

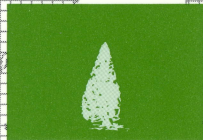


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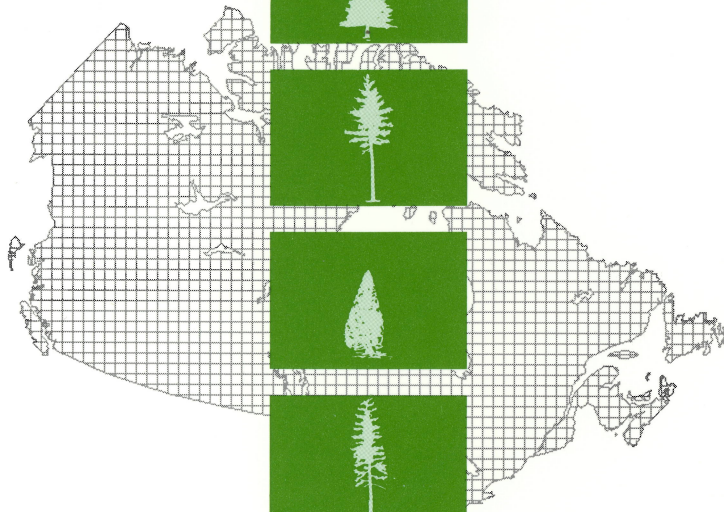
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# Canada's Forest Inventory 1991



J.J. Lowe, K. Power, and S.L. Gray

Petawawa National Forestry Institute  
Information Report PI-X-115

Canada

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J.J. Lowe, K. Power, and S.L. Gray

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Canadian Forest Service  
in cooperation with the  
Canadian Forest Inventory Committee

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# 1. Contents

<i>iii</i>	Abstract/Résumé
<i>iv</i>	1. Contents
1	2. Contributors to the inventory
2	3. Members of the Canadian Forest Inventory Committee (1991)
3	4. Highlights
4	5. Introduction
6	6. National summary
7	Table 6.1. Area and volume summary by province
7	Table 6.2. Comparison of 1986 and 1991 inventory results
8	7. Land class and forest site class
9	Figure 7.1. Area percent of timber productive forest by site class
9	Figure 7.2. Volume per hectare on timber productive forest by site class
10	8. Stocking, age, and maturity
11	Figure 8.1. Area percent of stocked and nonstocked timber productive forest
11	Figure 8.2. Area percent of timber productive forest by age class
11	Figure 8.3. Area of timber productive forest by maturity class
12	Table 8.4. Relationship between maturity and age
12	Figure 8.5. Volume per hectare of timber productive forest by age class
12	Figure 8.6. Volume per hectare of timber productive forest by maturity class
13	9. Wood volume
14	10. Forest composition
15	Figure 10.1. Area percent of stocked timber productive forest by forest type
15	Table 10.2. Area percent of stocked timber productive forest by composition
15	Table 10.3. Volume by species group
16	11. Forest growth
17	Table 11.1. Growth by forest region
18	12. Forest ownership, use, and availability
21	Table 12.1. Area percent of forest by province and ownership
21	Table 12.2. Area percent of timber productive forest by province and ownership
22	Figure 12.3. Area of forest by ownership and productivity
22	Figure 12.4. Area of forest by ownership and status
22	Figure 12.5. Area of timber productive forest by ownership and status
22	Figure 12.6. Volume on timber productive forest by ownership and status
23	Table 12.7. Importance of the forest for seven uses
23	Table 12.8. The wood production forest
24	13. The inventory
24	13.1. Overview
25	13.2. Core attributes
25	13.3. Spatial information and overlays
25	13.4. Auxiliary and other related information
27	14. Information services
28	15. References
29	16. Appendix 1. Summary tables
57	17. Appendix 2. Auxiliary source data
63	18. Appendix 3. Glossary
67	19. Maps



## Abstract

Canada's Forest Inventory 1991 (CanFI91) replaces the 1986 version Can FI86: The inventory is an aggregation from provincial and other sources of the best information available in 1991. The database is spatially referenced in 47 000 cells. The report presents some standard statistical and map products to describe the distribution and structure of the forest resource.

The inventory now covers all major blocks of forest. In addition to the core attributes some auxiliary information has been added concerning forest region, stocking, growth, access, policy constraint, the wood production forest, and the importance of the forest for other uses.

Successive versions of CanFI (1981, 1986, 1991) are the best available information at those times, but differences between them can not be used as estimates of real change.

## Résumé

L'inventaire des forêts du Canada 1991 (IFCan91) remplace la version 1986. Il est une compilation des meilleures données de sources provinciales et autres dont on disposait en 1991. Les renseignements intégrés dans la base des données sont caractérisés géographiquement en 47 000 cellules. Le rapport contient des cartes et des statistiques normalisées qui permettent de décrire la distribution et la structure des ressources forestières.

L'inventaire couvre maintenant toutes les grandes étendues forestières. En plus des attributs principaux, il renferme des renseignements auxiliaires sur les régions forestières, la densité relative, l'accroissement, l'accès, les contraintes d'exploitation, la forêt de production et l'importance des forêts à des points de vue autres que celui de la production de matière ligneuse.

Les versions successives de l'IFCan (1981, 1986, 1991) constituent la somme des meilleurs renseignements disponibles à l'époque, mais on ne peut pas évaluer les changements réels en se fondant sur les différences qui existent entre ces inventaires.



## 2. Contributors to the inventory

*Canada:* Forestry Canada

*Alberta:* Department of Forestry, Lands and Wildlife

*British Columbia:* Ministry of Forests.

*Manitoba:* Department of Natural Resources

*New Brunswick:* Department of Natural Resources and Energy.

*Newfoundland and Labrador:* Department of Forest Resources and Lands.

*Northwest Territories:* Government of the N.W.T.<sup>1</sup>

*Nova Scotia:* Department of Lands and Forests.

*Ontario:* Ministry of Natural Resources.

*Prince Edward Island:* Department of Energy and Forestry.<sup>1</sup>

*Quebec:* Ministry of Forests.<sup>1</sup>

*Saskatchewan:* Department of Parks and Renewable Resources.

*Yukon:* Indian and Northern Affairs Canada.

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<sup>1</sup> No new data were available since Canada's Forest Inventory 1986 for the Northwest Territories, Prince Edward Island, and Quebec. All agencies cooperated with the auxiliary information.



### 3. Members of the Canadian Forest Inventory Committee (1990-1)

F.R. WELLINGS (Chair)

Director, Forest Resources Planning and Mensuration, Department of Lands and Forests, *Nova Scotia*

D.J. MORGAN (Vice-Chair)

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#### 4. Highlights

- The inventory now covers all major areas of forest.
- Of Canada's total area (997 million ha):
  - 42% is forest;
  - 25 % is timber productive forest.
- Of the forest area (416 million ha) the ownership pattern is:
  - 71% provincial;
  - 23 % federal (including territorial);
  - 6% private.
- Of the stocked timber productive forest area (229 million ha) the forest type distribution is:
  - 63% softwood;
  - 22% mixedwood;
  - 15% hardwood.
- Of the timber productive forest volume (26 093 million m<sup>3</sup>) the species distribution is:
  - 78% coniferous;
  - 22% broadleaved.
- The average growth to maturity of the timber productive forest is:
  - 1.59 m<sup>3</sup>/(stocked ha.year);
  - 364 million m<sup>3</sup>/year.
- Of the timber productive forest area (245 million ha) an estimated:
  - 7% is (temporarily) not stocked;
  - 45% is young;
  - 43% is mature or overmature;
  - 5% is uneven aged or unclassified for maturity;
  - 48% (all ages) is presently suitable and available for wood production\*.
- This 'wood production forest'\* (119 million ha) has an estimated:
  - 14 535 million m<sup>3</sup> of growing stock volume (130 m<sup>3</sup>/stocked ha);
  - 203 million m<sup>3</sup>/year average productivity to maturity (1.81 m<sup>3</sup>/(stocked ha.year)).

---

\*see Chapter 12

## 5. Introduction

Canada's Forest Inventory 1991 (CanFI91) replaces the 1986 version as the authoritative national statement on the distribution and structure of the forest resource.

The inventory is a spatially referenced database containing the best information available in 1991. This report demonstrates the categories of information and presents certain standard products. At the request of the Province of Newfoundland and Labrador many of the detailed tables include Labrador with the Yukon and Northwest Territories in a subtotal called the Northern Tier. Newfoundland Island and the other nine provinces are reported in the Southern Tier. This division of Newfoundland and Labrador may be inconvenient for some users wishing to see provincial totals but, from the national perspective, it recognises the broad differences between the two tiers in matters such as development and accessibility.

A more complete set of tabulated results is presented in the appendices of this report than was the case with previous inventories. The data in those tables have not been manipulated, and show clearly where information is not available. The tables and figures in the text tend to be simpler concentrations of information, but all refer back to sources in the appendices. For most tables the warning is given that totals as presented may not add or compute exactly due to the rounding of numbers after calculation. On the other hand, some summary tables and graphics in the text have been adjusted to make a less confusing product. The techniques include grouping categories, ignoring missing values, and making percentages add exactly to 100.

The following symbols are used in the tables:

.. not available (missing value)	... not applicable
_ zero	.. too small to be expressed

The national inventory is produced with the cooperation of provincial and territorial forest inventory agencies, both individually and collectively through the Canadian Forest Inventory Committee (CFIC). The inventories of those agencies were the sources of most of the data. Questions that are too detailed for the national inventory, and questions relating to local forest management, should be referred to the responsible province or territory. The source inventories are usually more current than this 5-year national aggregation. At the national level that may not be important for most

changes in the forest, which tend to cancel out for short periods over large areas. The province or territory may know of recent major regional disturbances (e.g., extraordinary fire losses) or administrative changes (e.g., the assignment of new forest management agreements or the designation of large protected areas).

For the first time all major forest areas are included in the inventory, and earlier estimations of forest outside the inventory have been discontinued. The inventory is aggregated from many sources. Over the years the specifications of the modern source inventories have become more complete, and most provinces and territories have programmes of periodic inventory renewal for the active areas of forest management. The oldest source inventories, with the most values missing in the data, tend to occur in more remote areas. The details of this are presented with the full specifications in a technical supplement to this report (Canadian Forest Service, in prep.).

Because the inventory is spatially referenced, it can be overlaid by regional boundaries and then analysed. This has been completed for Forest Regions and Sections (Rowe 1972).

The scope of the inventory has been extended with the addition of certain types of auxiliary information. These are described briefly below, and in more detail in subsequent chapters and appendices.

The inventory contains large areas of 'unproven' stocking where the source inventories recognised disturbed areas such as 'burns' but did not say if they were restocked with tree species. Stocking factors have now been provided by the provinces and territories to allow the unproven condition to be divided into 'stocked' and 'nonstocked' (see Chapter 8).

Forest productivity, or growth to maturity of the existing forest, has been calculated as mean annual increment (m.a.i.), and is presented in Chapter 11. Maturity is as defined by the province or territory.

Chapter 12 presents several studies concerning the availability of forest for timber management. The fact that timber productive forest is not legally reserved from harvest does not mean that it is all available for timber production. Policy constraint factors are used to estimate the limitations on timber harvest. Information has been added concerning the presence and type of access routes. These factors are combined to estimate how much of Canada can be considered as 'wood production forest'.

Timber interests have justified most of Canada's initial investment in forest management and inventory, but expectations are changing for a more holistic approach to forest ecosystem management. It will take time for the many non-timber components of forest management to identify their information needs, to obtain funding, and produce inventory results that can be rolled up to the national level. The 1991 inventory introduces the application of an international scale to estimate the importance of seven uses of the forest, one being wood production (Chapter 12).

Another necessary step towards holistic forestry is to remove or declare timber bias where it exists in the terminology. In previous inventories the terms 'productive' and 'unproductive' forest were used for categories defined by timber productivity. In this inventory the terms 'timber productive' and 'timber unproductive' are introduced. The old terms were not appropriate for wildlife and other non-timber values, especially when they resulted in statements like "almost half of Canada's forests are unproductive". The intention is to leave room in the terminology for all values to be accommodated as forest inventories expand.

Canada's Forest Inventory takes advantage of existing data available in the inventory organizations of the

provincial and territorial forest services, and uses very economical methods for aggregation to the national level. It is possible that the diversification of forest management to include more disciplines, combined with increased delegation of forest management and inventory to agencies such as forest industry, will make this national inventory technique more difficult in the future. The implications to CanFI of fragmented forest management and inventory can be seen now in the weakness of data for federal and native lands other than those managed by the territorial governments.

Canada's Forest Inventory presents the best information available at the time. It and its source inventories are not true time-series entities, and users are advised that mathematical differences between successive inventories are not necessarily due to real change during that 5-year period. Most resource management takes place at the local level. The absence of surveys in Canada to monitor change of land use and forest cover at provincial and national levels may be due in part to the reproductive resilience of disturbed forest, the current low rates of change to other land uses such as agriculture, the size of the forest, and the concentration of limited resources on map-based inventories for the most active forest management units.

## 6. National summary

### Area and volume

The 1991 inventory covers for the first time all major forested areas. The 416 million ha of forest represents 65% of the inventory area (643 million ha) or 42% of the country (997 million ha) (Table 6.1). Quebec leads with 20% of the forest (82 million ha) followed by the Northwest Territories at 15% (over 61 million ha), British Columbia at 15% (under 61 million ha), and Ontario at 14% (58 million ha).

Map 19.1 shows the distribution of forest and the outer limit of inventory. At the cold northern edge the transition through discontinuous forest to the tree line is very patchy and occurs over long distances where the land is relatively flat. In these conditions various definitions of 'forest', and the different techniques for sensing and mapping, can produce very different results if the whole area is not done at the same time and in the same way. This map shows that in northern Manitoba, Ontario, and Labrador the limit of inventory was based on higher limits of tree size and density than were used for neighbouring inventories of eastern NWT and northern Quebec. For other views of this situation see the 1979 'Provisional forest map of Canada' (Canada 1979) and the 1993 National Atlas of Canada 'Vegetation cover' map (Canada 1993).

Fifty nine percent (245 million ha) of the forest is described as timber productive and 41% (171 million ha) as timber unproductive (see Chapter 7 for more details). For timber productive forest Quebec leads with 22% (55 million ha) followed by British Columbia at 21% (52 million ha) and Ontario at 17% (42 million ha). Maps 19.2 and 19.3 show the distribution of timber productive and unproductive forest, respectively.

Wood volume is only reported for stocked timber productive forest (see Chapter 9 for more details). The national total is 26 billion m<sup>3</sup>, of which 78% (20 billion m<sup>3</sup>) is from coniferous species and 22% (6 billion m<sup>3</sup>) from broad-leaved. British Columbia comes first with 41% (11 billion m<sup>3</sup>) followed by Quebec at 17% (over 4 billion m<sup>3</sup>) and Ontario at 14% (under 4 billion m<sup>3</sup>).

### Comparison of 1986 and 1991 inventory results

Canada's national inventory is a periodic aggregation of the best available information. It is not a time series from which real change can be calculated because much

of the apparent change is due to improved coverage and procedures as well as other artifacts of periodic map-based source inventories. These source inventories are themselves of various ages at the time of aggregation.

A superficial examination of Table 6.2 suggests that the area of forest has fallen by 8% from 453 to 416 million ha. What in fact happened was extension of the inventory in 1991 to cover all major blocks of forest, especially in northern Ontario and Manitoba. This added 18 million ha of forest to the inventory. With this last extension an earlier estimate of 55 million ha of uninventoried forest was no longer needed — that estimate had obviously been too high.

This expansion of the inventory coverage contributed to an increase in the timber productive forest of 0.7% (from 244 to 245 million ha). Other artifacts in the source inventories, as well as real change, contributed to this net increase.

An inventory report is not normally a place for interpretation of results and the opinions of the authors. Strong public interest in changes to forest area, and the inability of the inventory as designed to answer such questions, is felt to justify the following paragraphs.

Global concerns about diminishing forests have not been comprehensively addressed in Canada by the agencies responsible for forest management and inventory. The main concern of these agencies, with limited budgets, has been to explore, develop, protect, and manage the very extensive resources. Changes in land use from forestry to settlement, agriculture, and transportation corridors have not generally been dramatic in recent years. Experience has shown that the loss of tree cover to fire, harvest, pests, etc. in Canada is generally a temporary condition if extremes such as soil loss and harvesting on marginal sites are avoided and the land is not converted to other uses. The resulting vegetation sooner or later reverts to forest.

In this working environment it is understandable that limited forest inventory resources have not been diverted into monitoring changes in the total forest area. The forest management agencies need the best available information at the time, and will actively change specifications and techniques to get it. Their priorities to date have been for management level map-based information, not for regional or national statistics based on a special network of sample plots.

Table 6.1. Area and volume summary by province

## 1. Forest area and volume covered by Canada's Forest Inventory 1991

Province/Territory	Area (× 1 000 000 ha)					Volume <sup>α</sup> (× 1 000 000 m <sup>3</sup> )		
	Land	Water	Total	Forest	Tpf <sup>β</sup>	Conif.	Broadleaved	Total
						Timber productive forest volume		
Newfoundland I.	10.0	1.1	11.1	6.0	3.2	207.8	28.5	236.3
Nova Scotia	5.0	0.5	5.4	3.9	3.8	155.2	105.8	261.0
Prince Edward I.	0.6	--	0.6	0.3	0.3	16.0	10.0	26.0
New Brunswick	7.1	0.2	7.3	6.1	6.0	421.6	205.0	626.6
Quebec	106.5	18.9	125.4	82.5	54.8	3089.8	1221.0	4310.8
Ontario	67.7	9.0	76.7	58.0	42.2	2391.3	1375.6	3766.9
Manitoba	37.8	10.0	47.8	26.3	15.2	594.8	316.8	911.7
Saskatchewan	35.0	5.9	40.9	28.8	12.6	461.2	435.9	897.1
Alberta	51.5	2.2	53.7	38.2	25.7	1880.3	1200.6	3080.9
British Columbia	92.6	2.5	95.1	60.6	51.7	9867.1	710.3	10577.4
Subtotal S. Tier	413.7	50.3	464.0	310.7	215.5	19085.1	5609.5	24694.6
Labrador	21.3	3.6	24.9	16.5	8.1	277.1	10.0	287.1
Yukon Terr.	47.8	0.5	48.3	27.5	7.5	572.1	65.6	637.8
Northwest Terr.	90.9	14.4	105.3	61.4	14.3	336.3	137.3	473.6
Subtotal N. Tier	160.1	18.5	178.6	105.5	29.8	1185.5	212.9	1398.5
Canada - inventory	573.8	68.8	642.6	416.2	245.4	20270.7	5822.3	26093.0
(%)	(89)	(11)	(100)	(65)	(38)	{78}	{22}	{100}

## 2. All of Canada

Canada - Total	921.5 <sup>γ</sup>	75.5 <sup>γ</sup>	997.1 <sup>γ</sup>	416.2	245.4	20270.7	5822.3	26093.0
(%)	(92)	(8)	(100)	(42)	(25)	{78}	{22}	{100}

<sup>α</sup>Volume reported only for timber productive forest.

<sup>β</sup>Tpf = timber productive forest area.

<sup>γ</sup>Source: Canada Year Book (1992).

Totals may not add exactly due to rounding.

For more detail see Appendix 1, Tables 16.1 and 16.3.

Table 6.2. Comparison of 1986 and 1991 inventory results (× 1 000 000 ha)

	Forest		Timber productive forest	
	1986	1991	1986	1991
Inventoried	397.9	416.2	243.7	245.4
Not inventoried	(55.4)	-	..	-
Total	(453.3)	416.2	243.7	245.4

## 7. Land class and forest site class

### Land class and timber productivity

Chapter 6 and Table 6.1 dealt with the land classes used in the inventory, and in particular with the complex transition from forest to other land classes as the trees get smaller and sparser at the edges of their natural range. Beyond the forest the inventory recognises two conditions — fresh water and nonforest land.

Within the forest the first major differentiation is between 'timber productive' and 'timber unproductive'. The former occurs on better sites considered capable of producing a merchantable crop within a reasonable length of time. This consideration is based only on site quality, regardless of forest use. For instance, timber productive forest can occur in protected wilderness areas. The qualifier 'timber' has been added to these terms since the 1986 inventory to recognise clearly that they are based on timber considerations. Thus timber unproductive forest may be quite productive for wildlife.

Table 6.1 and Maps 19.1 to 19.3 show the distribution of forest and its subdivision according to timber productivity. Concentrations of timber unproductive forest can be seen in the cold northern areas and also in the dry prairie transition.

Timber productive forest is further quantified for wood volume and several descriptive attributes. These are presented below and in subsequent chapters and appendices.

### Site class

Site class is defined in terms of the expected tree height at an index age of 50 years. Figure 7.1 shows the area distribution by site class. Areas in the higher site classes 5 to 7 are too small to show clearly, while classes 6 and 7 are reported only from British Columbia.

Figure 7.2 shows the general trend to higher standing volumes on the better sites, although standing volume is not only a function of site productivity but also involves the ability to accumulate volume (stand age, longevity of the species, lack of disturbance, etc.).

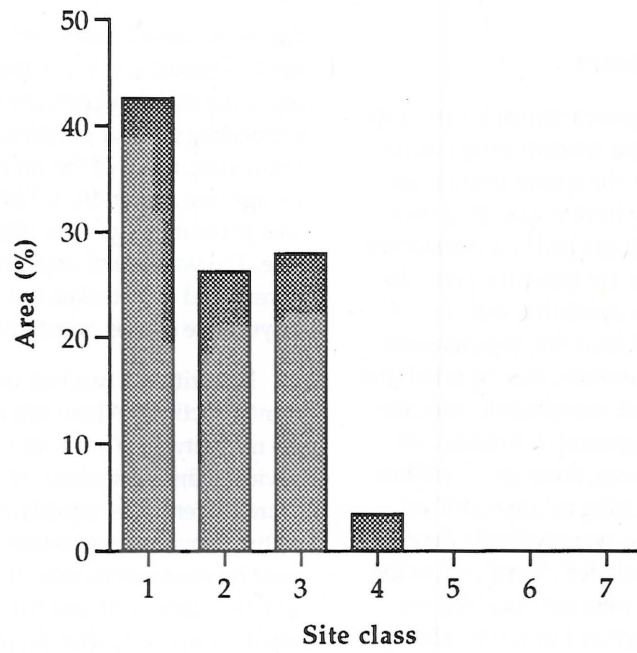


Figure 7.1. Area percent of timber productive forest by site class.

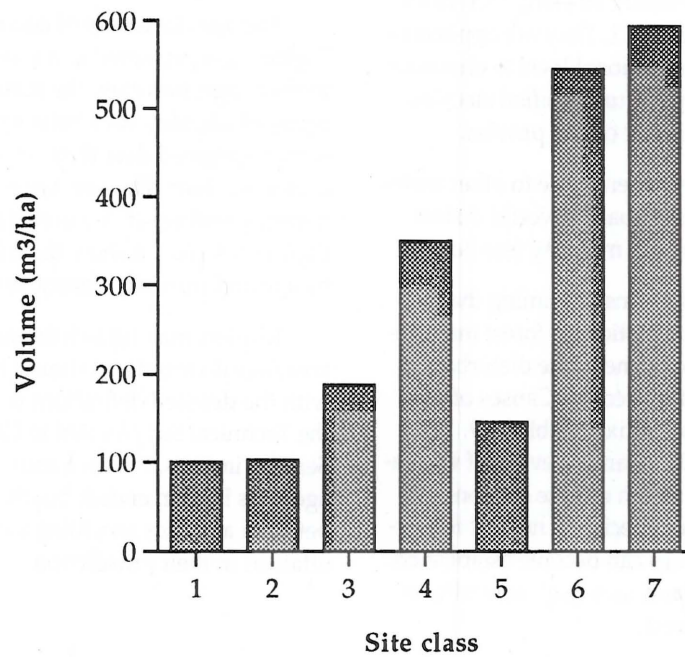


Figure 7.2. Volume per hectare on timber productive forest by site class.



## 8. Stocking, age, and maturity

### Stocking and cause of disturbance

The success or failure of regeneration on temporarily nonstocked areas is of major concern to operational forest management. However, the source inventories feeding the national inventory have not on their own been capable of quantifying all stocked and nonstocked timber productive forest. They are generally periodic inventories based on photointerpretation that cannot detect very small trees, and silvicultural regeneration activities may be recorded elsewhere. It is expected that this situation will improve with more holistic inventories and improved data management techniques. As Table 16.5 (Appendix 1) indicates, there are 19 million ha in the inventory where stocking is 'unproven' or 'unclassified'. These conditions were typically described in the source inventories as 'cutover', 'burn', etc. at the time of inventory. Such areas were not classified for other descriptive attributes such as forest type and age if the stocking situation was not known.

In order to overcome this limitation of the inventory, the provinces and territories provided their best estimates of the proportion of the unproven stocking that is expected to have been stocked at the time of the original inventory. These auxiliary stocking factors are reported in Appendix 2, Table 17.1. They are applied in Appendix 1, Table 16.5 at the national level to eliminate by calculation the unproven and unclassified stocking categories. Figure 8.1 is the result of this process.

Similar adjustments have been made to other tables where the unproven stocking situation would distort the distribution of area by age or maturity (see below).

The reader is cautioned against assuming that all nonstocked forest is a poor reflection on forest management practices. Harvest is only one of the disturbances that cause temporary loss of tree cover. Causes of disturbance are reported in Appendix 1, Table 16.9. Nonstocked forest in Canada is rarely devoid of vegetation for long, and a limited length of time as 'nonstocked with commercial tree species' is normal following disturbance until seedlings can become established. Areas deforested for other land uses (e.g., agriculture) are no longer considered forest.

### Age and maturity

Age is extremely important in the even-aged management of boreal and temperate forests. Unfortunately, age is not easy to determine from air photos, even with supporting ground samples. Although the situation is improving, much of the inventory is still unclassified for age (see Appendix 1, Table 16.6). Figure 8.2 shows area percent by age class where the information is available. The portions of unproven stocking estimated to be nonstocked and stocked have been added to the 0- and 10-year age classes, respectively.

Maturity is a function of stand age and management objectives. Where age is known in the inventory the maturity class has been calculated based on the advice of the particular province or territory. Many source inventories, especially the older ones, report maturity but not age because maturity is easier to estimate by photointerpretation. Appendix 1, Tables 16.6 and 16.7, show that much more of the inventory is classified for maturity than for age.

Figure 8.3 gives area percent by maturity where the information is available. The portions of unproven stocking estimated to be nonstocked and stocked have been added to the nonstocked and regeneration classes, respectively.

The age classes are of equal intervals (20 years), so Figure 8.2 is presented as a conventional bar chart. In terms of age, however, the maturity classes are not of equal width; they vary between source inventories, and with aggregated data they can overlap, so Figure 8.3 uses a pie chart. The average relationship between maturity and age in the inventory is shown in Table 8.4. Figures 8.5 and 8.6 show the mean volume per hectare by age and maturity classes, respectively.

Readers making a close examination of the area/age distributions should familiarize themselves with the detailed definitions of the upper age classes in the Technical Supplement to CanFI 91 (Canadian Forest Service, in prep.). In each source inventory the highest age class is open ended, but the start of that class varies between agencies according to the ages commonly attained in their jurisdiction.

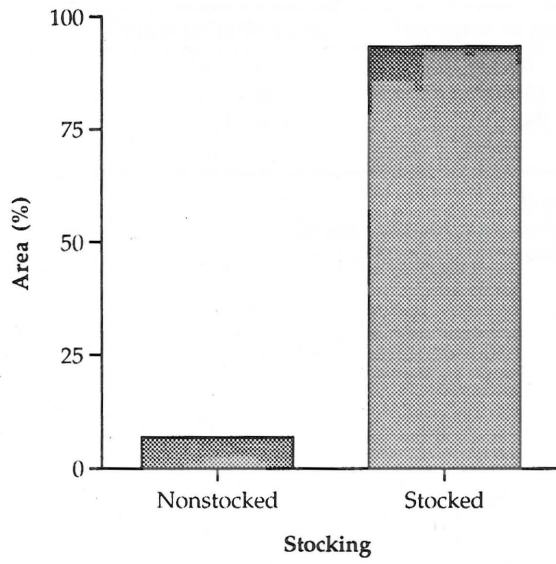


Figure 8.1. Area percent of stocked and nonstocked timber productive forest.

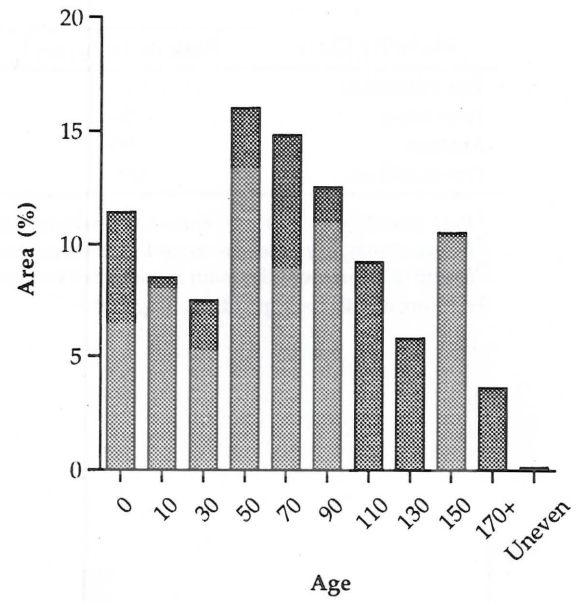


Figure 8.2. Area percent of timber productive forest by age class.

