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## **Stand Management Cooperative**

Fall Meeting, September 16-18, 2002  
Dolphins Resort, Campbell River, BC.

### **Minutes**

The meeting began at 9:00 on September 24. Attendees are listed in Appendix A and the Agenda in Appendix B.

#### **Minutes of Business Meeting:**

Policy Committee Chair Norm Andersen opened the meeting and after introductions noted the large effort over the summer by the Finance Committee and the University of Washington's Office of Software & Copyright Ventures. At the Spring meeting the Finance Committee was directed to investigate the issues related to intellectual property and marketing associated with the database and a dues structure/contract arrangement for potential new form(s) of membership for organizations that do not own and manage lands but would use the database to produce and provide analyses, models, and services. Director David Briggs reviewed meetings and progress by the committee, which led to drafts of SMC by-laws and a model database licensing agreement. He reviewed the draft by-laws and introduced Charles Williams from the UW Office of Software & Copyright Ventures who reviewed the language of the licensing agreement. During discussion, it was suggested that the existing Contract Agreement between land owning members and the SMC be appropriately revised for the new membership class. The licensing of the database would be a separate document under the overall membership agreement. After discussing the concept of and answering questions about these documents, a motion was made by Greg Johnson to have the Finance Committee to finalize the by-laws with the provision for a new Analytical Member category. The motion was seconded by Gene McCaul and unanimously approved. To speed this process, the draft by-laws were reviewed in detail and consensus reached on wording of each article. D. Briggs will provide a new draft with the revisions for further review.

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After the by-law review, the members of the forestry consulting community who were present were asked for further comments on the general approach. Those present seemed to feel that this would be a workable approach but there will undoubtedly be different opinions regarding sharing of analyses and information and dues/fee structure. We will continue to work on these issues as the drafting continues.

David Briggs reviewed the status of the budget for 2002. Based on actual expenses through July and projections to the year end, there should be a budget surplus of approximately \$36,000 to carry into 2003. Given new consolidations within the industry and the loss of the USFS as a member, dues for 2003 (Appendix C) will drop substantially to about \$511,000. This will be insufficient to meet expenses. Even if a summer field crew is not hired for vegetation/habitat surveys and other work, there will be a shortfall of about \$10,600. The \$36,000 balance projected for the end of 2002 will be sufficient to cover the shortfall but there will not be sufficient funds left over to hire a summer crew; opportunities to get assistance from other sources of funds will be explored. The outlook beyond 2003 looks bleak unless new members join or if we are successful in competitive grants. A motion to accept the 2003 dues was made by Greg Johnson, seconded by Howard Dew and unanimously approved.

Eric Turnblom briefly reviewed the schedule for the 2002/03 field season and then presented a new design alternative for the Type IV installations. This revision was based on discussions at the Spring meeting where the following issues arose (1) design presented at the Spring meeting may lack sufficient power, due to lack of replication, to test the interactions, and (2) that the intermediate genetic quality level could be dropped from the genetics treatment. As a result of these concerns, a motion was made to re-examine the design in the context of replication and need to include all treatment levels, and to present re-design(s) at the Fall 2002 meeting. Reducing the genetics treatment from 3 levels to 2 reduced the acreage demand and permitted a design that overcomes many issues. There seemed to be consensus that this was a much more attractive design. David Briggs noted that we need to move forward quickly since the Grays Harbor genetics cooperative is ready to produce seedling for the first Type IV if we can agree on a design. It was agreed that we should make an effort to take advantage of this situation.

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David Briggs discussed an email reviewed from Phil Cannon with Boise Cascade who was commissioned by the Vegetation Management Research Cooperative to explore collaboration between the two cooperatives. It was noted that having VMRC involved makes sense given that vegetation management is part of the Type IV installation experiment and there may be other ways for SMC and VMRC to collaborate. David Briggs would communicate this to Phil and pursue the matter further.

The following future meetings were discussed.

