



COASTAL SILVICULTURE  
COMMITTEE

*Winter Workshop 2003*  
*"The Sustainability of High Yield Timber Management"*



January 29 & 30, 2003  
Coast Bastion Inn  
Nanaimo, British Columbia





COASTAL SILVICULTURE  
COMMITTEE

CSC Winter Workshop 2003

## *“The Sustainability of High Yield Timber Management”*

# *Acknowledgements & Thanks*

We wish to thank the volunteers of the Coastal Silviculture Committee and their employers for their time and dedication in putting this year's Winter Workshop together and making it a reality.

**Keith Thomas, *Co-Chair***, Ministry of Forests  
**Colin Buss, *Co-Chair***, TimberWest  
**Lisa Meyer, *Sctry/Treas.***, Ministry of Forests

**Al Powelson**, ALTRA Forestry Ltd  
**Bill Wagner**, Canadian Forestry Service  
**Diane Douglas**, Ministry of Forests  
**Graham Hues**, Western Forest Products  
**Jim Hunt**, J.Hunt & Assoc. Inc.  
**Joanne Pickford**, FMIBC  
**Keith Thomas**, Ministry of Forests  
**Mel Scott**, Ministry of Forests  
**Peter McAuliffe**, Pelton Reforestation  
**Emma Neill**, Ministry of Forests  
**Mike Bowering**, D.R. Systems  
**Russell Brewer**, GFC Forest Mgt. Ltd.

**Tom Hedekar and Doug Ellis** Malaspina University-College: (*workshop  
administration*)

Special thanks to all our speakers & presenters and their employers

COVER PHOTO: “Pruned stand on Malaspina’s woodlot” courtesy of Doug Ellis

*Coastal Silviculture Committee, Winter Workshop, Jan 29 & 30, 2003 Nanaimo, BC*



*"Winter Workshop 2003"*

**January 29 & 30, 2003**

Coast Bastion Inn,  
Nanaimo, BC

*"The Sustainability of High Yield Timber  
Management"*

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# CSC Winter Workshop 2003

## The Sustainability of High Yield Timber Management

### ~Introduction~

Exclusive management of forests for high-yield timber production is a contentious proposition.

There are those who perceive this type of forest management to not be sustainable and that it will cause ecosystem degradation and loss of productivity over time. The economics are also questioned because of the predicted decline in prices of solid wood products due to increased competition from developing industries in other forest regions. In addition there are anticipated environmental and social risks that are associated with this form of management: monocultures with vastly reduced biodiversity, chemical pesticides and fertilisers, disease and abiotic injury of trees resulting from genetically enhanced phenotypes, and de-stabilising of local communities due to decision-making based on short-term economics rather than longer-term considerations. Historical examples of high-yield management have had limited success.

On the other hand there are those who perceive high-yield timber management as an avenue to providing greater wealth and prosperity to both industry and the public, with an additional net benefit to society by focusing more of the wood production on less land, leaving larger areas for non-timber uses. Although forest product competition is intense, the economics are perceived to be sound because demand is anticipated to outstrip supply over the next century as worldwide development occurs and global population increases. In addition, forest technology can be used to sustain high-yield forests in perpetuity, and the environmental and social risks will be limited through judicious management of a smaller land-base. Current examples in the Pacific Northwest suggest that with adequate markets, investment-returns of 8% or more are possible.

The question before us is: *Should a portion of the public forest in Coastal BC be set aside for high-yield timber production?* Come to the 2003 Coastal Silviculture Committee (CSC) Winter Workshop to hear this question answered.

We know you will find this year's program to be educational and entertaining.

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Keith Thomas  
Colin Buss

Co-chairs of the CSC Winter Workshop 2003

**Coastal Silviculture Committee, Winter Workshop, Jan 29 & 30, 2003 Nanaimo, BC**  
**The Sustainability of High Yield Timber Management**

<b>Day 1</b>	<b>AGENDA</b>
0800 - 0850	Registration/Check-in (Coffee and Pastries)
0850 - 0900	<b>Introduction</b> – Keith Thomas
0900- 0930	Key note speaker – <b>Dr. John Barker</b> (Professor Emeritus, Univ. of BC)
	<b>Regeneration: From Seed to Site</b> (Peter McAuliffe – Moderator)
0930 - 1000	Managing the genetic resource – <b>Annette van Niejenhuis</b>
1000 - 1030	What's New in the Nursery? – <b>Iola Elder</b> (Sylvan Vale)
1030-1045	Coffee
1045 - 1110	Minimising time to "Freely Growing Achievement" through better nursery/plantation co-ordination – <b>Dave Lloyd</b> (Pelton)
1110 - 1135	Plantation Establishment, A Field Forester's perspective – <b>Rick Monchak</b> (TimberWest)
1135 - 1200	CSC Business Meeting (AGM) – <b>Keith Thomas</b>
1200 - 1300	Buffet Lunch
	<b>High-yield Timber Management</b> (Colin Buss – Moderator)
1300 - 1330	The Basics of High Performance – <b>George Fenn</b> (Private land owner Oregon)
1330 - 1400	Ecologically-based decision support tools for assessment of the sustainability of high yield timber management – <b>Dr. Hamish Kimmins</b> (Univ. of BC)
1400 - 1430	Silviculture Investments and Marketing – <b>Hamish Kerr</b> (TimberWest)
1430 - 1500	Coffee/Trade show
1500-1530	Ecosystem Perspective – <b>Herb Hammond</b> (Environmental consultant)
1530-1600	The Working Forest – <b>Bruce Sieffert</b> (Min. Sustainable Resource Management)
1600 - 1645	<b>Panel Discussion:</b> Should a portion of the public forest in Coastal BC be set aside for high-yield timber production?
1645 - 1700	Wrap-up and adjournment - <b>Tom Hedekar/Doug Ellis</b>
1700 - 1815	Trade show No-host bar
1815 - 1915	Dinner
1915 - 2015	Speaker: Struggling Towards the "New Era" in Sustainable Forestry: A Status Report on BC Liberal Policies <b>Dr. George Hoberg</b> (Univ. of BC)

