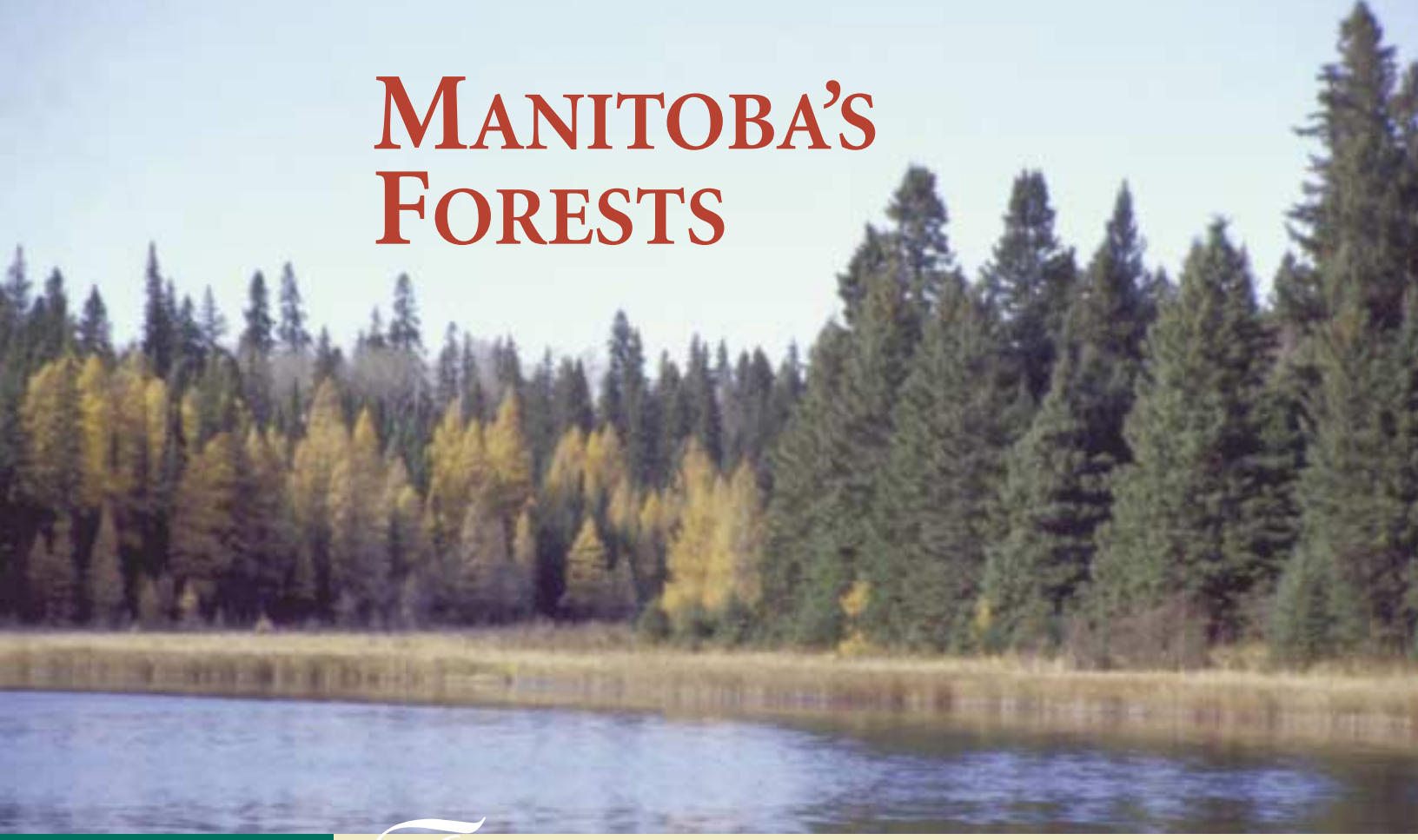
Manitoba's Forests



R.A. Bohning

I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived.