1. The SMC Spring meeting will be held at McMEnamin's in Troutdale, OR . The dates of April 23/24 were proposed and we will contact McMEnamin's to reserve them
2. The SMC Fall meeting will be held in mid September and is due to be held in Washington. Suggestions for field trips and locations were solicited. Of the possibilities, a meeting to incorporate a trip to the Wind River experiments and possibly the canopy crane emerged as the most popular idea. We will be contacting those who have organized recent visits to both to explore the feasibility for the SMC
3. The Levels of Growing Stock meeting and tour will be on July 9/10; those interested should contact Norm Andersen to get on the mailing list.
4. The second International Precision Forestry Symposium on June on the UW campus; those interested should contact David Briggs or Megan O'Shea
- 5.

The status of the potential analysis projects that were discussed and prioritized at the Spring meeting was reviewed by David Briggs. The status report (Appendix D) shows that some of these have either been completed or have potential funding. The list also has additions. Members were asked to send potential additions for future consideration to David Briggs.



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**APPENDIX B**  
**STAND MANAGEMENT COOPERATIVE**  
**Dolphins Resort, Campbell River, B.C.**

**Fall Meeting**

**September 16-18, 2002**

**AGENDA**

- Sept 16**
- Topic**
- 9:00 **Welcome:** Norm Andersen , Chair SMC Policy Committee  
**Introductions:** David Briggs, SMC Director
- 9:10 **Discussion: SMC By-Laws, Contract & Licensing Agreements**  
SMC Finance Committee  
UW Office of Intellectual Property and Technology Transfer
- 10:15 **Break**
- 10:35 **Discussion: SMC By-laws, cont.**
- 12:00 **Lunch**
- 1:00 Afternoon Free
- 7:00 **SMC Budget for 2003**  
David Briggs
- 7:20 **2002/2003 Field Schedule**
- 7:30 **Spring & Fall 2003 Meetings**  
**Update on Project List**
- 8:00 **Discussion: Type IV Installations**
- 8:30 **Collaboration between Forest Service Research and Forest Industry**  
Charlie Peterson, Portland Forest Sciences Laboratory  
**The USFS Focused Science Delivery Program**  
Jamie Barbour, Program Manager  
**Adjourn:**
- Sept 17**
- 7:00 Depart
- 8:00-9:00 Eve River variable retention experiment Travel to Port McNeill from
- 9:00-11:00 Travel to Port McNeill, walk around the eco-trail, lunch at Beaver Lak
- 12:30-2:00 The SCHIRP experiment
- 2:00 – 3:30 Visit a couple of SMC Type III's and maybe the Cw pruning experiment
- 3:30 –6:30 Travel back to Campbell River

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**Sept 18**

- 7:00 Depart
- 7:00-12:00 Visit the STEMS site in the Sayward  
Visit some of TimberWest's forest lands
- 12:00 Back in Campbell River, meeting adjourned

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**APPENDIX C 2003 Budget Projection**

<b>2003 Financial Support</b>		
<b>Cooperator</b>	<b>Amount</b>	<b>%</b>
<b>Formula dues:</b>		
Boise Cascade	\$ 17,126	
Bureau of Land Management	\$ 73,730	
Campbell Group	\$ 28,868	
Cascade Timber Consulting	\$ 16,549	
Forest Systems, Inc.	\$ 7,777	
Hampton Tree Farms	\$ 16,786	
King County Dept. Nat. Res.	\$ 5,845	
Longview Fiber	\$ 27,309	
Oregon Dept. Forestry	\$ 34,488	
Pilchuck Tree Farms	\$ 6,355	
Plum Creek Timber Co./TTC	\$ 24,792	
Pope Resources	\$ 15,529	
Port Blakely Tree Farms	\$ 15,694	
Quinalt Dept. Nat. Res	\$ 7,988	
Rayonier Timberlands	\$ 23,412	
Simpson Timber Co.	\$ 22,970	
Timberwest	\$ 35,516	
Washington DNR	\$ 46,821	
West Fork Timber Co. LLC	\$ 7,625	
Weyerhaeuser Co.	\$ 75,730	
	\$ -	
<b>Total</b>	<b>\$ 510,909</b>	
Member Contracts, Grants, etc.	\$ 4,500	
<b>Subtotal</b>	<b>\$ 515,409</b>	<b>58.5%</b>
Less credits for in-kind days	\$ -	
<b>Net Cash Contributions</b>	<b>\$ 515,409</b>	
<b>Institutional Contributions</b>		
B.C. Ministry of Forests	\$ 20,000	
Oregon State University	\$ -	
University of Washington	\$ 125,000	
<u>USFS PNW Research Station</u>	<u>\$ 20,000</u>	
<b>Subtotal</b>	<b>\$ 165,000</b>	<b>18.7%</b>
<b><u>External Research Grants</u></b>	<b>\$ 200,000</b>	<b>22.7%</b>
<b>TOTAL</b>	<b>\$ 880,409</b>	<b>100.0%</b>

