SASCO

SOUTHERN INTERIOR SILVICULTURE COMMITTEE

2015 WINTER WORKSHOP

Placing BC in a Global Forest Management Context –

and

Key Forest Management Issues of the Day –

How Do We Measure Up?

Thompson Rivers University,
Kamloops
February 10 - 11, 2015

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2015 SISCO Winter Workshop

Day One: Tuesday February 10, 2015

TRU Campus Activity Centre - Mountain Room

8:25 Welcome & Opening Remarks
Ian Cameron, Azura Formetrics
2015 SISCO Chair

Placing BC in a Global Forest Management Context - How Do We Measure Up?
Plenary Sessions

8:30 *Setting the Stage: Where Does BC's Forest Management Strategy Fit in the Global Forest Management Context?*
John Innes
Dean, Faculty of Forestry UBC and Forest Renewal BC Chair in Forest Management

9:15 *Global Marketing Strategies*
Stirling Angus
Consultant, Timber Development, Valuation and Market Access, JCH Forestry

10:00 Coffee Served

10:30 *Future Wood Products for the Global Market*
Bill Downing
President, Structurlam Products Ltd.

11:10 *BC's Forest Management Strategy for Multiple Resources and Public Expectations – How Does it Measure Up?*
Bruce Larson
Professor, Faculty of Forestry UBC / FRBC Chair of Silviculture

11:50 *Diverse Silviculture Practices for a Diverse Future Wood Supply – What Are the Barriers to Change and Innovation?*
Bill Bourgeois
Coordinator, Healthy Forests - Healthy Communities

12:30 Lunch: TRU Culinary Arts Program Cafeteria

Forest Science Research – Practical Applications
Discussion Sessions 1-7
TRU Campus Activity Centre – various rooms (see separate sheet)

1:45 *Discussion Session 1: Root Disease Control: Biological and Economic Impacts*
Bill Chapman, Soil Scientist, MFLNRO
Mike Cruickshank, Root Disease Scientist, Canadian Forest Service

Discussion Session 2: The Obscure Statistics of Well-Spaced Trees
Eleanor McWilliams, Partner, Associated Strategic Consulting Experts
Jim Goudie, Team Lead, Stand Development Modelling, MFLNRO

2015 SISCO Winter Workshop

Day One continued

Discussion Sessions continued

Discussion Session 3: The Value of Long-Term Trials; Our Research Group Trials From the Past 20 + Years: What Has Been Noticed, Recorded, and Some Unexpected Results
Teresa Newsome, Research Silviculturist, MFLNRO
Alan Vyse, Adjunct Professor, TRU, Retired BC Forest Service Research Manager

Discussion Session 4: High Density Pl: to Thin or Not to Thin
Ian Cameron, Growth and Yield Specialist, Azura Formetrics
Jim Thrower PhD, RPF, Growth and Yield Specialist, JS Thrower and Associates

Discussion Session 5: Logging in Mule Deer Winter Range; What is Acceptable? And The Cariboo Mule Deer Winter Range Initiative – an Historic Look
Ken Day, Manager, UBC Alex Fraser Research Forest
Darcy Peel, Land and Resource Specialist, MFLNRO

Discussion Session 6: Forest Health From Three Perspectives: the High, the Dry, and the Cool Wet
Lorraine Maclauchlan, Forest Entomologist, MFLNRO

Discussion Session 7: Fuel Hazard Assessment and Abatement: Challenges Facing Licensees Regarding Postharvest Material and New Stand Generation
Peter Semenoff, Protection Officer, Kamloops Fire Center
Glen Burgess, Protection Officer, Vernon Fire Zone
Tom Sullivan, Wildlife Ecologist, Forest and Conservation Sciences, UBC
Brad Bennett, VP – Operations, Pacific BioEnergy Corporation

3:00 Coffee on the run, served in Grand Hall Foyer

3:15 *Discussion Sessions 1 – 7 repeated*

4:30 Adjourn for the day

5:30 TRU Campus Activity Centre, Mountain Room

Cash Bar Opens
ABCFP All Members Meeting

7:00 Banquet

8:00 *Fifty Million Year Old BC Fossil Forests: The Dawn of the Modern World*
Bruce Archibald, Paleontologist, Research Associate SFU, Royal BC Museum, and Museum Comparative Zoology, Cambridge

2015 SISCO Winter Workshop

Day Two: Wednesday February 11, 2015

TRU Campus Activity Centre - Mountain Room

Key Forest Management Issues of the Day - How Do We Measure Up?
Panel Sessions

8:25 Announcements
Ian Cameron, 2015 SISCO Chair

8:30 SISCO AGM

8:45 *Professional Reliance in Forestry Compared to Other Regulatory Regimes*
Mark Haddock
Assistant Teaching Professor, Environmental Law Centre, University of Victoria

9:15 *Panel 1: Who Will be There to Manage Tomorrow's Forests – Is the Current Succession Planning Approach Adequate?*

Moderator: John Karakatsoulis

Are we losing our viable workforce for carrying out forest management in this province? Are we losing our forest management expertise, and the research and science upon which it depends? What expertise are we losing, and do we need research capacity and scientific knowledge to inform our forest management policies and practices? If not, what will inform these policies and practices? Are "boots on the ground" really necessary, or are these boots better replaced by less costly remote sensing technologies such as LIDAR and satellite imagery and tech-savvy modellers and accountants? In short, what is our succession plan for remaining viable in forest science and research, and for ensuring the forestry workforce needed to achieve our societal goals for future forest management? Our panel of experts will address these weighty questions, and then it's your turn to join in the debate.

Panelist 1: Industry Perspective Regarding Loss of Expertise: Bill Beese, Chair, Forest Resources Technology, Vancouver Island University

Panelist 2: Researcher's Perspective: Phil Burton, Professor, UNBC

Panelist 3: Loss of Capacity in Operations: Rick Sommer, Kamloops Forest District Manager, MFLNRO

Panelist 4: Goverment's Perspective Regarding Succession, and Support for Research: Louise de Montigny, Silviculture Reasearch Leader, Resource Practices, MFLNRO

Panelist 5: Industry Perspective Regarding Succession Planning: Jason Mattioli RPF, Assistant Manager, Fibre Supply, West Fraser Mills

10:10 Questions from the Floor

10:30 Coffee Served

2015 SISCO Winter Workshop

Day Two continued

Key Forest Management Issues of the Day - How Do We Measure Up?
Panel Sessions?

11:00 *Panel 2: Can Partial Cutting Address Current and Future Forest Management Issues?*

Moderator: Walt Klenner

Partial cutting has been applied extensively in many of the forest ecosystems found in the Southern Interior, and the concepts underlying partial cut harvesting have evolved since the early days of "selective cutting". Early practices often removed the trees of greatest economic value with little regard for the quality or value of stems retained or the consequences for future harvest entries. Many potential applications of partial cut harvesting exist, including improvement thinning to increase the timber value of the residual stand and to maintain snow interception and cover on ungulate winter ranges, and retention cutting in visually sensitive areas. But what "partial cutting" practices are actually in use today, where is it being applied, and does it achieve what we expect it to? Our panel of experts will provide food for thought and a target for your professional questions.

Panelist 1: Case Study Data: Rainer Muenter, Forest Manager, Monticola Forestry

Panelist 2: Growth and Yield: Catherine Bealle Statland, Research Scientist - Stand Development Modelling, MFLNRO

Panelist 3: Habitat Goals of Group and Patch Cuts: Michaela Waterhouse, Silviculture Systems Researcher, MFLNRO

Panelist 4: How Well Does the Current Forest Management Framework Support Partial Cutting in BC?: Jeff McWilliams, Senior Associate, B.A.Blackwell & Assoc.

