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## LONG-TERM SILVICULTURE RESEARCH SITES WORKSHOP Victoria, BC, October 25-28, 1998

Summary Report by:  
Jane Perry, Chris Hollstedt and Michaela Waterhouse  
Southern Interior Forest Extension & Research Partnership

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### General Overview

Approximately 100 registrants attended this conference, with the highest representation by Canadian Forestry Service staff, one of the main sponsors of the event. Other participants included MOF Research staff from headquarters and most regions, some industry representatives, international participants (Finland, Mexico, United States), private consultants and two SIFERP representatives. Everyone at the workshop was committed to long-term research for its known importance and value, and as workshop participants they were looking for methods to ensure their projects become a research legacy. One of the main issues for British Columbia participants was a general concern over future funding for long- and short-term research in BC and the continuation of FRBC support after the “tsunami wave” of research funding a few years ago.

Various introductory and keynote speakers, along with presenters at the concurrent sessions, focused on three fundamental issues for long-term research: long-term research sites, planning for the long term, and “getting the goods out” (extension). Presentations will be published in the Forestry Chronicle and recommendations from this workshop will be put forward at the provincial, national and international levels. An overview of the conference’s main issues is as follows:

- Partnerships for long-term research are crucial for maintaining scientific and financial support and providing key specialists to the research team, but they need a common vision and plan. The strengths and resources of each partnering agency can help to address long-term barriers and limited resources.
- Successful long-term research needs:
  - Security of land tenure.
  - A sense of place for the site, such as an experimental forest, with the necessary infrastructure.
  - Committed funding, preferably from a trust fund or endowment.
  - Protection of the research site from natural factors (wildfire, pests, etc.) and artificial damage (road building, development, etc.).
  - An individual who will “champion” the project through good times and bad and who can remain with the project for the long term.
  - Networking and promotion with other scientists and with non-traditional audiences to maintain support and extend results.
- Long-term investment in research and treatment efficacy monitoring is important.
- Inter-disciplinary research installations are most useful for practical application. Plan for this before trials are established, as it can’t usually be done well after. Use the simplest experimental design possible.
- A project coordinator and statisticians are essential to long-term research projects.



- The planned “failure” treatments show foresight and are answering today’s questions. These treatments contribute to the site’s legacy value.
- Data management needs significant improvement. The value of “old data” cannot be predicted and it is usually much higher than ever anticipated. These data need to be documented, archived and made accessible to potential users. On-line biological meta databases are the direction for future research and in some cases, the basis for sustained funding.
- Treatment effects are realized over the long-term, and since the initiator most likely will not be the one seeing these results it is important to keep good records.
- Transferring of incremental results is required to improve practices (adaptive management).
- Effects at the stand to landscape/watershed to forest estate/ecodistrict levels need to be investigated and observed.
- Ongoing dialogue is critical to continuing to learn from research investments as well as make the investigations more meaningful. Researchers need to involve their colleagues and resource practitioners and managers.
- Promotion and marketing of a long-term research site are important, but are not to be confused with technology transfer.
- Technology transfer needs to be built into the design of research projects, preferably with an extension specialist part of the project team.

**Paul Addison, Director General, Pacific Forestry Centre, CFS**

- Two main points:
  - Need to deal with *practical* issues
  - Talk to each other! Link people, share information to learn
- CFS will be working at national level to coordinate.

**Larry Pederson, Chief Forester, Ministry of Forests**

- Budget cuts and expenditures for short-term needs have reduced long-term research funding.
- We do need long-term support – develop programs and partnerships to achieve this.
- Long-term research is under pressure due to inadequate funding.
- Comparison of long-term research with current stock market:
  - Lack of influx of new funds
  - Uncertainty in next few years
- We need a strategy to address this!
- New approach in MOF Research Branch strategic plan – “work smarter.”
- Cross-disciplinary studies
- Trend to fewer, more integrated long-term research sites.
- Good to make workshop theme research *sites*, not projects.
- Use interim results from benchmark studies.
- Need to use our “collective intellects.”
- Need increasing underpinnings of science, eg. for certification, criteria and indicators to demonstrate responsible forest management with public support by meeting broad public objectives
- Industry stability and forest policy are big questions for MOF Executive now.
- Keep working on partnerships.
- FORCAST – Forest Coalition for Forest Science and Technology

**Gary Hogan, Pacific Forestry Centre**

*Why are we here?*

- Forestry is changing and will continue to change.
- Different expectations of forest managers.
- \$ are tight.
- Multi-partner, multi-agency.



*What is your mental framework?*

- Wants to see high level of participation by attendees at workshop.

