



The Forest Resource in Atlantic Canada and an Overview of Issues that Impact Wood Production

Derek MacFarlane



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and an Overview of Issues that Impact Wood Production**

by

Derek MacFarlane

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Abstract

The forest resource in Atlantic Canada provides jobs and income for many residents. Sustainable management of this resource will ensure these benefits continue. This paper briefly describes Atlantic Canada's forest resource in terms of productive forest land, inventory of wood volume, age class of trees, and land ownership. Wood production is reviewed by comparing recent annual harvest volumes to annual allowable cuts (AAC). Issues that may have an impact on future wood production are also discussed.

Keywords: *Forest resource, Atlantic Canada, AAC, Wood production.*

Résumé

Les ressources forestières du Canada atlantique procurent des emplois et des revenus à de nombreux résidents. L'aménagement durable des ressources en question permettra de perpétuer ces retombées. Dans le présent document, les ressources forestières du Canada atlantique sont décrites par rapport aux terrains forestiers productifs, à l'inventaire du volume de bois, aux classes d'âge des arbres et aux propriétés foncières. La production du bois est abordée dans le cadre d'une comparaison établie entre les récents volumes annuels de coupe et les possibilités annuelles de coupe (PAC). Les facteurs qui sont susceptibles d'influer sur la future production du bois font également l'objet de discussions.

Mots clés : *ressources forestières, Canada atlantique, PAC, production du bois.*

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Introduction

This paper describes the forest resource in the four Atlantic provinces (*i.e.*, Newfoundland, Prince Edward Island, Nova Scotia, and New Brunswick). The resource is described in terms of its area of productive forest land, the inventory or volume of wood, the age class or maturity class of the trees, and, finally, land ownership pattern.

The paper also looks at wood production, comparing recent harvest volumes to annual allowable cuts (AAC). In conclusion, some of the issues that may have an impact on future wood production are outlined. Issues identified are limited to primary forest products (*i.e.*, future demand for manufactured forest products is not discussed).

The Forest Resource

Land Base

Almost one half of the land base in Atlantic Canada is considered to be productive forest land¹ (Table

1). However, this is misleading because of the relatively high proportion of the forest land in Newfoundland (about 50%) that is considered unproductive². Almost 95% of the forest land in the three remaining provinces (*i.e.*, the Maritime provinces) is classified as productive. Economic activity surrounding the abundant forest resource is significant. The New Brunswick and Nova Scotia economies, for example, rely significantly on the forest resource. Almost half the value of all exports from New Brunswick are derived from the forest.

Wood Volume

The volume of wood growing on the productive forest land in Atlantic Canada is over 1.4 billion m³ (Table 2). On average, yields for the three Maritime provinces are 102 m³/ha, whereas Newfoundland averages about 88 m³/ha.

The dominant species are softwoods, which comprise over 75% of the total volume. The majority of the softwood consists of spruce and fir (66%). Hardwoods consist of a mixture of maple, birch, and poplar, with maple being most abundant.

Table 1. Area classification in Atlantic Canada ('000 ha)

Class	NF	PEI	NS	NB
Productive forest land	11 271	278	3 767	5 954
Unproductive forest land	11 253	16	156	152
Non-forest land	14 645	272	1 361	1 103
Total	37 169	566	5 284	7 209

Table 2. Volume of gross merchantable wood in Atlantic Canada ('000 ha)

Species	NF	PEI	NS	NB
Softwood	488	16	153	434
Hardwood	39	10	101	212
Total	527	26	254	646

¹ Productive forest land is defined as forest land that is capable of producing a merchantable stand within a reasonable length of time.

² Unproductive forest land is defined as forest land that is incapable of producing a merchantable stand within a reasonable length of time. It includes muskeg, rock, barrens, marshes, meadows, *etc.* within a forest land.

Table 3. Area of productive forest land by maturity class in Atlantic Canada ('000 ha)

Maturity Class	NF	PEI	NS	NB
Regeneration	2 866	33	377	872
Immature	699	—	2 474	2 553
Mature	943	—	385	2 177
Overmature	893	—	4	188
Uneven-aged	—	—	37	11
Unclassified	4 861	245	—	86
Total	10 262	278	3 278	5 886

Table 4. Productive forest land ownership in Atlantic Canada ('000 ha)

Ownership	NF	PEI	NS	NB
Private industrial	4	—	846	1 207
Private non-industrial	—	257	1 778	1 788
Municipal	15	—	—	—
Unspecified	169	—	—	—
Provincial	11 021	20	1 030	2 888
Federal	60	2	112	71
Total	11 271	278	3 767	5 954

Maturity Class³

The age-class distribution of forest stands throughout Atlantic Canada is unbalanced⁴. This is one of the major forest management problems facing resource planners. For example, in New Brunswick, relatively large tracts of forest land (40%) are in the mature/overmature age class (Table 3).

