

Policy and Genetic Resource Management Directions

or

Who moved my seed?

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July 29, 2008



Overview

- Setting the context
 - Major Forestry Issues
 - MPB
 - State of Forest Industry
 - Political Direction
- Climate Change & Forest Carbon
- GRM Challenge Dialogue
- Other TIB Initiatives and News



Major Forestry Issues

- **Mountain Pine Beetle**
- **BC Forest Industry** – Roundtable, Regulatory Review, Innovation, Community Transition,
- **Coast** – transition to 2nd growth
- **First Nations** – treaty negotiations, FN opportunities
- **Fire Protection and Community and Interface**
- **Managing for multi-values:** ecosystem-based management, visuals; water; wildlife (spp. at risk), NTFPs
- **Worker Safety and Succession**
- **Climate Change** – GHG mitigation and adaptation



Responses to the Mountain Pine Beetle

- Increase harvest levels in affected areas
- Protect the mid-term timber supply
- Mountain Pine Beetle Action Plan
- BC Bio-energy Strategy
- Forest for Tomorrow Program



State of Forest Industry

- Weak US market
- Strong Canadian \$
- Increasing energy and transportation costs
- Softwood lumber sales decline
 - 24 % compared to 2006 sales
 - 36 % “ 2003 “
- Mill closures, reduced shifts
- Full AAC not being harvested
~75% of 80M m³ Provincial AAC



Seedlings Requested vs. Planted 2005-2008

Planting Year	Seedlings Requested (k)	Seedlings Planted (k)	Difference (k)
2005	227	209	18
2006	257	230	27
2007	270	236	34



Minister Pat Bell's – Top 4 Themes

1. Growing more trees and fibre
- for diverse products and carbon storage; creating incentives to capture full value
2. Improving utilization standards
3. Expand markets – China
4. Promote wood construction in commercial and institutional buildings



State of Forest Sector – Seed Use Impacts

- Less area harvested = less seed demand (Licensees and BCTS)
- New and diverse seed users: Communities, First Nations, Bio-energy producers, carbon sequesters
- Increasing gov't role in reforestation – FFT Program
- Continued demand for quality seed.... at reduced cost
- Optimize seed use efficiency



Climate Change Impacts



Frequent Intense Storms



Insects and Disease



Changing Fire Behaviour



More Severe Drought

Climate Change Responses

BC Government

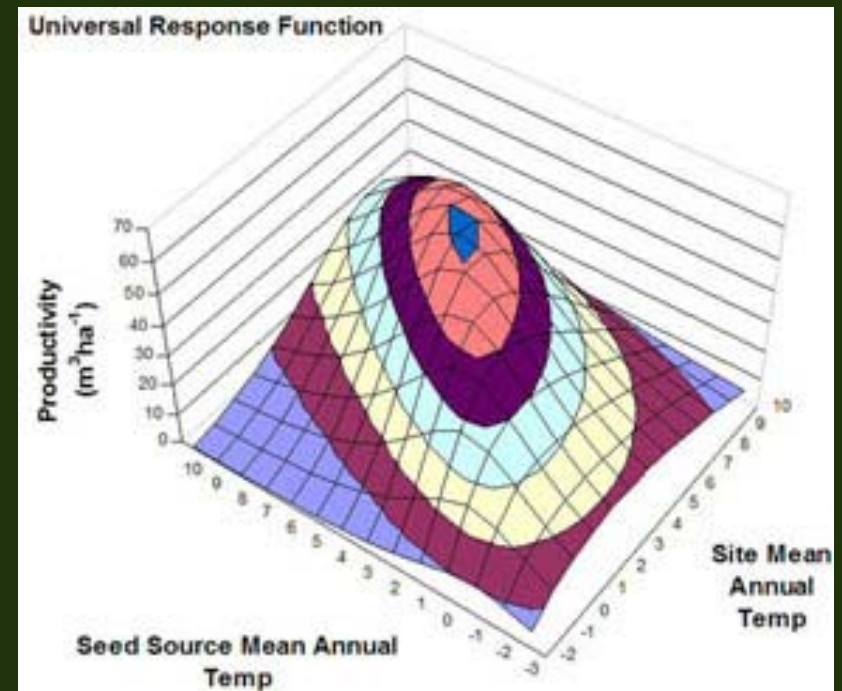
- Aggressive GHG reduction targets
- Western Climate Initiative
- Cap and Trade System
- Zero net deforestation
- Plant trees to store carbon
- Use wood over other products
- Bio-energy Strategy

