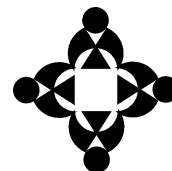




Summaries and Observations from Three Partnership- sponsored NDT4 Events

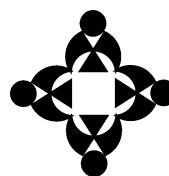
FILE REPORT 01-5



Southern Interior
Extension and
Research Society

Summaries and Observations from Three Partnership-sponsored NDT4 Events

Donald V. Gayton (editor and compiler)



Southern Interior
Forest Extension and
Research Partnership

National Library of Canada Cataloguing in Publication Data

Main entry under title:

Summaries and observations from three partnership-sponsored NDT4 events
[computer file]

(File report ; 01-5)
ISBN 1-894822-00-5

1. Forest management—British Columbia. 2. Forest fires—British Columbia.
I. Gayton, Don, 1946- II. Southern Interior Forest Extension and Research
Partnership. III. Series: File report (Southern Interior Forest Extension and
Research Partnership) ; 01-5.

SD568.B7S87 2001

634.9'2'09711

C2001-902488-6

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The Southern Interior Forest Extension and Research Partnership would like to acknowledge the generous financial contributions of Forest Renewal BC.



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ABSTRACT

This file report provides summaries, observations, and conclusions from three extension events, sponsored by the Southern Interior Forest Extension and Research Partnership (the “Partnership”), which dealt with research, policy, and operations in fire-maintained, natural disturbance type 4 (NDT4) ecosystems. The events spanned eight months, from July 1999 to March 2000 and were held in Cranbrook, Penticton, and Kamloops.

This report is intended as a useful summary for those working on NDT4 issues in the Southern Interior.

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PART A:
NDT4 Workshop
Summaries and Observations

INTRODUCTION AND PURPOSE OF REPORT

This file report provides summaries, observations, and conclusions from three extension events, sponsored by the Southern Interior Forest Extension and Research Partnership (the “Partnership”), which dealt with research, policy, and operations in fire-maintained, natural disturbance type 4 (NDT4) ecosystems. The events spanned eight months, from July 1999 to March 2000 (see Table 1).

TABLE 1 Three Partnership-sponsored NDT4 workshops

Event	Time and place	No. of participants
Introduction to Fire-maintained Ecosystems	Penticton, July 14–15, 1999	30
Fire-maintained Ecosystem Restoration	Cranbrook, October 21–23, 1999	160
Structural Attributes of Fire-maintained Ecosystems	Kamloops, February 22–24, 2000	35

This report is based on notes and observations from these three events, and is intended as a useful summary for those working on NDT4 issues in the Southern Interior. The conclusions and recommendations of the workshop participants and those of the author, who co-ordinated all three events, are clearly differentiated. Any errors or omissions are the author’s sole responsibility.

NDT4 THUMBNAIL

The NDT4 is comprised of the Interior Douglas-fir, Ponderosa Pine and Bunchgrass biogeoclimatic zones of the Cariboo, Kamloops, and Nelson Forest Regions, plus the Squamish Forest District in the Vancouver Forest Region. The conventional assumption is that—prior to European arrival—NDT4 forests were subject to low-intensity fires ranging in frequency from four to 50 years,¹ although little in-province data exists on which to base that assumption. The total amount of NDT4 in the province is approximately 4.5 million ha, with the largest amount in the Kamloops Forest Region, followed by the Cariboo, with significantly smaller amounts in the Nelson and Vancouver Regions.² The Crown land portion of the NDT4 land base is assumed to be roughly 60%, or 2.7 million ha. Forest ingrowth and encroachment, resulting from modern fire suppression, has been documented from historical air photo comparisons in all three regions. Districts and regions vary in response to the ingrowth/encroachment issue; some are actively engaged in restoration (thinning and burning) work, others are at the level of planning and further research.

¹ Biodiversity Guidebook, Forest Practices Code of British Columbia, September, 1995.

² Eng, Marvin, BEC Area Summary for All Subzone/Variants. Ministry of Forests, Research Branch, Victoria, B.C.

PENTICTON WORKSHOP

This 2-day event, which included both field and classroom sessions, was introductory in nature. Participants included civil servants, consultants, hunters, ranchers, and environmentalists. Participants were generally pleased with the programming (see Evaluation, Appendix A-1), and urged the presenters to get the message out to others in the south Okanagan, the public, local politicians, fire chiefs, students, and the media.

Author's Conclusions

- Large portions of the 1994 Garnet Fire are recovering well.
- In spite of the complexity of urban and suburban development, and land jurisdictions in the south Okanagan, land managers see possibilities for doing NDT4 restoration, including the use of prescribed burning.
- First Nations people of the Okanagan are comfortable with prescribed burning—it is part of their tradition.
- Forest ingrowth as a result of fire suppression is having a major negative impact on the Vaseaux Lake sheep herd.
- Annual fuel accumulation on dry ponderosa pine sites is far in excess of the rate of biological breakdown of those fuels; thus fuel build-ups to unsafe levels are inevitable if fire is suppressed, and no alternative treatments are imposed.

CRANBROOK WORKSHOP

This 3-day workshop was hosted in conjunction with the Pacific Northwest Section of the Society for Range Management, and so some of the participants were from Oregon, Washington, and Alberta. Because of the size of this event (160 people), participant evaluation was not done. However, an independent note-taker, familiar with local issues, was engaged to provide a summary of the event (see Appendix A-2).

Author's Observations

- Fred Hall, a senior United States Forest Service (USFS) ecologist from Oregon, presented a technique (growth basal area) for assessing the “stockability” of dry interior forest stands. He demonstrated how unmanaged, overdense stands can stagnate, and conversely, how thinning can benefit even mature stands, once the needles have been replaced.
- The root spread of ponderosa pine covers an area five times that of the crown; so theoretically, a stand reaches optimum density at 12% crown closure.
- Most of the operational and technical issues of NDT4 ecosystem restoration have been resolved for the time being.
- Hunting, ranching, and environmental groups are largely in support of NDT4 restoration; the timber industry's support tends to be tied to good pulp prices.
- Significant barriers to NDT4 restoration are found in the area of forest policy, cruising, and stumpage, and lack of funding.

- A combination commercial thinning/restoration thinning pass, followed by a prescribed burn, is more effective, safer, and more acceptable to the public than is a prescribed burn only.

KAMLOOPS WORKSHOP³

This workshop, which was a follow-up to an April 1999 meeting of B.C. Ministry of Forests Forest Sciences researchers, had several objectives: a review of current NDT4 research, operations, and inventory, and an attempt to define NDT4 old growth by structural attributes.

This last objective is a complex one, driven by the Biodiversity and Landscape Unit Planning (LUP) Guidebooks, which dictate the identification of areas within each LUP containing a threshold percentage of “Mature” (> 100 years old) and “Old” (> 250 years) trees in the stand, followed by the creation of Old Growth Management Areas (OGMAs) with restricted harvesting regulations. Authors of the two guidebooks recognized that the standard, age-based concept of “old growth” did not fit the more dynamic NDT4, and so left the door open for the creation of an alternative, stand attribute-based definition. Such a definition would also be available for Local Resource Management Plans (LRMP). There is a certain urgency for this information, as various LRMPs are in process right now, and objectives for OGMAs must be established by 2002.

