

**Stand Management Cooperative
Annual Spring Meeting
April 22-23, 2015
UW Waterfront Activities Center, Seattle, WA**

ATTENDEES

B.C. Ministry of Forests, Louise de Montigny; **Campbell Global**, Dave Hamlin; **Canadian Wood Fibre Centre**, Cosmin Filipescu; **Cascade Timber**, John Jayne; **Hancock Forest Management**, Patrick Clune, James Vander Ploeg; **Lone Rock Timber Co.**, Chris Sexton; **Olympic Resource Management**, Scott Holmen, Ryan Schlecht, David Stafford; **Oregon State University**, Keith Jayawickrama, Doug Maguire, Nate Osborne, Henry Rodman; **Plum Creek Timber Co.**, Conner Fristoe; **Port Blakely Tree Farms**, Mike Warjone; **Quinault Indian Nation**, Jim Plampin; **Rayonier Forest Resources**, Candace Cahill, John Paul McTague; **Roseburg Forest Products**, Eric Dinger, Tony Powell; **Sierra Pacific Industries**, Josh Misenar; **Stimson Lumber Co**, Margret Banks; **TimberWest**, Shawn McLennan; **University of Washington**, Tom Deluca, Greg Ettl, Jason Cross, Bob Gonyea, Maureen Kennedy, Kim Littke, Megan O'Shea, Eric Turnblom; **USFS PNW RS**, Eini Lowell; **West Fork Timber**, Gene McCaul; **Weyerhaeuser Company**, Greg Johnson, Scott Holub, Rick Leon, Dave Marshall; **Private Consultant**, Jim Flewelling

The business meeting, social and workshop were held this year at the University of Washington's Waterfront Activities Center beginning at 8:30 AM with light refreshments on the 22nd. There were 40 attendees from 21 organizations attending the business meeting and 32 attendees from 19 organizations attending the workshop on the 23rd. Candace Cahill, 2014 Policy Committee Chair opened the meeting at 9:00 AM welcoming the attendees. Director Greg Ettl asked members to introduce themselves and then briefly discussed the objectives for the business meeting and workshop. Before lunch SEFS Director Tom Deluca introduced himself and expressed his appreciation for the support SMC members have given over the past 28+ years. The meeting adjourned at 4:30 followed by a hosted social from 5:00-7:00, (Addendum A).

ACCOMPLISHMENTS

STAFF: Maureen Kennedy, an analyst currently employed at SEFS was hired by SMC at 20% to assist Eric Turnblom in wrapping up current SMC research projects, specifically, (SMC)² Report (a.k.a. SMC Performance Report) and the PCT Analysis updates. Jason Cross was hired as a Forest Research Scientist 4, to work ½ time on the database and ½ time in one of the SMC research areas: nutrition, wood quality, growth modeling, or silviculture. Most of his time has been spent familiarizing himself with SMC projects, the database, its input procedures, and the potential for integration with other SMC products. For the September 9-10th annual fall meeting in Victoria B.C., Jason's goal is to have increased levels of automation and error-checking for the database input procedures, with significant progress establishing relationships between tables and partitioning groups of tables into separate databases.

Bob Gonyea, Bert Hasselberg and William Bizak completed all field work planned for the 2013-2014 season. Measurement highlights include the following: Type I's: 9 Full measurements, 18 RD checks, 4 plots marked for

thinning; Type II's, 2 full measurements; Type III's, 5 Full Measurements, 5 plots measured and marked for thinning; Type V's, 31 Full Measurements, 13 Weather stations data collected and maintained and 27 Weather stations dismantled, (Addendum B).

For the next few years SMC field crew will experience a decline in measurement days due to the phasing out of the Type V Paired Tree Plots and NTIC sharing in the Type IV measuring. This dip in field work creates a window of opportunity for the SMC to put in new measurements, (if members so agreed) and to look at various scenarios to undertake SMC measurements after Bert and Bob retire. In July of 2012, the SMC Review Measurements Approach (RMA) committee met and looked at 5 data collection approaches, (Addendum C).

