forestry report

December 1982 (No. 27) Northern Forest Research Centre Edmonton, Alberta

Manitoba's forests

The forest is Canada's most valuable renewable natural resource, and the benefits provided by the forests to the people of Manitoba are numerous.

Some benefits are intangible and difficult to assess, such as protecting agricultural crops, providing food and shelter for wildlife, regulating water flow, and creating a pleasing environment for hikers, campers, and nature lovers.

Other benefits are tangible and can be measured in terms of the various goods and services that make up the forest industry in Manitoba.

The tables and facts presented on the following pages attempt to provide a comprehensive, although brief, picture of this significant industry, which is the second largest manufacturing group in Manitoba. Information presented here is based on data collected in 1979-80.

In this issue:

Manitoba forestry facts

Winter logging in the early 1900s

Area classification

	Manitoba '000 km²	Manitoba %	Canada '000 km²	Canada %
Land classification				
Forest[a]—Inventoried	240	—	3 424	—
—Noninventoried	109	—	940	—
—Total	349	54	4 364	44
Agriculture	76	11	672	7
Urban and cleared	1	—[b]	34	—[b]
Unclassified[c]	122	19	4 097	41
Total land	548	84	9 167	92
Total water	102	16	755	8
Total area	650	100	9 922	100

[a] Includes inventoried and best estimates of noninventoried forest land, with forest defined as land primarily intended for growing or currently supporting fores .
[b] Less than 1%.
[c] Primarily wild land that includes tundra, barrens, and alpines and is generally uninfluenced by human activity.

Sources: Canadian Forestry Service and Statistics Canada.

- ***Approximately 25% of Canada's productive forest land is found in the prairies; Manitoba has 8.9% of Canada's productive forest.***

Forest land ownership

	Manitoba '000 km²	Manitoba %	Canada '000 km²	Canada %
Provincial crown	340	98	3 243	74
Federal crown	4	1	919	21
Private[a]	5	1	199	5
Undetermined	0	0	3	—[b]
Total	349	100	4 364	100

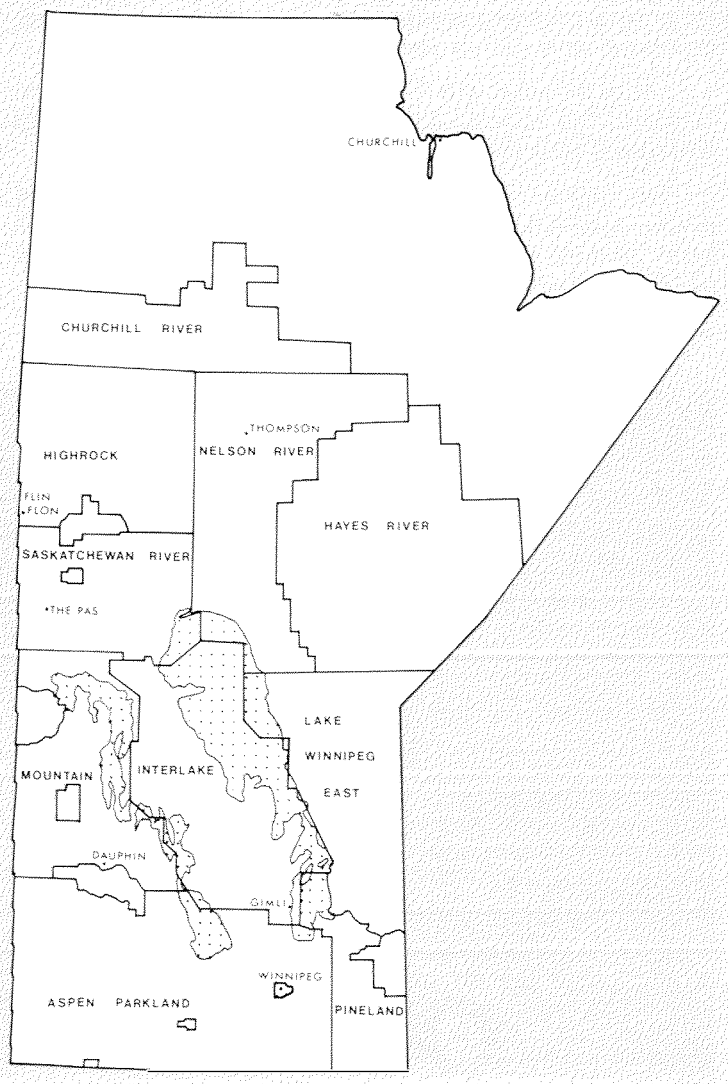
[a] Land that is not the property of the crown. For southern Manitoba a more comprehensive forest inventory and ownership determination is being completed.
[b] Less than 1%.

Source: Canadian Forestry Service.