All three forest regions have been wrestling with this issue, but each in a different fashion. The consensus was that regional approaches need not be identical, but mutual awareness and some degree of inter-regional and region-branch consistency is necessary.

A global list of stand, patch, and single-tree attributes was produced (see Appendix A-3) for planning or operational guidance. It was agreed that the selected attributes could be applied at the biogeoclimatic variant/site series level, with similar variants/site series grouped together. The nature of those groupings was left for subsequent discussion. Seral stage would be a further modifier. (The concept of seral in the NDT4 has a different meaning than in the other NDTs, and within the NDT4, seral is applied differently in the understory and overstorey.)

The general framework for applying the selected structural attributes to the landscape is presented in Table 2.

TABLE 2 General framework for applying selected structural attributes to landscapes

Structural attribute	Variant/site series group 1			Variant/site series group 2			Et cetera
	Early	Mature	Old	Early	Mature	Old	
1							
2							
3							
Et cetera							

The group also agreed in general terms to the following points:

- Develop a set of structural attributes by ecogroup (at least 12 variants/site series per group) and seral stages within these ecogroups.

³ Additional notes in Appendix A-3.

- The number of ecogroups is determined by the complexity of NDT4 in each jurisdiction, and must be meaningful to attribute-based management.
- Need to make an effort to harmonize the groupings between regions.
- We will do this by dealing with ecological variables, first at the fine scale and then lumping.
- Kamloops Forest Region's proposed Biogeoclimatic Ecosystem Classification (BEC) grouping⁴ is province-wide, and is a good starting point, although complete agreement on it has not been reached.
- Groupings will be periodically adjusted based on new information.

The proposed action resulting from this portion of the workshop: ecologists from all NDT4 regions and branch levels will meet to harmonize groupings. Fred Nuszdorfer (Vancouver), Dennis Lloyd (Kamloops), Ordell Steen (Cariboo), Tom Braumandl (Nelson), and Andy MacKinnon (Branch), will bring together data and identify and fill gaps.

Author Observations

- There is much food for thought in Ken Lertzmann's significant tautology: "the sequence of ecosystem states and dynamics in the past is the only empirical model for maintaining patterns of biodiversity and ecosystem function in the present."
- Instead of being wholly within the historic "frequent, low intensity fire regime," British Columbia's NDT4 was probably subject to a "mixed fire regime"—frequent low-intensity fires with occasional, randomly occurring stand-replacement fires.
- There is agreement that mean fire return interval (the time between fires) would be normally distributed, with very short and very long intervals being uncommon. There is also agreement that the bell curve should be maintained, as it will result in diverse, heterogeneous, and stable landscapes.
- There is disagreement about whether current management is driving us toward the infrequent, or very frequent, side of the bell curve, and a resulting "monoculture" of all closed, or all open stands.
- Forest stand architecture resulting from a mixed fire regime is more complex, and more difficult to interpret, than that resulting from either a frequent low-intensity fire regime or an NDT3-style stand replacement fire regime.
- Although there is a wealth of data from the United States we can borrow, there is very little fire history and historical stand reconstruction data from British Columbia, and virtually none of it has appeared in peer-reviewed scientific journals.
- Three forest regions (Kamloops, Cariboo, and Nelson) have formed committees to deal with NDT4 issues.
- Certain forest districts (Invermere and Squamish, in particular) are actively engaged in operational NDT4 ecosystem restoration.
- Tree age class is generally agreed to be a poor indicator of old-growth structure in the NDT4.
- Actual age-class in the NDT4 may be misrepresented, because of the way the inventory methodology is structured.
- NDT4 must be actively managed; to create an NDT4 Old Growth Management Area and then to leave it alone, would not achieve the purpose of the OGMA.

⁴ Lloyd, Dennis. Refining Natural Disturbance Type Four (NDT4). B.C. Ministry of Forests, Kamloops Forest Region, April, 1999.

APPENDIX A-1 Penticton Workshop: Participant List and Evaluation Results

List of Participants, Introduction to Fire-maintained Ecosystems Workshop Penticton (July 14–15, 1999)

Name	Location	Affiliation
Harold King	Oliver	Naturalist
Bob Dennis	Keremeos	Similikameen Indian Band
Angus Dickie	Penticton	SIFERP
Joan MacKay	Osoyoos	S.O.S.A
Gene Desnoyers	Penticton	MOF
Bill Henrickson	Penticton	MOF
Larry Lacasse	Penticton	MOF
Grant Thompson	Summerland	Consultant
Shelagh Seaton	Summerland	Consultant
Jennifer Turner	Penticton	UBC student
Dave Goertzen	Summerland	BC Parks
Bob Gray	Summerland	BC Parks
Bert Webb	Kelowna	Interested citizen
Les Molnar	Grand Forks	MOELP
John Pethybridge	Penticton	MOF
Bob Ellis	Cawston	K.C.S.A.
Danie Tremblay	Summerland	BC Parks
Randy Hardy	Westbank	Gorman Bros. Lumber
Joey Hicks	Winfield	C.F.G.
Dave Calder	Westbank	C.F.G
Lisa Scott	Oliver	Consultant
Don Guild	Westbank	Consultant
John Kruger	Penticton	Okanagan First Nation
Dennis St. John	Okanagan Falls	Consultant
<i>Workshop Resource People</i>		
Don Gayton	Nelson	SIFERP
Patrick Daigle	Victoria	MOF Research Branch
Bob Gray	Chilliwack	Fire consultant
Annie Kruger	Penticton	Elder, Okanagan First Nation
Roseanne Van Ee	Vernon	Consulting nature interpreter
Tom Chapman	Naramata	Wildlife biologist

Tabulation of Penticton Workshop Evaluation Results

Notes

- Workshop had 30 registrants. Not all registrants attended the entire workshop.
- Day 1 started at 9 a.m., had a 3-hour midday field session, and finished at 5 p.m. Day 2 started at 9 a.m. with a 3-hour field session, and finished at 2:30 p.m.
- Approximate breakdown of 30 registrants (substantial overlap between these categories):

Consultants	5
Ministry of Forests	5
Wildlife enthusiasts	4
Parks staff	4
Ranchers	3
Interested public	3
Environmentalists	2
First Nations	3
Student	1

- City, town, and regional district people were actively canvassed to attend the workshop, but none came.
- Twenty-two evaluation forms were filled out at the end of the workshop.
- In four cases, respondents answered “Yes” to Question 1 (“Did the workshop provide the information you were looking for”), but then went on to comment on information they felt should have been presented. In these cases, I changed the “Yes” response to a “No.”
- One of the “No” responses to Question 1 came from a registrant who only attended 1 day.

