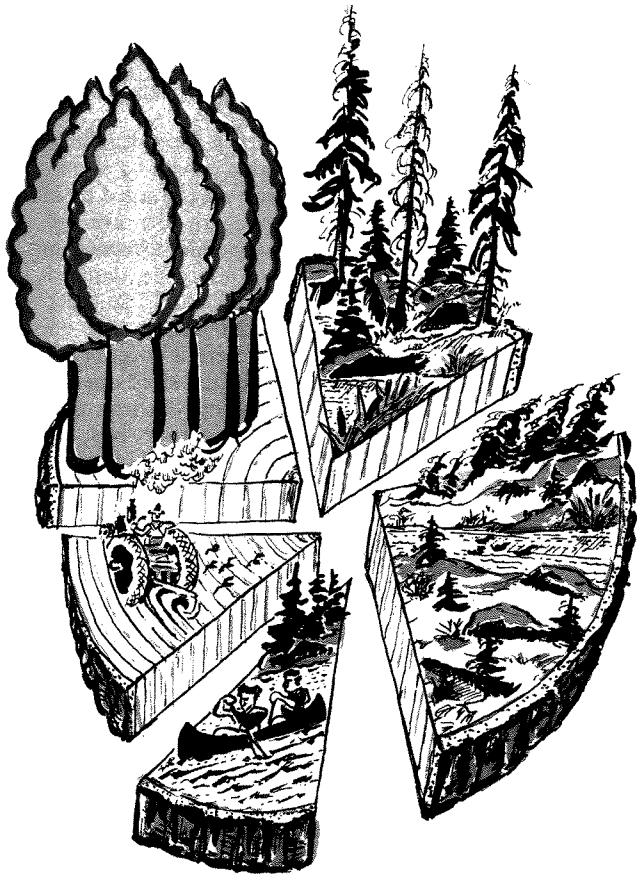
forestry report

Spring 1979 Northern Forest Research Centre Edmonton, Alberta



Thirty-nine percent of Manitoba is treed; half of this area can yield wood products in perpetuity under sustained yield management.

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Forestry in Manitoba

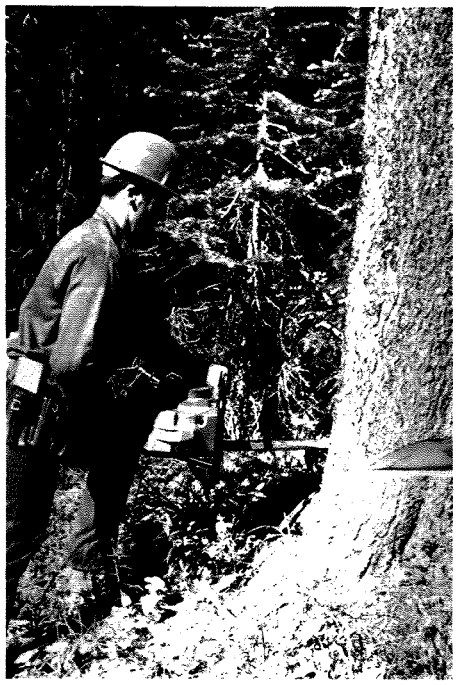
Importance of forestry in Manitoba

The importance of forestry in Manitoba far exceeds the stumpage value of the trees logged. Stumpage, or the $1.3 million in dues paid in 1977 for the right to harvest trees, is the only direct payment made by forest operators to the government. Even the addition of the value of the wood delivered to the mill ($36.5 million) does not adequately measure the contribution of the forest resource to the provincial economy, because it ignores primary and secondary manufacturing of wood products, employment, salaries and wages, forest management activities, tax revenues, and foreign dollar exchange.

In 1977 the value of all forest products processed in Manitoba was $279.5 million. Logging and primary and secondary wood manufacturing generated work for 4500 full-time and 1100 seasonal workers, who earned $63.2 million in salaries and wages. In the primary resource sector, the forest industries are a major employer (second only to mining) and offer considerable potential employment opportunities outside urban centers, particularly in northern Manitoba. Forest management activities such as the production and outplanting of tree nursery stock and stand tending represent the creation of a new product and the generation of new employment opportunities. The detection and suppression of forest fires contribute significantly to the economy by reducing merchantable timber losses, estimated at $44 million in 1977. Taxes of $6.1 million were collected in 1977 from the forest industries by the provincial government; that same year the federal government collected $9.8 million. Because 80% of the wood harvested and processed is sold outside the province, exported forest products earn income and foreign dollar exchange. In 1977, the value of exported forest products was approximately $105 million, or 15% of the value of all commodities exported from the province.

It has been estimated that the forest industries in Manitoba contributed 3% of the total $8.7 billion economic activity (Gross Provincial Product) in 1977. An even larger contribution can be expected in the future as new industry is developed to use the currently underutilized (78%) wood resources of the province.

Forest management



Harvesting a mature white spruce.

Forest lands cover 39% of the province, but only half, or 132 000 km², is considered economically productive for the harvesting of wood products. Most of the forest lies north of 51° latitude in the central and vast northern reaches of the province, although some very productive forests do occur in the southeast.