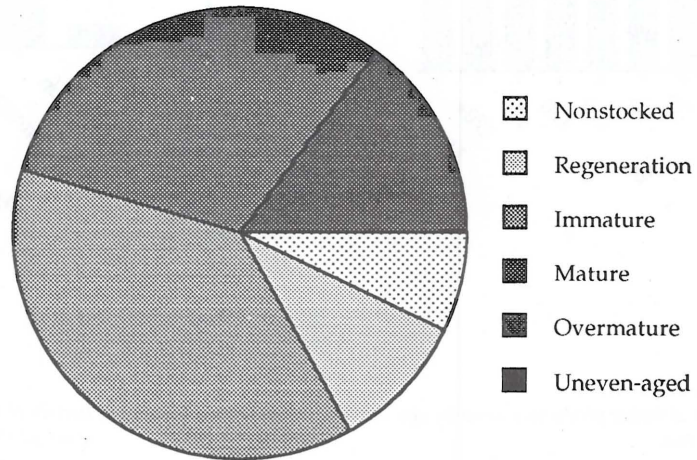


Figure 8.3. Area of timber productive forest by maturity class.

Table 8.4. Relationship between maturity and age

Maturity Class	Age (years)		
	Peak distribution <sup>1</sup>	Range of majority <sup>2</sup>	Range of occurrence <sup>3</sup>
Regeneration	10	0 - 15	0 - 30
Immature	50	15 - 75	10 - 110
Mature	90	75 - 130	50 - 130
Overmature	155	130+	70+

<sup>1</sup>Peak distribution - the age of most area within that maturity class.

<sup>2</sup>Range of majority - the age range where that maturity class has more area than any other.

<sup>3</sup>Range of occurrence - the main age range of that maturity class.

For more detail see Appendix 1, Fig. 16.8

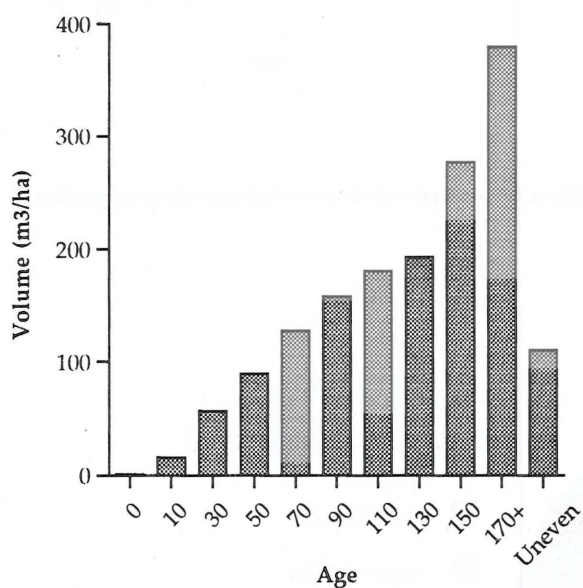


Figure 8.5. Volume per hectare of timber productive forest by age class.

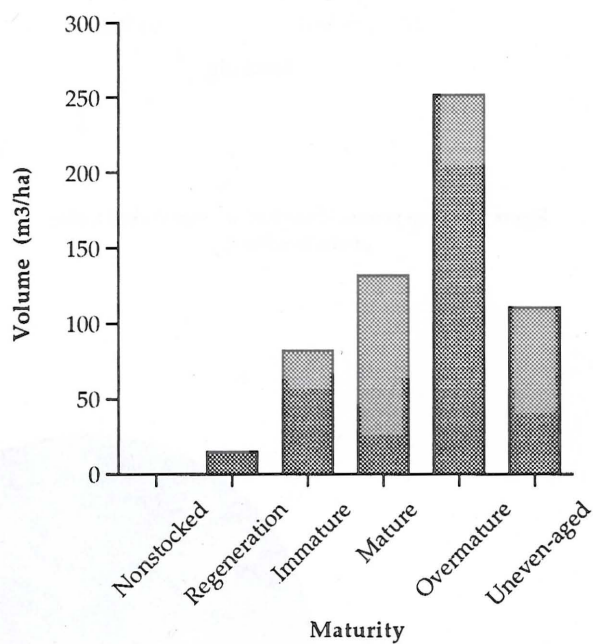


Figure 8.6. Volume per hectare of timber productive forest by maturity class.

## 9. Wood volume

Table 6.1 reports 26 billion m<sup>3</sup> of wood on the 245 million ha of timber productive forest, or an average of 106 m<sup>3</sup>/ha (regardless of age or stocking level). Coniferous species account for 78% of the volume, broad-leaved for 22%. Further details on the distribution of volume are to be found elsewhere, especially in Chapters 10 and 12, in Appendix 1, and Maps 19.5 to 19.8.

The volume reported is known as 'gross merchantable pulpwood volume'. For measurement purposes trees that have crossed a certain threshold of size are considered merchantable to pulpwood specifications. This measurement specification does not necessarily imply that the wood is suitable or available for commercial use. Merchantable volume is the main stem volume under bark above a stated stump height and below a minimum top diameter. Detailed specifications vary between source inventories (Gray and Nietmann 1989, Canadian Forest Service, in prep.). 'Gross' means that deductions have not generally been made for

defects in the wood such as decay (volumes for British Columbia are 'net').

Previous national inventories reported volume to saw dimensions as well as pulp dimensions. Saw-wood volume estimates have been discontinued in this report because of the apparent lack of client interest since 1986. In most Canadian timber management practices all merchantable sizes are now harvested sooner or later, the industrial use of various sizes and species is more closely integrated, and the relationship of use to size alone is not practical at the national level.

The wood volume reported is an important part, but not all, of the biomass in the timber productive forest. Wood fibre also occurs in the stump, top, and branches of the merchantable trees, in woody vegetation below the threshold of merchantability, and in the timber unproductive forest. A separate biomass inventory was created in 1984 (Bonnor 1985). Attempts are now under way to relate the other components of aboveground biomass directly to the national forest inventory.

## 10. Forest composition

The composition of stocked timber productive forest is analysed in several ways. Area can be reported by forest type (softwood, mixedwood, hardwood) in most cases, and by predominant genus (e.g., spruce) for an increasing portion of the inventory. Both of these attributes are based on the stand labels of the source inventories. Figure 10.1, Table 10.2 and Map 19.4 illustrate this ability. They show how conifers tend to dominate the timber productive forest, especially in the colder areas and away from the plains. The inventory does not describe the timber unproductive forest, which consists mostly of coniferous species especially at the cold transitions — see the National Atlas 'Vegetation cover' map (Canada 1993).

The wood volumes of source inventories came from representative regional sample plots, and in the national inventory volume can be reported by species group (e.g., black and red spruce) where the source inventories allow (see Table 10.3). Most source inventories that do not recognise species groups can at least report coniferous and broadleaved volumes separately. For more detail see the Technical Supplements (Gray and Nietmann 1989, Canadian Forest Service, in prep.).

Considerably detailed information on forest composition is to be found in Appendix 1, especially in Tables 16.10 to 16.16, and in Maps 19.4 to 19.8.

Map 19.7 is the sum of Maps 19.5 and 19.6, and they can be examined in conjunction with Map 19.4.

Those who are used to dealing with volume per hectare in site specific operational situations may be surprised at the values presented for Maps 19.5 to 19.7. For these maps the growing stock volume in each map cell was divided by the total area of that cell, not by the area on which that volume occurs. This lowers the values of volume per hectare reported, but ensures a proper representation on the map of the total amount of wood volume present.

Map 19.8 shows the distribution of mature and overmature volume per hectare on which it grows. Values are obviously higher than for the other volume maps. The highest values occur in the west, and the class intervals selected to give a good national picture obscure the extremely high values of coastal British Columbia.

The initial impression that Map 19.8 shows site capability for wood production is not entirely correct. It also involves the forest's ability to stockpile wood. The authors speculate that the longer history of human disturbance in eastern and central Canada has contributed to lower mature and overmature volumes relative to the west. The mature and overmature forest of coastal British Columbia has accumulated volume for centuries with little disturbance from fire or human beings.

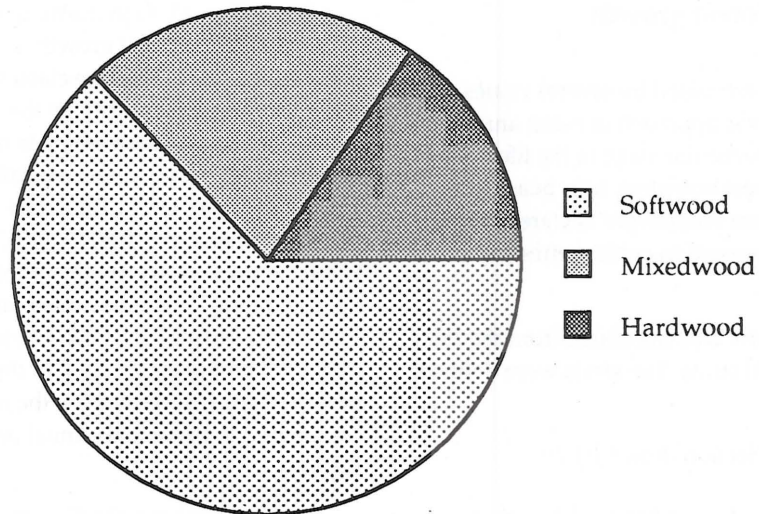


Figure 10.1. Area percent of stocked timber productive forest by forest type.

Table 10.2. Area percent of stocked timber productive forest by composition

Predominant genus	Forest type			Total
	Softwood	Mixedwood	Hardwood	
Coniferous	43	7	1	51
Broadleaved	3	6	12	21
Unclassified	17	8	2	28
<b>Total</b>	<b>63</b>	<b>21</b>	<b>15</b>	<b>100</b>

Totals may not add exactly due to rounding.  
For more detail see Appendix 1, Table 16.11.

Table 10.3. Volume by species group ( $\times 1\,000\,000\text{ m}^3$ )

Coniferous		Broadleaved	
Spruce	7618	Poplar - aspen	3247
Pine	4534	Birch	1142
Fir	3106	Maple	686
Hemlock	1764	Other	265
Douglas-fir	865	Unspecified	482
Larch	143	<b>Total - Broadleaved</b>	<b>5822</b>
Cedar & other	933		
Unspecified	1308	<b>All species</b>	
<b>Total - Coniferous</b>	<b>20271</b>	<b>Total - All species</b>	<b>26093</b>

For more detail see Appendix 1, Table 16.12.

## 11. Forest growth

Forest growth can be estimated by several values, including the empirical approach of mean annual increment (m.a.i.) to a particular stage in the life cycle of the forest. Canada's Forest Inventory uses m.a.i. to maturity, which is mature volume per hectare divided by age. The m.a.i. is expressed in cubic metres per hectare per year.<sup>1</sup>

The m.a.i. to maturity was calculated from the 1986 inventory for about 1800 strata. The strata were defined as combinations of:

- Forest Region and Section (Rowe 1972);
- site class;
- predominant genus if available or, failing that, forest type.

In each stratum the m.a.i. was calculated from the mature forest as pulpwood volume ( $\text{m}^3/\text{ha}$ ) divided by age. For records identified as 'mature', but with no age information, an appropriate mature age was substituted based on the advice of the province or territory. Coniferous and broadleaved m.a.i. were calculated separately and can be combined for all species.

Although m.a.i. was calculated using mature forest it can be applied to the inventory for any age or maturity class of stocked timber productive forest. For any subpopulation of interest the m.a.i. is computed as the average of the m.a.i. corresponding to each component in that subpopulation weighted by the area of each record. Table 11.1 presents the mean m.a.i. to maturity of all species for the stocked timber productive forest of each Forest Region and of Canada. For more detail see Appendix 1, Table 16.17 where coniferous, broadleaved, and all species values are reported by Forest Region and Section. These results take the same basic approach as an earlier national report on mean annual increment (Bickerstaff et al. 1981), and replaces those estimates with newer and more comprehensive data.

Because m.a.i. to maturity is a long term average it may not reflect current growth. However, for large areas with a mixture of age classes it is reasonable to multiply m.a.i. to maturity by the area of stocked timber productive forest for an estimate of the growth potential of the existing forest. This calculation for the whole country is presented in Table 11.1. Areas that are temporarily nonstocked (fire, harvest, etc.) do not contribute at present to growth, although they are an essential part of the long term timber land base. Only if all timber productive forest grew to maturity and was then disturbed and re-established in the same manner as the existing mature forest would the numbers in Table 11.1 correspond to the actual annual net growth of Forest Regions.

The m.a.i. represents the rate at which volume has accumulated in the existing forest from establishment to maturity. This net growth to maturity does not, under typical Canadian conditions of extensive forest management, include all the volume growth throughout the life of the forest. Some of that growth is lost during the rotation due to factors like competition, insects, and disease. The m.a.i. provides a baseline growth value of the present forest for the conditions under which it developed. Higher net growth rates could be attained, and are one argument for more investment in forest management (another argument is higher product value). In areas under extensive forest management the harvestable growth could be increased in several ways, including the use of periodic thinnings to reduce loss during stand development.

The growth rates reported here may not be directly comparable with figures from other countries. Harvestable growth rates reported under intensive timber management may be twice those of extensively managed areas on similar sites. It should also be noted that this inventory reports m.a.i. for merchantable volume inside bark, whereas other countries may use total main stem volume and may measure volume outside bark.

<sup>1</sup> Cubic metres per hectare per year is properly written for scientific purposes as  $\text{m}^3/(\text{ha}\cdot\text{a})$ , but for clarity in this general report the notation used is  $\text{m}^3/(\text{ha}\cdot\text{yr})$ .

Table 11.1. Growth by forest region

For stocked timber productive forest	
Forest region	m.a.i. to maturity m <sup>3</sup> /(ha.yr)
Boreal - predominantly forest	1.56
Boreal - forest and grassland	1.82
Boreal - forest and barren	0.45
Subalpine	2.11
Montane	1.76
Coast	2.31
Columbia	2.11
Deciduous	2.07
Great Lakes - St Lawrence	1.82
Acadian	1.55
Grassland	1.28
Tundra	0.79
Canada	1.59
	Million m <sup>3</sup> /yr <sup>1</sup>
	364

<sup>1</sup>The Canada m.a.i. of 1.5910 m<sup>3</sup>/(ha.yr), when applied to 228 714 000 ha of stocked timber productive forest (Appendix 1, Table 16.5), represents an average national growth to maturity of 363 884 000 m<sup>3</sup>/yr. For more detail on coniferous, broadleaved, and all species m.a.i. by forest region and section see Appendix 1, Table 16.17.



## 12. Forest ownership, use, and availability

Most of the inventory attributes described in previous chapters apply only to timber productive forest. In this chapter some analyses include all of the forest.

### Ownership and status

The ownership situation is summarized in Tables 12.1 and 12.2 and Figure 12.3. Most of the forest is owned by the Crown (i.e., the state as represented by provincial, territorial, and federal governments). The limited amount of private forest occurs mostly in the Maritime Provinces, Quebec, and Ontario.

Most of the Crown forest in Canada is classified as 'provincial'. There are three categories of 'federal' Crown ownership. 'Native' lands are administered by Indian Affairs and Northern Development Canada. Other departments administer 'other federal' lands, including national parks, national defence establishments, and properties of federal Crown corporations. In the case of the Yukon and Northwest Territories the evolving devolution of resource management to the territorial capitals caused the territorial equivalent of 'provincial' ownership to be included in the 'provincial/territorial' class. In this way such lands are distinguishable from 'native' and 'other federal' lands, and can be either included or excluded from 'federal' totals.

The distinction between 'industrial' and 'nonindustrial' private land is not exact and varies with province. In general the larger private holdings belong to corporations engaged in commercial forestry whereas the smaller properties may or may not be used in that way.

'Status' codes are generally used in conjunction with 'ownership', especially for Crown ownership. One aspect of this combination is summarised in Figs 12.4 to 12.6. More detail is presented in Appendix 1, Tables 16.21 to 16.23. The status class 'reserved' is land that by law is not available for the harvesting of forest crops (e.g., national parks). 'Nonreserved Crown land' may be classified as 'retained' or 'assigned'; in the former the Crown has retained direct management of the forest (e.g., harvest allocation through quotas or licences); in the latter forest management has been delegated (e.g., forest management agreements).

### Policy constraints

Not all nonreserved timber productive forest is available for timber harvest. For instance timber management units typically contain considerable areas of timber productive forest that are withheld from harvest due to the policies or attitudes of the owner. These constraints are generally for site protection or other non-timber benefits and, by definition, do not involve economic accessibility.

In the case of formal management plans this constraint may be exercised by management regulations and operational guidelines in order to protect other land values; for small private properties it may be nothing more than the attitude of the owner. Streamside buffers, key wildlife habitats, and steep slopes are examples of land withheld from harvest due to policy constraints. Such areas are often not specifically identified in the source inventories because their exact definition is part of operational planning. The provinces and territories have provided estimates of the proportion of nonreserved timber productive forest that is under 'policy constraint', and this auxiliary information is reported in Appendix 2, Table 17.2. The Canadian average of 18.8% was calculated using the inventory to produce a weighted mean of the source estimates. The combined effect of 'reserved' and 'policy constraint' values is explored below in 'The wood production forest'.

### Forest use

Table 12.7 estimates the overall importance of the forest for seven different uses, from wood production to recreation. This information was generated in response to an international survey (United Nations 1985), so some of the definitions and class values are not ideal for Canadian situations. The values cannot be compared directly with each other, as reference to Chapter 13, Section 13.4, will show.

One apparent peculiarity in the Canadian context arises from the fact that the international scale used for wood production deals with average annual harvest per hectare under present management practices and over a long period of time (50 - 100 years). The basic international class definitions are:

Class of importance	Harvest (m <sup>3</sup> /(ha.yr))
Low	≤ 1
Medium	> 1 to ≤ 3
High	> 3

Wood production is extremely important in Canada and as a component of the world economy yet, at first glance, the values in Table 12.7 suggest otherwise. The Canadian style of extensive timber management over very large areas does not rate as 'high' on this international scale; about one third of the timber productive forest is 'medium' and about two thirds is 'low'. Table 11.1 and the discussion on growth and management intensity at the end of Chapter 11 in part explain the situation for areas under active timber management. The results are further diluted by the fact that much of the timber productive forest is not available or accessible for timber management (see 'The wood production forest').

In Canada the wood harvest is predominantly commercial, and rarely occurs in timber unproductive forest for reasons that are both economic and environmental. This is not always so in other parts of the world where the harvesting of domestic fuelwood can be a major activity even on sites of low productivity.

#### Access

Map 19.9 shows the pattern of access in Canada. The presence of an access route within any inventory cell does not necessarily imply that all the suitable forest is economically accessible, but there is obviously a general relationship. Most of the forest outside accessed cells is economically inaccessible under present conditions, but there are exceptions. In this report the word 'accessed' is used, rather than 'accessible', to reinforce the distinction between current physical access and economic accessibility.

In the last 10 years certain changes have been observed in the access reported. Roads have increased and been upgraded, there have been rail closures, and many waterways are no longer considered suitable for timber transportation.

#### The wood production forest

Site-specific definition of the long-term wood production forest is at best a detailed, complex, and volatile exercise for forest owners (mostly the provinces) and industry. The planning horizon of timber management is typically 50 to 100 years or more, yet economic, political, and other land use factors can change more rapidly and the planner is often shooting at a moving target. Current estimates of harvest (area and volume) and the sustainable allowable cut (volume) are available elsewhere (Canadian Council of Forest Ministers 1993). Estimates of the area and location of what is presently

considered to be the wood production forest are not available for national aggregation.

Given this situation, it is still important to explain that most of the estimated 416 million ha of forest are not suitable, available, or economically attractive for sustainable commercial wood production. Canada's Forest Inventory 1991 and associated auxiliary information now make it possible to calculate a rough national estimate of how much can be considered 'wood production forest'. Table 12.8 summarizes this calculation and, although the result is not exact, it is felt to be reasonably close in relative terms.

Table 12.8 starts with the stocked and total areas of nonreserved accessed timber productive forest, also the volume ( $\text{m}^3/\text{ha}$ ) and mean annual increment to maturity ( $\text{m}^3/(\text{ha}\cdot\text{yr})$ ) of the stocked portion. Timber unproductive forest is not suitable and reserved forest is not available. Not all nonreserved accessed timber productive forest is available, so a reduction of 18.8% has been made for policy constraints (see Appendix 2, Table 17.2). The result is an estimate for the wood production forest of 118.9 million ha. This represents 48% of the country's timber productive forest area (245.4 million ha), 29% of the forest (416.2 million ha), or 12% of the whole country (997.1 million ha).

To summarize Table 12.8:

	The wood production forest				
	Area	Volume		m.a.i. to maturity	
	(million ha)	( $\text{m}^3/\text{ha}$ )	(billion $\text{m}^3$ )	( $\text{m}^3/(\text{ha}\cdot\text{yr})$ )	(million $\text{m}^3/\text{yr}$ )
Nonstocked	7	...	...	...	...
Stocked	112	130	15	1.8	203
<b>Total</b>	<b>119</b>	...	<b>15</b>	...	<b>203</b>

Totals may not relate exactly due to rounding.

More detail of the structure and distribution of the timber productive forest that is accessed and not reserved is presented in Appendix 1, Tables 16.24 to 16.26 and 16.29 to 16.32.

Table 12.8 gives the calculations, with reference to source, for all numbers used. From this base some specialist readers may wish to make other refinements. One obvious improvement is appropriate if the reader is not satisfied with 'accessed' as an approximation for economic accessibility and has an expert opinion for adjustment. That adjustment factor would have a negative component for economically inaccessible forest in the accessed area and a positive component for some economically accessible forest beyond accessed cells. Lowe (1991) used, for the sake of discussion, a net factor of

-10% and the authors are not aware of any subsequent suggestions to improve this.

Two other discounts could be made:

a) in recognition of the fact that not all of the wood production forest as estimated above is yet fully committed to timber management; and,

b) for various scenarios where some of the area now available for timber management could be rezoned to prevent harvest (e.g., protection of ecological reserves and old growth forest).

Table 12.1. Area percent of forest by province and ownership

Province or Territory	Million ha	%			
		Crown			Total
		Provincial	Federal	Private	
Newfoundland I.	6.0	1.4	--	0.1	1.4
Nova Scotia	3.9	0.3	--	0.6	0.9
Prince Edward I.	0.3	0.0	--	0.1	0.1
New Brunswick	6.1	0.7	--	0.7	1.5
Quebec	82.5	18.1	0.1	1.7	19.8
Ontario	58.0	12.3	0.1	1.5	13.9
Manitoba	26.3	5.9	0.1	0.3	6.3
Saskatchewan	28.8	6.7	0.1	0.1	6.9
Alberta	38.2	7.9	0.8	0.4	9.1
British Columbia	60.6	13.9	0.1	0.5	14.6
Subtotal S. Tier	310.7	67.2	1.4	6.0	74.6
Labrador	16.5	4.0	-	-	4.0
Yukon Territory	27.6	-	6.6	-	6.6
Northwest Terr.	61.4	-	14.8	-	14.8
Subtotal N. Tier	105.5	4.0	21.4	-	25.4
<b>Canada</b>	<b>416.2</b>	<b>71.2</b>	<b>22.8</b>	<b>6.0</b>	<b>100.0</b>

All 'Provincial/Territorial' forest in the Yukon and Northwest Territories has been assigned to 'Federal'.

Totals may not add exactly due to rounding.

For more detail see Appendix 1, Table 16.18.

Table 12.2. Area percent of timber productive forest by province and ownership

Province or Territory	Million ha	%			
		Crown			Total
		Provincial	Federal	Private	
Newfoundland I.	3.2	1.2	--	0.1	1.3
Nova Scotia	3.8	0.4	0.1	1.1	1.5
Prince Edward I.	0.3	--	--	0.1	0.1
New Brunswick	6.0	1.2	--	1.2	2.4
Quebec	54.8	19.6	0.1	2.7	22.4
Ontario	42.2	14.8	0.1	2.3	17.2
Manitoba	15.2	5.6	0.1	0.4	6.2
Saskatchewan	12.6	4.8	0.2	0.2	5.2
Alberta	25.7	9.2	0.7	0.5	10.4
British Columbia	51.7	20.1	0.2	0.9	21.1
Subtotal S. Tier	215.5	76.9	1.5	9.4	87.8
Labrador	8.1	3.3	-	-	3.3
Yukon Territory	7.5	-	3.1	-	3.1
Northwest Terr.	14.3	-	5.8	-	5.8
Subtotal N. Tier	29.8	3.3	8.9	-	12.2
<b>Canada</b>	<b>245.4</b>	<b>80.2</b>	<b>10.4</b>	<b>9.4</b>	<b>100.00</b>

All 'Provincial / Territorial' forest in the Yukon and Northwest Territories has been assigned to 'Federal'.

Totals may not add exactly due to rounding.

For more detail see Appendix 1, Table 16.19.

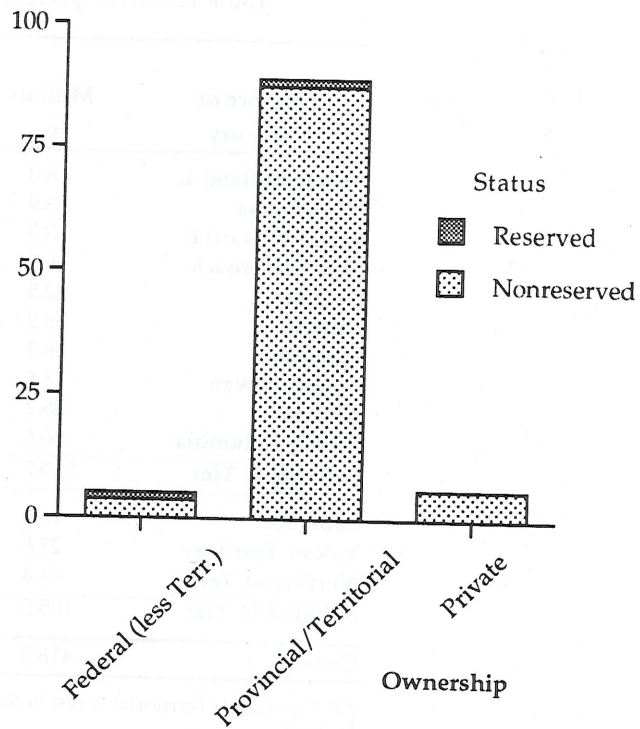
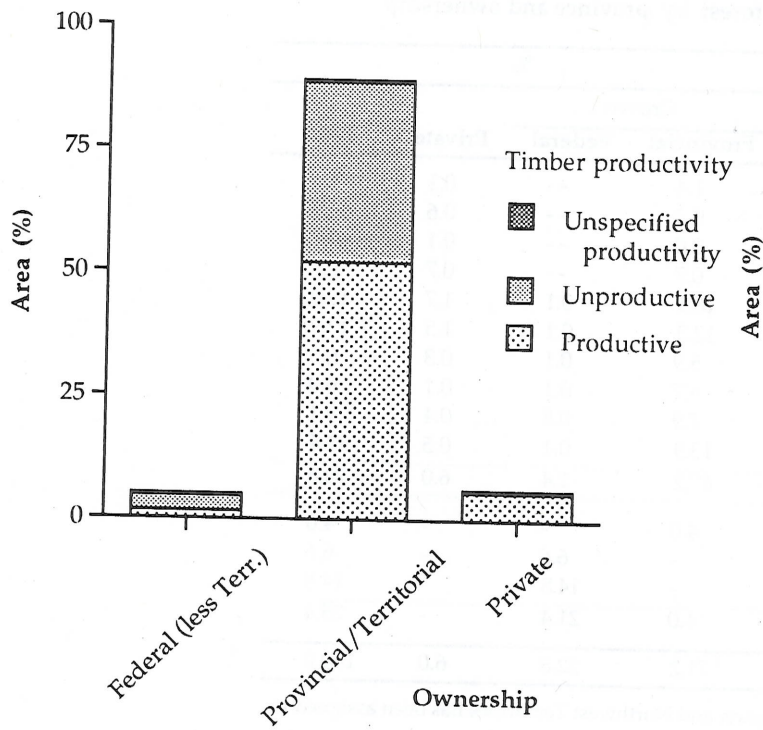


Figure 12.3. Area of forest by ownership and productivity.

Figure 12.4. Area of forest by ownership and status.

