WESTERN BOREAL GROWTH AND YIELD ASSOCIATION

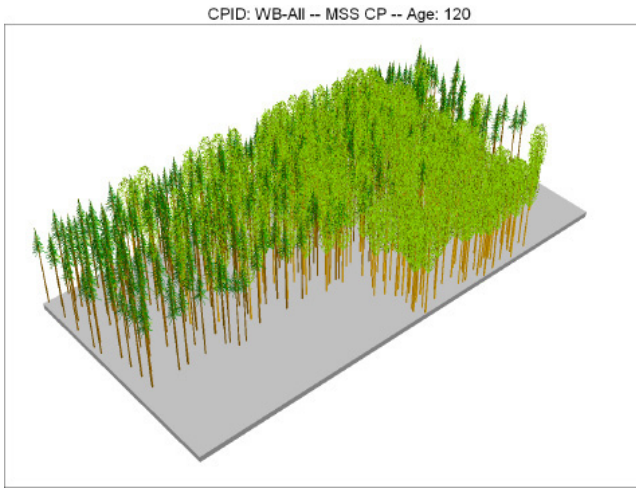


ANNUAL REPORT

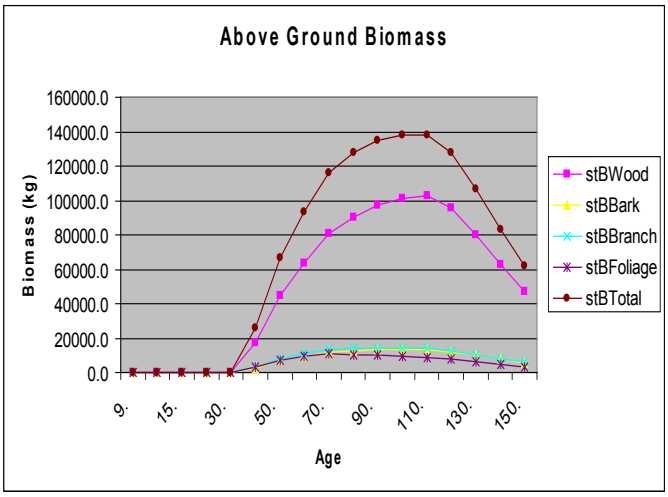
April 2010

WESBOGY Prince Albert Saskatchewan installation, year 20 (2010).

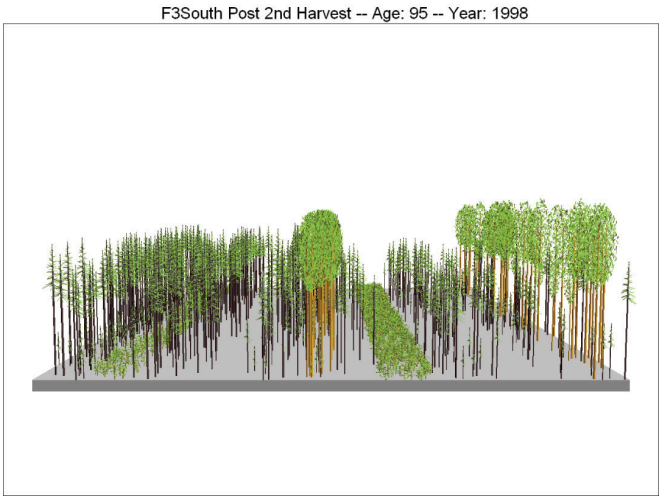
MGM visualization of a WESBOGY installation at age 60



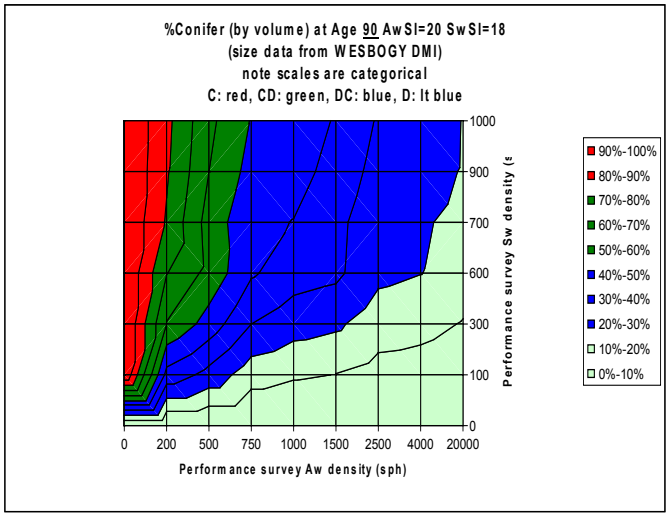
MGM visualization of a WESBOGY installation at age 120



MGM prediction of above ground biomass by age



MGM Mulitistrata visualization of the Hotchkiss understory protection experiment in 1998 immediately, after the second pass harvest.



The percent conifer volume of WESBOGY plots, by broad cover group, projected to age 90 by MGM.

CONTENTS

The Western Boreal Growth and Yield Association first met in the mid 1980's as an informal group of agencies involved in forest growth, yield, inventory and planning in western Canada. The association works to: encourage member agencies to work in a coordinated fashion to improve the efficiency of their research and development efforts; facilitate data sharing; and, provides a forum for communication. We are focused on development and dissemination of growth and yield modeling technology and information for both natural and regenerated stands in the western boreal mixedwood region, primarily aspen and spruce.

Current membership in the association includes seven forest companies, three provincial/territorial governments (Alberta, Saskatchewan and the Northwest Territories) and the federal government.

