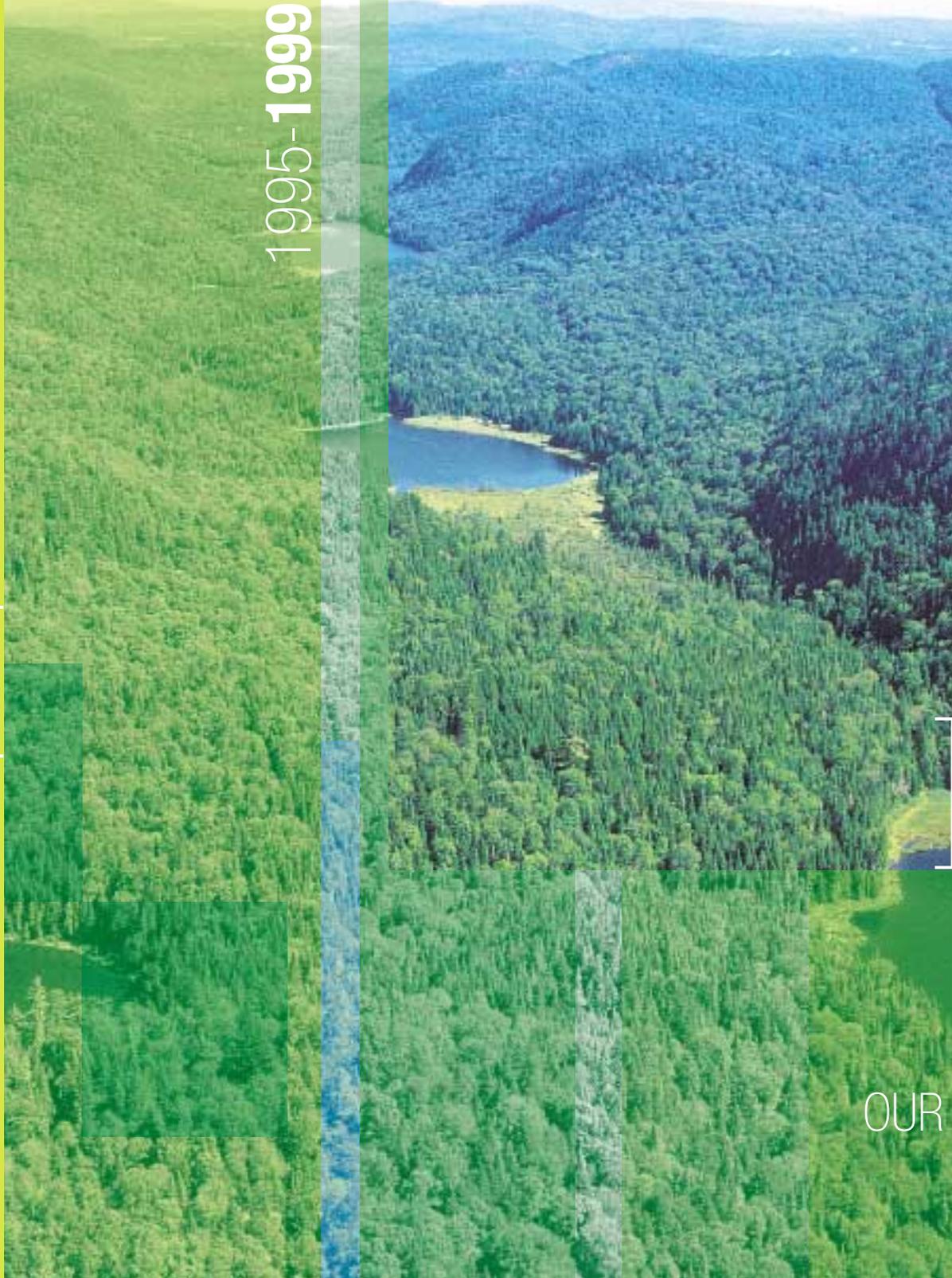


Summary Report

on the State of Québec's Forests

1995-1999



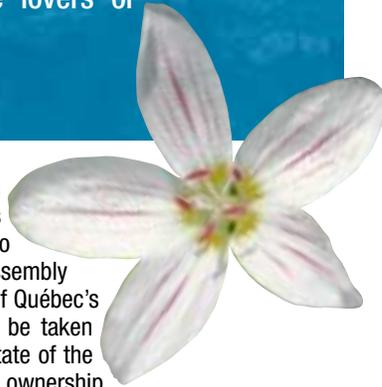
OUR **FORESTS**

Forests are an omnipresent feature of Québec's landscape, and contain a wide variety of ecosystems as well as many different types of stands. They play a multiplicity of social, economic, tourist, environmental and recreational roles in the lives of Québecers from all regions, whether they be forestry workers, nature lovers or simply Sunday tourists.

The Minister of Natural Resources is responsible for managing this priceless heritage, and is required to submit a report to the National Assembly once every five years on the state of Québec's forests. A number of factors must be taken into account when assessing the state of the forests, including the type of land ownership (public or private), ecosystem diversity, and the impact of fires, climate, defoliating insects, diseases, atmospheric pollutants, climate change and regional differences on forest use and on the scope of forest resource development work.