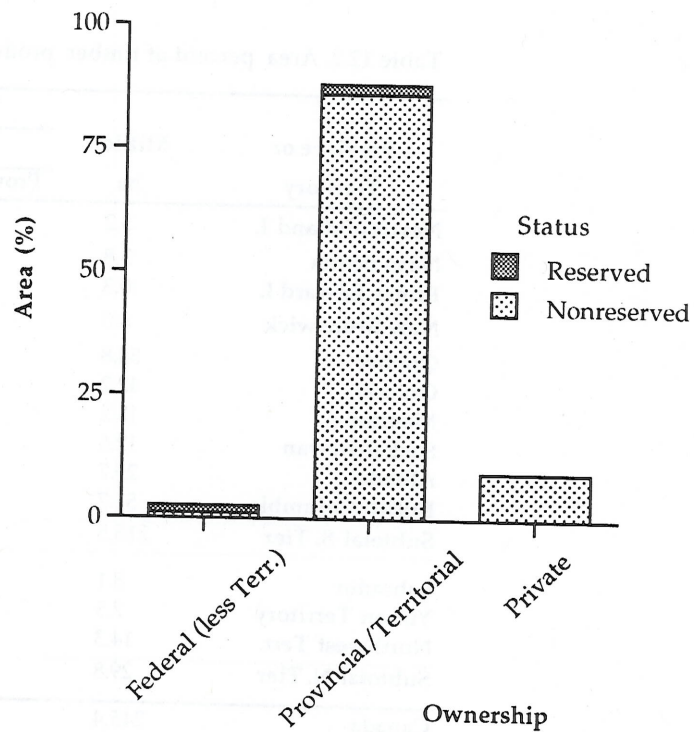
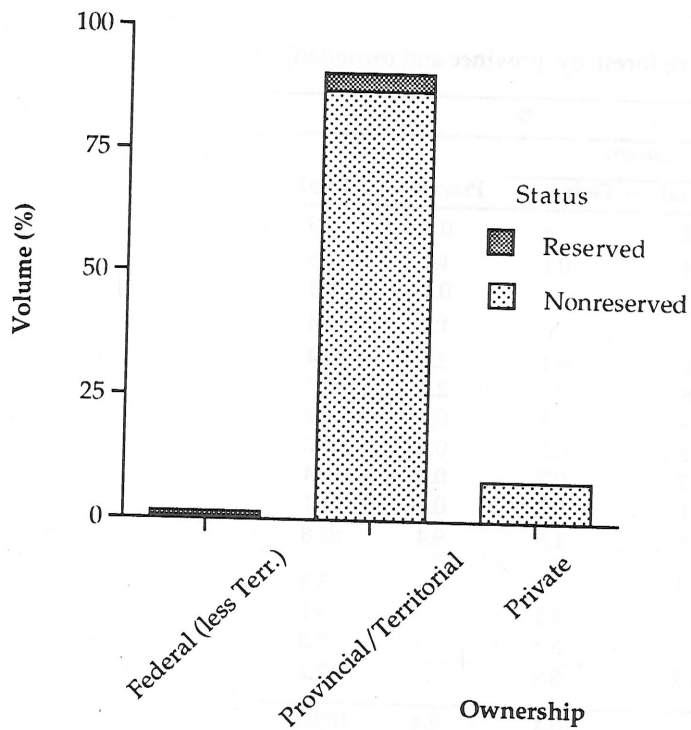


Figure 12.5. Area of timber productive forest by ownership and status.

Figure 12.6. Volume on timber productive forest by ownership and status.

**Table 12.7. Importance of the forest for seven uses**

Several provinces and territories provided factors in response to a United Nations' (FAO/ECE) survey between the 1986 and 1991 inventories. All provinces and territories were given the opportunity to upgrade these factors for application to the 1991 inventory.

The sum of the High (H), Medium (M), and Low (L) values is 100% for each combination of function, forest type, and owner. The specifications are on an international scale, not Canadian, and are described in Section 13.4 'Auxiliary and other related information'. Timber productive forest is the closest Canadian fit for the FAO/ECE category 'forest', and timber unproductive forest for 'other wooded land'.

Canada												
Weighted mean of those provinces and territories that responded												
Function <sup>1</sup>	Area %											
	Timber productive forest						Timber unproductive forest					
	Public			Private			Public			Private		
	H	M	L	H	M	L	H	M	L	H	M	L
Wood production	0	38	62	0	27	73	0	0	100	0	0	100
Protection	6	44	50	1	32	67	1	20	79	7	25	68
Water	5	66	29	5	60	35	1	20	79	19	19	62
Grazing (range)	0	1	99	1	22	77	1	3	96	1	13	86
Hunting	16	40	44	11	60	29	7	29	64	25	41	34
Nature conservation	7	57	36	1	23	76	4	59	37	1	14	85
Recreation	8	15	77	1	7	92	1	8	91	3	10	87

<sup>1</sup>For more detail see Appendix 2, Table 17.3.

**Table 12.8. The wood production forest**

Nonreserved accessed timber productive forest			
A. Application of policy constraint discount factor (%) to area (million ha)			
	Nonstocked <sup>a</sup>	Stocked	Total
Area before discount <sup>b</sup>	8.329	138.116	146.445
Policy constraint factor <sup>c</sup>	-18.8%	-18.8%	-18.8%
Area after discount	6.763	112.150	118.913
B. Calculation of volume			
Stocked area (million ha)		112.150	
Volume per hectare (m <sup>3</sup> /ha) <sup>d</sup>		129.9	
Volume (million m <sup>3</sup> )		14568	
C. Calculation of mean annual increment to maturity			
Stocked area (million ha)		112.150	
m.a.i. (m <sup>3</sup> /(ha.yr)) <sup>e</sup>		1.810	
m.a.i. (million m <sup>3</sup> /yr)		203	

Totals may not calculate exactly due to rounding.

<sup>a</sup>Nonstocked = Total - Stocked

<sup>b</sup>Source: Stocked - Appendix 1, Table 16.25; Total - Appendix 1, Table 16.26.

<sup>c</sup>Source: Appendix 2, Table 17.2.

<sup>d</sup>Source: Appendix 1, Table 16.25.

<sup>e</sup>Source: Appendix 1, Table 16.24.

## 13. The inventory

### 13.1 Overview

This chapter is limited to a brief description of the 1991 version of Canada's Forest Inventory. The full description is provided in a separate technical supplement to this report. Because the basic specifications have changed little between the 1986 and 1991 inventories, the 1986 technical supplement (Gray and Nietmann 1989) can answer most questions pending publication of the 1991 supplement (Canadian Forest Service, in prep.).

Although attribute specifications have changed very little, the extent and quality of the coverage, the auxiliary information, and the data handling procedures have all improved in the last five years. The concepts reported for the forest inventories of 1981 and 1986, and the biomass inventory of 1984, considered the Canadian Forest Resource Data System (CFRDS) as a collection of inventories and associated information, including Canada's Forest Inventory (CanFI). With recent emphasis on the periodic modification and technical development of CanFI as the main database, and the increasing ability to handle associated databases relationally, it has been recognised that CanFI is the appropriate central name. The initial concept of CFRDS is still valid, but the name became redundant and has been discontinued.

In summary, CanFI91 is an aggregation of the best available data from many source inventories. The data for this inventory were those available from the various sources in 1991, so the actual year of origin of the components pre-dates 1991. The year of collection of the source data is attached to each record; this is typically the year when the aerial photographs were taken. If no new source inventory was produced for a given area between 1986 and 1991 then the 1986 data are used again. The inventory is not a true time series, and the reader is warned against assuming that differences between the two inventories are due entirely to real differences in the forest.

The age of inventory information is reported in the technical supplement. The older source inventories tend to be in areas of lower activity and priority for forest management, and to have more values missing from the record. The areas of higher priority tend to be re-inventoried more frequently and with more modern specifications. The province of British Columbia has now instigated a programme to keep its inventories current between re-inventories and to do this by a combination

of observation and modelling for the major factors of change. The information provided by that province to the 1991 inventory was all updated to 1990. Most provinces keep more up-to-date information in other records at the local management level.

Specifications for the national inventory were developed collectively with the invaluable cooperation of the Canadian Forest Inventory Committee (CFIC). Then the detailed relationships with the specifications of each source inventory were explored individually with the provinces and territories. The contributing agencies processed the data at cost for the Canadian Forest Service. The key processing operation was to recode the source data to national specifications. Data deficiencies were recorded as 'missing values', and these are made clearly visible in the tables in Appendices 1 and 2. After conversion of the source records, which typically came from individual forest map polygons (stands), the results were aggregated by combining all like records within a cell. The national inventory cell is typically a provincial forest inventory map sheet. There are over 47 000 cells in the inventory, with a typical cell size of about 10 000 ha.

New core inventory data since 1986 were available for parts of all except three provinces or territories (Prince Edward Island, Quebec, and Northwest Territories). Because inventories of individual federal properties ('native' and 'other federal' ownerships) tend to be local matters they are not organized in the way that the provinces and territories coordinate their inventory production and data records. Where a province includes federal lands within its own inventory, either directly by inventory or indirectly through data transfer, then those federal lands will have been reported to Canada's Forest Inventory 1991. In some other situations where federal land inventories were not known to the reporting province they have been treated as 'missing values', in which case the federal forest as reported may be less than in 1986. Time and resources were not available to chase individual inventories of so many federal properties with many different types of land management and inventory systems.

There were some very large blocks of uninventoried forest in the 1981 inventory where the provinces and territories concerned had not yet been able to conduct suitable surveys. For the 1986 inventory a programme was begun to estimate these 'gaps' with low intensity samples, treating each gap as one large cell. Three gaps were filled with provincial cooperation in southern Alberta and in south-central and northern Saskatchewan (Gillis 1988).

For the 1991 inventory the remaining gaps were completed, so no major blocks of forest remain un-inventoried. The newly completed gap inventories do not include all the stunted and sparse trees north to the tree line, but include the areas of significant forest cover as indicated by the early products of a satellite mapping project (Canada 1993). One very large gap was filled in northern Ontario, as well as another covering a narrow fringe of timber unproductive forest in northern Manitoba. The 1986 gap inventories in Alberta were adjusted to accommodate subsequent expansion of the provincial inventory. The gap in northern Saskatchewan was replaced by a provincial inventory. The 1991 gap inventories are not covered by a special report, but the results are included in this report and are clearly visible as homogeneous blocks on some of the maps. The estimate of forest beyond the inventory has been discontinued. Those historical estimates were considerably larger than the gap estimates that replaced them, with a consequent apparent reduction in the forest area. The authors assume that those old estimates included large areas known to contain a few scattered trees but, with current knowledge and remote sensing capability, not all of such conditions are considered to be forest.

### 13.2 Core attributes

The data records within any one cell are different because they have different combinations of descriptive attributes. The attribute categories and codes are listed in the Appendix 3 Glossary and more detailed descriptions are to be found in the technical supplements (Gray and Nietmann 1989, Canadian Forest Service, in prep.). Those publications also include detailed conversion tables relating the national codes to those of each of the source inventories.

Each record identifies the province or territory and the cell. A record also carries the area in hectares, and volumes where appropriate. Volumes are gross merchantable under-bark m<sup>3</sup>/ha for various species groups, which are explained in more detail in Chapter 9 and in the technical supplement. The present report is restricted to pulpwood volumes, and no longer presents volume for saw-wood specifications (see Chapter 9).

### 13.3 Spatial information and overlays

Because the individual records are all linked to mapped cells within a geographic information system they can be handled spatially as well as statistically. One benefit of this is the ability to report in map form. Spatially referenced data can be combined with other spatial information such as 'access' (see Map 19.9), or can be

assigned to overlaid regions such as Forest Regions and Sections (see Appendix 1, Table 16.13) or Ecoregions (in preparation).

### 13.4 Auxiliary and other related information

#### General

The core attributes described in Section 13.2 are cell specific and generally come directly through conversion from the source inventories. The scope of the inventory can be extended by relating other information on the basis of location and/or certain attributes. Several categories of auxiliary information have been added to the inventory and are reported in other chapters. This allows use of the inventory beyond the core attributes, but care must be taken in describing and using auxiliary information for two basic reasons. The first reason is that auxiliary information is usually provided by province or by region and, when used in combination with cell specific attributes, the spatial resolution of the product is that of the region and not the cell. The second reason is that although auxiliary information can be based on hard data it usually relies on the experience and opinion of local experts in the absence of appropriate surveys.

#### Stocking factors

Stocking factors were introduced between the 1986 and 1991 inventories to handle the problem of 'unproven' stocking. In the source inventories there are large areas of disturbed timber productive forest where the cause of disturbance is mapped (e.g., 'burn', 'cutover') with no information on the presence or absence of regeneration at the time of inventory. The stocking factors reported by the provinces and territories (see Appendix 2, Table 17.1) estimate, by cause of disturbance, the proportion of 'unproven' area that can be added to the youngest 'stocked' category — the balance is added to 'nonstocked'. This adjustment has been done at the national level in Appendix 1, Table 16.5, and subsequently applied to the bottom line of other tables that involve stocking (such as age class distribution, see Appendix 1, Table 16.6). Results are presented in Chapter 8.

#### Policy constraint

Not all nonreserved timber productive forest is available for timber harvest. The auxiliary attribute of policy constraint uses provincial and territorial estimates of the proportion that is not legally 'reserved' but is likely to be withdrawn from timber planning due to owner policy or practice. These constraints are generally for site protection or other non-timber benefits and, by



definition, do not involve economic accessibility. In practice some of the provincial and territorial estimates do include an element of economic accessibility that could not be removed from their source data. The factors are reported in Appendix 2, Table 17.2, and presented in Chapter 12.

#### Cull and tree size-volume relationships

These two categories of auxiliary information were attempted in the 1986 inventory and have since been discontinued because the expected client interest did not materialize. Regional cull estimates were generally available, but tree size-volume relationships suitable for aggregated data were hard to obtain. The former would have allowed adjustment from gross to net merchantable volume, and the latter would have provided estimates of volume by tree size.

#### Importance of forest use

The forest is much more than a source of commercial wood products, and this auxiliary information considers the seven functions of wood production, protection, water, grazing (range), hunting, nature conservation, and recreation. The factors are reported in Appendix 2, Table 17.3, and applied in Chapter 12. The Canadian estimates arose out of a United Nations FAO/ECE survey (UN 1985) and use international categories and definitions that do not always relate exactly to the situation in any one country such as Canada. Chapter 12 pursues this point for 'wood production', and also points out that the high, medium, and low categories within each function do not imply equivalent values that allow comparison between functions. These points will be apparent with examination of the categories and classes summarized in the Appendix 3 Glossary; the original specifications are given at length in the FAO/ECE report.

#### Productivity

This auxiliary information is described in Chapter 11. Forest growth differs from the other auxiliary informa-

tion in that it is not of external origin, but is calculated within the inventory. In summary it is the mean annual increment to maturity calculated from the existing mature forest for about 1800 strata. The strata are defined by combinations of regions and appropriate attributes. The products are coniferous and broadleaved m.a.i. in terms of gross merchantable pulpwood cubic metres per hectare per year, and can be applied by the inventory reporting software for any selection of stocked timber productive forest (regardless of age or maturity).

#### Access

Access was first used for the 1984 biomass inventory (Bonnor 1985). Since then it has been transferred to the national forest inventory and upgraded with the cooperation of the provinces and territories. Unlike other auxiliary information access is cell specific. It records the presence and type of access routes somewhere within a cell. The categories are road, rail, and water. Water access implies that the transportation of timber by water is an accepted practice in that area, and that the water body is suitable. The road categories distinguish between paved, gravel, earth, and winter. Some jurisdictions, especially Alberta, recognise that snow roads are used for access in certain areas that are not otherwise roaded. If that is a normal local practice and if the cell is within the economic sphere of timber harvest, it can then be coded as having winter roads.

Map 19.9 shows the highest category of access within each cell, and the subject is explored further in Chapter 12.

#### Biomass, etc.

Other auxiliary information can and will be related to the national forest inventory as needs dictate and resources allow. One such project is currently underway to relate various components of forest biomass directly to CanFI91 and to future versions of the inventory.

#### 14. Information services

The database CanFI91 (Canada's Forest Inventory 1991) is available to answer special client requests at:

Forest Inventory and Analysis Project  
Petawawa National Forestry Institute  
Canadian Forest Service  
P.O. Box 2000, Chalk River, Ontario  
K0J 1J0  
Phone: (613) 589-2880  
Fax: (613) 589-2275

'Canada's Forest Inventory 1991: technical supplement' (Canadian Forest Service, in prep.) is a technical description of the 1991 inventory. However, the 1986 technical supplement (Gray and Nietmann 1989) is still valid for most basic features of the inventory. Publications are available in English or French from the Publications Distribution Centre at the Petawawa National Forestry Institute.

## 15. References

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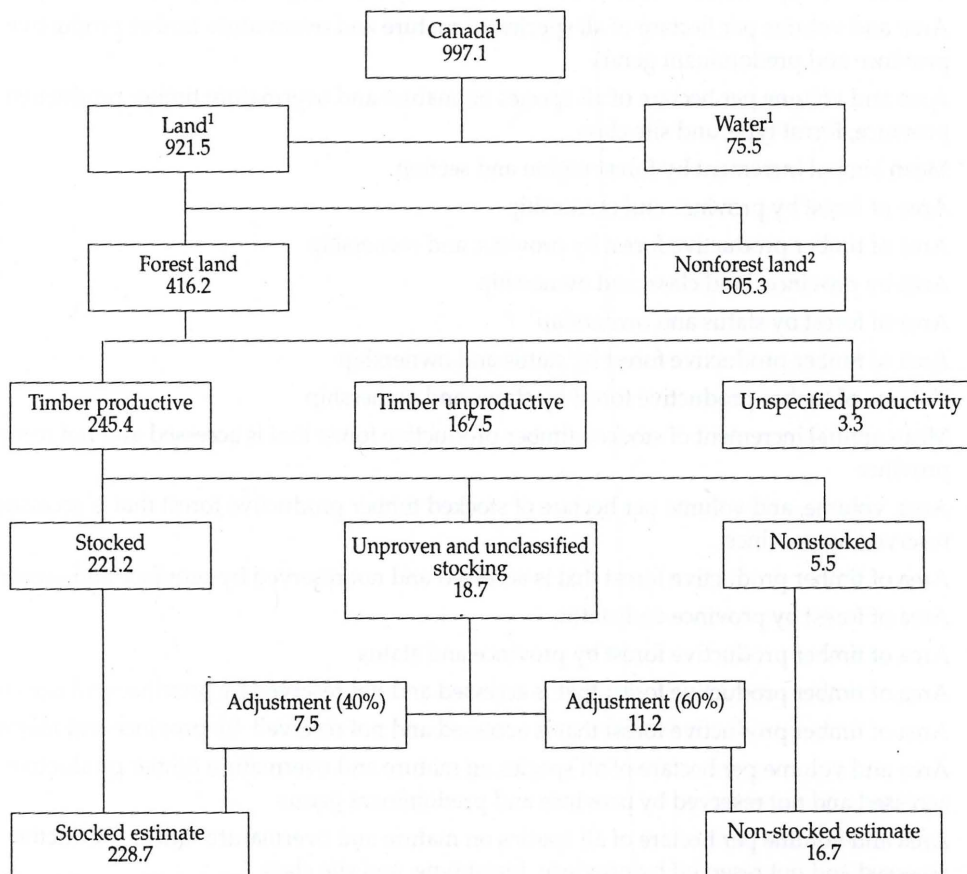
## 16. Appendix 1. Summary tables

Table 16.1	Inventoried area by province and land class
Fig. 16.2	Area by land class and stocking
Table 16.3	Volume of timber productive forest by province and forest type
Table 16.4	Area and volume per hectare of timber productive forest by province and site class
Table 16.5	Area of timber productive forest by province and stocking class
Table 16.6	Area and volume per hectare of timber productive forest by province and age class
Table 16.7	Area and volume per hectare of timber productive forest by province and maturity class
Fig. 16.8	Relationship between maturity and age
Table 16.9	Area of nonstocked plus unproven stocking timber productive forest by province and cause of disturbance
Table 16.10	Area of stocked timber productive forest by province and forest type
Table 16.11	Area of stocked timber productive forest by forest type and predominant genus
Table 16.12	Volume by species group and forest type
Table 16.13	Area and volume per hectare of all species on stocked timber productive forest by forest region and predominant genus
Table 16.14	Volume of all species on timber productive forest by forest region and predominant genus
Table 16.15	Area and volume per hectare of all species on mature and overmature timber productive forest by province and predominant genus
Table 16.16	Area and volume per hectare of all species on mature and overmature timber productive forest by province, forest type, and site class
Table 16.17	Mean annual increment by forest region and section
Table 16.18	Area of forest by province and ownership
Table 16.19	Area of timber productive forest by province and ownership
Table 16.20	Area by province, land class, and ownership
Table 16.21	Area of forest by status and ownership
Table 16.22	Area of timber productive forest by status and ownership
Table 16.23	Volume of timber productive forest by status and ownership
Table 16.24	Mean annual increment of stocked timber productive forest that is accessed and not reserved by province
Table 16.25	Area, volume, and volume per hectare of stocked timber productive forest that is accessed and not reserved by province
Table 16.26	Area of timber productive forest that is accessed and not reserved by province and ownership
Table 16.27	Area of forest by province and status
Table 16.28	Area of timber productive forest by province and status
Table 16.29	Area of timber productive forest that is accessed and not reserved by province and age class
Table 16.30	Area of timber productive forest that is accessed and not reserved by province and maturity class
Table 16.31	Area and volume per hectare of all species on mature and overmature timber productive forest that is accessed and not reserved by province and predominant genus
Table 16.32	Area and volume per hectare of all species on mature and overmature timber productive forest that is accessed and not reserved by province, forest type, and site class

Table 16.1. Inventoried area by province and land class (× 1000 ha)

Province/Territory	Forest			Nonforest	Unspecified land	Water	Unclassified	Total
	Timber productive	Timber unprod.	Unspecified productivity					
Newfoundland I.	3220	2767	-	3979	-	1116	23	11106
Nova Scotia	3767	156	-	949	-	467	90	5428
Prince Edward I.	278	16	-	263	--	17	-	575
New Brunswick	5954	152	-	867	-	189	142	7304
Quebec	54789	27696	-	23937	29	18907	1	125360
Ontario	42204	15791	-	9393	7	9020	324	76738
Manitoba	15239	11038	-	11563	-	9963	-	47802
Saskatchewan	12633	16155	18	5189	835	5901	142	40873
Alberta	25705	12022	487	11100	870	2233	1310	53726
British Columbia	51739	8810	16	31406	-	2457	675	95102
<b>Subtotal S. Tier</b>	<b>215528</b>	<b>94603</b>	<b>520</b>	<b>98646</b>	<b>1741</b>	<b>50270</b>	<b>2707</b>	<b>464014</b>
Labrador	8051	8486	-	4810	-	3587	-	24934
Yukon Terr.	7470	20021	58	20181	78	535	--	48345
NW Terr.	14321	44347	2769	29477	-	14360	-	105273
<b>Subtotal N. Tier</b>	<b>29842</b>	<b>72854</b>	<b>2827</b>	<b>54468</b>	<b>78</b>	<b>18482</b>	<b>-</b>	<b>178552</b>
<b>Canada</b>	<b>245370</b>	<b>167458</b>	<b>3348</b>	<b>153113</b>	<b>1819</b>	<b>68753</b>	<b>2707</b>	<b>642567</b>

Totals may not add exactly due to rounding.



Totals may not add exactly due to rounding

<sup>1</sup>Source: Canada Year Book 1992

<sup>2</sup>Nonforest land = Land - Forest

For more detail see Appendix 1, Tables 16.1 and 16.5

Figure 16.2. Area by land class and stocking (× 1 000 000 ha).

Table 16.3. Volume of timber productive forest by province and forest type (× 1000 m<sup>3</sup>)

Province/Territory	Forest type				Total
	Softwood	Mixedwood	Hardwood	Unclassified	
<i>Newfoundland I.</i>					
Coniferous	185228	21526	1060	1	207815
Broadleaved	12025	11239	5217	-	28481
Total	197253	32765	6277	1	236296
<i>Nova Scotia</i>					
Coniferous	104477	34855	15881	-	155213
Broadleaved	12415	22664	70681	-	105760
Total	116892	57519	86562	-	260973
<i>Prince Edward I.</i>					
Coniferous	7794	5596	2618	-	16008
Broadleaved	1216	3431	5388	-	10035
Total	9010	9027	8006	-	26043
<i>New Brunswick</i>					
Coniferous	266755	100537	50364	3934	421590
Broadleaved	30530	69962	103138	1333	204963
Total	297285	170499	153502	5267	626553
<i>Quebec</i>					
Coniferous	2433571	503351	152869	2	3089793
Broadleaved	158380	456018	606565	10	1220973
Total	2591952	959369	759433	12	4310766
<i>Ontario</i>					
Coniferous	1747375	532734	111231	--	2391340
Broadleaved	131506	503899	740145	--	1375550
Total	1878881	1036633	851376	--	3766890
<i>Manitoba</i>					
Coniferous	477112	95187	22543	--	594842
Broadleaved	59004	87183	170645	--	316832
Total	536116	182370	193188	--	911674
<i>Saskatchewan</i>					
Coniferous	310479	115005	35705	-	461189
Broadleaved	38819	109083	288047	-	435949
Total	349298	224088	323752	-	897138
<i>Alberta</i>					
Coniferous	1218176	432379	229725	--	1880280
Broadleaved	137829	264256	798510	--	1200595
Total	1356005	696635	1028235	--	3080875
<i>British Columbia</i>					
Coniferous	9320404	533456	12794	442	9867096
Broadleaved	59643	344959	305167	546	710315
Total	9380047	878415	317961	988	10577411
<b>Subtotal S. Tier</b>					
Coniferous	16071371	2374626	634790	4379	19085166
Broadleaved	641367	1872694	3093503	1889	5609453
Total	16712738	4247320	3728293	6268	24694619
<i>Labrador</i>					
Coniferous	272843	3735	538	-	277116
Broadleaved	5600	3772	588	-	9960
Total	278443	7507	1126	-	287076
<i>Yukon Territory</i>					
Coniferous	478355	90042	3744	-	572141
Broadleaved	25045	31795	8794	-	65634
Total	503400	121837	12538	-	637775
<i>Northwest Terr.</i>					
Coniferous	150022	185776	497	-	336295
Broadleaved	3958	93692	39622	-	137272
Total	153980	279468	40119	-	473567
<b>Subtotal N. Tier</b>					
Coniferous	901220	279553	4779	-	1185552
Broadleaved	34603	129259	49004	-	212866
Total	935823	408812	53783	-	1398418
<b>CANADA</b>					
Coniferous	16972591	2654179	639569	4379	20270718
Broadleaved	675970	2001953	3142507	1889	5822319
Total	17648561	4656132	3782076	6268	26093035

Totals may not add exactly due to rounding.

**Table 16.4. Area and volume per hectare of timber productive forest by province and site class**  
**Area (× 1000 ha); Volume per hectare (m<sup>3</sup>/ha) in brackets**

Province/Territory	Site Class							Unclass.	Total
	1	2	3	4	5	6	7		
<b>Newfoundland I.</b>	600 (73.2)	2358 (89.3)	15 (105.4)	- (...)	- (...)	- (...)	- (...)	248 (57.4)	3220 (83.6)
<b>Nova Scotia</b>	3461 (86.7)	306 (74.2)	-- (61.5)	- (...)	- (...)	- (...)	- (...)	- (...)	3767 (85.6)
<b>Prince Edward I.</b>	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	278 (106.3)	278 (106.3)
<b>New Brunswick</b>	185 (107.8)	529 (114.7)	1911 (114.5)	239 (121.1)	- (...)	- (...)	- (...)	3089 (100.1)	5954 (107.2)
<b>Quebec</b>	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	54789 (86.3)	54789 (86.3)
<b>Ontario</b>	14620 (73.4)	12643 (91.2)	14411 (121.8)	444 (155.5)	34 (123.0)	- (...)	- (...)	52 (46.3)	42204 (96.5)
<b>Manitoba</b>	740 (40.1)	5584 (49.7)	8915 (81.3)	- (...)	- (...)	- (...)	- (...)	- (...)	15239 (67.8)
<b>Saskatchewan</b>	43 (73.0)	300 (108.8)	21 (175.0)	- (...)	- (...)	- (...)	- (...)	12269 (78.9)	12633 (79.8)
<b>Alberta</b>	6563 (96.3)	13789 (141.0)	2520 (196.6)	- (...)	- (...)	- (...)	- (...)	2833 (13.4)	25705 (131.4)
<b>British Columbia</b>	24812 (164.7)	4050 (48.8)	17785 (297.6)	4884 (377.9)	4 (332.8)	1 (543.8)	1 (592.4)	203 (115.8)	51739 (223.2)
<b>Labrador</b>	42 (82.0)	135 (125.0)	1 (183.3)	- (...)	- (...)	- (...)	- (...)	7873 (57.4)	8051 (59.2)
<b>Yukon Terr.</b>	6567 (101.2)	854 (177.8)	38 (197.9)	1 (216.5)	- (...)	- (...)	- (...)	10 (103.7)	7470 (112.9)
<b>Northwest Terr.</b>	11897 (18.4)	2325 (102.1)	84 (213.2)	- (...)	- (...)	- (...)	- (...)	15 (-)	14321 (33.2)
<b>Canada</b>	69530 (100.1)	42873 (101.8)	45700 (187.5)	5568 (348.8)	38 (145.4)	1 (543.8)	1 (592.4)	81660 (83.3)	245370 (117.9)

Totals may not add exactly due to rounding.