11:45 Questions from the Floor

12:15 Lunch

2015 SISCO Winter Workshop

Day Two continued

Key Forest Management Issues of the Day - How Do We Measure Up?
Panel Sessions

1:30 *Panel 3: Declining Timber Supplies and Allowable Annual Cut Management*

Moderator: Marvin Eng

The Chief Forester regularly reviews the timber supply for all timber supply areas (TSA) and tree farm licences (TFL) in the province. This review examines the impacts of current forest management practices on the timber supply, economy, environment and social conditions of the local area and the province.

There has been much discussion, analysis and concern in recent years regarding the Mountain Pine Beetle's (MPB) impact on the province's timber supply. Projections are that nine TSAs and one TFL will experience allowable annual cut (AAC) declines of 20 percent or more over the next ten years. This anticipated decline in AAC is challenging government to provide sufficient timber volumes to existing licence holders while also providing opportunities for new entrants, particularly those that can increase the utilization of fibre (for example, pellets and bio-energy), and First Nations who also seek a larger portion of the AAC to further their economic goals.

Much of the volume previously provided to First Nations to build capacity was sourced using short-term MPB AAC uplifts. Existing licence holders want to protect existing harvesting rights as much as possible. And new entrants continue to seek access to low value fibre. Panel members will provide their perspective how best to apportion the 'post-beetle' AAC. Then you will get a chance to further the debate.

Panelist 1: Ministry of Forests Lands and Natural Resources Operations: Doug Stewart, Director, Forest Tenures Branch

Panelist 2: Fibre Utilization / Innovation: Brad Bennett, VP – Operations, Pacific BioEnergy Corporation

Panelist 3: First Nations Operations: Not Available

Panelist 4: Industry Perspective: Allan Bennet, Forestry Supervisor / TFL Forester West Fraser

2:20 Questions from the Floor

2:40 *Wicked Problems and Simplistic Solutions* (Food For Thought on the Drive Home)
Bob Simpson, Mayor of Quesnel; Chair, Cariboo-Chilcotin Beetle Action Coalition

3:15 Closing Remarks and Adjourn
John Karakatsoulis, Senior Lecturer, Natural Resources Sciences, TRU
Incoming SISCO Chair

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SOUTHERN INTERIOR SILVICULTURE COMMITTEE

DAY ONE

PRESENTER ABSTRACTS

Our objective is to promote appropriate silvicultural practices in the Southern Interior of British Columbia

Setting the Stage: Where Does BC's Forest Management Strategy Fit in the Global Forest Management Context?

John Innes

British Columbia has a complex forest management strategy embedded in the Forest and Range Practices Act and its associated legislation that is heavily reliant on the professionalism of foresters working in the sector. It is based on the protection of a number of core values in so far as this protection does not significantly impede the supply of fibre to mills.

Globally, this strategy is similar to the forest management in a global context, although there is no globally accepted set of forest management practices, and discussions of a global forest convention has foundered. In the 1990s and early 2000s, there was a certain amount of convergence in forest management through the application of criteria and indicators of sustainable forest management, but these have largely been abandoned, primarily because of the costs associated with monitoring the indicators.

However, the criteria and indicators are also directly or indirectly incorporated into certification schemes, such as the Sustainable Forestry Initiative standard and the Australian Forestry Standard. The more reputable schemes have been endorsed by the Program for the Endorsement of Forest certification (PEFC). These certification schemes do not guarantee sound forest management practices, and are only as effective as the audits that are done to ensure compliance with the relevant standard.

Globally, public opinion is increasingly driving forest management practices. Countries have responded through procurement legislation (such as the amendments to the US Lacey Act), and non-governmental organizations have responded through increasingly effective campaigns to have products from companies or even countries boycotted.

The result is a complex mix of forces developed globally and increasingly being applied locally. Few other jurisdictions place as much reliance of professional foresters as British Columbia, and very few have legislation limiting the practise of forestry to such a small group of individuals. Most jurisdictions have clear objectives for their forest estates, but British Columbia is not alone in progressively reducing its investment in its forests and the research that supports its decision-making.

Biographical Sketch

John Innes (RPF – in Australia only) holds the FRBC Chair of Forest Management in the Faculty of Forestry at UBC and is also the Dean there. He has 30 years of experience working in forest research in the United Kingdom, Switzerland and Canada. His most recent book, co-edited with William Nikolakis, was "*Forests and Globalization – Challenges and opportunities for sustainable development*". In recent years most of his research output has been related to forestry and forest practices in China

Marketing Strategies Over the Years

Stirling Angus RPF

Consultant, Timber Development, Valuation and Market Access, JCH Forestry

Future Wood Products for the Global Market

Bill Downing

When it comes to the innovative structural use of wood, Structurlam Products of Penticton, BC is at the forefront, and the company's president, Bill Downing, is the driving force. He will give you a look into Structurlam's world, where just about any structure is possible to build safely in wood. Bill's presentation will examine the latest trends in heavy timber construction, including the growing interest in tall wood structures.

Biographical Sketch

Mr. Downing began his career as a forester in the Kootenay region of British Columbia. Over the ensuing 25 years, Bill moved to management and has run several companies and one industry association. Prior to joining Structurlam in 2007, Bill was CEO of BC Wood Specialties Group, an association of British Columbia's secondary, or value-added wood product firms. Mr. Downing has a degree in forestry from the University of British Columbia, an MBA from the University of Washington and is a Registered Professional Forester.

BC's Forest Management Strategy for Multiple Resources and Public Expectations – How Does it Measure Up?

Bruce Larson

The strategy for multiple resources is basically embedded in FRPA and implemented through the Forest Stewardship Plans; leaving it vague and inconsistent. Silvicultural practices are focussed on timber management as the objective and other resources treated as constraints. Therefore it is impossible to gauge (especially quantitatively) how successful our forest management is for the production of other resources.

Public consultation invariable demonstrates concern over other resources in addition to jobs. Data frequently touted by the provincial government indicates that the full impact on provincial GDP of the tourism industry may be double the total impact of forest industry. Although the actual assumptions used can be debated, there is no question that tourism and its dependence on visual quality and wildlife, is economically very important to the Province.

What would happen if we managed our forests to maximize visual quality and wildlife habitat while keeping a thriving forest industry as a constraint? In order to meet this constraint our silvicultural activities would have to be ramped up in priority areas to keep delivered wood costs low. In addition our activities would have to produce logs with higher lumber and grade recovery factors. Silvicultural activities for timber production would then be considered a cost (to tourism and other industries) rather than as an investment (to forest industry).

Currently we enforce our areas with sensitive visual quality objectives and our critical wildlife habitat through GAR's because they are considered a constraint on our management. This makes it impossible to quantify our success. If we made them objectives we could better measure our success (and improvement). This approach was tried on a large private holding in Washington with some success. A quite high threshold was set for the timber production of the holding, but the modelling objective to be maximized was visual quality and wildlife habitat. Public perception and acceptance were greatly improved.

Biographical Sketch

Bruce Larson (Hon. Member ABCFP) is Professor of Forestry and holds the FRBC Chair of Silviculture in the Faculty of Forestry at UBC. He has 32 years of experience teaching silviculture both in Canada and the United States and has written papers and textbooks on forest stand dynamics and silviculture.

Diverse Silviculture Practices for a Diverse Future Wood Supply – What Are the Barriers to Change and Innovation?

Bill Bourgeois

The forest sector has changed significantly over the last decade to meet the demands of the global market, the recession and changed political focus. This is not a temporary change and will be the future reality. Forest Professionals will need to be innovative, flexible, resourceful, and determined if they are to meet the public, employer and professional requirements over the next decade. A forecast of the conditions to be encountered and suggested ways for Forest Professionals to overcome the challenges and barriers to ensuring a BC sustainable forest asset will be presented.

Biographical Sketch

Bill Bourgeois PhD, RPF
President, New Direction Resource Management Ltd

Bill Bourgeois has invested 40 years in improving forest land management, especially in BC. During this period Bill has been a research scientist, terrain stability specialist, industry supervisor, manager and general manager, Associate with the Commission on Resources and Environment, company Vice President of forest policy and sustainability and a private consultant.