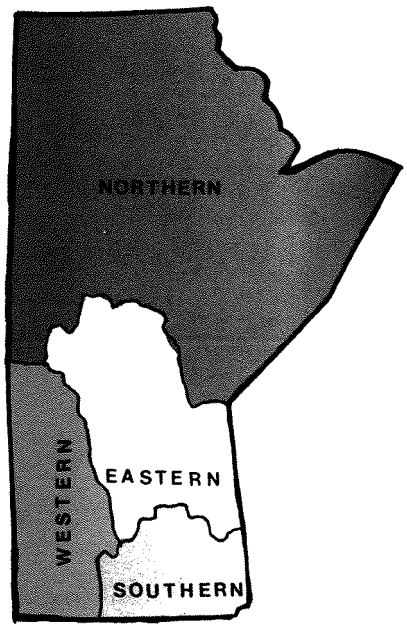
Area Classification	km²	%
Forest land		
Productive	132 000	20
Unproductive	125 000	19
Wildlands	204 000	32
Agriculture	85 000	13
Water	104 000	16
Totals	650 000	100

Approximately 98% of the productive forest land is provincially owned, 1% federally owned, and 1% privately owned.

Forest management on provincial crown lands is carried out by the Forest Branch of the Department of Mines, Natural Resources and Environment in four administrative regions: Northern, Western, Eastern, and Southern. For the purpose of timber management every region is divided into subunits that serve as the base for determining annual allowable cut, planning the harvest (logging), silviculture, and forest protection.

Metric and English equivalents

1 m³ = 35.3 ft³
1 m³ = 176.6 fbm (board feet)
1 t (tonne) = 1.1 tons
1 cord = 85 ft³ = 2.4 m³ (pulp)
1 cord = 80 ft³ = 2.3 m³ (fuel and box wood in Manitoba)
1 ha = 2.5 acres



Administrative Regions of the Manitoba Department of Mines, Natural Resources and Environment.

Logging

Historical harvest data in Manitoba suggest that the logging industry is only once more achieving the level of production reached between the 1920's and early 1950's. The composition of the harvest has, however, changed substantially. Instead of fuel wood, the leading products harvested are pulpwood and sawlogs, which are processed into paper and lumber products. As well, there are strong trends toward using a greater number of species, harvesting trees of smaller size, and utilizing material more fully.

Between 1973 and 1977 the average annual harvest of wood accounted for 22% of the total 7.5 million m³ annual allowable cut for the province. Regional data indicate room for further industrial development, particularly in the Northern Region.

Region	Total annual allowable cut ('000 m³)	Average annual harvest ('000 m³)	%
Northern	4576	807	18
Western	998	317	32
Eastern	1557	309	20
Southern	368	234	64
Province	7519	1667	22

Each year the forest industry harvests approximately 29% of the annual allowable cut for conifers (softwoods), but only a tiny fraction (6%) of the allowable cut for hardwoods. White and black spruce accounted for 58% of the total annual cut, jack pine for 34%, other conifers for 1%, and hardwoods for 7%. Currently, pulpwood represents 62%, lumber 33%, and all other products 5% of the annual volume of wood harvested.

Prior to 1965, most sales of crown timber were allocated annually by public competition to the highest bidder. To provide longer-term tenure and thus stabilize the forest industry, operators holding timber cutting rights (sales and permits) in the years 1962-1965 were granted an allocation of timber equal to the average annual harvest for that period, effective until 1980. This method of allocating timber is known as the quota system. The bulk of the approximately 280 Timber Sale quotas and the 497 Timber Permit quotas are allocated to small and medium-sized operators. As a measure to bolster investment in the forest industry, the province has negotiated special arrangements for larger capital investments.

Manitoba's 1978 forest inventory shows that the majority (80%) of the 573 million m³ merchantable timber volume in economically accessible areas is in small tree sizes between 10.2 and 22.9 cm (4.0-9.0 in.) diameter at breast height, a fact that dictates the type of industry that Manitoba's forests can support. Equally important is the fact that at present wood product prices, half of the productive forest land cannot be harvested or managed economically until timber stands are made accessible by the construction of efficient transportation systems.

Some definitions

Diameter at breast height (dbh): The diameter of a tree measured at a height of 1.3 m (4.5 ft) above the ground.

Fiberboard: Sheet material manufactured from wood fibers under pressure and heat.