Ministry of Forests and Range

- MFR climate change strategy
- Future Forest Ecosystems Initiative
- FFEI Science Council
- Forest Sector Climate Action Steering Committee
- Forest carbon management scenarios, protocols
- Climate modelling; seed transfer and species selection changes

Climate-based Seed Transfer

- **Interim changes Fall 2008**
 - elevation, latitudinal shifts for some spp.
- **Seed Transfer Models** – development, analysis, and selection
- **New seed transfer standards within 3-5 yrs**
- Tied to climate projections and species selection
- **Assisted Migration Trial**
- **Incremental changes over time** – allow for adjustments to investments in seed inventories and orchards etc.



Courtesy Greg O'Neill

CC and Carbon - Seed Use Impacts

- Changing species selection & seed transfer standards
- Increased species diversity – hardwoods
- Changes to breeding programs, seed production
- Increased use of seed from warmer areas – USA
- Shifts in use of existing seed inventories, ownership
- Seed supply in wild stands effected by increased pest damage and changes in reproduction.
- Some seed will become more precious, other redundant.



Genetic Resource Management (GRM) Challenge Dialogue

Purpose:

- *to have a dialogue with GRM Community of Practice (COP) and stakeholders to create:*

a collective vision and strategy for GRM in BC



GRM Final Report & Strategic Framework



Forest Tree Genetic Resource Management – Strategic Framework (Logic Model)

Vision:
GRM's forest genetic resources are diverse, resilient, and managed to provide multiple values for the benefit of present and future generations.

Guiding Principles:
• Foster a cooperative management approach - address GRM components of conservation, resilience and value in a balanced and integrated manner through collaboration between government agencies, forest industry, professionals, First Nations, environmental groups and others
• Recognize GRM as an integral element of sustainable forest management

Respond proactively to environmental, social, economic and technology changes
Pursue the best science
Nurture collaboration among stakeholders

Apply adaptive management
Exercise open inclusive communication + Measure and manage performance
Employ best practices

Drivers

- Climate change
- Increasing plantation value
- Genetic legacy - developed properly and maintained for future generations
- Mountain Pine Beetle impact in the interior of BC - large reforestation investments, seed demand
- Cost competitiveness of the forest industry
- Transition from old growth to second growth stands on the coast
- National and international agreements, protocols and obligations
- Marketplace demands regarding sustainability
- Forest industry sustainable forest management and certification
- New technologies
- Demand for new and improved forest and other bioproducts

Resources

- Forest Tree Genetic Resource Assets of British Columbia
- GRM Related Programs and Initiatives
- GRM Community of Practice - people, expertise and skills
- GRM Governance, Operating Model and Funding - FCC, Ministries, FIC, Forest Science Board, other levels of government, industry, firms, NGOs and academia
- GRM Related Infrastructure
- GRM Related Support Systems - Information and Decision Support Systems

Objectives and Outcomes

Core Business Objectives and Outcomes

1. Conservation – genetic diversity of representative populations of all indigenous tree species

Objective: The genetic diversity of all tree species indigenous to BC is protected through a network of in-situ reserves, ex-situ populations, and ex-situ seed collections.

Outcome: The genetic structure and diversity of all indigenous tree species are adequately maintained to support their continued evolution while providing environmental services and social and economic values.

3. Resilience – Adaptation, diversity, and pest resistance

Objective: GRM activities, including seed transfer and registration policies, aim to address the potential environmental impacts of climate change, including changes to forest productivity and forest health risks.