Question	Yes	No	Reasons for answering “no”
1. Did the workshop provide the information you were looking for?	13	9	<ul style="list-style-type: none"> • Would like to see more examples. • More interface information. • Interface stuff. • More specifics related to actual burn planning and implementation. • Not enough detail about the advantages and disadvantages to wildlife. • More information on interface fire controls. • More information on wildlife and cattle, and more information on the benefits of burns to the environment. • Wanted to have paper copies of some of the information presented on the slides. • Contacts. Information from others. • Need to spend time looking at specific situations and then call into the presenters expertise.
2. Was the information presented at the right level of detail for you?	16	6	<ul style="list-style-type: none"> • [Not enough detail for me] but probably suitable for the audience. • I found it above my head, but could reflect on most information. • The first day may have been a little basic, but that was probably necessary considering the diverse group. • Would like more detail on plant species (re: nitrogen fixing, fire germinated, fire tolerant, etc.).
3. Should future workshops be the same length?	18	3	<ul style="list-style-type: none"> • Longer: more time for specific theory, and more time relating theory to field application. • Longer. • Longer.
4. Was the balance between field time and class time all right?	19	3	<ul style="list-style-type: none"> • Maybe more field time. • More field time involved in running through potential or mock-up processes and planning for conducting burns. • More field time.

Participant Free Responses (explanatory additions in square [] brackets)

- Well done, informative, interesting. Accessible to a range of knowledge levels.
- Could ask Regional District Directors and Fire Chiefs to be presenters of field sessions and thereby get their presence.
- Provide some information for public (non-government) attendees so they can take it home and hopefully distribute or discuss and refer to. Examples: Fire adapted plants vs. non-adapted, wildlife browse needs, etc.
- Need more class time to record data from field trips.
- Is there any research on grasses to duplicate or replace native varieties if they are not coming back to original expectations?
- Please send details of future workshops.
- I think there was a very good mix of field and classroom information.
- This message needs to get out to the public, through classroom, other ministries, and through municipal and city government.

- Introduce an educational program for provincial park audiences on fire-maintained ecosystems and the importance of fire in keeping them vibrant and viable.
- Work through municipal agencies to promote burning and public education about interface areas.
- Introduce this topic to the schools.
- Excellent presentations by organizers, especially Bob Gray's sessions.
- Good interaction among the participants.
- Field trips correlated well with classroom presentations.
- Overall, very worthwhile.
- Still think you guys should educate young people, even if done in small information packages, or books in school, or something?
- Very informative and enjoyable.
- Bob's topic on history and fuel loading was great.
- Field trip: possibly find treated area and area not treated; good to show comparisons.
- Excellent mix of scientific information and slides and jargon.
- Great job.
- The field time should be in the afternoon and the class time in the morning. It is difficult sometimes to return to the classroom. I noticed some people didn't attend afternoon lectures. [Field trips were brief and scheduled early in the day because of the potential for very hot weather.]
- Prepare a canned package for parks interpreters, schools, etc.
- Put on a shorter canned program for regional districts, media, etc.
- I was very impressed with Bob Gray and his knowledge of the subject. We should use him much more to promote this subject and sell it to the public!
- There was a great cross-section of resource (experience) people [at the workshop]—very valuable for discussion and sharing.
- I was happy to be involved.
- "The medium is the message." [Referred to getting information out to mass media].

APPENDIX A-2 Cranbrook Workshop: Participant List and Notes

List of Participants, Fire-maintained Ecosystems Workshop Cranbrook (October 21–23, 1999)

Name	Location
Alexander, Mike	Blairmore, Alta.
Bai, Yuguang	Kamloops, B.C.
Balaski, Ken	Victoria, B.C.
Baliko, Werner	Grand Forks, B.C.
Banting, Barb	Cranbrook, B.C.
Barraclough, Cori	Victoria, B.C.
Bawtree, Alf	Celista, B.C.
Beck, Bob	Kamloops, B.C.
Beck, Judi	Victoria, B.C.
Benson, Barry	Canal Flats, B.C.
Berg, Gail	Windermere, B.C.
Blumenauer, Don	Kamloops, B.C.
Bogen, Angela	Rocky Mountain House, Alta.
Borman, Michael	Corvallis, Oregon
Brannon, Tom	
Breese, John	Prineville, Oregon
Breese, Lynne	Prineville, Oregon
Brunner, James	Medford, Oregon
Buckhouse, John	Corvallis, Oregon
Burk, Phil	Invermere, B.C.
Byford, Steve	Cranbrook, B.C.
Carroll, Keith	Dawson Creek, B.C.
Chalifour, Paul	Cranbrook, B.C.
Choquette, Wayne	Yahk, B.C.
Creelman, Glen	Cranbrook, B.C.
Creelman, Patricia	Cranbrook, B.C.
Crowley, Sue	Invermere, B.C.
Daigle, Mike	Cranbrook, B.C.
Dedels, Mike	Kamloops, B.C.
Desnoyers, Gene	Penticton, B.C.
Doggart, Mike	Cranbrook, B.C.
Ehrhart, Bob	Bend, Oregon
Ernst, Reg	Lethbridge, Alta.
Espinel, Chris	Invermere, B.C.
Falsetta, Peter	Kamloops, B.C.
Fenn, Frank	Radium Hot Springs, B.C.
Fenn, Tom	Radium Hot Springs, B.C.
Fiddis, Rick	Invermere, B.C.
Forte-Gardner, Olivia	
Fox, Jim	Kamloops, B.C.
France, Bob	Vernon, B.C.

**List of Participants, Fire-maintained Ecosystems Workshop,
Cranbrook (continued)**

Name	Location
Gall, Lise	Cranbrook, B.C.
Gall, Mike	Cranbrook, B.C.
Gayton, Don	Nelson, B.C.
Gerts, Nichola	Victoria, B.C.
Gleave, Dave	Invermere, B.C.
Gleeson, Gerry	Dawson Creek, B.C.
Glidewell, Chan	
Gray, Bob	Chilliwack, B.C.
Green, Ross	Fort St. John, B.C.
Griffin, Grant	Cranbrook, B.C.
Grilz, Perry	Prince George, B.C.
Haddow, Cindy	Victoria, B.C.
Hale, Dave	Kimberley, B.C.
Halko, Rob	Cranbrook, B.C.
Hall, Fred	Portland, Oregon
Hall, Larry	Cranbrook, B.C.
Hanson, Maurice	Kimberley, B.C.
Heinrichs, Rick	Grand Forks, B.C.
Hisch, Peter	Cranbrook, B.C.
Hoffman, Lois	Ontario, Oregon
Jamieson, Bob	TaTa Creek, B.C.
Jones, Marian	Knutsford, B.C.
Keefer, Michael	Cranbrook, B.C.
Keller, William	Okanogan, Washington
Kelly, Claudia	Corvallis, Oregon
Killins, Glynn	Cranbrook, B.C.
Kincaid, Erven	Eugene, Oregon
Kincaid, Hisano	Eugene, Oregon
Kirby, Jim	Victoria, B.C.
Klassen, Mike	Grand Forks, B.C.
Kneeland, Al	Midway, B.C.
Kreuger, Bill	Corvallis, Oregon
Kroeker, Darryl	Kamloops, B.C.
Lacasse, Larry	Penticton, B.C.
Lacey, Tom	Merritt, B.C.
Laforest, Mark	Cranbrook, B.C.
Leahy, Jeff	Grand Forks, B.C.
Leonard, Bob	Soap Lake, Washington
Liggins, Lavona	Kamloops, B.C.
Lishman, Peter	Kamloops, B.C.
Lucey, Patrick	Victoria, B.C.
McCoy, Pete	Cranbrook, B.C.
McDonald, Andy	Tobacco Plains, B.C.
McDonald, Cam	Tobacco Plains, B.C.
McDonnell, Jeff	Kamloops, B.C.
McInnis, Mike	La Grande, Oregon
McLean, Alex	Penticton, B.C.

