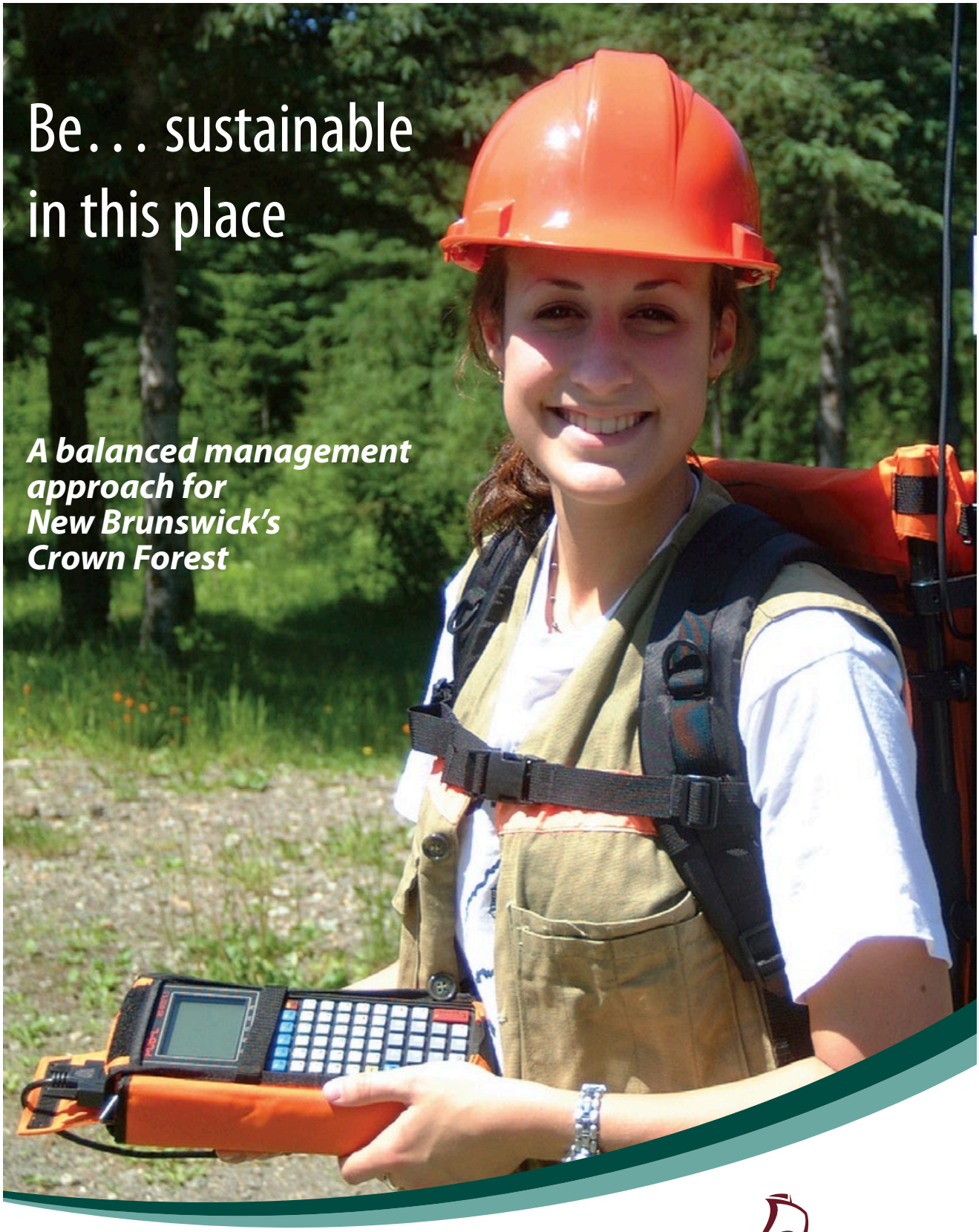

New Nouveau Brunswick

Be...in this place • Être...ici on le peut

Be… sustainable in this place
A balanced management approach for New Brunswick's Crown Forest

2009.01

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CNB 5911

Background

Context

In response to recommendations made by the New Brunswick Select Legislative Committee on Wood Supply, in 2005 the Minister of Natural Resources established the Task Force on Forest Diversity and Wood Supply. The Task Force was given the mandate to develop a realistic and practical set of forest management alternatives and to describe their outcomes in terms relevant to forest diversity, wood-based business opportunity and socio-economic impacts. Based on recommendations in the Select Committee report, the alternatives were to meet two requirements:

1. to generate increasing yields of a wider variety of commercial tree species and products; and
2. to do so in a manner that recognizes and maintains the diversity and important ecological characteristics of the Acadian forest.