Conversion factors

Metric		Imperial
1 centimetre (cm)	=	0.3937 inch (in.)
1 metre (m)	=	3.2808 feet (ft)
1 cubic metre (m^3) roundwood	=	35.3147 cubic feet (ft^3)
1 m^3 roundwood	=	0.4155 cords (solid wood)
0.0283 m^3 roundwood	=	1 ft^3
2.4067 m^3 roundwood	=	1 cord (solid wood)
1 tonne (t)	=	1.1023 tons (T)
1 t (chips)	=	0.9167 bone dry units (BDU)
1 m^3 processed lumber	=	616 board feet (foot board measure, fbm)
0.0016 m^3 processed lumber	=	1 board foot (fbm)
1 m^2 sheet product (1 mm basis)	=	6.8 ft^2 (1/16 in. basis)
0.1470 m^2 sheet product (1 mm basis)	=	1 ft^2 (1/16-in. basis)
1 square kilometre (km^2)	=	0.3861 square miles (mi^2)
1 kilogram (kg)	=	2.2046 pounds (lb)

For definitions and uses of forest products listed in this report, refer to *Canadian woods, their properties and uses*, E.J. Mullins and T.S. McKnight (Eds.).



Manitoba forest sections

Volume of forest growing stock

Forest section	% by coniferous species: White spruce	Black spruce	Jack pine	Balsam fir	Larch	Eastern white cedar	Total coniferous[a]: Volume[b] '000 m³	%	% by deciduous species: Trembling aspen	Balsam poplar	White birch	Other[c]	Total deciduous[a]: Volume[b] '000 m³	%
Aspen Parkland[d]	6.5	0.1	0.1	0.6	1.8	0	3 586	0.8	5.3	4.1	3.0	55.7	12 372	5.9
Pineland	1.5	3.5	2.6	7.1	30.8	95.9	16 513	3.7	6.6	8.6	5.6	10.4	14 214	6.8
Mountain[d]	28.6	8.0	7.0	14.3	11.9	0.4	43 886	9.9	26.0	50.2	21.0	16.0	59 437	28.5
Interlake[d]	5.7	3.9	4.3	22.6	8.0	2.0	20 992	4.7	9.2	6.5	8.0	2.4	17 995	8.6
Lake Winnipeg East	9.6	11.7	24.2	26.0	36.2	1.7	74 809	16.8	17.8	4.4	12.7	5.2	31 860	15.3
Saskatchewan River	12.1	5.7	8.8	3.2	4.2	0	32 738	7.3	4.2	7.7	5.2	10.3	10 241	4.9
Hayes River	5.5	21.2	25.5	14.3	1.8	0	91 982	20.7	9.2	6.4	17.3	0	19 730	9.5
Highrock	16.9	22.0	14.1	4.2	2.3	0	79 352	17.8	11.7	5.6	13.6	0	22 622	10.8
Nelson River	13.4	19.7	9.9	7.7	2.7	0	66 438	14.9	9.7	6.4	10.2	0	18 991	9.1
Churchill River	0.2	4.2	3.5	0	0.3	0	14 979	3.4	0.3	0.1	3.4	0	1 152	0.6
Total volume —'000 m³	43 973	221 272	160 698	10 248	8 379	705	445 275	100.0	156 428	27 441	20 743	4 002	208 614	100.0
% of total by species	9.9	49.7	36.1	2.3	1.9	0.1	—	—	75.0	13.2	9.9	1.9	—	—
Annual allowable cut (AAC)—'000 m³	—	—	—	—	—	—	5 786	—	—	—	—	—	2 070	—
1978-79 harvest —'000 m³	—	—	—	—	—	—	1 651	—	—	—	—	—	236	—
% AAC harvested	—	—	—	—	—	—	—	28.5	—	—	—	—	—	11.4

[a] Coniferous 68% and deciduous 32% of total roundwood volume.
[b] Gross merchantable volume for trees 10 + cm in diameter at breast height (taken at 1.37 m), assuming a 30.5-cm stump and a 7.6-cm top diameter inside bark.
[c] Manitoba maple, black ash, green ash, bur oak, white elm, basswood, cottonwood, and willow.
[d] Forest inventory for Aspen Parkland, Mountain, and Interlake is incomplete; deciduous volumes expected to be significantly higher.

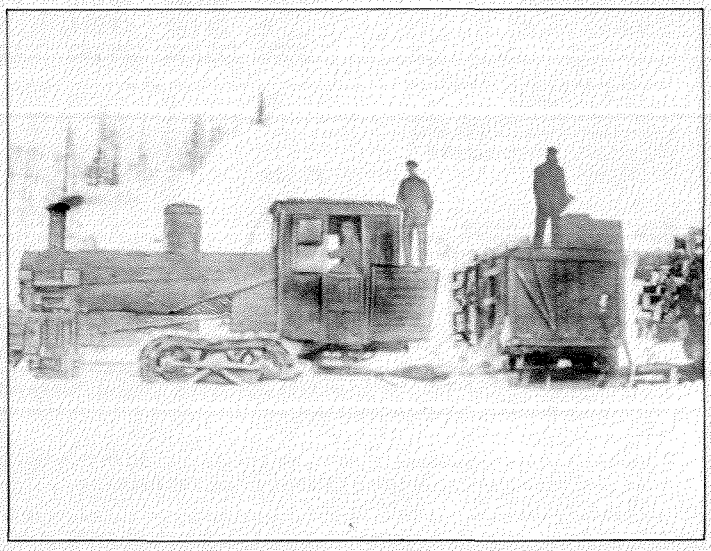
Source: Manitoba Department of Natural Resources.