— Henry David Thoreau

Forests for Life

Whether we live in the country or the city, forests are indispensable to our lives. Trees absorb carbon dioxide and release oxygen for us to breathe. Their roots anchor soil and prevent it from washing away. Forest ecosystems shelter a wide variety of plants and animals that all have roles to play in maintaining forest health – and therefore, ours.

Through recreational activities or more contemplative pursuits, it is in forests that we reconnect with the natural world. Forests also provide jobs for many Manitobans, as well as products (some familiar, and others that may surprise you!) we use every day. Welcome to Manitoba's Forests. Read on to find out more about this incredibly versatile, valuable—and renewable—resource.

Partners in Sustainability

Because we depend on forests to meet so many of our needs, it is vital that a balance be maintained between using and protecting them. The Province of Manitoba and the Government of Canada are committed to principles of sustainable development, which means using and enjoying a resource today without compromising its integrity or its capability to provide for future generations.

The provincial government's Sustainable Development Strategy guides provincial policymaking in a number of areas, including forest development. The provincial government is also responsible for management of forest land in Manitoba, a role undertaken by Manitoba Conservation, Forestry Branch.

On the federal side, Natural Resources Canada's Canadian Forest Service (CFS) carries out federal forest research and national policy development. The CFS provides information and leading-edge technologies to ensure that Canada's forest sector remains competitive, environmentally responsible, and sustainable.

Forest Lands and Resources

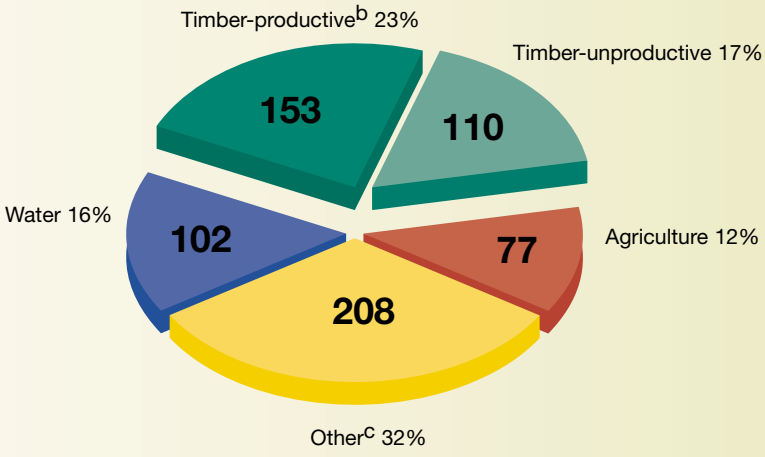
Manitoba's Forest Resource

The generous expanse of boreal forest sweeping across Manitoba has shaped much of the province's character and history. From the arrival of First Peoples to Manitoba's forested areas about 7,000 years ago, through the fur trade and heyday of the bush plane, to the present, forests have helped define the Manitoba we know today.

About 40% of Manitoba is classified as forested land. But not all forested land can be managed for timber; in fact, only 58% of Manitoba's forested lands are considered timber-productive. That is because within the boreal forest are other kinds of terrain such as muskeg and bog, where trees do not grow well. Manitoba's ratio of productive forest land to total forest land is about the same as for Canada as a whole.

The Province of Manitoba owns most (92%) of the land on which Manitoba's forests grow. Such land is known as provincial Crown land. Private landowners also own some of Manitoba's forested land, about 7%. The Government of Canada owns the remaining 1% of forested land in Manitoba, primarily as Indian Reserves.