**List of Participants, Fire-maintained Ecosystems Workshop,
Cranbrook (concluded)**

Name	Location
Madsen, Craig	Edwall, Washington
Madsen, Sue Lani	Edwall, Washington
Mah, Shirley	Victoria, B.C.
Malmberg, Mike	Fort Steele, B.C.
Mann, Andrea	
Maslovat, Carrina	Victoria, B.C.
Michaelsen, Larry	Kamloops, B.C.
Miller, Val	Nelson, B.C.
Moore, Ted	Heffley Creek, B.C.
Moulton, Patricia	Kamloops, B.C.
Munson, Thomas	Cranbrook, B.C.
Murphy, Kevin	Vernon, B.C.
Needham, Bob	Kamloops, B.C.
Newhouse, Nancy	Invermere, B.C.
Newman, Reg	Kamloops, B.C.
Page, Hilary	Edmonton, Alta.
Penn, Briony	Victoria, B.C.
Phillips, Nick	Cranbrook, B.C.
Price, Gary	Nelson, B.C.
Radford, Brian	Salt Spring Island, B.C.
Rasmussen, Jacquie	Lillooet, .C.
Raven, Sonja	Pritchard, B.C.
Reynolds, Mark	Oregon
Ross, Tim	Cranbrook, B.C.
Schuk, Calvin	Tatlayoko Lake, B.C.
Schuk, Lynn	Tatlayoko Lake, B.C.
Selman, Jack	Cranbrook, B.C.
Sills, Martin	Williams Lake, B.C.
Skinner, Anne	Cranbrook, B.C.
Smith, Darrell	Invermere, B.C.
Smyth, Clint	Blairmore, Alta.
Spahan, Harry	Merritt, B.C.
Strachen, Graham	Kamloops, B.C.
Temple, Steve	B.C.
Thompson, Donald	Kamloops, B.C.
Tipper, Gary	Kimberley, B.C.
Vandenbergh, Jack	Cranbrook, B.C.
Veira, Doug	Kamloops, B.C.
Watt, R.A.	Waterton Park, Alta.
Weerstra, Bryne	Cochrane, Alta.
Westhaver, Alan	Jasper, Alta.
White, Dave	Invermere, B.C.
White, Jim	Knutsford, B.C.
Youwe, Phil	Kamloops, B.C.
Zehnder, Chris	Invermere, B.C.
Zehnder, Dave	Invermere, B.C.
Zuber, Ben	Grand Forks, B.C.

Cranbrook Workshop Notes

Day 1—October 21—Field day with Dr. Fred Hall, Chief Plant Ecologist, USFS

Dr. Hall provided a short course on his approach to documenting wood fibre in forest stands during the first part of the morning, followed by a field trip to three sites in the Trench (an older-age stand close to Cranbrook, a site on Fenwick Road, and one at Horseshoe Lake). He has developed some practical tools for estimating the wood available in a stand and the likely wood available in the future, given specific management objectives on a site.⁵ He noted that there is a lot of “motherhood and mysticism” in dry forest management. He suggests that rate of growth is a function of stand density rather than a function of age, and that self-thinning doesn't work in the low-elevation stands of the Trench. He also questions the efficacy of un-even-aged management, since volume growth in the second storey is much lower than that in the upper canopy. He has found that older-aged forests (up to 200 years of age) will release and start to grow again when the stand is thinned, but the trees must first replace high-stress needles with low-stress needles and increase needle volume in response to a more open canopy. These processes take at least 4 years, so only long-term studies can document the real effect of thinning on forest growth.

A discussion of objectives in management at the end of Fred's talk and during the field trip was productive in identifying the problems inherent in setting management objectives on a site. Fred's approach will provide an important tool for identifying the outcomes of any particular set of management objectives, but does not help in the process of setting objectives. Overall, Dr. Hall's work seems to suggest that optimal growth in low-elevation stands is optimal at much lower stand density than previously assumed. This does not, however, include considerations of timber quality; Joe Tress pointed out that self-limbing in denser stands contributes to timber quality by reducing knots.

7:30 p.m.—“Ecosystem Restoration in the Trench: Lessons We Have Learned”

In this panel presentation, Gary Tipper (Regional Range Specialist, B.C. Ministry of Environment, Lands and Parks), who grew up in the area, described the changes he has seen in the landscape and in people over 45 years. Mike Malmberg (District Agriculturist, B.C. Ministry of Agriculture and Fish) described the changes in the agriculture industry over the last three decades, the decline in AUMs on Crown range, and the conflicts that have occurred. He noted that the ability of people to find co-operative solutions should be considered a resource in the valley. Maurice Hansen (Executive Director, East Kootenay Trench Natural Resources Society) described the present co-operative model that has developed in recent years to deal with the problem of forest ingrowth in the Trench.

8:30 p.m.—“A Thumbnail History of the Trench, from the Glaciers to the Present”

Wayne Chouquette, consulting archaeologist and paleo-ecologist, described the geological, climatic, and human factors that have shaped the vegetation of this area over the last 10 000 years. This area may have been dominated by a dry sagebrush vegetation type in the post-glacial period, and evidence of burning has been found as far back as 11 400 years ago. More recently,

⁵ The Concept and Application of Growth Basal Area: A Forestland Stockability Index. Fred Hall, USFS. R6 Ecol Tech Paper 007-89.

about 5000 years ago, the climate changed and the area become much wetter as a result of a shift in the prevailing winds from south–southwest to west. He noted that the Little Ice Age (1630–1820) occurred just before the arrival of David Thompson, the first white person to establish a presence in the Trench. He arrived in an area that had been affected by the Little Ice Age, and the arrival of horses in about 1700. It also appears that bison, antelope, and sharp-tailed grouse occurred in the area before this period, indicating the presence of larger grassland areas than currently exist. He pointed out the issues inherent in attempting to use ecosystem restoration to return landscapes to a condition found at a particular date (e.g., 1850) since vegetation is always in a state of flux.

Day 2—October 22

7:30 a.m.—Greetings from the City of Cranbrook—Michael Patterson, Mayor

8:30 a.m.—Dr. Briony Penn: “Communities and Ecosystem Restoration”

Briony is an instructor in the Restoration of Natural Systems Program at the University of Victoria. She described her experiences in working with small rural communities in Scotland, providing an example of the problems of working with communities on restoration projects. She also noted the importance of culture in defining a people’s relationship to the land.

9:30 a.m.—Bob Gray: “Determining Historic Ecosystem Conditions”

Bob is a consulting fire ecologist. He described his work in using fire-scarred trees to determine burn frequency (13 years on severe sites in the Trench) and stand reconstruction using old stumps to estimate stand density in 1850. He also described the fuel types now found in the Trench and noted that fuel accumulation in the form of needles on the forest floor exceeds the rate of decay by 12–14 times. A discussion of smoke and pollution issues followed his talk.