Bill has been talked about as the "big picture guy" in the forest sector. He has been a loud voice in encouraging development of a vision and goals for Provincial and local forests to guide policy, land use and strategic and operational plans. All with the long-term goal of contributing to the sustainable management of today's and tomorrow's BC forests.

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SOUTHERN INTERIOR SILVICULTURE COMMITTEE

Discussion Sessions

Our objective is to promote appropriate silvicultural practices in the Southern Interior of British Columbia

Twenty Years of Research Studying Armillaria Root Disease in BC

Bill Chapman

After 40 trials and 20 years of research studying armillaria root disease in British Columbia, the most memorable characteristic of this disease of woody plants is its complexity. Pre-commercial thinning or brushing may increase, decrease or have no effect on the mortality levels in a stand. It is notoriously difficult to predict post-harvesting disease behavior from pre-harvest conditions. There is no convincing evidence that inoculum reduction reduces losses to armillaria root disease. Container grown seedlings seem more susceptible to Armillaria root disease than natural regeneration. Western red cedar is the only species which shows economically significant resistance to the disease at a young stand age, but most species show a marked increase in resistance after about age 15 to 20. Competitive fungi such *Hypholoma fasciculare* can reduce the incidence of Armillaria after disturbance or harvesting and ring barking or naturally occurring ring barking such as MPB attack can promote decay fungi that limit the availability of refugia for armillaria in harvested stands. Within this complex mélange of behaviors, there are several factors which can be manipulated to affect the way in which the disease interacts with its host and it is suggested that integrating several of these approaches offers the best hope for managing Armillaria root disease.

Biographical Sketch

Bill has a Ph.D in Forest Soils from UBC with a specialization in forest soil biology. Bill has worked as a research scientist for the Ministry of Forests in Williams Lake since 1992. He conducts research on armillaria root disease, the effects of soil management on forest productivity and forest health, reclamation of highly disturbed areas, direct seeding of commercial tree species, and numerous other topics related to soil and soil ecosystems.

Root Disease Control: Biological and Economic Impacts

Mick Cruickshank

In 1968 a trial was established near Salmon Arm to determine if root removal and raking would reduce mortality in the next rotation on a site infested by Phellinus Sulphurascens, cause of laminated root disease. In stumped and not stumped blocks, seedlings of Douglas-fir, lodgepole pine, western redcedar and paper birch were planted alone and in all combinations of two species in three 0.04 ha plots per block; western larch and Engelmann spruce were planted on one plot in each block.

Tree mortality was recorded periodically by cause over 45 years. Dominant height, diameter, and basal area were measured every five years after 20 years. The highest survival after 40 years occurred in plots where stumps were removed, especially in those of Douglas-fir alone or in mixture or of spruce or larch. Mortality averaged over all species at age 40 was on average 14% lower in plots stumped (0.47) than in those not stumped (0.61). Principal causes of mortality in both blocks to year 40 were planting failure, root diseases (mainly Armillaria ostoyae), abiotics, thinning, and for lodgepole pine, mountain pine beetle.

Stump removal improved planting survival and reduced root disease mortality caused by P. sulphurascens and A. ostoyae. For all species except pine ($p > 0.34$), spruce ($p = 0.14$), and redcedar ($p > 0.24$) and with the exception Douglas-fir with redcedar ($p = 0.005$), yield in plots stumped showed positive effects on basal area by age 40 compared to plots not stumped, especially for western larch (60, 40 m^2/ha, respectively) or Douglas-fir (56, 40 m^2/ha, respectively).

By age 40, height growth was also greater (average 70 cm) in plots stumped for most species. Quadratic mean diameter (QMD) of the 10 largest trees by age 40 was not different between stump treatments despite the greater density of the plots stumped. Admixing of tree species usually lowered overall combined basal area and had varying effects on tree height and diameter compared to monocultures.

Admixing of resistant and susceptible tree species provided little benefit on reducing disease impact in the susceptible species. After costs of planting, harvesting, and stump removal were considered, positive economic benefit for merchantable volume or lumber by age 45 were evident in larch and Douglas-fir and its mixtures except fir-pine (8-15 thousand $/ha); small but positive economic gains were also evident in redcedar monoculture (450-$700/ha). .

A review of the stump removal literature, the main fungi causing root diseases and their new scientific designation, emerging problems, and genetic disease control trials in progress are briefly discussed.

Biographical Sketch

Mike Cruickshank is a forest pathologist who is currently a specialist in forest tree root disease at Natural Resources Canada where he has been for the last 20 years. Mike has Master of Pest Management from Simon Fraser University. Mike's work focuses on disease impacts, control, economics, and value.

The Obscure Statistics of Well-Spaced Trees

Jim Goudie and Eleanor McWilliams

Well-spaced (WS) and well-spaced free-growing (FG) tree counts have been a mainstay of silviculture surveys for more than 25 years. Primary goals of these measures included a desire to ensure consistency with evolving and significant policy changes to stocking standards, and to better inform on-site silvicultural treatment decisions (Wyeth 1984). Since 1987, the measures have been used to assess post-harvest regenerated stands against stocking standards, to select which stands would be transferred back to crown responsibility. Increasingly however, WS and FG counts are being promoted for inventory growth and yield purposes. Modifications of the measures and choices allowed by the practitioner have clouded the interpretations of these applications. This presentation provides demonstrates some of the idiosyncrasies and limits of WS and FG tree count statistics for inventory and growth and yield purposes.

Biographical Sketches

Jim Goudie

Jim was born in Toronto, Canada and raised in Orange County, CA. He graduated from Humboldt State University in northern California with a BS in Forest Science in 1976 and received a master's degree in 1980 at the University of Idaho (UI) studying forest growth modelling under Dr. Kenneth Mitchell (who created TASS). While working as a research associate for five years after his MSc, he conducted growth and yield research projects in the U.S., Canada, Africa and the Philippines. He returned permanently to Canada when Dr. Mitchell hired him in August of 1985. He developed site index curves, managed and summarized a large PSP database (for model calibration and validation), and conducted research to improve TASS and associated programs. His particular modelling expertise is in modelling the relationships between crown morphology (size, foliar biomass, leaf area) and its effect on both wood quantity (volume increment, distribution) and wood quality (relative density, microfibril angle, cell dimensions, knot size and distributions). He was appointed to the leadership role in the stand development modelling group after Dr. Mitchell's retirement in March, 2003. In his spare time, Jim enjoys visiting his two granddaughters, as well as bicycling, dancing and restoring his 100-year old home, which, like growth models, are never finished.

Eleanor McWilliams, MSc., RPF (BC & AB)

Eleanor graduated from UBC in 1984 and worked for Canfor and the Canadian Forest Service before obtaining an MSc in forest biometrics from the University of Minnesota in 1991. She has worked as a consultant for the last 24 years. She has extensive experience in monitoring, regeneration standards, quantitative silviculture, inventory, stand modelling, and financial analysis of silviculture treatments.

Do Long Term Trials Have Value?.... Results and Surprises Over 20+ Years

Teresa Newsome and Alan Vyse

The forestry research program managed by the provincial government has a long history in British Columbia. A variety of topics have been explored over the last 30+ years. The focus of research tends to change over time and information coming from older trials can be overlooked as new initiatives are introduced. Often early results are reported and as efforts are re-directed older results are not conveyed. However, over time results and trends from early data change.

Teresa will provide some longer term data from older trials. Topics covered will include:

- Long-term response of Douglas fir on a variety of site preparation treatments compared to lodgepole pine in some IDF subzones (EP841);
- Growth of Ponderosa Pine on the Chilcotin Plateau – 32 years later (EP841);
- Origin of pine seed and the effect on the infection rate of elytroderma (EP841);
- Survival and growth of Douglas fir growing under very high aspen densities (EP1152);
- Release of pine from height repression caused by high densities after wildfires (EP1221);
- Long term performance of introduced or exotic species compared to native species (EP904).