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<b>2003 BUDGET</b>		
<b>INCOME</b>	<b>Amount</b>	<b>%</b>
Formula Funding	\$ 510,909	99.1%
<u>Contracts</u>	<u>\$ 4,500</u>	0.9%
Subtotal	\$ 515,409	100.0%
<u>In-kind credits</u>	<u>\$ -</u>	0.0%
<u>Net Cash Contributions</u>	<u>\$ 515,409</u>	100.0%
<u>2001 Ending Balance</u>		
<u>Forward</u>	<u>\$ -</u>	0.0%
<b>Total Funds Available</b>	<b>\$ 515,409</b>	<b>100.0%</b>
<b>EXPENSES</b>	<b>Amount</b>	<b>%</b>
<b>Excludes summer veg crew</b>		
Salaries	\$ 266,493	51.7%
Benefits	\$ 57,000	11.1%
Travel	\$ 50,000	9.7%
Equipment & supplies	\$ 20,000	3.9%
Contract Services	\$ 24,000	4.7%
Tuition	\$ -	0.0%
<b>Subtotal</b>	<b>\$ 417,493</b>	<b>81.0%</b>
<u>Indirect</u>	<u>108,548</u>	<u>21.1%</u>
<b>Total Direct &amp; Indirect</b>	<b>\$ 526,041</b>	<b>102.1%</b>
<u>Research Contracts</u>	<u>\$ -</u>	<u>0.0%</u>
<b>Total Expenditures</b>	<b>\$ 526,041</b>	<b>102.1%</b>
<b>2003 Ending Balance</b>	<b>\$ (10,632)</b>	<b>-2.1%</b>
<b>Total Funds Available</b>	<b>\$ 515,409</b>	<b>100.0%</b>

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**APPENDIX D  
POTENTIAL SMC ANALYSIS PROJECTS**

**Status Report: September 2002**

A large amount of information has been collected from SMC Installations and is in the database. The attached pages list a number of possible projects, most of which could be completed in 1 year or less by a graduate research assistant. We could begin immediately on one or more of these by allocating some of the 2002 budget. Since there are more possible projects than available RA's or funds, it would be helpful to get a sense of which are of greatest interest to SMC members and try to match these with available or incoming graduate students.

**Please review the brief project descriptions on the attached pages and vote for the 3 that you think are the most important by circling their titles.**

Also, if you think of other projects that are not on the list please send me a brief description. We can add them to the list for future discussion and ranking.

**I. PROJECTS COMPLETED, FUNDED, OR WITH FUNDING PENDING**

**J. [Tally 3] Relationship between Relative Density (RD) and crown length or crown closure.**

It has been observed by the field crew that one can estimate the relative density (RD) of a plot from the amount of crown closure and recession and subsequent understory shading. This study would examine this to determine if percentage of live crown can be closely related to RD and if it provides a reasonably simple method to calculate thinning triggers as it is easier to calculate live crown percentages than to calculate RD in the field.

**Status: Analysis completed by Eric Turnblom's Grad Student Mark Senger; journal article being prepared**

**E. [Tally 6] Title: Effect of Planting Spacing on Growth of Type III Installations**

Many Type III installations have 3 or more measurements permitting an analysis of basic growth trends to date in overstory stand statistics (DBH, total height, basal area, volume), branching, and development of understory vegetation and snags (mortality). Repeated Measures ANOVA, ANCOVA, and regression models developed where appropriate.