Table 16.5. Area of timber productive forest by province and stocking class (× 1 000 ha)

Province/Territory	Nonstocked	Stocking not confirmed			Stocking confirmed				Total
		Unproven	Unclassified	Subtotal	Fully	Partially	Unquantified	Subtotal	
Newfoundland I.	370	23	-	393	1857	464	506	2827	3220
Nova Scotia	234	485	-	719	37	62	2949	3048	3767
Prince Edward I.	-	33	-	33	220	24	1	245	278
New Brunswick	66	41	-	107	4581	1051	215	5847	5954
Quebec	-	4842	-	4842	-	-	49947	49947	54789
Ontario	-	3166	1	3167	30279	7531	1228	39037	42204
Manitoba	-	1787	--	1787	12023	1429	-	13452	15239
Saskatchewan	-	1394	-	1394	8351	681	2208	11239	12633
Alberta	249	1995	13	2257	20549	1058	1841	23448	25705
British Columbia	4351	6	1	4359	47184	-	196	47380	51739
<b>Subtotal S. Tier</b>	<b>5270</b>	<b>13773</b>	<b>15</b>	<b>19058</b>	<b>125081</b>	<b>12300</b>	<b>59090</b>	<b>196471</b>	<b>215528</b>
Labrador	-	3203	-	3203	131	29	4688	4848	8051
Yukon Territory	188	1632	-	1820	2761	2873	16	5650	7470
Northwest Territories	-	39	-	39	4266	8741	1274	14281	14321
<b>Subtotal N. Tier</b>	<b>188</b>	<b>4874</b>	<b>-</b>	<b>5062</b>	<b>7158</b>	<b>11644</b>	<b>5978</b>	<b>24780</b>	<b>29842</b>
<b>Canada</b>	<b>5458</b>	<b>18647</b>	<b>15</b>	<b>24120</b>	<b>132238</b>	<b>23943</b>	<b>65068</b>	<b>221249</b>	<b>245370</b>

Application of stocking factors to reassign areas of 'unproven' and 'unclassified' stocking

	Nonstocked	Unproven + unclassified <sup>1</sup>	Stocked			Subtotal	Total
			Fully	Partially	Unquantified		
Before adjustment	5458	18662	132238	23943	65068	221249	245370
Stocking factor <sup>2</sup>	60% ←				40% →		
Adjustment <sup>3</sup>	+ 11197				+ 7465	+ 7465	
<b>Canada</b>	<b>16655</b>	<b>...</b>	<b>132238</b>	<b>23943</b>	<b>72533</b>	<b>228714</b>	<b>245370</b>

Totals may not add exactly due to rounding.

<sup>1</sup> 18647 + 15 = 18662.

<sup>2</sup> Source: Appendix 2, Table 17.1 40% stocked, but unquantified for stocking level; 60% nonstocked.

<sup>3</sup> 18662 × 60% = 11197 nonstocked.

18662 × 40% = 7465 stocked (unquantified).



Table 16.6. Area and volume per hectare of timber productive forest by province and age class  
Area (× 1000 ha); Volume per hectare (m<sup>3</sup>/ha) in brackets

Province/Territory	Nonstocked	Stocking unproven	Stocked by age class											Unclass.	Total
			0	1-20	21-40	41-60	61-80	81-100	101-120	121-140	141-160	161 +			
Newfoundland I.	370 (...)	23 (...)	- (...)	335 (14.9)	299 (39.6)	315 (79.3)	766 (106.8)	882 (112.8)	- (...)	- (...)	- (...)	- (...)	- (...)	231 (57.4)	3220 (83.6)
Nova Scotia	234 (...)	485 (...)	- (...)	55 (10.5)	421 (31.2)	1484 (90.1)	793 (111.7)	130 (96.3)	20 (75.6)	- (...)	- (...)	- (...)	37 (51.9)	110 (84.7)	3767 (85.6)
Prince Edward I.	- (...)	33 (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	245 (106.3)	278 (106.3)
New Brunswick	66 (...)	41 (...)	273 (5.3)	899 (34.9)	408 (82.8)	1283 (121.6)	1452 (131.3)	933 (136.3)	364 (139.4)	145 (149.8)	68 (151.9)	11 (170.8)	10 (138.8)	- (...)	5954 (107.2)
Quebec	- (...)	4842 (...)	- (...)	1008 (25.4)	1930 (71.4)	3086 (106.6)	2700 (128.6)	1822 (141.3)	868 (124.5)	- (...)	- (...)	- (...)	153 (122.1)	38381 (80.4)	54789 (86.3)
Ontario	- (...)	3167* (...)	1243 (-)	1521 (10.5)	4135 (50.2)	7968 (94.8)	7459 (122.9)	4990 (118.2)	3741 (127.1)	3007 (128.6)	810 (125.8)	245 (146.7)	6 (122.4)	3911 (71.6)	42204 (96.5)
Manitoba	- (...)	1788 (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (-)	- (...)	- (...)	13452 (67.8)	15239 (67.8)
Saskatchewan	- (...)	1394 (...)	- (...)	341 (18.7)	1010 (77.8)	1557 (107.8)	1065 (145.7)	1246 (145.9)	545 (136.7)	213 (118.5)	26 (104.9)	1 (103.4)	- (...)	5237 (39.1)	12633 (79.8)
Alberta	249 (...)	2008* (...)	1 (8.4)	204 (16.7)	1098 (55.8)	5773 (74.9)	4215 (122.8)	4051 (193.5)	2635 (208.8)	1785 (208.3)	618 (210.1)	456 (195.6)	- (...)	2610 (54.0)	25705 (131.4)
British Columbia	4351 (...)	8* (...)	- (...)	1684 (4.8)	2567 (49.8)	3886 (70.7)	4735 (138.4)	4890 (192.0)	5589 (221.6)	3887 (241.4)	15013 (288.9)	4933 (412.5)	- (...)	196 (115.8)	51739 (223.2)
Labrador	- (...)	3203 (...)	- (...)	- (-)	1 (-)	- (91.9)	- (91.9)	12 (118.4)	20 (123.3)	20 (123.3)	29 (114.5)	77 (109.8)	- (...)	4687 (57.4)	8051 (59.2)
Yukon Terr.	188 (...)	1632 (...)	- (...)	15 (15.0)	71 (51.5)	87 (73.3)	241 (132.7)	884 (166.3)	834 (162.6)	159 (192.5)	50 (218.6)	13 (226.6)	- (...)	3296 (81.4)	7470 (112.9)
Northwest Terr.	- (...)	39 (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	14281 (33.2)	14321 (33.2)
Canada	5458 (...)	18662* (...)	1518 (1.0)	6062 (15.9)	11939 (56.6)	25440 (89.6)	23426 (127.4)	19838 (158.2)	14617 (180.5)	9217 (192.8)	16615 (276.7)	5736 (379.0)	206 (110.5)	86638 (65.9)	245370 (117.9)

\* The 'unproven' column includes 15 000 ha with no stocking classification (see Table 16.5).

Application of stocking factors to reassign areas of 'unproven' and 'unclassified' stocking

	Nonstocked	Stocking unproven	Stocked by age class											Unclass.	Total
			0	1-20	21-40	41-60	61-80	81-100	101-120	121-140	141-160	161 +			
Before adjustment	5458	18662	1518	6062	11939	25440	23426	19838	14617	9217	16615	5736	206	86638	245370
Adjustment <sup>1</sup>	-5458		+5458												
Adjustment <sup>2</sup>			+11197	+7465											
Canada			18173	13527	11939	25440	23426	19838	14617	9217	16615	5736	206	86638	245370

Totals may not add exactly due to rounding.

<sup>1</sup>Nonstocked is the same as age class 0.

<sup>2</sup>Source: Appendix 1, Table 16.5. The stocked portion of 'unproven + unclassified' stocking is allocated to the youngest age class (1-20).

Table 16.7. Area and volume per hectare of timber productive forest by province and maturity class  
Area (× 1000 ha); Volume per hectare (m<sup>3</sup>/ha) in brackets

Province/Territory	Nonstocked	Stocking unproven	Stocked by maturity class					Unclass.	Total
			Regeneration	Immature	Mature	Overmature	Uneven		
Newfoundland I.	370 (...)	23 (...)	222 (2.7)	698 (58.5)	879 (105.1)	796 (112.1)	- (...)	231 (57.4)	3220 (83.6)
Nova Scotia	234 (...)	485 (...)	56 (1.9)	2556 (84.3)	395 (108.6)	4 (150.2)	37 (51.9)	- (...)	3767 (85.6)
Prince Edward I.	- (...)	33 (...)	- (...)	- (...)	- (...)	- (...)	- (...)	245 (106.3)	278 (106.3)
New Brunswick	66 (...)	41 (...)	832 (5.6)	2553 (105.6)	2177 (141.0)	188 (165.6)	10 (138.8)	86 (148.2)	5954 (107.2)
Quebec	- (...)	4842 (...)	7079 (30.0)	15279 (93.2)	26068 (99.4)	44 (158.2)	153 (122.1)	1324 (44.0)	54789 (86.3)
Ontario	- (...)	3167* (...)	2787 (-)	14893 (70.4)	13271 (117.5)	8074 (143.3)	6 (122.4)	6 (-)	42204 (96.5)
Manitoba	- (...)	1787 (...)	1276 (-)	9075 (60.7)	2575 (110.1)	526 (146.2)	- (...)	- (-)	15239 (67.8)
Saskatchewan	- (...)	1394 (...)	3 (10.5)	4671 (88.6)	1495 (125.5)	1482 (153.3)	- (...)	3589 (19.1)	12633 (79.8)
Alberta	249 (...)	2008* (...)	701 (2.9)	10688 (82.3)	8046 (186.0)	3179 (209.4)	- (...)	834 (37.0)	25705 (131.4)
British Columbia	4351 (...)	8* (...)	1686 (4.7)	15180 (126.4)	10501 (216.8)	19951 (319.5)	- (...)	63 (4.5)	51739 (223.2)
Labrador	- (...)	3203 (...)	- (...)	1 (-)	64 (122.0)	96 (109.8)	- (...)	4687 (57.4)	8051 (59.2)
Yukon Terr.	188 (...)	1632 (...)	15 (14.5)	3491 (85.2)	2020 (154.4)	124 (229.6)	- (...)	- (...)	7470 (112.9)
Northwest Terr.	- (...)	39 (...)	802 (-)	8897 (17.6)	4567 (69.2)	15 (38.8)	- (...)	- (-)	14321 (33.2)
Canada	5458 (...)	18662* (...)	15459 (14.8)	87982 (82.0)	72056 (131.5)	34480 (251.4)	206 (110.5)	11065 (43.3)	245370 (117.9)

\* The 'unproven' column includes 15 000 ha with no stocking classification (see Table 16.5).

Application of stocking factors to reassign areas of 'unproven' and 'unclassified' stocking

	Nonstocked	Stocking unproven	Area stocked by maturity class					Unclass.	Total
			Regeneration	Immature	Mature	Overmature	Uneven		
Before adjustment	5458	18662	15459	87982	72056	34480	206	11065	245370
Adjustment <sup>1</sup>	+ 11197	←	→ + 7465	...	...	...	...	...	...
Canada	16655	...	22924	87982	72056	34480	206	11065	245370

Totals may not add exactly due to rounding.

<sup>1</sup>Source: Appendix 1, Table 16.5. The stocked portion of 'unproven + unclassified' stocking is allocated to the youngest maturity class (regeneration).

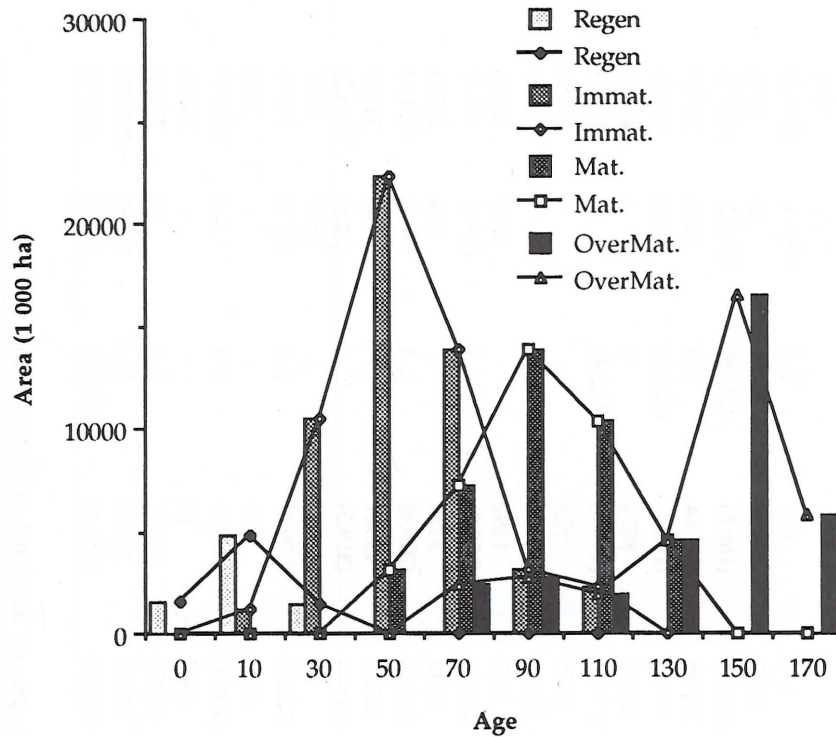


Figure 16.8. Relationship between maturity and age.

Table 16.9. Area of nonstocked plus unproven stocking timber productive forest by province and cause of disturbance ( $\times 1000$  ha)

Province/Territory	Cutover	Burn	Pest	Other	Unclassified	Total
Newfoundland I.	165	91	49	88	-	393
Nova Scotia	--	-	-	-	718	719
Prince Edward I.	14	1	--	18	-	33
New Brunswick	-	38	-	69	-	107
Quebec	1585	2515	175	566	--	4842
Ontario	--	-	-	-	3165	3166
Manitoba	-	38	-	-	1749	1787
Saskatchewan	90	609	-	136	559	1394
Alberta	291	1343	-	354	256	2244
British Columbia	910	1179	8	6	2254	4358
<b>Subtotal S. Tier</b>	<b>3056</b>	<b>5814</b>	<b>234</b>	<b>1236</b>	<b>8703</b>	<b>19043</b>
Labrador	43	25	-	1	3134	3203
Yukon Territory	5	484	-	-	1331	1820
Northwest Territories	3	36	-	-	--	39
<b>Subtotal N Tier</b>	<b>51</b>	<b>545</b>	<b>-</b>	<b>1</b>	<b>4465</b>	<b>5062</b>
<b>Canada</b>	<b>3107</b>	<b>6359</b>	<b>234</b>	<b>1237</b>	<b>13168</b>	<b>24105</b>

Totals may not add exactly due to rounding.

Table 16.10. Area of stocked timber productive forest by province and forest type (× 1000 ha)

Province/Territory	Forest Type				Total
	Softwood	Mixedwood	Hardwood	Unclassified	
Newfoundland I.	2447	318	62	--	2827
Nova Scotia	1386	715	946	-	3048
Prince Edward I.	90	85	70	-	245
New Brunswick	2285	1460	1355	747	5847
Quebec	33068	9666	7119	95	49947
Ontario	21832	10064	7135	6	39037
Manitoba	9069	1883	2500	-	13452
Saskatchewan	6268	2215	2756	-	11239
Alberta	10090	4679	8672	7	23448
British Columbia	39454	5459	2456	11	47380
Subtotal S. Tier	125989	36544	33071	866	196470
Labrador	4743	94	11	-	4848
Yukon Territory	4251	1275	124	-	5650
Northwest Territories	4225	9395	662	-	14281
Subtotal N Tier	13219	10763	797	-	24779
Canada	139208	47307	33868	866	221249
Adjustment from unproven stocking				+7465	+7465
Canada	139208	47307	33868	8331	228714

Totals may not add exactly due to rounding.

<sup>1</sup>Source: Appendix 1, Table 16.5. The stocked portion of 'unproven + unclassified' stocking is allocated to the unclassified forest type.

Table 16.11. Area of stocked timber productive forest by forest type and predominant genus (× 1000 ha)

Predominant genus	Forest type				Total
	Softwood	Mixedwood	Hardwood	Unclassified	
Spruce	36459	6159	37	-	42656
Pine	30374	4943	30	-	35346
Balsam fir	9181	1827	76	-	11084
Hemlock	4369	239	17	-	4626
Douglas-fir	4223	265	-	-	4488
Larch	815	33	6	-	855
Cedar & other conifers	3010	581	14	-	3606
Unspecified conifers	6480	888	2273	-	9642
Subtotal Conifers	94911	14935	2453	-	112303
Poplar	34	6271	10760	-	17066
Birch	85	3181	2480	-	5746
Maple	21	1026	4148	-	5194
Other broadleaved	6049	1553	2184	-	9786
Unsp. broadleaved	--	2219	7166	-	9386
Subtotal broadleaved	6189	14250	26738	-	47178
Unclassified	38106	18121	4676	866	61770
Canada	139208	47307	33868	866	221249
Adjustment from unproven stocking <sup>1</sup>				+7465	+7465
Canada	139208	47307	33868	8331	228714

Totals may not add exactly due to rounding.

<sup>1</sup>Source: Appendix 1, Table 16.5. The stocked portion of 'unproven + unclassified' stocking is allocated to the unclassified forest type.

Table 16.12. Volume by species group and forest type ( $\times 1000 \text{ m}^3$ )

Species group	Forest type				Total
	Softwood	Mixedwood	Hardwood	Unclass.	
Black spruce & red spruce	2026875	333057	77883	--	2437814
Other spruce	4046581	882489	251298	2	5180370
White pine	71749	79479	18077	--	169305
Jack, lodgepole, & shore pine	3616781	459061	60590	23	4136455
Other pine	176661	43265	7916	--	227842
Balsam fir	2607466	382901	115822	1	3106190
Hemlock	1697941	46385	19608	1	1763935
Douglas -fir	819066	44041	1469	247	864822
Larch	134116	7006	1815	--	142937
Cedar & other conifers	831768	81199	20171	--	933138
Unspecified conifers	943589	295296	64921	4104	1307910
<b>Subtotal - conifers</b>	<b>16972592</b>	<b>2654179</b>	<b>639570</b>	<b>4378</b>	<b>20270718</b>
Trembling aspen	201681	687428	1185513	--	2074622
Other poplar	120055	436158	616387	2	1172602
Yellow birch	8927	70796	104355	--	184078
Other birch	181240	432089	344752	2	958083
Sugar maple & black maple	3306	30015	169448	--	202769
Other maple	24892	128067	329993	3	482955
Other broadleaved species	9138	58876	196917	546	265477
Unspecified broadleaved	126730	158522	195143	1336	481730
<b>Subtotal - broadleaved</b>	<b>675968</b>	<b>2001951</b>	<b>3142508</b>	<b>1889</b>	<b>5822317</b>
<b>Total - all species</b>	<b>17648560</b>	<b>4656130</b>	<b>3782078</b>	<b>6267</b>	<b>26093035</b>

Totals may not add exactly due to rounding.

Table 16.13. Area and volume per hectare of all species on stocked timber productive forest by forest region and predominant genus  
Area (× 1000 ha); Volume (m<sup>3</sup>/ha) in brackets

Forest Region	Predominant genus in the cover type													Total	
	Spruce	Pine	Fir	Hemlock	Douglas-fir	Larch	Other conifers	Unspec. conifers	Poplar	Birch	Maple	Other bdlvd	Unspec. bdlvd		Unclassified
Boreal forest	29332 (111.3)	18338 (103.1)	3202 (77.7)	4 (453.6)	-- (1.1)	287 (74.8)	146 (96.8)	4190 (78.5)	11252 (140.7)	3210 (82.9)	276 (102.0)	7648 (70.4)	6230 (128.6)	41072 (76.0)	125184 (96.7)
Boreal grass	63 (140.2)	77 (117.4)	-- (120.6)	- (...)	-- (160.5)	2 (65.3)	- (...)	606 (61.0)	1352 (90.0)	16 (115.9)	95 (73.2)	- (...)	56 (128.0)	26 (149.2)	2295 (85.7)
Boreal barren	2395 (56.3)	1276 (29.0)	389 (104.8)	- (...)	- (...)	13 (82.2)	1 (61.9)	3287 (51.5)	31 (202.9)	28 (115.5)	30 (15.9)	9 (73.3)	13 (11.8)	12796 (34.9)	20261 (41.5)
Subalpine	3497 (241.7)	4439 (182.5)	2835 (231.3)	1141 (425.7)	620 (245.7)	68 (164.5)	291 (382.2)	- (...)	498 (113.0)	34 (108.5)	4 (316.2)	21 (235.4)	50 (108.1)	419 (22.6)	13915 (226.5)
Montane	1426 (260.9)	6355 (187.4)	580 (249.5)	84 (420.3)	1643 (172.2)	69 (187.1)	36 (275.2)	- (...)	731 (104.1)	58 (126.6)	-- (788.0)	-- (107.7)	7 (75.8)	93 (57.9)	11083 (192.9)
Coast	190 (499.7)	131 (194.2)	526 (477.8)	2441 (428.5)	765 (280.3)	- (...)	1701 (333.7)	- (...)	83 (114.7)	16 (85.0)	14 (336.7)	164 (266.5)	- (...)	15 (2.0)	6046 (373.6)
Columbia	571 (279.1)	739 (191.7)	408 (188.0)	252 (343.8)	736 (223.8)	256 (185.4)	220 (298.1)	- (...)	121 (105.6)	39 (128.8)	- (...)	- (...)	- (...)	25 (226.8)	3366 (227.4)
Deciduous	1 (29.4)	22 (105.9)	-- (72.2)	4 (124.9)	- (...)	1 (108.2)	24 (75.2)	- (...)	13 (106.7)	3 (76.3)	102 (87.0)	112 (83)	- (...)	3 (106.8)	286 (87.2)
Gt .Lks. - St Law.	1493 (94.6)	2112 (132.5)	1498 (99.5)	241 (153.2)	- (...)	99 (71.6)	946 (97.9)	107 (94.1)	2642 (131.4)	2309 (96.4)	4578 (124.8)	1826 (79.2)	479 (123.7)	4072 (87.8)	22403 (108.0)
Acadian	1705 (119.2)	142 (121.8)	477 (131.0)	6 (133.9)	- (...)	44 (114.1)	173 (149.1)	1398 (83.7)	40 (98.8)	15 (88.0)	82 (120.2)	1 (80.3)	2545 (105.0)	1338 (43.7)	7966 (97.0)
Grassland	45 (255.4)	437 (146.4)	6 (200.0)	- (...)	518 (147.2)	11 (139.5)	-- (220.6)	32 (90.9)	89 (111.2)	3 (90.9)	11 (83.6)	- (...)	3 (148.1)	9 (74.2)	1165 (145.7)
Tundra	1937 (180.7)	1278 (164.6)	1163 (225.2)	453 (451.3)	206 (262.7)	5 (146.2)	69 (450.1)	22 (37.2)	214 (119.0)	14 (126.5)	1 (90.8)	4 (219.4)	2 (78.7)	1903 (53.5)	7271 (171.0)
Canada	42656 (131.0)	35346 (132.4)	11084 (170.7)	4626 (410.3)	4488 (210.5)	855 (127.2)	3606 (255.0)	9642 (69.0)	17066 (132.0)	5746 (89.6)	5194 (121.8)	9786 (75.9)	9386 (121.7)	61770 (66.6)	221249 (117.9)
Area adjustment from 'unproven' and 'unclassified' stocking <sup>1</sup>														+7465	+7465
Canada														69235	228714

Totals may not add exactly due to rounding.

<sup>1</sup>Source: Appendix 1, Table 16.5. The stocked portion of 'unproven + unclassified' stocking is allocated to the unclassified predominant genus.

Table 16.14. Volume of all species on timber productive forest by forest region and predominant genus ( $\times 1000 \text{ m}^3$ )

Forest Regions	Predominant genus in the cover type													Total	
	Spruce	Pine	Fir	Hemlock	Douglas-fir	Larch	Other conifers	Unspec. conifers	Poplar	Birch	Maple	Other bdlvd	Unspec. bdlvd		Unclassified
Boreal forest	3265259	1890998	248734	1657	-	21432	14116	328769	1582728	266064	28115	538011	801353	3123288	12110526
Boreal grass	8876	9079	39	-	26	104	-	36935	121616	1878	6987	-	7182	3950	196673
Boreal barren	134889	36980	40754	-	-	1070	33	169253	6307	3242	483	663	153	447052	840880
Subalpine	845290	810072	655645	485630	152296	11123	111136	-	56237	3670	1301	5031	5369	9462	3152262
Montane	372136	1190765	144669	35238	283006	12950	9785	-	76064	7371	5	55	568	5368	2137981
Coast	94815	25371	251164	1046246	214352	-	567628	-	9562	1376	4821	43731	-	30	2259096
Columbia	159282	141603	76774	86627	164750	47523	65502	-	12729	5022	-	-	-	5657	765470
Deciduous	43	2335	1	526	-	70	1782	-	1397	260	8910	9294	-	345	24962
Gt. Lks. - St Law.	141241	279888	149065	36874	-	7110	92595	10066	347312	222587	571223	144655	59284	357559	2419458
Acadian	203130	17260	62563	809	-	4973	25779	116977	3997	1338	9876	64	267328	58418	772510
Grassland	11513	63957	1216	-	76224	1587	47	2915	9900	316	955	-	419	667	169716
Tundra	349957	210370	261834	204420	54175	773	31019	829	25424	1719	80	969	152	101781	1243500
<b>Canada</b>	<b>5586431</b>	<b>4678678</b>	<b>1892458</b>	<b>1898027</b>	<b>944829</b>	<b>108715</b>	<b>919422</b>	<b>665744</b>	<b>2253274</b>	<b>514843</b>	<b>632756</b>	<b>742473</b>	<b>1141808</b>	<b>4113577</b>	<b>26093035</b>

Totals may not add exactly due to rounding.

Table 16.15. Area and volume per hectare of all species on mature and overmature timber productive forest by province and predominant genus  
Area (× 1000 ha); Volume (m<sup>3</sup>/ha) in brackets

Province/Territory	Predominant genus in the cover type														Total
	Spruce	Pine	Fir	Hemlock	Douglas-fir	Larch	Other conifers	Unspec. conifers	Poplar	Birch	Maple	Other bdlvd	Unspec. bdlvd	Unclassified	
Newfoundland I.	702 (107.2)	.. (83.5)	860 (108.6)	- (...)	- (...)	1 (81.7)	- (...)	- (...)	3 (122.5)	110 (115.5)	-- (64.8)	- (...)	- (...)	-- (86.7)	1675 (108.4)
Nova Scotia	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	167 (113.9)	- (...)	- (...)	- (...)	- (...)	132 (104.4)	100 (107.1)	399 (109.1)
Prince Edward I.	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)
New Brunswick	866 (139.3)	45 (155.5)	470 (161.1)	4 (142.0)	- (...)	11 (151.3)	169 (159.2)	- (...)	-- (134.0)	-- (115.4)	- (...)	- (...)	795 (133.2)	5 (128.1)	2365 (143.0)
Quebec	986 (106.4)	143 (166.9)	187 (118.3)	35 (231.0)	- (...)	1 (83.2)	109 (135.7)	- (...)	322 (150.4)	1460 (119.4)	155 (183.2)	2 (223.5)	- (...)	22714 (95.6)	26113 (99.5)
Ontario	6895 (119.6)	2556 (151.6)	759 (100.1)	98 (144.4)	- (...)	35 (93.8)	274 (93.8)	- (...)	2816 (190.4)	2002 (87.9)	1350 (135.1)	4553 (107.6)	- (...)	6 (115.3)	21345 (127.3)
Manitoba	933 (116.4)	855 (99.6)	32 (124.4)	- (...)	- (...)	23 (75.8)	1 (100.3)	1107 (129.4)	5 (112.6)	17 (133.1)	127 (114.5)	- (...)	- (...)	- (...)	3101 (116.2)
Saskatchewan	1088 (128.0)	331 (137.3)	4 (128.3)	- (...)	- (...)	17 (75.8)	- (...)	252 (37.8)	1103 (175.2)	27 (112.8)	-- (125.3)	-- (107.2)	-- (38.1)	153 (146.1)	2977 (139.3)
Alberta	4058 (183.3)	2369 (239.0)	23 (191.4)	- (...)	22 (153.7)	46 (113.9)	- (...)	- (...)	1483 (168.5)	9 (102.9)	- (...)	- (...)	3052 (185.6)	162 (132.9)	11225 (192.6)
British Columbia	6763 (262.6)	9483 (235.2)	4717 (276.7)	3321 (508.7)	1804 (284.7)	91 (259.9)	2132 (359.0)	- (...)	1888 (207.8)	125 (166.2)	5 (435.8)	24 (332.4)	- (...)	97 (187.9)	30452 (284.1)
Labrador	153 (112.9)	- (...)	5 (163.1)	- (...)	- (...)	- (90.2)	- (...)	- (...)	- (...)	2 (138.9)	- (...)	- (...)	- (...)	- (...)	160 (114.7)
Yukon Territory	867 (163.1)	703 (169.1)	3 (142.8)	- (...)	- (...)	- (...)	- (...)	- (...)	109 (199.6)	7 (176.9)	- (...)	- (...)	- (...)	455 (124.4)	2144 (158.7)
Northwest Terr.	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	4582 (69.1)	4582 (69.1)
Canada	23311 (173.8)	16485 (204.4)	7060 (224.2)	3458 (495.2)	1826 (283.1)	226 (164.5)	2684 (309.9)	1527 (112.6)	7728 (186.7)	3760 (104.2)	1637 (138.9)	4579 (108.9)	3980 (172.4)	28274 (92.7)	106536 (170.3)

Totals may not add exactly due to rounding.