<b>Day 2</b>	<b>AGENDA</b>
0700 - 0830	Breakfast Trade show
0830 - 0835	Welcome to Day 2
	<b>Standards - Do we have them?</b> (Mel Scott – Moderator)
0835 - 0910	Designing, Documenting and Delivering on Timber Production - <b>Ralph Winter</b> (BC Min For)
0910 - 0945	Results-based silviculture survey and modelling system to regulate reforestation obligations - <b>Eleanor McWilliams</b> (JS Thrower and Assoc.)
0945 - 1015	Coffee break – Trade show
1015-1050	<b>Silviculture Standards and Guidelines for Maintaining or Recruiting Habitat Objectives</b> - <b>Colene Wood</b> , (Min. of Water, Land and Air Protection)
1050-1125	Monitoring Standards – <b>Dr. Don Reimer</b> (D.R. Systems)
1125-1200	Setting auditable standards - <b>Ian Brown</b> , P.Eng., AGDM
1200-1215	Closing Remarks and Adjourn

**We thank the following exhibitors for their support:**

<b>Firm</b>	<b>Contact</b>	<b>Phone</b>
Pelton Reforestation	Peter McAuliffe	(604) 465-5411
JRP Consulting	Rod Poirier	(250) 956-4522
J.S. Thrower and Associates Ltd.	Hamish Robertson	(604) 739-9887
Forest Practices Board	Grant Loeb	(250) 356-1380
Sinocast Imports Inc.	Daolin Liang	(604) 689-4885
Noel Roddick Ltd.	Bruce Colquhoun	(604) 946-8338
FORREX	Jennifer Turner	(604) 463-0328
Western Aerial Applications	Jim Cooper	(604) 792-3354

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# BUSINESS MEETING AGENDA, JANUARY 29, 2003

## CSC Coastal Silviculture Committee

### Call to order

Additions to the agenda – items for discussion

Adoption of the agenda – motions from the floor

### Business Arising

#### 1. Bursary distribution

- UBC                    2 @ \$ 500.00
- Malaspina            2 @ \$ 500.00
- BCIT                    2 @ \$ 500.00
- FMIBC                1 @ \$ 500.00
- UNBC                 1 @ \$1000.00

Discussion of Bursary distribution for 2003.

2. Presentation of Bursary to Malaspina College recipient(s), if present.

3. Financial Statement January 2002-December 2002 (included)

#### 4. Process for electing Directors

- list of current directors. (included)
- Maximum is 15; if more nominations are received than vacancies, current directors will vote. Self-nomination encouraged.

#### 5. Silviculturist of the Year Award

Description of the award – past recipients – Bill Beese, Gordon Weetman, Reinhard Mueller, Karel Klinka.

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#### 6. Closing remarks

- CSC members welcome to contribute ideas to the Directors
- Better yet become a Director.

**Financial Report Jan. 01 to Dec. 31, 2002**  
**Coastal Silviculture Committee**  
**DECEMBER 2001 BALANCE**

			9,996.09
<b>CSC BUSINESS COSTS</b>			
Post office box	77.04		
Annual report filing fee	25.00		
		(102.04)	(102.04)
<b>BURSARIES</b>			
Bursaries – UBC, BCIT, FMIBC, UNBC, Malaspina	4,500.00		(4,500.00)
<b>WINTER WORKSHOP</b>			
<b>INCOME</b>			
Registration	29,844.36		
		29,844.36	
<b>EXPENSES</b>			
Accounts adjustment from previous workshop	528.10		
Hotel – catering, A/V rental, gratuities	18,315.81		
Printing costs – brochures, folders, tags, etc	971.69		
MaterCard/VISA charges	362.10		
Extension Services	4,134.20		
Presenter Expenses	171.05		
		(24,482.95)	
			5,361.41
<b>SUMMER WORKSHOP</b>			
<b>INCOME</b>			
Registration	16,121.12		
Liter deposit refund	18.65		
Souvenirs sold at workshop	60.00		
		16,199.77	
<b>EXPENSES</b>			
Buses	4,156.95		
Hotel – catering, A/V rental, gratuities	2,327.56		
Bag lunches and snacks	1,252.71		
Baquet dinner	3,410.44		
Printing costs – brochures, folders, tags, etc	694.35		
MaterCard/VISA charges	179.08		
Extension Services	3,302.50		
Presenter Expenses	279.12		
Souvenir T-Shirts	1,552.07		
Silviculturist of the Year Award	66.65		
		(17,221.43)	
			(1,021.66)
<b>Bank interest</b>	42.21		42.21
<b>Malaspina Account</b>			428.25
<b>DECEMBER 2002 BALANCE</b>			10,204.26

# **Sustainability of High Yield Timber Management**

**Dr. John Barker RPF**

## **~Abstract~**

Discussion of the topic High Yield Timber Management requires that we know exactly what we mean by sustainability and what it is we wish to be sustained. Do we want to merely maintain what we have or do we want to define some goal and manage to meet in order to achieve it?

Some view sustainability as survival of the planet, others view it as maintaining natural ecosystems while others think in terms of economic well being and community. High yield timber management is usually viewed as tree farming yet if we consider the range of values that exist in a forest, it is apparent that the term could apply to timber, wildlife, recreation, potable water etc.

Emphasizing any one of these aspects will often detract from the quality of others- we cannot have our cake and eat it too – (although bread and water may be the ultimate end of our current approach).

In today's environment, the choice of what to emphasize has become a labyrinthian process whereby all views are sought. This often leads to a lack of clarity in what objectives really are to be emphasized, which leads to conflict and makes management difficult. In trying to resolve these issues, we need to better understand the linkages that exist between many of the key attributes so that tradeoffs can be evaluated. These are not simple and will require extensive and expensive research and analysis.

In discussing the topic, it will be assumed that timber management is the overriding issue. Various aspects of intensively managing forests and their contribution to HYTM opportunities will be examined.

# Biography for:

## Dr. John Barker, RPF

### Contact Info

Email: jebarker@telus.net

Phone: 604-986-6309

### Education

B.Sc.F. UBC 1959.

M.Sc. U Calif (Berkeley) 1966

Ph.D. U Calif (Berkeley) 1972

### Experience

Western Forest Products Limited  
Manager Technical Forestry Services 10 years  
Research Forester 9 years  
Forester 4 years

Canterbury University, Christchurch New Zealand  
Lecturer, Senior Lecturer 9 years

Lakehead University, Thunder Bay Ontario  
Associate Professor 2 years

University of British Columbia  
FRBC Chair in Silviculture 3 years. Retired in 2002.  
Currently Adjunct Professor UBC. Also served as adjunct from 1983 to 1998.