Area Classification[a] ('000 km²)



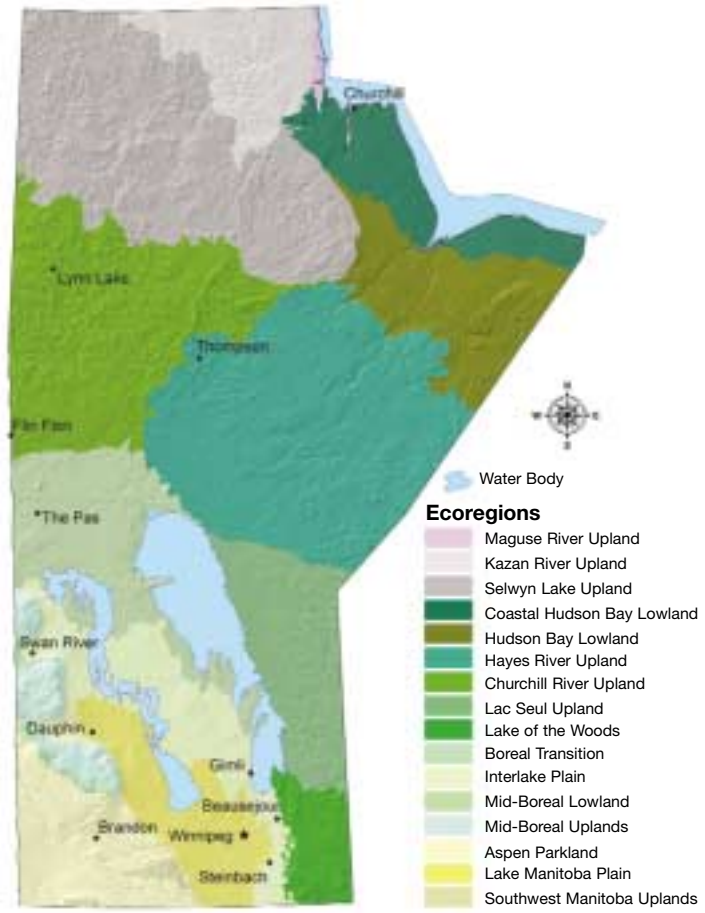
[a] Manitoba's total area is 650,000 km². Of that, 263,000 km² (40%) is forested, defined as land primarily intended for growing or currently supporting forests.

[b] Timber-productive refers to forest land that is capable of producing a merchantable stand within a resaonable length of time.

[c] Other is primarily wild land that includes tundra, alpines, and barrens and is generally not influenced by human activity.

Source: Lowe et al, 1996.

Ecoregions of Manitoba[a]



[a] Ecoregions are broad areas that show similarities in geography, climate, and vegetation.

Source: Ecological Stratification Working Group, 1996.

From Roofing Felt to Fine Furniture

While the uses for Manitoba's trees are sometimes limited by the characteristics of the wood itself, in other cases uses are limited only by the imagination! Wood is truly one of the most versatile and beautiful resources we have.

Softwood Species

White spruce and black spruce (*Picea glauca* (Moench) Voss and *Picea mariana* (Mill.) B.S.P.)
- Canada's and Manitoba's most important species with respect to volumes harvested
- Wood is light-colored, has low weight when dried, is soft, resilient, and straight-grained, and has good machining properties
- Long fibers and low resin content in both species make them ideal for pulp, paper, and newsprint manufacturing
- Highly valued for lumber used in building construction and general millwork

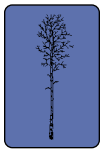
Jack pine (*Pinus banksiana* Lamb.)
- Wood is light brown in color, with medium strength and hardness characteristics, and finishes well
- Used for pulp and paper, newsprint, and lumber
- Also used in treated wood products such as railway ties, posts, and poles

Eastern white-cedar (*Thuja occidentalis* L.)
- Lighter in weight than any of the other commercial species
- Seasons well without warping and has good machining qualities
- Has a pleasing aroma, making it a popular choice for interior finishing work
- Also used for exterior finishing, outdoor furniture, and posts due to its durability and resistance to decay

Tamarack or larch (*Larix laricina* (Du Roi) K. Koch)
- Wood is moderately hard and heavy and somewhat oily
- Tends to have a spiral grain that makes its undesirable for most lumber uses
- Its strength, durability, and moderate resistance to decay suit it to special purposes such as floor planking, building skids, pilings, posts, and poles
- Not in great demand due to its limited availability