**Status: \$30K proposal to USFS Focused Science Delivery Program to support a graduate student for projects E and components of N approved but on hold due to the fire budgeting issue.**

**N. [Tally 6] Analysis of the Stem Sectioning Database.**

A large data set of trees, representing a broad cross-section of tree sizes and crown classes, from SMC Installations have received detailed stem sectioning and all data is in the SMC database. This project will calculate taper & stem form (inside & outside bark), growth, and volume (cubic & board foot), develop relationships, and compare with existing equations. Examples include

1. Comparison of height growth rate and stem form. Trees in the stem sectioning database come from all crown classes; is there are relationship with height growth and/or crown class?
2. Compare with volume equations such as Bruce & Demars

**Status: Luciana Ingaramo will work on this during Fall Quarter**

3. Compare with existing taper /stem form models
4. Examine the impacts of thinning, fertilization, and pruning.
5. Bark thickness differences among stands & treatments
6. Develop conversion factors

**Status: \$30K proposal to USFS Focused Science Delivery Program to support a graduate student for projects E and components of N approved but on hold due to the fire budgeting issue.**

**II. PENDING PROJECTS WITH RANKINGS FROM SPRING 2002****A. [Tally 1] Title: Type I Installation Status Report: 1986-2001**

Each Type I installation has a plot summary report generated from the database. However, there have been no counterparts summarizing all of the Type I's for a species. This project would develop such a report for all Type I's combined, segregated by species. A report procedure and format would be developed that that can be easily repeated and updated after each field season. The report will include graphical trajectories of overstory stand statistics, branch diameter and count, mortality & snags, treatments that have been implemented, etc. It will include simple trendline regressions and other summary statistics but will not attempt to develop in-depth models (these would be separate analyses). The initial report would include all measurements through the 2001/02 field season.

**B. [Tally 1] Title: Type II Douglas-fir Installation Status Report: 1986-2001**

Each Type II installation has a plot summary report generated from the database. However, there have been no counterparts summarizing all of the Type II's for a species. This project would develop such a report for all Type II's combined, segregated by species. A report procedure and format would be developed that that can be easily repeated and updated after each field season. The report will include graphical trajectories of overstory stand statistics, mortality & snags, treatments that have been implemented, etc. It will include simple trendline regressions and other summary statistics but will not attempt to develop in-depth models (these would be separate analyses). The initial report would include all measurements through the 2001/02 field season.

**C. [Tally 1] Title: Type III Installation Status Report: 1986-2001**

Each Type III installation has a plot summary report generated from the database. However, there have been no counterparts summarizing all of the Type III's for a species. This project would develop such a report for all Type III's combined, segregated by species. A report procedure and format would be developed that that can be easily repeated and updated after each field season. The report will include graphical trajectories of overstory stand statistics, branch diameter and count, understory vegetation, mortality & snags, treatments that have been implemented, etc. It will include simple trendline regressions and other summary statistics but will not attempt to develop in-depth models (these would be separate analyses). The initial report would include all measurements through the 2001/02 field season.

**D. [Tally 1] Title: Status of Type I plots precommercially spaced using two different methods**

Type I installations contain a subset of re-spaced plots that were based on both systematic and best-tree selection criteria. This study would produce graphical trajectories summarizing basic growth trends to date in overstory stand statistics (DBH, total height, basal area, volume), branching, and development of and snags (mortality). Repeated Measures ANOVA, ANCOVA, and regression models developed where appropriate.

**F. [Tally 4] Title: An comparison of growth on Type IIIp's to Type IIIpa's across spacings**

Type IIIpa's are plots within Type III installations where early thinning and pruning experiments have been implemented. Many of these have been measured two or more times. This study would analyze of basic growth trends to date in overstory stand statistics (DBH, total height, basal area, volume), branching, and development of understory vegetation and snags (mortality) of Type IIIpa's compared to their untreated counterpart plots (Type IIIp's). Repeated Measures ANOVA, ANCOVA, and regression models developed where appropriate.

**G. [Tally 1] Title: Status of Fertilization Treatments on Type I Installations**

Type I installations contain a subset of plots that are following fertilization regimes. This study would produce graphical trajectories summarizing basic growth trends to date in overstory stand statistics (DBH, total height, basal area, volume), branching, and development of and snags (mortality) with comparisons to their unfertilized counterpart plots. Repeated Measures ANOVA, ANCOVA, and regression models developed where appropriate.