Annual allowable cut

The annual a lowable cut from Manitoba's forests is equal to the annual growth, assuming that cutovers fully regenerate immediately after harvesting. The intent is to utilize this annual increment and still maintain the current level of growing stock. This is similar to spending the interest earned from a bank deposit without reducing the principal.

As the level of intensive forest management (e.g., stand tending practices such as thinning and fertilizing) increases in Manitoba, there will be an increase in the growing stock and a corresponding increase in the annual allowable cut. On the other hand, significant forest losses due to fire, insects and diseases, and allocation of forest lands for other uses such as agriculture and recreation will reduce the annual allowable cut.

- ***In 1980-81, the Manitoba government planted 1.4 million seedlings, seeded 2 200 ha and scarified over 3 300 ha in its reforestation program.***
- ***Manitoba lost a total of 81 000 ha of forest land to wildfires in 1980. Where economica y feasible, merchantable timber has been salvaged, 409 000 m³ of round timber to date. Approximately 70% was for lumber, 20% was for pulpwood, and 10% was for other forest products such as posts and rails.***



Ice train moving logs (about 1920)

Mobile steam-powered sawmill, 1910

Forest products

Product	Forest section										
	Aspen Parkland	Pineland	Mountain	Interlake	Lake Winnipeg East	Saskatchewan River	Hayes River	Highrock	Nelson River	Churchill River	Total production[a]
Dimension lumber[b]—m³	24 425	15 115	47 838	8 902	6 115	96 984	0	536	1 510	0	201 425
Boards[b]—m³	6 973	9 747	10 662	1 132	216	685	0	81	438	0	29 934
Timbers[b]—m³	4 530	7 142	927	1 043	0	3 380	0	178	487	0	17 687
Ties[b]—m³	0	3 292	1 202	0	0	1 563	0	0	0	0	6 057
Treated lumber[b]—m³	5 844	0	1 119	0	0	0	0	0	0	0	6 963
Pallets and containers[b]—m³	27 500	0	0	0	0	0	0	0	1 948	0	29 448
Machined lumber (sidings, moldings, and paneling[b]—m³	7 305	0	0	0	0	0	0	16	0	0	7 321
Furniture stock[b]—m³	6 055	0	0	0	0	0	0	0	0	0	6 055
Lath[b]—m³	73	0	21	0	0	0	0	0	0	0	94
Shakes and shingles[b]—m³	0	0	0	0	3	0	0	0	0	0	3
Rails[c]—m³	0	0	543	0	0	0	0	0	0	0	543
House logs[c]—m³	0	0	946	9 318	3	522	0	0	0	0	10 789
Posts (untreated)[c]—m³	1 747	5 663	14 238	1 772	352	12	0	12	18	0	23 814
Poles (untreated)[c]—m³	0	161	0	0	0	272	0	0	0	0	433
Treated posts[c]—m³	8 495	0	7 238	0	0	0	0	0	0	0	15 733
Treated poles[c]—m³	2 714	0	2 122	0	0	0	0	0	0	0	4 836
Firewood[c]—m³	14 507	28 884	23 312	7 108	19 677	1 925	241	2 159	1 803	241	99 857
Sawlogs[c, d]—m³	0	24 747	13 077	349	0	4 578	0	0	0	0	42 751
Pulpwood[c, d]—m³	3 129	136 010	126 160	4 653	9 599	8 352	0	13 239	0	0	301 142
Treated plywood (1mm basis)[e]—'000 m²	29	0	0	0	0	0	0	0	0	0	29
Insulation and fiberboard sheathing (1 mm basis)[e] —'000 m²	23 529	0	0	0	0	0	0	0	0	0	23 529
Newsprint—t	0	0	0	0	158 759	0	0	0	0	0	158 759
Kraft pulp and paper—t	0	0	0	0	0	131 425	0	0	0	0	131 425
Wood chips—t	0	6 788	4 293	0	0	36 000	0	0	0	0	47 081
Paper and roofing products—t	45 360	0	0	0	0	0	0	0	0	0	45 360

[a] Total wood volume harvested in 1979-80 was 1 887 000 m³.
[b] Processed lumber; volume based on the actual size of the sawn product (i.e., 3.8 X 8.6 cm or 1 1/2 X 1 3/8 in.) and not on the nominal size (i.e., 5.1 X 10.2 cm or 2 X 4 in.).
[c] Roundwood.
[d] Includes only the amount of sawlogs and pulpwood that is not processed by the log producer but that is sold as roundwood to others for processing in either the domestic or export markets.
[e] Sheet product.

Source: The Northern Forest Research Centre.

