Forest Genetics and Certification - Presentation summary

Introduction

In the closing decade of the 20-century a number of intergovernmental and non-governmental processes emerged that sought to determine, internationally, measures of responsible forest management. Responding to concerns over tropical deforestation, general forest ecosystem degradation, and limited transparency in international trade, these processes have focused energy on clarifying what sustainable forest management is and attempting to encourage its practice.

Forest certification is one such initiative. Set up by environmental, economic and social interests, certain initiatives have captured the attention of forest products producers and particular retail companies, which have begun to express a desire to sell certified wood products. However, there are a number of initiatives, each with different requirements, procedures for assessing management, and each, which states, it is verifying the practice of responsible management. This leads to a number of questions:

- Does certification really provide for responsible forest management?
- If so, how do the different initiatives assess important components of functioning forests?
- Is this likely to change in the future?

In BC, there is extensive interest in understanding how government policy stands when compared to the requirements of the various certification initiatives. Forest genetic resource management and conservation is one area, which has received limited attention.

Research Objectives

In light of these questions we sought to address two main objectives:

1. Look at how certification in other regions addresses the management and conservation of forest genetic resources.
2. Relate this to BC standards, requirements and practices surrounding forest genetics management in order to determine potential conflicts between certification and management occurring in BC forests.

Methodology

The research proceeded in two parts. The first involved examining the standards and requirements of four certification initiatives and the second involved interviewing individuals with expertise in forest genetics and certification. We examined the following certification initiatives:

- The Canadian Standards Association (CSA), which is a national body that facilitates developing product certification in Canada.
- The Forest Stewardship Council (FSC), which acts as both an international body that oversees national standards development that adhere to the FSC Principles and Criteria (P&C) and an accreditation body for companies that wish to certify to the FSC standard.
- The Pan European Forest Certification (PEFC) initiative, which is a mutual recognition framework and,
- The Sustainable Forestry Initiative (SFI) that was initially an industry code of conduct for members of the American Forest and Paper Association, but has, more recently, developed procedures for independent verification. As with the FSC, it does not certify companies; nationally accredited auditing firms are responsible for this activity.

Standards analysis

With each initiative we examined specific documents for references to genetics.

- FSC – examined national and sub-national draft and ratified standards; and the requirements of the FSC-accredited certifiers used in the absence of endorsed national/sub-national standards.
- CSA – examined the Canadian Council of Forest Ministers 6 criteria and 21 Critical elements.
- SFI – examined documents outlining the initiative's objectives, performance measures, core and other indicators.
- PEFC – examined the Pan European Criteria and Indicators, and operational level guidelines. We also examined a selection of standards from the national-initiatives.

Interview analysis

Interviewees included individuals from the following five groups. 1) BC ministry of forests, 2) Companies and organizations conducting certification audits, 3) Officials working with the certification initiatives, 4) Environmental groups, and 5) Forest geneticists.

Background

Genetics is a key component of biodiversity. It is a central concern to forest managers as it offers opportunities to increase resistance to pathogens and pests, and potentially increase stand productivity. Selecting for improved characteristics relies on genetic variability, making the conservation of genetic diversity an important consideration for managers. Table 1, reviews how the BC government addresses the management and conservation of forest genetic diversity.

Table 1. Information on the BC approach to management and conservation of forest genetic diversity

	Description of relevant BC requirements
Genetic Diversity	-Technical standards on wild seed collection and orchard seed production (e.g., number of trees and effective population size) (see http://www.for.gov.bc.ca/tip/treeseed/tech.htm) -Protected areas; wildlife, visual or environmentally sensitive set- asides; riparian reserves; and inoperable stands (see http://www.growingtogether.ca/facts/protected.htm)
Genetic Adaptation	-Seed planning zones, and seed and vegetative material transfer guidelines (see http://www.for.gov.bc.ca/tip/seedp_zones/index.htm and http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/veg/seedtoc.htm)
Genetic Quality	-Adherence to seed registration standards (SPAR) required under Forest Practices Code Act for planting seed or vegetative material on Crown lands (see http://www.for.gov.bc.ca/tip/spar/index.htm) -Replanting must use best genetic quality seed source unless exempted by district manager (see http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcaregs/silvprac/spr1.htm#8)
Genetic Manipulation	-Forest Genetics Council recommended 10 year moratorium on use of GMO for reforestation -GMOs not eligible for registration under current seed and vegetative material standards and requirements (see http://www.for.gov.bc.ca/tip/treeseed/tech.htm) -Import and export of GM material along with health and safety issues, and environmental impacts governed by Federal government (see http://bravo.ic.gc.ca/biotech/forestry/foprous.htm)