Balsam fir (*Abies balsamea* (L.) Mill.)
- Has physical characteristics similar to those of spruce but far less resilient and with lower strength properties
- Used for many of the same purposes as spruce
- Graded and marketed in the species grouping known as spruce-pine-fir (SPF)
- Favoured for Christmas trees due to its pleasing conifer scent

Hardwood Species

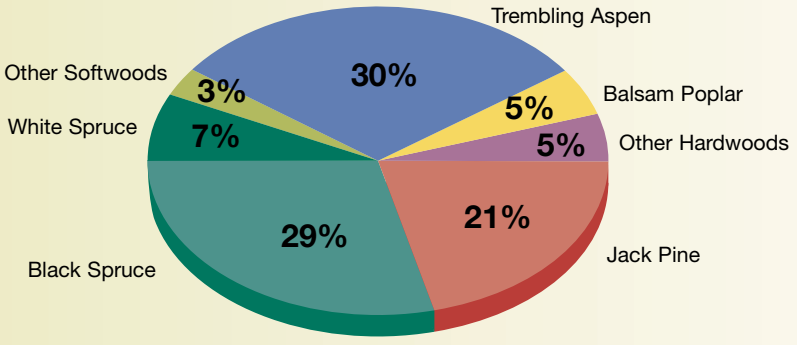


Trembling aspen (*Populus tremuloides* Michx.)
- Commonly referred to as poplar
- Makes up the majority of hardwood volume available in Manitoba
- The only hardwood species used commercially to any great extent
- Wood is white to grayish-white, relatively durable, usually straight-grained with a fine, even texture, and comparable to spruce in strength
- When properly seasoned, trembling aspen works well, holds nails satisfactorily, and takes a good finish
- Wide variety of uses including paperboard, roofing felt, lumber, pallets, boxes, furniture stock, flooring, interior finish and trim, oriented strandboard, particleboard, and fiberboard

Balsam poplar (*Populus balsamifera* L.)
- Also known as poplar
- Similar to trembling aspen with respect to most of its wood characteristics but with a coarser texture and higher incidence of wet pockets in the wood
- Can be used for most of the same products as trembling aspen, although the qualities noted above make it a less popular choice

White birch (*Betula papyrifera* Marsh.), green ash (*Fraxinus pennsylvanica* var. *subintegerrima* (Vahl) Fern.), white elm (*Ulmus americana* L.), and bur oak (*Quercus macrocarpa* Michx.)
- Hardwood species with limited commercial uses such as furniture stock, interior finishing, and flooring
- Also used as fuel wood
- Syrup (similar to maple syrup) can also be produced from white birch

Volume of Forest Growing Stock by Species, 2001



Mechantable volume 675,710,000 m^3

Source: Manitoba Conservation, 2001b.

From the Forest to the Marketplace

How Much Wood Can Be Harvested?