The association coordinates the maintenance, data collection, data storage and analysis for a long-term study designed to examine the effects of manipulating aspen density in young stands on growth and yield of mixedwood stands. Currently there are 11 experimental installations within the western boreal forest.

In June 2009 a new version of the Mixedwood Growth Model was released and supported by a technical user workshop. Although model development is ongoing, the plan for MGM in 2010 is to shift from model development to model validation and the publishing of relationships and results.

In 2009 some studies were completed and several are continuing. All studies are designed to contribute to a better understanding of the growth and yield implications of managing mixedwood stands.

This Annual Report presents highlights of work accomplished during 2009 and briefly outlines plans for 2010.

June 2010

It is difficult to believe that another year has already passed since the last annual report. It continues to be a pleasure to serve as chair of the Western Boreal Growth and Yield Association and to participate in the work and activities of the Association. I am particularly pleased to welcome the Canadian Forest Service, Canadian Wood Fibre Centre to our Association.

MGM2009 was released during the past year, and a workshop was held in May to provide training to potential model users. This version of MGM includes biomass estimation, stand visualization, and the ability to simultaneously simulate several spatial "strata" within a stand. A thorough validation of the model is showing that MGM2009 is working very well and is providing unbiased results that match with growth of permanent sample plots. Mike is busy preparing a manuscript that will be submitted for publication this summer. We are grateful to FRIAA and to the MWMA for funding to support work on MGM.

During the past year substantial progress was made on a number of WESBOGY projects. Thanks to the efforts of Susan and Mike the LTS dataset is now in excellent shape, with all data collected to date now clean and on the sharepoint site. Task lists for each member are now up and being maintained on the sharepoint site and should help to keep everyone on track with their Long-Term Study measurement and maintenance activities.

During the year Mike has worked with Ken Stadt and Dan MacIsaac on analysis and simulation of yield for the Hotchkiss Understory Protection study (based on remeasurements funded by MWMA), with manuscripts in preparation for this project. Mike and Stefanie have successfully completed a final report for FRIAA and MWMA on the Benchmark Project, and are currently preparing manuscripts for publication.

Three WESBOGY NOTES (Top height protocol, Site Index Protocol, and GPS protocol) were completed during the year and are available on the sharepoint site.

We have a busy year planned for 2010 which includes ongoing work on and support for MGM, completion of simulations illustrating application of MGM and LTS data, preparation of manuscripts and WESBOGY notes, and presentation of posters on MGM and the long-term study at the CIF AGM being held in Jasper in September 2010. Our fall meeting will be held September 14 and 15 in Manning, Alberta.

Please contact Mike Bokalo or myself if you would like further information relating to our projects or other WESBOGY activities.

Phil Comeau
Chair, WESBOGY
Dept. of Renewable Resources
University of Alberta
751 General Services Bldg.
Edmonton, AB T6G 2H1
Email: phil.comeau@ualberta.ca

The purpose of the WESBOGY Association is to conduct research projects that contribute to the development and dissemination of growth and yield information and modeling technology for both natural and regenerated stands growing in the boreal mixedwood region, primarily aspen and spruce.

Individual projects and/or students sponsored with Association resources should make progress in achieving this mission. Sponsored projects include those supported using Association resources. Associated projects are identified with the Association but are funded by individual (or groups of) members or other sources. A business plan outlining project priorities and allocation of resources to accomplish the mission has been developed and periodically reviewed with the participation of Steering Committee members.

GOALS

To develop and implement a program of research in the study of growth and yield and stand dynamics focused on problems of interest to members of the Association. Projects will have defined goals and products, and will be completed in a timely manner.

To increase knowledge and awareness of growth and yield relationships, as they exist in western and northern Canada.

To foster communication, cooperation and exchange of information among the members as well as various agencies and groups concerned with management and development of boreal forests.

To focus on the dynamics of mixedwood stands of aspen and white spruce growing in the boreal forest. Basic relations to be studied will include establishment, ingrowth, growth, and mortality. While the major species of interest are aspen and white spruce, other species such as balsam poplar, lodgepole pine, black spruce, and jack pine will also be studied. In developing simulation models based on these relations, provision will be made for projecting stands subject to multiple interventions (treatments) through the life of the stand. Differences between Natural Subregions (Ecoregions) and site productivity will also be evaluated where there is sufficient data.

To encourage the establishment and continued monitoring of standardized permanent sample plots (PSPs) to quantify the effects of forest management practices in natural and regenerated stands, and in general to coordinate the acquisition of high priority growth and yield data.

To identify, evaluate, rank and address areas of research which are: of regional importance, of shared mutual interest, and most effectively approached cooperatively by the Association rather than by individual efforts;

To facilitate the dissemination of growth and yield data through the development of appropriate procedures, standards and databases for members' use.

The following table lists measurable objectives identified for the 2006-2011 Agreement. It also includes links to the overall goals of the WESBOGY Association.