Relevance of these "old" results will be linked to today's issues. Technical reports by EP number detailing most of these older trials are currently in preparation.

Alan will focus on the rationale for conducting long term trials: when should you think about investing or supporting investment in a long term trial? what topics might justify the effort?

Biographical Sketches

<u>Teresa Newsome MSc, RPF</u>
Teresa Newsome is a professional forester with a BSc in Forestry and a MSc in Soil Science. She has been managing the silviculture research program since 1989 in the Cariboo Region. Teresa has been involved with site preparation / species trials, sheep grazing trials, revitalization of old height repressed pine, determining the competitive effects of aspen on conifers (predominantly pine), studying the effects of various silvicultural systems on regeneration performance as well as other operational silviculture issues.

<u>Alan Vyse MSc, RPF</u>
Alan worked as a Research Forester for the British Columbia Forest Service for 30 years and is now Adjunct Professor and Research Associate in the Natural Resource Sciences Department at Thompson Rivers University in Kamloops. He holds Bachelor's and Master's degrees in forestry and is a Registered Professional Forester in the province. He is currently engaged in several research projects dealing with the management of forests in the Kamloops area and has published papers on a variety of forestry topics.

High Density Lodgepole Pine: To Thin Or Not To Thin.

Ian Cameron & Jim Thrower

The decision *to thin or not to thin* Pl stands has been part of the silviculture decision space in BC since the mid 1970s. A maximum density limit became part of the free-growing obligations and this resulted in widespread application of juvenile spacing in the 1980s and 1990s. There was intense discussion about the costs and benefits of spacing these stands, which culminated in a decision to increase the density at which juvenile spacing of *high density* Pl stands was required. By the early 2000s the application of juvenile spacing diminished and the discussion is issues followed suit.

That discussion is now back on. The two main drivers for this renewed interest are: 1) the large areas of Pl regeneration resulting from salvaging beetle-killed Pl stands, some of which will exceed max density; and 2) the thought that spacing young and middle-aged Pl stands may help mitigate the rapidly approaching crunch in mid-term timber supply.

There is now new information to bring to this discussion. The definition of what is merchantable has changed in recent years, and will continue to change. There are also new results from some of the many research trials that have been installed in BC over the last three decades. In this session, we will review some of the old and new information and discuss what it might, could, or should mean in the context of assessing the potential value of thinning (juvenile and otherwise) Pl stands in the BC interior.

Biographical Sketch - Ian Cameron, MF, RPF
Ian is a growth and yield analyst and modeller with over 30 years of experience using quantitative methods to analyze silviculture and inventory issues, and providing quantitative solutions to practical problems. Ian spent the first half of his career working in the Forest Service research program and the second half in consulting, first with J.S. Thrower & Associates and then with Azura Formetrics.

Biographical Sketch - Jim Thrower, PhD, RPF
Jim has been a BC-based forestry consultant most of his career focusing on the quantitative aspects of forest management including inventory, growth and yield, quantitative silviculture, and strategic fiber supply. Although still active in those fields, Jim is recently more focused on his quantitative approaches in the operational world to improve inventory systems for estimating timber value and recovery, and improving yield and utilization in harvesting, mostly relating to recovery of smaller piece sizes for pulp chips. Jim has worked on the Pl growth and yield and max density file in BC for about three decades now. And until this request to discuss this at SISCO, had thought the *thing* had gone away forever! Apparently not.

Lessons Learned On the Second Entry in a Cariboo Mule Deer Winter Range

Ken Day, MF,RPF

Starting in 1982 a team of wildlife habitat ecologists led by Harold Armleder was charged with co-ordinating mule deer winter habitat requirements with timber production. Their research included the establishment of a replicated harvesting trial to test their understanding of mule deer ecology. The trial was logged in 1984 in what has come to be described as "low-volume clumpy single tree selection." This trial and many associated research projects were located within the Knife Creek Block of the UBC Alex Fraser Research Forest, created in 1987.

The Research Forest has been working with this research group for nearly 3 decades, and has adopted the mule deer ecology as guiding principles for forest management. Over the years the Research Forest has piloted recommendations from the mule deer project and contributed to the development of guidance documents. Included in the guidance and GAR Order is an expectation for a 30 year re-entry period, hence the trial was scheduled for re-entry in 2014.

This presentation will report on the silvicultural and operational approaches and outcomes of the second entry in a Mule Deer Winter Range in the IDFxm and dk3 near 150 Mile House.

Biographical Sketch

Ken Day is the Manager of the Alex Fraser Research Forest in Williams Lake, B.C. Ken came to UBC in 1987, after working for various consultants and sawmills in the Okanagan Valley. He received his Honours Bachelor of Science in Forestry from Lakehead University in Thunder Bay, Ontario, and has been a Registered Professional Forester since 1982. In 1998 he received his Masters of Forestry from UBC, focusing on the management of uneven-aged Douglas-fir in the IDF. Ken is married, and has two adults who still call him Dad.

Strategic Land Use Direction on Cariboo Mule Deer Winter Ranges – Approaches, Lessons Learned, and What May Be Used In Other Locations

Darcy Peel
Project Manager, FLNRO

During the early 1990's land use planning had a very high priority throughout BC. The result, in the Cariboo Region, was the Cariboo-Chilcotin Land Use Plan (CCLUP) which attempted to balance economic, social, and environment needs in the region. One component of this plan was a mule deer winter range (MDWR) strategy. This strategy was developed utilizing the land use direction from the CCLUP and the specific research completed in the Region. Over a period of several years plans were developed for each of the nearly 100 MDWRs in the region.

Land use planning processes in other regions also highlighted mule deer as species of concern in their planning areas. Each of these other planning tables dealt with the specific issues of the region in different ways resulting in different approaches to the management of the MDWR. This discussion will attempt to describe the process in the Cariboo Region in detail and highlight some of the differences between that approach and those taken in the Kamloops Land and Resource Management Plan and the Kootenay -Boundary Land Use Plan.

Biographical Sketch

Darcy Peel is a Land Resource Specialist with the Ministry of Forests, Lands, and Natural Resource Operations. He came to the Cariboo Region in 1989 and worked in Wildlife and Forestry Management for over 20 years before relocating to the Kamloops area. Darcy continues to work on a variety of projects with a recent focus on Mountain Caribou recovery including an exchange with Environment Canada leading the Recovery Planning process for the Southern Mountain Caribou

Darcy resides in Kamloops and has two daughters and a step son, one is now a Teacher in Kamloops, another is a Master Scuba Instructor currently in Honduras, and the last finishing high school this year..

Forest Health: The High And The Dry

Lorraine Maclauchlan

High elevation forests have their own unique assemblage of forest health issues. Past estimates of in-stand losses in subalpine fir-dominated ecosystems have been unreliable due to historically limited and sporadic aerial survey coverage prior to the 1990's.

The western balsam bark beetle, *Dryocoetes confusus* Swaine (Coleoptera: Scolytinae), is the most destructive mortality agent in these ecosystems, yet the outbreak dynamics and impact of this beetle is not well understood. Research results show mortality from this beetle to be as high as 70%, with annual average mortality up to 1.6% in some ecosystems.

The coldest and driest Engelmann Spruce-subalpine fir subzones (ESSFxc and ESSFdv) sustain the highest levels of mortality from western balsam bark beetle, with an average of over 46% standing dead. *Dryocoetes confusus* attacks the largest and most stressed trees in a stand.

Therefore, with increasing climatic stress in these ecosystems due to smaller winter snow packs and increased summer droughts, mortality from western balsam bark beetle will likely increase in the future.