Table 16.16. Area and volume per hectare of all species on mature and overmature timber productive forest by province, forest type, and site class

Area (× 1 000 ha); Volume per hectare (m<sup>3</sup>/ha) in brackets

Province/Territory	Site class							Unclassified	Total
	1	2	3	4	5	6	7		
<i>Newfoundland I.</i>									
Softwood	405 (82.0)	1001 (116.8)	1 (158.7)	- (...)	- (...)	- (...)	- (...)	- (...)	1407 (106.8)
Mixedwood	18 (93.0)	197 (121.1)	2 (172.9)	- (...)	- (...)	- (...)	- (...)	- (...)	216 (119.2)
Hardwood	1 (79.5)	46 (104.6)	5 (129.0)	- (...)	- (...)	- (...)	- (...)	- (...)	52 (106.2)
Unclassified	- (...)	- (117.3)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (117.3)
Subtotal	424 (82.4)	1244 (117.1)	7 (144.2)	- (...)	- (...)	- (...)	- (...)	- (...)	1675 (108.4)
<i>Nova Scotia</i>									
Softwood	147 (111.7)	20 (130.4)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	167 (113.9)
Mixedwood	93 (106.4)	7 (115.4)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	100 (107.1)
Hardwood	116 (105.0)	17 (100.2)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	132 (104.4)
Subtotal	356 (1082)	44 (116.5)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	399 (109.1)
<i>Prince Edward I.</i>									
	(..)	(..)	(..)	(..)	(..)	(..)	(..)	(..)	(..)
<i>New Brunswick</i>									
Softwood	79 (132.5)	248 (143.5)	492 (158.5)	10 (171.1)	- (...)	- (...)	- (...)	455 (145.8)	1285 (149.6)
Mixedwood	1 (133.9)	17 (144.1)	248 (143.0)	32 (152.4)	- (...)	- (...)	- (...)	326 (130.5)	624 (137.0)
Hardwood	-- (160.8)	2 (132.8)	137 (127.7)	37 (139.9)	- (...)	- (...)	- (...)	275 (134.0)	451 (132.5)
Unclassified	-- (123.3)	-- (117.4)	2 (121.7)	1 (127.8)	- (...)	- (...)	- (...)	2 (137.3)	5 (128.0)
Subtotal	80 (132.5)	268 (143.5)	880 (149.2)	80 (148.9)	- (...)	- (...)	- (...)	1057 (138.0)	2365 (143.0)
<i>Quebec</i>									
Softwood	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	20229 (90.7)	20229 (90.7)
Mixedwood	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	3714 (132.0)	3714 (132.0)
Hardwood	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	2170 (125.2)	2170 (125.2)
Subtotal	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	26113 (99.5)	26113 (99.5)
<i>Ontario</i>									
Softwood	6943 (99.1)	2702 (140.6)	1551 (157.1)	10 (213.2)	-- (104.4)	- (...)	- (...)	-- (114.8)	11206 (117.3)
Mixedwood	731 (93.3)	2025 (108.1)	2957 (156.4)	70 (220.4)	4 (187.7)	- (...)	- (...)	3 (125.3)	5789 (132.4)
Hardwood	4 (79.1)	1390 (108.3)	2830 (161.6)	118 (231.0)	5 (226.8)	- (...)	- (...)	2 (117.9)	4349 (146.4)
Subtotal	7678 (98.6)	6117 (122.5)	7338 (158.6)	198 (226.4)	9 (209.2)	- (...)	- (...)	5 (122.2)	21345 (127.3)
<i>Manitoba</i>									
Softwood	159 (37.5)	552 (77.3)	862 (130.1)	- (...)	- (...)	- (...)	- (...)	- (...)	1574 (102.2)
Mixedwood	- (...)	53 (90.9)	616 (154.2)	- (...)	- (...)	- (...)	- (...)	- (...)	669 (149.2)
Hardwood	- (...)	150 (58.5)	708 (128.5)	- (...)	- (...)	- (...)	- (...)	- (...)	858 (116.3)
Subtotal	159 (37.5)	755 (74.5)	2187 (136.4)	- (...)	- (...)	- (...)	- (...)	- (...)	3101 (116.2)

Table 16.16. (contd.)

Province/Territory	Site class							Unclassified	Total	
	1	2	3	4	5	6	7			
<b>Saskatchewan</b>										
Softwood	-	-	-	-	-	-	-	-	1362	1362
	(...)	(...)	(...)	(...)	(...)	(...)	(...)	(104.4)	(104.4)	
Mixedwood	-	-	11	-	-	-	-	837	848	
	(...)	(...)	(194.3)	(...)	(...)	(...)	(...)	(170.3)	(170.6)	
Hardwood	11	86	11	-	-	-	-	660	767	
	(83.8)	(126.0)	(155.7)	(...)	(...)	(...)	(...)	(173.8)	(166.9)	
Subtotal	11	86	21	-	-	-	-	2859	2977	
	(84.8)	(126.0)	(175.0)	(...)	(...)	(...)	(...)	(139.7)	(139.3)	
<b>Alberta</b>										
Softwood	2754	2205	372	-	-	-	-	-	5331	
	(141.7)	(246.3)	(260.3)	(...)	(...)	(...)	(...)	(...)	(193.2)	
Mixedwood	201	1570	392	-	-	-	-	-	2163	
	(149.7)	(238.3)	(254.0)	(...)	(...)	(...)	(...)	(...)	(232.9)	
Hardwood	316	2660	755	-	-	-	-	-	3731	
	(97.5)	(168.8)	(196.5)	(...)	(...)	(...)	(...)	(...)	(168.4)	
Subtotal	3271	6435	1519	-	-	-	-	-	11225	
	(137.9)	(212.3)	(227.0)	(...)	(...)	(...)	(...)	(...)	(192.6)	
<b>British Columbia</b>										
Softwood	13359	1642	9536	2549	--	--	--	94	27181	
	(215.4)	(71.5)	(379.0)	(504.0)	(800.8)	(1138.4)	(1178.7)	(188.4)	(291.1)	
Mixedwood	808	49	1223	221	--	--	--	1	2303	
	(131.9)	(57.7)	(273.3)	(398.9)	(498.4)	(605.7)	(...)	(218.2)	(231.1)	
Hardwood	289	9	629	39	--	--	--	-	966	
	(102.0)	(44.6)	(258.9)	(334.0)	(482.1)	(...)	(...)	(...)	(213.0)	
Unclassified	--	--	1	--	--	--	--	-	2	
	(119.5)	(11.6)	(81.7)	(394.4)	(...)	(...)	(...)	(...)	(142.6)	
Subtotal	14457	1700	11390	2809	1	--	--	96	30452	
	(208.5)	(71.0)	(361.0)	(493.4)	(759.6)	(997.7)	(1178.7)	(188.7)	(284.1)	
<b>Labrador</b>										
Softwood	41	114	1	-	-	-	-	-	156	
	(82.1)	(125.0)	(185.7)	(...)	(...)	(...)	(...)	(...)	(114.0)	
Mixedwood	--	3	--	-	-	-	-	-	4	
	(100.3)	(144.0)	(170.7)	(...)	(...)	(...)	(...)	(...)	(143.2)	
Hardwood	-	1	--	-	-	-	-	-	1	
	(...)	(131.0)	(172.0)	(...)	(...)	(...)	(...)	(...)	(131.1)	
Subtotal	41	118	1	-	-	-	-	-	160	
	(82.1)	(125.6)	(183.8)	(...)	(...)	(...)	(...)	(...)	(114.7)	
<b>Yukon Territory</b>										
Softwood	1275	479	7	--	-	-	-	4	1765	
	(142.8)	(191.8)	(204.8)	(335.7)	(...)	(...)	(...)	(123.4)	(156.3)	
Mixedwood	186	151	12	-	-	-	-	-	349	
	(128.0)	(205.6)	(254.7)	(404.0)	(...)	(...)	(...)	(...)	(166.3)	
Hardwood	11	14	4	--	-	-	-	-	29	
	(135.6)	(261.5)	(273.0)	(227.9)	(...)	(...)	(...)	(...)	(214.5)	
Subtotal	1472	644	23	1	-	-	-	4	2144	
	(140.8)	(196.3)	(241.8)	(347.5)	(...)	(...)	(...)	(123.4)	(158.7)	
<b>Northwest Territories</b>										
Softwood	1736	162	12	-	-	-	-	-	1910	
	(43.6)	(208.1)	(302.9)	(...)	(...)	(...)	(...)	(...)	(59.1)	
Mixedwood	1813	652	30	-	-	-	-	-	2496	
	(30.2)	(174.6)	(268.6)	(...)	(...)	(...)	(...)	(...)	(70.9)	
Hardwood	12	152	12	-	-	-	-	-	176	
	(22.7)	(155.4)	(250.4)	(...)	(...)	(...)	(...)	(...)	(152.8)	
Subtotal	3561	966	54	-	-	-	-	-	4582	
	(36.7)	(177.2)	(272.3)	(...)	(...)	(...)	(...)	(...)	(69.1)	
<b>Canada</b>										
Softwood	26898	9125	12835	2570	1	--	--	22145	73573	
	(159.2)	(151.0)	(323.4)	(501.5)	(703.3)	(1138.4)	(1178.7)	(93.1)	(178.9)	
Mixedwood	3851	4724	5491	323	4	--	-	4881	19275	
	(76.7)	(163.7)	(189.5)	(335.8)	(189.4)	(605.7)	(...)	(138.5)	(150.2)	
Hardwood	760	4526	5091	194	5	-	-	3106	13682	
	(99.4)	(144.4)	(173.5)	(234.1)	(229.0)	(...)	(...)	(136.3)	(152.2)	
Unclassified	--	--	3	1	-	-	-	2	6	
	(119.5)	(105.6)	(107.2)	(220.3)	(...)	(...)	(...)	(137.3)	(132.1)	
Subtotal	31510	18375	23420	3088	9	--	--	30134	106536	
	(147.7)	(152.6)	(259.4)	(467.3)	(238.5)	(997.7)	(1178.7)	(104.9)	(170.3)	

Totals may not add exactly due to rounding.

Table 16.17. Mean annual increment by Forest Region and Section

Section code	Region and Section Name	m.a.i. to maturity m <sup>3</sup> /(ha.yr)		
		Coniferous	Broad-leaved	All species
Region total	<i>BOREAL - FOREST</i>	1.017	0.545	1.562
B.1a	Laurentide-Onatchiway	1.015	0.562	1.577
B.1b	Chibougamau-Natashquan	1.009	0.175	1.184
B.2	Gaspé	1.311	0.658	1.969
B.3	Gouin	..	..	..
B.4	Northern Clay	1.076	0.724	1.800
B.6	East James Bay	..	..	..
B.7	Missinaibi-Cabonga	0.736	0.872	1.608
B.8	Central Plateau	1.164	0.648	1.811
B.9	Superior	0.858	0.833	1.691
B.10	Nipigon	0.974	0.712	1.686
B.11	Upper English River	1.302	0.486	1.788
B.12	Hamilton & Eagle Valleys	0.960	0.044	1.005
B.14	Lower English River	1.047	0.557	1.605
B.15	Manitoba Lowlands	1.109	0.261	1.370
B.18a	Mixedwood	0.911	1.053	1.963
B.18b	Hay River	0.673	0.439	1.111
B.19a	Lower Foothills	1.415	0.810	2.225
B.19b	Northern Foothills	0.975	0.253	1.228
B.19c	Upper Foothills	1.835	0.267	2.102
B.20	Upper Churchill	1.209	0.565	1.774
B.21	Nelson River	1.116	0.159	1.275
B.22a	Northern Coniferous	1.109	0.200	1.308
B.22b	Athabasca South	0.823	0.202	1.025
B.23a	Upper Mackenzie	0.450	0.327	0.778
B.24	Upper Liard	0.933	0.368	1.301
B.25	Stikine Plateau	0.892	0.142	1.034
B.26a	Dawson	0.691	0.060	0.751
B.26b	Central Yukon	0.769	0.066	0.835
B.26c	Eastern Yukon	0.905	0.087	0.992
B.26d	Kluane	0.748	0.057	0.805
B.28a	Grand Falls	1.475	0.243	1.718
B.28b	Corner Brook	1.807	0.239	2.046
B.28c	Anticosti	..	..	..
B.29	Northern Peninsula	1.511	0.150	1.661
B.30	Avalon	1.164	0.081	1.245
Region total	<i>BOREAL - GRASS</i>	0.927	0.890	1.816
Bg.16	Aspen-oak	0.038	1.544	1.582
Bg.17	Aspen Grove	0.927	0.890	1.816
Region total	<i>BOREAL - BARREN</i>	0.385	0.063	0.447
Bb.5	Hudson Bay Lowlands	0.770	0.057	0.828
Bb.13a	Northeastern Transition	..	..	..
Bb.13b	Fort George	..	..	..
Bb.23b	Lower Mackenzie	0.306	0.023	0.329
Bb.27	Northwestern Transition	0.230	0.047	0.277
Bb.31	Newfoundland-Labrador Barrens	1.693	0.214	1.907
Bb.32	Forest-Tundra	0.379	0.026	0.405
Bb.33	Alpine forest-Tundra	0.384	0.095	0.478
Region total	<i>SUBALPINE</i>	1.991	0.115	2.106
SA.1	East Slope Rockies	1.936	0.187	2.122
SA.2	Interior Subalpine	1.951	0.110	2.061
SA.3	Coastal Subalpine	2.369	0.072	2.441
Region total	<i>MONTANE</i>	1.639	0.124	1.763
M.1	Ponderosa Pine & Douglas-fir	1.507	0.038	1.545
M.2	Central Douglas-fir	1.336	0.075	1.411
M.3	Northern Aspen	1.431	0.092	1.523
M.4	Montane transition	2.079	0.231	2.309
M.5	Douglas-fir & Lodgepole Pine	1.401	0.304	1.700

Table 16.17. (contd.)

Section code	Region and Section Name	m.a.i. to maturity m <sup>3</sup> /(ha.yr)		
		Coniferous	Broad-leaved	All species
<b>Region total</b>	<b>COAST</b>	<b>2.212</b>	<b>0.097</b>	<b>2.310</b>
C.1	Strait of Georgia	2.288	0.393	2.680
C.2	Southern Pacific Coast	2.476	0.128	2.605
C.3	Northern Pacific Coast	1.898	0.075	1.973
C.4	Queen Charlotte Islands	2.126	0.022	2.148
<b>Region total</b>	<b>COLUMBIA</b>	<b>2.049</b>	<b>0.059</b>	<b>2.109</b>
CL.1	Southern Columbia	2.113	0.065	2.178
CL.2	Northern Columbia	1.357	..	1.357
<b>Region total</b>	<b>DECIDUOUS</b>	<b>0.406</b>	<b>1.667</b>	<b>2.072</b>
D.1	Niagara	0.406	1.667	2.072
<b>Region total</b>	<b>GREAT LAKES-ST. LAWRENCE</b>	<b>0.655</b>	<b>1.166</b>	<b>1.821</b>
L.1	Huron-Ontario	0.619	1.370	1.989
L.2	Upper St. Lawrence	0.543	1.379	1.922
L.3	Middle St. Lawrence	0.409	1.284	1.692
L.4a	Laurentian	0.529	1.111	1.640
L.4b	Algonquin-Pontiac	0.546	1.111	1.657
L.4c	Middle Ottawa	0.573	1.408	1.981
L.4d	Georgian Bay	0.426	1.129	1.555
L.4e	Sudbury-North Bay	0.623	1.044	1.666
L.5	Eastern Townships	0.495	1.210	1.704
L.6	Temiscouata-Restigouche	1.062	0.931	1.993
L.7	Saguenay	0.810	0.645	1.456
L.8	Haileybury Clay	0.471	1.065	1.535
L.9	Temagami	0.923	0.935	1.857
L.10	Algoma	0.450	1.047	1.497
L.11	Quetico	0.902	1.152	2.054
L.12	Rainy River	0.650	2.315	2.966
<b>Region total</b>	<b>ACADIAN</b>	<b>0.935</b>	<b>0.613</b>	<b>1.547</b>
A.1	New Brunswick Uplands	..	..	..
A.2	Upper Miramichi-Tobique	1.171	0.632	1.803
A.3	Eastern Lowlands	0.968	0.599	1.567
A.4	Carleton	0.958	0.793	1.751
A.5a	South Atlantic Shore	0.691	0.333	1.024
A.5b	East Atlantic Shore	0.767	0.337	1.104
A.6	Cape Breton Plateau	0.485	1.324	1.809
A.7	Cape Breton-Antigonish	0.115	1.075	1.188
A.8	Prince Edward Island	1.345	0.785	2.131
A.9	Fundy Coast	1.172	0.605	1.778
A.10	Southern Uplands	1.113	0.801	1.914
A.11	Atlantic Uplands	0.914	0.472	1.386
A.12	Central Lowlands	0.794	0.541	1.334
A.13	Cobequid	0.979	0.885	1.864
<b>Region total</b>	<b>Grassland</b>	<b>0.913</b>	<b>0.363</b>	<b>1.276</b>
<b>Region total</b>	<b>Tundra</b>	<b>0.708</b>	<b>0.078</b>	<b>0.786</b>
<b>Canada total</b>		<b>1.107</b>	<b>0.484</b>	<b>1.591</b>

Table 16.18. Area of forest by province and ownership (× 1000 ha)

Province/Territory	Federal		Provincial/ Territorial	Private				Unclassified	Total
	Other	Native		Industrial	Non-indust.	Municipal	Unspecified		
Newfoundland I.	97	-	5609	7	--	18	255	-	5988
Nova Scotia	101	11	1100	883	1827	-	-	-	3923
Prince Edward I.	1	1	20	-	273	-	-	-	295
New Brunswick	73	-	2935	1229	1868	-	-	-	6106
Quebec	157	69	75326	433	3801	-	2700	-	82486
Ontario	163	176	51217	839	5555	-	-	45	57995
Manitoba	264	118	24619	-	1159	117	-	-	26277
Saskatchewan	337	165	27881	-	236	-	187	-	28806
Alberta	3232	209	32974	-	-	15	1512	272	38214
British Columbia	352	215	57832	-	2142	5	18	-	60564
Subtotal S. Tier	4779	964	279514	3390	16860	156	4672	318	310652
Labrador	-	-	16537	-	-	-	-	-	16537
Yukon Territory	117	-	27433	-	-	-	-	-	27550
Northwest Terr.	15104	-	46332	-	-	-	-	-	61436
Subtotal N. Tier	15221	-	90302	-	-	-	-	-	105523
Canada	20000	964	369816	3390	16860	156	4672	318	416175

Totals may not add exactly due to rounding.

Table 16.19. Area of timber productive forest by province and ownership (× 1000 ha)

Province/Territory	Federal		Provincial/ Territorial	Private				Unclassified	Total
	Other	Native		Industrial	Non-indust.	Municipal	Unspecified		
Newfoundland I.	60	-	2971	4	-	15	169	-	3220
Nova Scotia	101	11	1030	846	1778	-	-	-	3767
Prince Edward I.	1	1	20	-	257	-	-	-	278
New Brunswick	71	-	2888	1207	1788	-	-	-	5954
Quebec	153	63	47966	422	3635	-	2550	-	54789
Ontario	127	141	36351	744	4795	-	-	45	42204
Manitoba	247	89	13821	-	983	98	-	-	15239
Saskatchewan	327	133	11784	-	203	-	187	-	12633
Alberta	1689	15	22464	-	-	14	1270	253	25705
British Columbia	274	198	49145	-	2099	5	17	-	51739
Subtotal S. Tier	3050	652	188441	3222	15539	132	4193	298	215528
Labrador	-	-	8051	-	-	-	-	-	8051
Yukon Territory	73	-	7398	-	-	-	-	-	7470
Northwest Terr.	2373	-	11948	-	-	-	-	-	14321
Subtotal N. Tier	2446	-	27396	-	-	-	-	-	29842
Canada	5496	652	215837	3222	15539	132	4193	298	245370

Totals may not add exactly due to rounding.

Table 16.20. Area by province, land class and ownership (× 1000 ha)

Province/Territory Ownership	Land class							Total
	Forest			Nonforest	Unspec. land	Water	Unclassified	
	Timber productive	Timber unproductive	Unspecified productivity					
<i>Newfoundland I.</i>								
Other Federal	60	37	-	24	-	10	-	131
Province/Terr.	2971	2638	-	3832	-	989	23	10452
Indust. private	4	3	-	7	-	1	-	16
Nonindust. priv.	-	-	-	-	-	-	-	1
Municipal	15	3	-	8	-	2	-	28
Unspec. private	169	86	-	108	-	87	-	449
Unclassified	-	-	-	-	-	28	-	28
<b>Subtotal</b>	<b>3220</b>	<b>2767</b>	<b>-</b>	<b>3979</b>	<b>-</b>	<b>1116</b>	<b>23</b>	<b>11106</b>
<i>Nova Scotia</i>								
Other Federal	101	1	-	29	-	10	-	141
Native	11	-	-	4	-	1	-	15
Province/Terr.	1030	70	-	257	-	339	-	1697
Indust. private	846	37	-	87	-	38	-	1008
Nonindust. priv.	1778	49	-	572	-	78	-	2477
Unclassified	-	-	-	-	-	-	90	90
<b>Subtotal</b>	<b>3767</b>	<b>156</b>	<b>-</b>	<b>949</b>	<b>-</b>	<b>467</b>	<b>90</b>	<b>5428</b>
<i>Prince Edward I.</i>								
Other Federal	1	--	-	1	-	--	-	3
Native	1	--	-	1	-	--	-	2
Province/Terr.	19	1	-	1	-	--	-	22
Nonindust. priv.	257	15	-	259	..	16	-	549
<b>Subtotal</b>	<b>278</b>	<b>16</b>	<b>-</b>	<b>263</b>	<b>..</b>	<b>17</b>	<b>-</b>	<b>575</b>
<i>New Brunswick</i>								
Other Federal	71	3	-	49	-	--	57	180
Native	--	--	-	--	-	--	-	--
Province/Terr.	2888	47	-	226	-	7	-	3168
Indust. private	1207	22	-	64	-	-	64	1357
Nonindust. priv.	1788	80	-	528	-	-	21	2417
Unclassified	--	-	-	-	-	181	-	181
<b>Subtotal</b>	<b>5954</b>	<b>152</b>	<b>-</b>	<b>867</b>	<b>-</b>	<b>189</b>	<b>142</b>	<b>7304</b>
<i>Quebec</i>								
Other Federal	153	4	-	5	-	9	1	172
Native	63	7	-	7	-	2	-	78
Province/Terr.	47966	27360	-	36	-	4366	-	79727
Indust. private	422	11	-	4	-	10	-	447
Nonindust. priv.	3635	165	-	2406	-	265	-	6471
Municipal	-	-	-	-	29	-	-	29
Unspec. private	2550	150	-	-	-	-	-	2700
Unclassified	...	-	-	21479	-	14256	-	35736
<b>Subtotal</b>	<b>54789</b>	<b>27696</b>	<b>-</b>	<b>23937</b>	<b>29</b>	<b>18907</b>	<b>1</b>	<b>125360</b>
<i>Ontario</i>								
Other Federal	127	36	-	72	3	7	-	245
Native	141	34	-	145	3	3	54	381
Province/Terr.	36351	14866	-	2736	-	8813	-	62767
Indust. private	744	95	-	8	-	--	-	847
Nonindust. priv.	4795	760	-	6411	-	2	-	11967
Municipal	--	-	-	-	-	-	-	--
Unclassified	45	-	-	21	-	195	270	531
<b>Subtotal</b>	<b>42204</b>	<b>15791</b>	<b>-</b>	<b>9393</b>	<b>7</b>	<b>9020</b>	<b>324</b>	<b>76738</b>
<i>Manitoba</i>								
Other Federal	247	17	-	47	-	13	-	323
Native	89	29	-	91	-	4	-	213
Province/Terr.	13821	10797	-	4920	-	9921	-	39459
Nonindust. priv.	983	176	-	6454	-	25	-	7638
Municipal	98	19	-	51	-	--	-	168
<b>Subtotal</b>	<b>15239</b>	<b>11038</b>	<b>-</b>	<b>11563</b>	<b>-</b>	<b>9963</b>	<b>-</b>	<b>47802</b>

Table 16.20. (contd.)

Province/Territory Ownership	Land class							Total
	Forest			Nonforest	Unspec. land	Water	Unclassified	
	Timber productive	Timber unproductive	Unspecified productivity					
<i>Saskatchewan</i>								
Other Federal	327	11	-	52	--	13	1	404
Native	133	15	18	151	-	3	--	319
Province/Terr.	11784	16097	-	1855	832	5513	24	36106
Nonindust. priv.	203	32	-	1425	-	21	-	1682
Unspec. private	187	--	-	1588	3	--	-	1778
Unclassified	-	-	-	119	-	350	117	585
<b>Subtotal</b>	<b>12633</b>	<b>16155</b>	<b>18</b>	<b>5189</b>	<b>835</b>	<b>5901</b>	<b>142</b>	<b>40873</b>
<i>Alberta</i>								
Other Federal	1689	1249	294	1815	-	339	68	5453
Native	15	-	193	-	-	-	-	209
Province/Terr.	22464	10510	-	3156	1	1619	222	37972
Municipal	14	1	-	35	1	--	5	56
Unspec. private	1270	242	-	5173	4	262	1014	7966
Unclassified	253	20	-	921	864	13	1	2071
<b>Subtotal</b>	<b>25705</b>	<b>12022</b>	<b>487</b>	<b>11100</b>	<b>870</b>	<b>2233</b>	<b>1310</b>	<b>53726</b>
<i>British Columbia</i>								
Other Federal	274	63	16	186	-	16	-	555
Native	198	16	-	126	-	7	-	347
Province/Terr.	49145	8686	-	29462	-	2381	-	89675
Nonindust. priv.	2099	43	-	1584	-	52	-	3779
Municipal	5	--	-	3	-	--	-	8
Unspec. private	17	1	-	45	-	1	675	738
Unclassified	--	-	-	-	-	--	-	1
<b>Subtotal</b>	<b>51739</b>	<b>8810</b>	<b>16</b>	<b>31406</b>	<b>-</b>	<b>2457</b>	<b>675</b>	<b>95102</b>
<b>Subtotal S. Tier</b>	<b>215528</b>	<b>94603</b>	<b>521</b>	<b>98646</b>	<b>1741</b>	<b>50270</b>	<b>2707</b>	<b>464014</b>
<i>Labrador</i>								
Province/Terr.	8051	8486	-	4810	-	3587	-	24934
<b>Subtotal</b>	<b>8051</b>	<b>8486</b>	<b>-</b>	<b>4810</b>	<b>-</b>	<b>3587</b>	<b>-</b>	<b>24934</b>
<i>Yukon Terr.</i>								
Other Federal	73	45	-	2744	1	6	-	2868
Province/Terr.	7398	19977	58	17437	77	530	--	45476
<b>Subtotal</b>	<b>7470</b>	<b>20021</b>	<b>58</b>	<b>20181</b>	<b>78</b>	<b>535</b>	<b>--</b>	<b>48345</b>
<i>Northwest Terr.</i>								
Other Federal	2373	11927	804	10072	-	2245	-	27421
Province/Terr.	11948	32420	1965	19405	-	12115	-	77853
<b>Subtotal</b>	<b>14321</b>	<b>44347</b>	<b>2769</b>	<b>29477</b>	<b>-</b>	<b>14360</b>	<b>-</b>	<b>105273</b>
	<b>29842</b>	<b>72854</b>	<b>2827</b>	<b>54468</b>	<b>78</b>	<b>18482</b>	<b>-</b>	<b>178552</b>
<i>Canada</i>								
Other Federal	5496	13390	1114	15096	4	2668	127	37896
Native	652	101	211	524	3	19	54	1564
Province/Terr.	215837	151956	2023	88133	910	50180	270	509309
Indust. private	3222	168	-	171	-	50	64	3676
Non-indust. priv.	15539	1321	-	19639	--	461	21	36980
Municipal	132	23	-	97	30	2	5	289
Unspec. private	4193	478	-	6913	7	349	1689	13631
Unclassified	298	20	-	22540	864	15023	478	39222
<b>Total</b>	<b>245370</b>	<b>167458</b>	<b>3348</b>	<b>153113</b>	<b>1819</b>	<b>68753</b>	<b>2707</b>	<b>642567</b>

Note: Ownership categories for which no area is reported within a jurisdiction have been omitted.

Totals may not add exactly due to rounding.

Table 16.21. Area of forest by status and ownership (× 1000 ha)

Status	Federal		Provincial/	Private				Unclassified	Total
	Other	Native	Territorial	Industrial	Nonindust.	Municipal	Unspecified		
Reserved	5649	-	6404	-	-	-	-	-	12053
Assigned	1	448	60833	-	-	18	-	-	61300
Retained	14350	515	300273	-	-	126	-	-	315264
Other	-	-	2	3390	16860	5	4672	-	24930
Unclassified	-	-	2303	-	-	6	-	318	2628
<b>Total</b>	<b>20000</b>	<b>964</b>	<b>369816</b>	<b>3390</b>	<b>16860</b>	<b>156</b>	<b>4672</b>	<b>318</b>	<b>416175</b>

Totals may not add exactly due to rounding.

Table 16.22. Area of timber productive forest by status and ownership (× 1000 ha)

Status	Federal		Provincial/	Private				Unclassified	Total
	Other	Native	Territorial	Industrial	Nonindust.	Municipal	Unspecified		
Reserved	3410	-	5250	-	-	-	-	-	8660
Assigned	1	209	51962	-	-	16	-	-	52188
Retained	2085	443	156752	-	-	105	-	-	159385
Other	-	-	2	3222	15539	5	4193	-	22962
Unclassified	-	-	1871	-	-	6	-	298	2175
<b>Total</b>	<b>5496</b>	<b>652</b>	<b>215837</b>	<b>3222</b>	<b>15539</b>	<b>132</b>	<b>4193</b>	<b>298</b>	<b>245370</b>

Totals may not add exactly due to rounding.