1. Hire a replacement for Bert and Bob and have them in training this next
2. Contract out all remeasurements and other desired field work
3. Mix of in-house at UW and contracting
4. Work with other regional coops
5. Members do measurements

Examples of outside crew cost test run

- Outside Crew Measurement Costs (e.g. from 2013 measurement stands)
 - \$2 to \$6/tree
 - Silvercreek (\$2850-\$8550)
 - Prather Creek (\$1210-\$3630)
 - Boxcar (\$5250-\$15,570)
 - Total Contract Crew Cost Estimate (\$9310- \$27,750)
 - \$19,650 best guess at what our crew would cost if we did it
 - SMC Check Crew Estimate: \$6640 (10% check)
 - Estimated Funds Required: \$26,290

Greg tasked the RMA with scheduling an early July meeting to look at costs and feasibility of contracting and hiring a 3rd crew member. It was noted that unless additional measurements were scheduled there would be no need to hire an extra crew member.

BUDGET

In April, the UW Office of Sponsored Program (OSP) informed SMC the 2015 NSF CAFS Phase II program solicitation states that member dues are considered program income; under university policy program income budgets carry an 8% F&A rate. Therefore, during the course of our NSF I/UCRC membership all SMC income carries an 8% F&A rate, in the event our membership ends, SMC's F&A rate goes back to 26%.

The increase in dues, coupled with the lower F&A rate, and the fact no new research has been funded for the past 3-years allowed a \$250,000 carryover, a jump from the \$85,000 we carried in in 2013. If we assign \$200,000 to new projects we will have spent the funds built up over the last 3 years. Greg pointed out SMC's revenues are consistent; members ought to feel assured when obligating funds to the RFP's presented later in the day. Budget projections out to 2018 are as follows:

- 2016: \$637,320 revenue (\$598,000 expenses)
 - \$39,320 projected discretionary
- 2017: \$637,320 revenue (\$613,000 expenses)
 - \$24,320 projected discretionary
- 2018: \$637,320 revenue (\$630,000 expenses)
 - \$7,000 discretionary

MEETINGS 2014-2015

- Joint Technical Advisory Committee: 12-8-2014, Reviewed proposals: a) Paired fertilization plot study b) Hemlock genetic gain, c) Sun-setting Type I protocol, d) Paired tree wood quality
- Installation Review (IRC) Committee: 1-13-2015 (planned for sun-setting at rotation installations)
- Policy Advisory Committee: 4-6-2015, Budget and research funding discussion

Center for Advanced Forestry Systems (CAFS)

Annual Meeting May 19-21, Asheville, NC

We are now into CAFS Phase II, funding is set at \$65K a year, (down \$5k). 2014 funding was split evenly between Rob Harrison's project, Understanding Site-Specific Factors Affecting the Nutrient Demands and Response to Fertilizer by Douglas-fir Phase II and Eric Turnblom's Young Douglas-fir Wood Quality Phase II. As previously mentioned, SMC's indirect cost rate is set at 8% for the duration of our CAFS membership.

CAFS Phase II Project Proposals

- Turnblom et al., Appraising Rotation-age Tree and Stand Characteristics in a 1970's Decadal Cohort of Douglas-fir Plantations in the PNW
- Turnblom et al., Assessing impacts of Soil Parent Material, "Responsiveness," and N-Fertilization on Stand and Tree Wood Properties in mid-rotation Coastal U.S. Douglas-fir Plantations using a paired tree approach

CAFS Phase I Final Report

- Turnblom et al.: Impact of genetic gain, weed control and spacing on wood stiffness, density, and knot index in a large-plot trial of Coastal Douglas-fir

Phase I Continuing

- Littke et al.: Understanding Site-Specific Factors Affecting the Nutrient Demands and Response to Fertilizer by Douglas-fir.

RESEARCH UPDATES

1. Maureen Kennedy: Silviculture Manipulation Consequences in Stand Management Cooperative Installations (SMC)² (Addendum D)

Analysis Goals:

- Predict yield using Chapman-Richards
- BA, QMD, [TPA], CVT, CV4, CV6, BF4, BF6

- Test differences in yield curves with site characteristics
- Initial TPA, SI30, species (DF, WH, or Mixed), elevation, latitude, longitude
- Begin with Type III, untreated yield
- Improve asymptote estimates

Summary and Timeline:

- The Chapman-Richards fits show varying yields with combinations of site characteristics
- For some yield variables increasing initial TPA shows higher yield early in stand development, then switches to lower asymptotes later in stand development.
- Type I/II fits are almost complete
- Updated browser calculator anticipated by May 2015
- Report anticipated by mid-Summer 2015

2. Eric Turnblom: PCT Analysis (Addendum E)

Rationale:

- SMC members seek to maximize timber volume / value, but also place some degree of priority on less conventional stand attributes such as:
 - Live Crown Length
 - Branch Size
 - Other habitat values
- The impacts of timing / intensity of PCT on these attributes are not well understood / publicized

Results to Date:

- Responses in Type I installations
- QMD & CVT per acre yield (reported last Fall)
- BF volume to 4" top
- Independent variables used:-
 - ISPA, percent stems retained (PRT), SI30, Elev, Tot. Age, Age at PCT, and their interactions
 - Analysis included extensive plotting of response variables by plot and in groups
 - A flexible function, the generalized allometric equation was chosen for analysis and modeling responses to PCT
- Major determinants affecting accumulation of BF 4" top vol:-
 - Site Index (p << 0.0001)
 - Percent Retained (p < 0.0001)
 - Age at PCT (p < 0.0001)
- Also strong evidence for effects of:
 - Elevation (p = 0.0009)
 - Best Tree Selec. (p = 0.0210)

Benefits:

- Better understanding of how stands with given characteristics could be most profitably managed for the mix of materials that might be produced
- Resulting whole stand models will provide independent corroboration of growth modeling work

Expected Deliverables:

- Models describing yields in stands with & w/o PCT across sites, densities, timings in SMC Working Paper
- Mechanism to deliver tree lists corresponding to defined reporting ages and useful combinations of input variables

3. Nate Osborne (OSU): Preparing for a Comprehensive Regional Douglas-fir Wood Density Profile Model (Addendum F)

Nate Osborne, (Nathaniel.Osborne@oregonstate.edu), presented a brief update on his research using large core samples collected from Panther Creek to analyze and scan for predicting density profile models. His finale paper will be posted on OSU's Forest Engineering, Resource & Management website: <http://ferm.forestry.oregonstate.edu/gradstudents/osborne-nathaniel>

GRADUATE STUDENTS:

Turnblom:

- Kevin Ceder, Ph.D., Candidate, expected fall 2015, currently unfunded
- John Kirby, M.S., expected graduation 2016-ish, currently funded through SEFS fellowship/scholarship - move him onto PCT RA
- Luyi Li, M.S., expected graduation spring 2015, currently funded as an RA through CAFS

Harrison:

- Matt Norton, M.S., Stump Decomposition, expected 2015
- Marcella Menegale, Ph.D., Forest Soils, expected 2016
- Christiana Dietzen, Ph.D., Forest Soils, expected 2016
- Jason James, Ph.D., Forest Soils, expected 2017
- Amelia Root, start M.S. Fall 2015
- Cole Gross, start M.S. Fall 2015

Ettl (Proposals yet to be vetted through PAC):

- Kiwoong Lee, PhD, water-use efficiency from stable isotopes, Type I
- Hyunju Lee, PhD, mortality rates, carbon storage in Type I, II, III installations

NEW PROPOSALS

With \$200,000 available for funding new research a call for proposals went out in early January, in total we received 8 RFP's, (Addendum G). PI's gave a 20 minute presentation followed by a Q&A. SMC members spent a little over an hour discussing the merits of each proposal, 15 Policy Committee members voted. Number 2), SMC Type I Sunset Protocol received the most votes with 16 total, followed by a tie between numbers 6) Stand and Tree Response to Late Rotation Fertilization and 8), 2nd Generation Genetic Gain Western Hemlock, both receiving 14 votes. A motion was made by Candace Cahill and seconded by Greg Johnson to fund the top 3 proposals, the motion passed with 13 yes, 1 no and 1 abstaining. Bob and Bert's time for top three projects would be 30-35 days.

1) Paired-tree Extension Littke and Harrison **11.5 votes**

- Comments: Comments: We should disregard RFNRP and Type I fertilization studies, too different from today's forests and fertilization practices. We need to add more plots in Oregon. We would like to add fixed-area and paired-tree installations to better understand the relationship between single-tree and per area response. This study involved a budget for establishing new installations and analysis time. It would be a good idea to combine this proposal with proposal #6 because a similar experimental design can be used for both.