Biographical Sketch:

Lorraine Maclauchlan is the Forest Entomologist for the Thompson Okanagan Region, Ministry of Forests, Lands and Natural Resource Operations, based in Kamloops. Since 1987, Lorraine has been involved in developing and implementing management strategies for defoliators, bark beetles and pests of young stands. Her current research is on the impact and dynamics of numerous forest insects, including the western balsam bark beetle, mountain pine beetle in young stands and western spruce budworm. Lorraine also teaches Forest Entomology at Thompson Rivers University in the Faculty of Natural Resource Sciences.

Fuel Hazard Assessment and Abatement: Challenges Facing Licensees Regarding Postharvest Material and New Stand Generation

Glen Burgess

Biographical Sketch

Glen Burgess is a Forest Protection Officer with Wildfire Management Branch in Vernon. He began his career in 1986 following graduation from Malaspina College in Nanaimo with a Diploma in Forest Technology. He has had experience working in the Cariboo, Coast and Nelson Forest Regions as well as the Cariboo, Southeast and Kamloops Fire Centres. Glen is currently certified as a Type 1 Incident Commander and has the pleasure of leading one of the Province's Incident Management Teams.

Glen has spent time working for both the Resource Districts and Wildfire Management over the past 30 years. He has had the opportunity to also spent time on assignments in Alberta, Ontario, Yukon and Northwest Territories as well as many areas within British Columbia.

Peter Semenoff

Biographical Sketch

Peter Semenoff is a Forest Protection Technician with the Fire Management Section of the Kamloops Fire Centre, Wildfire Management Branch. Since the 1980's, Peter has been involved with coastal and interior timber cruising, timber pricing and harvesting, logging residue and waste as well as forest protection (Wildfire) responsibilities. Current responsibilities include forest fire prevention, exemptions, prohibitions and fire origin and cause investigations.

PAPERS PUBLISHED

- Timber Cruising Guidelines for the Cariboo Forest Region (between 1987 and 1990)
- Timber Cruising Guidelines for the Nelson Forest Region (between 1990 and 1998)
- Effects of selective cutting on the epidemiology of armillaria root disease in the southern interior of British Columbia (2001)
  Authors: Morrison D J, Pellow K W, Nemec A F L, Norris D J, Semenoff P
  Journal: Canadian Journal of Forest Research

Since 2010, Peter has appreciated the efforts of Andre Arsenault and Nancy Densmore regarding Coarse Woody Debris as well as Tom Sullivan and Walt Klenner regarding the creation of wildlife habitat areas on harvested cut-blocks. Last but not least, one must also recognize the efforts of licensees that make a considerable effort to meet the fuel hazard assessment and abatement requirements while providing for the creation of wildlife habitat, coarse woody debris and providing opportunities for the utilization of post-harvest material.

If We Build Habitat Will They Come?
Mammalian Carnivores and Windrows of Post-Harvest Woody Debris

Tom Sullivan

Wood residues from forest harvesting may be utilized to build habitat for wildlife and biodiversity, or as biomass "feedstocks" for bioenergy production, rather than disposing of them with burning.

Mammalian carnivores such as marten and small weasels are impacted negatively by clearcutting with loss of preferred prey species, den sites, and other components of forest stand structure. Habitat selection by these mustelids appear to be determined by the availability of appropriate food (small mammal prey) and access to nesting and resting sites, particularly in the winter. They are very dependent upon subnivean sheltered sites and voles (genera *Microtus* and *Myodes*), notably red-backed voles, are primary food items. Resting sites and den sites for marten are associated with large snags, live trees, and downed hollow logs, underground access (especially in winter), and in constructed slash piles. Provision of debris piles and windrows on clearcuts, and subsequently in young forests, provide habitat for small mammal prey, marten, and weasels. These mustelids will use windrows of woody debris as connective habitat between reserves of uncut timber.

Windrows clearly provided important habitat for maintenance of red-backed vole populations on clearcuts. In addition, substantial populations of other small mammal species also occurred in these windrow habitats at numbers higher than in dispersed (conventional) treatments. These other species, particularly *Microtus*, are also prey for small mustelids. Large-scale windrows of debris have clear conservation implications for mammals in commercial forest landscapes.

Biographical Sketch

Tom Sullivan is professor of wildlife ecology and conservation in the Dept of Conservation and Forest Sciences, University of BC, Vancouver. He has worked some 35+ years on wildlife-forestry interactions and, in addition to woody debris habitat creation, and vole pest management, is monitoring several long-term (20+ years) installations on innovative silvicultural practices including PCT, fertilization, and green-tree retention.

Declining Timber Supplies and Allowable Cut Management

Brad Bennett

The worldwide demand for renewable carbon friendly sources of energy in the form of wood pellets is a rapidly growing market opportunity for British Columbia. British Columbia with its environmentally attractive forest practices, well develop primary sawmilling sector in combination with an abundance of un-utilized forest based waste material has the potential to become one of the world's leaders in the production of industrial grade wood pellets. Estimates suggest despite the decline in the sawlog harvest in the Interior of the Province, the wood pellet sector has the potential to grow to four times its current production levels of 2.0 million tonnes.

As a new emerging forest products sector in the Province much of the tenure and Annual Allowable Cut (AAC) structure is currently in place to service the conventional sawmilling sector with limited commercially viable opportunities for new entrants. The current AAC management regime appears to favor maintaining the harvest levels of the traditional replaceable licenses providing limited opportunity for new entrants. The wood pellet sector's current access to sawmill and forest residuals is based on short term contracts and are not afforded the same term and volume certainty that most other Provincial forest products sectors enjoy. The wood pellet sectors is looking for forest policy intervention to balance "the market place" and allow for the growth of new emerging sectors. These types of issues have faced other forest products sectors in the past and resulted in various other forms of policy intervention (Bill 13 Contractor Regulation, Category 2 &3 Timber Sales).

Pacific BioEnergy Corporation in conjunction with Nazko First Nation, Tolko Industries and Ministry of Forest Lands and Natural Resource Operations (MFLNRO) has developed a unique tenure, business and partnership arrangement in the Quesnel Timber Supply Area that may provide a template for the future.

Government invention is required to, improve utilization, security of supply for secondary users and rehabilitate marginally economic stands that could represent a new secure supply source for secondary users and First Nations.

Biographical Sketch

Brad Bennett is currently the Vice President- Operations with Pacific BioEnergy and joined the organization in 2009. In 2013, Brad became the Chairman of the Wood Pellet Association of Canada (WPAC) and has been active on a number local and international related policy initiatives. He has over 25 years of experience in the forest industry and, until 2008, was the General Manager (Specialty Plywood & B.C. Timberlands) at Ainsworth Lumber Co. Ltd. Brad has extensive experience in developing and managing First Nations joint venture business relationships and is currently the President of NAZBEC Wood Processing Lp. a joint venture project with Nazko First Nations in Quesnel British Columbia. He holds a BSc in Forestry from the University of British Columbia and is a Registered Professional Forester.

SASCO

SOUTHERN INTERIOR SILVICULTURE COMMITTEE

DAY TWO

PRESENTER ABSTRACTS

Our objective is to promote appropriate silvicultural practices in the Southern Interior of British Columbia

Professional Reliance in Forestry Compared to Other Regulatory Regimes

Mark Haddock

Biographical Sketch

Mark Haddock teaches environmental and administrative law at the University of Victoria, and is a supervising lawyer at the UVic Environmental Law Centre. He was a member of the Forest Practices Board of British Columbia for six years, and was on the minister's Practices Advisory Council during development of the Forest and Range Practices Act regulations. Mark has worked for West Coast Environmental Law, Ecojustice, the federal Department of Justice, Department of Indian Affairs and Northern Development, and the BC Forest Service. He holds a B.A. and LL.B. degrees from the University of British Columbia.