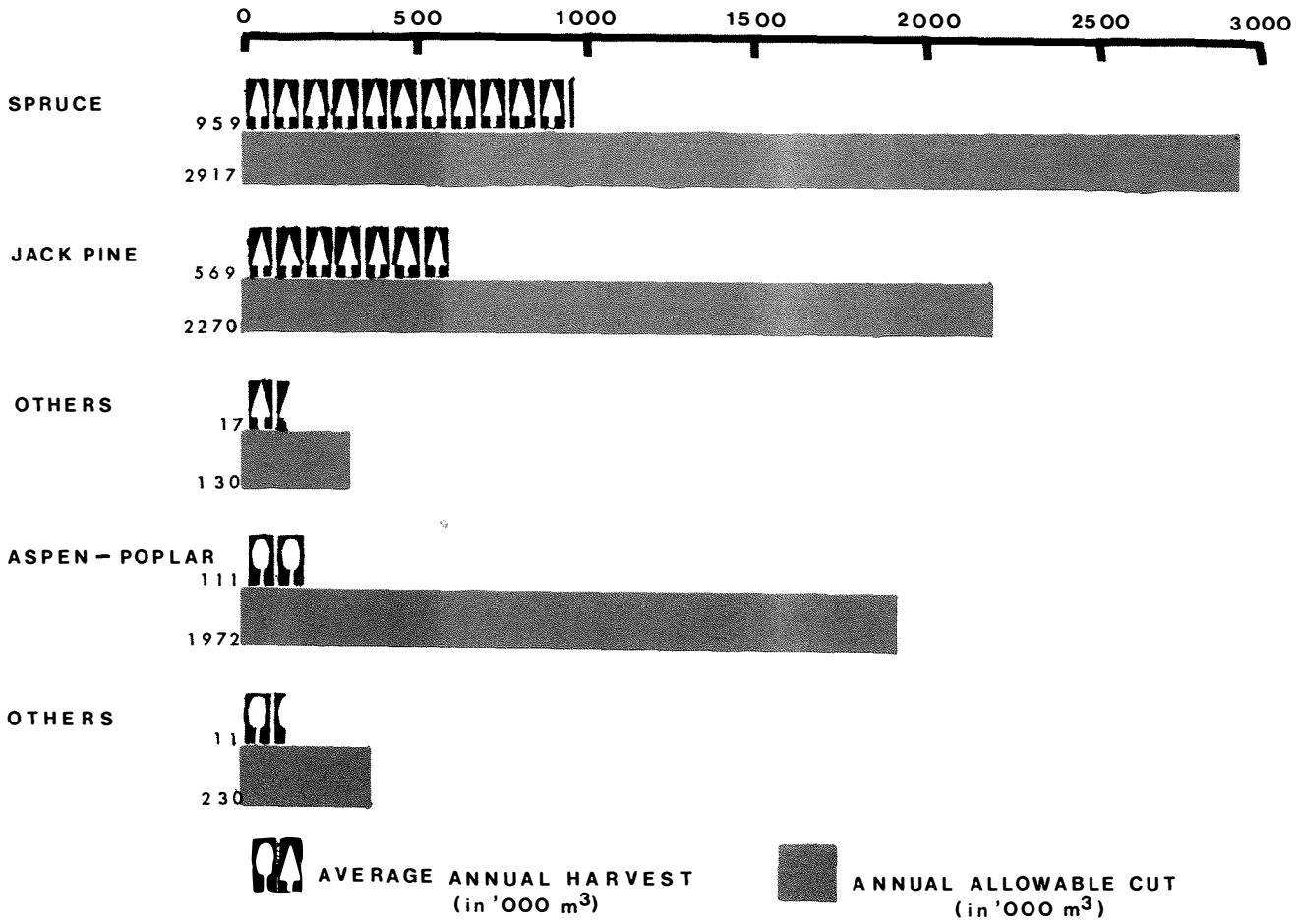
Kraft pulp: Sulphate pulp used for making strong paper such as brown wrapping and bag papers.

Scarification: Loosening the topsoil or breaking up the forest floor in preparation for a forest crop by either natural or artificial means.

Silviculture: The science and art of cultivating forest crops.

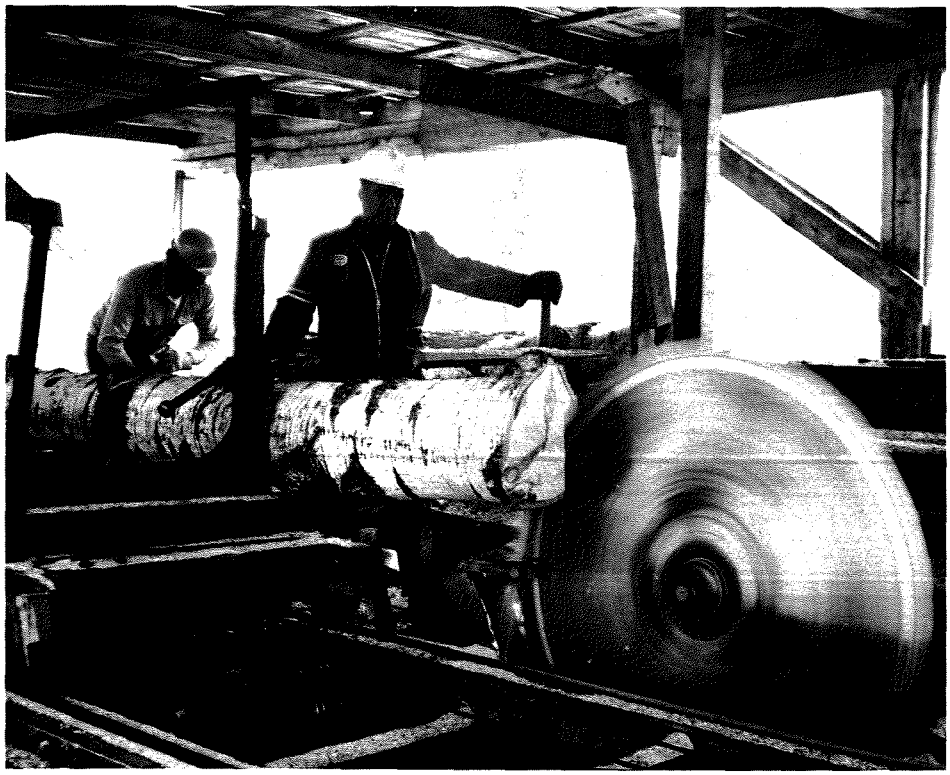
Value added: The value added to or created in a product or commodity by the manufacturing or marketing process, less the cost of materials, supplies, packaging, or overhead.

Value of shipments: The total worth of a commodity at the point of departure; for example, the price of lumber from a mill yard.