### Professional

Registered Professional Forester  
Member Canadian Institute of Forestry (National President 1997.)  
Member of  
Forest Genetics Council of BC  
Forest Productivity Council  
Forintek Advisory Committee  
FERIC Advisory Committee

### Community

President  
Cascadia Society (Services for Special Needs Persons)  
Secretary  
Lynn Valley Community Association

### Research Interests

Site Index/Growth & Yield Relationships between BEC and site index.

Effects of Ericaceous vegetation on stand development. SCHIRP project is early fertilization to achieve crown closure and improvement of nutrient cycling.

Genetic improvement of yellow cedar. Clonal selection of quality phenotypes and evaluation of nutritional and elevational range of establishment opportunities.

# Managing the Genetic Resource

**Annette Van Niejenhuis**

## ~Abstract~

The British Columbia Tree Improvement Program is a cooperative effort delivered by many agencies. These include the Ministry of Forests, Licensees, other private industry, the Canadian Forest Service, BC Universities, consultants and contractors. The Program uses the natural variability of our coniferous species to choose for high performance in select traits. Its objective is to increase plantings using high-gain seed.

To facilitate the program, Species Committees develop and implement annual plans for each of 40+ Seed Planning Units. These Seed Planning Units assure the adaptability of seed deployment. Coastal operations covering maritime and sub-maritime zones include 14 Seed Planning Units. Seed from these programs is now available (declared surplus) with as much as 16% gain in volume.

Genetic worth is presented for all seed available through the Seed Planning and Registry system. Most genetic worth values are percentage gains in volume predicted at rotation age 60. For Sitka spruce and white pine, where the primary trait is resistance to pests, genetic worth will be presented as a resistance estimate. Secondary traits such as wood density may also be scored and added to the information available. Measures of realized gain trials indicate that projected volume gains are sound predictions of actual gains. In some cases they estimate gains conservatively. Deploying gain can influence present operability where harvest constraints limit wood availability. In the short term an Allowable Cut Effect (ACE) may be realized by deploying stock with gain. In the long term, Allowable Annual Cuts will be above those projected without genetic gain.

Seed prices for coastal orchard seed range from \$4 to \$6 per 1,000 seedlings for wild seed to as much as \$75 per 1,000 seedlings for high-gain Douglas-fir seed. The difference between wild seed and orchard seed is in the order of \$16 per 1,000, generally. Improved volumes per unit area justify the cost of improved seed, as costs per cubic metre will decrease.

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### **Biography for:**

**Annette van Niejenhuis**

RPF, M.Sc. Forestry and B.Sc. Forestry, Lakehead University

Post-graduate studies in genetics and genecology

I am currently working at the Saanich Forestry Centre for Western Forest Products as the Tree Improvement and Research Coordinator. In this capacity I direct the development of the seed orchards and coordinate silviculture research for our Company.

# What's New in the Nursery?

Iola Elder

## ~Abstract~

Effective reforestation is paramount to maintaining productive forest. Effective artificial Reforestation relies on a consideration of all factors which may impact on the survival and growth of the planted seedling.

Every member of the reforestation team, from nursery to planter is important to the overall success of the reforestation program. Successful plantations can only be attained if all phases of the program are conducted with care and attention to the needs of the seedlings.

The production of healthy, well-balanced and conditioned seedlings is the primary function of the forest seedling nursery. This has to be matched with cost effective production, reliability, timeliness and sound customer service. Forest seedling nurseries are constantly refining and improving production methods and techniques in the quest for consistent crops that meet the needs of the sites being treated. Possibly one of the most important, and often underutilized, tools to meet this goal is communication. Constant communication between the nursery and field forester allows the nursery to better tailor seedlings for a particular need, recommend suitable stock types and realistic morphological and physiological expectations and the forester to be better appraised of the expectations or limitations of a particular request.

More and more there is increased emphasis being placed upon the reduction of cost of production. At the same time there is often a failure to recognize the limitations this may place on attaining required standards and goals at both the nursery and in field success. It is imperative, therefore, that all parties work collectively to understand all aspects of the reforestation program and agree on acceptable and attainable standards while trying to meet established goals of reforestation success. Paramount to success is an ongoing understanding and quest to always consider the needs of the seedlings first, give respect to basic biological requirements and accomplish it in a cost-effective manner.

~~The ultimate goal needs to be cost-effective and successful reforestation.~~

A brief historical perspective of nursery growing (techniques, trends, and innovations), a synopsis of the "state of the art", and a projection into the future of nursery seedling production will be presented. Topical issues such as morphological vs. physiological specifications (condition), slow-release fertilizers, stock types (plug size, season of planting, species), monitoring crop health in the nursery, and controlling pH and salt levels in the plug will be discussed.

A discussion of how nurseries can help Silviculturalists manage risk of plantation failure will lead to active discussion of ways to improve success in coastal planting programs.

*Coastal Silviculture Committee, Winter Workshop, Jan 29 & 30, 2003 Nanaimo, BC*

# Minimizing Time to “Freely Growing Achievement” through better Nursery / Plantation Co-ordination

David Lloyd

Pelton Reforestation

~Abstract~

Results of field studies are showing that early root growth is a key indicator of height achievement at year 4 – 5.

Forest regeneration is a complicated process, and it's difficult to get everything right every time. But we're now receiving measurements from replicated trials that are differentiating results expectations from different treatment concepts.

Field measurement results will be discussed from private land plantation trials in the U.S. for:

1. Vegetation Management;
2. Increased delayed release fertilizer rates at the Nursery;
3. Late Summer vs. spring planting dates; and
4. Large size containers 1015A vs. 615A

Field trials from private land customers in the U.S. are particularly interesting since they have both harsher and more competitive conditions and conditionally better growing climates than we do. They rely more on herbicides and fertilizer to maximize seedling growth in order to increase their harvest rate. They also have the incentive to invest heavily in silviculture, knowing that they will recoup their investments over time.

## **Biography for:**

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### **David Lloyd:**

David Lloyd graduated from the Faculty of Forestry at UBC in the early 70's. He has been working with Pelton Reforestation Ltd. as a field representative for some 20 years, and has been working with clients to understand field establishment parameters for that period.