Scientific Expertise In Forest Management: A Personal And Industrial Perspective

W.J. (Bill) Beese, MF, RPF

British Columbia prides itself on being a world leader in sustainable forest management. The State of British Columbia's Forests report recognizes that "the quality of resource management decisions depends, in part, on the ability to generate, store, distribute and apply knowledge" (BCMFML 2010). The results-based Forest and Range Practices Act is supported by the Forest and Range Evaluation Program (FREP), a province-wide monitoring and effectiveness evaluation initiative with a mission that includes "…communicating science-based information to enhance the knowledge of resource professionals…" (FREP 2011). We like that term science-based! If you search the BC Ministry of Forests, Lands and Natural Resource Operations website you'll get about 500 hits for "science-based" in a wide range of policy, planning and other documents. Sustainable Forest Management (SFM) certification systems also support scientific research. Objective 10 of the Sustainable Forestry Initiative (SFI) 2015-2019 Forest Management Standard is "to invest in forestry research, science and technology, upon which SFM decisions are based…" (SFI 2015). Canadian Standards Association (CSA) certification requires organizations to "monitor advances in SFM science and technology, and incorporate them when and where applicable" through activities including "involvement in research" (CSA-Z809 2013).

So, what is the role of BC forest companies in research, and how should they obtain their science-based information for decision-making? When I joined the forest industry in the early 1980s, the model included a company research department with numerous in-house experts to conduct research and provide advice to forest practitioners. Is that still a viable model? According to the State of BC's Forests report (BCMFML 2010): "Although continuing to invest in research, BC's forest companies have followed North American trends and virtually eliminated in-house research capacity." Yet, there are some NA companies such as Weyerhaeuser that, although reduced from historic staffing levels, still maintain substantial research expertise and spend $22 million (US) annually on forestry research and technological innovation (Weyerhaeuser 2014). In my experience, there was no succession planning for company research scientists; rather, layoffs and attrition eliminated most specialists over the past few decades. BC companies now rely primarily on consultants and support for universities for conducting research. There are advantages and disadvantages of this approach. Today, forest practitioners have more information directly at their fingertips than ever before with the internet and portable computers. This reduces the need for in-house experts. So, maybe the old model is no longer the most effective. Still, I can't help feel a bit of nostalgia for the "good old days", being part of the old model for much of my career. It was a great gig.

Biographical Sketch

Before joining the VIU Forestry faculty in 2010, Bill spent over 30 years doing research, environmental consulting and policy development for several forest companies on the BC coast. He has a Master's degree in forest ecology from UBC. His research interests include silvicultural systems, prescribed burning, forest regeneration and biodiversity. He has served on advisory committees on research, old growth forests and ecosystem-based management. Bill recently wrote a chapter on variable retention in a book on *North Pacific Temperate Rainforests* (U. Washington Press 2013), and collaborated on several papers reviewing the application of retention forestry for biodiversity conservation around the world.

Information and Education Needs for a Forestry of the Future

Phil Burton

Programs of forestry education and research have a difficult time keeping up with the shifting priorities of the forest products sector, the governments that regulate forest use, and various publics with diverse expectations of the world's forestlands. In recent decades, we have gradually seen an evolution from an emphasis on the technical and tree-centred aspects of forest harvesting and regeneration to broader consideration of non-timber values, creative stand management options, and landscape-wide planning. Climate change, large forest fires, insect outbreaks and market turmoil have all prompted shifts to a greater emphasis on risk reduction and persistence, often supported by efficiencies in operations and conscious efforts to maintain flexibility and future options. Those trends are likely to continue, especially if more forest management is taken over by communities, First Nations, and stewardship contractors.

Despite changes in the priorities and tools of forest planning and management, there are some remarkable constancies in the desirable attributes of forest managers and the information they need to do a good job. The forester who is first and foremost an avid naturalist – one who loves being in the outdoors and craves to know as many plants and animals and their habits as possible – will likely be a responsible steward of the forest estate. Sensitivity to the local/regional culture and how the forest is important to that culture, while being cognizant of global trends and pressures, will always facilitate the social license to conduct active forest management. An entrepreneurial and experimental spirit that is open to new opportunities and management approaches is always desirable. The information needed for sustainable forest management will always depend on accurate monitoring and reliable projections, though it seems we are always challenged by budget limitations to conduct such work, and the need to be selective in what attributes or values can be monitored and modelled.

With forests, their development, disturbance and management regimes operating over such long time frames, collective and institutional memory is perhaps more important than the experience and expertise of individual foresters. To that end, robust data management systems that make past, present, and forthcoming inventories accessible are important, as is information from detailed permanent sample plots that provide both representative and question-driven data. Some experimental designs are particularly informative, such as the decadal response of trees, vegetation, wildlife (and other case-specific forest values such as water yields or edible mushrooms) to a range of canopy opening sizes or partial cutting intensities. Studies of edge influence in both the disturbed area and the residual mature forest are likewise informative to a wide range of forest management applications.

An understanding of universal principles and global sensitivities are important in providing a checklist of factors to consider in the juggling act of sustainable forest management. But the distinctive nature of every ecological and human community means that local experience and awareness will likewise be important to prioritize those factors and considerations to sustain forest values in an uncertain future.

<u>Biographical Sketch</u>

Phil Burton, Ph.D., R.P.Bio., is currently an Associate Professor of Ecosystem Science & Management at UNBC, and chair of UNBC's Northwest regional operations, based in Terrace. He has been conducting research on topics of forest regeneration, stand development, disturbance ecology and ecological restoration in B.C. for 25 years. He has more than a hundred publications to his name, including editorship of *Towards Sustainable Management of the Boreal Forest* (NRC Research Press, 2003) and co-authorship of *Salvage Logging and its Ecological Consequences* (Island Press, 2008).

Who Will be There to Manage Tomorrow's Forests –
Is the Current Succession Planning Approach Adequate?

Are we losing our viable workforce for carrying out forest management in this province? Are we losing our forest management expertise, and the research and science upon which it depends? What expertise are we losing, and do we need research capacity and scientific knowledge to inform our forest management policies and practices? If not, what will inform these policies and practices? Are "boots on the ground" really necessary, or are these boots better replaced by less costly remote sensing technologies such as LIDAR and satellite imagery and tech-savvy modellers and accountants? In short, what is our succession plan for remaining viable in forest science and research, and for ensuring the forestry workforce needed to achieve our societal goals for future forest management? Our panel of experts will address these weighty questions, and then it's your turn to join in the debate.

Loss of Capacity in Operations

Rick Sommer
Kamloops Forest District Manager, MFLNRO

Support, Succession and Recruitment for Research in the Ministry of Forests, Lands and Natural Resource Operations

Louise de Montigny, Ph.D., RPF

With the restructuring of the Forests ministry, subsequent loss of researchers through downsizing and the final disappearance of Research Branch in late 2010, there has been uncertainty as to the future of the research program within FLNRO despite a pressing need for science to address the complex problems facing policy- and decision-makers. Recently, research planning has moved away from project proposals to outcome-based programs led by research staff and supported by management teams and executive. With this new framework in place, the ministry's Research Oversight Committee has now turned their attention to recruitment and retention including protecting core research positions, incorporating graduate and other student hirings into annual workplans, collaborating with universities, creating partnerships with research organization and exploring options for researcher advancement based on scientific contribution.

Biographical Sketch

Louise de Montigny began her career as Research Silviculturist with Research Branch in 1991 and is now a Research Leader for the Ministry of Forests, Lands and Natural Resource Operations. Louise holds a BSF from UBC, MFS from Yale and a PhD from UBC, is a Professional Forester and an Adjunct Professor at UBC.