In late August 2008, the Task Force submitted to Government their final report. The report included 8 management alternatives for the Crown forest and described in quantitative terms the trade-offs associated with each alternative.

Government Process to Develop Response

In mid-September 2008 public hearings were held in five cities across the province. In response to its request for public feedback, the Department of Natural Resources received over 600 submissions via on-line comments, email and traditional correspondence. The Department also held information and feedback sessions around the province for its staff and received written feedback from several of its branches and regional operations. Based on this feedback, the collective set of opinions on how best to manage the Crown forest varied greatly. This complexity is inherent in managing a public resource, and it was the Government's objective to find a correct balance between wood supply and forest diversity.

The framework developed by the Task Force for defining management alternatives was created to be flexible, in recognition that there are more than eight possible alternatives to manage the Crown forest. The framework included selecting options from seven cornerstone issues that all affect wood supply and forest diversity and are all important elements in the management of the Crown forest. These included: wood supply priorities, the amount of protected area, the area of conservation forest, the area of old forest, the area in plantations, the types of harvest treatments implemented and the forest composition that results from management.

Based on the feedback received, it was felt that the original eight alternatives presented by the Task Force could be modified to achieve the preferred balance between wood supply and forest diversity. As a result, a ninth alternative was developed by selecting new choices for the seven cornerstone issues. The choices that define this alternative will help form the objectives for the management of the Crown forest for 2012 and beyond.

Government's Preferred Alternative

As a result of past decisions to mitigate reductions in harvest levels, the harvested volume is forecast to decrease from today to the projected 2012 status quo harvest level presented on the following pages. This means that even if the status quo strategy was continued, the harvest level would be reduced from current levels to the levels presented here for 2012.

The preferred strategy represents changes to the status quo that diversify and make more sustainable the long-term wood supply and that maintain important stand structural and compositional characteristics of the Acadian forest. The Government's current strategy (status quo) and its new strategy are presented in full detail in the next pages. Like in the original Task Force report, the outcomes that are presented are from an aspatial, provincial-level analysis and therefore will undoubtedly change with further planning and implementation in the forest.

Status Quo

Description

This alternative reflects forest management on Crown land as conducted under current government policy and includes both diversity and wood supply objectives. These have evolved over time and are fully described in the Government's documents "Our Shared Future" and "Objectives and Standards for the New Brunswick Crown Forest for the 2007-2012 Period".

- The primary wood supply objective is to maximize the sustainable supply of spruce/fir in the short-term, followed, in decreasing order of priority, by maximizing long-term spruce/fir supply and maximizing hardwood (all species combined). These objectives include a non-declining harvest policy which allows wood supply increases over time, but which disallows decreases.
- There are no wood supply objectives set for softwood species other than spruce, fir, and jack pine, and none set for individual hardwood species. Spruce/fir quality is indirectly controlled by a limit on the proportion of volume harvested in small sized trees.
- Non-clearcut harvesting must be conducted in stands where 50% or more of the volume is (individually) tolerant hardwood, cedar, white pine, red spruce, or red pine.
- Area of suitable habitat is maintained at levels deemed necessary to support viable populations of all native forest vertebrates, and to maintain current deer populations.
- The area of mature vegetation communities is maintained above 12% of the forest area and riparian buffers are a minimum of 30 meters to protect water quality and maintain tree cover in riparian locations.
- Four percent of the total forested area is included in a network of protected areas.

Outcomes

- The total and log-potential wood supply of spruce/fir increase 60% by year 50 (Fig. 1). This results largely from planting and spacing treatments; by year 50, plantations and spacings make up 22 and 21% of the forest, respectively (Fig. 3).
- The absence of objectives for non-spruce/fir species results in highly variable harvest levels of those species and, except for tolerant hardwood, the log-potential wood supply of these species groups declines in the long-term (Fig. 2).
- Over time, treatments implemented to meet wood supply objectives change forest composition by increasing balsam fir and spruce/fir types, and decreasing tolerant mixedwoods (Fig. 5).
- In the long-term, old forest makes up 35% of the total area (Fig. 4) and the forest age structure develops two distinct features (Fig. 6). By year 100, 58% of the forest is even-aged and less than 50 years old, and 21% is unmanipulated and more than 150 years old. Few even-aged stands managed for timber exceed 100 years of age.