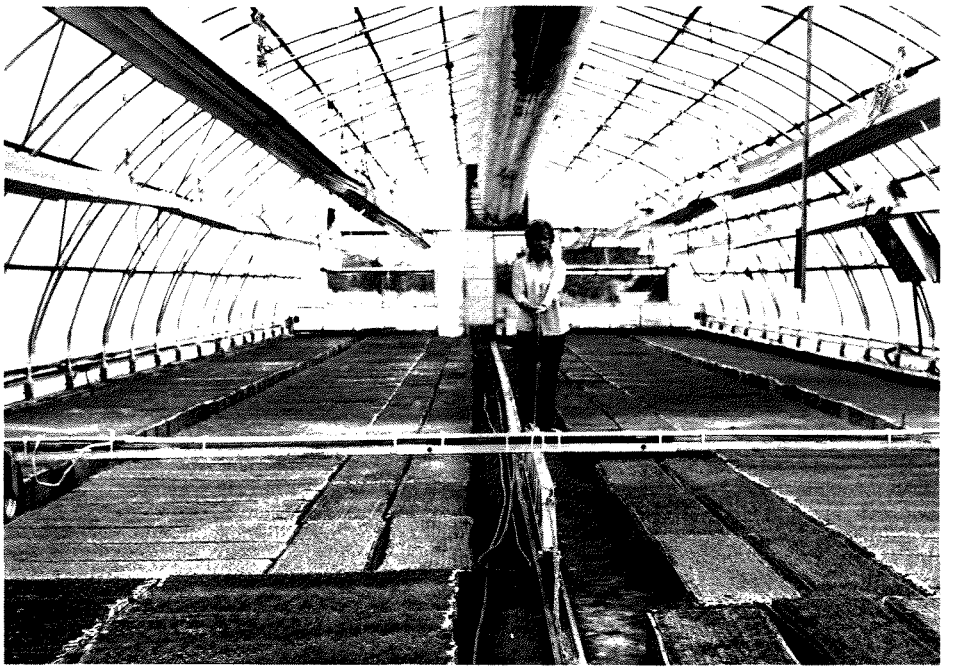
Annual allowable cut (harvest) and actual annual harvest between 1973 and 1977 in '000 m³.

Although provincial crown lands currently support an excess of available conifer timber, regionally the picture is different. Most of the conifers on forest lands in the readily accessible Western and Southern regions are presently fully committed. Approximately 80% of the noncommitted timber volume in the province is located in the Eastern and Northern regions—both areas with limited or no access. However, the expansion of industry into presently unreachable areas is not only a question of making those areas accessible, but also a function of large concentrations of timber. At present the scattered location of mature stands of conifers and associated hauling distances render most logging operations uneconomical. However, there are four areas with mature, presently unutilized, merchantable conifer stands capable of supporting medium- to large-scale pulpwood or sawlog developments in the Northern Region: east of Sherridon, south of Thompson stretching to the north shore of Lake Winnipeg, near Island Lake, and east of Lake Winnipeg. A smaller-scale development could be supported in the Eastern Region in the area between Gypsumville and Grande Rapids. Extensive hardwood stands, principally aspen, in the Western Region between Dauphin and The Pas are also potentially exploitable.



Portable sawmill.

Silviculture



Watering container-grown seedlings at ***the Pineland Tree*** *Nursery near Hadashville.*

Silvicultural activities such as seedling production and reforestation create new forest resources, in this way contributing to the provincial economy. Traditionally such activities have been overlooked in assessing the economic importance of forestry. The tree nursery at Hadashville has produced 2.7 million bareroot and container seedlings annually since 1974. The proportion of container stock has gradually grown from 20% in 1974 to 33% at present because container seedlings extend the planting season and are cheaper to produce. Since 1974, jack pine and red pine have constituted 60-70% of the total bareroot and container stock; the balance is made up of white spruce, Scots pine, and other species. The present cost of producing bareroot stock is 7 cents each; container seedlings cost somewhat less.

Tree planting following site preparation, which reached a peak of 2500 ha per year from 1969 to 1973, has now declined to about 900 ha each year. Tree planting is confined mainly to reforestation of clearcuts in the Southern and Eastern regions where access is good. Site preparation prior to planting consists primarily of mechanical treatments, although there has been some prescribed burning to dispose of slash before ground treatment or to remove mistletoe-infected jack pine. The cost per hectare of site preparation and planting was approximately $100 in 1975.