5-Year Objectives	Related Goals
1. To maintain the WESBOGY long-term study designed to evaluate the effect of spruce and aspen density levels on the development of plantations from establishment to final harvest. Maintain and update the database for the WESBOGY long-term study. Complete analysis of data. Encourage new members to participate in the long-term study.	Goal #1 and #5
2. To develop and refine growth and mortality relationships and incorporate these new relationships into the MGM growth simulator.	Goal #1 and #2
3. To expand the scope of the MGM growth simulator as a tool for the development of managed stand yield projections for the major commercial tree species in the region. This will also include providing support for studies required to develop models of tree and stand response to establishment, tending and harvesting practices.	Goal #4, #5, and #6
4. To maintain a website that will identify, evaluate and disseminate information on trends in growth and yield research;	Goal #3 and #7
5. To hold annual field and technical meetings for dissemination of information obtained from ongoing research projects as well as other speakers invited to address other relevant growth and yield issues.	Goal #3 and #7
6. To expand the scope of WESBOGY activities by recruiting new members and seeking opportunities to augment the research component by securing funding from other granting agencies.	Goal #1, #2, #3 and #6
7. To identify and summarize regional PSP database standards and protocols for data exchange and use with regional growth models.	Goal #2, #3, #5 and #7
8. To collaborate with other agencies and organizations in the development of research and acquisition of data to support a better understanding of and development of models to estimate effects of silviculture on yield.	Goal #1, #2, #3 and #4
9. To identify and prioritize research needs and to initiate new projects as appropriate under the direction of the Steering Committee and members.	Goal #1, #2 and #6

5-Year Program (2006-2010)

1. To continue analysis of the WESBOGY long-term study data including:
   - Height, diameter, and density patterns for aspen in the natural plots.
   - Height and diameter growth of spruce and aspen in treated plots.
   - Mortality of spruce and aspen in treated plots.
   - Recruitment (ingress) of new trees into natural and treated plots.
   - Preparation of manuals and reports for distribution to members and for journal publication.
2. To continue development of MGM to improve its ability to represent stand responses to silviculture. This will include:
   - Partial cutting amount and method.
   - Site preparation.
   - Brushing and vegetation management
   - Influence of site, age and other factors on aspen-conifer interactions..
3. To update the WESBOGY long-term study data collection manual and the WESBOGY web site.
4. To seek to expand the scope of WESBOGY activities and influence.
   - To identify and approach potential new members;
   - To seek opportunities and develop proposals for potential complementary funding from other agencies.
   - To work with other groups and co-operatives and to promote WESBOGY activities in both silviculture practices and growth modeling.
5. To organize the WESBOGY Fall, Spring, and Steering Committee meetings each year. Prepare the meeting minutes and WESBOGY annual reports.
6. To develop height, diameter, and mortality functions for other species.
   - To develop relationships for poplar and black spruce using available PSP data.
   - To prepare manuals and reports for distribution to members and for journal publication.
7. Review, summarize, and prepare a report of regional PSP database standards and protocols for data exchange and use in regional growth models.
8. To review and update the list of priority and ongoing projects.
9. To undertake high priority research projects as recommended by the Steering Committee and approved by the members.

The following table *summarizes* current projects and their respective priorities. For a complete description of projects and proposed projects see the WESBOGY 2005 Annual report.

Current Research Projects

	Subject/Title	Status and Priority
1.	Development of MGM	**Status:** Ongoing **Researchers:** Mike Bokalo, Ken Stadt, Steve Titus, Phil Comeau
2.	Validation of MGM2009A	**Status:** Manuscript in Prep **Researchers**: Mike Bokalo, Ken Stadt, Phil Comeau, Steve Titus
3.	Maintenance of Long Term Study Database	**Status**: Ongoing **Researchers**: Mike Bokalo, Phil Comeau, Susan Humphries
4.	Analysis of Long Term Study Data	**Status**: Ongoing **Researchers**: Mike Bokalo, Phil Comeau
5.	Climate change response on Long Term Study Sites	**Status:** Initiated in 2009 **Researchers:** Ted Hogg, Mike Bokalo, Dan MacIsaac, Phil Comeau
6.	MGM-Volume Loss Factor development	**Status**: Manuscript in Prep **Researchers**: Cosmin Tansanu (PhD). Mike Bokalo and Phil Comeau
7.	Evaluation of competition indexes using LTS data	**Status**: Underway **Researcher**: Phil Comeau
8.	Effects of herbaceous and woody vegetation control on early boreal mixedwood stand development (Judy Creek Mixedwood Regeneration study)	**Status**: Initiated in 2002; ongoing **Researcher:** Doug Pitt, Phil Comeau, Dan MacIsaac. Paper published in CJFR in January 2010 (see list of recent publications)
9.	Competitive effects of willow and aspen on white spruce growth in mixedwood stands	**Status**: Initiated in 2006 **Researcher**: Fang Ye, Phil Comeau
10.	Stand Density Index and its relationships with productivity and understory vegetation	**Status**: Initiated in 2007 **Researcher**: Valentin Reyes-Hernandes, Phil Comeau
11.	Growth and Yield Implications of White Spruce Understory Protection and Other Mixedwood Silviculture Systems	**Status:** Completed 2009; 2 manuscripts in preparation **Researcher:** Dan MacIsaac, Ken Stadt, Mike Bokalo, Phil Comeau
12.	Benchmarking Natural (fire origin) stand regeneration.	**Status**: Completed in 2009; 3 manuscripts in preparation **Researcher**: Stefanie Gaertner, Mike Bokalo, Ken Stadt and Ellen Macdonald

Agency/Company	Current Membership
Alberta Sustainable Resource Development	Since 1985
Alberta-Pacific Forest Industries Inc.	Since 1990
Alberta Plywood	Since 1985
British Columbia Ministry of Forests	1985-2003
Canadian Forest Products	Since 1985
Daishowa-Marubeni International Ltd.	Since 1990
Wood Fibre Centre, Canadian Forest Service	Since 2009
Louisiana-Pacific Canada Ltd., British Columbia	Since 1997
Louisiana-Pacific Canada Ltd., Manitoba	Since 1996
Manning Diversified Forest Industries Ltd.	Since 1997
Northwest Territories Resources, Wildlife and Economic Development	Since 1985
Saskatchewan Ministry of Environment	Since 1985
University of Alberta	Since 1985
Weyerhaeuser Company, Alberta Forestlands	Since 1985