In addition to these elements, the Five-Year Report on the State of Québec's Forests must consider developments in survey methods, monitoring and other similar elements. It must also contain a range of information from many different sources, both public and private. At the same time, it must attempt to measure the impacts of natural and human disturbances whose true consequences will only become apparent years or even decades later. It is therefore a complex, long-term task.

This third Five-Year Report presents as accurate a picture as possible of the state of the forests, based on the available information and data. It details the changes in the composition of the forests between the 1970s and the 1990s, and describes the methods applied and actions taken between April 1, 1995 and March 31, 2000 to achieve sustainable forest resource management. Lastly, it presents forest composition, forest development activities and principal disturbances for Québec as a whole and for each of the 17 administrative regions established by the Québec government. In other words, it contains a summary portrait of Québec's forests and presents the highlights of the period 1995-1999.



Principal sources of information

The *Report on the State of Québec's Forests 1995-1999* was prepared using information obtained from a variety of sources, including the Ministère des Ressources naturelles, public forestry agencies and the private sector. For the section on changes in forest composition, the Department used data from its forest surveys since the 1970s. For the portrait of forest management activities in Québec's 17 administrative regions, it consulted the general forest management plans and annual forest management reports that all timber supply and forest management agreement (TSFMA) holders are required to produce and submit for MRN approval. The review of damage by insects, diseases and ice storms is based on data from special surveys carried out by the Department, and the review of fire damage is based on reports published by the Société de protection des forêts contre le feu (SOPFEU).

Many other sources of additional information were also consulted, including reports from the regional agencies for private forest development, the results of the *Forest Resource Development Program* and documents concerning the application of the *Regulation respecting standards of forest management for forests in the public domain*.

Changes in forest composition between the 1970s and the 1990s

An analysis of the data¹ collected from the three forest survey programs clearly shows both the nature and scope of the changes to Québec's forests between the 1970s and the 1990s. One of the principal conclusions is that the relative importance of softwood stands, which accounted for more than half of all forest land at the time of the first survey, declined by 10% during the period under consideration. The decline was particularly noticeable in the case of fir and spruce forests. Spruce budworm epidemics were responsible for high mortality rates among balsam fir populations, resulting in the conversion of some softwood stands into mixed stands. There were therefore more mixed stands at the end of the period than at the beginning. This particular change is especially obvious in the case of mixed intolerant hardwood stands, such as those containing both fir and white birch.

Although the areas affected by logging have increased steadily since the first survey, they are still smaller than those affected by natural disturbances such as fires, insect infestations, windfall and so on. At the time of the first survey there were virtually no areas affected by moderate to severe infestations, but by the time of the second (1980s) and third (1990s) programs, approximately 13% and 12% of the productive forest had been attacked.

Pressure on the forest from natural disturbances and human activities also caused a decline in the percentage of high-density stands. The spruce budworm epidemic that raged from the mid-1970s to the 1990s was the main culprit in softwood stands, while partial cutting was to blame in tolerant hardwood and mixed intolerant hardwood stands. During the same period, fires and clear cutting (where all mature trees of commercial species in a given stand are harvested) produced a slight increase in the percentage of regenerated and regenerating stands. The relative importance of mature forests also increased slightly, due to the higher percentage of mixed and hardwood stands growing to maturity.

¹ The analysis method used does have its limitations, however. For example, some areas are not covered in their entirety, in particular the Eastern mossy spruce forest, and management activities carried out in recent years are excluded because only the original survey data were used.

Disturbance agents in the forests

Large areas of forests were subjected to disturbances in the period 1995-1996 to 1999-2000. Forest fires were particularly destructive between 1995 and 1997, the ice storm of 1998 caused extensive damage in certain regions, and defoliating insect populations grew significantly in 1999.

In the period 1995 to 1999, fire damaged a total area of 572,799 ha, including 196,000 ha in 1995, 244,000 ha in 1996 and 94,000 ha in 1997. In 1995, the Saguenay–Lac-Saint-Jean, Mauricie, Abitibi-Témiscamingue and Gaspé-Magdalen Islands regions suffered the most. In 1996, the Saguenay–Lac-Saint-Jean and Gaspé-Magdalen Islands regions were hit once again, along with the North Shore, while in 1997 it was the turn of Northern Québec.

The ice storm that hit southern Québec in January 1998 damaged nearly 1,770,000 ha of forests in the Montérégie, Centre-du-Québec, Chaudière-Appalaches, Eastern Townships, Outaouais and Laurentides regions. Most of the damaged stands (92%) were privately owned.

The area affected by the principal softwood defoliating insects increased from 6,650 ha to 37,689 ha between 1995 and 1998, and in 1999 soared to 495,105 ha. The epidemics were concentrated mainly in the North Shore (hemlock looper) and Outaouais (spruce budworm) regions. The areas attacked by hardwood defoliators, which dropped from 5,894 ha to just 280 ha between 1995 and 1997, also increased significantly in 1999, to 169,531 ha. The forest tent caterpillar was responsible for most of the damage to hardwoods, especially in Abitibi-Témiscamingue.

Management of the public and private forests

A number of general conclusions emerged from the figures relating to forest management and development activities between 1995 and 1999. First, the volumes of wood harvested in Québec's public forests increased steadily over the five-year period. TSFMA holders cut 133.8 Mm³ of softwoods (87% of the allowable cut) and 22.3 Mm³ of hardwoods (37% of the allowable cut) in the common areas, and also intensified their management activities significantly, carrying out silvicultural work over more than 1,337,000 ha (excluding regeneration cutting). Artificial regeneration work exceeded the goals for the period, due to the fact that large fire-damaged areas had to be restored to production.