**Alan Vyse, Ministry of Forests, Kamloops Research**

- We've seen an historical 'blip' in establishment of research sites in 1990-95, but will this funding continue? (concern over continued FRBC support for research)
- Research sites vulnerable to various threats, such as wildfire, vandalism, loss of \$ to maintain.
- Recommendations from this workshop to put forward at provincial, national and international levels.
- Need full involvement by participants and research community.
- Salute to the pioneers in BC forest research:

*Coast*

- S.R. Schenstrom – Cowichan Lake trials, 1928
- George Warrock
- Alan Orr-Ewing – forest genetics
- Ralph Schmidt – species trials

*Interior*

- Percy Barr – Aleza Lake Forest
  - Dave Arnott and John Revel
  - Harry Smith – Southern Interior high elevation (original data lost)
  - Keith Illingworth – Pl provenance with 60 installations x 2 blocks each
  - Wayne Johnstone – Pl
- We're using their work today!

**Tony Rotherham, Canadian Pulp and Paper Association**

- Exponential rate of change over time since 1500's.
- Everyone is pulled in every direction to meet society's needs – not dull but not easy.
- Challenges to Canadian forest industry:
  - Biodiversity
  - Climate change and reducing emissions
  - Endangered species
- Quandary: With high demand and high prices for forest products – desperate customers. With low demand and low prices – picky customers (current situation).
- More industry mergers expected.
- Strategic alliances between big suppliers and big customers.
- Technology changing faster and faster.
- Canadian production of pulp and paper, lumber and panels worth app. \$50 billion/year and 70-75% of productions is exported.
- Forest research needs angry CEO's being forceful with government. VP Woodlands provide support for this.
- Industry not doing research due to public ownership of forest land base and long rotation for Canadian forests.
- Need tenure reform outside present framework.

*Needs:*

- Forest inventory program across Canada – prove sustainable forest management with respect to volume harvested and still growing.
- Growth and yield on natural stands, all age classes to validate current tables.
  - Europeans finding big increase in growth from increased CO<sub>2</sub> and nitrogen deposition.
  - Changing (lowered) utilization standards.

**Steve D'Eon, Petwawa Research Station**



- Security needed in: land tenure, protection of research site, long-term funding, continuity of research staff leading the project.

#### **Ted Wilson, Glentress Forest, Scotland**

- Scotland's forest cover was reduced from 60-70% to <5% through agriculture, sheep farming, excessive deer browsing.
- Douglas-fir and Sitka spruce planted in the 1940's as even- and uneven-aged stands.
- Research has been "mission-oriented" – reactive to problems (eg. windthrow) and very applied.
- Conservation of native woodland.
- Glentress is a 'working forest' and 117 ha in area with app. 2 ha/year harvested.

#### **David Marshall, Oregon State University, LOGS Studies**

- LOGS = Levels of Growing Stock
- Cooperative of Canadian Forestry Service, OSU, US Forest Service, Weyerhaeuser, etc. with MOF as new member
- 9 sites with BC sites at Sayward Forest (est. 1969) and Shawnigan Lake (est. 1970).
- All treatments showed increased basal area over time.
- Oversight committee meets annually at one of the sites.
- Each cooperator is responsible for site maintenance and measurements on own installation. Data are shared and kept internal unless agreed to distribution by that cooperator.
- Strong inverse relationship between growth and growing stock.
- Differences between volume and BA growth.
- Control has highest volume but two treatments have higher merchantable volume than the control.

#### *Summary*

- Cooperative ventures can work. Needs common vision and plan. The advantage is in the cooperation aspect with a balance of inputs (resources) and strengths of the cooperators.
- Plot size and buffers are important.
- The planned "failure" treatments are answering today's questions – shows foresight.
- Document procedures and site history.

#### *Challenges*

- How to archive information? (and not just data)
- How do we better disseminate information?
- How to get information to less traditional audiences?

#### **Ian Morrison, Great Lakes, CFS – Acid Rain Effects in the Turkey Lakes Watershed**

##### *Lessons learned:*

- Issue-driven
- Broad-based, in-depth support is critical – gets political action.
- Be prepared when the 'go-ahead' is given. Use the preparation/lead time well.
- Have an overall vision with focus and scope.
- Project architecture – framework for 'doable objectives.'
- Careful site selection – consider distance and access.
- Multi-disciplinary approach to research – yields synergy in application.
- Well-framed questions lead to well-framed objectives.
- Don't disparage top-down planning – it's the vision.
- Need security of tenure and security of funding for long-term monitoring.
- Steering committee meets twice per year.
- Multi-faceted forest research needed for multi-faceted forest management.
- Need a *network* of sites – representative sites accessible to a broad range of interests.