Destination of forest products

Product	Destination					Total production[a]
	Manitoba %	Saskatchewan %	Ontario %	Rest of Canada %	United States %	
Dimension lumber[b]—m³	47	9	0	4	40	201 425
Boards[b]—m³	59	8	0	0	33	29 934
Timbers[b]—m³	86	0	0	0	14	17 687
Ties[b]—m³	76	5	17	0	2	6 057
Treated lumber[b]—m³	85	11	0	0	4	6 963
Pallets and containers[b]—m³	74	9	9	8	0	29 448
Machined lumber (sidings, moldings, and paneling)[b]—m³	71	10	14	4	0	7 321
Furniture stock[b]—m³	73	10	10	7	0	6 055
Lath[b]—m³	92	8	0	0	0	94
Shakes and shingles[b]—m³	100	0	0	0	0	3
Rails[c]—m³	100	0	0	0	0	543
House logs[c]—m³	65	—[d]	35	0	0	10 789
Posts (untreated)[c]—m³	89	0	6	0	5	23 814
Poles (untreated)[c]—m³	100	0	0	0	0	433
Treated posts[c]—m³	76	21	0	0	3	15 733
Treated poles[c]—m³	77	20	0	0	3	4 836
Firewood[c]—m³	97	0	0	0	3	99 857
Sawlogs[c,e]—m³	91	—[d]	9	0	—[d]	42 751
Pulpwood[c,e]—m³	47	0	39	0	14	301 142
Treated plywood (1 mm basis)[f] —'000 m²	90	5	0	0	5	29
Insulation and fiberboard sheathing (1 mm basis)[f] —'000 m²	17	14	0	12	57	23 529
Newsprint—t	20	15	0	15	50	158 759
Kraft pulp and paper—t	10	10	20	40	20	131 425
Wood chips—t	80	0	14	0	6	47 081
Paper and roofing products—t	36	31	0	28	5	45 360

[a] Total wood volume harvested in 1979-80 was 1 887 000 m³.
[b] Processed lumber; volume based on the actual size of the sawn produce (i.e., 3.8 X 8.6 cm or 1 1/2 X 1 3/8 in.) and not on the nominal size (i.e., 5.1 X 10.2 cm or 2 X 4 in.).
[c] Roundwood.
[d] Less than 1%.
[e] Includes only the amount of sawlogs and pulpwood that is not processed by the log producer but that is sold as roundwood to others for processing in either the domestic or export markets.
[f] Sheet product.

Source: The Northern Forest Research Centre.

- ***During 1979-80 the forest industry in Manitoba***
  - ***—made up 10.4% of the value of shipments of goods of own production in the manufacturing industry, second only to the food and beverage industry***
  - ***—provided 4.9% of the total value added in the goods producing sector***
  - ***—paid salaries and wages amounting to $96 million, making it the second largest contributor in the manufacturing industry.***

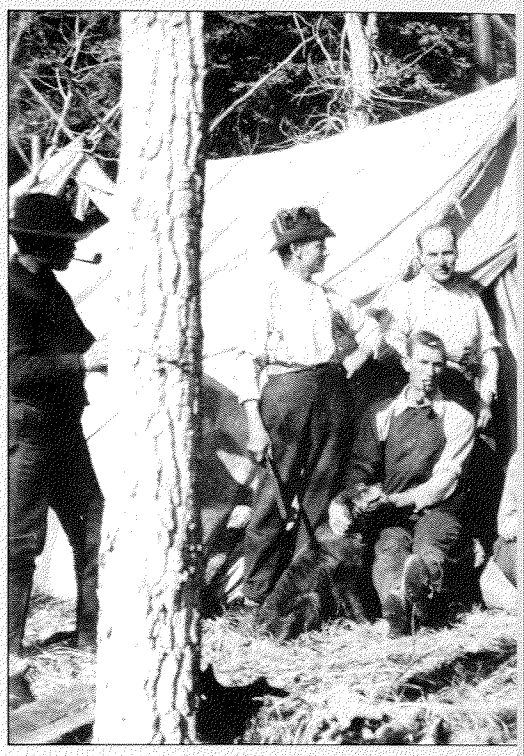
- ***In 1981, forest products accounted for 14% of rai way car loadings in Canada (approximately 230 million t) plus additional amounts of purchased chemicals, fuels, machinery, equipment, and other items shipped by rail for use by the forest industry.***

Direct and indirect employment

Industry	Number of firms	Direct employment Person-years	Indirect employment Person-years	Total employment Person-years	Industry multiplier[a]
Sawmills					
Greater than 8115 m^3 (> 5 MM fbm)	5	585	673	1 258	2.15
1623 – 8115 m^3 (1 MM to 5 MM fbm)	19	286	329	615	2.15
162 – 1623 m^3 (100 M to 1 MM fbm)	43	108	124	232	2.15
Less than 162 m^3 (< 100 M fbm)	109	46	53	99	2.15
Independent planing mills	5	34	39	73	2.15
Wood treating[b]	2	42	40	82	1.95
Miscellaneous wood-using industries (building logs, pallets, laths)	19	184	237	421	2.29
Pulp, paper, paperboard, and roofing materals	4	1 495	1 914	3 409	2.28
Independent log producers	78	99	93	192	1.94
Total	284	2 879	3 502	6 381	—

[a] The multipliers in this table are estimates supported by statistics of the Northern Forest Research Centre forest industry surveys and pertinent literature.
[b] One firm has a sawmill as well as a wood treating plant and is therefore counted twice; employment is separated by operation.

Source: The Northern Forest Research Centre.