Pre-commercial thinning was also more popular than expected, as forest managers tried to make softwood stands less vulnerable to the spruce budworm, first by promoting the growth of less vulnerable species and second by reducing intra- and inter-species competition, which hinders tree growth. Selection and pre-selection cutting were also widely practised.

Private forest timber harvests increased during the period under consideration, with a total softwood cut of 23.3 Mm³ and a total hardwood cut of 26.2 Mm³ (90% and 67% of the allowable cut respectively). Thanks to the various assistance programs available to woodlot owners, more than 24,500 management plans were produced and silvicultural work was carried out over a total area of 320,000 ha. The 17 regional agencies for private forest development, created in 1996, all produced protection and development plans for their respective areas.

Knowledge acquisition, monitoring and assessment

As pointed out earlier, the observed changes in the state of Québec's forests are due to a number of natural and human factors. One of the main missions of the Ministère des Ressources naturelles is to acquire knowledge about the forests, forest-related activities and the factors that affect them. To do this, it carries out surveys, research and development, monitoring and various kinds of assessments.

In the period covered by this Report, the Ministère des Ressources naturelles:

- Intensified its environmental assessment and monitoring activities for forest management work (impacts on wildlife, wildlife habitats and soils);
- Introduced a method in 1998-1999 that enables it to systematically monitor the application of the *Regulation respecting standards of forest management for forests in the public domain*, revised in 1996;
- Carried out several research/development projects;
- Continued with its third survey program;
- Continued work on the Ecoforest Information System, known by its French acronym SIEF;
- Drew up a list of the principal forest insects and diseases;
- Assessed compliance with the commitments set out in the *Review of Forest Biodiversity*;
- Drew up a preliminary report on the results of the *Forest Protection Strategy*.

In accordance with the commitments made in the *Forest Protection Strategy*, the maximum area of single-block cutting areas was reduced. Selection and pre-selection cutting increased significantly over the period, as did pre-commercial thinning, early reforestation and the use of large seedlings. Chemical phytocide use in the forests was gradually phased out, and should be eliminated completely by 2001. Contrary to the wishes of the *Strategy's* authors, however, commercial thinning and shelterwood cutting did not increase to any significant degree. The situation should improve in the coming years, because these two types of treatment are particularly well suited to stands thinned early in their life cycles, notably by pre-commercial thinning, and to plantations where the trees have reached harvestable size.

The MRN also complied with its commitments under the *Review of Forest Biodiversity*, published in 1996, by improving its knowledge of biodiversity in Québec's forests and of the impacts of current management practices. It adopted a preventive approach aimed at preserving certain rare, exceptional or fragile ecosystems, and began to develop a new forest management approach that will promote the maintenance of biodiversity in forest areas under management.

Some interesting results were obtained in the areas of genetic tree improvement, plantation creation and maintenance, selection cutting, layering, large seedling production and early reforestation. The MRN's researchers established new natural forest production tables that allow for a much more accurate assessment of stand productivity. The results of all this research have obviously been incorporated into management processes. For example, the production tables are now used when preparing the general forest management plans.

During the period under consideration, the MRN continued to monitor atmospheric pollutants and climate change in order to assess their long-term impact on forest ecosystem dynamics. Its survey, research, assessment and monitoring work allows it to assess the state of the forests and influence changes in order to achieve sustainable development.

More regional development and partnerships

Regional actors and local communities are playing an increasingly important role in forest management. In the five-year period covered by this Report, the MRN's shift towards regionalization and joint action led to the signature of thirteen special agreements with different regional authorities, eight territorial management contracts with RCMs, and 95 forest management contracts with Native communities, RCMs, joint management boards and other organizations. Fifteen inhabited forest pilot projects were also launched. Their goal is to create new business partnerships between forest users, with greater participation by local populations in resource management decisions.

In addition to promoting partnerships, the *Forest Resource Development Program* generated major investments in all regions of Québec, and led to the completion of numerous silvicultural, wildlife, environmental, recreational and educational projects.

Seventeen regional agencies for private forest development were created in 1996-1997, allowing for hitherto unprecedented cooperation between the MRN, the municipal community, forest producers' organizations and associations of wood processing plant operating permit holders. The agencies are responsible for promoting and directing the development of private forests with a view to achieving sustainable development.

A renewed forest system

It was also during the period covered by this Report that the MRN launched its in-depth review of Québec's forest system, an exercise that, among other things, allowed it to examine the results achieved by the *Forest Act*, adopted in 1987. The forest system review also offered an opportunity to consult the forest industry, local and regional communities and the general public, in a process that ultimately led to a broad consensus on the future of Québec's forests.

Some of the principal goals of the renewed forest system are to involve ordinary citizens to a much greater extent in forest management, improve the planning of forest management activities and achieve tighter control over the holders of rights in the forests (TSFMAs, FMCs, etc.).