Summary of Status Quo Management Settings

Wood Supply	spruce/fir
Protected Area	4%
Conservation Forest Area	30%
Minimum Old Forest Area	25%
Maximum Plantation Area	25%
Harvest Treatments	Non-clearcutting where late successional species individually >50%
Forest Composition	Maintain vegetation communities

Fig. 1: Spruce/fir wood supply vs status quo

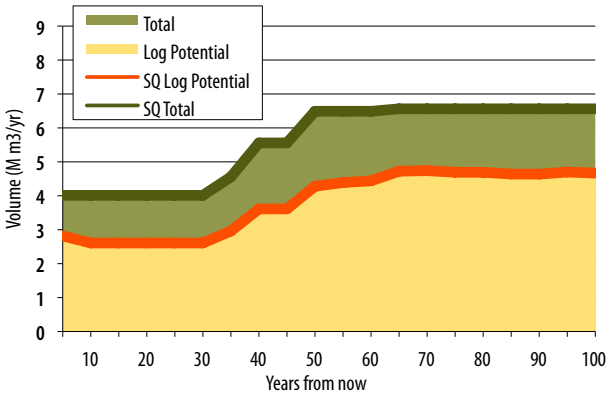


Fig. 2: Log-potential wood supply

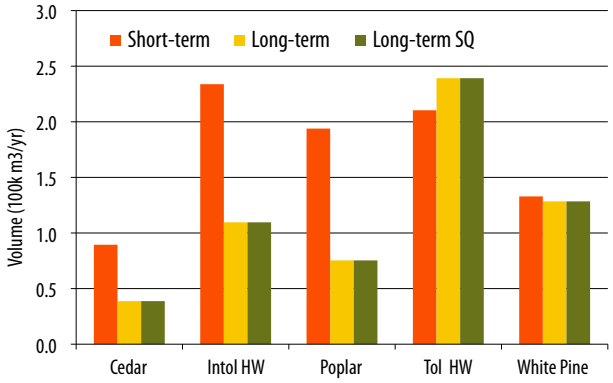


Fig. 3: Area by management history at forecast year 50

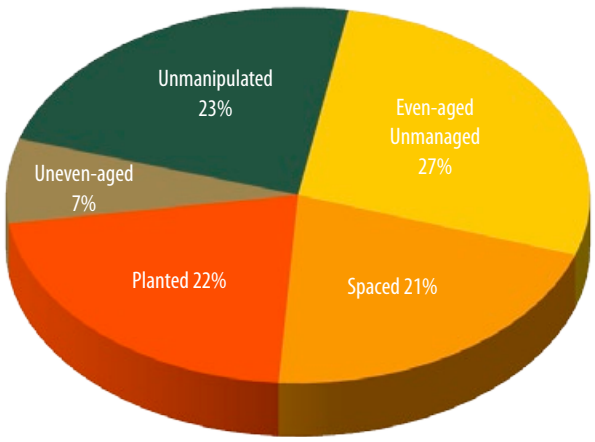


Fig. 4: Old forest abundance over time

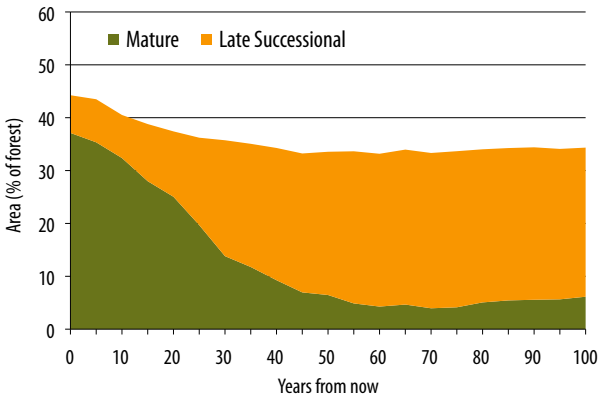


Fig. 5: Forest stand type abundance

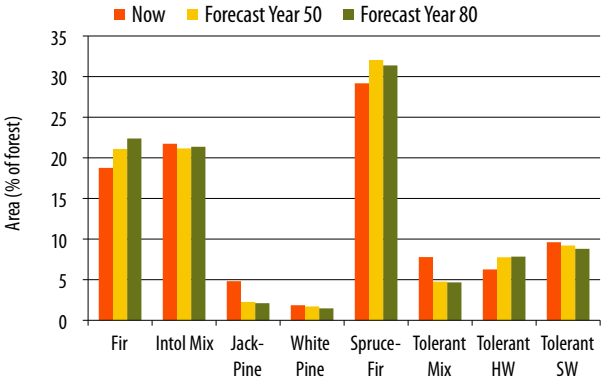
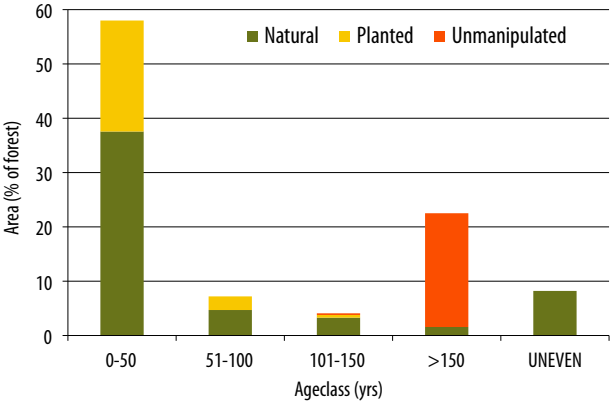


Fig. 6: Ageclass structure at forecast year 100



Government Strategy

Description

This strategy introduces objectives to increase forest diversity, while introducing measures to mitigate the negative wood supply consequences that result from those objectives. To ensure long-term increases in wood supply, plantations are targeted to high productivity sites and the harvest of non spruce-fir species are not allowed to decline after 2012. To ensure long-term maintenance of forest diversity, protected area is increased and harvest treatments are conducted with the objective to maintain the composition and structure that is characteristic of the Acadian forest.

- The wood supply objective places top priority on log-potential volume of spruce/fir, and ensures a sustained supply of log-potential volume in all other species groups.
- Plantation area will increase to 28% of the total forest by year 50.
- Efforts to increase forest diversity are partly addressed by increasing the protected area from 4% to 6-8% of the forest so that more area develops naturally, unaffected by timber harvesting.
- The area of stand types that have declined historically due to timber management practices (eg. eastern cedar, red spruce, tolerant hardwood and tolerant mixedwood) is not allowed to decline below current levels.
- Harvest treatments are implemented to maintain the presence of late-successional species where they are relatively abundant today (collectively making up greater than 50% of a stand). At least 5% permanent retention area is included in harvest prescriptions not located in high productivity plantation areas.