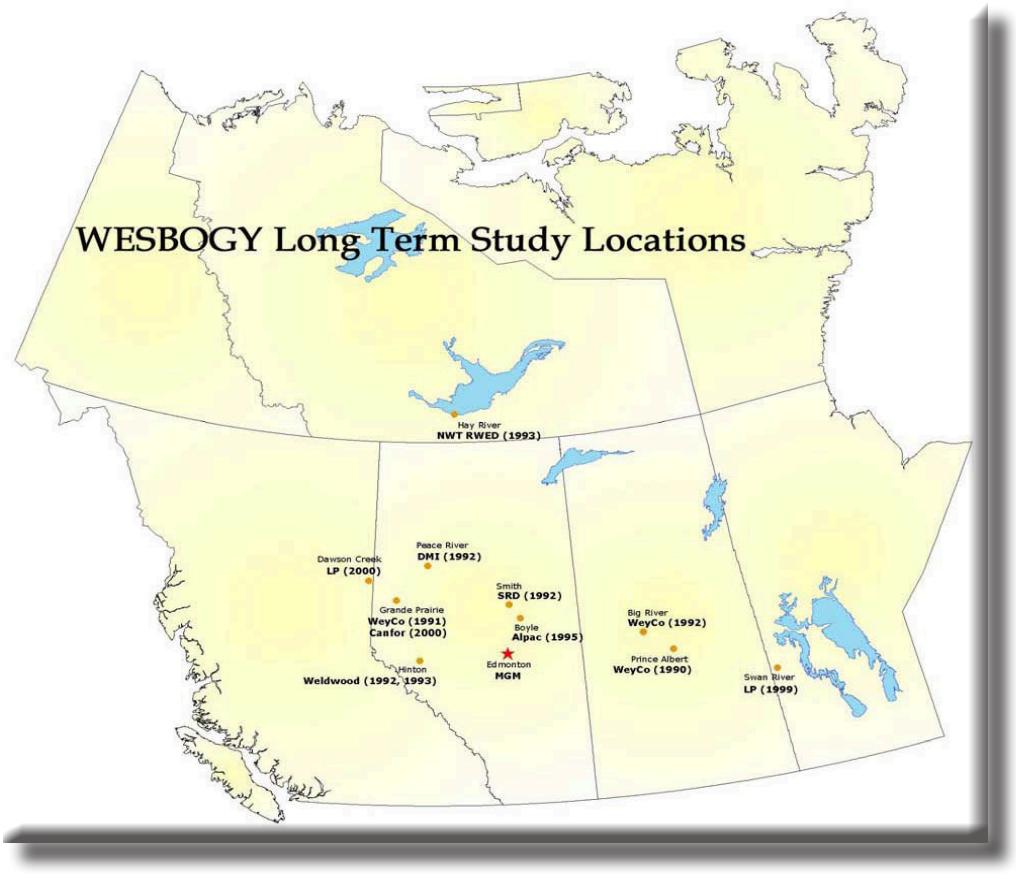
Steering Committee Members

A Steering Committee, consisting of three or four members elected to the Committee at the Annual Fall meeting, and the Chair and the Research Scientist sets policy, develops strategic objectives and priorities, reviews work plans, adjusts annual membership assessments in light of planned activities, and deals with other items which may arise.

2000 Titus, Wang, Behuniak, Niemi, Weeks
2001 Titus, Behuniak, Niemi, Nichol, Ewan
2002 Titus, Bokalo, Comeau, Behuniak, Niemi, Nichol, Ewan
2003 Comeau, Bokalo, Titus, Behuniak, Niemi, Nichol, Ewan/Ashley
2004 Comeau, Bokalo, Titus, Behuniak, Nichol, Ashley, Whittaker
2005 Comeau, Bokalo, Titus, Behuniak, Nichol, Ashley, Whittaker
2006 Comeau, Bokalo, Behuniak, Nichol, Blue/Ashley, Whittaker/Whitmore
2007 Comeau, Bokalo, Nichol, Ashley, Whitmore, Morgan
2008 Comeau, Bokalo, Leblanc, Zaichkowsky, Whitmore, Morgan
2009 Comeau, Bokalo, Leblanc, Whitmore, Morgan

History and Locations of Long Term Study Installations

Company or Agency	Agency Code	Site	Year Spruce Established	Measurements Including 2008
Alberta Sustainable Resource Development	SRD	Med	1992 2001	17 8
Alberta-Pacific Forest Industries Inc.	ALP	High Med	1994 2001	16 8
Canadian Forest Products Ltd.	CFR	High Med	2000 2001	9 8
Daishowa-Marubeni International Ltd.	DMI	High Med	1992 1992	17 17
Louisiana-Pacific Canada Ltd., Manitoba	LPSR	High Med	1998 1998	11 11
Louisiana-Pacific Canada Ltd., Dawson Creek	LPDC	High Med	2001 2004	8 6
Northwest Territories Resources, Wildlife and Economic Development	NWT	High Med	1993 1993	16 16
Alberta Plywood	WFR	High Med	1992 1993	15 17
Weyerhaeuser Company, Alberta Forestlands	WGP	High Med	1991 1991	18 18
Domtar Inc., Saskatchewan	WPA	High Med	1990 1990	19 19
Saskatchewan Ministry of Environment	SSK	High Med	1992 1992	17 17



Long Term Study of Aspen/Spruce Stand Development

Mike Bokalo, Phil Comeau and Susan Humphries

The WESBOGY Long-Term Study has been underway since 1991 and is designed to document and demonstrate the effects of spruce and aspen densities (and precommercial thinning) on the development of mixedwood stands. The design of the Long-Term Study involves planting white spruce seedlings in recently clearcut areas where aspen regeneration had already been established. Spruce seedlings were planted in both the plot and buffer areas. For the first 5 years, vegetation is controlled by clipping or using plastic mulch mats within a 40 to 50 cm radius of the spruce. After 5 years, both the spruce and aspen are thinned to desired treatment densities. The objectives of the thinning are to achieve desired densities but retain potential crop trees at relatively uniform spacing. The study uses a randomized block design with each agency setting up and maintaining one block, comprised of two installations. Each installation consists of two replications of a series of 15 plots.