The period covered by this third *Report on the State of Québec's Forests 1995-1999* was marked by some extensive natural disturbances and an increase in logging activities, and also by an intensification of forest management work. Generally speaking, the period was one of transition for forest management in Québec, since it was during these five years that the forest system renewal was prepared. Subsequent five-year reports will be based on a much broader pool of knowledge and will therefore be able to provide a more complete portrait of the forests, whose sustainable management depends first and foremost on preserving a balance between the social, economic and environmental roles of a heritage that belongs to all Québécois.

This summary report, in French and English, along with the detailed *Rapport sur l'état des forêts québécoises 1995-1999* (in French only), is available on the Web site of the Ministère des Ressources naturelles: www.mrn.gouv.qc.ca/forets

Summary informations on forests throughout Québec and in the regions

QUÉBEC	
Total area ¹ : 1,496,647 km ²	
Area of forest land ² : 655,124 km ²	89% public 11% private
Area of accessible productive forest land ² : 518,163 km ²	
Gross marketable volume ² : 4,367.9 Mm ³	68% softwood 32% hardwood
Summary 1995-1999	
Area damaged by fire between 1995 and 1999 ³ : 572,799 ha	
Area of natural stands damaged by the main defoliating insects ⁴ :	
	1995 1999
- Softwood:	6,650 ha 495,105 ha
- Hardwood:	5,894 ha 169,531 ha
Area damaged by the 1998 ice storm: 1,770,000 ha	
Forest management in the period 1995-1999 ⁵ :	
- Total softwood harvest ⁶ :	158.8 Mm ³ (87% of allowable cut ⁷)
- Total hardwood harvest ⁶ :	49.0 Mm ³ (49% of allowable cut ⁷)
- Silvicultural work carried out ⁸ :	
- Regeneration cut:	1,419,634 ha - Artificial regeneration: 370,841 ha
- Partial cut:	315,676 ha - Other treatments: 994,030 ha
Development of various forest resources between 1995 and 1999 ⁹ :	
- Silvicultural treatments (<i>Objectives: forest-wildlife, landscapes and environment</i>): 20,640 ha	
- Roads:	2,098 km
- Trails:	7,979 km
Survey of exceptional forest ecosystems (rare, sanctuary and old):	
199 Protected EFES ¹⁰	(15,722 ha) 385 Unprotected EFES (18,161 ha)

BAS-SAINT-LAURENT (01)	
Total area ¹ : 22,637 km ²	
Area of forest land ² : 19,320 km ²	59% public 41% private
Area of accessible productive forest land ² : 18,586 km ²	
Gross marketable volume ² : 164.8 Mm ³	57% softwood 43% hardwood
Summary 1995-1999	
Area damaged by fire between 1995 and 1999 ³ : 112 ha	
Area of natural stands damaged by the main defoliating insects ⁴ :	
	1995 1999
- Softwood:	0 ha 0 ha
- Hardwood:	0 ha 0 ha
Area damaged by the 1998 ice storm: 0 ha	
Forest management in the period 1995-1999 ⁵ :	
- Total softwood harvest ⁶ :	10.3 Mm ³ (105% of allowable cut ⁷)
- Total hardwood harvest ⁶ :	5.0 Mm ³ (79% of allowable cut ⁷)
- Silvicultural work carried out ⁸ :	
- Regeneration cut:	73,600 ha - Artificial regeneration: 38,631 ha
- Partial cut:	29,659 ha - Other treatments: 143,809 ha
Development of various forest resources between 1995 and 1999 ⁹ :	
- Silvicultural treatments (<i>Objectives: forest-wildlife, landscapes and environment</i>): 3,641 ha	
- Roads:	245 km
- Trails:	1,024 km
Survey of exceptional forest ecosystems (rare, sanctuary and old):	
4 Protected EFES ¹⁰	(43 ha) 22 Unprotected EFES (1,171 ha)

SAGUENAY-LAC-SAINT-JEAN (02)

Total area¹: 106,397 km²
Area of forest land²: 93,324 km² 95% public 5% private
Area of accessible productive forest land²: 79,584 km²
Gross marketable volume²: 619.0 Mm³ 80% softwood 20% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 110,566 ha
Area of natural stands damaged by the main defoliating insects⁴:
1995 1999
- Softwood: 0 ha 265 ha
- Hardwood: 0 ha 0 ha
Area damaged by the 1998 ice storm: 0 ha
Forest management in the period 1995-1999⁵:
- Total softwood harvest⁶: 37.6 Mm³ (100% of allowable cut)
- Total hardwood harvest⁶: 3.9 Mm³ (41% of allowable cut)
- Silvicultural work carried out⁸:
- Regeneration cut: 367,165 ha - Artificial regeneration: 83,854 ha
- Partial cut: 8,439 ha - Other treatments: 192,128 ha
Development of various forest resources between 1995 and 1999⁹:
- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 3,654 ha
- Roads: 364 km
- Trails: 667 km
Survey of exceptional forest ecosystems (rare, sanctuary and old):
10 Protected EFES¹⁰ (561 ha) 9 Unprotected EFES (198 ha)

CAPITALE-NATIONALE (03)