Forest survey crew, 1913

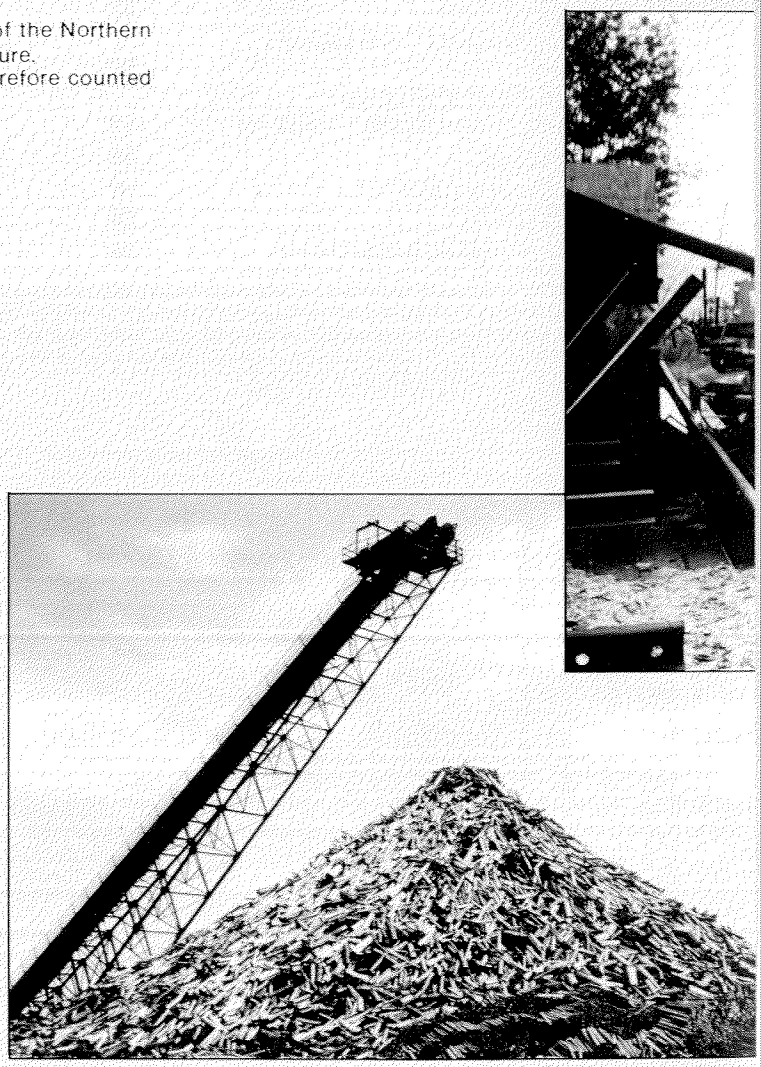
Industry multiplier

An industry multiplier is a value that multiplied by the direct employment of a given industry indicates the total direct and indirect employment generated by that industry. Indirect employment results from economic activity associated with the manufacturing.

In the forest industry, direct employment includes all persons directly employed in the processing plants. Indirect employment includes all persons employed as an indirect result of forest industry activity, for example, sales personnel in local retail outlets, those employed in supplying the forestry complex with intermediate goods, and civil servants required to maintain community services.

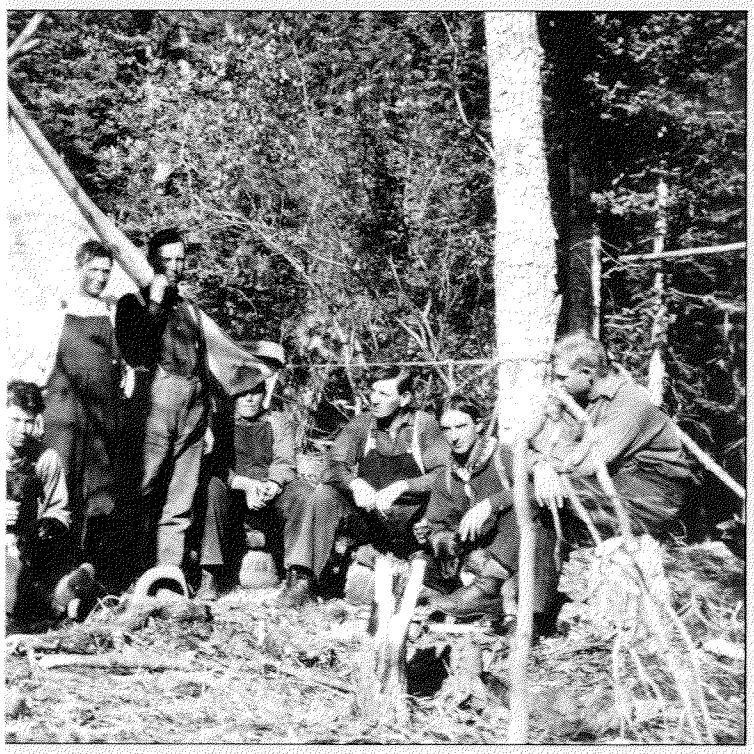
Direct employment × Industry multiplier = Total employment resulting from manufacturing