Database management and maintenance work continued in 2009. The Access database was restructured to include the history files, top height data and all the site, soil and vegetation tables. The last of the spatial data was obtained and the process of creating a single spatial tree data table is underway. In 2009 three new protocols were finalized and distributed as WESBOGY Notes. The top height protocol was implemented to estimate top height of the aspen in the natural untreated plots (4 largest dbh trees in the full plot). The site index protocol which outlined the methods to estimate site index for each of the LTS installations. The GPS protocol standardized the protocol for obtaining GPS locations. The sharepoint site also saw continued development including the updating of metadata (history files), task lists, meeting minutes, WESBOGY publications, and selections of relevant literature (eg. Biomass; Forest Carbon). In 2009 the sharepoint site was expanded to include secure workspaces for contractors working for member agencies.

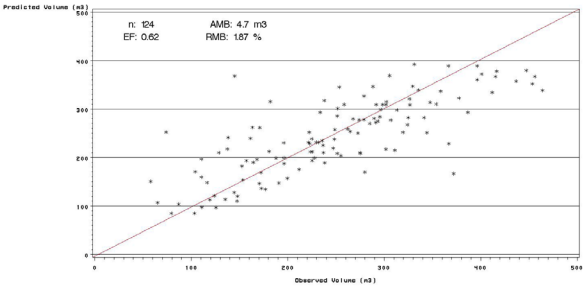
In 2010 the Saskatchewan Prince Albert installation will see it's 20th re-measurement. A cooperative project with Ted Hogg and Dan MacIsaac from the Canadian Forest Service which will look at the effects of the recent drought (climate change) on growth and mortality of both the spruce and aspen on the LTS site will begin in 2010.

MGM Development and Validation

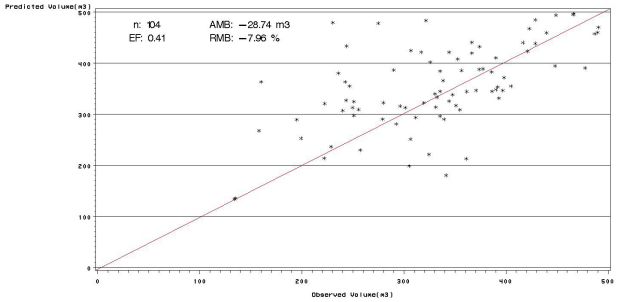
Mike Bokalo, Ken Stadt, Phil Comeau and Steve Titus

The year began with an MGM workshop on June 20th that highlighted some of the new components of the model including the multistrata model and stand visualization capabilities. Work during 2009 focused primarily on the validation of MGM and the migration to Excel 2007. The validation compared model predictions against stand level data (average height, top height, DBH, volume, basal area and density) using 4 permanent sample plot databases; the ASRD mature PSPs and juvenile stand dynamics system plots (SDS), the juvenile WESBOGY LTS plots and the mature Saskatchewan PSPs. Residual plots and statistical tests (average mean bias, relative model bias and efficiency) were used in the validation and show that the model validates well for both juvenile and mature stages of stand development for both pure and mixed species stands of aspen, spruce and lodgepole pine. Results show that MGM is validating very well. A validation manuscript is being completed during the summer of 2010. The following figures illustrate some of the results from this validation.

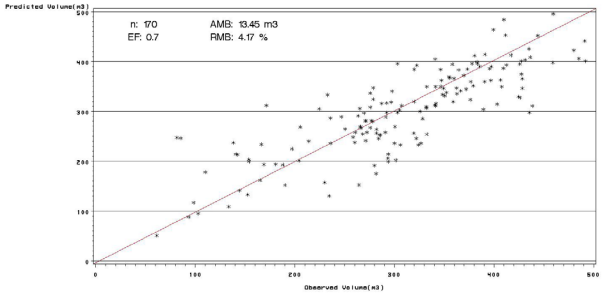
SRD AW Plots – Deciduous Volume



SRD SW Plots – Conifer Volume



SRD PL Plots – Conifer Volume



Benchmarking Natural Origin Stand Development

Stefanie Gaertner, Mike Bokalo, Ken Stadt and Ellen Macdonald

In 2009 the project "Benchmarking Natural Origin Stand Development" funded by the Forest Resource Improvement Association of Alberta and the Mixedwood Management Association was completed. The objective of the study was to conduct a broad comparative survey of regeneration assessment protocols by evaluating the regeneration 10 to 20 years post-fire using the alternative regeneration standards (WAS 2008) and the previous Free-to-Grow standards (ARS 2007). This benchmark data set (density, stocking, size distributions) was compared to post-harvest stand data sets and used to initialize growth and yield models.

The results and discussion can be found in: Gärtner S., M. Bokalo, K.Stadt and E. Macdonald, 2010. Benchmarking Natural Origin Stand Development. Final Report Submitted to the Forest Resource Improvement Association of Alberta (FRIAA) and the Mixedwood Management Association (MWMA).