Similarly (although not indicated in Table 3), Prince Edward Island faces a situation where large tracts of softwoods (mainly spruce) are in the mature/overmature stage and begin to deteriorate at age 50.

The majority of forest stands are even aged, largely a result of the severe budworm outbreak of 1910-1920. As in many other parts in Canada, the

forest management problem in the Atlantic provinces is how best to schedule the harvest from mature/overmature stands so as to maintain a regular or even flow of commercial timber while ensuring that areas now regenerating will meet future needs.

Land Ownership

Unlike other regions of Canada where the Crown owns the vast majority of the forest resource, a large percentage of forest land in the Atlantic provinces (except Newfoundland) is privately owned. In fact, a large portion is owned by approximately 80 000 woodlot owners (Table 4).

Non-industrial ownership (*i.e.*, private woodlots) in Prince Edward Island, Nova Scotia, and New Brunswick is 92, 47, and 30%, respectively. These

³ Maturity class is defined as trees or stands grouped according to their stage of development from establishment to suitability for harvest. A maturity class may comprise one or more age classes.

⁴ An unbalanced age-class distribution contains varying areas within each age class (*i.e.*, a balanced age-class distribution contains the same area in each age class).

Table 5. AAC levels for the Atlantic provinces ('000 ha)

Species	NF	PEI	NS	NB
Softwood	2 980	2 500	3 750	6 858
Hardwood	—	190	1 500	3 877
Total	2 980	2 690	5 250	10 735

figures are relatively high considering private ownership for Canada as a whole is only 6% (industrial and non-industrial). Private woodlots are an important part of the industrial wood supply but, due to such factors as their small size and owners' multiple objectives, they are more complicated to manage in terms of a regional timber supply. Provincial Crown ownership in Newfoundland, New Brunswick, and Nova Scotia is 97, 48, and 27%, respectively.

Sustainable Harvest Levels

The sustainable supply of timber (*i.e.*, AAC) from the four Atlantic provinces totals almost 19.5 million m³. This represents approximately 10% of the nation's total. Softwood makes up about 14 million m³ or 71% of the total AAC. As shown in Table 5, New Brunswick and Nova Scotia represent the bulk of the AAC volume — 85%. Although Newfoundland contains a relatively large area of productive forest land, a significant portion is scattered and considered uneconomical to harvest.

Because of the high percentage of private lands in Atlantic Canada, provincial agencies that determine AACs also must assess the potential timber supply from private lands. These assumptions differ by province. In New Brunswick, for example, 100% of private woodlots are considered available for timber supply, while in Nova Scotia only 60% are assumed available for harvesting. Because private woodlots are unregulated, there is a certain amount of uncertainty associated with this portion of the timber supply equation.

Another factor that determines the AAC level is the amount of silviculture carried out. The increased harvest allowed as a result of silviculture (*i.e.*, allowable cut effect or ACE) can be as high as 25-30% of the total.

Harvesting and manufacturing forest products in Atlantic Canada contributes significantly to the economy, especially the rural economy. The economic impact of the forest sector is not discussed in this paper, but the fact that forestry contributes significantly to the provincial economies — particularly Nova Scotia and New Brunswick — should not be overlooked.

Newfoundland

As shown in Table 6, harvest levels for softwood in Newfoundland have remained below the AAC in recent years but the gap is narrowing.

Wood supply analysis in Newfoundland indicates that over the next two decades, timber supply vs. demand will be critically tight, primarily due to an unbalanced age-class distribution. In fact, a shortfall of up to 500 000 m³/year is predicted. To offset this shortfall, potential timber supply from Labrador is being explored. Beyond 20 years, the supply outlook is more favorable, primarily a result of assumed yields in silviculture.

Prince Edward Island

Although Prince Edward Island is a relatively small player in terms of timber supply, it faces one of the most complicated timber supply problems because 90% of the forest land is owned by private

Table 6. Volume harvested and AAC for Newfoundland ('000 m³)

	1990	1991	1992	1993	1994
Softwood harvest	2 267	2 427	2 503	2 875	2 290
Hardwood harvest	210	253	317	256	155
Total harvest	2 877	2 680	2 820	3 131	2 445
AAC Softwood	2 980	2 980	2 980	2 980	2 980
AAC Hardwood	0	0	0	0	0

Table 7. Volume harvested and AAC for Prince Edward Island ('000 m³)

	1990	1991	1992	1993	1994
Softwood harvest	276	248	303	335	368
Hardwood harvest	181	204	207	199	151
Total harvest	448	452	510	534	519
AAC Softwood	250	250	250	250	20
AAC Hardwood	190	190	190	190	190
Total AAC	440	440	440	440	440

Table 8. Volume harvested and AAC for Nova Scotia ('000 m³)

	1990	1991	1992	1993	1994
Softwood harvest	3 714	3 498	3 592	3 863	4 229
Hardwood harvest	925	850	656	400	877
Total harvest	4 639	4 348	4 248	4 263	5 106
AAC Softwood	3 750	3 750	3 750	3 750	3 750
AAC Hardwood	1 500	1 500	1 500	1 500	1 500
Total AAC	5 250	5 250	5 250	5 250	5 250

woodlot owners. Harvest levels for hardwood and particularly softwood have exceeded AACs (Table 7).