2) SMC Type I Sunset Protocol, Lowell and Turnblom **16 votes**

- Comments: Lost opportunity if we don't do it, use first year to determine treatment variability, goal is to build models, do complete measurements, cut, cookies, mill, etc., we have good estimates of time and costs but not clear how many plots are needed, 2-plots was based on SMC availability, could be more with in-kind

3) Assessing impacts of Soil Parent Material, "Responsiveness," and N-Fertilization, Lowell and Turnblom **0 votes**

- Comments: Project budget could be cut in half if project receives CAFS 2015 funding and SMC in-kind, problem with many SMC studies no randomization, subject to historical selection, so why do it now, field crew available to help out because of fewer Type 5 measurements

4) Refit SMC DF Plantation Site Curves, Flewelling and Marshall **8.5 votes**

- Comments: Type III's would go to 30-40 years, positive is not dependent on extrapolation, could implement in ORGANON and CIPS

5) Biomass Equations for Coastal Douglas-fir, Cross, Cornick, Turnblom **0 votes**

- Comments: Other groups already doing biomass research, need more collaboration before SMC funds own project

6) Stand and Tree Response to Late Rotation Fertilization, de Montigny, Harrison, et al. **14 votes**

- Comments: Some members not happy making plot size smaller, ½ fertilized ½ not, what's the value to late fertilization, how many are being sun-setted, trying to answer questions to ISPA from 10 years ago, if you go to a sample based model it leads to a model based approach, Type I plot size so small-need more trees, too much "noise" on fertilized/not fertilized plots, this is a hallmark of all our projects, need to discuss more, members want more info on late fertilization

7) Estimate of Bole and Crown size of Douglas-fir, Miller and Turnblom **0 votes**

- Not much enthusiasm for project

8) 2nd Generation Genetic Gain Western Hemlock, Jayawickrama, et al. **14 votes**

- Hemlock needs a publicist, positive benefits to project #4 in the form of new site curves, Port Blakely offered one of their sites for the project

NEXT STEPS

The TAC Project Leaders will schedule a joint TAC meeting sometime in June-July to discuss the funding process.

The Installation Review Committee, (IRC) and the Review Measurements Approach, (RMA) chairs, (E. Turnblom and C. Harrington) will email members to schedule meetings in early July, if you would like to be part of either the IRC or RMA committees contact Megan O'Shea, moshea@uw.edu.

This year's SMC Annual Fall Meeting, Sept 9-10th will be in Victoria, BC. Louise de Montigny is in the process of organizing lodging and field trip logistics but it looks like the business meeting will be in downtown Victoria on the 9th with a half day field trip on the 10th to the Shawnigan Lake fertilization trials. More registration info will go out the first of June.

Meeting adjourned at 4:30.

April 22-23, 2015

Stand Management Cooperative Spring Workshop

Greg Ettl opened the workshop welcoming the members at 8:30. Jason Cross led a discussion on the SMC database, the general schema according to the 2013 data dictionary; establishing the relationships in Access and enforcing referential integrity; and the possible division of the database into two or more databases. Jason will be sending a Data Dictionary out to members this summer. While the database is focused at the installation level, Jason feels once he thoroughly understands the scope and range of members' use he'll be able to create a database that is query-friendly at different levels of data resolution. Members also want the ability to name special projects in, and easily export data from the database (to Excel) which he said is doable. Jason requested members email him with errors so he can correct them. He estimates by the fall meeting that input procedures for field data will be automated, and that wiring relationships between tables in the database will be underway. The members decided there was a need for a Databased Users Group, Jim Flewelling, Rick Leon, Margret Banks, Candace Cahill, James Vander Ploeg, Patrick Clune, Scott Holmen and Ryan Schlecht volunteered to be on it. Jason will chair the group and be in contact with the group later this summer.

Kim Littke followed Jason by demonstrating the use of various models based on the Type V Paired-tree Study for predicting fertilizer response. Her models are based on two-year and four-year single-tree basal area response to fertilization. Some members felt her study, based on “Will it respond or not”, versus “How much will I make” is confusing. Kim pointed she didn’t design the study to answer how much can be made by fertilizing here or here, there’s not enough stand information to determine how fertilizing will pay off; her RFP would have a look at that question.

Eric and Jason presented updates on the Tree List Generator. Jason did a feasibility study on the command lines and mentioned all new measurements will be added by the fall meeting. He ran through the program demonstrating what it can and can’t do, members said they wanted a Tree List Generator able to run with their formulas, no headers just tree variables, while others said web based using Python, or R based to move to ORGANON works for them. Jason will conduct a more in-depth demonstration of the Yield Calculator–Tree List Generator– ORGANON system at the fall meeting in Victoria September 9th and 10th. Please contact him with any questions or suggestions, crossco@uw.edu.

Workshop adjourned at 3:30 PM.