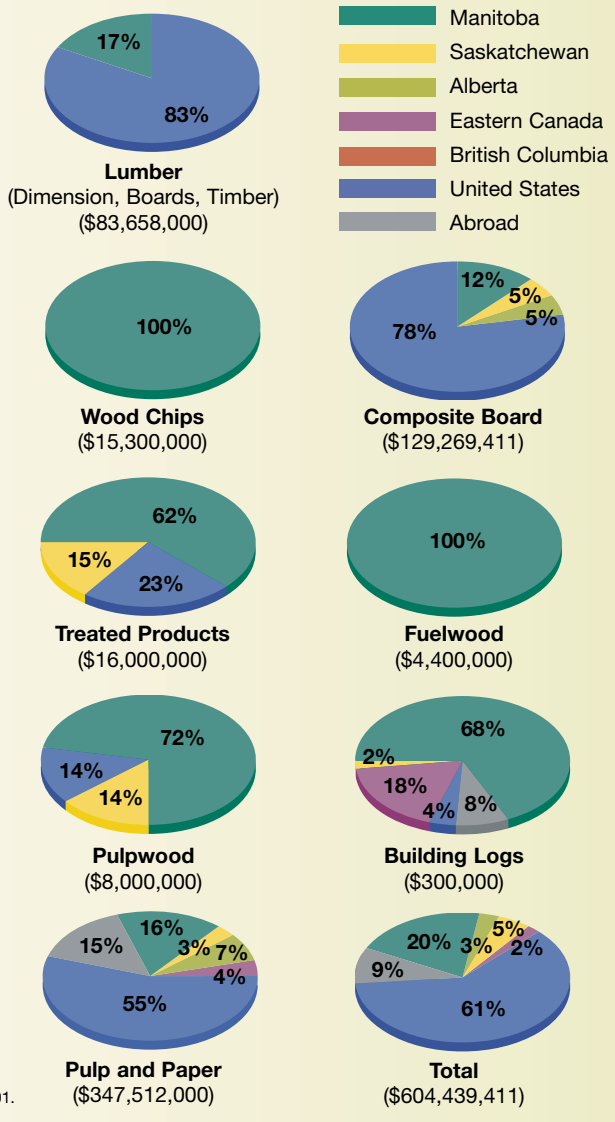
First, it must be determined how much wood will be produced on a hectare of land in a given year for a particular forest area. This depends primarily on the type of soil, as well as the species, health, and ages of the trees.

Wildfires disturb much more area in boreal Manitoba than any other type of natural or human disturbance. In addition, forested land is sometimes set aside for wildlife habitat and other non-timber uses.

Manitoba Harvest Figures

- *The Annual Allowable Cut in 2001 from provincial Crown lands was 8,900,000 m³ of wood. Of this amount, 2,200,000 m³ were actually harvested.*
- *Softwoods made up the largest percentage (65%) of trees harvested in 2001.*
- *Hardwoods accounted for 35% of trees harvested in 2001.*

Destination of Primary Forest Products by Value, 2000–2001



Source: Bohning et al., 2001.

Forest managers take all these factors into account when calculating the Annual Allowable Cut (AAC). The AAC is the volume of wood that can be harvested each year while still ensuring an ongoing supply of timber for future use.

Forest companies that wish to harvest wood from provincial Crown lands must comply with government guidelines governing harvest and reforestation practices.

Cut blocks (areas being harvested) vary in size and shape and in Manitoba average about 30-35 hectares. Areas over 100 hectares have received departmental approval under certain conditions, such as when timber is salvaged from diseased or insect-infested stands or from areas affected by fire or blowdown. Regulations also require that cut blocks be located a minimum distance from watercourses such as rivers and lakes.

Working closely with partners such as Manitoba Conservation, Tembec Inc., the Canadian Forest Service, Alberta-Pacific Forest Industries Inc. (Al-Pac), the University of Winnipeg and the Manitoba Model Forest, researchers are field-testing and evaluating new ways of harvesting timber in an ecologically and socially acceptable manner.

Primary Forest Products in Manitoba, 2000–2001

Product	Production[a,b]
Lumber (Dimension, Boards, and Timbers)	219 MM fbm
Treated Products	
Lumber	25 MM fbm
Posts and Poles	20 M m³
Miscellaneous Wood Products (Building Logs)	3 M m³
Fuelwood	100 M m³
Pulpwood	139 M m³
Wood Chips	310 M m³
Composite Board (Oriented Strandboard, Particleboard, and Fiberboard)	511 MM ft²
Pulp and Paper (Unbleached Kraft, Newsprint, and Felt Paper)	348 metric tonnes

[a] MM = 1,000,000; M = 1,000.

[b] 1 m³ of lumber = 177 foot board measure (fbm); 1 m³ of solid wood = 616 foot board measure (fbm).

Source: Bohning et al., 2001.

An Industry on the Move

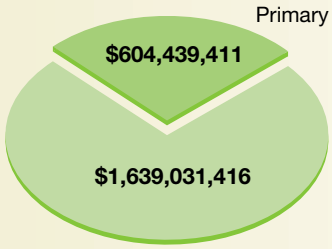
Manitoba's forest industry experienced dramatic growth from 1991 to 2001. The total value of forest products produced in the province surged from approximately $830 million to over $1.6 billion during this period.