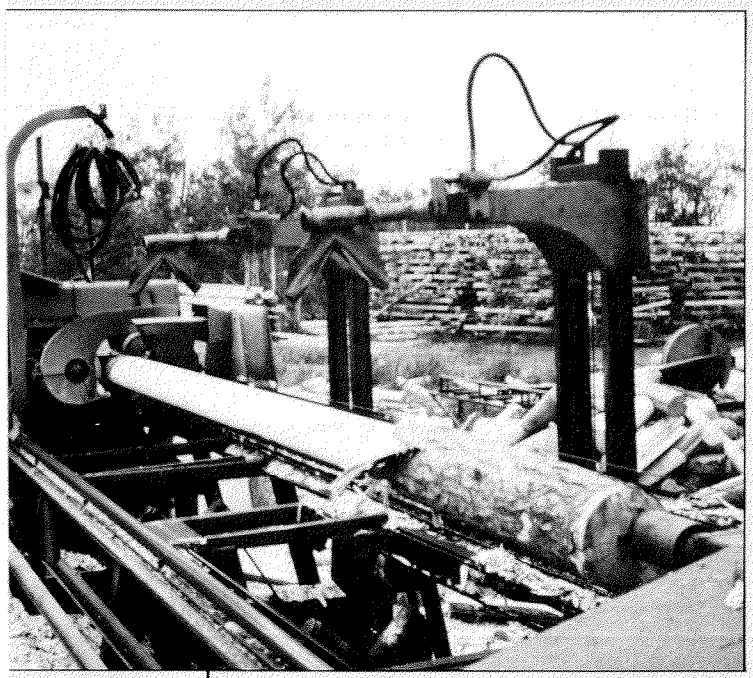
= Direct + indirect employment



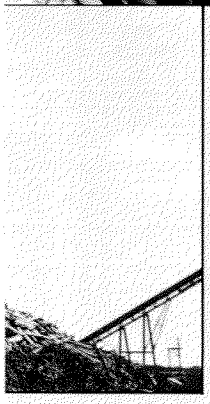
Stockpiling pulpwood

- ***One job in 35 in Manitoba is directly or indirectly dependent on the forest industry.***





Lathe making building logs



Salaries and wages

Rank by industry[a]	Salaries and wages for total activity[b] $000 000	%
Manitoba		
1. Food and beverage	158	19.6
2. Forest industry[c]: forestry (logging), wood industries, and paper and allied industries	96	11.9
3. Transportation equipment	91	11.3
4. Metal fabricating	80	9.9
5. Clothing	68	8.4
6. Printing, publishing, and allied industries	68	8.4
7. Machinery	66	8.2
8. Primary metal	44	5.4
9. Electrical products	34	4.2
10. Nonmetallic mineral products	29	3.6
Other	73	9.1
Total	807	100.0
Canada		
1. Forest industry[c]: forestry (logging), wood industries, and paper and allied industries	5 692	18.2
2. Food and beverage	3 545	11.3
3. Transportation equipment	3 489	11.2
4. Metal fabricating	2 636	8.4
5. Primary metal	2 432	7.8
6. Electrical products	1 925	6.2
7. Machinery	1 701	5.4
8. Printing, publishing, and allied industries	1 613	5.2
9. Chemical and chemical products	1 606	5.1
10. Clothing	1 085	3.5
Other	5 526	17.7
Total	31 250	100.0

[a] For Manitoba, rank relates only to industry groups for which data can be published.
[b] For the manufacturing sector only.
[c] Includes values from the Northern Forest Research Centre.

Sources: Statistics Canada and the Northern Forest Research Centre.

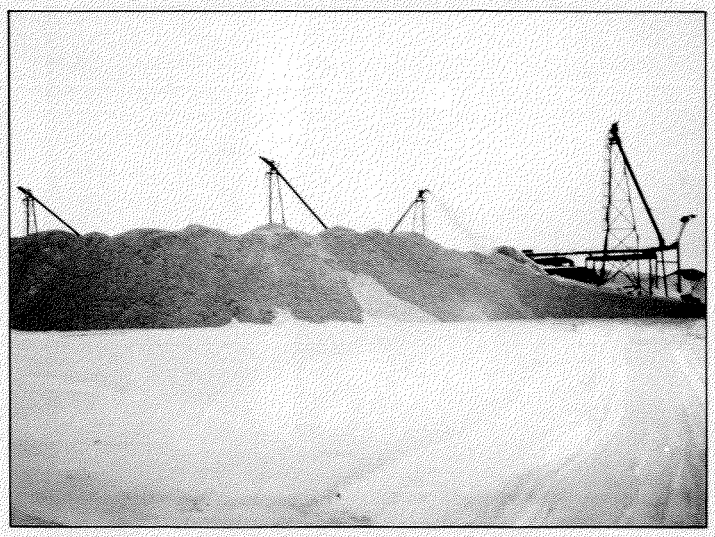
- ***In 1980-81 the federal Department of Regional Economic Expansion in a cost-sharing agreement with the province spent $8.6 million on forest management in Manitoba.***