10:30 a.m.—Dr. Fred Hall: “Finding the Balance between Trees and Grass”

Fred described the factors to consider in attempting to integrate objectives for timber, cattle forage, and wildlife values on dry sites in the Pacific Northwest. He gave a very quick review of his approach to defining site productivity (covered in more detail in the previous field day) and then gave examples of the factors that define stem size and grass production on different sites that he has documented over the last 30 years.

Dr. Hall’s prescription for optimizing multiple resource values on a site is to develop options that maximize each resource (timber, cattle forage, wildlife values) on separate sites, then to develop a prescription that optimizes one value while considering and providing some benefit for other resources and users. This would suggest that best management would provide a mosaic of timber sites and grassland areas optimized for these values, rather than an area with mid-range stand densities attempting to provide some timber values and some forage values on the same site.

11:00 a.m.—Field Tour

The group then went on a field tour. At the Johnson Lake prescribed burn site, B.C. Ministry of Forests Aboriginal liaisons Diana Cote and Lillian Rose described the importance of archaeological resources and the need to consider them in burn plans. Darrell Smith, of the B.C. Ministry of Forests Range Program in Invermere, described the forage response to the 1998

burn. Dave White, a Ministry Incremental Silviculture Forester in Invermere, described the policy directives under which the burning program operates, and described the changes in stand density that resulted from the fire. Phil Burk, of the Range Program in Invermere, described the logistics behind the project, including Forest Service (FS) fuel moisture indices, weather requirements, and their public information program.

The second site studied was the Lost Spring Pasture near Ta Ta Creek (known as the “Miller Road Project”). One block on the site was thinned only, another block was burned only, a third was thinned and then burned, and a fourth block was the untreated control. Maurice Hansen (Rocky Mountain Trench Natural Resources Society) described the project and the associated monitoring and research projects. He noted the relatively small size of the project in relation to the problem, and indicated the present efforts of the society to expand the scope of the program. Bob Jamieson, a tenure holder in the area, described the situation from a rancher’s point of view, and also emphasized the need to increase the scope of the program. Marlene Machmer described 5 years of research on the impact of restoration treatments on bird populations. Tim Ross described his work documenting the response of tree, shrub, grass, and forb layers to different treatments.

Day 2 ended with an annual banquet. Bill Anderson’s contribution to range management in the province and the East Kootenay was recognized and Bill gave a short history of co-ordinated planning in British Columbia. The “Trail Boss” award went to John Buckhouse for his work with moisture regimes and processes in range lands. The evening ended with presentations from local writers and range managers, and Briony demonstrating African/Scottish gumboot dancing.

Day 3—October 23

The next morning was taken up with a panel on “Fire-maintained Ecosystem Restoration: Making it Happen.” John Bergenske (East Kootenay Environmental Society) indicated that face-to-face discussions of issues are best and that recent planning is problematic. Rick Fiddis (B.C. Ministry of Forests, Protection Branch) indicated that they are keen to help with the planning process for burns, and see working together and careful planning as very important. Steve Temple, of CFI, the local forest company saw a need to be fiscally responsible, initiating a discussion around “voodoo” economics, comparing annual return from grazing fees versus one in 90 year returns from logging. George Wilson (East Kootenay Wildlife Association) indicated that too many roads were a major problem. Dave Zehnder (Invermere rancher) indicated that ingrowth of forests, people, and bureaucracy was a problem for the cattle industry. Dave White (Canal Flats Wildlife Club and CFI mill manager) talked about weeds, responsibility, and accountability.

In the ensuing discussion, Nicola Gerts (Land Conservancy of B.C.) talked about the importance of land stewardship, and was excited by the “bluebird-beef” idea. Jim White (B.C. Grasslands Conservation Council) talked about the council and the need for urban and rural interests to work together. Others noted the absence of decision makers at the meeting, the lack of education on range issues, the impact of grazing on aquatic habitats and public water supplies, the bias in the system that leads to the maintenance of poor management practices, the need for reduced stumpage on ingrowth wood in the Trench, and the overall need for combining ecological reality, economic stability, and social acceptability in the restoration program.

Overall Perceptions

1. Although the presentations on the restoration program were useful as a “coming-of-age” experience for those involved, I heard or saw little evidence of anyone from other areas challenging us on our assumptions or giving us anything to chew on. It might have been useful to have presentations on examples of restoration and thinning projects from other jurisdictions.
2. A description of the differences in the Invermere and Cranbrook models and approaches to restoration would have been useful for both locals and people from other areas.
3. The First Nations presentation, especially the reference to their traditional use of fires each spring on the reserve lands, suggests to me that they should play a larger role in the future. It looks to me like native land managers will have a major role in land management in the future, given the decisions and actions on the West Coast and in the Maritimes. We should be thinking about these issues in terms of the future of the restoration program.
4. One person I talked to from the United States indicated that in his area NDT4 restoration is part of fire management, and is treated as “due diligence.” They feel that they have reduced their liability concerns in a major way with this strategy.
5. It was unfortunate that so few local managers and decision makers were there.
6. It might be worthwhile to have a discussion with some foresters, including Joe Tress, about the potential use of fire in denser stands to limb the trees and provide better quality timber. If you look at pictures of the loblolly pine stands in the American southeast, the stems are all limbed to 30–40 feet. I don’t know if that is due to the regular fires, or to manual limbing or thinning, but it might be worthwhile having a discussion around that issue. In either case, if we had denser forest stands that were limbed and therefore were fire-proof, it would be much easier to do range burns, since we could burn entire pastures, grassland areas, and forest areas, together.
7. The major points in Fred’s contribution, for me, were:
 - The root system of Py covers an area five times the crown diameter.
 - The root system of Fd covers an area three times the crown diameter.
 - Py stands are fully stocked at 12% canopy closure.
 - 20% canopy closure is the limit at which bunchgrass grow.
 - A mosaic of open grasslands and forest stands, at optimal density for timber production, is more effective than attempting to grow timber and grass in the middle range of stand density, for all resources.
8. The major point from Briony’s talk was the importance of culture in people’s relationship with land. It might be worth discussing the idea of celebrating Trench culture with an event that included Dr. Penn as well as local poets, singers, and historians.

by: Bob Jamieson, consultant, November 1999

APPENDIX A-3 Kamloops Workshop: Participant List, Notes, and Evaluation

List of Participants, Structural Attributes of Fire-maintained Ecosystems Workshop (Kamloops, February 22–24, 2000)

