SKATING ON THIN ICE: CLIMATE SMART FORESTRY APPROACHES





SFI May 2025

What am I going to try and (quickly) cover in the next 8 – 10 minutes

Climate Smart Forestry – Operational Perspective

- 1. Climate Vulnerability and Adaptation Assessment
- 2. Improving Seed for Reforestation
- 3. Creating Fire Breaks through Forest Harvesting

Please remember:

- I am not a climate scientist
- I am not a geneticist
- I am not growth and yield specialist
- I am not a silviculture expert (I only know enough to be dangerous)

1. Detailed Climate Vulnerability and Adaptation Assessment

- Identify and prepare for the adverse impacts of climate change on forest resources and determine appropriate forest management strategies.
- Provides a detailed assessment of the vulnerabilities and risks to the SFM system
- Develops a proactive approach to climate change adaptation in forestry how to enhance resilience and adaptive capacity

Methodology (approach developed through the CCFM & IPCC assessment reports)

The assessment of the tenure area consisted of three main tasks:

- 1. Pre-Vulnerability Analysis: Establishing the context and current climate-forest relationships in the area
- 2. Detailed Vulnerability Analysis: Identifying vulnerabilities and opportunities for adaptation.
- 3. Adaptation Options: Developing and evaluating potential adaptation strategies.

These analysis are conducted through workshops and is based on a combination of scientific data, expert knowledge, and locallevel understanding

Key Findings Include

- Assessment of the Current Climate Vulnerability
 - E.g. Projected climate changes include increased temperatures, altered precipitation patterns, and more extreme weather events.
- Forest Impact Scenarios
 - Various impacts on forest conditions, growth, mortality, and productivity were assessed over different time horizons (20 year increments x 4)
- Detailed Vulnerability Analysis
 - Detailed evaluation of how climate change affects sustainable forest management (SFM) objectives at a specific tenure, including biodiversity, soil and water quality, and timber supply.

Detailed Climate Vulnerability and Adaptation Assessment (cont)

Some Suggested Adaptation Options

- Water Management: Improving road construction standards and stream crossings to mitigate impacts on infrastructure and water quality.
- **Regeneration**: Enhancing forest resilience through better monitoring and adaptive management practices.
- Access to Timber: Adjusting road networks, harvesting schedules, and operations to cope with changing climate conditions.
- **Biodiversity**: Implementing measures to protect species and habitats, both at a stand and landscape level.
- Wildfire Risk: Increasing awareness and proactive actions to manage fire risks including forest management strategies

2. Improved Regeneration

Example - The Use of Seed Orchards



- Warming, drought, and extreme weather are contributing to reductions in seed viability
- Seed Orchards give us the means to help improve seed performance and tree health
- We are expanding the use of improved seedlings to support reforestation

For example

In 2024 - 94% of seedlings planted in the WY GP FMA came from improved seed – enhancing reforestation efforts and forest resilience





3. Wildfire Risk Operational Level Example

- Trees in this caribou range are already

 overmature current average age is 120 years
 expected pine lifespan is 80 100 yrs
 - The forest is in a mature/overmature state and few fuel breaks exist.





- A forest area with diverse, healthy mix of young, middle and mature trees will be less dense, have less debris and have less fuel to add to a fire
- Society has been very effective at fire suppression – tends to create forests that are outside of NRV
- SFM can help by moving to a healthier mix of tree ages



- In areas densely packed with mature trees, unhealthy fires have a continuous supply of fuel – fire spreads more rapidly and burns hotter – it takes longer to regenerate the forest due to the severity of the burn
- Example of science related to fire hazard
 - Dr. Jen Beverly work shows 'fire exposure map' (From 'A Simple Metric of Landscape Fire Exposure' Dr Jen Beverly January 2021)
 - The Fire exposure metric is a <u>numeric rating of the potential for fire</u> <u>transmission to a location</u> - given surrounding fuel composition, irrespective of weather or other fire controls.
- Fire spread potential in this range is very high
- Need to work to break up the big red blob into smaller red blobs forest harvest can help with that
- Forest harvest can help create fire breaks/barriers, reduce fuel loads and eliminate high risk forest stands





Fire Mitigation – Suggested *firebreaks* generated by GOA Fire Experts



Fire Exposure Map (Dr Beverly) for the two caribou ranges



Exposure (%) High : 100 Low:0



What a 10 year harvest plan might look like

- Harvesting priorities in the first decade are centered on the landscape fuel breaks to help mitigate the spread of potential large scale, catastrophic fires
- This also helps to start creating a better mixture of young, mid seral and older forest – more like a natural system

To summarize:

- 1. Climate Vulnerability and Adaptation Assessments provide a good initial evaluations and frameworks to help identify and implement different climate smart strategies at different scales
- 2. One such 'strategy' could be seed orchards to grow better performing seedlings = stronger, more resilient forests
- 3. Another strategy is being proactive in addressing the risk of large scale, catastrophic fires
- 4. Focused forest management can play a positive role in helping reduce and mitigate fire risk and fire spread





It's all about trying to balancing different values and the tradeoffs associated with achieving that balance