Total area¹: 19,601 km²
Area of forest land²: 17,129 km² 70% public 30% private
Area of accessible productive forest land²: 15,528 km²
Gross marketable volume²: 121.4 Mm³ 55% softwood 45% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 8,193 ha
Area of natural stands damaged by the main defoliating insects⁴:
1995 1999
- Softwood: 0 ha 0 ha
- Hardwood: 0 ha 0 ha
Area damaged by the 1998 ice storm: 0 ha
Forest management in the period 1995-1999⁵:
- Total softwood harvest⁶: 4.9 Mm³ (69% of allowable cut)
- Total hardwood harvest⁶: 1.5 Mm³ (27% of allowable cut)
- Silvicultural work carried out⁸:
- Regeneration cut: 40,913 ha - Artificial regeneration: 6,458 ha
- Partial cut: 6,193 ha - Other treatments: 32,044 ha
Development of various forest resources between 1995 and 1999⁹:
- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 571 ha
- Roads: 4 km
- Trails: 368 km
Survey of exceptional forest ecosystems (rare, sanctuary and old):
18 Protected EFES¹⁰ (4,183 ha) 18 Unprotected EFES (349 ha)

MAURICIE (04)

Total area¹: 39,778 km²
Area of forest land²: 33,916 km² 83% public 17% private
Area of accessible productive forest land²: 31,356 km²
Gross marketable volume²: 312.8 Mm³ 56% softwood 44% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 74,585 ha
Area of natural stands damaged by the main defoliating insects⁴:
1995 1999
- Softwood: 0 ha 227 ha
- Hardwood: 3,375 ha 0 ha
Area damaged by the 1998 ice storm: 0 ha
Forest management in the period 1995-1999⁵:
- Total softwood harvest⁶: 15.7 Mm³ (99% of allowable cut)
- Total hardwood harvest⁶: 4.5 Mm³ (46% of allowable cut)
- Silvicultural work carried out⁸:
- Regeneration cut: 122,501 ha - Artificial regeneration: 34,962 ha
- Partial cut: 22,684 ha - Other treatments: 70,584 ha
Development of various forest resources between 1995 and 1999⁹:
- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 1,125 ha
- Roads: 115 km
- Trails: 445 km
Survey of exceptional forest ecosystems (rare, sanctuary and old):
9 Protected EFES¹⁰ (583 ha) 10 Unprotected EFES (611 ha)

ESTRIE (05)

Total area¹: 10,429 km²
Area of forest land²: 7,862 km² 9% public 91% private
Area of accessible productive forest land²: 7,653 km²
Gross marketable volume²: 86.4 Mm³ 36% softwood 64% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 89 ha
Area of natural stands damaged by the main defoliating insects⁴:
1995 1999
- Softwood: 0 ha 27 ha
- Hardwood: 0 ha 0 ha
Area damaged by the 1998 ice storm: 523,000 ha
Forest management in the period 1995-1999⁵:
- Total softwood harvest⁶: 3.0 Mm³ (104% of allowable cut)
- Total hardwood harvest⁶: 4.2 Mm³ (88% of allowable cut)
- Silvicultural work carried out⁸:
- Regeneration cut: 1,222 ha - Artificial regeneration: 6,391 ha
- Partial cut: 12,288 ha - Other treatments: 13,000 ha
Development of various forest resources between 1995 and 1999⁹:
- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 473 ha
- Roads: 12 km
- Trails: 192 km
Survey of exceptional forest ecosystems (rare, sanctuary and old):
7 Protected EFES¹⁰ (1,005 ha) 13 Unprotected EFES (601 ha)

MONTRÉAL (06)

Total area¹: 621 km²
Area of forest land²: 43 km² 3% public 97% private
Area of accessible productive forest land²: 43 km²
Gross marketable volume²: 0.4 Mm³ 9% softwood 91% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 0 ha
Area of natural stands damaged by the main defoliating insects⁴:
1995 1999
- Softwood: 0 ha 0 ha
- Hardwood: 0 ha 0 ha
Area damaged by the 1998 ice storm: 1,000 ha
Forest management in the period 1995-1999⁵:
- Total softwood harvest⁶: 0 Mm³ (0% of allowable cut)
- Total hardwood harvest⁶: 0 Mm³ (0% of allowable cut)
- Silvicultural work carried out⁸:
- Regeneration cut: 0 ha - Artificial regeneration: 0 ha
- Partial cut: 0 ha - Other treatments: 0 ha
Development of various forest resources between 1995 and 1999⁹:
- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 0 ha
- Roads: 0 km
- Trails: 0 km
Survey of exceptional forest ecosystems (rare, sanctuary and old):
14 Protected EFES¹⁰ (169 ha) 3 Unprotected EFES (46 ha)

OUTAOUAIS (07)

Total area¹: 34,103 km²
Area of forest land²: 28,487 km² 81% public 19% private
Area of accessible productive forest land²: 27,214 km²
Gross marketable volume²: 366.0 Mm³ 32% softwood 68% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 421 ha
Area of natural stands damaged by the main defoliating insects⁴:
1995 1999
- Softwood: 5,869 ha 22,201 ha
- Hardwood: 1,200 ha 0 ha
Area damaged by the 1998 ice storm: 346,000 ha
Forest management in the period 1995-1999⁵:
- Total softwood harvest⁶: 5.2 Mm³ (59% of allowable cut)
- Total hardwood harvest⁶: 8.0 Mm³ (50% of allowable cut)
- Silvicultural work carried out⁸:
- Regeneration cut: 35,047 ha - Artificial regeneration: 5,313 ha
- Partial cut: 95,680 ha - Other treatments: 34,811 ha
Development of various forest resources between 1995 and 1999⁹:
- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 759 ha
- Roads: 108 km
- Trails: 458 km
Survey of exceptional forest ecosystems (rare, sanctuary and old):
30 Protected EFES¹⁰ (1,295 ha) 53 Unprotected EFES (2,637 ha)