# Plantation Establishment

**Rick Monchack**

~Abstract~

## **Current Practices**

Plantation establishment involves the co-ordination of decisions for several variables, including species, stock type, density, fertilization and timing windows. It is important to recognize that these variables, as well as forest health and brush hazard, are interrelated and that decisions must be made for the suite of variables rather than for each one individually. We have learned a lot over the past few years to help us with these decisions. But, are we making these decisions with the correct overall objective in mind? For most of us, the establishment of plantations is being driven by the over-arching goal of free growing. What is your free growing objective?

Another important question to answer is how do we know we are successful? (Are we spending too much money or not enough?) As with any other aspect of our business, appropriate performance measures need to be in place to help foresters gauge the success of their projects and decisions. What are appropriate performance measures for plantations? How can we maintain performance and minimize risk and costs?

## **A high Yield Scenario**

Public land foresters currently are striving to fulfil legally defined stocking requirements. What would we do differently if we were managing for maximum economic return? Assuming there was certainty to the land base, this is a very exciting prospect. The focus would only be on the best sites, say site 30 and higher, where we can grow high value species and mechanize harvesting. Stock types would be large and regular fertilization would be a must. However, we would have to overcome our cultural objections to herbicides and would need to develop a small log market.

## **Biography for:**

### **Rick Monchak, R.P.F.**

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Rick has been involved with operational silviculture since 1980 and still remembers the carefree days of no SPs and government paid programs. Previous work locations include South, West and East Vancouver Island and the Mainland Coast from Jervis Inlet to Rivers Inlet. Currently, Rick is Operations Forester for TimberWest at the Johnstone Straits Operation. Rick is also the coastal rep on the Provincial Industrial Silviculture Committee.

# The Basics of High Performance

George Fenn

## ~Abstract~

The panel on Sustainability of High Yield Timber Management has been presented with several questions related to the principal topic of the conference. As an American timber grower my comments must, of necessity, be delivered with some humility since I cannot claim to know or judge all of the factors governing B.C. public policy.

On the other hand, I can, I believe, make some substantive contributions to the many of the questions which have been presented to the panel. Some of information I hope to impart includes:

1. A description of the technology involved in achieving high timber yields, including details of the procedures which we follow to achieve our goals
2. A discussion of the impact of higher yields and shorter rotations on soil fertility and stability.
3. A discussion of the economics of high-yield, short rotation forestry. What kind of front-end investment is required, and what is the payoff?
4. Observations about the impact of high yield forests on wildlife
5. Observations about the importance of mills adapted to small diameter logs to the economic feasibility of a high yield program
6. What we see in the future technological advances which may impact a high yield program, particularly in wood products manufacture
7. Importance of timber tree species diversity to the sustainability of a high yield program
8. Observations about continuity of management policy which are requisite to the success of a high-yield program

# The Basics of High Performance

George S. Fenn

## Biography:

- ◆ Currently owner and operator of Fenn Farms, a 425 forest property, at Elkton, Douglas County, Oregon. During this time, the MAI of the douglas fir stands has increased from 160 to a projected 580 cubic feet per acre per year.
  - ◆ For the last 25 years, the property has been managed with increasing silvicultural intensity
  - ◆ George has applied his scientific background to forest management. His property has been visited by the Oregon Board of Forestry, the senior faculty in forestry at Oregon State University, senior management groups from Weyerhaeuser and other industrial forest owners, and numerous professionals and academics from the U.S. and other countries. He has delivered several lectures at Oregon State University and OSU sponsored events.
  - ◆ George came to forestry from a diverse professional background:
    - ◆ Undergraduate work in physics at the California Institute of Technology at Pasadena, California (Cal Tech)
    - ◆ Graduate work in physics and electrical engineering at Cal Tech
    - ◆ A decade of work leading a long-range missile guidance program at the Northrop Corporation
    - ◆ Founder, president and CEO of FMA Inc., a pioneer in combining graphic and digital data in large databases
    - ◆ Senior consultant to CBS and its European partners in the development of electronic video recording
    - ◆ Chairman and CEO of Kratos, Inc, a publicly owned manufacturer of civil engineering and scientific instruments
  - ◆ George has followed an 'open-door' policy for the reciprocal sharing of information with all colleagues in the forestry and forest products industry.
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# Ecologically-based Decision Support Tools for Assessment of the Sustainability of High Yield Timber Management

J. P. (Hamish) Kimmins

Professor of Forest Ecology and Senior Canadian Research Chair  
in Modelling the Sustainability of Forest Ecosystems.  
Department of Forest Sciences, Faculty of Forestry, UBC.

## ~ Abstract ~

The best basis for decision making in forestry is generally experience. However, in most parts of Canada we lack experience of high yield forestry, or any other intensity of forest management for that matter, over the three or more rotations needed to fully assess sustainability. In the absence of the desired experience foundation for sustainability assessment, the best method is probably the combination of what experience we do have with simulation of the key ecosystem processes that we believe will be altered by the management we are assessing. Such hybrid experience-knowledge models are needed for assessment of a variety of criteria and indicators of sustainability - environmental, social and economic. Scenario analysis of the stand level sustainability of high-yield forestry, and of landscape zonation into different intensities of management, are needed to identify possible optimum long term strategies for forestry that will balance the needs and desires of today's population against the anticipated needs and desires of our grandchildren and their grandchildren. By basing our assessment of these strategies on an ecosystem model, we can have increased confidence that the suggested strategies will be environmentally sustainable and respect the ecology of the values that are to be sustained.

Hybrid simulation, multi value, forest ecosystem management simulation models have been under development at UBC since the late 1970's. The FORCYTE model was replaced by the FORECAST model, which has been used for stand level assessments and as the driver of a watershed landscape model POSSIBLE FOREST FUTURES. It is currently being developed as the driver of LLEMS - a local landscape ecosystem management simulator for scenario and tradeoff analysis in complex cutblock (variable retention) systems. FORECAST has also been used as the driver of timber and wildlife habitat supply models in B.C. The paper will briefly introduce these types of modelling and give examples of where they have been and are being used, and how they can contribute to the assessment of high yield forestry, and the design of zonation strategies.