Who Will be There to Manage Tomorrow's Forests – Is the Current Succession Planning Approach Adequate

Industry Perspective Regarding Succession Planning

Jason Mattioli

West Fraser, like most players in the Forest Industry, is experiencing an aging workforce. As this workforce retires, they take with them significant experience and knowledge. At the same time the industry faces looming retirements, schools have been struggling to keep enrolment up. The recent recession led many prospective future forestry students away from the Industry, creating a challenge for filling the gap. There is currently a race against time to fill positions and add bench strength to ensure a successful transfer of this precious experience and knowledge.

In a competitive climate for Foresters and Technologists, how does a company attract and retain good young professionals to ensure tomorrow's forests are being managed adequately, while ensuring the health and success of the company? West Fraser has undertaken a number of initiatives to ensure succession planning leads to our company continuing to be a leader in the Industry. The presentation provides an outline of some of the strategies West Fraser has implemented for attracting and retaining our workforce.

Biographical Sketch

Jason Mattioli is a Professional Forester with West Fraser Mills in Quesnel, BC. Jason has been involved with recruitment for over 10 years, in hiring, training and mentoring roles. Jason completed his Bachelor of Natural Resource Science degree at the University College of the Cariboo (TRU), before pursuing his Professional designation through the Allied Science Forester in Training route. Jason has been with West Fraser for 12 years in various roles within the Woodlands Group in Chetwynd, BC, most recently as the Planning Superintendent. His career has now taken him out of Woodlands into a new role as Assistant Manager, Fibre Supply for West Fraser's Canadian Operations.

Using Partial Harvesting To Meet Strategic Harvest Level Goals.

Rainer Muenter

In the examples presented, different partial harvesting methods have been used to mitigate different operational constraints, presented by unbalanced age class distributions and depleted inventories of mature forests.

Inventory methods have to be designed to document the change created by Shelterwood harvest, commercial thinning and un-even aged management. Some of the results of continuous inventories and Lidar inventories are presented and the effects of partial harvesting on harvest levels is discussed.

Biographical Sketch

Rainer Muenter, RPF

Operational Management of large tracts of private Forest Land, Woodlots and small Forest Licenses in the Southern Interior and on the South Coast of BC.

Previous Experience: Management of Loblolly and Long Leaf Pine Plantation in Georgia, USA with intensive silviculture practices. Rainer started his carrer as manager of a forest operation in Germany with mixed natural hardwood and conifer plantations.

Education: BF, Goettingen, Germany, MSc, Forest Science, University of Idaho

Partial Cutting and Growth and Yield

Catherine Bealle Statland

"Partial cutting" is not a forest management method in itself, but only a type of harvest entry that leaves at least some live trees standing. Such entries must always be carefully planned within the proper context of a full silviculture system. Such systems include a wide range of single- or a multi-aged forest management approaches and may or may not include permanent retention features. Growth and yield modelling and strategic analyses of silviculture systems that include partial cutting have lagged those for single cohort, even-aged management methods because data is lacking and the theoretical foundation for model development is weak. Hence, there is a temptation to rely too heavily on information and experience from other jurisdictions, where the forest management history and species are very different from ours.

We do know that initial and residual stand structures – tree size, age, species and spatial distributions – affect growth and yield outcomes. Taller trees will suppress smaller ones by dominating growing space, i.e., using most of the light, moisture, and nutrients on the site. However, relative tree size and spatial distributions can affect the degree to which this happens, with group selection patterns allowing more growing space for young cohorts than uniform single-tree selection, for example. There is conflicting information about the relative growth efficiency of larger and/or older trees versus smaller/younger trees growing in intimate mixture. Regardless, balancing increment on older cohorts with the health and vigour of younger cohorts is essential for multi-aged management systems to keep up with the productivity of single-cohort systems. Few B.C. southern interior uneven-aged forests, resulting from either natural or anthropogenic disturbance, are well-balanced in this regard. The transition to a balanced state often results in a period of below-potential productivity. The "BDQ" control system for uniform, single-tree selection management is unproven as a method of ensuring efficiency, sustainability, all-age balance or biological stability. Regeneration, especially in dry uneven-aged forests, is problematic. Structures with two or at most three discrete cohorts are easier to manage and may be more efficient.

Reliable modelling and analyses require good tree-level information on both the partial cutting treatment(s) applied and the residual stand structure. A "percent removal" describes a level of disturbance impact that may be meaningful for some purposes, but is not a sufficiently consistent treatment for robust quantitative analysis of growth and yield.

Biographical Sketch

Catherine is a Research Scientist in Stand Development Modelling at the B.C. Ministry of Forests, Lands and Natural Resource Operations. A graduate of the University of British Columbia Faculty of Forestry and the Yale School of Forestry and Environmental Studies, she has been working in growth and yield research with the Ministry since 1992, specializing in the dynamics of dry, complex Douglas-fir forests found in the B.C. southern interior. She is also part of the development team for the Tree and Stand Simulator (TASS), the province's premier spatial growth and yield model used in managed stand growth and yield projection. In her leisure time, she is a soccer mom, choral singing enthusiast and committed life-long learner.

The Bare Necessities: Habitat Goals of Partial Cuts

Michaela Waterhouse

Silvicultural systems that employ partial cutting can be used to maintain or create key structural components in forests required by wildlife. There are several examples from the Cariboo Region, in a variety of biogeoclimatic zones, where these silvicultural systems are in operational use. On mule deer winter range, group selection is used in the SBS and ICH, while single tree selection is used in the IDF. Both systems are intended to maintain snow interception cover and forage, while taking into account the silvics of Douglas-fir in wet and dry zones. At high elevations in the ESSF, group selection is used in mountain caribou habitat. In the dry pine zones in the west Chilcotin (MS and SBPS), both irregular group shelterwood and group selection have been applied in forest operations in northern caribou habitat. For caribou, the main habitat attribute to conserve and maintain is forage, in particular arboreal and terrestrial lichens. The silvicultural systems developed for mule deer and caribou habitat have rotation periods that extend beyond what is normally modelled for timber production. There is an extended period of time required to grow the trees of sufficient size and age to provide the desired attributes such as arboreal lichen. There are some planning, layout and harvesting costs, especially with single-tree selection systems. Successful regeneration, stand stability and resilience are requirements for all these silvicultural systems. In the Cariboo Region, years of research have been invested to support the development, implementation and refinement of the silvicultural systems which are now prescribed by GAR orders under FRPA for ungulate winter range for mule deer and in wildlife habitat areas for caribou.

Biographical Sketch

Michaela Waterhouse RPF & RP Bio. has been a silvicultural systems researcher in the Cariboo Region within the Ministry of Forests, Lands and Natural Resource Operations since 1997. She has conducted research and published many papers on the effects of silvicultural systems on caribou habitat, mule deer habitat, breeding birds, stand stability, and regeneration.

How Well Does the Current Forest Management Framework Support Partial Cutting in BC?

Jeff McWilliams, RPF

I believe we are talking about partial cutting in the context of long term, rotation-length silviculture systems approaches to managing multiple resource values(timber and non-timber values).

The forest management framework in BC consists of the tenure and stumpage and regulation [FRPA] systems. These components interact to create the overarching environment under which forest management occurs in BC. As with a 3 legged stool, stability is dependent on the equal contribution of all 3 components and the overall strength of the framework is dependent on the weakest leg.

This presentation will briefly review the important conditions required for successful partial cutting followed by summaries of how key aspects of the tenure, stumpage and regulatory systems restrict the opportunities for partial cutting.

Biographical Sketch

Jeff McWilliams, RPF
Senior Associate, Affiliation: B.A. Blackwell and Associates Ltd.