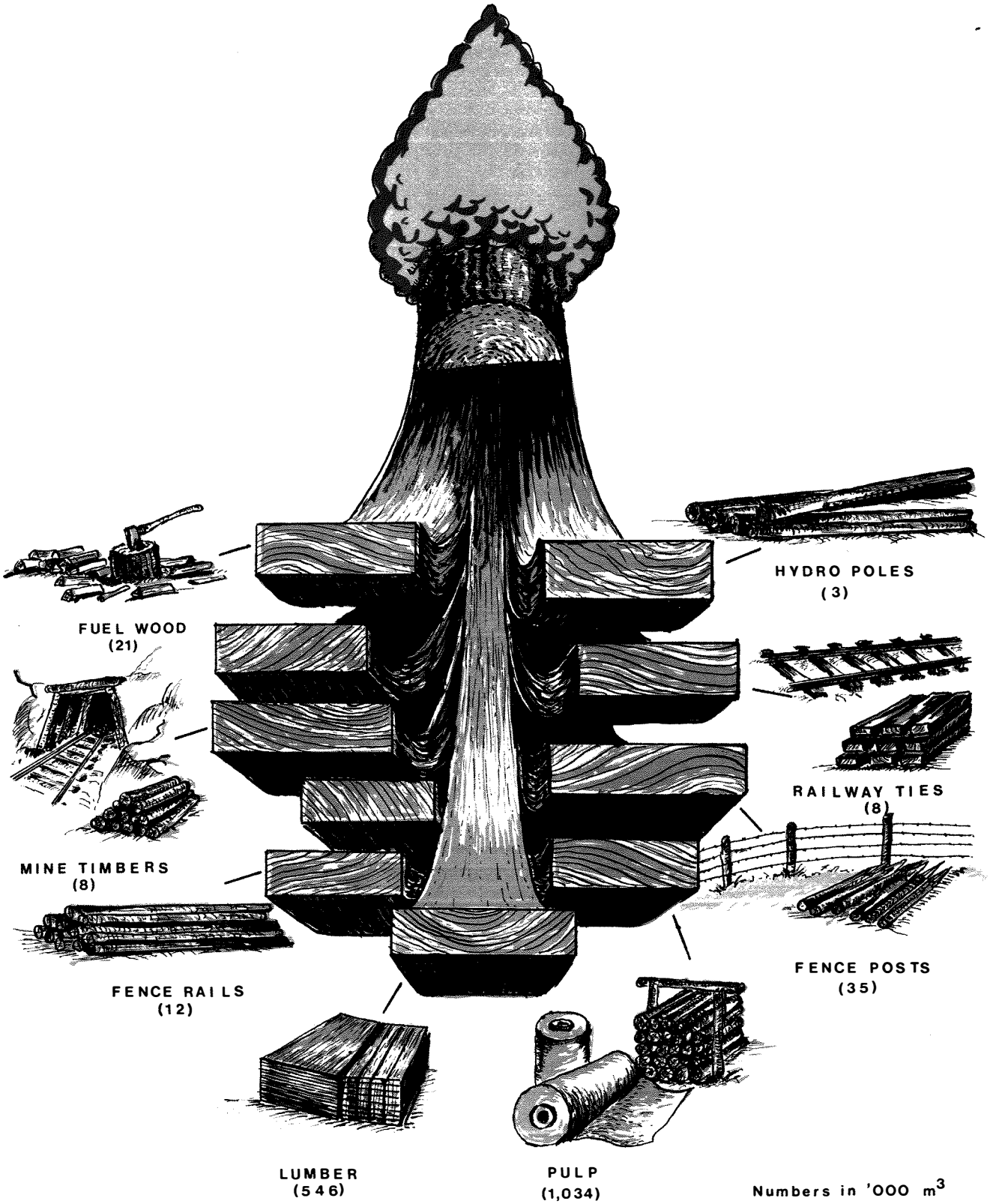
In the Northern, Western, and Eastern regions, some cutover areas are now scarified with anchor chains, barrel scarifiers, or disc trenchers to promote natural regeneration. The area scarified has increased from 2590 ha in 1973 to more than 4000 ha in 1977 as planting has correspondingly declined. At present only those areas that can be reached by heavy equipment during the summer can be treated; costs on large areas run about $16-$40/ha.

Forest protection

Forest Fires—Detection and suppression of forest fires not only protect forest resources and recreational land but also create seasonal employment: a fixed detection and suppression force based on an average fire year of 5000 man-days augmented by additional crews hired as conditions dictate. Fire occurrence fluctuates widely. In the period 1973-1977, for example, the incidence of fires varied from a low of 358 in 1975 to a high of 1128 in 1976—the worst year on record. The volume of timber burned varied with the location of the fires and the concentration of timber in the burned stands. In 1977 more than 6 300 000 m^3 of timber went up in smoke, an estimated loss of $44 million of timber at current market prices. Fire suppression costs that year were $2.1 million. Detection costs were $297 000, an investment that yields a good return because fires can be extinguished more easily if they are discovered when they are small.

Fire fighters extinguishing a fire in heavy slash.

Insects—Monitoring of insect populations in Manitoba has been carried out mostly by the Canadian Forestry Service. So far, chemical control measures have not been used widely; the Spruce Woods Provincial Park and Forest and the Belair Forest are the only areas that have been treated. Outbreaks of jack pine budworm and spruce budworm covering 800 ha in the Spruce Woods Park were sprayed aerially in 1975 at a cost of $3.50/ha. In 1976, 600 ha were sprayed for jack pine budworm, and the following year, half that area. Costs were approximately $15/ha. In most cases tree defoliation and budworm larval survival were reduced to acceptable levels.



Average annual production of major forest products between 1973 and 1977 in '000 m³.

Forest products industries

Primary manufacturing

Pulp and paper is by far the most important of the primary wood-using industries in Manitoba. In 1976 primary wood manufacturing produced products worth $93 million (value added of $35 million) paying $20.5 million in wages to 1492 employees. Manitoba Forest Products mill located at The Pas, now in its ninth year of operation, produces approximately 326 tonnes (t) of pulp and unbleached kraft paper daily. Abitibi's long-established (since 1926) pulp and paper mill at Pine Falls produces 454 t of newsprint daily using a mix of sulphite and ground wood pulp. Building Products of Canada Ltd. in Winnipeg has the capacity to produce 63 t of pulp each day, which it converts by secondary manufacturing to asphalt roofing material and other paper products.