Effects of Herbaceous and Woody Vegetation Control on Early Boreal Mixedwood Stand Development (The Judy Creek Mixedwood Study)

Doug Pitt, Phil Comeau, Dan MacIsaac, Milo Mihajlovich,Michael Hoepting and Susan Humphries

In 2002 we initiated this study at Judy Creek to examine effects of planting spruce at 5-m spacing, tending them individually with 2-m radial treatments, and leaving aspen to regenerate naturally in the intervening area between the spruce. We also compared the effects of controlling only the woody component against control of both woody and herbaceous vegetation for 2 and 4 years after planting. The site is located 30 km northeast of Whitecourt Alberta Canada (54°03'N, 115°36'W; elevation: 1000 m). Att age 5 the best growth of spruce and aspen was observed following treatments consisting of 2 to 4 years of herbaceous and woody (i.e., complete) competition control within a 2 m radius of the spruce planted at 4 m spacing. In these situations, spruce growth was equivalent to the same stock grown at 2.5-m spacing and provided with complete, continuous relief from competition. Removing only the woody vegetation stimulated herbaceous competition and reduced survival and growth of spruce. In contrast, control of herbaceous vegetation alone resulted in increased spruce and aspen growth over woody-only competition control. Untended plots contained the smallest spruce and aspen in the study.

A detailed discussion of results is available in: Pitt, D.G., P.G. Comeau, W.C. Parker, D. MacIsaac, S. McPherson, M.K. Hoepting, A. Stinson, and M. Mihajlovich. 2010. Early vegetation control for the regeneration of a single-cohort, intimate mixture of white spruce and trembling aspen on upland boreal sites. Can. J. For. Res. 40: 549-564.

Figure 1. Untreated

Figure 2. Radial Complete Control

Figure 3. Herbaceous (Understory) Control

Figure 4. Woody Control

Figure 5. Broadcast Complete Control

Growth and Yield Implications of White Spruce Understory Protection and Other Mixedwood Silviculture Systems

Dan MacIsaac, Mike Bokalo, Ken Stadt and Phil Comeau

This research project, led by the Canadian Forest Service and funded by the Mixedwood Management Association was completed in 2009. This project was initiated to further develop MGM to include the effects of adjacent strata on tree growth using light as the main factor limiting growth.

The summary of the results and detailed discussion can be found in: MacIsaac D., K. Stadt and M. Bokalo, 2010. Growth and Yield Implications of Strip Shelterwoods and Other Mixedwood Silviculture Systems for Mixed Hardwood - White Spruce Management: Enhancement of a Strata-Based Version of the Mixedwood Growth Model (Release 2009). Final Report Submitted to the Mixedwood Management Association (MWMA).

Effects of stand density and composition on key stem and crown characteristics for aspen and white spruce – links to wood quality and data for CROBAS calibration.

Phil Comeau and Derek Sattler

Stand density and composition can have substantial effects on wood quality through their influences on crown and branch size, growth rates, stem form, and the size of the juvenile wood core.

The objectives of this project are to: 1) Examine effects of density, age, stand composition, tree characteristics and other factors on crown architecture, and branch size (and size distribution) of white spruce and trembling aspen; 2) Develop regression models that predict crown architecture and branch size as a function of tree and stand characteristics; 3) Examine relationships between stand and tree characteristics and wood properties; and, 4) Collect field data for calibration of CROBAS (and other models).

Progress during 2009 included preliminary analysis of permanent sample plot data from Alberta SRD to examine effects of stand density and composition on live crown ratio and slenderness and to select candidate sites for field sampling. Field data collection was completed in seven stands in 2009. Wood samples collected from 41 trees were collected and measurement of density and MOE completed at the Univ. Laval, Centre de Research sue le Bois laboratories. Sampling of 9 stands is planned for the 2010 field season.

More information on the ForValueNet Strategic Network is available at: http://www.forvaluenet-foretvaleur.ca/

Graduate Students Working on Projects in the Western Boreal

Valentin Reyes-Hernandez (PhD) - Stand Density Index and its relationships with productivity and understory vegetation in the boreal mixedwoods in Western Canada

Fang Ye (PhD) - Evaluation of competitive effects of willow and aspen on white spruce growth in western boreal mixedwood stands

Hongan Yan (PhD) - The effects of competition control treatments on white spruce (Picea glauca [Moench] Voss) height and diameter growth.

Francesco Cortini (PhD) - Yield implications of site preparation and climate change in northern British Columbia.

Derek Sattler (PhD) - Effects of density, species composition, age, and tree dimensions on wood quality for aspen and white spruce in boreal mixedwoods of western Canada (FORVALUENet Project 1.2).

Diana Osika (MSc) - Reconstructed Height Growth Trajectories of White Spruce Following Hardwood Release.

Claudia Rivera-Rios (PhD) – Factors influencing height:diameter allometry in white spruce and aspen.

Publications during 2009-2010

Bokalo M. and P.G. Comeau. 2010. WESBOGY Long Term Study - Top Height Protocol. Western Boreal Growth and Yield Association Research Note 1.

Bokalo M. and P.G. Comeau. 2010. WESBOGY Long Term Study - Site Index Protocol. Western Boreal Growth and Yield Association Research Note 2.

Bokalo M. and P.G. Comeau. 2010. WESBOGY Long Term Study - GPS Protocol. Western Boreal Growth and Yield Association Research Note 3,

Comeau, P.G., C.N. Filipescu, R. Kabzems, and C. DeLong. 2009. Growth of white spruce underplanted beneath spaced and unspaced aspen. Univ. of Alberta, Dept. of Renewable Resources, Centre for Enhanced Forst Management. EFM Research Note 09/2009.

