and morale, and the cost to the community of the impact on the family, which can be immeasurable. All of these costs are less obvious, harder to track and can be 5 to 53 times greater than the direct cost of an incident.

Let's explore the above in an example of a common silviculture related incident: an employee slips and falls on the job damaging 2 discs in their back and they miss 6 weeks of work, all which results in a $4000 compensation claim.

- Direct Costs + Indirect Costs = Total Costs
- $4,000 + $20,000 = $24,000 (using the lowest 1:5 direct:indirect ratio)

Assuming this business operates a 10% profit margin the impact on this company's profitability would mean they would need to increase sales by $240,000 just to offset the total cost of the injury.

REFORESTATION UNDER CLIMATE CHANGE – A STUDY

Purpose: to understand the impacts of government policies and regulations on reforestation decisions in British Columbia (BC) and the factors that promote and constrain alternative reforestation strategies under climate change.

Procedure: complete an anonymous and confidential web-based survey that will take at least 20 minutes to complete. You will be presented with some questions about: current reforestation policies and practices in BC, climate change, alternative reforestation strategies.

Participate: target respondents include people with experience developing/approving reforestation strategies OR preparing/approving stocking standards and forest stewardship plans in British Columbia.

To participate, visit **app.fluidsurveys.com/s/reforestation**

Contact: David Perez, M.Sc. Student, Department of Forest Resources Management dpforestry@gmail.com

What can you do to make 2011 an incident free year?

There are a number of things you can do to help make your worksites as safe as possible. This year, begin with a pre-start-up checklist to ensure your crews have all safety items they require, such as:

- Personal Protective Equipment
- Trained First Aiders
- Block and Warning Signs
- Emergency Preparedness & Response Plan
- Spill Kits
- WHMIS Labels and MSDS
- Evacuation Plan
- Fire Equipment
- Communication procedures
- Work Permits
- First Aid Kits
- Operating Plans
- Lock-out procedures

To keep safety a priority throughout the season, adopt a "Tailgate Safety Meeting" schedule. Tailgate meetings can be held weekly, monthly, or anytime a new worksite or issue arises. They only need to be 10-15 minutes long and are a great way to keep safety at the forefront of everyone's mind all year. Use them to address worksite hazards, a hazard alert, work practices, machinery, tools, attitudes and anything else that may affect the safety of the worksite. Giving your employees time to discuss safety issues reflects positively on you as the employer, however, to be completely effective you need to follow-up in the field to re-enforce the information and ensure questions arising from the meeting always get answered (even if time is required to find the proper response). It's also a good idea to keep a record of your tailgate meetings; some jurisdictions require you to do this, but its good practice regardless.

New Legislation

Woods workers spend a lot of time in their vehicles and so its relevant to mention that as of June 6, 2011 new distracted driving legislation will come into affect that will make it illegal to use any electronic device with a display screen, communication device, or entertainment device that is not firmly attached to a vehicle's dashboard (i.e. cell phones) while driving in New Brunswick. Drivers caught using devices illegally will lose three points and be fined $172.50.

For more information on any of these items please visit www.nbforestsafety.ca. The New Brunswick Forest Safety Association is a not for profit safety association aimed at eliminating workplace accidents in the forest industry through education and training.

Why we need the S-100 course

by Jake Jacobson, Wildland Fire Instructor

Why are silverculture workers in BC required to have the S100. "Basic Wildland Firefighting and Safety".

Under the BC Forest Act, anyone working in the forest must be trained and equipped to take prompt, safe and effective action and try to limit the spread of the fire accruing within 1 Km of their work area.

If a crew can contain a fire quickly, it will save revenue producing timber and possibly save millions of dollars.

WorkSafe and the forest industry have adapted the BCFS S100 course as the minimum standard training. With knowledge of this course, people can properly assess a fire and make informed decision on how to safely attack the fire. Fire fighting is a very dangerous activity and only trained people should attempt to contain a fire.

The Forest Service recognizes the S100 ticket as being valid for a period of five years. If the employee works on a Wildland fire and retains proof of doing so, their ticket is good for another fire years from the time of the fire.

WorkSafe B.C. regulation, Part 26.3.1 that states that if you are working in forestry operations, you must be trained in fire fighting duties and you must have the annual refresher. This is the S100a course and covers the pertinent safety features of the S100 course.

This course can be taken in a classroom conducted by a responsible instructor, and is also offered as an online course through several organizations.

Be safe out there. When it comes to fighting forest fires, it is as important to know what your abilities are as well as your limitations. And remember, when in doubt, back out!

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