Outcome: Trees are well adapted to the climate of the areas in which they are planted, contain adequate genetic diversity, and, where technically feasible, are resilient to pests, resistant, healthy, and form part of diverse forest ecosystems across the landscape.

3. Value – increased timber and non-timber values

Objective: Sufficient seed of high quality and genetic value is produced through tree breeding, seed production, and related activities to meet reforestation objectives and enhance timber supply and quality.

Outcome: The genetic resource of indigenous tree species is developed to maintain and enhance a range of socio-economic values.

Enabling Outcomes Objectives and Outcomes

4. Research

Objective: Knowledge gaps respecting the genetic diversity, genetic worth, demarcations, and adaptation to climate, pests and diseases, as well as reproductive biology, seed production, and control of cone and seed pests of BC's indigenous tree species are identified, prioritized and addressed to support SFM planning, policy and practice.

Outcome: GRM policies, plans and practices are informed by timely and objective scientific knowledge on the genetic diversity, genetic improvement, seed transfer, and seed production of indigenous tree species.

5. Decision Support Systems - accessible data, information, knowledge and tools

Objective: Decision Support Systems are developed, maintained and improved and linked with other information systems to support GRM core business needs.

Outcome: Decision makers (e.g. government, chief forester, district managers, forest professionals) make informed decisions using readily available GRM data, knowledge and tools.

6. GRM Policy and Practices

Objective: Policy and practices are assessed and improved continuously through regular effectiveness evaluation.

Outcome: GRM policies and practices are aligned with the Chief Forester's Stewardship Vision and Research, and guide and support strategic land use planning, sustainable forest management objectives.

7. Communications

Objective: The vision objectives and strategies for GRM are communicated and embedded clearly and effectively to the GRM community of practice, all stakeholders, First Nations and the public.

Outcome: There is an appropriate level of awareness, understanding, and support of GRM and its role in SFM, among the community of practice, stakeholders, First Nations and the public.

Impacts

Strategic GRM investments in value, conservation, and resilience during uncertain times will ensure the availability of Indigenous tree genetic resources to meet the social, environmental, and economic needs of British Columbians today and in the future.

The contribution of GRM to the resilience and productivity of BC's forests enhances forest commercial value and forest industry competitiveness, while increasing society's ability to respond future change.

Stakeholder and the public understanding of GRM earns their trust and provides a social license for the work of GRM practitioners and the forest sector to manage and operate in the forest.

GRM in BC is a model for the world to follow.

Assumptions that will influence how we choose to move forward with GRM to 2020:

- Future climatic conditions will be different and difficult to predict with certainty, especially precipitation patterns as they impact forest ecosystems.
- Changing climate will require new research, tools, and decision-making approaches to manage risk, uncertainty, and complexity in a timely manner.

3. The assisted migration of tree species and seed sources is a proactive forest management response to climate change, since populations will be less adapted to their current locations over time.

4. GRM activities can be responsive to changing climate, new technologies, global markets and social values in order to maintain or enhance timber supply and non-timber values.

5. Conservation strategies will need to change to address warming climates, since tree genetic resources may not be adequately protected in existing parks, ex-situ reserves, etc.

6. Responsive policies and practices, and new incentives will be required to support conservation, resilience and value.

7. Although new technologies and exotic species may offer some opportunities, they require extensive development, testing and evaluation in an appropriate biological and social context before they can be considered for broader applications.

8. Although the Ministry of Forests and Range is devoted to and accountable for forest resources, GRM activities are best coordinated and delivered as a collaborative effort with stakeholders.

9. GRM is an integral part of sustainable forest management and biodiversity and needs to be aligned and linked with strategies and objectives for these and other government priorities and policies (e.g. climate change).

10. The human resources and capacity needed to deliver conservation, resilience and value will require ongoing partnerships with other organizations and initiatives.