Name	Affiliation
Anderson, Greg	MOF – Invermere District
Armleder, Harold	MOF – Cariboo Region
Arsenault, Andre	MOF – Kamloops Region
Bai, Yuguang	Agriculture Canada
Baker, Rick	MOF – Kamloops Region
Bealle-Statland, Catherine	MOF – Research Branch
Beck, Bob	MOF – Kamloops Fire Zone
Beck, Judy	MOF – Protection Branch
Belliveau, Phil	MOELP – Kamloops
Braumandl, Tom	MOF – Nelson Region
Dawson, Rick	MOF – Cariboo Region
Dorner, Brigitte	SFU
Feller, Michael	UBC
Fox, Jim	MOF – Kamloops region
Gayton, Don	SIFERP
Gray, Bob	Consultant
Haddow, Cindy	MOELP – Victoria
Heyerdahl, Emily	SFU
Hoffos, Robin	MOELP – Williams Lake
Hollstedt, Chris	SIFERP
Kirby, Jim	MOF-Victoria
Klenner, Walt	MOF – Kamloops Region
Kremsater, Laurie	UBC
Lertzmann, Ken	Simon Fraser Univ.
Lloyd, Dennis	MOF – Kamloops Region
MacKillop, Deb	UBC
MacKinnon, Andy	MOF – Research Branch
Millar, Judy	MOELP- Parks, Summerland
Morford, Shawn	SIFERP
Parminter, John	MOF – Research Branch
Sandmann, Holger	SFU
Soneff, Ken	MOF – Cariboo Region
Steeger, Chris	Consultant
Steen, Ordell	MOF – Cariboo Region
Stevens, Tory	MOELP-Victoria
Sutherland, Karyn	SIFERP
Tipper, Gary	MOELP – Cranbrook
Von Sacken, Angela	MOF-Victoria
Vyse, Alan	MOF – Kamloops Region
White, Dave	MOF – Invermere District

Generic structural attributes for describing NDT4

Attribute	Units/method of measurement
Stems per hectare	
Stems per hectare by layer by live stems	
Stems per hectare by layer by dead stems	
Stems per hectare by age class	
Stems per hectare by size class	
Basal area per hectare	
Height class	
Basal area by layer and age class	
Canopy closure or openness (size class)	
Intertree spacing	
Leading species	
Spatial distribution	
Disturbance history	
Coarse woody debris size class, condition	
Understorey composition	
– species	
– percent cover	
– biomass	
– key species	
– vigour	
Landscape pattern	
Seral stage	
Seral stage mosaics	
Patch size	
– height	
– density	
– micropatch size	
Patch diversity	
Connectivity	
Fine fuels	
Regeneration	
Decline	
Landscape context	
– adjacency	
– distance to nearest road	
Forest floor LFH	
Height to live crown	
Arboreal community	
Crown shape	
Age characteristics or indicators	
Variability of stem diameter	
Single tree disturbance (such as crown scorch)	
Presence of large old trees	
Age of veteran trees	
Diversity of height	
Index of multilayeredness (for example foliage height)	

Cranbrook Workshop Notes

NDT4 and Old Growth Management Areas

The only things constraining us are Landscape Unit Planning Guidelines (must link to provincial targets; for example, must take OGMAs from inoperable [non-contributing] areas first, and must attempt spatial representation [by variant]). Where is the flexibility?

A key is policy acceptance, not wanting additional impacts on timber supply.

The issue is that the traditional, age-based way doesn't work, so we have to work on the attributes. Using "age" is not helping us. We need other variables that tell us what "old" looks like.

There are two choices for old growth:

- redefining old growth (this option has less impact on industry)
- recruit more old growth—we don't need minimum old growth targets anywhere in the NDT4.

This is the point: first come up with old-growth attributes and make that right, then look at the impacts. Do it in this order. What is driving the process: the constraints we operate under, or the ecology?

In the Kootenays, the higher level plan defines it for you.

Take a baby step first. The forest cover data only describes one layer, but it doesn't characterize the whole stand. Can we use other types of information?

We need to link this to management. We have to get a set of attributes that can be applied at the operational level.

We have lost a lot of spatial variation over time, especially in the 1950s and 1960s.

Problem: when we go to apply the guidelines, age is not enough. Age is hard to nail down. Age class will always be a parameter, but it is inadequate for our purposes. We need to know the structural attributes behind the age class.

"Old" is probably the wrong goal. It's likely that 90 percent is old now. We need a new way of thinking.

We need to move from age class to seral class. Seral stages are not the same for NDT4 as they are for other NDTs. There is a gradient of cumulative natural disturbance which is very variable, and hard to relate to age, because of variability in disturbances.

We need to look at your ability to maintain and sustain the old growth.

The definition should include structural attributes (analogues or proxies in some cases) by seral stages, including spatial diversity and distribution, and must be operationally feasible and flexible enough to accommodate various management strategies.

We need to distinguish between seral stage and age.

Angela Von Sacken's summary:

Angela discussed how the presentations delivered so far feed into policy and planning.

This information can be used to write objectives for Local Resource Management Plans (LRMPs) and higher-level (strategic) plans. The objectives can be less restrictive than what is in the Landscape Unit Planning (LUP) guide. This information should be available at the objective writing stage.

There is a certain urgency. All objectives for Old Growth across the province must be completed by 2002. Attributes should be organized by strategic and operational levels. We must have these attributes within the next 6 months.

The discussions over the last few days are in the right direction.

In the NDT4, old growth areas must be managed. We need to know how much harvesting, burning, and thinning can help us achieve the desired future condition.

We will look at the inventory differently. Layers and other attributes will be investigated. If there is no old growth, how can we recruit?

Variable disturbance: what does that mean? Can we use what Dennis Lloyd has produced to define the groupings? How many subgroups in the NDT4 should there be? What are the details needed in each of these subgroups? What percentage of old growth must be maintained in each of these subgroups? Can we compare between regions and develop a consistent approach or is it better to keep things separate?

Reality check: there are social, economic, structural, and spatial representation targets that must be considered. It is not just ecological.

Questions and discussions from these two talks

- We don't currently see an attribute-based definition.
- We need to get something for OGMA process immediately; there is fear that this will stall the process because of a lack of direction (we need to set the direction so we don't lose an opportunity).
- We have enough information to develop OGMA's in the NDT4.
- This information is important to help not only define OGMA's, but to manage the recruited areas over time.

Recommendations

- Put information into everyone's hands quickly.
- Develop information and tools to vary objectives.
- The public record on historical condition is poor. How do we give direction to people to restore systems to historic levels if we don't know what those historic levels were?
- How will this tool be used?
 - To set strategic objectives.
 - To set operational direction for management of and recruitment of OGMA's.
- We don't want restrictive definitions, but options that provide for a mixture of units.

Key points

- It is tough to link area-based objectives to a 12% target.
- It is important to have OGMA's spatially located by 2002.
- Without management, all areas are at risk (potential catastrophic events).
- The key issue is maintenance.
- Attribute management is important.
- We want to be able to maintain a legacy of old trees and structural units that may be out of OGMA's.
- Ingrowth and encroachment have to be addressed.

- The vision is for zone management to maintain legacies and restore structure, linking to historic levels that may or may not be 12% of the NDT4 land base.

Flip chart notes

Working session objectives:

- Confirm agreement on the importance of a common framework.
- List a series of attributes and thresholds that describe the NDT4 (building on what exists).
- Agree on regional distinctions and come up with options for development of an attribute-based tool.
- Assign these attributes to an ecological framework.

How will we use this information?

- To manage encroachment and ingrowth.
- To maintain the legacy we already have.
- To restore historic landscape structure and representation linked to historic information, if we have it.
- Tool will be useful at the strategic level to set strategic objectives and at the operational level to guide how we can achieve these objectives.