Value of shipments in the manufacturing sector

Rank by industry	Value of shipments of goods of own manufacture $000 000	%
Manitoba		
1. Food and beverage	1 253	31.9
2. Forest industry[a]: forestry (logging), wood industries, and paper and allied industries	406	10.4
3. Machinery	331	8.4
4. Metal fabricating	299	7.6
5. Transportation equipment	279	7.1
6. Clothing	237	6.0
7. Primary metal products	190	4.8
8. Printing, publishing, and allied industries	181	4.6
9. Electrical products	144	3.7
10. Nonmetallic mineral products	136	3.5
Other	472	12.0
Total	3 928	100.0
Canada		
1. Forest industry[a]: forestry (logging), wood industries, and paper and allied industries	26 142	16.6
2. Food and beverage	25 373	16.1
3. Transportation equipment	19 667	12.5
4. Petroleum and coal products	12 371	7.9
5. Primary metal products	11 856	7.5
6. Metal fabricating	10 397	6.6
7. Chemical and chemical products	9 531	6.1
8. Electrical products	6 661	4.3
9. Machinery	6 528	4.2
10. Printing, publishing, and allied industries	4 721	3.0
Other	23 933	15.2
Total	157 180	100.0

[a] Includes values from the Northern Forest Research Centre.

Sources: Statistics Canada and the Northern Forest Research Centre.



Wood chips

Value of shipments

Value of shipments refers to the total value of sales excluding discounts, returns, allowances, sales tax, excise duties, and the cost of transporting the product to market. The value is essentially the total revenue of the goods (shipped from the mill) of a firm or of an industry.

- ***In the last 10 years the value of shipments in the forest industry in Manitoba has increased 4½ times.***
- ***The total value of shipments of forest products in Manitoba in 1979-80 was $406 million. Approximately 40% was consumed in Manitoba, 21% was exported to the USA, 15% went to the neighboring province of Saskatchewan, 6% went to Ontario, and 18% was sent to the rest of Canada.***
- ***In 1979-80 the forest industry in Canada contributed***
  - ***—$26.1 billion in value of shipments of goods of own production***
  - ***—$11.8 billion in total value added***
  - ***—$11.5 billion net contribution to Canada's balance of payments.***

Lumber ready for market

Value added—provincial

	Manitoba $000 000	Manitoba %	Canada $000 000	Canada %
Gross domestic product by sector				
All goods producing	3 834	37.1	123 171	45.7
(Forest industry	189	1.8	11 849	4.4)
Service producing	6 503	62.9	146 150	54.3
Total	10 337	100.0	269 321	100.0
Goods producing industries[a]				
Manufacturing[b]	1 498	39.1	54 577	44.3
Construction	660	17.2	21 988	17.8
Agriculture	631	16.5	7 957	6.5
Mining[c]	470	12.3	19 820	16.1
Electric power	366	9.5	6 012	4.9
Forest industry[d]: forestry (logging), wood industries, and paper and allied industries	189	4.9	11 849	9.6
Fisheries	11	0.3	888	0.7
Hunting and trapping	9	0.2	80	0.1
Total	3 834	100.0	123 171	100.0

[a] Value added for forest industry, mining, and manufacturing is for total activity, not just value of goods of own manufacture.
[b] Wood industries and paper and allied industries are excluded from the manufacturing total and are included as part of the forest industry total.
[c] Includes metals, petroleum, and coal before refining into products.
[d] Includes values from the Northern Forest Research Centre.

Sources: Statistics Canada and the Northern Forest Research Centre.

Cutting fuelwood in Riding Mountain National Park, 1948

Value added

In the process of creating manufactured goods, a number of intermediate goods and services are purchased by firms and are used during production.

A few examples of intermediate goods and services in the forest industry include fuel and electricity, wood-preserving chemicals, veneer adhesives, pulp treating chemicals, contractor fees, and lawyer and accountant fees. Without the use of these purchased intermediate goods and services, the forest product firm could not produce the form of output demanded by consumers.

Value added is defined as the difference between total revenue and the cost of all purchased materials, supplies, and services. Value added therefore includes payments to labor, depreciation, profits, and taxes. The relationships can be shown as follows:

Value added = Wages and salaries + Depreciation + Profits + Taxes

= Total revenue − Cost of purchased intermediate goods and services

Value added—national

	All goods producing $000 000	Forest industry $000 000	Forest industry as % of goods
Newfoundland	2 006[a]	X[b]	X
Prince Edward Island	278	X	X
Nova Scotia	2 285	246	10.8
New Brunswick	2 178	460	21.1
Quebec	25 807	3 087	12.0
Ontario	44 918	2 570	5.7
Manitoba[c]	3 834	189	4.9
Saskatchewan[c]	5 289	172	3.3
Alberta	22 238	381	1.7
British Columbia	13 724	4 558	33.2
Yukon and Northwest Territories	614	X	X
Canada	123 171	11 849	9.6

[a] Due to confidentiality, forestry (logging) data for Prince Edward Island are included with those for Newfoundland.
[b] Confidential.
[c] Includes values from the Northern Forest Research Centre.

Sources: Statistics Canada and the Northern Forest Research Centre.

Corporate and personal income taxes from the forest industry[a]

Tax	Estimated taxes paid[b] Manitoba $000 000	Canada $000 000
Corporate income		
Provincial	1.1	262
Federal	2.0	484
Personal income		
Provincial	9.2	332
Federal	17.0	674

[a] Forest industry includes forestry (logging), wood industries, and paper and allied industries.
[b] Includes values from the Northern Forest Research Centre.