Hamish Kimmins  
University of BC Phone: (604) 822-3549 Fax: (604) 822-9133  
Home office phone (604) 263-8177, Vancouver, BC Canada  
[kimmins@interchange.ubc.ca](mailto:kimmins@interchange.ubc.ca)

## Biography for:

### James Peter Kimmins (generally known as Hamish)

- Position: Professor of Forest Ecology, Department of Forest Sciences, UBC  
Canada Research Chair in Forest Ecosystem Modelling  
Director, Forest Ecosystem Management Simulation Group  
Associate, Liu Centre for the Study of Global Issues
- Date of birth: 31<sup>st</sup> July, 1942
- Citizenship: Canadian and British
- Marital status: Married with two sons and a grandson.
- Education: B.Sc. Forestry, 1<sup>st</sup> Class Honors, University of Wales, Bangor, 1964  
M.Sc. Forest Entomology, University of California, Berkeley, 1966  
M. Phil. Forest Ecology, Yale University, New Haven, 1968  
Ph.D. Forest Ecology, Yale University, New Haven, 1970
- Work Experience: Assistant Professor of Forest Ecology, UBC, 1969-74  
Associate Professor of Forest Ecology, UBC, 1974-79  
Professor of Forest Ecology, UBC, 1979 – date  
Associate Director, Sustainable Development Research Institute 1992-94  
Associate, Liu Centre for the Study of Global Issues, UBC, 2000-date  
Director, Forestry International Programs, 2001-2002  
UNESCO, Member, World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), 1999-date  
Chair, Ethics of Energy sub commission, 2000-2002
- Major Works: Forest Ecology, 1987, MacMillan, NY, 530 pp: 2<sup>nd</sup> Edit. 1997. Prentice Hall, NJ  
Balancing Act: Environmental Issues in Forestry, 1992. UBC Press, Vancouver, BC  
246 pp. 2<sup>nd</sup> Edit. 1997  
FORECAST/FORTOON series of ecosystem management models/games/decision support tools  
FORCEE, LLEMS and HORIZON ecosystem management models/decision support tools  
POSSIBLE FOREST FUTURES landscape management decision support tool
- Major Awards: Killam Leave Fellowship, Oxford University, 1975-76  
Visiting Scientist Fellowship, Kyoto University, Japan, 1982  
IUFRO Scientific Achievement Award, 1986  
Eddy Distinguished Lectureship, University of Toronto, 1986  
CIF Scientific Achievement Award, 1987  
Industrial Forestry Lecturer, University of Alberta, 1991  
Western Forestry & Conservation Award for Achievement in Forestry, 1991  
Forest Renewal BC, Forestry Excellence Award, 1997
-

## Biography for:

### Hamish Kimmins

Major Consultancies: Saskatchewan Government Forest Ecosystems Branch, Chairman, Expert Panel. Review of 20 year Management Plans, Weyerhaeuser Canada; Saskfor-MacMillan. Forestry Canada, Government of Canada. Reviewer, Model Forest Program Canada Pulp and Paper Association (Canadian and European Offices), on international forestry/ecology environmental issues. Canadian Government on herbicide use in forestry, and environmental monitoring BC Ministry of Forests on slashburning, whole tree harvesting, ecological reserves, impacts of clearcutting, boreal mixedwood management. Various conservation groups on boundaries for parks and wilderness areas. Government of Newfoundland; Member, Review Panel on the 20 year Strategic Directions of the Newfoundland Forestry Service Forestry Canada on herbicides, whole tree harvesting, bioenergy projects. Government of Tasmania on land-use issues. Government of New Zealand on impacts of site preparation practices. BC Forest Resources Commission on Forest Harvesting NSERC grant selection committee: ecology/forestry/systematics. Chairman, National Round Table on Environment and Economy, Forestry Dialogue Chair, Saskatchewan Forest Impacts Monitoring Science Advisory Board MacMillan Bloedel/Weyerhaeuser Science Advisory Board, Coastal Sustainable Forestry project 1998-date INTERFOR, Science Advisor, Sustainable Forest Mgmt. Planning & Citizens Board, 2001-date Government of Newfoundland, Science Review Panel on Forest Policy.

Publications:

Refereed journal articles	83
Books	7
Book Chapters	13
Conference proceedings papers	75
Professional reports and journals	41

# **Silviculture Investments and Marketing**

**Hamish Kerr**

## **~Abstract~**

The talk will start by looking at intensive agriculture for parallels that might be useful for forestry. A description of the forces at work in the North American forest industry will be discussed that is leading to more intensive silviculture. The talk will then cover some aspects of the economics of intensive silviculture and the implications for how forests are managed and the products that will be produced.

The conclusion of the talk is that yes, we should practice more intensive silviculture on the coast. However intensive silviculture can only realize its full potential if high site timberland is privatized or tenures are devised that more closely mimic the rights associated with private property.

## **Biography for:**

Hamish Kerr  
Vice President Strategic Planning & Forest Policy  
TimberWest

Hamish officially joined TimberWest last June and is responsible for strategic planning, forest inventory and silviculture. Prior to joining TimberWest Hamish worked as a forest analyst for almost 20 years in the investment banking industry with Goepel Shields and Partners based in Vancouver and Burns Fry Ltd based in Toronto. As an analyst Hamish provided institutional investors with advice on forest industry stocks and provided forest companies with advice on raising capital, restructuring and mergers and acquisitions.

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Hamish has a BScF from the University of New Brunswick (1977) and an MBA from the University of Western Ontario (1983).

# **ECOSYSTEM-BASED MANAGEMENT IS HIGH-YIELD FORESTRY**

**by Herb Hammond**  
**Silva Ecosystem Consultants Ltd.**  
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**Presentation to Coastal Silviculture Committee  
January 29, 2003**

Ecosystems have inherent limits. They focus on maintaining whole systems, not on the production of any one part. We cannot change the biological and physical limits of ecosystems, nor can we change the productivity of ecosystems. When managers manipulate ecosystems to produce more of a particular resource, this decision brings with it an inherent loss of ecological stability and overall integrity.

The question "Should a portion of the public forest land in coastal BC be set-aside for high-yield timber management?" has ecological, social, and economic implications. This question is being considered by the Coastal Silviculture Committee at a time when there is a major effort on the coast to move from conventional timber management to ecosystem-based management for a variety of forest services and products. Ecosystem-based management (EBM) requires as a fundamental principle the maintenance of ecological integrity at multiple spatial and temporal scales. Adherence to this principle is fundamentally at odds with the concept of high-yield timber management, because maintenance of ecological integrity requires protection and, where necessary, restoration of natural composition, structures, functions, and ecological processes. However, because EBM maintains ecological integrity, it provides the widest array of forest products and services, providing the basis for stable, diverse forest economies . . . high-yield forestry.