Demand for hardwood is driven by domestic fuel-wood use. Although Prince Edward Island has no pulp and paper mills, large volumes of softwood are exported to pulp mills in other parts of the Maritimes. Wood supply analysis indicates that future demand for both softwood and hardwood on Prince Edward Island can only be met with significant silvicultural inputs. In order to pay for silvicultural

inputs, a fund, derived from a check-off from mill-delivered wood, was established.

Nova Scotia

Harvest levels overall in Nova Scotia are below the AAC, but softwood is currently slightly above the AAC (Table 8). Hardwood exhibits a surplus.

Recently, Nova Scotia has reduced its expectations of doubling the wood supply. This was to have been achieved as a result of huge invest-

Table 9. Volume harvested and AAC for New Brunswick ('000 m³)

	1990	1991	1992	1993	1994
Softwood harvest	7 133	6 693	7 405	7 153	7 276
Hardwood harvest	1 691	1 949	1 800	1 806	1 993
Total harvest	8 824	8 642	9 205	8 959	9 269
AAC Softwood	6 858	6 858	6 858	6 858	6 858
AAC Hardwood	3 877	3 877	3 877	3 877	3 877
Total AAC	10 735	10 735	10 735	10 735	10 735

ments in silviculture. A more modest approach, primarily as a result of the demise of the federal/provincial Forestry Agreements, will result in maintenance of the softwood AAC.

A major concern with wood supply analysis in Nova Scotia is that a relatively large volume of wood (primarily from private land) is exported to New Brunswick and Maine. The primary concern is that these wood volumes are not currently being captured in the harvest estimates and consequently have an impact on the sustainable wood supply.

New Brunswick

New Brunswick appears to be harvesting below the hardwood AAC (Table 9). But, as in Nova Scotia, large volumes of wood are leaving the province that are not being captured in the total harvest estimates. A significant portion of this volume originates from unregulated private lands.

Although there appears to be a hardwood surplus in New Brunswick, this volume has recently been absorbed with announcements by various mills that they will use the surplus. For softwood, annual harvest levels are close to or exceed the AAC.

The large areas of softwood stands in the mature and over-mature age classes continue to plague the industry. The question remains: "How can the wood supply from the older age classes be maintained until the younger stands become merchantable?" Recently the New Brunswick government

announced an expanded silviculture program. This new program brings the level of hardwood silviculture up to the level currently implemented for softwoods.

Issues

The remainder of this paper will focus on issues that may have an impact on future wood production. As indicated in the previous sections, each province differs in terms of its use of the resource, but there are some common threads. For example, sustainable wood supplies are very tight relative to harvest levels; a significant portion of the industrial wood supply comes from private landowners; silvicultural investment permits increased harvest levels; and, all four provinces have silvicultural inputs built into their supply models. These and other issues will be discussed. They are presented in no particular order of importance.

Ownership

A relatively large portion of forest land in Atlantic Canada is owned by private woodlot owners. For the most part, these lands are unregulated from a sustainable wood supply perspective. In New Brunswick, for example, almost 30% of the wood supply originates from this tenure. The issue here is that a large number of woodlot owners own woodlots for reasons other than timber supply. The forest industry will be challenged to develop innovative ways to access this wood supply. One possible way is for industry to help demonstrate to

owners that woodlots can be managed for multiple benefits, including harvesting.

Certification

Another issue that industry will have to deal with will be sustainable certification (whether it is the CSA or the FSC standard or a combination). This issue is further complicated when timber originates from private woodlots which, for the most part, have no management plans. The question facing industry will be "How can wood supply from sources where industry has no control over planning be certified as sustainable?"

Silviculture

A significant portion of the AAC (*e.g.*, 30% in some provinces) results from investments in silviculture (thinning and planting). The end of federal/provincial forestry agreements has resulted in a significant reduction in dollars available for silviculture and the brunt of these reductions has fallen on private woodlots. New methods to fund silviculture on private woodlots, such as check-offs on mill-delivered wood, will have to be developed by all stakeholders in order to maintain the harvest levels currently assumed. On the positive side, preliminary yields from silviculturally treated stands appear to be higher than anticipated and consequently assumed in wood supply models.