ABITIBI-TÉMISCAMINGUE (08)

Total area¹: 64,547 km²
 Area of forest land²: 55,061 km² 93% public 7% private
 Area of accessible productive forest land²: 48,554 km²
 Gross marketable volume²: 444.5 Mm³ 54% softwood 46% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 60,998 ha
 Area of natural stands damaged by the main defoliating insects⁴:

	1995	1999
- Softwood:	25 ha	0 ha
- Hardwood:	0 ha	169,258 ha

Area damaged by the 1998 ice storm: 0 ha
 Forest management in the period 1995-1999⁵:

- Total softwood harvest⁶: 13.8 Mm³ (70% of allowable cut⁷)
- Total hardwood harvest⁶: 5.3 Mm³ (40% of allowable cut⁷)
- Silvicultural work carried out⁸:
 - Regeneration cut: 174,084 ha - Artificial regeneration: 49,154 ha
 - Partial cut: 60,675 ha - Other treatments: 95,659 ha

Development of various forest resources between 1995 and 1999⁹:

- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 877 ha
- Roads: 154 km
- Trails: 1,287 km

Survey of exceptional forest ecosystems (rare, sanctuary and old):
 6 Protected EFES¹⁰ (375 ha) 41 Unprotected EFES (2,394 ha)

CÔTE-NORD (09)

Total area¹: 272,290 km²
 Area of forest land²: 198,936 km² 99% public 1% private
 Area of accessible productive forest land²: 143,736 km²
 Gross marketable volume²: 1 108.7 Mm³ 93% softwood 7% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 48,328 ha
 Area of natural stands damaged by the main defoliating insects⁴:

	1995	1999
- Softwood:	672 ha	472,139 ha
- Hardwood:	0 ha	0 ha

Area damaged by the 1998 ice storm: 0 ha
 Forest management in the period 1995-1999⁵:

- Total softwood harvest⁶: 19.7 Mm³ (71% of allowable cut⁷)
- Total hardwood harvest⁶: 0.2 Mm³ (5% of allowable cut⁷)
- Silvicultural work carried out⁸:
 - Regeneration cut: 200,438 ha - Artificial regeneration: 34,799 ha
 - Partial cut: 1,453 ha - Other treatments: 54,086 ha

Development of various forest resources between 1995 and 1999⁹:

- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 546 ha
- Roads: 684 km
- Trails: 995 km

Survey of exceptional forest ecosystems (rare, sanctuary and old):
 6 Protected EFES¹⁰ (46 ha) 19 Unprotected EFES (2,803 ha)

NORD-DU-QUÉBEC (10)

Total area¹: 835,455 km²
 Area of forest land²: 133,324 km² 99% public 1% private
 Area of accessible productive forest land²: 83,688 km²
 Gross marketable volume²: 525.6 Mm³ 88% softwood 12% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 239,094 ha
 Area of natural stands damaged by the main defoliating insects⁴:

	1995	1999
- Softwood:	0 ha	0 ha
- Hardwood:	0 ha	0 ha

Area damaged by the 1998 ice storm: 0 ha
 Forest management in the period 1995-1999⁵:

- Total softwood harvest⁶: 25.4 Mm³ (100% of allowable cut⁷)
- Total hardwood harvest⁶: 1.4 Mm³ (35% of allowable cut⁷)
- Silvicultural work carried out⁸:
 - Regeneration cut: 256,863 ha - Artificial regeneration: 58,441 ha
 - Partial cut: 3,139 ha - Other treatments: 134,994 ha

Development of various forest resources between 1995 and 1999⁹:

- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 912 ha
- Roads: 3 km
- Trails: 943 km

Survey of exceptional forest ecosystems (rare, sanctuary and old):
 0 Protected EFES¹⁰ (0 ha) 7 Unprotected EFES (323 ha)

GASPÉSIE-ÎLES-DE-LA-MADELEINE (11)

Total area¹: 20,547 km²
 Area of forest land²: 19,521 km² 83% public 17% private
 Area of accessible productive forest land²: 16,450 km²
 Gross marketable volume²: 135.8 Mm³ 69% softwood 31% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 29,798 ha
 Area of natural stands damaged by the main defoliating insects⁴:

	1995	1999
- Softwood:	0 ha	0 ha
- Hardwood:	0 ha	0 ha

Area damaged by the 1998 ice storm: 0 ha
 Forest management in the period 1995-1999⁵:

- Total softwood harvest⁶: 10.4 Mm³ (88% of allowable cut⁷)
- Total hardwood harvest⁶: 1.1 Mm³ (35% of allowable cut⁷)
- Silvicultural work carried out⁸:
 - Regeneration cut: 73,427 ha - Artificial regeneration: 15,738 ha
 - Partial cut: 3,627 ha - Other treatments: 101,969 ha

Development of various forest resources between 1995 and 1999⁹:

- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 399 ha
- Roads: 206 km
- Trails: 466 km

Survey of exceptional forest ecosystems (rare, sanctuary and old):
 18 Protected EFES¹⁰ (4,898 ha) 17 Unprotected EFES (1,435 ha)