Table 16.23. Volume of timber productive forest by status and ownership (× 1000 m<sup>3</sup>)

Status	Federal		Provincial/	Private				Unclassified	Total
	Other	Native	Territorial	Industrial	Nonindust.	Municipal	Unspecified		
Reserved	201081	-	926132	-	-	-	-	-	1127213
Assigned	54	20267	5925434	-	-	1616	-	-	5947372
Retained	74070	55943	16511429	-	-	6000	-	-	16647443
Other	-	-	211	312112	1438907	744	345090	-	2097064
Unclassified	-	-	232624	-	-	1283	-	40037	273943
<b>Total</b>	<b>275205</b>	<b>76210</b>	<b>23595831</b>	<b>312112</b>	<b>1438907</b>	<b>9643</b>	<b>345090</b>	<b>40037</b>	<b>26093035</b>

Totals may not add exactly due to rounding.



Table 16.24. Mean annual increment of stocked timber productive forest that is accessed and not reserved by province

Province/Territory	m.a.i. to maturity m <sup>3</sup> /(ha.yr)
Newfoundland I.	1.689
Nova Scotia	1.333
Prince Edward I.	2.131
New Brunswick	1.810
Québec	1.580
Ontario	1.837
Manitoba	1.337
Saskatchewan	2.057
Alberta	1.980
British Columbia	1.919
Labrador	..
Yukon Territory	1.005
Northwest Terr.	0.560
Canada	1.810

Table 16.25. Area, volume, and volume per hectare of stocked timber productive forest that is accessed and not reserved by province

Province/Territory	Area	Volume	
	(× 1000 ha)	(× 1000 m <sup>3</sup> )	(m <sup>3</sup> /ha)
Newfoundland I.	2069	173521	83.9
Nova Scotia	2954	253354	85.8
Prince Edward I.	245	26025	106.2
New Brunswick	5777	620563	107.4
Quebec	33864	3192403	94.3
Ontario	22861	2250885	98.5
Manitoba	5274	411745	78.1
Saskatchewan	5204	568546	109.2
Alberta	18884	2678445	141.8
British Columbia	33048	7507444	227.2
Labrador	365	18442	50.6
Yukon Terr.	1351	150442	111.3
Northwest Terr.	1711	92527	54.1
Canada	133608	17944341	134.3
Adjustment <sup>1</sup>	× 1.03374	× 1	/1.03374
Canada	138116	17944341	129.9

<sup>1</sup>In Table 16.5 (for all stocked timber productive forest) the stocking adjustment of 7465 was added to 221249 to make 228714 thousand ha. The same adjustment factor of 228714/221249 = 1.03374 is assumed for this table.

The stocking adjustment adds area to the youngest age class, so there is no increase in volume and the volume per hectare is reduced accordingly.

Totals may not add exactly due to rounding.

Table 16.26. Area of timber productive forest that is accessed and not reserved by province and ownership (× 1000 ha)

Province/Territory	Federal		Provincial/	Private				Total
	Other	Native	Territorial	Industrial	Nonindust.	Municipal	Unspecified	
Newfoundland I.	2	-	2238	4	--	15	144	2403
Nova Scotia	5	11	1030	846	1778	-	-	3671
Prince Edward I.	1	1	19	-	257	-	-	278
New Brunswick	70	--	2838	1189	1787	-	-	5884
Quebec	19	63	30205	422	3635	-	2549	36893
Ontario	68	81	19725	633	4672	--	-	25179
Manitoba	2	69	4697	-	968	98	-	5834
Saskatchewan	-	128	5107	-	203	-	187	5626
Alberta	-	15	19645	-	-	13	1270	20944
British Columbia	58	179	33537	-	1921	-	17	35711
Subtotal S. Tier	225	547	119041	3094	15221	126	4167	142423
Labrador	-	-	559	-	-	-	-	559
Yukon Territory	-	-	1750	-	-	-	-	1750
Northwest Terr.	197	-	1516	-	-	-	-	1713
Subtotal N. Tier	197	-	3825	-	-	-	-	4022
Canada	421	548	122866	3094	15221	126	4167	146445

Totals may not add exactly due to rounding.

Table 16.27. Area of forest by province and status (× 1000 ha)

Province/Territory	Reserved	Nonreserved			Unclassified	Total
		Assigned	Retained	Other		
Newfoundland I.	93	254	5378	263	-	5988
Nova Scotia	96	494	622	2710	-	3923
Prince Edward I.	-	2	20	273	-	295
New Brunswick	-	2934	75	3097	-	6106
Quebec	377	15848	59273	6933	54	82486
Ontario	1699	22638	27220	6393	45	57995
Manitoba	261	8563	16294	1159	-	26277
Saskatchewan	678	879	26824	425	-	28806
Alberta	4357	5401	24417	1518	2521	38214
British Columbia	3268	4288	50840	2160	8	60564
Subtotal S. Tier	10831	61300	210963	24930	2628	310652
Labrador	-	-	16537	-	-	16537
Yukon Territory	117	-	27433	-	-	27550
Northwest Territories	1105	-	60331	-	-	61436
Subtotal N. Tier	1222	-	104301	-	-	105523
Canada	12053	61300	315264	24930	2628	416175

Totals may not add exactly due to rounding.

Table 16.28. Area of timber productive forest by province and status (× 1000 ha)

Province/Territory	Reserved	Nonreserved			Unclassified	Total
		Assigned	Retained	Other		
Newfoundland I.	59	71	2917	173	-	3220
Nova Scotia	96	493	554	2624	-	3767
Prince Edward I.	-	1	19	257	-	278
New Brunswick	-	2887	72	2995	-	5954
Quebec	345	14795	32987	6607	54	54789
Ontario	1485	19400	15736	5538	45	42204
Manitoba	245	5277	8733	983	-	15239
Saskatchewan	647	846	10747	393	-	12633
Alberta	2443	4296	15623	1275	2068	25705
British Columbia	2685	4120	42810	2116	8	51739
Subtotal S. Tier	8004	52188	130199	22962	2175	215528
Labrador	-	-	8051	-	-	8051
Yukon Terr.	73	-	7398	-	-	7470
Northwest Terr.	583	-	13737	-	-	14321
Subtotal N. Tier	656	-	29186	-	-	29842
Canada	8660	52188	159385	22962	2175	245370

Totals may not add exactly due to rounding.

Table 16.29. Area of timber productive forest that is accessed and not reserved by province and age class (× 1000 ha)

Province/Territory	Nonstocked	Stocking unproven	Stocked by age class											Total	
			0	1-20	21-40	41-60	61-80	81-100	101-120	121-140	141-160	161 +	Uneven		Unclass.
Newfoundland I.	320	14	-	289	263	289	627	520	-	-	-	-	-	81	2403
Nova Scotia	234	483	-	55	421	1484	793	130	20	-	-	-	37	16	3673
Prince Edward I.	-	33	-	-	-	-	-	-	-	-	-	-	-	245	278
New Brunswick	66	41	271	896	403	1266	1431	919	359	143	67	11	10	-	5883
Quebec	-	3028		984	1857	2911	2632	1777	679	-	-	-	149	22876	36893
Ontario	-	2318*	818	1120	2989	5611	4854	3077	2143	1569	407	128	6	140	25179
Manitoba	-	560	-	-	-	-	-	-	-	-	-	-	-	5274	5834
Saskatchewan	-	422		233	690	1067	642	850	304	150	20	1	-	1245	5626
Alberta	198	1862	1	117	914	4925	3671	3715	2278	1692	505	377	-	691	20944
British Columbia	2663	-	-	1462	1850	2823	3485	3591	4130	2875	9570	3264	-		35711
<b>Subtotal S. Tier</b>	<b>3481</b>	<b>8761</b>	<b>1089</b>	<b>5156</b>	<b>9386</b>	<b>20376</b>	<b>18135</b>	<b>14579</b>	<b>9913</b>	<b>6429</b>	<b>10569</b>	<b>3779</b>	<b>202</b>	<b>30566</b>	<b>142424</b>
Labrador	-	194	-	-	--	--	--	3	4	4	7	19	-	327	559
Yukon Terr.	52	346	-	9	38	46	80	191	173	34	14	6	-	760	1750
Northwest Terr.	-	1	-	-	-	-	-	-	-	-	-	-	-	1711	1712
<b>Subtotal N. Tier</b>	<b>52</b>	<b>541</b>		<b>9</b>	<b>38</b>	<b>46</b>	<b>80</b>	<b>194</b>	<b>177</b>	<b>38</b>	<b>21</b>	<b>24</b>		<b>2798</b>	<b>4021</b>
<b>Canada</b>	<b>3533</b>	<b>9304*</b>	<b>1089</b>	<b>5165</b>	<b>9424</b>	<b>20422</b>	<b>18216</b>	<b>14774</b>	<b>10090</b>	<b>6467</b>	<b>10590</b>	<b>3804</b>	<b>202</b>	<b>33364</b>	<b>146445</b>

\* Includes 1000 ha with no stocking classification.

Application of stocking factors to reassign areas of 'unproven' and 'unclassified' stocking

	Nonstocked	Stocking unproven	Area stocked by age class											Total	
			0	1-20	21-40	41-60	61-80	81-100	101-120	121-140	141-160	161 +	Uneven		Unclass.
Before adjustment	3533	9304	1089	5165	9424	20422	18216	14774	10090	6467	10590	3804	202	33364	146445
Stocking factor <sup>1</sup>		0%	60%	40%											
Adjustment		- 9304	+5382	+3722	...	...	...	...	...	...	...	...	...	...	...
Adjustment <sup>2</sup>	- 3533		+3533												
<b>Canada</b>	<b>...</b>	<b>...</b>	<b>10205</b>	<b>8887</b>	<b>9424</b>	<b>20422</b>	<b>18216</b>	<b>14774</b>	<b>10090</b>	<b>6467</b>	<b>10590</b>	<b>3804</b>	<b>202</b>	<b>33364</b>	<b>146445</b>

<sup>1</sup>Source: Appendix 2, Table 17.1. 40% is stocked and assigned to the youngest age class (1-20). 60% is nonstocked and assigned to age class 0.

<sup>2</sup>Nonstocked is the same as age class 0.

Table 16.30. Area of timber productive forest that is accessed and not reserved by province and maturity class (× 1000 ha)

Province/Territory	Nonstocked	Stocking unproven	Regeneration	Stocked by maturity class			Uneven	Unclass.	Total
				Immature	Mature	Overmature			
Newfoundland I.	320	14	194	616	690	489	-	81	2403
Nova Scotia	234	483	54	2474	385	4	37	-	3671
Prince Edward I.	-	33	-	-	-	-	-	245	278
New Brunswick	66	41	827	2533	2137	184	10	86	5884
Quebec	-	3028	5398	13405	14861	43	149	8	36893
Ontario	-	2318*	1838	8556	7549	4907	6	6	25179
Manitoba	-	560	361	3398	1205	310	-	-	5834
Saskatchewan	-	422	-	3009	764	1004	-	426	5626
Alberta	198	1862	271	8715	7031	2867	-	-	20944
British Columbia	2663	-	1462	11036	7716	12834	-	-	35711
<b>Subtotal S. Tier</b>	<b>3481</b>	<b>8761</b>	<b>10405</b>	<b>53742</b>	<b>42338</b>	<b>22642</b>	<b>202</b>	<b>852</b>	<b>142423</b>
Labrador	-	194	-	-	14	23	-	327	559
Yukon Terr.	52	346	9	853	456	33	-	-	1750
Northwest Terr.	-	1	23	947	741	-	-	-	1713
<b>Subtotal N. Tier</b>	<b>52</b>	<b>541</b>	<b>32</b>	<b>1800</b>	<b>1211</b>	<b>56</b>	<b>-</b>	<b>327</b>	<b>4021</b>
<b>Canada</b>	<b>3533</b>	<b>9304*</b>	<b>10437</b>	<b>55542</b>	<b>43549</b>	<b>22698</b>	<b>202</b>	<b>1179</b>	<b>146445</b>

\* Includes 1000 ha with no stocking classification.

Application of stocking factors to reassign areas of 'unproven' and 'unclassified' stocking

	Nonstocked	Unproven	Regeneration	Area stocked by maturity class			Uneven	Unclass.	Total
				Immature	Mature	Overmature			
Before adjustment	3533	9304	10437	55542	43549	22698	202	1179	146445
Adjustment <sup>1</sup>	+5582	← 60%	→ 40%	-3722					
<b>Canada</b>	<b>9115</b>	<b>...</b>	<b>14159</b>	<b>55542</b>	<b>43549</b>	<b>22698</b>	<b>202</b>	<b>1179</b>	<b>146445</b>

Totals may not add exactly due to rounding.

<sup>1</sup>Source: Appendix 1, Table 16.29. The stocked portion of 'unproven + unclassified' stocking is allocated to the youngest maturity class (regeneration).

Table 16.31. Area and volume per hectare of all species on mature and overmature timber productive forest that is accessed and not reserved by province and predominant genus  
Area (× 1000 ha); Volume (m<sup>3</sup>/ha) in brackets

Province/Territory	Predominant genus in the cover type														Total
	Spruce	Pine	Fir	Hemlock	Douglas-fir	Larch	Other conifers	Unspec. conifers	Poplar	Birch	Maple	Other Bdlvd	Unspec. Bdlvd	Unclass.	
Newfoundland I.	541 (108.0)	.. (113.2)	549 (107.3)	- (...)	- (...)	1 (82.1)	- (...)	- (...)	3 (122.8)	86 (114.6)	-- (64.8)	- (...)	- (...)	-- (61.2)	1179 (108.2)
Nova Scotia	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	164 (114.1)	- (...)	- (...)	- (...)	- (...)	126 (103.2)	98 (106.9)	389 (108.7)
Prince Edward I.	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)
New Brunswick	850 (139.3)	45 (155.5)	456 (160.8)	4 (141.2)	- (...)	11 (151.2)	168 (154.1)	- (...)	-- (134.0)	-- (115.4)	- (...)	- (...)	782 (133.2)	5 (128.0)	2321 (142.9)
Quebec	770 (106.3)	143 (166.9)	178 (119.2)	35 (231.0)	- (...)	1 (83.2)	109 (135.7)	- (...)	318 (150.5)	1441 (118.9)	154 (183.3)	2 (223.5)	- (...)	11754 (109.3)	14905 (112.9)
Ontario	3187 (121.6)	1159 (160.8)	608 (99.6)	61 (141.9)	- (...)	18 (97.6)	220 (93.0)	- (...)	2072 (184.1)	1399 (87.1)	1011 (134.7)	2720 (109.6)	- (...)	- (...)	12455 (128.7)
Manitoba	311 (123.0)	260 (108.8)	26 (124.0)	- (...)	- (...)	18 (78.4)	1 (101.1)	782 (119.6)	4 (112.6)	16 (130.4)	98 (94.7)	- (...)	- (...)	- (...)	1515 (116.5)
Saskatchewan	680 (133.2)	183 (143.1)	4 (127.6)	- (...)	- (...)	15 (76.7)	- (...)	- (...)	887 (175.6)	20 (119.1)	-- (125.0)	-- (107.2)	- (...)	-- (119.1)	1768 (154.3)
Alberta	3674 (182.2)	2191 (243.6)	20 (197.5)	- (...)	18 (155.6)	34 (114.2)	- (...)	- (...)	1216 (169.4)	8 (96.4)	- (...)	- (...)	2735 (185.1)	-- (165.4)	9898 (194.7)
British Columbia	3940 (283.1)	6964 (230.0)	2639 (298.2)	2321 (519.0)	1600 (275.0)	75 (264.4)	1606 (364.3)	- (...)	1286 (208.6)	91 (172.4)	4 (422.5)	21 (336.5)	- (...)	2 (142.7)	20550 (294.3)
Labrador	35 (116.0)	- (...)	1 (154.8)	- (...)	- (...)	-- (100.8)	- (...)	- (...)	- (...)	1 (133.0)	- (...)	- (...)	- (...)	- (...)	37 (117.6)
Yukon Territory	181 (163.2)	149 (180.2)	-- (141.8)	- (...)	- (...)	- (...)	- (...)	- (...)	30 (178.2)	1 (161.3)	- (...)	- (...)	- (...)	128 (135.3)	489 (162.0)
Northwest Terr.	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	741 (96.4)	741 (96.4)
Canada	14169 (183.0)	11093 (219.4)	4482 (225.1)	2420 (504.7)	1618 (273.7)	173 (172.7)	2104 (307.3)	947 (118.6)	5796 (183.2)	3062 (105.9)	1268 (138.5)	2743 (111.4)	3643 (171.1)	12728 (108.8)	66247 (186.6)

Totals may not add exactly due to rounding.

Table 16.32. Area and volume per hectare of all species on mature and overmature timber productive forest that is accessed and not reserved by province, forest type and site class  
Area (× 1000 ha); Volume per hectare (m<sup>3</sup>/ha) in brackets

Province/Territory	Site class							Unclassified	Total
	1	2	3	4	5	6	7		
<i>Newfoundland I.</i>									
Softwood	273 (81.4)	703 (116.6)	1 (155.8)	- (...)	- (...)	- (...)	- (...)	- (...)	977 (106.8)
Mixedwood	12 (89.2)	147 (118.5)	1 (168.4)	- (...)	- (...)	- (...)	- (...)	- (...)	160 (116.8)
Hardwood	1 (74.9)	38 (105.3)	4 (138.3)	- (...)	- (...)	- (...)	- (...)	- (...)	43 (107.7)
Unclassified	- (...)	- (117.3)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (117.3)
<b>Subtotal</b>	<b>286</b> (81.7)	<b>888</b> (116.4)	<b>6</b> (147.8)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>1179</b> (108.2)
<i>Nova Scotia</i>									
Softwood	147 (111.7)	18 (133.2)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	165 (114.1)
Mixedwood	93 (106.7)	5 (118.2)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	98 (117.3)
Hardwood	116 (105.7)	10 (83.1)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	126 (103.9)
<b>Subtotal</b>	<b>356</b> (108.4)	<b>34</b> (115.5)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>389</b> (109.1)
<i>Prince Edward I.</i>	(..)	(..)	(..)	(..)	(..)	(..)	(..)	(..)	(..)
<i>New Brunswick</i>									
Softwood	78 (132.5)	239 (143.5)	479 (158.4)	10 (171.1)	- (...)	- (...)	- (...)	452 (145.7)	1259 (149.5)
Mixedwood	1 (133.9)	16 (144.0)	243 (143.1)	32 (152.4)	- (...)	- (...)	- (...)	322 (130.4)	615 (136.9)
Hardwood	-- (160.8)	2 (130.5)	133 (127.6)	37 (139.9)	- (...)	- (...)	- (...)	270 (133.8)	442 (132.5)
Unclassified	-- (137.4)	-- (88.1)	2 (113.6)	1 (132.9)	- (...)	- (...)	- (...)	2 (140.6)	5 (125.1)
<b>Subtotal</b>	<b>79</b> (132.6)	<b>258</b> (143.4)	<b>857</b> (149.2)	<b>80</b> (149.0)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>1046</b> (137.9)	<b>2321</b> (142.9)
<i>Quebec</i>									
Softwood	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	9534 (104.2)	9534 (104.2)
Mixedwood	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	3291 (129.9)	3291 (129.9)
Hardwood	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	- (...)	2080 (125.6)	2080 (125.6)
<b>Subtotal</b>	<b>(...)</b>	<b>(...)</b>	<b>(...)</b>	<b>(...)</b>	<b>(...)</b>	<b>(...)</b>	<b>(...)</b>	<b>14905</b> (112.9)	<b>14905</b> (112.9)
<i>Ontario</i>									
Softwood	2821 (95.7)	1496 (137.7)	870 (157.2)	-- (207.8)	- (104.4)	- (...)	- (...)	-- (...)	5194 (118.2)
Mixedwood	444 (84.9)	1405 (106.7)	2109 (153.8)	50 (213.8)	3 (168.5)	- (...)	- (...)	- (...)	4010 (130.4)
Hardwood	3 (82.1)	1052 (106.9)	2108 (158.0)	85 (223.9)	4 (217.2)	- (...)	- (...)	- (...)	3251 (143.2)
<b>Subtotal</b>	<b>3268</b> (94.2)	<b>3953</b> (118.5)	<b>5086</b> (156.1)	<b>141</b> (219.6)	<b>7</b> (196.9)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>12455</b> (128.7)
<i>Manitoba</i>									
Softwood	8 (44.6)	202 (76.2)	290 (134.0)	- (...)	- (...)	- (...)	- (...)	- (...)	500 (109.3)
Mixedwood	- (...)	22 (85.4)	316 (151.6)	- (...)	- (...)	- (...)	- (...)	- (...)	338 (147.3)
Hardwood	- (...)	147 (58.2)	530 (119.9)	- (...)	- (...)	- (...)	- (...)	- (...)	677 (106.5)
<b>Subtotal</b>	<b>8</b> (44.6)	<b>371</b> (69.6)	<b>1136</b> (132.3)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>-</b> (...)	<b>1515</b> (116.5)

Table 16.32. (contd.)

Province/Territory	Site class							Unclassified	Total
	1	2	3	4	5	6	7		
<b>Saskatchewan</b>									
Softwood	-	-	-	-	-	-	-	665	665
	(...)	(...)	(...)	(...)	(...)	(...)	(...)	(121.9)	(121.9)
Mixedwood	-	-	10	-	-	-	-	501	512
	(...)	(...)	(194.3)	(...)	(...)	(...)	(...)	(184.4)	(184.7)
Hardwood	11	75	11	-	-	-	-	495	592
	(83.8)	(127.3)	(155.7)	(...)	(...)	(...)	(...)	(172.0)	(164.4)
Subtotal	11	75	21	-	-	-	-	1661	1768
	(83.8)	(127.3)	(175.0)	(...)	(...)	(...)	(...)	(155.7)	(154.3)
<b>Alberta</b>									
Softwood	2441	2007	330	-	-	-	-	-	4777
	(140.8)	(248.7)	(273.9)	(...)	(...)	(...)	(...)	(...)	(195.3)
Mixedwood	177	1412	348	-	-	-	-	-	1937
	(149.3)	(242.0)	(259.3)	(...)	(...)	(...)	(...)	(...)	(236.7)
Hardwood	249	2309	625	-	-	-	-	-	3183
	(95.4)	(171.0)	(201.0)	(...)	(...)	(...)	(...)	(...)	(171.0)
Subtotal	2867	5729	1302	-	-	-	-	-	9898
	(137.3)	(215.8)	(235.0)	(...)	(...)	(...)	(...)	(...)	(195.6)
<b>British Columbia</b>									
Softwood	8338	905	7221	1877	--	--	--	-	18341
	(220.1)	(73.3)	(379.6)	(479.5)	(668.8)	(1354.1)	(1216.3)	(...)	(302.2)
Mixedwood	451	15	893	1670	--	--	--	-	1525
	(126.9)	(48.0)	(263.3)	(390.1)	(498.4)	(605.7)	(...)	(...)	(234.8)
Hardwood	191	2	464	24	--	--	--	-	682
	(101.8)	(35.3)	(252.6)	(368.1)	(482.1)	(...)	(...)	(...)	(213.4)
Unclassified	--	--	1	--	--	--	--	-	2
	(114.2)	(11.6)	(81.2)	(404.7)	(...)	(...)	(...)	(...)	(143.2)
Subtotal	8981	922	8579	2068	--	--	--	-	20550
	(212.9)	(72.8)	(360.6)	(471.0)	(628.2)	(655.6)	(1216.3)	(...)	(294.3)
<b>Labrador</b>									
Softwood	9	26	--	-	-	-	-	-	35
	(86.7)	(127.1)	(185.4)	(...)	(...)	(...)	(...)	(...)	(117.0)
Mixedwood	--	1	--	-	-	-	-	-	1
	(100.4)	(128.4)	(198.3)	(...)	(...)	(...)	(...)	(...)	(128.3)
Hardwood	-	1	--	-	-	-	-	-	1
	(...)	(132.0)	(172.0)	(...)	(...)	(...)	(...)	(...)	(132.2)
Subtotal	9	28	--	-	-	-	-	-	37
	(86.9)	(127.2)	(187.1)	(...)	(...)	(...)	(...)	(...)	(117.6)
<b>Yukon Territory</b>									
Softwood	253	116	5	-	-	-	-	1	375
	(141.0)	(205.0)	(190.8)	(...)	(...)	(...)	(...)	(123.4)	(161.4)
Mixedwood	56	47	4	--	--	--	--	-	108
	(122.8)	(199.3)	(206.8)	(400.0)	(...)	(...)	(...)	(...)	(159.8)
Hardwood	1	3	1	-	-	-	-	-	6
	(191.2)	(193.0)	(362.4)	(...)	(...)	(...)	(...)	(...)	(234.9)
Subtotal	311	166	10	--	-	-	-	1	489
	(138.0)	(203.2)	(222.4)	(400.0)	(...)	(...)	(...)	(123.4)	(162.0)
<b>Northwest Territories</b>									
Softwood	74	40	3	-	-	-	-	-	118
	(55.5)	(226.6)	(328.9)	(...)	(...)	(...)	(...)	(...)	(121.7)
Mixedwood	375	193	3	-	-	-	-	-	570
	(31.4)	(184.3)	(290.4)	(...)	(...)	(...)	(...)	(...)	(84.4)
Hardwood	--	46	7	-	-	-	-	-	53
	(...)	(157.2)	(251.9)	(...)	(...)	(...)	(...)	(...)	(168.8)
Subtotal	449	279	13	-	-	-	-	-	741
	(35.4)	(186.0)	(280.6)	(...)	(...)	(...)	(...)	(...)	(96.4)
<b>Canada</b>									
Softwood	14444	5752	9198	1893	--	--	--	10651	41939
	(175.8)	(163.8)	(335.4)	(477.0)	(535.2)	(1354.1)	(1216.3)	(107.1)	(205.3)
Mixedwood	1608	3263	3928	250	3	--	-	4114	13166
	(94.0)	(171.5)	(187.5)	(323.9)	(171.0)	(605.7)	(...)	(136.6)	(158.8)
Hardwood	572	3686	3882	145	4	-	-	2846	11135
	(99.5)	(146.1)	(170.2)	(226.1)	(220.0)	(...)	(...)	(134.4)	(150.2)
Unclassified	--	--	3	1	-	-	-	2	6
	(114.4)	(79.4)	(101.9)	(226.5)	(...)	(...)	(...)	(140.6)	(130.2)
Total	16624	12702	17012	2289	7	--	--	17613	66247
	(165.2)	(160.6)	(263.5)	(444.3)	(214.3)	(655.6)	(1216.3)	(118.4)	(186.8)

Totals may not add exactly due to rounding.

## 17. Appendix 2. Auxiliary source data

Table 17.1	Stocking factors
Table 17.2	Policy constraint factors
Table 17.3	Importance of forest use



Table 17.1. Stocking factors

These factors are the percentage of 'unproven' stocking that is estimated to have been stocked at the time of the source inventory.

Province/Territory	Percent stocked by cause of disturbance					Mean
	Cut	Burn	Pest	Other	Unclass.	
Newfoundland I.	85	50	85	80	na	56
Nova Scotia	67	67	na	na	67	67
Prince Edward I.	100	100	100	50	na	73
New Brunswick	96	96	na	96	96	96
Quebec	60	33	100	60	50	47
Ontario	96	100	100	100	na	0
Manitoba	na	na	na	na	0	0
Saskatchewan	0	0	na	0	0	0
Alberta	95	58	100	58	58	63
British Columbia	0	0	na	0	0	0
Labrador	80	50	na	80	80	80
Yukon Territory	0	56	na	na	56	56
Northwest Territories	0	60	na	na	60	56
Canada - Mean	63	38	100	52	34	40

'na' - not applicable or not available.

If no other figure is available set 'Cut', 'Burn', and 'Unclassified' to 0%, 'Pest' and 'Other' to 100%.

The mean factors for each province or territory, and for Canada, were weighted by the appropriate inventory areas.

Table 17.2. Policy constraint factors

Province or Territory	Region or FMU <sup>1</sup>	Owner & Status <sup>2</sup>	Stratum value (%) <sup>3</sup>	Mean value (%)
Newfoundland	All	All	cl 10	10.0
Nova Scotia		3 -	19	
		4 -	19	
		5 -	64	
	Mean	Other	cl 10	40.7
Prince Edward Island		1 -	49	
		33	29	
	Mean	Other	cl 10	11.4
New Brunswick		32	18	
		44	cl 10	
		54	17	
	Mean	Other	cl 10	16.0
Quebec	11, 15	All	2.0	
	12, 13, 87	All	3.0	
	14, 33, 51	All	4.0	
	21, 31, 61, 73, 74, 81	All	6.0	
	22, 32, 35, 41, 72, 82	All	5.0	
	23, 24	All	9.1	
	25, 94	All	8.6	
	26	All	8.7	
	27	All	10.7	
	42	All	7.6	
	43	All	6.8	
	62, 71, 91, 93	All	7.0	
	75, 77	All	9.0	
	76, 92	All	8.0	
	83, 85	All	4.3	
	84	All	11.0	
	86	All	2.4	
	95	All	12.0	
	96	All	10.0	
	Other	All	10.0	
	Mean			7.5
Ontario		3 -	12	
	Mean	Other	cl 10	11.7
Manitoba	All	All	13	13.0
Saskatchewan	UTM Grid Cell & Vector Inventories	32	100	
		33	5	
	Other	Other	cl 10	
	Other	All	cl 10	
	Mean			10.6
Alberta	All	All	cl 35.5	35.5
British Columbia		3 -	40	
	Mean	Other	cl 10	38.5
Yukon	All	All	cl 10	10.0
NWT	All	All	cl 10	10.0
Canada	Mean	-	-	18.8

<sup>1</sup>Quebec factors are reported by forest management unit (FMU).