Sawmilling is the second most important primary wood-using industry. Between 1957 and 1977 and number of portable and stationary sawmills declined from 339 to 135. However, during this same period several large permanent sawmills were established, and lumber production has more than doubled in the past 10 years as a result of these modern facilities. These large sawmills, located at The Pas, Swan River (two mills), Roblin, Blumenort, and Sprague, produce 437 000 m³ of lumber, approximately 80% of the lumber sawn annually in the province.

Region	No. portable sawmills	No. stationary sawmills
Northern	12	2
Western	58	5
Eastern	31	
Southern	23	4
Totals	124	11

Wood chips, a by-product of the sawmilling industry, are being produced at the rate of 0.3 million m³ annually.

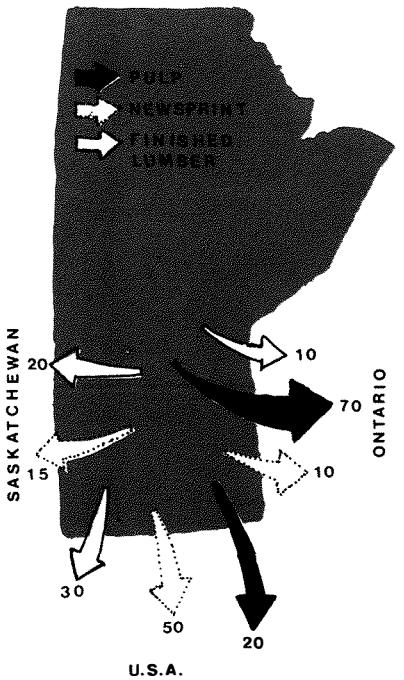
During the 1960's, two small plywood and four softboard and fiberboard mills were in operation. They have since closed as a result of inadequate wood supply or poor markets. At present only one mill, Welclad Industries in Winnipeg, is producing fiberboard and insulation board. Two wood preserving plants, located in Neepawa and Roblin, chemically treat approximately 57 000 m³ of poles and smaller quantities of posts each year.

Secondary manufacturing

Secondary industries presently established in Manitoba manufacture a wide range of wood and paper products from doors and caskets to asphalt roofing and bags:

	Number of plants
Sashes, doors, and other millwork	50
Wooden boxes	3
Coffins and caskets	2
Asphalt roofing	2
Paper boxes and bags	13
Misc. paper converters	7
Total	77

Most of these industries are located in the metropolitan Winnipeg area. In 1976 they employed 2648 people who earned $29.8 million in wages and produced goods worth $138.3 million with a value added of $54.7 million. Most of the products produced by these industries are sold within the province.



Export of forest products to Saskatchewan, Ontario, and the U.S.A. as a percentage of total annual production between 1973 and 1977.

For the statistically minded

1976

Activity	Value of shipments ($ in millions)	Value added ($ in millions)	Employment (man-years)	Wages ($ in millions)
Primary wood manufacturing				
Saw, planing, and shingle mills	15.7	7.4	536	5.7
Pulp and paper mills	74.6	27.0	870	14.0
Misc. wood processors	2.7	0.6	86	0.8
Secondary wood manufacturing				
Sash, door, and other millwork	47.5	19.7	1163	12.4
Wooden boxes	5.0	0.9	60	0.7
Coffins and caskets	3.5	0.7	55	0.6
Asphalt roofing	9.2	3.3	108	1.7
Paper boxes and bags	48.3	19.9	908	10.3
Misc. paper converters	24.8	10.2	354	4.1
Logging	32.2	15.7	670	9.7
Totals 1976	263.5	105.4	4810	60.0
1977 (Estimate)	279.5	114.5	4850	66.5
1978 (Forecast)	338.6	160.0	5100	76.3