CHAUDIÈRE-APPALACHES (12)

Total area¹: 15,216 km²
 Area of forest land²: 11,276 km² 14% public 86% private
 Area of accessible productive forest land²: 10,899 km²
 Gross marketable volume²: 93.6 Mm³ 44% softwood 56% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 37 ha
 Area of natural stands damaged by the main defoliating insects⁴:

	1995	1999
- Softwood:	0 ha	0 ha
- Hardwood:	0 ha	0 ha

Area damaged by the 1998 ice storm: 200,000 ha
 Forest management in the period 1995-1999⁵:

- Total softwood harvest⁶: 4.8 Mm³ (93% of allowable cut⁷)
- Total hardwood harvest⁶: 3.5 Mm³ (63% of allowable cut⁷)
- Silvicultural work carried out⁸:
 - Regeneration cut: 6,247 ha - Artificial regeneration: 18,649 ha
 - Partial cut: 3,423 ha - Other treatments: 44,851 ha

Development of various forest resources between 1995 and 1999⁹:

- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 498 ha
- Roads: 0 km
- Trails: 204 km

Survey of exceptional forest ecosystems (rare, sanctuary and old):
 6 Protected EFES¹⁰ (86 ha) 19 Unprotected EFES (819 ha)

LAVAL (13)

Total area¹: 261 km²
 Area of forest land²: 59 km² 0% public 100% private
 Area of accessible productive forest land²: 59 km²
 Gross marketable volume²: 0.3 Mm³ 17% softwood 83% hardwood

Summary 1995-1999

Area damaged by fire between 1995 and 1999³: 0 ha
 Area of natural stands damaged by the main defoliating insects⁴:

	1995	1999
- Softwood:	0 ha	0 ha
- Hardwood:	0 ha	0 ha

Area damaged by the 1998 ice storm: 0 ha
 Forest management in the period 1995-1999⁵:

- Total softwood harvest⁶: 0 Mm³ (0% of allowable cut⁷)
- Total hardwood harvest⁶: 0 Mm³ (0% of allowable cut⁷)
- Silvicultural work carried out⁸:
 - Regeneration cut: 0 ha - Artificial regeneration: 0 ha
 - Partial cut: 0 ha - Other treatments: 0 ha

Development of various forest resources between 1995 and 1999⁹:

- Silvicultural treatments (*Objectives: forest-wildlife, landscapes and environment*): 0 ha
- Roads: 0 km
- Trails: 0 km

Survey of exceptional forest ecosystems (rare, sanctuary and old):
 3 Protected EFES¹⁰ (19 ha) 10 Unprotected EFES (123 ha)

LANAUDIÈRE (14)			
Total area ¹ :	13,405 km ²		
Area of forest land ² :	10,497 km ²	77% public	23% private
Area of accessible productive forest land ² :	9,894 km ²		
Gross marketable volume ² :	104.7 Mm ³	41% softwood	59% hardwood
Summary 1995-1999			
Area damaged by fire between 1995 and 1999 ³ : 212 ha			
Area of natural stands damaged by the main defoliating insects ⁴ :			
	1995	1999	
- Softwood:	0 ha	0 ha	
- Hardwood:	0 ha	0 ha	
Area damaged by the 1998 ice storm: 1,300 ha			
Forest management in the period 1995-1999 ⁵ :			
- Total softwood harvest ⁶ :	2.6 Mm ³	(75% of allowable cut ⁷)	
- Total hardwood harvest ⁶ :	2.6 Mm ³	(57% of allowable cut ⁷)	
- Silvicultural work carried out ⁸ :			
- Regeneration cut:	31,061 ha	- Artificial regeneration:	3,651 ha
- Partial cut:	11,380 ha	- Other treatments:	19,771 ha
Development of various forest resources between 1995 and 1999 ⁹ :			
- Silvicultural treatments (<i>Objectives: forest-wildlife, landscapes and environment</i>):	2,558 ha		
- Roads:	77 km		
- Trails:	420 km		
Survey of exceptional forest ecosystems (rare, sanctuary and old):			
	1 Protected EFES ¹⁰ (139 ha)		7 Unprotected EFES (343 ha)

MONTÉRÉGIE (16)			
Total area ¹ :	11,534 km ²		
Area of forest land ² :	3,692 km ²	2% public	98% private
Area of accessible productive forest land ² :	3,543 km ²		
Gross marketable volume ² :	40.4 Mm ³	25% softwood	75% hardwood
Summary 1995-1999			
Area damaged by fire between 1995 and 1999 ³ : 170 ha			
Area of natural stands damaged by the main defoliating insects ⁴ :			
	1995	1999	
- Softwood:	0 ha	0 ha	
- Hardwood:	0 ha	0 ha	
Area damaged by the 1998 ice storm: 211 000 ha			
Forest management in the period 1995-1999 ⁵ :			
- Total softwood harvest ⁶ :	0.4 Mm ³	(40% of allowable cut ⁷)	
- Total hardwood harvest ⁶ :	1.0 Mm ³	(43% of allowable cut ⁷)	
- Silvicultural work carried out ⁸ :			
- Regeneration cut:	0 ha	- Artificial regeneration:	1,676 ha
- Partial cut:	2,053 ha	- Other treatments:	3,101 ha
Development of various forest resources between 1995 and 1999 ⁹ :			
- Silvicultural treatments (<i>Objectives: forest-wildlife, landscapes and environment</i>):	385 ha		
- Roads:	4 km		
- Trails:	188 km		
Survey of exceptional forest ecosystems (rare, sanctuary and old):			
	40 Protected EFES ¹⁰ (1,081 ha)		98 Unprotected EFES (3,230 ha)