Ecological implications of high-yield timber management include:

- Loss of essential composition, structures, functions, and ecological processes necessary to maintain ecological diversity, and a variety of timber and non-timber forest products and services.
- The areas where high-yield timber management is likely to occur are generally on the higher productivity sites. These sites are also the most biologically rich sites, and are unique or "naturally rare" ecosystems in the landscape. Hence, high-yield timber management is likely to have a negative impact on biological diversity that is disproportionate to the area of land dedicated to high-yield timber management.

Social implications of high-yield timber management include:

- Loss of biologically-rich, rare sites that provide a wide array of forest values and services, from research and recreation to homes for endangered species and ecosystems.
- Loss of important natural benchmarks that are important to design restoration, and for the overall appreciation of forest ecosystem complexity and diversity.
- Potential loss of important recreation and tourism sites.

Economic implications of high-yield timber management include:

- Research quantifying the benefits of high-yield timber management in BC is both scanty and relatively short term. These research results also tend to be derived from homogeneous sites that are atypical of the heterogeneity of natural forest landscapes. Therefore, anticipated benefits of high-yield forestry are unlikely to meet expectations.
- Even our better quality timber growing sites are not as productive for wood fibre as many other parts of the world. It is questionable whether we can compete effectively in a high volume, wood fibre market, as opposed to a high quality wood market. Therefore, high-yield timber management may be “barking up the wrong tree.”
- Natural composition, structures, functions, and ecological processes are lost through high-yield timber management, resulting in the requirement for expensive cultural treatments, like fertilization, pesticide use, and genetic modifications to prop up degraded ecosystems. These cultural treatments not only result in loss of ecological integrity, but the cost of carrying out these treatments may not be recovered in the value of high-yield fibre.
- If high-yield timber management “wears out” the ecological productivity of sites, particularly soil productivity, we may find ourselves facing long-term economic degradation similar to that still experienced in the southern United States as a result of intensively growing too much cotton.

Some social and economic questions, with ecological (and social and economic) consequences:

- After increasing cutting rates based upon high yield projections (the allowable annual cut effect), will the timber industry follow through with necessary investments and intensive silviculture?
- Will these investments be public subsidies?

High-yield timber management is highly uncertain. Forest ecosystem complexity not only is poorly understood, but linear scientific methods will never be able to adequately understand forest ecosystem complexity. On the other hand, prudent forest management has constantly supported that maintaining natural composition, structures, functions, and

ecological processes results in the best blend of ecology, sociology, and economics, particularly over the long term. This commonsense understanding leads us away from setting aside public forests for high-yield timber management and towards a wider implementation of ecosystem-based management. You can't have a forest without trees, and you can't have trees without a forest.

Some suggestions of where to go from here on this issue are:

1. Perform a landscape evaluation of existing high-yield forestry trials, including impacts to ecological integrity and the full range of forest values.
2. Analyze the types of ecosystems that would be extensively modified in high-yield timber management to determine actual losses to local, sub-regional, and regional biological diversity.
3. Carry out both neoclassical and ecological economic analysis, with long-term perspectives and incorporation of lost opportunity analysis, to define the many and varied economic pictures and uncertainties.
4. Document clearly the full range of uncertainties surrounding high-yield timber management.
5. Use the results of 1. and 4. to engage in an open, transparent, participatory public process to determine whether or not high-yield timber management is appropriate on public forests.

In the end we may discover the obvious:

**Maintaining high yields of timber in the working forest still requires maintaining similar ecological integrity to that found in unemployed forests.**

# Ecosystem Perspective

## HERB HAMMOND

### BIOGRAPHY:

**HERB HAMMOND** is a Registered Professional Forester and forest ecologist with 30 years experience in research, industry, teaching and consulting. He is best known for his development and application of ecosystem-based forest conservation planning and forest use, which he defines as the protection and ecologically responsible use of the forest through all scales of time and space. He heads Silva Ecosystem Consultants Ltd., and is a founding director of the Silva Forest Foundation, a non-profit organization devoted to research and education in ecologically responsible forest use.

Hammond holds a Bachelor of Science in forest management from Oregon State University and a Masters of Forestry from the University of Washington. He is the author of *Seeing the Forest Among the Trees: The Case for Wholistic Forest Use* (Polestar Press), which won the Roderick-Haig Brown B.C. Book Prize in 1992. He is currently working on a new book on practical approaches to ecosystem-based conservation planning, with the working title of *Walking Softly: Ecosystem-Based Forest Use for Cultural and Ecological Responsibility*.

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*The forest sustains us, we do not sustain the forest*

# **The Working Forest**

**Bruce Sieffert, RPF**

**Ministry of Sustainable Resource Management**

## **~Abstract~**

The BC Government committed in 2001 to establishing a Working Forest land base to provide greater stability for working families, and to enhance long-term forestry management and planning. The Ministry of Sustainable Resource Management has been working with other agencies to develop specific proposals that are designed to deliver on this commitment. The presentation will highlight these proposals.

### **Biography for:**

#### **Bruce Sieffert**

Bruce Sieffert is a forester who has worked with the BC government for over 20 years in the area of forest and land use planning. He is currently Manager, Forest Resources, with the Resource Planning Branch of the Ministry of Sustainable Resource Management.

# Struggling Towards the “New Era” in Sustainable Forestry: A Status Report on BC Liberal Policies

George Hoberg

## ~Abstract~

The forest sector in British Columbia has been in a protracted crisis for over five years. The BC Liberals were elected in an extraordinary landslide in May 2001.

In forestry, their New Era campaign document contained a 12-point plan designed to restore competitiveness to the sector. Yet after more than 15 months at the helm, relatively little new policy has actually been enacted, and frustration with the pace of policy reform is increasing.

This presentation gives an overview of the current forest policy agenda, provides a progress report on the government's performance thus far, and offers some explanations for why there has been so little apparent progress.

## Biography

George Hoberg is Professor and Head of the Department of Forest Resources Management at UBC. He received a BS from UC Berkeley, and his PhD from MIT.

