

2011 Northern Silviculture Committee Winter Workshop: New directions in forest management

Alan Wiensczyk

The 2011 Northern Silviculture Committee Winter Workshop was held February 15–16 on the campus of the University of Northern British Columbia in Prince George and brought together a wide variety of speakers who continued discussing the theme initiated at the summer field tour—*New Directions in Forest Management*. Over 120 delegates, representing the forest industry, academia, provincial and federal governments, and the consulting community, gathered to listen to presentations and discuss the current silviculture issues of the day.

“The way we are currently managing our forests presents many risks that we can no longer ignore. We need to start viewing our forests as complex, adaptive systems and manage them as such,” stated **Dave Coates** (B.C. Ministry of Forests, Lands and Natural Resource Operations). He explained that we need to shift our emphasis from managing our forests for uniform composition and structure, with a scale-independent view of practices and orderly and predictable forest development, to an approach that promotes forest resilience and adaptability to changing conditions. He also noted, however, that our challenge will entail the development of new viewpoints, decision criteria, practices, and models that will allow us to apply complex systems thinking operationally to ensure our forests are providing the values we need and want. This sentiment was shared by both **Chris Hawkins** (Yukon College)



Complex structure in a stand affected by mountain pine beetle (Craig DeLong photo).

and **Suzanne Simard** (University of British Columbia) in their presentations. Said Hawkins: “Modified natural forests or plantations are generally less resilient than primary forests and are at greater risk of large-scale loss due to climate change because of their reduced biodiversity.” He suggested that we need to maintain genetic diversity and biodiversity at all scales, maintain stand and landscape structural complexity, reduce forest fragmentation, and recognize and plan for predicted future climates to mitigate this risk. In her presentation, Simard emphasized the interconnectedness of trees in an ecosystem through space and time. Her research on Douglas-fir and birch ecosystems found that these two species are connected through mycorrhizae networks and that this connection positively affects regeneration success, disease resistance, and resource sharing and cycling for both species. She concluded that, instead of

For More Information

For more information on forests as complex systems, Coates recommended participants read the article by Annand et al. 2010. Ecological systems as complex systems: Challenges for an emerging science. Diversity 2:395–410.

<http://www.mdpi.com/1424-2818/2/3/395/pdf>

trying to eliminate successional steps through brushing, we should encourage the conservation of natural successional pathways through broadleaf–conifer mixtures, as these pathways will create forests that are more diverse and connected, store more carbon, and have a lower risk of damage from insects and disease.

Another theme addressed at the conference was the use of fibre for bioenergy and other non-traditional products. One key message echoed by three presenters, **Jason Fisher** (Dunkley Lumber), **Tony Sauder** (FPInnovations), and **Brian Quick** (Lakeland Mills), was that the delivered cost of the fibre relative to the value of the product produced is a critical factor in determining the viability of any new fibre uses. Fisher explained that proximity of the fibre source to the bioenergy facility, the demand for the fibre, the amount of processing required, and the end worth of the product are the main factors in determining fibre affordability. In his presentation, Quick provided more detail on the three main sources of fibre available:

1. sawmill and planer mill residues (bark, sawdust, shavings);
2. harvesting residue (pulpwood fibre, residual tops, branches, and broken chunks); and
3. standing mountain pine beetle-killed pine trees (non-sawlog).

Sawmill and planer mill residues are the least-expensive sources of fibre, followed by harvesting residue. A challenge associated with these fibre sources is that the availability can vary depending on the economy and lumber production. The most-expensive source of fibre is standing dead pine. In addition to higher costs, the long-term sustainability of this fibre source is another challenge, according to Quick.

Opportunities also exist to develop new products that utilize the residual fibre, said both Fisher and Sauder. Sauder described the Future BioPathways project, commissioned by the Forest Products Association of Canada (<http://www.fpac.ca>) in 2009 to help the forest industry and others determine the viability of new wood-fibre products. Project researchers determined where the product was on the development path and looked at the financial, social, and environmental metrics for each new product. Information such as the return on capital investment, employment levels per unit of product, and the carbon footprint associated with the new product was all included. Sauder went on to summarize some of the key conclusions from the report.

- The lumber industry is the cornerstone of a competitive forest and bioenergy industry.
- Potential exists to add production of chemicals to the outputs of the pulp and paper manufacturing process.
- Almost all bioenergy and biochemical options are more economically attractive when integrated with current forest industry operations.
- There is a need to build partnerships between forest companies and bioenergy and biochemical producers.

This report is available online at http://www.fpinnovations.ca/pdfs/01_29_2010-E-Technical_FINAL.pdf

Participants also got the opportunity to see an example of bioenergy production using residual wood fibre. **David Claus** (University of Northern British Columbia) led participants on a tour of the University of Northern British Columbia's new gasification plant that uses mill residues to heat water, which is then used to heat the main university buildings. This new facility will help the university reduce its heating costs and assist the university in becoming carbon neutral by reducing its greenhouse gas emissions. The plant will also provide students and faculty with an opportunity to conduct research to improve and refine bioenergy technologies.

A pair of speakers, **Ken White** and **Richard Reich** (B.C. Ministry of Forests, Lands and Natural Resource Operations), shared information on forest health strategies. White informed participants about the provincial forest health strategies for each of the interior timber supply areas (TSAs) and the Coast Region, noting that the most important part of these strategies is the best management practices, which apply to forest health-related activities. The strategies also include prioritized lists of the pests in the TSA, distribution maps for each pest, as well as estimates for non-recoverable losses for all forest pests and abiotic factors such as fire and blowdown. Planned future improvements include the incorporation of:

- hazard and risk ratings for different forest health agents;
- stand development monitoring data; and
- stocking standard recommendations.