LAURENTIDES (15)			
Total area ¹ :	22,498 km ²		
Area of forest land ² :	18,984 km ²	74% public	26% private
Area of accessible productive forest land ² :	17,866 km ²		
Gross marketable volume ² :	213,0 Mm ³	31% softwood	69% hardwood
Summary 1995-1999			
Area damaged by fire between 1995 and 1999 ³ : 172 ha			
Area of natural stands damaged by the main defoliating insects ⁴ :			
	1995	1999	
- Softwood:	0 ha	0 ha	
- Hardwood:	0 ha	273 ha	
Area damaged by the 1998 ice storm: 332,000 ha			
Forest management in the period 1995-1999 ⁵ :			
- Total softwood harvest ⁶ :	4.2 Mm ³	(79% of allowable cut ⁷)	
- Total hardwood harvest ⁶ :	5.6 Mm ³	(60% of allowable cut ⁷)	
- Silvicultural work carried out ⁸ :			
- Regeneration cut:	37,022 ha	- Artificial regeneration:	6,172 ha
- Partial cut:	51,682 ha	- Other treatments:	37,600 ha
Development of various forest resources between 1995 and 1999 ⁹ :			
- Silvicultural treatments (<i>Objectives: forest-wildlife, landscapes and environment</i>):	2,565 ha		
- Roads:	56 km		
- Trails:	275 km		
Survey of exceptional forest ecosystems (rare, sanctuary and old):			
	21 Protected EFES ¹⁰ (977 ha)		34 Unprotected EFES (992 ha)

CENTRE-DU-QUÉBEC (17)			
Total area ¹ :	7,329 km ²		
Area of forest land ² :	3,692 km ²	3% public	97% private
Area of accessible productive forest land ² :	3,509 km ²		
Gross marketable volume ² :	30.5 Mm ³	37% softwood	63% hardwood
Summary 1995-1999			
Area damaged by fire between 1995 and 1999 ³ : 24 ha			
Area of natural stands damaged by the main defoliating insects ⁴ :			
	1995	1999	
- Softwood:	84 ha	246 ha	
- Hardwood:	1,019 ha	0 ha	
Area damaged by the 1998 ice storm: 155,000 ha			
Forest management in the period 1995-1999 ⁵ :			
- Total softwood harvest ⁶ :	0.9 Mm ³	(132% of allowable cut ⁷)	
- Total hardwood harvest ⁶ :	1.1 Mm ³	(75% of allowable cut ⁷)	
- Silvicultural work carried out ⁸ :			
- Regeneration cut:	46 ha	- Artificial regeneration:	6,951 ha
- Partial cut:	3,300 ha	- Other treatments:	15,625 ha
Development of various forest resources between 1995 and 1999 ⁹ :			
- Silvicultural treatments (<i>Objectives: forest-wildlife, landscapes and environment</i>):	1,677 ha		
- Roads:	66 km		
- Trails:	47 km		
Survey of exceptional forest ecosystems (rare, sanctuary and old):			
	6 Protected EFES ¹⁰ (262 ha)		5 Unprotected EFES (86 ha)

1 The total area excludes large stretches of water such as the St. Lawrence River and Gulf, as well as James Bay, Hudson Bay, Ungava Bay and the Hudson Straits.

2 The data for regions 02, 03, 04, 09, 10, 14 and 15 were obtained from the second forest survey program, and those for regions 01, 05, 06, 07, 08, 11, 12, 13, 16 and 17 from the third program.

3 Only areas falling into the intensive protection zone were considered.

4 The principal defoliating insects for which damage was surveyed from the air are, for softwoods, the spruce budworm, the hemlock looper and the jack pine budworm, and for hardwoods, the forest tent caterpillar and the large aspen tortrix.

5 Including logging and the principal silvicultural treatments carried out in the common areas (TSFMA), forest reserves (FMC) and private forests, but excluding those carried out on federal public lands.

6 For the public forests, volumes of timber left on logging sites are not included in harvest figures. For the private forests, the harvest is calculated on the basis of the volumes the processing mills reported having purchased from the private forests (forest register), plus an estimate of firewood volumes (hardwoods) cut from private woodlots.

7 The private forest allowable cut was estimated from the FPBQ report entitled *La forêt privée au Québec, son potentiel ligneux* (November 1988). Data relating to large private holdings not used for the calculation, together with some Aboriginal Category IB lands, were added.

8 For the common areas, "Silvicultural Work Carried Out" refers to treatments carried out by TSFMA holders and meeting the quality standards established by the MRN. The data for 1998 are provisional and those for 1999 are estimates. For the private woodlots, silvicultural treatments are treatments carried out under the various assistance programs. Unsubsidized work, mostly partial cuts and clear cuts, has also been excluded (data unavailable).

9 Including work carried out under the Forest Resource Development Program and the White-tailed Deer Yard Management Support Program.

10 Mainly located in parks or ecological reserves.



OUR FORESTS

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The full report, entitled *Rapport sur l'État des forêts québécoises
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