**H. [Tally 2] Title: Relationship between foliar and litter nutrients and their relationship with tree/stand growth response.**

Foliage and soil/litter samples have been collected from control and fertilized plots on Type I installations and nutrient analyses have been completed. This study will examine relationships between these and with growth response.

**I. [Tally 4] Title: A Comparison of SMC Type I Installation Response to Fertilization with RFNRP Plantation (Phase IV) and Natural Stand Response (Phases I, II, III).**

While many past analyses were conducted on the response of Douglas-fir to fertilizer using the data collected from the various phases of RFNRP, no comparison has been made with the response to fertilization in the SMC Type I installations. This study would perform such a comparison to examine potential differences and similarities between these different sets of fertilization trials and implications for modeling.

**K. [Tally 2] Relationship between live crown percentages and annual increment.**

While the relationship between annual increment and live crown, SMC has a very large set of data across a broad range of treatments in the Installations. This study would examine this relationship in the context of the broad range of young plantations represented by the installations.

**L. [Tally 1] Bear damage by treatment.**

Bear damage is consistently identified and quantified when plots on an installation are measured. Anecdotal observation suggests that bears are more likely to hit open grown, unpruned trees. Bear damage does not always result in the death of that tree but likely has an effect on the growth and health of that tree. This study would analyze the incidence of bear damage in SMC installations and the impact on growth.

**M. [Tally 0] Monitoring Root Disease in Type I, II and III Installations.**

Pockets of root disease have been noted and are spreading on some Type I, II and III installations. This study would involve some field work to perform initial mapping of these pockets. Each subsequent remeasurement would identify and map the location of newly affected trees. Analyses rate of spread and of impact on growth will be conducted.

**O. [Tally 3] Effect of thinning, fertilization, and combined regimes on branch diameters and branch counts of Type I Installations.**

An analysis of these branch characteristics, measured with the SMC branch protocol, has been completed on ISPA, ISPA/2, and ISPA/4 plots that receive no further treatment. We have branch protocol data on all of the additional plots that are undergoing thinning and/or fertilization treatments. This study would perform a similar analysis on these and make comparisons with the plots that receive no further treatment.

**P. [Tally 1] Compare vegetation indices obtained with the temporary pre-planting grid with indices from the permanent vegetation survey plots.**

Before Type III's are planted, a grid of temporary plots is placed over the Installation to assess existing vegetation. After planting and permanent measurement plot establishment, a set of 4 permanent vegetation survey plots is placed within each measurement plot. This study would compare the pre-planting and post-establishment vegetation data and examine the trajectories of understory vegetation development. Many Installations now have the initial temporary plot survey plus several repeated measurements on the permanent plots

**Q. [Tally 1] Swiss Needle Cast Development on SMC Installations:**

Presence of SNC is noted on Installations but no attempt has been made to determine the impact it may be having on growth. This study would develop collaboration with the SNC Cooperative to survey the SMC installations for SNC severity and determine the impact SNC on growth and to see if there are treatment differences.

**R. [Tally 2] Growth impacts of pruning.**

Repetitive measures now exist that can document immediate and long term effects of different levels of pruning severity on tree & stand growth. This study would produce graphical trajectories summarizing basic growth (DBH, total height, basal area, volume) trends of pruned vs unpruned stands and analyze the impacts of pruning severity. Repeated Measures ANOVA, ANCOVA, and regression models developed where appropriate

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### III. NEW ADDITIONS TO LIST

**S. [New: June 4, 2002] Relationship between data collected with SMC branch protocol, log knot indices, and log grades and sorts.**

This SMC branch protocol measures the diameter of the largest branch and counts the number of branches that are at least half this diameter for Douglas-fir and western hemlock. These data are collected in the vicinity of breast height and models have been developed for Douglas-fir Type I installations. A simple next step would be to relate the diameter of the largest BH vicinity branch to the largest-limb-average-diameter (LLAD) used in the lumber and veneer recovery study (Fahey et al 1991) thereby providing a method for linking the protocol and that study. Another useful step would be to establish linkages with the conventional log grading system and with the more refined system of log sorts (Bowers 1997). Collectively, these linkages could provide improved methods for predicting log and product quality and value based on the relatively simple field protocol.

Could re-measure some of the SMC crown study trees from a decade ago for some of this. These would give initial & final branch data plus known treatment history.