Reich provided details about the Mackenzie Forest District's pine stem rust management strategy, developed by a committee of licensees, government, and consultants to reduce losses to pine stem rusts



Stalactiform blister rust on a young lodgepole pine tree in the Nadina Forest District (Richard Reich photo).

(comandra and stalactiform blister rusts and western gall rust). Reich noted that developing a rust hazard rating, one of the key pillars of the strategy, has been a challenge because of complex rust life cycles that include alternate hosts (blister rusts only), climate influences that can result in risk changes over time, and the influence of site factors (e.g., elevation, aspect, slope, and mesoslope position). One of the strategy's positive outcomes has been the success of the rust identification training for licensee, government, and consultant survey crews, which has resulted in better identification of rust hazard areas.

Kevin Astridge (B.C. Ministry of Forests, Lands and Resource Operations) told participants that stocking standard parameters are a silviculturalist's way to measure site occupancy and that the site occupancy of a plantation during the establishment phase can have a large impact on the potential yield from the site at rotation. Using the latest version of the Tables for Interpolation of Potential Stand Yield (TIPSY, ver. 4.2; <http://www.for.gov.bc.ca/hre/software/>), as well as output from the Tree and Stand Simulator (TASS) model, Astridge demonstrated how changes to tree seedling density, seedling distribution, and the minimum intertree distance can affect the predicted yield from a stand at age 80. He cautioned participants to remember that, when designing stocking standards, it is important to understand how these variables affect yield and how their interaction can lead to even greater yield impacts.

Guy Burdikin (West Fraser Mills – Williams Lake) informed workshop participants about some of the challenges facing the Williams Lake TSA, including

- massive tracts of beetle-killed forests and the reduced ability of these areas to regenerate naturally because of decreases in seed viability;
- catastrophic wildfires affecting both mature timber and plantations; and
- a seed supply shortage for certain elevation bands (1000–1500 m ASL).

He also noted that for some beetle-killed stands the value of timber harvested is insufficient to cover the increased silviculture costs associated with bringing these stands back into production. Normally, these stands would be left to regenerate naturally but decreased seed viability means this is no longer an option. Burdikin also discussed the formation of the Future Forest Estate Plan as a means to address some of these challenges. This plan is a “collaborative approach at the TSA level” that builds on the existing experience of the Future Forest Ecosystem Initiative, the Innovative Forest Practice Agreements, and Forest Practices Code Pilots to help with the “co-ordination and prioritization of limited resources for forest management in the Central Cariboo Region.” To date, the planning group has developed a project charter that outlines the scope, priorities, and alignment for the TSA; provides a basis for communication; establishes accountabilities; and sets the stage for action plans. Work also continues on the gathering and analysis of technical background data.

Another key component of the workshop was a pair of discussion/panel sessions. For the first, Dave Weaver (B.C. Ministry of Forests, Lands and Natural Resource Operations) gave a brief introduction on the proposed multi-block landscape standard for free-growing obligations and then invited feedback from the audience. Several audience members expressed support for the government's willingness to work on this initiative. A comment echoed by many of the participants was that stocking standard assessments, be they single block or multi-block, are simply tools to tell us how successful we are in achieving our forest management objectives. Said one participant, “We need a clear definition of forest management success and a system that will tell us whether we are successful—not just some administrative hoop we have to jump through.” Others expressed concerns about public perceptions if some areas were left not satisfactorily restocked.

During the second discussion session, a panel of experts shared their thoughts on the government's *New Vision of Silviculture* and ideas on what would be required to make it happen. Ralph Winter (B.C. Ministry of Forests, Lands and Natural Resource

Operations) provided a general overview of the silviculture strategy and the comments received during its review. One key area identified in this review process was the need for a collaborative sustainable forest management plan for each management unit in British Columbia that included clear goals, objectives, targets, and indicators for both timber and non-timber values. To that end, “the government has been working on a draft sustainable forest management planning framework paper” said Winter. The other two panellists, **Carl vanderMark** (Canadian Forest Products) and **Craig Farnden** (University of British Columbia), both agreed that a cohesive planning framework for forest management was needed to guide silviculture investment. Said Farnden, “Silviculture programs are simply a means to achieve explicit forest management objectives” and that a forest management plan is needed to set those objectives. To implement the strategy, vanderMark suggested that a focus is needed on the desired outcomes and the investments needed to generate positive returns, which should accrue to the risk takers, and that an optional incremental investment model is also required. Comments from the audience included a caution about the need to consider climate change and the effects of silviculture treatments on stand resiliency, as well as the need to recognize that a changing climate may affect our ability to realize our silvicultural investments.

In addition, **Brian Quick** (Lakeland Mills) spoke about forest operations in Brazil, where eucalyptus and loblolly pine plantations with mean annual increments averaging 44 m³/ha per year and 38 m³/ha per year, respectively, are used in pulp and paper production. I provided participants with information on knowledge extension and how FORREX could help them solve their natural resource management problems, and **Chris Opio** (University of Northern British Columbia) gave an after-dinner presentation on natural resource management in Uganda and the work being done to provide clean drinking water for rural residents in that country.

Digital copies of the presentations from the winter workshop are available on the University of Northern British Columbia’s Continuing Studies website at <http://www.unbc.ca/continuingstudies/events/nscwinter.html>

The next Northern Silviculture Committee event will be the summer field tour, which takes place June 15–16, 2011, in Mackenzie, B.C.

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