George is a political scientist by training. He taught public policy and American politics at UBC for 13 years before joining the Faculty of Forestry. His research interests include BC forest policy (especially land use and forest practices), comparative forest policy, policy and institutional design, theories of policy change, the role of knowledge in the policy process, and international constraints on domestic policy autonomy. He has written books on environmental policy in the US, toxic substances regulation, and BC forest policy, and edited two books on comparative Canada-US policies and the US influence on Canada.

His main research focus now is on regulating forest practices, forest certification, and First Nations. ~~The main question guiding his research to date has been why governments adopt the policies they do.~~ His most recent book (edited) is *Capacity for Choice: Canada in a New North America* (University of Toronto Press 2002).

This past summer, George was director of consultations for the BC government's results-based forest practices code.

# "Designing, Documenting and Delivering on Timber Production"

Ralph Winter, RPF

## ~Abstract~

High-yield timber management can be an avenue to providing short, mid and long-term wealth and prosperity to both industry and the public. Strategically planned and properly implemented silviculture can have the benefit of focussing more of the wood production on less land, leaving larger areas for non-timber uses. A key dependency is for forest managers to have clear forest estate objectives for timber volume, value and habitat supply. Clear forest estate objectives are needed in order to design the appropriate silviculture operations and performance standards.

To manage for timber production, there needs to be three key interdependent components:

- a comprehensive forest stewardship plan (FSP) which documents the objectives and performance standards;
- good design work in the timber supply and silviculture analyses;
- site plans that have strategically linked performance standards and are consistently implemented on the ground

The Forest and Range Practices Act intends to bring closer alignment between FSP objectives, standards and on-the-ground silviculture operations.

Analyses on some mgmt units have shown that prompt basic silviculture can lead to a 29% increase in merchantable volume. Analyses on other management units have shown that the right incremental silviculture regimes can lead to a 13-17% increase in merchantable volume. The key is to determine through management unit specific analysis, the silviculture regimes, treatment amount, timing and funding needed...and then do the requisite treatments.

With the removal of the legislated requirements for silviculture and stand management prescriptions, silviculture strategies can be utilized to help define silviculture regimes and associated standards for on-the-ground activities. Silviculture strategies and good tactical deployment of treatments is key to achieving FSP timber production objectives.

## Biography For: Ralph Winter

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Ralph Winter is the Stand Management Officer with the Forest Practices Branch, Ministry of Forests. Responsible for managing the Stand Management Unit which is involved in the development and training of silviculture survey and information systems, incremental silviculture, legislation, policy and guidelines. The unit is responsible for the implementation of the *Incremental Silviculture Strategy for British Columbia*, provincial direction and coordination of the *Forest Level Analysis for Silviculture Investments*. The unit is also involved in the production and training of growth and yield and decision support information for silviculture operations.

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*Coastal Silviculture Committee, Winter Workshop, January 29 & 30, 2003 Nanaimo BC*

# **Results-Based silviculture survey and modeling system to regulate reforestation obligations**

**Eleanor McWilliams**

## **~Abstract~**

The Riverside and Fort St. John Results-Based Forest Practices Code pilot projects are developing and testing a new results-based silviculture survey and modeling system to regulate reforestation obligations. The system sets merchantable volume targets for areas prior to harvest, surveys are done following harvest to predict future merchantable volumes, and a ledger is maintained to tally target and predicted future volumes over all cutblocks. The obligation to reforest all blocks harvested in a single year is met when the total predicted volume (area weighted) meets or exceeds the total target volume. In the case of Riverside, stands are surveyed 10 years following harvest and merchantable volumes are predicted for 80 years post-harvest. In Fort St. John, the system has been adapted for stands surveyed 15 years post-harvest and merchantable volumes predicted for either 80, 90, or 100 years post-harvest. The survey system uses 3.99 m radius plots established on a 100 m grid. Estimates of mean number of stocked quadrants, species composition, site quality, and stand height are used to predict future merchantable volumes. Target merchantable volumes are set at a level slightly above current minimum stocking standards.

## **Biography for:**

### **Eleanor McWilliams**

Eleanor McWilliams is a growth and yield analyst with J.S. Thrower & Associates Ltd. She is an RPF with over 15 years experience in quantitative silviculture, growth & yield, monitoring, and financial analysis. Current projects include building on the results-based survey and modeling system for Riverside, revising the Riverside system to meet the Fort St. John TSA needs, designing a silviculture strategy to maximize NPV on Timberwest' private lands, designing a growth & yield monitoring program for the Fort St. John TSA, and developing new stand density management regimes for Weyerhaeuser. Eleanor received a B.Sc.Forestry (Hon) at UBC (1984) and a M.Sc. in Biometrics at the University of Minnesota in 1991.

**Silviculture Standards and Guidelines for Maintaining or  
Recruiting Habitat Objectives  
or  
One person's "standard" is another person's "guideline"...**

**Colene Wood  
Ministry of Water Land and Air Protection, Victoria**

**~Abstract~**

The development of the *Forest Practices Code Act of BC*, and the proposed Forest and Range Practices Act, heralded a new look at the term "standard". The initial flow was act-regulation-standard-policy, but the focus on "standards" under the initial FPC soon evaporated as "guidebooks" became the preferred method of housing the "must-do's", "should-do's" and "could do's". Then we invented "guidelines" to get around the formal process of developing "Guidebooks", but that is another story.

Today is different. We are charged to develop "results-base" legislation with less emphasis on rules. But not less emphasis on standards, be they environmental, technical or audit standards. Perhaps a standard is a "must do" and a guideline is a "could do". Several folks today are discussing this point; suffice to say the risk associated with the forest practice will likely dictate the fine line between "standards" and "guidelines", as it is tending to do for the differentiation between rule-based and results-based. A standard related to legislation have slightly different emphasis than a standard related to a Forest Investment Account activity.

The amount of effort that goes into setting a standard and auditing compliance should also reflect the risk associated with that activity. Risk in my world could be environmental (eg, habitat alteration), economic (eg, lost investment) or safety (eg, drinking water). For low risk activities (I am not going to define "low"), a lot of flexibility can be granted. For high-risk activities, the standards should focus on reducing the risk, and preventing or mitigating undesirable consequences.