Wood Flow Monitoring

Another issue is that of monitoring wood flow. As mentioned earlier, a large portion of the forested land base is owned by woodlot owners. The fact that wood flow from these lands is unregulated creates a problem not only for industry, in that they cannot ensure their wood supply is sustainable, but also for government agencies trying to monitor annual harvest levels. Better wood flow data are needed to monitor sustainable wood flows.

Budworm

It's not a matter of "if" but "when" the budworm outbreaks of the past return to Atlantic Canada. One has only to look at the Cape Breton Highlands to see what happens when no protection is implemented. Although infestation levels are at an all-time low, experts predict that around the turn of the century budworm populations will return to their high numbers. Wood supply analysis assumes protection from insects, and provinces like New Brunswick cannot afford losses in wood volume. One of the issues industry will have to face is what can they use to control the pest, given traditional chemical controls, such as Fenitrothion[®], will not be available.

Maine Clearcut Referendum

In November of 1996, the people of the state of Maine voted for two forestry proposals. The first proposal was to ban clearcutting and set new logging standards. The second proposal, known as "the Compact for Maine Forests," was an alternative promoted by the Governor designed to improve forest management practices through stricter regulations on clearcutting. A third choice was added to the ballot which was against both proposals. The "Compact" proposal received 47.2% of the votes, the ban on clearcutting received 29.3%, and the "against both proposals" received 23.5%. Since no option received more than 50% (*e.g.*, a majority), by law, the question receiving the most will be referred to a separate ballot sometime in 1997. The uncertainty surrounding wood supply in Maine has an impact in Atlantic Canada. The Maine State Planning Office estimates that if clearcutting is banned, wood supply from Maine will be reduced by 20%. Currently, forest companies in New Brunswick and Nova Scotia find it difficult to compete with prices for roundwood offered by mills in Maine considering the currency exchange rate alone. Anything that increases demand by Maine forest companies for wood will put increased pressure on the wood supply from New Brunswick, Nova Scotia, and

even Prince Edward Island. Inevitably, the price of roundwood in the Maritimes will be driven up as firms compete for what is already a tight wood supply.

Environmental/Wildlife/Recreation Regulations

The pressure to create preserved areas is increasing. Although this pressure has not been as intense as that in other parts of North America, such as the West Coast, one only has to look across the border to Maine to see how quickly pressure can be applied (*i.e.*, the clearcut referendum). These pressures are already having an impact in Atlantic Canada. For example, in New Brunswick, sustainable wood supply volumes were reduced by about 10% in a recent wood supply allocation exercise due to restrictions placed on harvesting in designated watersheds.

Use

There are two aspects to discuss here. One is the increased recovery of wood volumes in the harvesting phase as a result of mechanization. Harvesting technology has not only improved sorting and in theory increased the value added of the cut trees, it has also enabled smaller (once uneconomical) trees to be harvested. This in essence extends the wood supply.

The second point is that manufacturing technology is enabling industries to use species (especially hardwood) that were traditionally underused. This too can have an effect of extending the wood supply.

Social

The final issue I wish to discuss is one which I call "social". One can argue that all the issues previously discussed have a social context but, to be more specific, the forest resource in Atlantic Can-

ada has traditionally supplied jobs and income for thousands of people, especially rural residents. The collapse of the fishery in the east is a dark reminder that our timber resource has to be sustainably managed. The trend today is to give "communities" more say regarding how resources are managed. I believe industry in Atlantic Canada is quite aware of this trend, but they are going to have to become more proactive in terms of helping develop mechanisms for public input. It is no longer enough for a company or government to say "we know what is best and that's how we'll do things." Forest land is more than just a place to harvest wood. Benefits such as jobs, recreation, clean water, *etc.*, will be demanded by the public.

Summary

Wood supplies in Atlantic Canada can be characterized as being very close to sustainable levels. Softwood harvest, the most abundant and most used species, is tighter to AACs than hardwood. Short-term opportunities to access more timber are available primarily for hardwoods. New Brunswick has the least room for expansion, given that both softwood and hardwood supplies have been allocated. The relatively large portion of the forest land base held by private woodlot owners complicates the wood supply equation, primarily because these lands are unregulated in terms of wood supply. Silvicultural investment is critical for sustaining current harvest levels in all four Atlantic provinces. Some factors that may negatively impact future wood production include: forest land withdrawals due to environmental, wildlife or recreational limitations; problems certifying unregulated lands such as private woodlots; an impending budworm infestation; and a clearcut ban in Maine. On the other hand, factors that may positively affect wood production include improved use; silvicultural inputs and yields; and a more proactive social conscience in both government and industry.

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