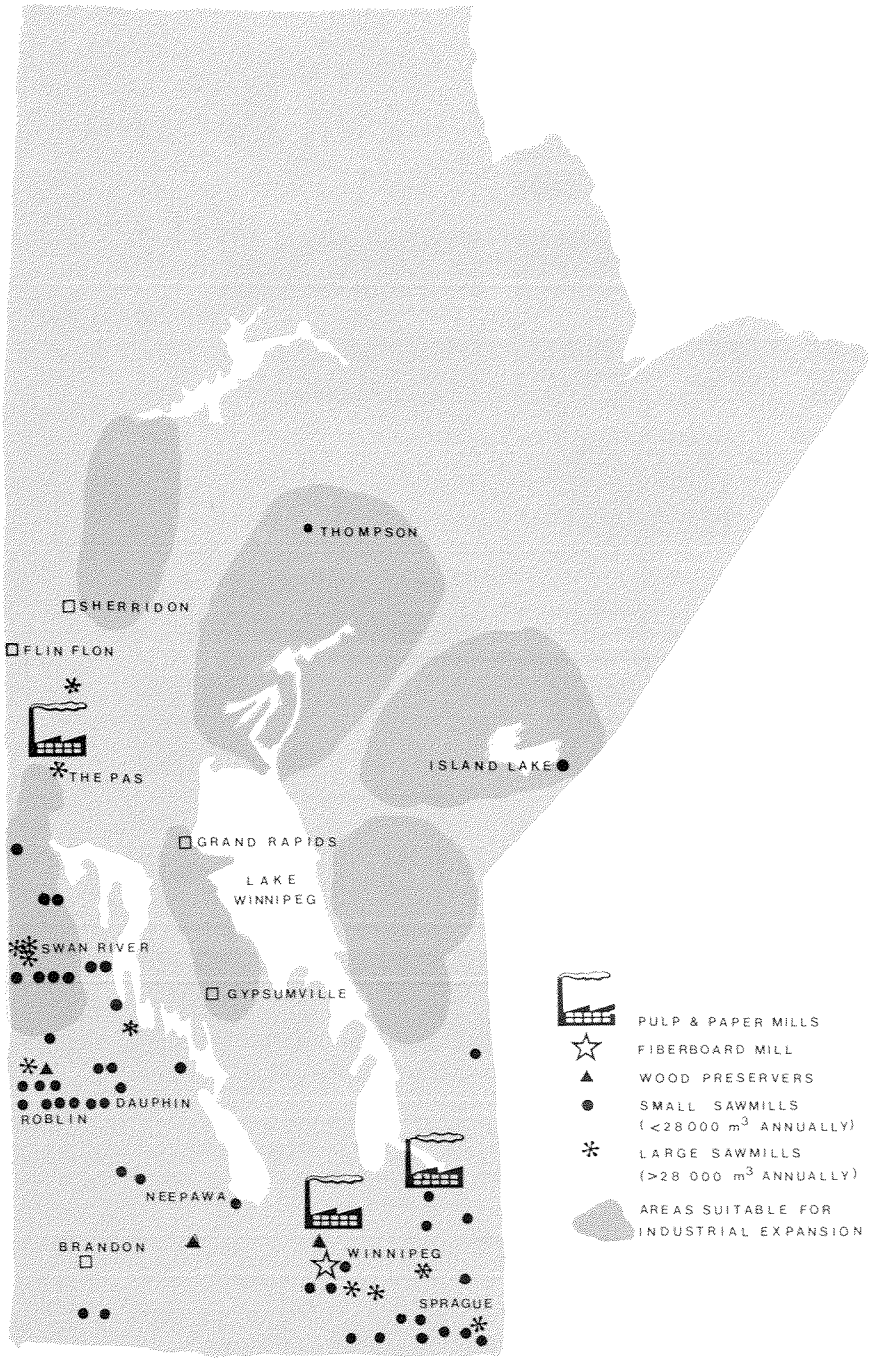
Markets

Manitoba has always been an exporter of forest products to other provinces or the U.S.A. Over the years, however, the products, species, origin of cut, destination, and amount exported have varied. In the 1940's, for example, fuel wood from private lands in southern Manitoba was one of the leading commodities exported to the northern American states. Today pulpwood and sawlogs from the Western and Northern regions are the most important export products. About 140 000 m^3 of sawlogs and pulpwood are shipped out of the province each year. Over half (57%) of the pulpwood exported was spruce, 30% was jack pine, and 13% was aspen. Fifty percent of the annual newsprint production of approximately 114 000 t is exported to U.S. markets, 15% to Saskatchewan, and 10% to Ontario; the remainder is consumed in the province.

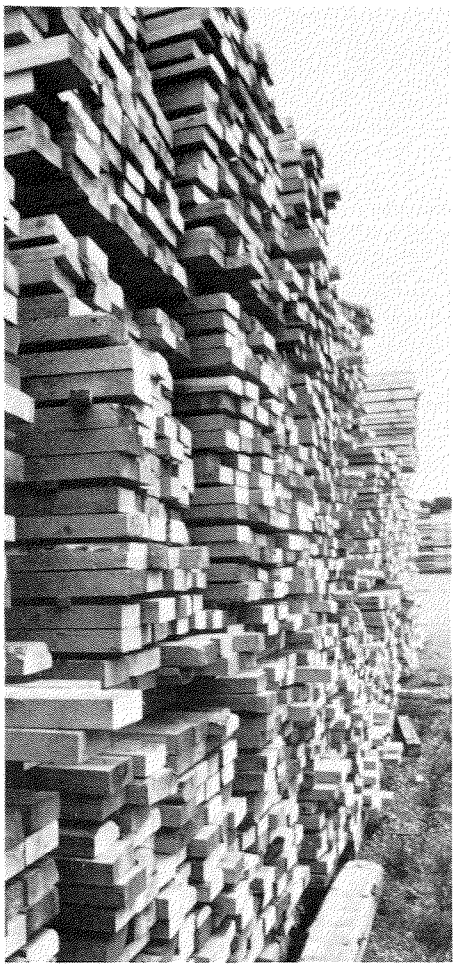
The production of jack pine and poplar wood chips for export has increased steadily to approximately 29 000 m^3 in recent years; most are sold in the U.S.A. On the other hand, in 1978 approximately 34 000 m^3 of spruce chips were imported from Saskatchewan for the newsprint mill at Pine Falls.

Manitoba's construction industry is the largest user of lumber, approximately 75% of which is produced within the province, and other wood products. For example, during each of the last 5 years, 3750 single detached dwellings were built, using 193 000 m^3 of lumber, 1.3 million m^2 of 0.95 cm (3/8 in.) plywood, and 139 400 m^2 each of 0.32 cm (1/8 in.) hardboard, 1.27 cm (1/2 in.) insulation board, and 1.59 cm (5/8 in.) particle board. Quantities of lumber and other wood products were also used for semidetached dwellings, duplexes, row houses, apartments, industrial buildings, home repairs, and other construction.