Results

The evidence from the examination indicates that BC standards and requirements specific to forest genetics are not in conflict with the standards of the included certification initiatives.

Table 2, summarizes the results of the document analysis for each of the initiatives. Table 3, provides a summary of the views expressed by interviewees on particular questions.

Table 2. Results from document analysis

FSC	CSA	SFI	PEFC
- Variable and vague - Promoted natural regeneration for maintaining genetic diversity - Documentation on seed source and clear rationale for actions that affect genetics on a given site - Greater emphasis on maintaining natural functions, meaning genetics addressed along with other forest conditions	- Vary between companies - Genetics issues developed, and are dealt with, on a company by company basis	- Vary between companies - Emphasis on protecting genetic resources as a source of future improvements for forest productivity - No practices prohibited - Encourages practices that are scientifically based	- Vary between national initiatives - Promote natural regeneration and emphasize protecting natural forest function - Attention to genetics from very specific to non-existent

Table 3. Results from interview analysis

	Interview responses			
Questions	**Forest Geneticists**	**Environmental Groups**	**Certifiers**	**Certification initiatives**
To what extent has a scientific perspective been integrated into the standards development process?	Variable	Variable	Variable	Variable
Is gene conservation and management well addressed by certification standards?	No	Yes	No	Variable
Do you agree with the ban on the use of GMOs?	Variable	Yes	Variable	Variable
Will traditional tree breeding play a role in certified forests over the long-term?	Yes	Variable	Yes	Yes
Will the impact of management practices on genetic diversity become more important in the future?	Yes	Yes	Yes	Yes

All the evidence indicates that for the specific issue of forest genetic resource management and conservation, BC standards and requirements are not in conflict with the requirements set by the certification initiatives. However, it is important to note that certification standards are hard to assess in isolation: other parts of the standards have indirect effects on the management of forest genetic resources. And while they may not state that gene conservation is their explicit objective, these other requirements may cause conflicts that have not been uncovered in this report.

There are, however, also specific issues to do with forest genetics that, in all likelihood, will be the topic of future debate in BC. First, if certification standards develop defined thresholds for conserving genetic resources, they may deviate from existing Ministry of Forest requirements (e.g., if a certification initiative sets a minimum effective population size of 15 trees for a breeding population, this would preclude the planting of certain seed presently registered at the provincial seed tree center).

Second, tree breeding does not have the unanimous support of BC environmental groups. The existing target of 75 % use of select seed in regenerating BC forests by 2007 would probably be in direct conflict with certification initiatives that choose to restrict the use of tree breeding. This issue will require further examination and attention in the coming years, particularly if the future level of natural infill in BC second growth forests significantly declines.

Conclusions and Recommendations

We identified broad agreement among interviewees that forest genetic resources are impractical to measure directly in field audits given current knowledge and technology. Consequently we are stuck using proxies that give us some sense of our potential impact on these resources; measuring whether management mimics natural processes may be the safest and most practical way to protect genetic diversity and its contribution to ecosystem resilience in the majority of situations.

Since this is not the case for all stands, certification standards would benefit from better knowledge of how effective the use of natural regeneration and the protection of phenotypically varied set-asides are at maintaining levels of genetic diversity. This is a question forest geneticists clearly should be trying to answer. Developing checklists and guidance material on how forest genetics are impacted by various regeneration, stand tending and harvesting practices in different forest types would be a significant contribution to better defining the parameters of responsible forest management.