Any standard first needs a reference point – a management objective – with appropriate measures that describe progress towards the objective. An objective for habitat may be retention and recruitment of wildlife tree patches. The standard must be measurable, and either be a minimum, maximum, average or target. An appropriate standard might include measures related to an environmental standard – minimum quality and quantity of snags/patch. An appropriate standard might include measures related to technical aspects – maximum statistic error around measurements of basal area. The audit standards should be the same as already mentioned, with the addition of sampling parameters and

how often a deviation might be acceptable before there is a major or minor infraction. Last, the standards need to be qualified as to when, where and under what conditions they apply. Is the scope provincial, and if so, how should the standards be localized?

Sometimes a variance to a standard is warranted. Under what conditions would a variance be acceptable to the agency responsible for management? The standards will be modified over time, as new information becomes apparent. Let's anticipate these modifications and apply adaptive management and a coordinated plan to keep the standards effective.

Now I will describe the various habitat objectives that are important for non-timber management, and the current guidelines (or are they standards?). You be the judge for now, as we are revising the report *Silviculture Guidelines and Practices for Maintaining or Recruiting Key Habitat Objectives*, Manning, Cooper and Associates, March 2002, and will produce standards and guidelines.

**Biography for:  
Colene Wood, RPF, M.Sc.**

Colene is a Registered Professional Forester, and has a technical diploma from BCIT in Forest Resource Management, a BSc in Geography from the University of Victoria, and an MSc in Environmental Management from Griffith University in Australia. She inspires fish and wildlife biologists to develop standards, guidelines, and best management practices, most recently for the Forest Investment Account activities.

Her experience began in the 70s in the southern interior doing silviculture surveys. She has worked for the Ministry of Forests at the district, regional and provincial level, contracted and consulted in silviculture, participated in development work in India and Southeast Asia, and for the past five years has been with the Ministry of Water, Land and Air Protection. Her current soapbox is, "We need to consider risk when we develop standards. Where there is a high risk – to the environment, to an investment, to public safety – then the standards should reflect this risk. They should focus on reducing the risk, and preventing or mitigating undesirable consequences. Likewise, if the risk is low, the standards can be flexible and straightforward."

# Performance-based Resource Management Standards and Implications

Don Reimer, Ph.D., CF

~Abstract~

British Columbia is in the process of moving towards a performance-based forest land management strategy. Such strategies require three fundamental capabilities:

- the capability to derive a “reliable” forecast;
- the capability to implement the forecast; and,
- the capability to measure and monitor results.

In a multi-resource, land stewardship context, these three capabilities imply an underlying sophistication of data, skills and analytical tools which are quite daunting. A real-world, case-study discussion of the interactions between standards for wildlife habitats, sustainable forest management forecasts and silvicultural practices will be used to illustrate the sensitivities and significance of ensuring compatibility and feasibility of standards across all three capabilities.

## **Biography**

**Don Reimer, Ph.D.**  
**President, D.R. Systems Inc.**

### **EXPERTISE**

Dr. Reimer has broad expertise in forest management issues, with particular emphasis on:

- Biometrics
- Forest policy analysis, strategic planning and investment analysis
- Application of ecosystem based forest management principles to forest estate planning

### **EDUCATION**

Ph.D. Resource Economics, Biometrics, Operations Research, Purdue University

M.F. Economics, Business Management, Biometrics, Yale University

B.Sc.F. Forest Management, Forest Measurement, Northern Arizona University

### **SUMMARY OF QUALIFICATIONS**

Dr. Reimer has 33 years experience in the forest industry. Following completion of graduate studies,

Dr. Reimer worked for MacMillan Bloedel Ltd. from 1969 until 1983, where he was responsible for the company's growth and yield program, for AAC calculations, for evaluation of forest resources (both physical and economic). He led the development and implementation of the company's forest management decision support systems, which included the first operational, polygon-based GIS (1976/77).

In 1983, Dr. Reimer left MB and started D.R. systems inc. Since that time he has consulted extensively in Canada, the U.S. and abroad, as well as directing the company's work in the development of forest information systems and strategic forest management consulting. Dr. Reimer designed the OPTIONS Forest Estate Model, which has been used for forest management strategic planning and risk analyses on over 500 million acres worldwide since 1984.

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### **Professional Affiliations**

Dr. Reimer is a Certified Forester with the Society of American Foresters and a member of the Canadian Institute of Forestry. He is on the curriculum committee with the Forest Management Institute of BC, on the board of directors of the Mid Island Science and Technology Innovation Council and a member of the B.C. Science Council's Forest Science Committee.

# ESTABLISHING AUDITABLE STANDARDS

**Ian Brown**

~Abstract~

The objectives of the Forest Investment Account (FIA) Land Base Investment Program (LBIP) as defined by the Ministry of Forests are to (i) actively foster sustainable forest management, and (ii) improve the forest asset base. PricewaterhouseCoopers (PwC) as the administrator and auditor of this program are responsible for ensuring that the above FIA objectives are being met and to identify areas for future program improvement.

With the move toward greater professional accountability and the Results Based Forest Practices Code, professionals must take due consideration of producing work and in turn, standards against which projects are auditable by government, their professional associations and the general public. In order to successfully develop standards in this new environment, professionals will need to ensure that clear objectives and deliverables are identified within the standards developed. Performance auditing by PwC is based on the standards that are designed by such professionals.

To manage the FIA LBIP program's objectives, PwC has established audit protocols based on the work standards that assist the auditor in evaluating projects against these standards, as well as the goals of the FIA LBIP program. PwC is responsible for both financial and performance audits under the program. Financial (and administrative) audits are completed at the Licensee level and not targeted at the project specific level. Within the performance audit level, more project variability is expected and thus, PwC has designed a project-by-project audit protocol to take this variability into consideration.

The presentation will add to the discussion of standards being discussed at this conference and highlight the areas in which PwC will be directing its' efforts and obligations as the administrator and auditor of the Land Based Investment Program.

## **Biography for:**

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### **Ian Brown, P.Eng., AGDM**

Ian is a Senior Investment Manager with PricewaterhouseCoopers LLP's Forest Investment Account. He has over sixteen years experience in forestry/engineering, and has previously worked for government, industry and a mid-sized consulting firm. In his current position, Ian is responsible for overseeing and approving the work of FIA's Investment Managers, as well as liaising with Licensees and the Ministry of Forests for program development and delivery, including standards.