Comeau, P.G. and G.J. Harper. 2009. Effects of vegetation control treatments for release of Engelmann spruce from a mixed-shrub community in southern British Columbia – Year 15 results. For. Chron. 85: 583-592.

Cortini, F., P.G. Comeau, J.O. Boateng, and L. Bedford. 2010. Yield Implications of Site Preparation Treatments for Lodgepole Pine and White Spruce in Northern British Columbia. Forests 1: 25-48.

Gärtner S., M. Bokalo, K.Stadt and E. Macdonald, 2010. Benchmarking Natural Origin Stand Development. Final Report Submitted to the Forest Resource Improvement Association of Alberta (FRIAA) and the Mixedwood Management Association (MWMA).

Lecomte, N., E. Macdonald, S. Brais, and P. Comeau. 2009. Growing conditions and tree productivity in boreal mixedwoods: hidden opportunities for forest managers. SFM Network Research Note Series No. 46.

MacIsaac D., K. Stadt and M. Bokalo, 2010. Growth and Yield Implications of Strip Shelterwoods and Other Mixedwood Silviculture Systems for Mixed Hardwood - White Spruce Management: Enhancement of a Strata-Based Version of the Mixedwood Growth Model (Release 2009). Final Report Submitted to the Mixedwood Management Association (MWMA).

Newsome, T.A., J.L. Heineman, A.F.L. Nemec, P.G. Comeau, A. Arsenault, and M. Waterhouse. 2010. Ten-year regeneration responses to varying levels of overstory retention in two productive southern British Columbia ecosystems. For. Ecol. Manage. 260: 132-145.

Pitt, D.G., P.G. Comeau, W.C. Parker, D. MacIsaac, S. McPherson, M.K. Hoepting, A. Stinson, and M. Mihajlovich. 2010. Early vegetation control for the regeneration of a single-cohort, intimate mixture of white spruce and trembling aspen on upland boreal sites. Can. J. For. Res. 40: 549-564.

Ye, F. and P.G. Comeau. 2009. Effects of gap size and surrounding trees on light patterns and aspen branch growth in the western boreal forest. Can. J. For. Res. 39: 2021-2032.

2009 WESBOGY Annual Fall Meeting

Whitecourt, Alberta
September 15th and 16th

September 15th - Location: Whitecourt Interpretive Center

Lunch (12:00 – 1:00)
Presentations (1:00 – 3:00)
Graduate Student Research Presentations
Natural Benchmark Project
WESBOGY Research (Mike Bokalo and Phil Comeau)

WESBOGY Business Meeting – (3:30 – 5:00)

Evening Dinner at the Forest Interpretive Centre - Catered (6:00)

September 16th - Mixedwood Trials Tour
Judy Creek
Blue Ridge
Willow Trial – Richard Krygier

Departure to Sites (8:00 a.m.) via Trucks
Return Whitecourt 4:30 pm

Planned WESBOGY Meetings in 2010

The 2010 Annual Spring Meeting is planned for May 27, 2010 on the University of Alberta campus.

The 2010 Annual Fall Meeting will be sponsored by Manning Diversified in Manning, Alberta on September 14th and 15th, 2010.

History of WESBOGY Meetings

Date	Sponsor	Location
2009 Sept 15-16	University of Alberta	Whitecourt, AB
2008 Sept 8-10	Alberta Plywood	Slave Lake, AB
2007 Sept 4-6	Alberta-Pacific Forest Industries	Lac La Biche, AB
2006 Aug 29-Sept 1	Louisiana Pacific Canada Ltd.	Dawson Creek, BC
2005 Aug 29 - Sept 1	Northwest Territories Resources, Wildlife and Economic Development	Hay River, NWT
2004 Aug 30 - Sept 1	Saskatchewan Environment – Forest Service	Prince Albert, SK
2003 Sept 9-11	Canadian Forest Products Ltd.	Grande Prairie, AB
2002 Sept 9-11	Louisiana-Pacific Canada Ltd.	Riding Mountain, MB
2001 Sept 9-11	Daishowa-Marubeni International Ltd.	Peace River, AB
2000 Sept 6-8	Weyerhaeuser Company, Drayton Valley	Edson, AB
1999 Sept 23-25	Weyerhaeuser Company, Prince Albert	Anglin Lake, SK
1998 Oct 7-9	Alberta-Pacific Forest Industries Ltd.	Athabasca, AB
1997 Oct 7-9	British Columbia Ministry of Forests	Dawson Creek, BC
1996 Nov 6-8	Daishowa-Marubeni International Ltd.	Peace River, AB
1995 Oct 11-13	Weldwood of Canada Ltd.	Hinton, AB
1994 Oct 12-14	Weyerhaeuser Company, Alberta Forestlands	Big River, SK
1993 Nov 4	University of Alberta	Edmonton, AB
1992 Oct 6-7	Weyerhaeuser Company, Grande Prairie	Grande Prairie, AB
1991 Oct 24-25	Weyerhaeuser Company, Prince Albert	Prince Albert, SK
1990 Nov 22	University of Alberta	Edmonton, AB
1989 Mar 15	Canadian Forest Service	Saskatoon, SK
1988 Nov 4	Canadian Forest Service	Whitecourt, AB
1998 Feb 4-5	Canadian Forest Service	HInton, AB
1987 Mar 27	Canadian Forest Service	Edmonton, AB
1986 Feb	Canadian Forest Service	Edmonton, AB
1985 Nov 15	Canadian Forest Service	Edmonton, AB
1985 Oct 24	Canadian Forest Service	Banff, AB
1985 Mar 23	Canadian Forest Service	Edmonton, AB

WESBOGY Website and Sharepoint Site

With the assistance of Judy Huck (U of A, Department of Renewable Resources Webmaster / Multimedia Technician) our new website is up and running. Changes include: having our own web address, a secure members area, and inclusion of both historical and current documents in readily accessible formats.