- To help balance reductions in wood supply that are a result of the aforementioned diversity objectives, the total conservation forest is reduced to between 23-25% by assigning to the general forest those areas that are deemed to contribute least to conservation objectives.

Outcomes

- Efforts to mitigate the negative impacts to wood supply allow a slight increase to the total spruce-fir supply in the short-term relative to the forecast short-term 2012 harvest under the status quo (Fig. 7). The expanded plantation area targeted to high-productivity sites allows an increase in total spruce-fir of 75% from the short to long-terms. The increase in spruce-fir harvest is delayed in the mid-term relative to the status quo due to more area being thinned to stands dominated by hardwood rather than to ones dominated by softwood.
- The supply of log-potential cedar, white pine and tolerant hardwood increase modestly in the long-term as a result of treatments that favor these species (Fig. 8). The harvest of intolerant hardwoods and poplar are kept at sustainable levels over the short and long-terms.
- By year 50, 28% of the forest is in plantations and another 19% is in pre-commmercial thinnings (Fig. 9). Plantations on areas not deemed as high-productive sites and all pre-commercial thinnings have 5% permanent retention from the pre-harvest stand. The combined area of unmanipulated forest and area managed on an uneven-aged basis make up almost one-third of the forest.
- The area of stand types dominated by fir, jack pine and intolerant mixedwood decline in the future and is replaced by increases in the area of spruce-fir, and tolerant stand types as a result of changes to harvest and pre-commercial thinning treatments (Fig. 11).
- Old forest declines to 30% of the forest by year 60, and remains stable thereafter (Fig. 10). After 100 years, 54% of the forest is less than 50 years old, almost half of which is in plantations (Fig. 12). The diversity-oriented objectives of this strategy result in almost one-third of the forest area being uneven-aged or unmanipulated and older than 150 years.