Sources: Statistics Canada and the Northern Forest Research Centre.

- ***In 1980-81 the provincial governments and private industry spent approximately $16 million and $12.7 million, respectively, on forest research and development in Canada.***
- ***In 1980-81 the Canadian Forestry Service spent $51.7 million on forest research across Canada.***
- ***In 1980-81 the Northern Forest Research Centre of the Canadian Forestry Service spent $4 million fulfilling its forestry research, development, and technology transfer roles in the three prairie provinces and the Northwest Territories.***

Unloading at the woodyard

Manitoba Forestry Branch revenues and expenditures

Revenues	$000
Timber royalties and fees	1 793
Provincial timber lease area fees	182
Nursery sales	4
Fire recovery fees	592
Total forestry revenues	2 571

Expenditures	$000
Fire protection	8 500
Forest management	1 600
Forest inventory	600
Forest road access	700
Other	600
Total forestry expenditures	12 000

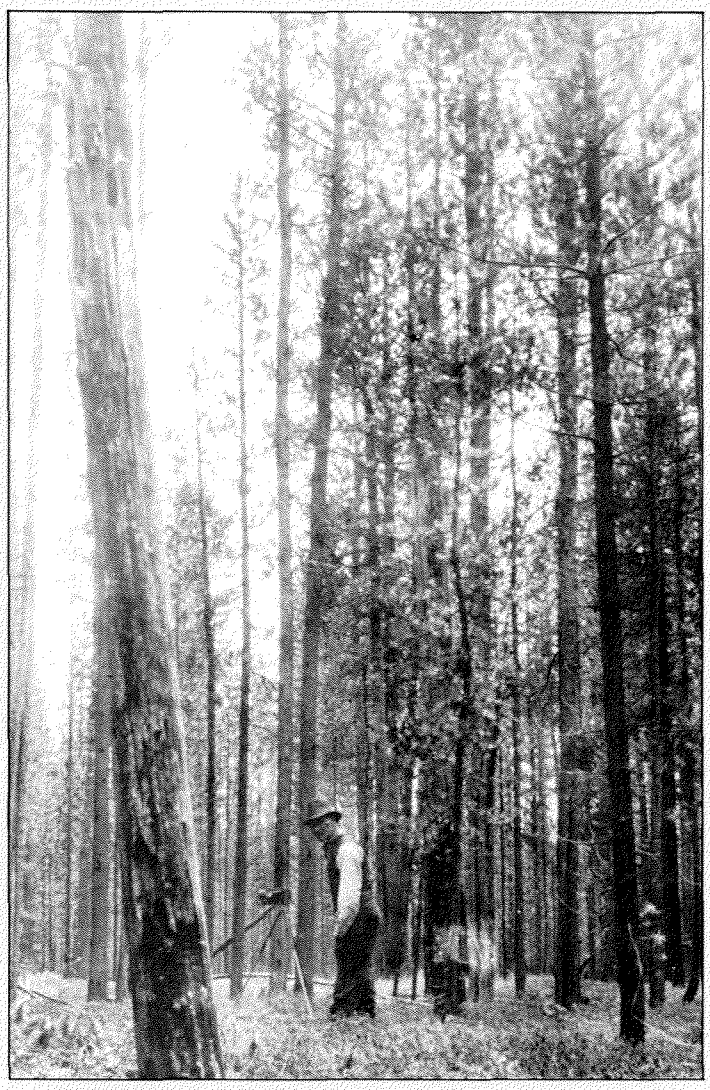
Source: Manitoba Department of Natural Resources.

Other uses of forest land

Fish	
Angling licenses—'000	196
Estimated revenue—$000	860
Commercial fish catch—'000 kg	16 631
Estimated market value—$000	20 858
Game	
Hunting licenses—'000	108
Estimated revenue—$000	1 137
Trapping	
Trapper licenses—'000	16
Estimated value of harvest—$000	9 616
Outdoor recreation[a]	
Visitors—'000	5 714
Campers in parks—'000	1 136
Estimated permit revenue—$000	1 785
Grazing	
Animal unit months[b]	45
Estimated revenue—$000	—[d]
Watershed benefits	
Net mean annual yield[c] in river discharges —'000 000 m^3	20 680

[a] Provincial and national parks, 1979-80.
[b] An animal unit month is the amount of forage provided for one animal unit for one month. One animal unit is defined as one mature cow with calf or their equivalent. Statistics include sheep and horses.
[c] Difference between outflow and inflow river discharges, with the majority of water being produced in a forested area.
[d] Not available.

Sources: Manitoba Department of Natural Resources and Parks Canada.



Forest photographer (about 1920)

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Early woodsman

Credits

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This Forestry Report was prepared by the Forest Economics group: W.J. Ondro, T.B. Williamson, R.A. Bohning, J.P. De Franceschi, and H.M. Stewart.

Editors: Judy Samoil and Gordon Turtle

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Northern Forest Research Centre
5320 - 122 Street
Edmonton, Alberta T6H 3S5
(403) 435-7210

Canada

Environment Canada
Canadian Forestry Service

Environnement Canada
Service canadien des forêts