Discussion on options:

Kamloops	Kootenays	Cariboo
NDT4 subzone variants NDT4 a, b, and c	Shrubland and riparian	Site series and seral stage
12 ecogroups (site series groupings)	Open range	Seral stage by subzone, site series, and topography
Lumping the 12 ecogroups into 5	Open forest	
12 ecogroups by seral stage	Closed forest	

PART B:
Evaluation of Structural
Attributes NDT4 Workshop
(Kamloops, February 22–24, 2000)

INTRODUCTION

An evaluation tool was administered at a Partnership workshop on Structural Attributes in the NDT4 to determine the appropriateness and effectiveness of the event, the agenda, and the goals. Results of the evaluation will be used to inform planning for future technical problem-solving workshops of this type.

STRUCTURAL ATTRIBUTES IN THE NDT4 WORKSHOP: DESCRIPTION

Goals of the workshop were “to review the state of the art in terms of disturbance regimes and stand structure in the NDT4, and then proceed to create practical structural attribute-based definitions, by subzone, as an alternative to age-based seral stage definitions. At workshop conclusion, important next steps will be consensually defined. It will also provide for informal information exchange.” The workshop was held in the Agriculture and Agrifood Canada conference room, Kamloops, February 22–24, 2000. Sectoral representation of workshop registrants was roughly 50% operations, 30% researchers, 10% policymakers, and 10% consultants. Maximum workshop attendance was 39, including presenters.

WORKSHOP EVALUATION METHODOLOGY

Several registrants had to leave at the end of the first day of the 2-day workshop; they were asked to fill out the evaluation form on their departure. The balance of those attending filled theirs out at the end of the workshop. Thirty-one evaluation forms were completed. Of the eight who did not fill out the evaluation form, most attended the first day and did not receive a form. Not all respondents answered every question; percentages were derived from the total number of responses for each question. The evaluation form included “Yes and No” as a response option, but several respondents intentionally checked both Yes and No on questions 2, 5, and 6, so these were recorded as a third response option.

RESULTS

Results are presented here in tabular form; free responses are recorded in Appendix B-1. The actual questionnaire is reproduced in Appendix B-2, and raw response data is provided in Appendix B-3.

1. How much of the 3-day workshop did you attend?

<i>Response</i>	<i>Percent</i>
Two Days	67
Three Days	33

2. Were the agenda items arranged logically?

<i>Response</i>	<i>Percent</i>
Yes	75
No	14
Yes and No	10

If no, what would you have changed?

3. How did you see the balance between presentation and discussion?

<i>Response</i>	<i>Percent</i>
Too much presentation	13
Balance about right	84
Too much discussion	3

4. Agenda balance between research, operations, and policy issues:

<i>Issue</i>	<i>Response</i>		
	<i>Too much</i>	<i>About right</i>	<i>Not enough</i>
Operations	0	55	45
Policy	0	90	10
Research	24	69	7

5. Did this workshop meet your needs?

<i>Response</i>	<i>Percent</i>
Yes	68
No	11
Yes and no	21

6. Did the workshop cover the highest priority NDT4 topics?

<i>Response</i>	<i>Percent</i>
Yes	75
No	21
Yes and no	4

If no, what topics should have been covered?

7. Is there a need for future events (workshops, field trips, conferences, training, etc.) covering NDT4 issues?

<i>Response</i>	<i>Percent</i>
Yes	96
No	4

If yes, please provide suggestions:

8. Has this workshop changed the way you understand the NDT4?

<i>Response</i>	<i>Percent</i>
Yes	68
No	32

9. As a result of the information and/or understanding acquired at this workshop, do you anticipate making any changes to your work (operations, policy, research, etc.) in the NDT4?

<i>Response</i>	<i>Percent</i>
Yes	54
No	46

Tell us how?

CONCLUSIONS

A primary workshop goal was met in that a final, consensual product (an NDT4 attribute matrix) was generated. An ad hoc subcommittee was struck to finalize the product and get it back to participants.

Workshop evaluation respondents generally approved of the overall workshop, the agenda sequence, and the balance of presentation versus discussion. In terms of agenda content, respondents were generally satisfied with the balance between operations, policy, and research, but a significant minority wanted a reduced research component and an increased operations component. Respondents offered a definite mandate (96%) to the Partnership to pursue further programming in the NDT4.

Responses to the questions “has this workshop changed the way you understand the NDT4,” and “as a result of this workshop, do you anticipate making any changes to your work” were high (68% and 54% affirmative, respectively), given this was an invited audience of experts and practitioners in the field. These data lead me to believe that there has been inadequate extension on the NDT4 issue, as well as insufficient inter-regional and interjurisdictional communication on it.

The responses, as well as my personal observations of the workshop, indicate a developing “push–pull” relationship between research and operations in the NDT4, with each sector wanting the other to be more cognizant of their needs and concerns. I see this as an essentially healthy development, possibly the single most useful outcome of the workshop.

There was an accusation that the Partnership was being positional on NDT4 (see Free Responses, Question 9), plus a post-workshop comment to that effect. Objectivity is a crucial Partnership asset, which should not be put in jeopardy. However, if the Partnership is to be involved in emerging and cutting-edge issues of ecosystem management in the Southern Interior, ideological differences are bound to come up, and some may interpret programming containing opposing points of view as “positionality.” The only sure way to avoid such accusations is to restrict Partnership programming to established and traditional issues.

APPENDIX B-1 Evaluation Feedback: Free Responses

Question 2: “How would you have changed the agenda?”

- Less presentation on Day 2 would have left more time for discussion and proceeding forward. The regional summaries took too much time (relative to that available) and should have been shortened and put into the first day.
- Policy discussions were limited to OGMAs too much.
- I think we attempted to tackle too large of an issue by not getting into differences within the NDT4 until the end. People talked too often about their certain type of NDT4, while everyone else interpreted it from their perspective of a different type of NDT4. This led to confusion.
- Thorough research presentations were difficult to tailor to the level of expertise and relevance of managers without a prior knowledge of the operation and policy issues (i.e., more background information upfront would have been useful).
- Focus on administration needs without enough ecosystem variability and objectives for a variety of resource needs—watershed, wildlife (over 200 species), recreation, and agriculture.
- Attribute discussion on Day 2.
- Presentations first, then discussion, rather than interspersed—a matter of degree.
- Announce changes in agenda.
- Wandered well off the agenda by the second day, but that was okay.
- It would be useful to put the research part in the middle of the workshop to give scientists the opportunity to address arising issues more directly.
- Introduction to NDT4 possible ecosystems (like Dennis Lloyd’s presentation).
- The agenda was flexible enough to allow the changes to happen.
- It would have been nice to know that Tuesday’s agenda had changed from inventory to fire/disturbance. I did register, so should have been able to get fax or e-mail when things changed.
- The objectives of the workshop were not well thought out. It’s too bad because there was a lot of expertise and energy in the room, which was not channelled properly.
- It seems too much was on the agenda.

Question 7: “Provide suggestions for future NDT4 events”

- More events are needed, but not until more work has been done regionally and synthesized.
- Not in the immediate future at least.
- Regular (e.g., annual) meetings, including field trips to allow for communication.
- Administration focus (dominant) versus operations (weak).
- Another workshop 6–12 months down the road. A field trip would also be useful. Another workshop to get into the details of what we discussed here (e.g., subdivisions of NDT4 and OGMA management details).
- More of all on NDT4, visit NDT4 sites, burns, problem areas, unique features.