**Bob Powers, US Forest Service**  
**“If you build it, will they come?”**

- Long-term installations like Shawnigan Lake and Petawawa are rare and are “gems.”
- Forestry research is far younger than agricultural research – why?
- Foresters write much and practice little and are seen as only wanting to cut trees.
- See David Smith’s definition of silviculture.
- If good science is done and no one hears of it ... did it happen? Need **communication** with each other and with the public.
- Scientists talking to scientists won’t work in the long term.
- Successful research programs lasting >10 years need champions to fight through good times and bad.
- Long Term Site Productivity program of long-term research – 60 sites across North America and 40 affiliated sites.
- Build on existing studies if possible, but start fresh if necessary.
- Tackle current issues but plan for the long haul.
- Network, network, network – including with support groups.
- Promote, promote, promote – don’t be shy!

**Jerry Franklin, University of Washington**

- The “invisible present” – from ‘so what?’ (one incident) to climatic or other trends. There may be subtle change with great variability (eg. climate change).
- Large scale (landscape level) and long term.
- Scientists are creative – need information sooner than available – take shortcuts such as 1. chronosequences that exchange space for time but make some gross assumptions and don’t know starting point, and 2. Retrospective studies. *But*, the phenomenon must be observed. Therefore, long-term ecological research is essential for critical testing of ecological hypotheses.
- Forest management now is a test of hypotheses – he’s glad to see all the long-term work going on in Canada – more here than in US.
- Old growth forests take up more carbon than they expire
- Long term and large scale research needs long-term commitments of personnel and \$. Also need a critical mass of scientists so that the project is worthwhile – not easy! Scientists are not usually willing to compromise. Individual, small experiments are much easier – but the value is not as high.
- Importance of place – don’t overlook or forget. Helps keep the research group together.
- Don’t be subtle in differences between treatments. Need to find thresholds, etc.
- KISS principle – don’t load up experiments (and extension). Only a few variables to help clarify results.
- Watch out for confounding treatments – very common with silviculture research. Big variation in all 4 main silv. systems.
- Long-term experiments almost always end up being used in ways unimagined at the outset.

*Challenges to successful large scale, long term research projects:*

- Leadership – most important element. Need deep individual commitment. Also important to address the issue of passing onto next generation – critical for continuity.
- Synthesis of results – extension agent helps.
- Sustained funding – ultimate solution is a trust fund or endowment.
- Data management – documentation, archiving, accessibility. Typically ¼ of total budget. Sharing a criteria for continued funding.
- Social – build national and local constituencies. Prompt information availability. Don’t assume everyone will like the results or even want more information. Possibly perceived as a threat. Create local ownership.
- Long term, large scale research creates a legacy for future generations.



### **Darwin Burgess**

#### *Summary*

- Develop study with partners, especially applied partners.
- Multidisciplinary approach.
- Appropriate design
- Plan to reach a number of goals – start with \$ available now, don't worry about future \$. Build long term in later if necessary.
- Results to clients – don't sit on data, communicate results.

### **Larry Spears, Canadian Biodiversity Information Initiative**

lspeers@mus-nature.ca

www.nature.ca//CanBII

- OECD Mega Science – Biodiversity (31 countries)
- Data management facilities – virtual
- Lack of mega-funding because lack of a common goal.
- Complexity of biology – caused or resulted in fragmented efforts.
- In US, President's Committee of Advisors on Science and Technology – defined biodiversity as “natural capital” that supplies “ecosystem services” such as water supply, etc.
- Need to incorporate into corporate decision making and standard economics
- Tie to policy
- Need information.
- Over time, information content successively decreases in stages of publication, details lost, lead scientist retires, lead scientist dies.

- Workshop Summary -

### **Gary Hogan**

#### *Planning and Design*

- Know the problem
- Relevant especially industrial forestry
- What is your desired outcome?
- Build support partnership.
- Commitment from management.
- Scale and \$
- Interdisciplinary/multidisciplinary
- Bottom-up vs. top-down design. Must fit organization – strategic plan.
- Strong contrasting treatments.
- Team building
  - Commitment, willingness to compromise
  - Track record
  - Team coordinator/leadership

#### *After Implementation*

- Continued commitment from scientists and management.
- Promote
- Do the tech. transfer – guarantees support.
- New paradigms – eg. Turkey Lakes, 15 year acid rain – harvesting experiments



- Succession planning – retirement
- Three D's: Durability, documentation, redundancy
- Three M's: Maintenance, monitoring, measurement
- Two C's: Coordination and communication

#### *Funding*

- Champion required
- Long-term and short-term goals
- Current paradigms – value added
- Promote
- Build your support base
- Tech. transfer – extension

#### *Data Management*

- Need a dedicated resource person
- Identify early in project
- Meta data standard
- Don't re-invent the wheel.
- Budget (10-15%)
- Scale

#### *Networking*

- \$ are limited
- Identify your partners
- Tie to current paradigms
- Promote
- Build your support base
- Think regional, national, international.

#### *Tech. Transfer*

- Problem with definition
- Identify your audience
- Vital for continued support
- Tie to continued paradigms
- Specialist may be required
- Opportunity for training
- Methods targeted to audience
- Written material quality control measures.
- Success = change (impact)