Summary of the Government Strategy Settings

Wood Supply	spruce/fir
Protected Area	6-8%
Conservation Forest Area	23-25%
Minimum Old Forest Area	25%
Maximum Plantation Area	28%
Harvest Treatments	Maintain late successional species by non-clearcutting where their combined content >50%
Forest Composition	Maintain under-represented types

Fig. 7: Spruce/fir wood supply vs status quo

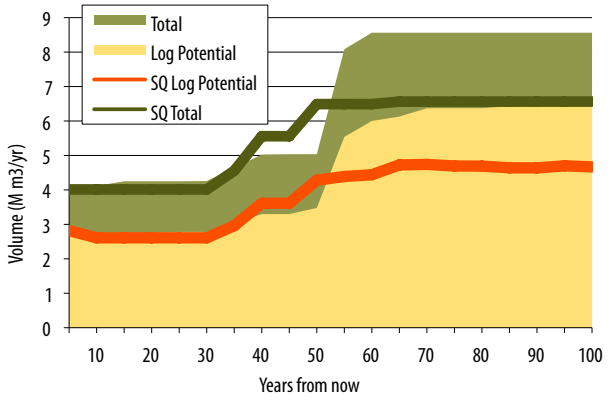


Fig. 8: Log-potential wood supply

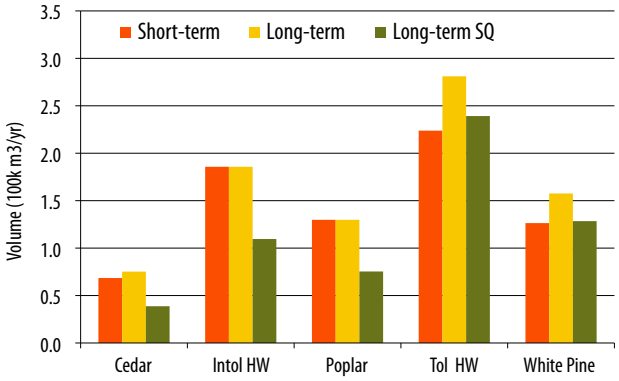


Fig. 9: Area (%) by management history at forecast year 50

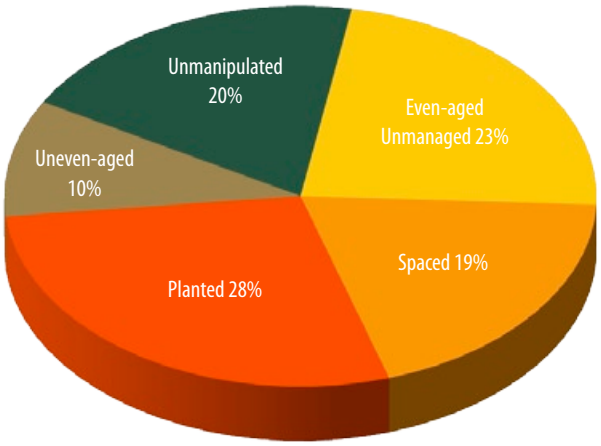


Fig. 10: Old forest abundance over time

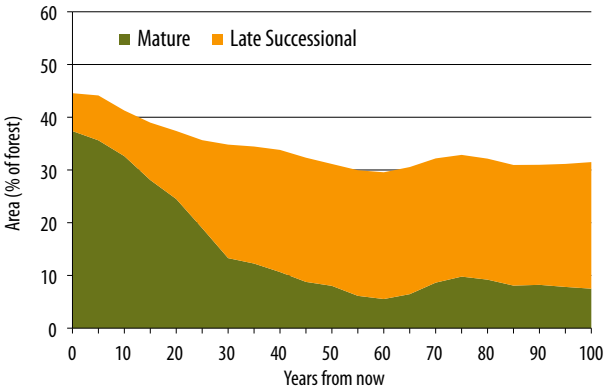


Fig. 11: Forest stand type abundance

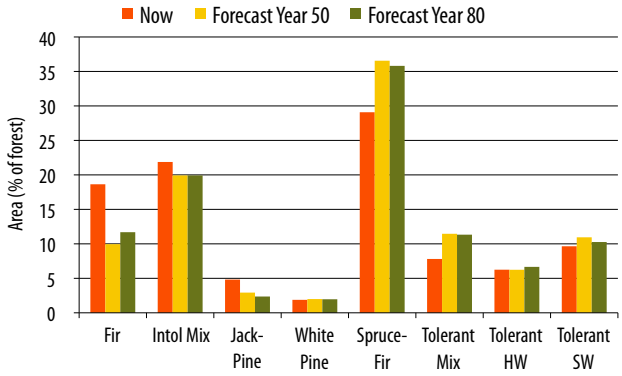
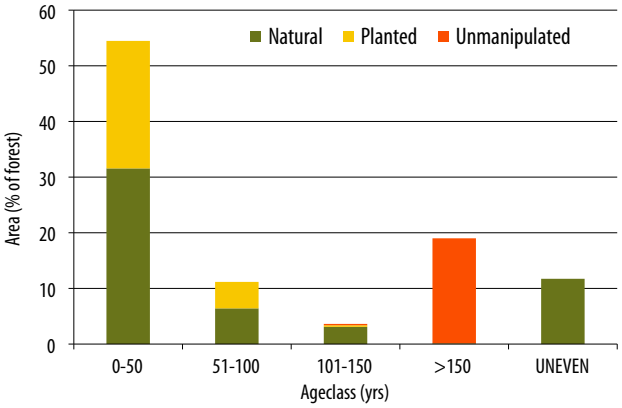


Fig. 12: Ageclass structure at forecast year 100



Complete list of outcomes

Harvest volumes are expressed as aspatial estimates from analyses at the provincial level.

Indicator	SQ	Government Strategy
Total Volume-All species/All products[1]		
(million m3/yr)	6.17 8.27	6.08 9.68
Spruce/fir Log-Potential[1]		
(million m3/yr)	2.7 4.2	2.8 5.2
Spruce/fir Total1		
(million m3/yr)	4.0 6.1	4.2 7.3
Other Softwood Log-Potential (thousand m3/yr)[1]		
Cedar	89 39	68 75
WhitePine	133 128	126 158
Other Softwood Total (thousand m3/yr)[1]		
Cedar	146 58	108 108
WhitePine	229 349	210 394
Hardwood Log-Potential (thousand m3/yr)[1]		