- MOF should answer research questions as soon as possible and take ownership. A research strategy meeting is desirable. Perceptions are slowing management vision. A field symposium would be good. One per year per region, with similar members.
- Translating concern about NDT4 into action, plan to actually implement restoration vision/emulating the structure/attributes.
- Annual workshop limited to 30 people (MOF, MOELP; research, operations) to update and share information.
- Further development of definitions, targets, implementation tactics.
- Detailed follow-up in small groups to work on operation issues and separate workshop on research agenda.
- A workshop that works on defining (by stand) structure attributes that cover the range of diversity we want.
- More time is needed to discuss the issues brought up in this workshop.
- Revisit attributes and management as new information becomes available.
- Field trip to look at attributes.
- Complete attribute discussion, discuss management for “old” individuals, recruitment outside of OGMA.
- A smaller group may be more efficient to deal with the structural definition issue.
- My preference would be to have forest and wildlife and range ecologists for this task.
- It sounds as if this kind of workshop would benefit all the NDTs. I would never discourage efforts to organize communication among researchers, MOELP and MOF, region and headquarters, etc. The more, the better.
- Need to follow-up on progress made at this meeting.
- Continue discussion, maybe every year update. Small group work on structural definitions.
- Field trip to examine restoration treatments.
- It was too early to have this workshop.
- Workshop/field trip to look at eco-restoration that has been done. I think there are a bunch of unknowns of fire severity and mosaic created even by spring burns; people need to see the variability in severity.
- Workshop on ecosystem health, including professionals involved in the assessment of health. Workshop on determining reference conditions, including the impacts of First Nations resource management activities. Workshop on restoration operations.
- Workshop with field visit to managed open forest and unmanaged OGMA in dry forest zone (NDT4b).

Question 9: “Do you anticipate the information and/or understanding acquired at this workshop will change the way you work in the NDT4? If so, tell us how. (Response is “yes” unless otherwise noted).

- No, but it brought home the urgency of filling the holes in our current ecological knowledge about NDT4.
- Only slightly.
- The idea of OGMA reserves no longer holds true. They should be areas of low-level, constant management, rather than reserves.
- Keep the pressure on policymakers, managers, and researchers to get on with it.
- We are bogging down at a critical time in the NDT4 life.

- Alter prescriptions to reflect long-term goals, thereby improving the probability of landing in the right place in the future.
- Want to get a student(s) to do some work on alternative approaches to definitions and indexes using our data and others data!
- Applications of research results (framework into recommendations).
- Refining my research.
- Too soon to tell if this will influence my work.
- Will spend more time assessing current fate of NDT4 in operating area.
- Getting people together from all regions has helped to develop some elements of a common approach.
- I will pass on my new knowledge to the folks in Habitat Branch (MOELP).
- Workshop was very useful in verifying appropriateness of our approach, but has suggested some modifications and alternatives to consider.
- Good contacts. Smaller groups will meet to tackle definitions and more work will be happening on NDT in various areas.
- No. I am concerned about the Partnership taking advocacy role in land management issues and policy. There are some clear and transparent processes taking place in the regions, which should not be ignored. I think it would be much wiser to have brainstorm sessions rather than building consensus. I did enjoy meeting NDT4 people and learning more about what they are doing.
- No, not at this point.
- Making recommendations for addressing NDT4-wide ecosystem health problems.
- Good advice was presented on how to implement a large burn plan. Intend to incorporate these ideas into burn plans within Kamloops and Lillooet Forest Districts.

Other Free Responses:

- Critique: if building a list of NDT4 attributes and actually getting numbers into that list was a supposed outcome of this meeting, then attendees should have been asked to prepare their lists before coming to the meeting.
- Interesting. Being just a curious observer, there is not much I have to say about whether this met my needs. However my impression is that the gathering was worthwhile for those who needed to derive some worth from it. Despite the frustrations and confusions of different interests and perspectives, good to see people speaking so thoughtfully.
- There is still a long way to go on this NDT4 issue. I wouldn't support jumping into any specific track as a result of the workshop without some testing by district and regional staff on the potential solutions.
- It appears the Inventory people have a good handle on processes for data collection. They could use more information on physical attributes to supplement ocular processes. If it looks like a duck and quacks like a duck, it must be a duck.
- I was confused as to whether we were discussing attributes of NDT4, or attributes of "old growth" NDT4, or if they are the same. If they are the same, then the 12% in Landscape Unit Guide for old growth is meaningless because old growth in NDT4 is 100%. There needs to be something for operational staff because forest districts around the province are

going ahead with planning burns, etc. Provincial and regional committees are following districts and will get “left behind” if this process is not accelerated to provide them with some direction (look at what the Trench is doing).

- Comment. Main political issue around NDT4 is definition or description of old growth. Need a one- or two-day workshop or think tank to address this issue because we are not going to come to grips with this in 3 or 4 hours. This issue is not going to go away. Need ecogroup targets ASAP. Note: Last hour of discussion was very productive. It is critical that this group of NDT4-interested people continue to exchange regional viewpoints, successes, and failures over the next few years.

APPENDIX B-2 Copy of Workshop Evaluation Form

SOUTHERN INTERIOR FOREST EXTENSION AND RESEARCH PARTNERSHIP

NDT4 Workshop, Kamloops, February 22–24

1. Did you attend 1 day ____ 2 days ____ 3 days ____

2. Were the agenda items arranged logically? Yes ____ No ____

If no, what would you have changed? _____

3. How did you see the balance between presentation and discussion (check one)?

Too much presentation, not enough discussion ____

Balance between presentation and discussion about right ____

Too much discussion, not enough presentation ____

4. Agenda balance between research, operations and policy issues (check three):

Too much

About right

Not enough

Operations

Policy

Research

5. Did this workshop meet your needs? Yes ____ No ____

6. Did the workshop cover the highest priority NDT4 topics? Yes ____ No ____

If no, what topics should have been covered? _____

7. Is there a need for future events (workshops, field trips, conferences, training, etc.) covering NDT4 issues? Yes ____ No ____

If yes, please provide suggestions _____

8. Has this workshop changed the way you understand the NDT4? Yes ____ No ____

9. As a result of the information and/or understanding acquired at this workshop, do you anticipate making any changes to your work (operations, policy, research, etc.) in the NDT4? Yes ____ No ____

Use the back for any additional comments.

Thank you!

APPENDIX B-3 Evaluation Raw Response Data

Question	Response	Number	Total responses	%
1	2 days	11	31	35
	3 days	20		65
2	Yes	21	28	75
	No	4		14
	Yes and No	3		11
3	Too much presentation	4	30	13
	About right	25		84
	Too much discussion	1		3
4	Too much operations	0	29	0
	Operations about right	16		55
	Not enough operations	13		45
4	Too much policy	0	29	0
	Policy about right	26		90
	Not enough policy	3		10
4	Too much research	7	29	24
	Research about right	20		69
	Not enough research	2		7
5	Yes	19	28	68
	No	3		11
	Yes and No	6		21
6	Yes	18	24	75
	No	5		21
	Yes and No	1		4
7	Yes	28	29	96
	No	1		4
8	Yes	21	31	68
	No	10		32
9	Yes	15	28	54
	No	13		46