Logic Model developed as part of the GRM (Strategic Planning) process. Concept and graphics by J. East, Ross A. Anderson - Strategic Design



GRM in BC

Vision

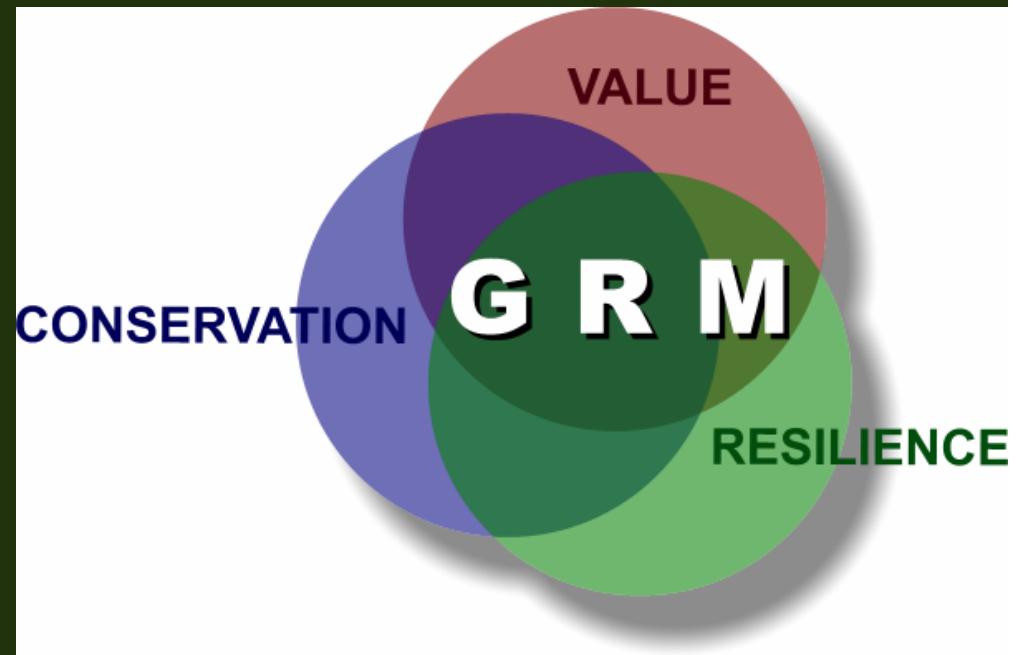
BC's forest genetic resources are diverse, resilient, and managed to provide multiple values for the benefit of present and future generations

Scope

- Crown & Private lands
- Includes All 51 tree spp. in BC
- Indigenous, “migrated” and “exotic” spp.
- Timber & non-timber values
- Encompasses new technologies

Components of GRM

- 3 core business areas:
 - Conservation
 - Resilience
 - Value
- Enablers:
 - Research
 - Policy and Practices
 - Decision Support Systems
 - Communications



Conservation

Outcome: The genetic structure and diversity of all indigenous tree species are adequately maintained to support their continued evolution while providing environmental services and social and economic values.

Objective: The genetic diversity of all tree species indigenous to BC is protected through a network of in-situ reserves, inter-situ populations, and ex-situ seed collections.

Resilience

Outcome: Trees are well adapted to the projected climate of the areas in which they are planted, contain adequate genetic diversity, and where technically feasible, are resistant to pests, resilient, healthy, and form part of diverse forest ecosystems across the landscape

Objective: GRM activities, including seed registration^[1] and transfer policies, aim to address the potential environmental impacts of climate change, including, changes to forest productivity and forest health risks.

^[1] includes collection, processing, testing, verification, storage, distribution and tracking of seed.