In addition, Manitoba's $50 million furniture industry provides an important market for hardwood lumber produced by the province's sawmill industry.



Location of existing forest industries and potential industrial development areas.



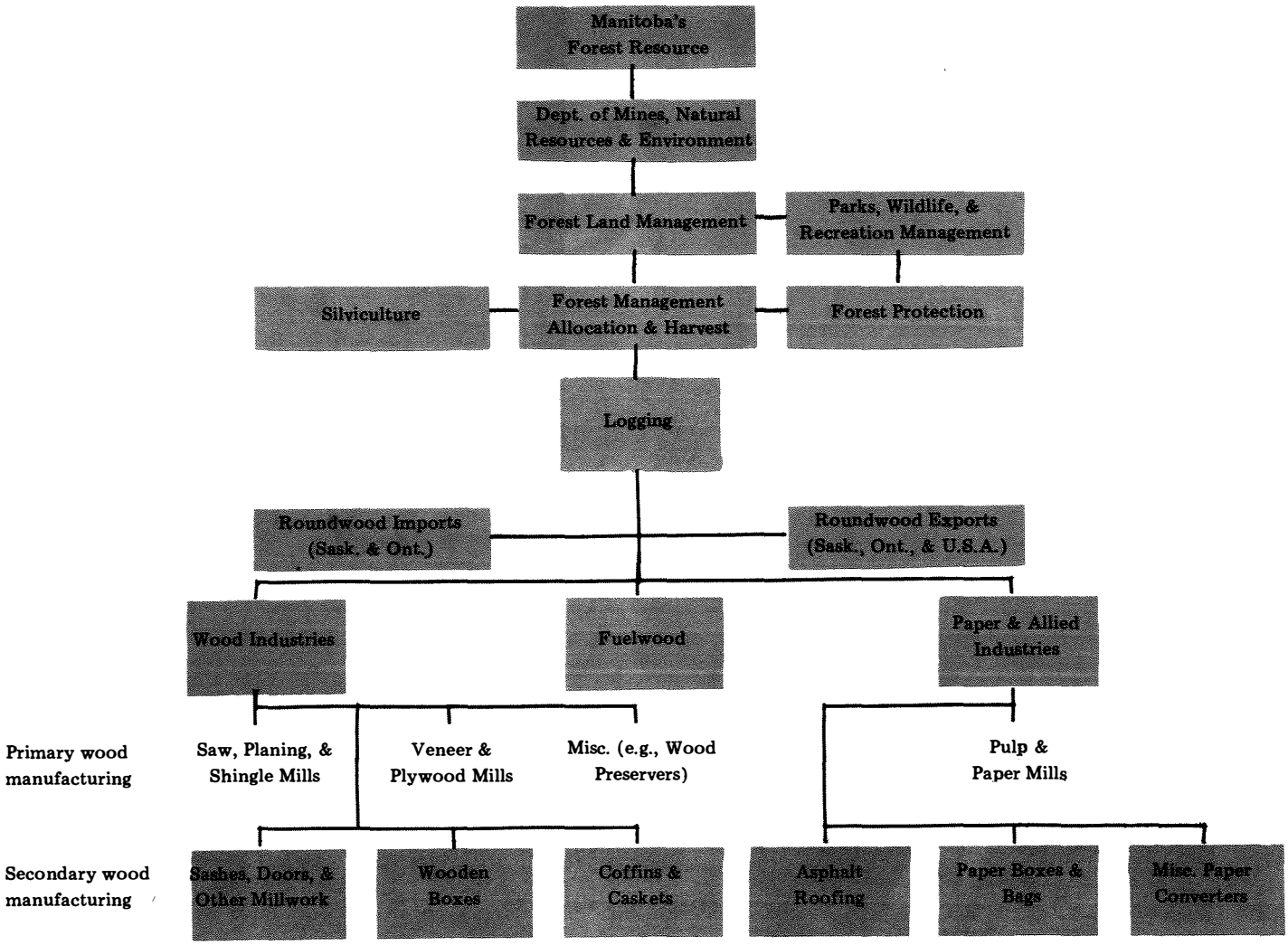
Rough-sawn lumber piled for seasoning.

Recreational use of forest lands

Forest lands that are set aside for the harvesting of timber and served by a network of roads soon invite other uses such as cross-country skiing, fishing, hunting, camping, and other recreational pastimes. These forest lands are important to urban dwellers (600 000 in Winnipeg and its suburbs), who are eager for recreational opportunities within a reasonable distance from their homes. A two-hour drive of 150 km is generally considered the maximum for daily and overnight use of forest lands and parks.

The recreational use of forest lands is a vital but intangible benefit whose value cannot be readily priced. The revenue generated by fishing, game bird, and big game licenses (approximately $2 million in 1977) represents only a fraction of the value, a situation akin to the relationship between stumpage and the total economic contribution of forestry.

In most parts of the province there is no noticeable conflict between recreational and timber uses of Crown and privately owned forest lands. However, in Whiteshell Provincial Park, where timber harvesting and recreation have been accommodated on the same lands, the multiple use concept of forest management receives a real test. Conflicts between the two uses have usually been resolved in favor of recreation. Master Plan Zoning, now in preparation by the Department of Mines, Natural Resources and Environment, will spell out single use zones in the near future.



Schematic diagram of relationships between forest management, logging, and primary and secondary wood manufacturing industries.

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