Sugar Maple and Yellow Birch	210 239	224 281
White Birch and Red Maple	234 110	186 186
Poplar	194 75	130 130
Hardwood Total (thousand m3/yr)[1]		
Sugar Maple and Yellow Birch	417 662	440 645
White Birch and Red Maple	848 603	737 748
Poplar	386 384	297 366
All Hardwood Total (million m3/yr)[1]	1.65 1.65	1.47 1.76
Wood Cost		
($/m3 ofr years 1-25)	43.30	43.90
Land Allocation (% of total Forest Area)[2]		
General Forest	68	75-**77**
Protected Natural Area (PNA)	4	6-**8**
Conservation Forest outside PNA	28	**15**-19
Forest Condition (% of total forest area in 2062)		
Even-aged : Planted	22	28
Spaced	21	19
No silviculture treatment	27	23
Uneven-aged (created by harvest)	7	10
Unmanipulated	23	20
Old Forest		
(% of total forest area in 2062)	34	31
Forest Composition (% of total forest area in 2092)		
Fir and Spruce/Fir	54	47
Tolerant (pure and mixed)	21	29
Pine (combined)	4	4
Intolerant Mixedwood	21	20
Area Clearcut		
(% of total area harvested over years 1-25)	81	72-76
Natural Disturbance-based Harvest		
(% of total area harvested over years 1-25)	23	35
Employment (jobs/yr)[3]	7600	7000
Value of Shipments (billion $/yr)[3]	1.44	1.29
Contribution to GDP (billion $/yr)[3]	0.80	0.72
Royalties (million $/yr)[3]	61	58

1 Left value in cell is average for years 1-25; right value is average for years 26-100.

2 Bolded values used for this set of outcomes.

3 Average for years 1-10 (in constant dollars).