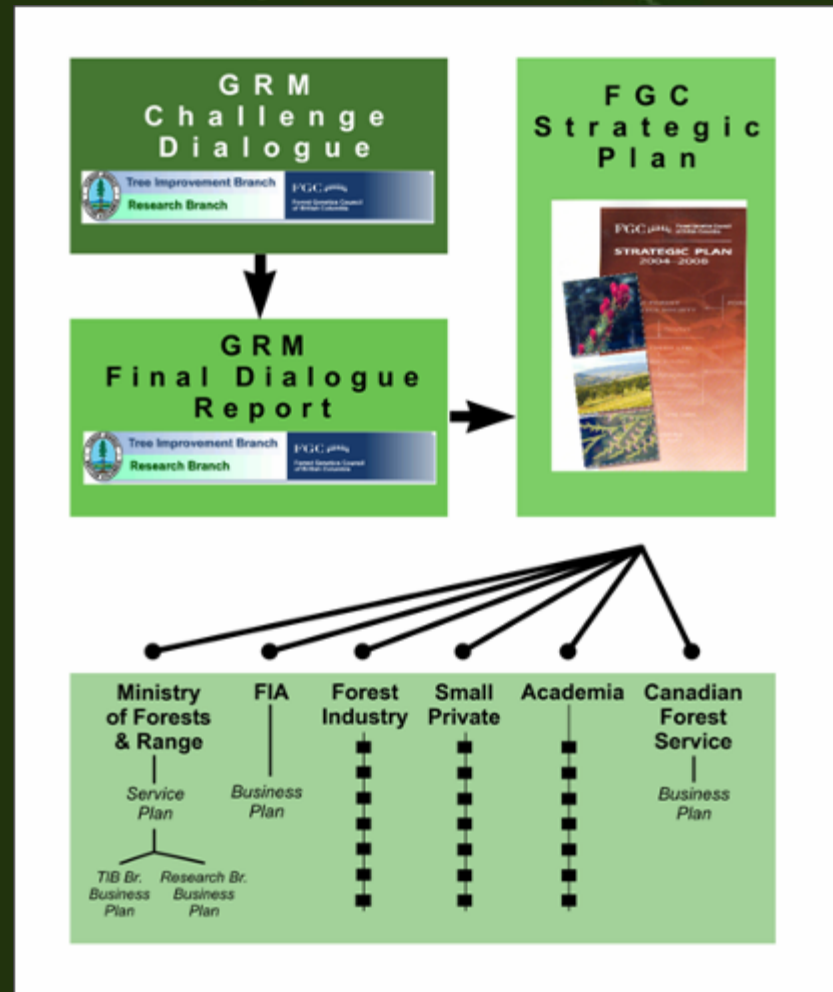
Value

Outcome: The genetic resource of indigenous tree species is developed to maintain and enhance a range of socio-economic values.

Objective: Sufficient seed of high quality and genetic value is produced through tree breeding, seed production, and related activities to meet reforestation objectives and enhance timber supply and quality.

Next steps in GRM

- FGC 5-year strategic plan 2009-2014
- Performance measures for GRM outcomes and objectives
- FGC and MFR annual business plans
- Guides GRM policies and practices



Other TIB Initiatives 2008-09

- Amendment to CF Standards – extend 95% transfer rule to multiple-license holders
- Processing unprecedented volumes of Pli cones and seed
 - 3 to 4 times more than 10-yr average
- Reviewing Cone and Seed Service Fee Schedule and Surplus Orchard Seed Prices
- Surplus Wild Stands Seed Prices = costs of acquisition (e.g. ground vs. aerial)
- Provincial level seed planning –
 - MFR Seed Stewardship Strategy
 - Seed Planning Checklist
- Updates to existing seedlot data – using GIS tools
- Developing tools to map seedlot collection areas
- C&E procedures and effectiveness evaluations of seed use
- State of Forest Reporting on Genetic Diversity



Sowing the Seeds of Change

based on 'Who Moved My Cheese?'

Change Happens

- They keep moving the seed

Anticipate Change

- Get ready for the seed to move

Monitor Change

- Smell the seed to check its still ripe and robust!

Adapt To Change Quickly

*- The quicker you let go of old seed,
the sooner you can enjoy new seed*

Change

- Move with the seed

Enjoy Change!

- Savor the adventure and enjoy the taste of new seed!

Be ready to change quickly and enjoy it again & again

- Keep moving the seed.



Congratulations ! Tree Seed Centre 50th Anniversary