The mean factors for each province or territory and for Canada were weighted by the appropriate inventory areas.

Table 17.2. (contd.)

<sup>2</sup>Ownership and status codes

Example: 54 = Ownership 5, Status 4

Ownership	Status
Crown	1 Reserved
1 Other federal	Nonreserved
2 Native	2 Assigned
3 Prov/terr	3 Retained
Private	4 Other
4 Industrial	8 Missing value
5 Nonindustrial	
6 Municipal	
7 Unspecified	
8 Missing value	

<sup>3</sup>Policy constraint value

Where figures were not available, default was set to 'cl 10'.

'cl' indicates a class midpoint, other values were identified at the indicated level.

Class	Range (%)	Class midpoint (%)
1	0-20	10.0
2	21-50	35.5
3	51-80	65.5
4	81-100	90.5

Table 17.3. Importance of forest use

The sum of the High (H), Medium (M), and Low (L) values is 100% for each combination of function, forest type, and owner. The specifications are on an international scale, not Canadian, and are described in Section 13.4 'Auxiliary and other related information'. Timber productive forest is the closest Canadian fit for the FAO/ECE category 'forest', and timber unproductive forest for 'other wooded land'.

Canada												
Weighted mean of those provinces and territories that responded												
Area %												
Function <sup>1</sup>	Timber productive forest						Timber unproductive forest					
	Public			Private			Public			Private		
	H	M	L	H	M	L	H	M	L	H	M	L
Wood production	0	38	62	0	27	73	0	0	100	0	0	100
Protection	6	44	50	1	32	67	1	20	79	7	25	68
Water	5	66	29	5	60	35	1	20	79	19	19	62
Grazing (range)	0	1	99	1	22	77	1	3	96	1	13	86
Hunting	16	40	44	11	60	29	7	29	64	25	41	34
Nature conservation	7	57	36	1	23	76	4	59	37	1	14	85
Recreation	8	15	77	1	7	92	1	8	91	3	10	87

Newfoundland												
Area %												
Function	Timber productive forest						Timber unproductive forest					
	Public			Private			Public			Private		
	H	M	L	H	M	L	H	M	L	H	M	L
Wood production	0	75	25	0	79	21	0	0	100	0	0	100
Protection	5	20	75	5	20	75	5	20	75	5	10	85
Water	5	10	85	5	10	85	5	10	85	10	20	70
Grazing (range)	1	5	94	5	5	90	1	5	94	5	5	90
Hunting	70	20	10	60	35	5	70	20	10	70	25	5
Nature conservation	5	10	85	5	5	90	5	10	85	5	10	85
Recreation	5	15	80	5	10	85	5	15	80	10	15	75

Prince Edward Island												
Area %												
Function	Timber productive forest						Timber unproductive forest					
	Public			Private			Public			Private		
	H	M	L	H	M	L	H	M	L	H	M	L
Wood production	0	95	5	0	100	0	0	0	100	0	0	100
Protection	0	100	0	0	100	0	0	100	0	0	100	0
Water	0	100	0	0	100	0	0	100	0	0	100	0
Grazing (range)	0	0	100	0	0	100	0	0	100	0	0	100
Hunting	0	95	5	0	100	0	0	100	0	0	100	0
Nature conservation	5	95	0	1	0	99	10	0	90	0	0	100
Recreation	5	0	95	1	0	99	0	0	100	0	0	100

Manitoba												
Area %												
Function	Timber productive forest						Timber unproductive forest					
	Public			Private			Public			Private		
	H	M	L	H	M	L	H	M	L	H	M	L
Wood production	0	20	80	0	10	90	0	0	100	0	0	100
Protection	0	20	80	0	30	70	0	50	50	10	30	60
Water	0	30	70	0	20	80	0	40	60	10	20	70
Grazing (range)	0	0	100	0	20	80	0	10	90	0	20	80
Hunting	10	30	60	10	40	50	0	30	70	10	50	40
Nature conservation	10	10	80	0	40	60	0	10	90	0	20	80
Recreation	10	30	60	0	10	90	0	10	90	0	10	90

Table 17.3. (contd.)

Saskatchewan												
Function	Area %											
	Timber productive forest						Timber unproductive forest					
	Public			Private			Public			Private		
	H	M	L	H	M	L	H	M	L	H	M	L
Wood production	0	90	10	0	0	100	0	0	100	0	0	100
Protection	2	5	93	0	0	100	0	0	100	0	0	100
Water	0	2	98	0	0	100	0	0	100	0	0	100
Grazing (range)	0	5	95	0	50	50	0	0	100	0	0	100
Hunting	0	100	0	0	100	0	0	1	99	0	0	100
Nature conservation	2	3	95	0	0	100	2	3	95	0	0	100
Recreation	1	6	93	0	0	100	0	1	99	0	0	100

British Columbia - Water only												
Function	Area %											
	Timber productive forest						Timber unproductive forest					
	Public			Private			Public			Private		
	H	M	L	H	M	L	H	M	L	H	M	L
Water	2	98	0	9	91	0	2	98	0	100	0	0

Yukon												
Function	Area %											
	Timber productive forest						Timber unproductive forest					
	Public			Private			Public			Private		
	H	M	L	H	M	L	H	M	L	H	M	L
Wood production	0	1	99	...	...	...	0	0	100	...	...	...
Protection	0	0	100	...	...	...	0	0	100	...	...	...
Water	0	1	99	...	...	...	0	0	100	...	...	...
Grazing (range)	0	0	100	...	...	...	0	0	100	...	...	...
Hunting	0	10	90	...	...	...	0	5	95	...	...	...
Nature conservation	0	100	0	...	...	...	0	100	0	...	...	...
Recreation	0	10	90	...	...	...	0	5	95	...	...	...

... not applicable

Northwest Territories												
Function	Area %											
	Timber productive forest						Timber unproductive forest					
	Public			Private			Public			Private		
	H	M	L	H	M	L	H	M	L	H	M	L
Wood production	0	2	98	...	...	...	0	0	100	...	...	...
Protection	20	60	20	...	...	...	1	20	79	...	...	...
Water	30	40	30	...	...	...	0	20	80	...	...	...
Grazing (range)	0	2	98	...	...	...	1	4	95	...	...	...
Hunting	1	40	59	...	...	...	0	50	50	...	...	...
Nature conservation	5	90	5	...	...	...	6	84	10	...	...	...
Recreation	10	15	75	...	...	...	0	10	90	...	...	...

... not applicable

Alberta, New Brunswick, Nova Scotia, Ontario, Quebec - no data

## 18. Appendix 3. Glossary

This glossary is intended to help the lay reader understand the categories of information in Canada's Forest Inventory 1991. More complete explanations and definitions are available in the technical supplement to this report (CFS 1994). The technical supplement to the 1986 inventory report (Gray and Nietmann 1989) is still valid for all except the newest categories. The technical supplements also provide the relationship between the specifications of the national inventory and those of the source inventories from which it was created. The inventory uses, wherever possible, the preferred English and French terminology of the Canadian Forest Inventory Committee as reported in 'Forest inventory terms in Canada' (Haddon 1988).

The explanation of 'forest use' has been paraphrased from the original and more comprehensive material (United Nations 1985) describing the international survey leading to the Canadian work.

**Access** - the presence or absence in the inventory cell of an access route that could be used for the transportation of wood. Physical access does not necessarily imply economic accessibility.

**Age class** - forest age as of the year of information in 20-year classes.

**Auxiliary information** - information that has been added to the inventory by relating it to the core data. The relationships use location (e.g., Province) and descriptive attributes (e.g., the cause of disturbance is 'burn').

**Biomass** - the oven-dry weight in tonnes/ha of various biological components of the ecosystem.

**CanFI** - Canada's Forest Inventory. CanFI91 is the version created with data available from source inventories in 1991.

**Cause of disturbance** - reason for nonstocked and unproven stocking. May be Cutover, Burn, Pest, or Other.

**Cell** - the smallest spatial entity recognised within the national inventory. Most cells are map sheets in the source inventories, with a typical area of 10 000 ha. For most cells there are several data records corresponding to the different combinations of condition that occur. Each record has a known area (ha), but the distribution of that condition within the cell is not known without reference to the source inventory map.

**Forest region and section** - about 90 forest sections have been mapped across Canada based on the general structure of the vegetation (Rowe 1972). The sections are grouped into forest regions. These boundaries have been overlaid on the national inventory which can, therefore, report by forest region or section.

**Forest Section** - see Forest Region and Section.

**Forest type** - description of the forest. May be Softwood, Mixedwood, or Hardwood.

**Forest use** - this is an early attempt to assess the importance of several kinds of goods and services obtained from the forest. The seven forest use functions are Wood production, Protection, Water, Grazing (range), Hunting, Nature Conservation, and Recreation.

- Separate estimates are made for Public (i.e., Crown) and Private lands. These two ownership categories are subdivided into Timber productive and Timber unproductive forest. Twenty eight estimates are made for each combination of forest use (7), ownership (2), and timber productivity (2).
- Each estimate presents the percentage of forest area that is rated as High, Medium, or Low for that use, with a total of 100%.
- The ratings use international specifications (United Nations 1985) that do not always apply well to a particular country, such as Canada. The ratings cannot be compared directly between forest uses, as each involves different value scales.
  1. **Wood production** - based on the average annual yields per hectare of the present harvest practices applicable over a long period (50 to 100 years). High - more than Medium. Medium - >1 to 3 m<sup>3</sup>/(ha. year). Low - less than Medium.
  2. **Protection** - based on the criteria of risk, the value to protect, and the protective capacity of the forest. High - all the criteria are high and the protective function has a higher priority than other uses. Medium - significant protective functions (e.g., erosion) but the system is sufficiently stable to allow most forestry operations (which may require modification). Low - less than Medium.

3. **Water** - based on the conservation, protection, or promotion of water supply. High - area designated for water supply, other uses restricted. Medium - water collection areas must be protected, other uses not restricted. Low - area not currently used for water collection or supply.
4. **Grazing (range)** - based on absolute production rather than importance for the local population. High - greater than Medium. Medium - the food produced for grazing animals during a vegetation period contains 500 to <1 000 megacalories per ha (1 000 megacalories = 4 200 megajoules, and is equivalent to about 175 kg of milk or a slaughtered meat weight of 20 kg). Low - less than Medium.
5. **Hunting (and trapping)** - based on the game population and its attractiveness and economic value for hunting. High - game populations and annual capture rates are high in absolute terms. A Scandinavian guideline for minimum annual capture per 100 ha is: moose (*Alces alces*) 1.0, roe deer (*Capreolus capreolus*) 1.8, hare (*Lepus spp.*) 1.5, rabbit (*Oryctolagus cuniculus*) 8.0, fox (*Vulpes vulpes*) 1.0; use one species, or combine species that are close to but below the minimum. Medium - not High, although the area is attractive for hunting which occurs regularly. Low - very low game populations or hunting and trapping are not attractive.
6. **Nature conservation** - based on the degree of regulation, with formal or voluntary regulation required for High or Medium. High - the object under conservation has national or international interest, and is protected over other land uses. Medium - either: the objects protected are uncommon in the region but not rare or endangered in the country; or a particular type of forest is being protected. Low - less than Medium, but general conservation regulations may exist that apply to all forests (e.g. streamside reserves).
7. **Recreation** - based on special qualities of the resource and proximity to population centres. High - areas close to population centres and frequently visited (120 or more recreational visitor hours per ha per year). Close means within walking distance (5 km) or attractive sites within easy reach of day trips by car (30 km). More distant areas may have very special qualities and arrangements to attract visitors. Medium - not High or Low. Low - forest rarely visited for recreation, walking access is not allowed or is difficult (over 5 km from vehicle parking), and no objects of particular attraction.

**Land class** - description of the land. May be Water (i.e. fresh-water), Nonforest, Land unspecified as to forest or non-forest, Timber Unproductive forest, Timber Productive forest, or Forest unspecified as to timber productivity. Timber productive forest occupies a site capable of producing a merchantable stand within a reasonable length of time (e.g., 50 m<sup>3</sup>/ha in 100 years). This classification does not imply that the land is available for timber management and harvest (e.g., timber productive forest can occur in a national park).

**Maturity class** - a stage of forest development based on age according to the opinion and objectives of the forest manager. Even-aged conditions may be Regeneration, Immature, Mature, or Overmature. The forest may be

- Uneven-aged; it may also be temporarily Nonstocked.
- Regeneration - young forest, generally less than one metre high.
- Immature - between regeneration and mature.
- Mature - forest that has developed to a harvestable stage and that is at or near the defined rotation age.
- Overmature - forest that has grown past the mature stage.

**Mean annual increment (m.a.i.)** - CanFI uses m.a.i. to maturity, calculated as the volume of the forest at maturity divided by age. It is expressed as merchantable cubic metres per hectare per year (m<sup>3</sup>/ha. yr), and represents the average harvestable accumulated growth per year of the existing forest from age zero to maturity. Mean annual increment is an empirical indicator of basic potential growth under certain conditions and is not an estimate of current growth. When applied to any population of stocked timber productive forest, m.a.i. can be expressed either as m<sup>3</sup>/yr or as m<sup>3</sup>/(ha. yr).

**Missing value** - see Unclassified.

**Ownership** - the owner of the land. May be Private or Crown (i.e., state).

- Private may be Industrial, Nonindustrial, Municipal, or Unspecified.
- Crown may be Provincial, Territorial, Native, or Other federal.
- Provincial and Territorial are lands owned by the Provincial and Territorial governments, respectively.

- Native Crown lands are native reserves and settlements administered by Indian Affairs and Northern Development Canada.
- Other federal lands are other than Territorial or Native (e.g., national parks, defence).

**Policy constraint** - auxiliary information used to estimate the proportion of nonreserved timber productive forest withheld from timber harvest due to the policies or attitudes of the owner (e.g., streamside reserves).  
(See also Status.)

**Predominant genus** - description of the forest by the most abundant genus according to the description in the source inventory. May be Spruce, Pine, Fir, Hemlock, Douglas-fir, Larch, Cedar and other conifers, Unspecified conifers, Poplar, Birch, Maple, Other broadleaved species, or Unspecified broadleaved species.

**Productivity** - see Mean annual increment and Site quality.

**Site quality** - a measure of the relative productive capacity of a timber productive forest site based on the height at age 50. May be from Site class 1 (lowest) to 7 (highest). Does not apply to the poorer sites of the timber unproductive forest.

**Source inventory** - an inventory that contributes to the national inventory. The typical source inventory is a provincial forest management inventory based on forest type maps at a scale of about 1:20 000.

**Species group** - grouping by which volumes are reported. May be Black spruce, Other spruce, White pine, Jack and lodgepole pine, Other pine, Fir, Hemlock, Douglas-fir, Larch, Cedar and other conifers, Trembling aspen, Other poplar, Yellow birch, Other birch, Sugar maple, Other maple, or Other broadleaved species.

**Status** - control of land for timber management and harvest. May be Reserved or Nonreserved. Nonreserved may be Assigned, Retained, or Other.

- Reserved land is by law not available for harvesting forest crops (e.g., national parks).
- Assigned land is owned by the Crown but is no longer under their direct or immediate control (e.g., forest management has been assigned by agreement from the Crown to a timber company).
- Retained land is owned by the Crown and remains under its direct and immediate control (e.g., the Crown manages the forest and timber companies harvest under licence).
- Other nonreserved land is privately owned and is available for harvesting forest crops.

(See also Policy constraint.)

**Stocking class** - description of the density of forest cover. Applies only to timber productive forest and may be Nonstocked, Unproven, or Stocked. Stocked may be Partially or Fully stocked, or Unquantified as to stocking level.

Unproven stocking is timber productive forest that has had the tree cover removed (e.g., harvested) or killed (e.g., fire) and where the subsequent degree of stocking has not been assessed.

(See also Stocking factor.)

**Stocking factor** - auxiliary information to estimate the proportions of Unproven stocking that would have been stocked and nonstocked at the time of the source inventory.

(See also Stocking class.)

**Timber productive forest** - see Land class.

**Timber unproductive forest** - see Land class.

**Unclassified** - most of the categories include this class to cater to those source inventories where the information is not available and must be handled as a missing value.

**Volume** - the gross merchantable pulpwood standing volume of stocked timber productive forest is reported by species group in m<sup>3</sup> or m<sup>3</sup>/ha.

- Gross volume has no allowance made for defects such as decay (except in B.C. where net volumes are reported).
- Merchantable volume is main-stem under-bark volume excluding stump and top allowances.
- Pulpwood volume is of dimensions large enough to be considered as pulpwood in local practice. It includes volumes that meet higher dimensional standards (e.g. saw-wood).



**Wood production forest** - the nonreserved accessed timber productive forest that is not under policy constraint. This is presented as an approximation for the forest presently suitable and available for sustainable commercial wood production (i.e., timber management).

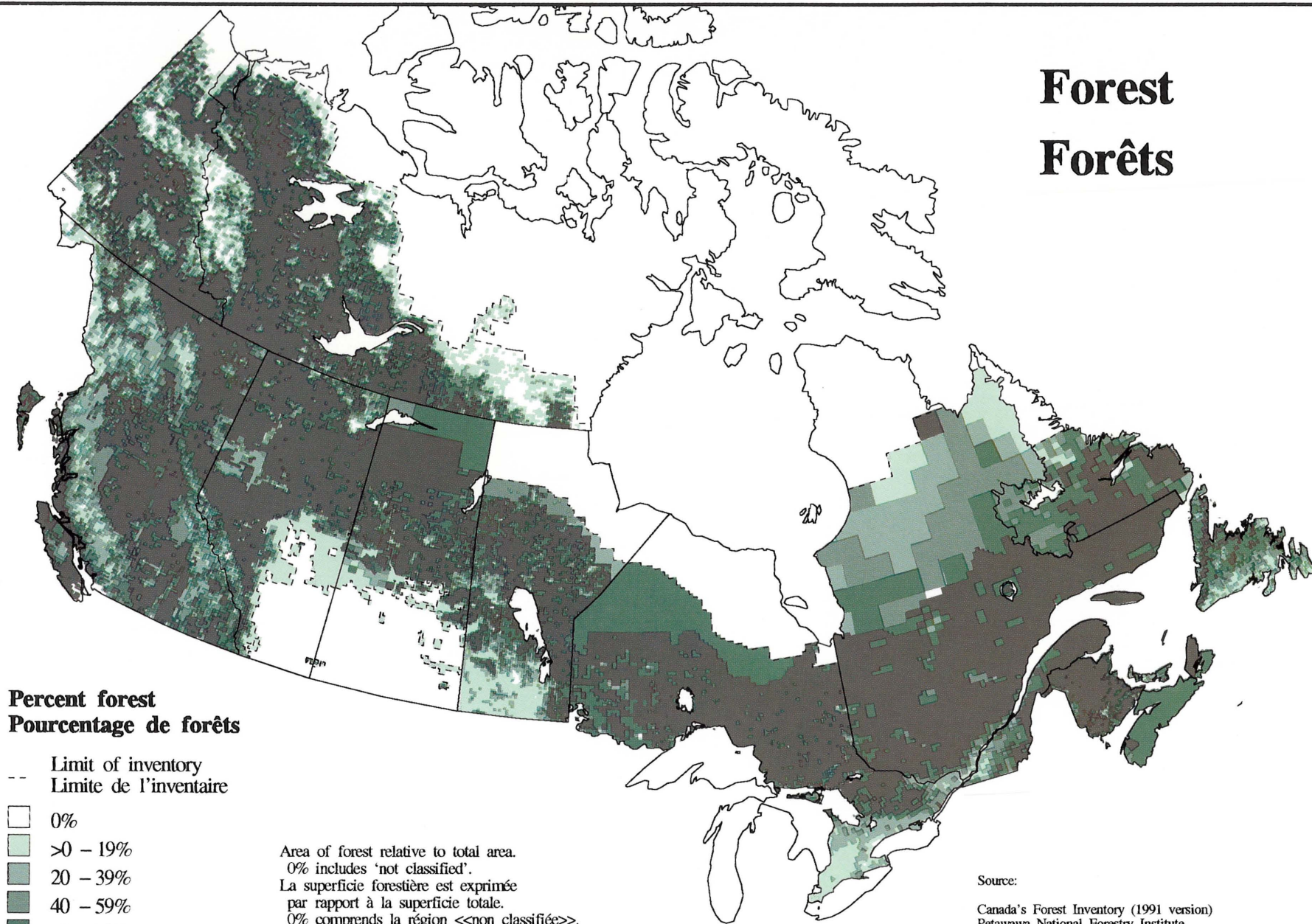
**Year of information** - the year in which the information was initially obtained. This is usually the year of photography of the source inventory, but may be the latest year to which the source inventory was updated for growth and loss.

(Note: the year of information is not 1991, the year when data collection began for CanFI91.)

**19. Maps**

Map 19.1	Forest
Map 19.2	Timber productive forest
Map 19.3	Timber unproductive forest
Map 19.4	Forest types
Map 19.5	Coniferous volume
Map 19.6	Broadleaved volume
Map 19.7	Volume of all species
Map 19.8	Mature volume of all species
Map 19.9	Access

# Forest Forêts



## Percent forest Pourcentage de forêts

-- Limit of inventory  
Limite de l'inventaire

- 0%
- >0 - 19%
- 20 - 39%
- 40 - 59%
- 60 - 79%
- 80 - 100%

Area of forest relative to total area.  
0% includes 'not classified'.  
La superficie forestière est exprimée  
par rapport à la superficie totale.  
0% comprends la région <<non classifiée>>.

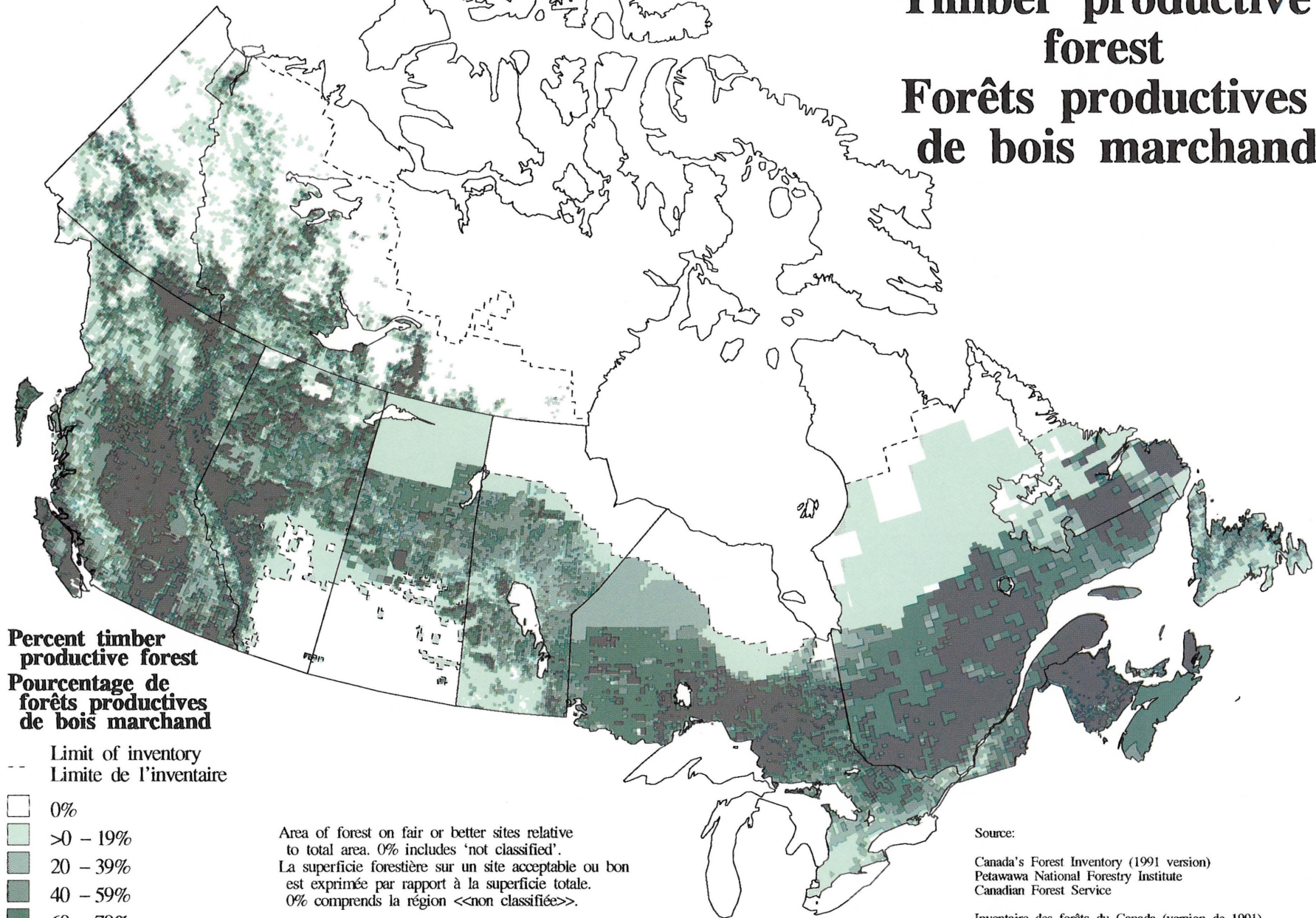
Source:

Canada's Forest Inventory (1991 version)  
Petawawa National Forestry Institute  
Canadian Forest Service

Inventaire des forêts du Canada (version de 1991)  
Institut forestier national de Petawawa  
Service canadien des forêts

# Timber productive forest

## Forêts productives de bois marchand



**Percent timber productive forest**  
**Pourcentage de forêts productives de bois marchand**

-- Limit of inventory  
 Limite de l'inventaire

- 0%
- >0 - 19%
- 20 - 39%
- 40 - 59%
- 60 - 79%
- 80 - 100%

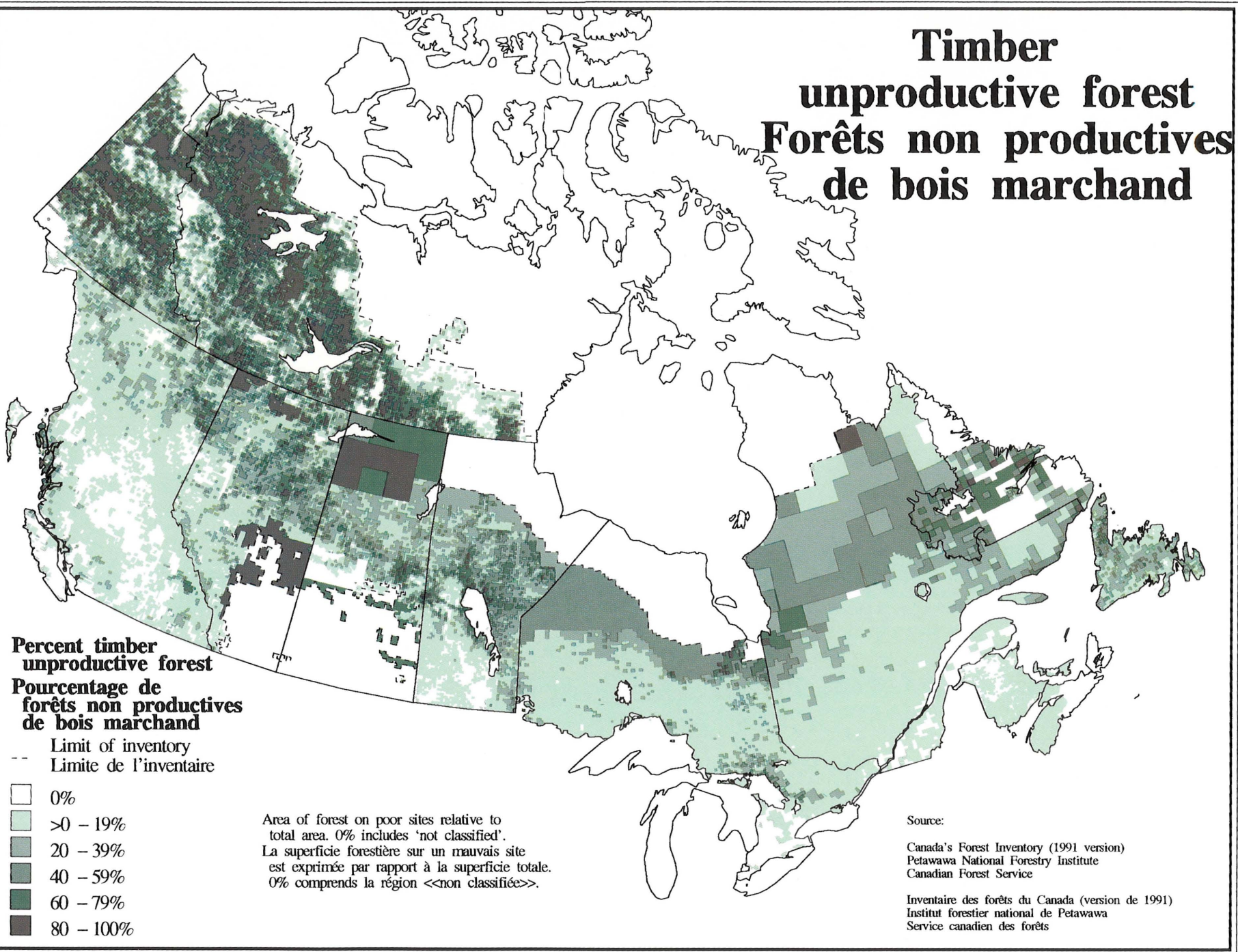
Area of forest on fair or better sites relative to total area. 0% includes 'not classified'.  
 La superficie forestière sur un site acceptable ou bon est exprimée par rapport à la superficie totale. 0% comprends la région <<non classifiée>>.