BSF 1985 from UBC (with 1 year as a visiting student at UNB)

Jeff was a silviculturist for Interfor on the coast for 5 years, 3 years as quality control, sawmill foreman and log supply coordinator a large coastal sawmill; 21 years as a consultant specializing in strategic forest management with specific expertise in silviculture, fertilization, stocking standards, silviculture strategies, operational planning and auditing

Declining Timber Supplies and Allowable Cut Management

Brad Bennett

The worldwide demand for renewable carbon friendly sources of energy in the form of wood pellets is a rapidly growing market opportunity for British Columbia. British Columbia with its environmentally attractive forest practices, well develop primary sawmilling sector in combination with an abundance of un-utilized forest based waste material has the potential to become one of the world's leaders in the production of industrial grade wood pellets. Estimates suggest despite the decline in the sawlog harvest in the Interior of the Province, the wood pellet sector has the potential to grow to four times its current production levels of 2.0 million tonnes.

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Declining Timber Supplies and Allowable Annual Cut Management

The Chief Forester regularly reviews the timber supply for all timber supply areas (TSA) and tree farm licences (TFL) in the province. This review examines the impacts of current forest management practices on the timber supply, economy, environment and social conditions of the local area and the province.

There has been much discussion, analysis and concern in recent years regarding the Mountain Pine Beetle's (MPB) impact on the province's timber supply. Projections are that nine TSAs and one TFL will experience allowable annual cut (AAC) declines of 20 percent or more over the next ten years. This anticipated decline in AAC is challenging government to provide sufficient timber volumes to existing licence holders while also providing opportunities for new entrants, particularly those that can increase the utilization of fibre (for example, pellets and bio-energy), and First Nations who also seek a larger portion of the AAC to further their economic goals.

Much of the volume previously provided to First Nations to build capacity was sourced using short-term MPB AAC uplifts. Existing licence holders want to protect existing harvesting rights as much as possible. And new entrants continue to seek access to low value fibre. Panel members will provide their perspective how best to apportion the 'post-beetle' AAC. Then you will get a chance to further the debate.

First Nations Operations

Not Available

Declining Timber Supplies and Allowable Annual Cut Management

The Chief Forester regularly reviews the timber supply for all timber supply areas (TSA) and tree farm licences (TFL) in the province. This review examines the impacts of current forest management practices on the timber supply, economy, environment and social conditions of the local area and the province.

There has been much discussion, analysis and concern in recent years regarding the Mountain Pine Beetle's (MPB) impact on the province's timber supply. Projections are that nine TSAs and one TFL will experience allowable annual cut (AAC) declines of 20 percent or more over the next ten years. This anticipated decline in AAC is challenging government to provide sufficient timber volumes to existing licence holders while also providing opportunities for new entrants, particularly those that can increase the utilization of fibre (for example, pellets and bio-energy), and First Nations who also seek a larger portion of the AAC to further their economic goals.

Much of the volume previously provided to First Nations to build capacity was sourced using short-term MPB AAC uplifts. Existing licence holders want to protect existing harvesting rights as much as possible. And new entrants continue to seek access to low value fibre. Panel members will provide their perspective how best to apportion the 'post-beetle' AAC. Then you will get a chance to further the debate.

Industry Perspective

Allan W. Bennett, RPF
Forestry Supervisor / TFL Forester
West Fraser, Quesnel Division

Biographical Sketch

Allan Bennett, RPF has worked 20 years in the Cariboo for West Fraser. His various duties have generally revolved around forest planning, silviculture, and stewardship. Currently, Allan is the Forestry Superintendent responsible for West Fraser, Quesnel Division's planning group, as well as, the TFL Forester for TFL 52.

Allocation Of Harvest Rights Due To Declining Allowable Annual Cuts

Doug Stewart

BACKGROUND:

The mountain pine beetle (MPB) infestation has caused an unprecedented loss of timber in the interior of the province. As a result, over the next several years, the minister of FLNR will be required to make timber allocation decisions that will have significant impacts to current tenure holders and communities, and will affect the volume that is available for future disposition by government.

DISCUSSION:

The process to allocate reduced harvest rights will generally follow three steps as outlined in the Forest Act (FA):

1. Allowable Annual Cut Reduction – the chief forester determines a new lower AAC for the TSA (FA, Section 8). As a component of the AAC, the Chief Forester may specify a portion of the AAC is attributable to specific types of timber, terrain or geographic area in a management unit.
2. Apportionment – the minister may apportion a TSA (FA, Section 10) to forms of agreement. An appointment decision is the minister's desired vision for the allocation of AAC by forms of tenure type (e.g. forest licences (FLs), woodlots, timber sale licences, community forests, etc.). An appointment decision does not have any effect on existing tenure rights. Government programs such as BC Timber Sales (BCTS), First Nations tenure, etc. use the Minister's AAC apportionment as their mandate for the issuance of new tenures.
3. Proportionate Reduction – the minister may reduce the AAC authorized to be harvested under non-exempt FLs (FA, Section 63) if the AAC determined for a timber supply area is reduced for any reason other than a reduction in the area of land in the timber supply area. Currently, non-exempt forest licences are those that have an AAC of less than 10,001m^3/year as prescribed in regulation.

Based on the above legislation, a key decision in timber allocation decisions with a declining AAC is how much of the AAC reduction does the minister apportion to the non-FL categories prior to proportionate FL reduction, if required. There is no legislative constraint on how much AAC can be set aside before proportionate reduction, however there is an overarching expectation to make decisions that are reasonable and fair given the facts available to the minister.

Timber allocation plans are being developed in many management units with a declining timber supply to help inform the minister's timber allocation decisions to ensure that they consider all relevant factors, and meet government objectives.

To ensure consistency in how timber allocation decisions are made FLNRO is developing principles that can be applied in making decisions. Examples include how much AAC is needed for BC Timber Sales to support market pricing objectives, how much AAC is needed to meet commitments and provide accommodation to First Nations, how to manage non-replaceable forest licences issued with MPB uplift AAC, etc.

Timing of Decisions:

The timing of the Chief Forester's AAC determination, and subsequent minister's apportionment, proportionate FL reduction, and where applicable minister's partition order decisions are important to ensure sustainable management of a TSAs AAC and to manage licensees' future AAC and tenure expectations.

In TSAs where the Chief Forester has set a new AAC, the minister will usually proceed with an immediate apportionment decision if the TSAs AAC is being fully utilized and to allow for new tenures to be issued. If these factors are not concerns, then minister may delay an apportionment decision. Likewise, after the minister sets a new apportionment for a TSA he may delay a proportionate reduction decision if there are no immediate concerns regarding over harvesting of the TSA and to provide FL holders time to transition to a lower harvest level.

Biographical Sketch

Doug Stewart is the Director of Forest Tenures Branch for the ministry of Forests, Lands and Natural Resource Operations. He holds a BSc in Forestry and has worked in the forest sector in BC and Alberta for 29 years.

The Forest Tenures Branch is responsible for the development and maintenance of provincial policy that governs the allocation of harvest rights.

Wicked Problems and Simplistic Solutions (Food For Thought on the Drive Home)

Bob Simpson

Biographical Sketch

Bob Simpson is Mayor of Quesnel and the Chair of the Cariboo-Chilcotin Beetle Action Coalition.

Bob was the MLA for Cariboo North from 2005-2012 and during his first term he was the Opposition Forest Critic. He was appointed the Opposition Aboriginal Relations Critic in his second term, but, in late 2010, he left the political party system to sit as an Independent MLA. During his time as an MLA Bob was a member of the Legislature's Finance, Public Accounts, and Crown Corporations Committees; he was also the only Opposition MLA to participate on the Government's Bioeconomy Committee.

Prior to seeking political office Bob ran a successful consulting and human resource development business; he also owned two retail outlets in Quesnel. Bob joined Weldwood of Canada's management team in 1996, eventually becoming the company's Corporate Manager for Organizational Effectiveness and Training.

Bob is a writer and public speaker on natural resource use and sustainability issues. He is currently writing a book for Harbour Publishing about the BC forest sector policy and politics.

SASCO

SOUTHERN INTERIOR SILVICULTURE COMMITTEE

LIST OF PRESENTERS

Our objective is to promote appropriate silvicultural practices in the Southern Interior of British Columbia

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