Check out our:

WEBSITE at: http://www.ales.ualberta.ca/rr/wesbogy.aspx
Sharepoint Site at: https://portal.ales.ualberta.ca/wesbogy/default.aspx

WESBOGY Financial Summary For 2009-2010 (Corrected July 31, 2010)

Description	Budgeted Amount	Actual Expenditures	Difference
Salaries & Benefits			
Research Scientist	$82,000.00	$74,544.00	$7,456.00
Field and office tech support	$16,500.00	$19,401.55	-$2,901.55
Grad students	$0.00	$0.00	$0.00
Professional (Programmer / Analyst)	$10,000.00	$9,911.00	$89.00
Travel	$9,000.00	$8,204.00	$796.00
Supplies, Equipment, Communication	$5,000.00	*$7,981.29	-$2,981.29
Overhead (15% of $125,000)	$18,750.00	$18,750.00	$0.00
TOTAL	$141,250.00	$138,791.84	$2,458.16
Opening Balance April 1, 2009		$159,760.55	
Member Contributions		$125,000.00	
Total Expenditures 2009/2010		$138,791.84	
Balance at March 31, 2010		$145,968.71	
Accounts Receivable - CFS		$12,500.00	
WESBOGY - Budget for 2010/11			
Description	**Amount**		
Salaries & Benefits			
Research Scientist	$77,250.00		
Field and office tech support	$12,000.00		
Grad students	$0.00		
Professional (Programmer/Analyst)	$10,000.00		
Travel (Wesbogy Meetings, travel & Judy Creek)	$9,000.00		
Supplies, Equipment, Communication	$6,500.00		
Overhead (15% of $137,500)	$20,625.00		
TOTAL	$135,375.00		
Projected Balance at March 31, 2011			
Opening Balance April 1, 2010		$145,968.71	
Accounts Receivable		$12,500.00	
Member Contributions		$137,500.00	
Expenditures 2010/2011		$135,375.00	
Estimated Balance at March 31, 2011		$160,593.71	

Company or Agency	Contact	Email
Alberta Sustainable Resource Development	Dave Morgan (780) 422-5295 Daryl Gilday (780) 422-5257	Dave.Morgan@gov.ab.ca Daryl.Gilday@gov.ab.ca
Alberta-Pacific Forest Industries Inc.	Dave Cheyne (780) 525-8261 Gitte Grover (780) 525-8349	Dave.Cheyne@alpac.ca Gitte.Grover@alpac.ca
Canadian Forest Products Ltd.	Jill Ashley (780) 538-7793 Shayla Blue (780) 538-7740 Melonie Zaichkowky (780)538-7720	Jill.Ashley@canfor.com Shayla.Blue@canfor.com Melonie.Zaichkowsky@canfor.com
Daishowa-Marubeni International Ltd.	Gord Whitmore (780) 624-7036 Jean-Marie Sobze(780) 624-7048	GWhitmore@prpddmi.com JSobze@prpddmi.com
Louisiana-Pacific Canada Ltd., Manitoba	Paul Leblanc (204) 734-7724	Paul.Leblanc@lpcorp.com
Louisiana-Pacific Canada Ltd., Dawson Creek	Adam Campbell (250) 782-3302 ext 223 Rod Brooks (250) 782-3302 ext 239	Adam.Campbell@lpcorp.com Rod.Brooks@lpcorp.com
Manning Diversified	Andy Shandro (780) 836-3111	Andy.Shandro@mdfp.ca
Northwest Territories Resources, Wildlife and Economic Development	Lisa Smith (867) 874-2009 Tom Lakusta (867) 874-2009	Lisa_Smith@gov.nt.ca Tom_Lakusta@gov.nt.ca
Saskatchewan Ministry of Environment	Phil Loseth (306) 953 - 3567 Xilin Fang (306) 953 - 2452	Phil.Loseth@gov.sk.ca Xilin.Fang@gov.sk.ca
University of Alberta	Phil Comeau (780) 492-1879 Mike Bokalo (780) 492-9038	Phil.Comeau@ualberta.ca Mike.Bokalo@ualberta.ca
Alberta Plywood Ltd. A Division of West Fraser Mills Ltd	Gary Harmata (780) 805-3718 Gordon Sanders (780) 849-4145	Gary.Harmata@westfraser.com Gordon.Sanders@westfraser.com
Weyerhaeuser Company, Alberta Forestlands	Greg Behuniak (780) 539-8207 Wendy Crosina (780) 451-9783	Greg.Behuniak@weyerhaeuser.com Wendy.Crosina@weyerhaeuser.com
Domtar Inc. Saskatchewan	Michelle Young	Michelle.Young@domtar.com
Wood Fibre Centre, Canadian Forest Service, Natural Resources Canada	Dan MacIsaac (780) 435-7332 Derek Sidders (780) 435-7355	Dan.MacIsaac@NRCan-RNCan.gc.ca Derek.Sidders@NRCan-RNCan.gc.ca

Western Boreal Growth & Yield Association (WESBOGY)

C/O Department of Renewable Resources
University of Alberta
751 General Services Building
Edmonton, Alberta T6G 2H1

Phone: 780-492-4413
Fax: 780-492-4323
www.ales.ualberta.ca/rr/wesbogy.cfm