Source:

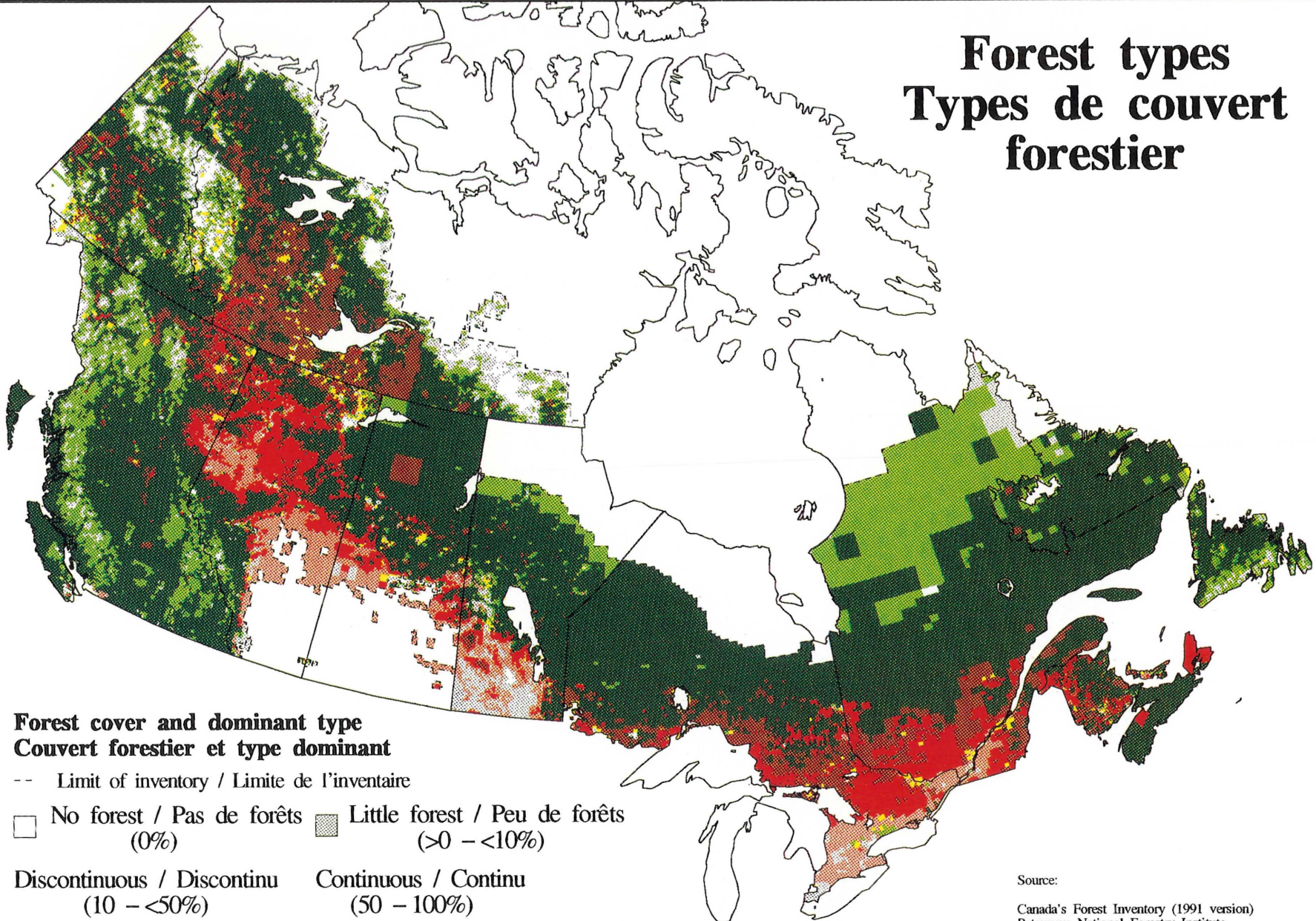
Canada's Forest Inventory (1991 version)  
 Petawawa National Forestry Institute  
 Canadian Forest Service

Inventaire des forêts du Canada (version de 1991)  
 Institut forestier national de Petawawa  
 Service canadien des forêts

# Timber unproductive forest Forêts non productives de bois marchand



# Forest types Types de couvert forestier



## Forest cover and dominant type Couvert forestier et type dominant

-- Limit of inventory / Limite de l'inventaire

□ No forest / Pas de forêts (0%)      ▨ Little forest / Peu de forêts (>0 - <10%)

Discontinuous / Discontinu (10 - <50%)      Continuous / Continu (50 - 100%)

■ Softwood / résineux  
■ Mixedwood / mélangé  
■ Hardwood / feuillu

■  
■  
■

'Forest cover' is all forest relative to total area. 'Dominant type' is the type of largest area in timber productive forest.

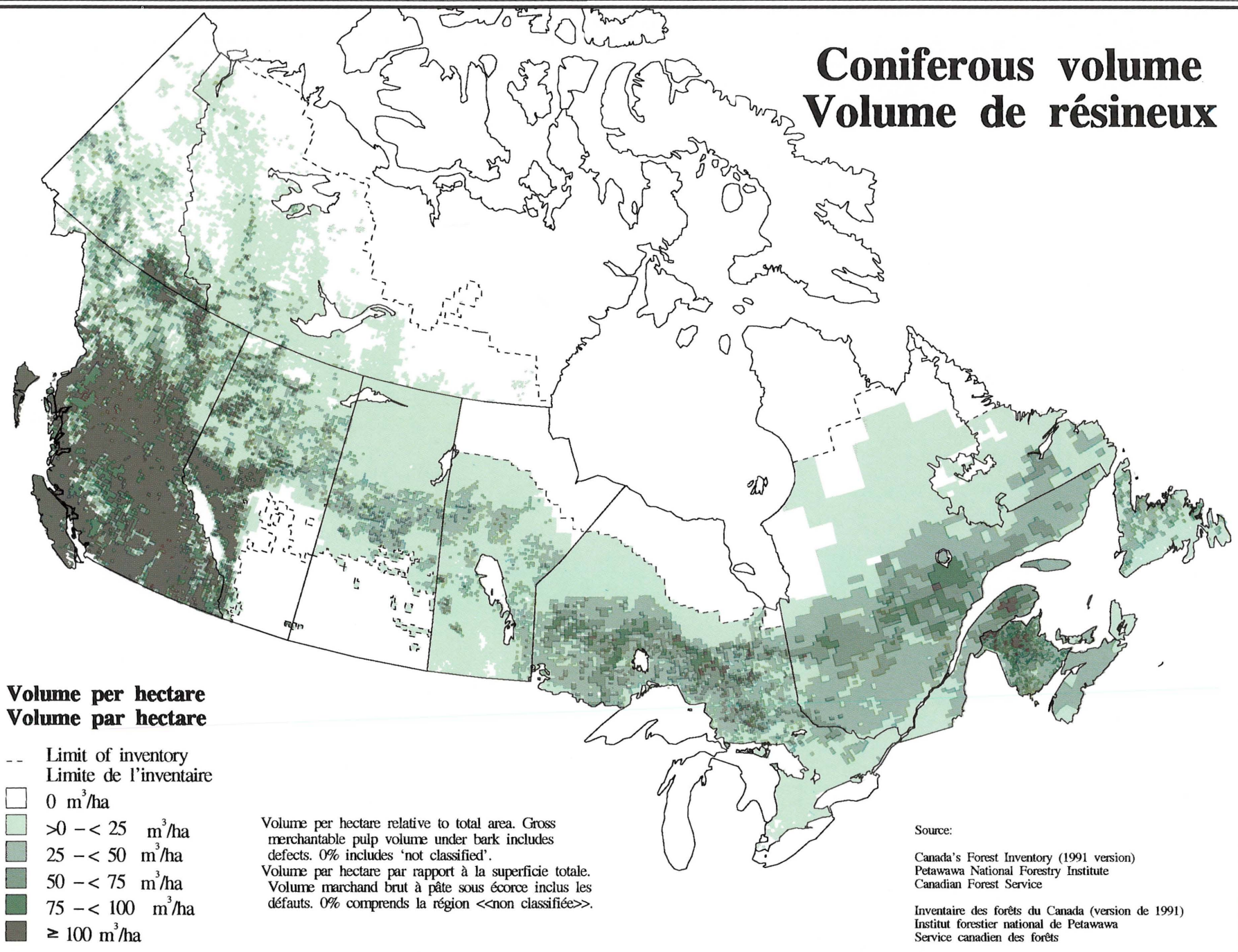
<<Couvert forestier>> signifie toute forêt et est exprimé par rapport à la superficie totale. Le <<type dominant>> est le type majeur dans des forêts productives de bois marchand.

Source:

Canada's Forest Inventory (1991 version)  
Petawawa National Forestry Institute  
Canadian Forest Service

Inventaire des forêts du Canada (version de 1991)  
Institut forestier national de Petawawa  
Service canadien des forêts

# Coniferous volume Volume de résineux



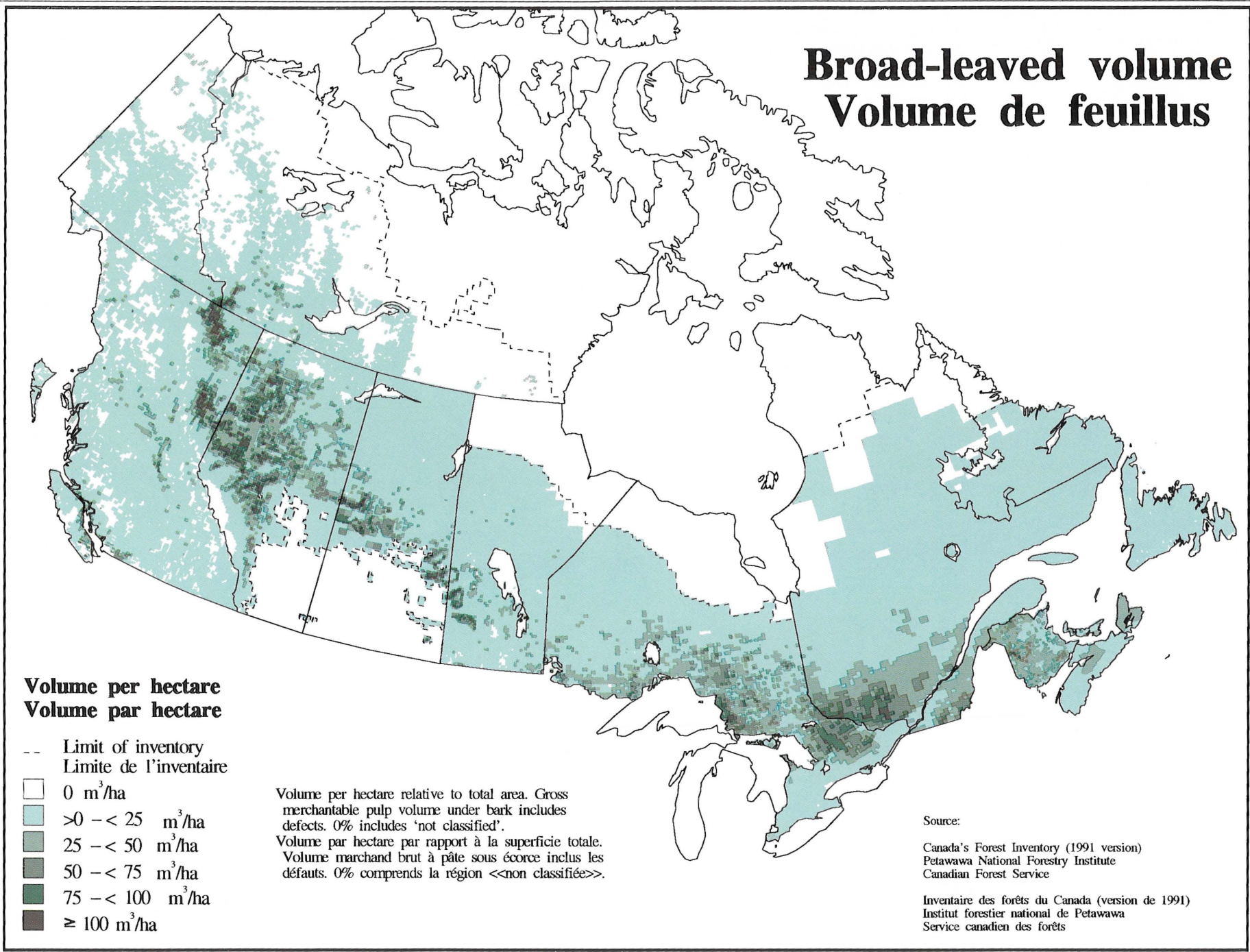
**Volume per hectare  
Volume par hectare**

- Limit of inventory  
Limite de l'inventaire
- 0 m<sup>3</sup>/ha
- >0 - < 25 m<sup>3</sup>/ha
- 25 - < 50 m<sup>3</sup>/ha
- 50 - < 75 m<sup>3</sup>/ha
- 75 - < 100 m<sup>3</sup>/ha
- ≥ 100 m<sup>3</sup>/ha

Volume per hectare relative to total area. Gross merchantable pulp volume under bark includes defects. 0% includes 'not classified'.  
 Volume par hectare par rapport à la superficie totale. Volume marchand brut à pâte sous écorce inclus les défauts. 0% comprends la région <<non classifiée>>.

Source:  
 Canada's Forest Inventory (1991 version)  
 Petawawa National Forestry Institute  
 Canadian Forest Service  
 Inventaire des forêts du Canada (version de 1991)  
 Institut forestier national de Petawawa  
 Service canadien des forêts

# Broad-leaved volume Volume de feuillus



**Volume per hectare  
Volume par hectare**

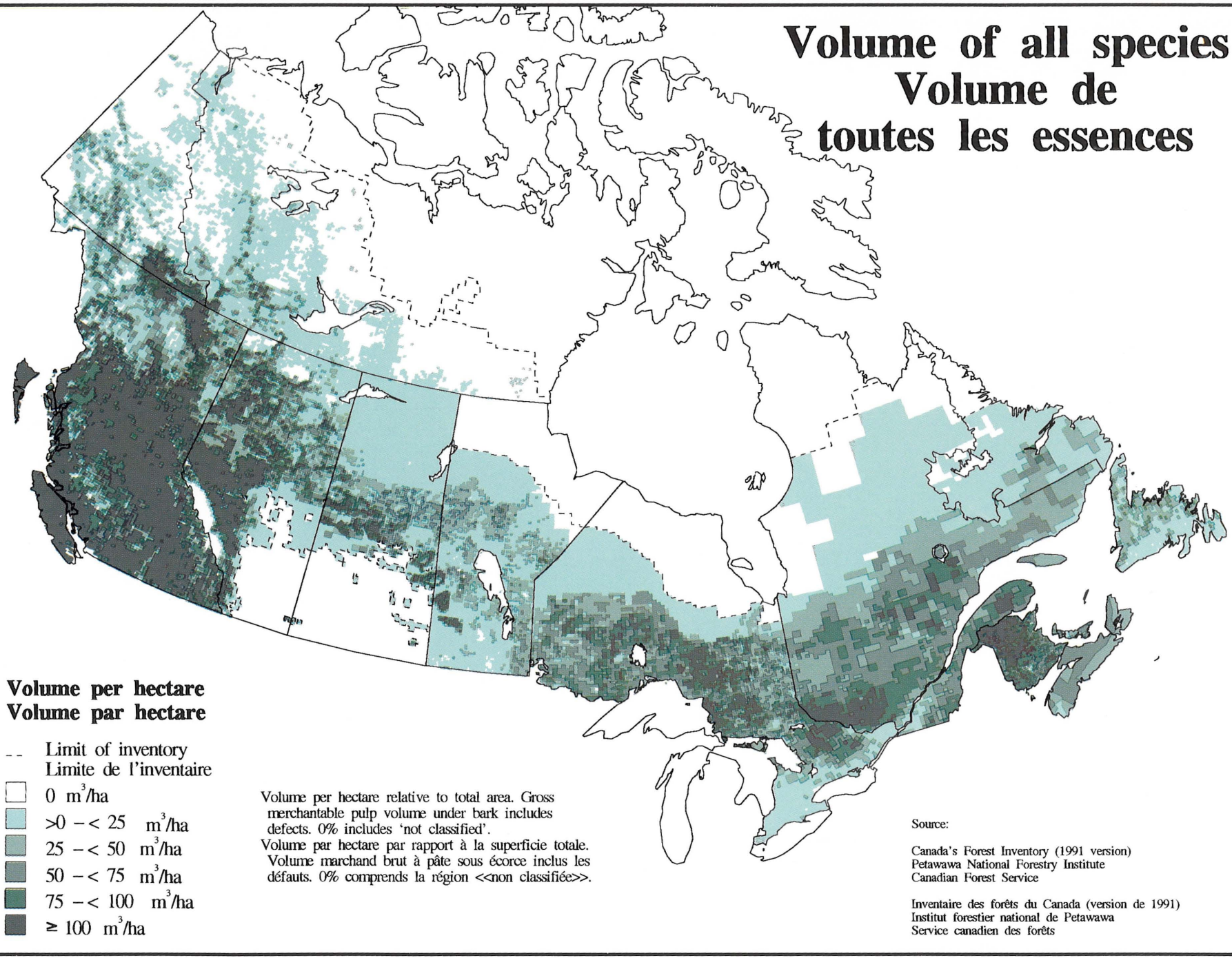
- Limit of inventory  
Limite de l'inventaire
- 0 m<sup>3</sup>/ha
- >0 - < 25 m<sup>3</sup>/ha
- 25 - < 50 m<sup>3</sup>/ha
- 50 - < 75 m<sup>3</sup>/ha
- 75 - < 100 m<sup>3</sup>/ha
- ≥ 100 m<sup>3</sup>/ha

Volume per hectare relative to total area. Gross merchantable pulp volume under bark includes defects. 0% includes 'not classified'.  
 Volume par hectare par rapport à la superficie totale. Volume marchand brut à pâte sous écorce inclus les défauts. 0% comprends la région <<non classifiée>>.

Source:  
 Canada's Forest Inventory (1991 version)  
 Petawawa National Forestry Institute  
 Canadian Forest Service  
 Inventaire des forêts du Canada (version de 1991)  
 Institut forestier national de Petawawa  
 Service canadien des forêts



# Volume of all species Volume de toutes les essences



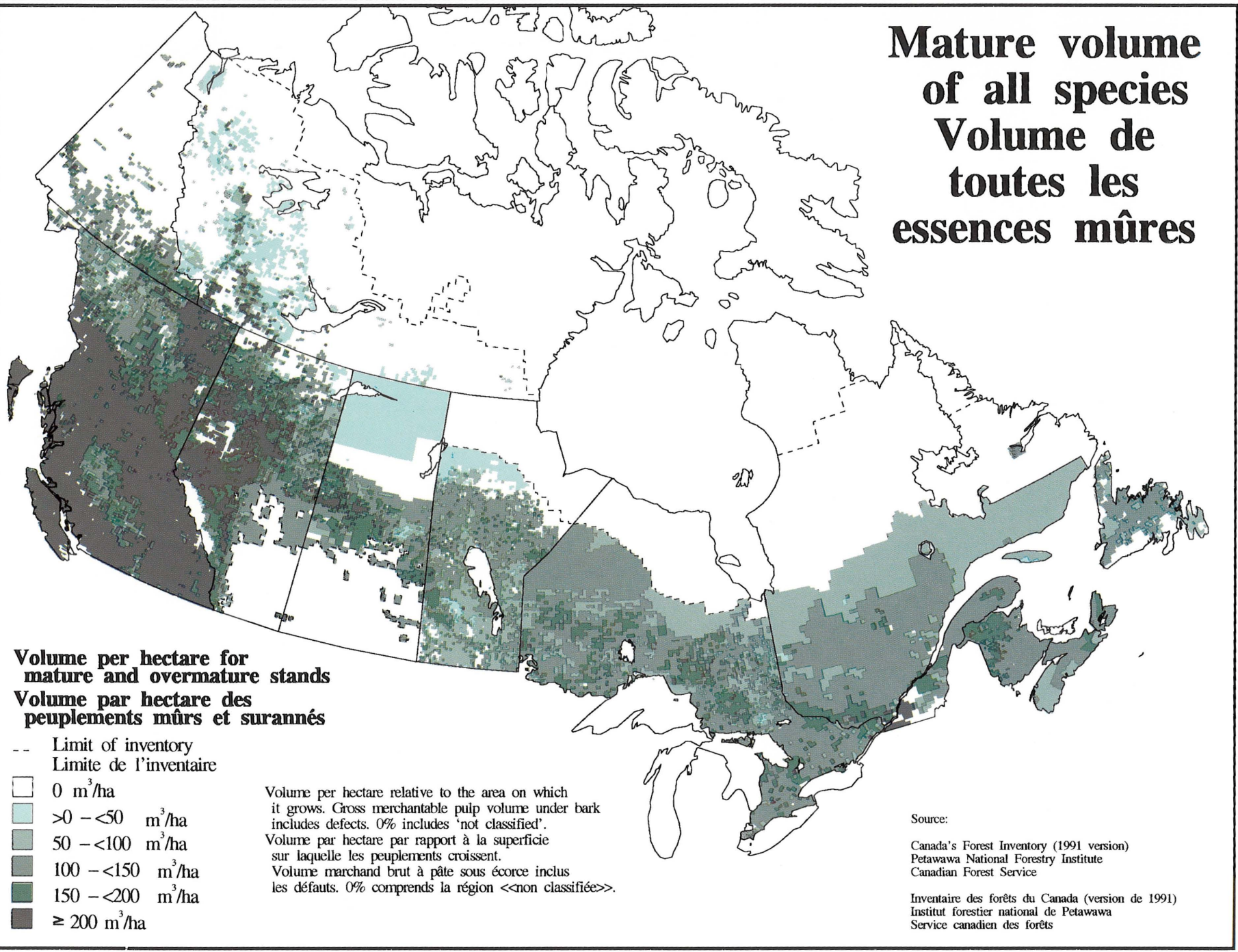
## Volume per hectare Volume par hectare

- Limit of inventory  
Limite de l'inventaire
- 0 m<sup>3</sup>/ha
- >0 - < 25 m<sup>3</sup>/ha
- 25 - < 50 m<sup>3</sup>/ha
- 50 - < 75 m<sup>3</sup>/ha
- 75 - < 100 m<sup>3</sup>/ha
- ≥ 100 m<sup>3</sup>/ha

Volume per hectare relative to total area. Gross merchantable pulp volume under bark includes defects. 0% includes 'not classified'.  
 Volume par hectare par rapport à la superficie totale. Volume marchand brut à pâte sous écorce inclus les défauts. 0% comprends la région <<non classifiée>>.

Source:  
 Canada's Forest Inventory (1991 version)  
 Petawawa National Forestry Institute  
 Canadian Forest Service  
 Inventaire des forêts du Canada (version de 1991)  
 Institut forestier national de Petawawa  
 Service canadien des forêts

# Mature volume of all species Volume de toutes les essences mûres



**Volume per hectare for  
mature and overmature stands**  
**Volume par hectare des  
peuplements mûrs et surannés**

- Limit of inventory  
Limite de l'inventaire
- 0 m<sup>3</sup>/ha
- >0 - <50 m<sup>3</sup>/ha
- 50 - <100 m<sup>3</sup>/ha
- 100 - <150 m<sup>3</sup>/ha
- 150 - <200 m<sup>3</sup>/ha
- ≥ 200 m<sup>3</sup>/ha

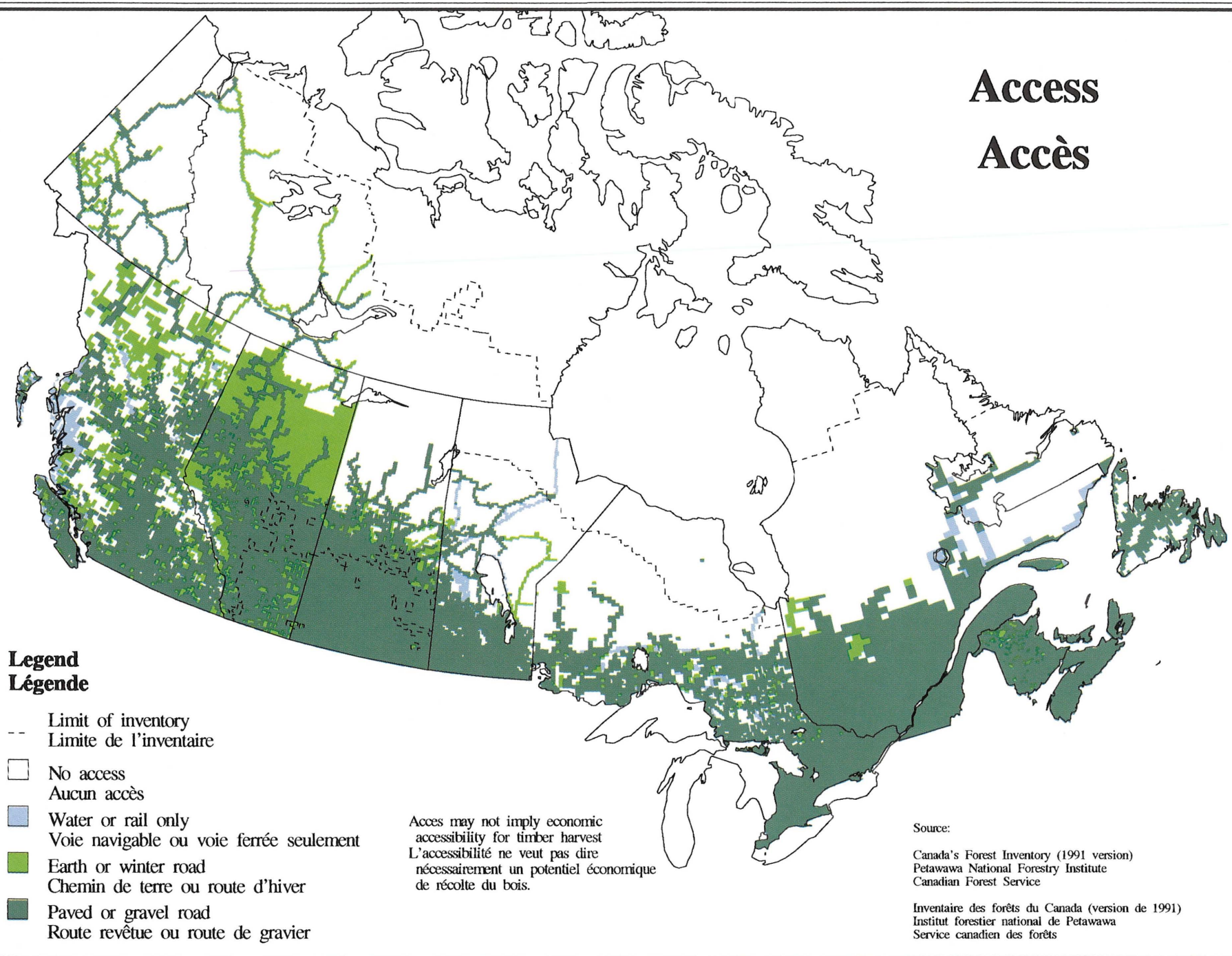
Volume per hectare relative to the area on which  
it grows. Gross merchantable pulp volume under bark  
includes defects. 0% includes 'not classified'.  
Volume par hectare par rapport à la superficie  
sur laquelle les peuplements croissent.  
Volume marchand brut à pâte sous écorce inclus  
les défauts. 0% comprends la région <<non classifiée>>.

Source:

Canada's Forest Inventory (1991 version)  
Petawawa National Forestry Institute  
Canadian Forest Service

Inventaire des forêts du Canada (version de 1991)  
Institut forestier national de Petawawa  
Service canadien des forêts

# Access Accès



## Legend Légende

- Limit of inventory  
Limite de l'inventaire
- No access  
Aucun accès
- Water or rail only  
Voie navigable ou voie ferrée seulement
- Earth or winter road  
Chemin de terre ou route d'hiver
- Paved or gravel road  
Route revêtue ou route de gravier

Access may not imply economic  
accessibility for timber harvest  
L'accès ne veut pas dire  
nécessairement un potentiel économique  
de récolte du bois.

Source:  
Canada's Forest Inventory (1991 version)  
Petawawa National Forestry Institute  
Canadian Forest Service  
  
Inventaire des forêts du Canada (version de 1991)  
Institut forestier national de Petawawa  
Service canadien des forêts