The industry is made up of two broad sectors: primary and secondary. Primary refers to the companies manufacturing the products that typically come to mind when we think of the forest industry, such as lumber, plywood, fiberboard, oriented strandboard, and pulp, paper, and newsprint.

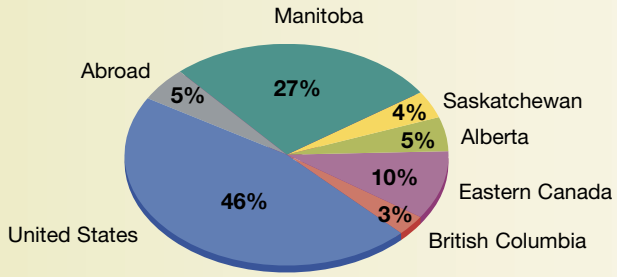
Manitoba's secondary forest products industry is a relatively large part of the province's forest sector, with close to 330 companies that employ over 13,000 people. It is also unusual among Canadian provinces in that the vast majority of the wood fiber is obtained outside the province. Products include pre-fabricated buildings, cabinets, doors and windows, engineered building components, and office furniture. The size of Manitoba's secondary industry reflects the province's long history as a manufacturing center and its central location as a transportation hub.

Market Destination of Manitoba's Forest Products, 2000–2001

Total Value of Forest Products

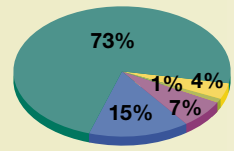


Destination of Forest Products by Value

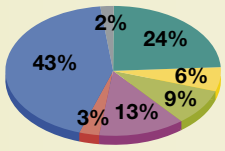


Source: Bohning et al., 2001 and 2002.

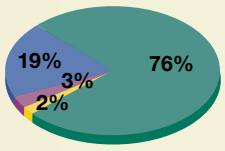
Destination of Secondary Forest Products by Value, 2000–2001



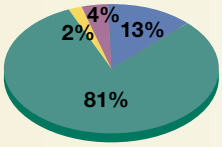
Prefabricated Buildings
($40,858,454)



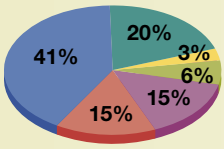
Commercial and Institutional Furniture
($25,109,698)



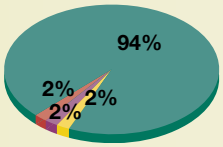
Boxes and Pallets
($25,032,784)



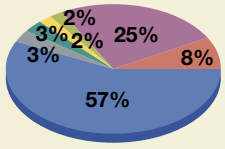
Other Furniture and Fixture Industry
($8,794,071)



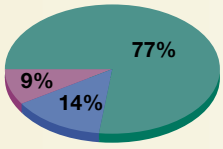
Architectural Woodwork/Fixtures
($60,425,798)



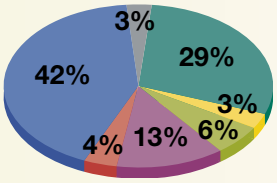
Office Furniture
($10,004,167)



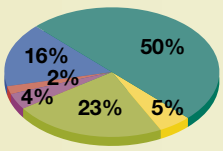
Upholstered Furniture
($434,700,000)



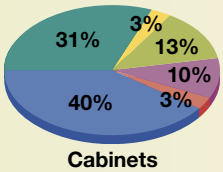
Engineered Building Components
($99,727,283)



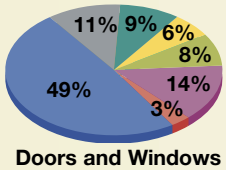
Total
($1,639,031,416)



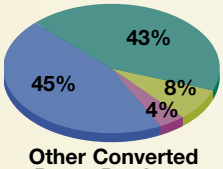
Millwork
($30,355,276)



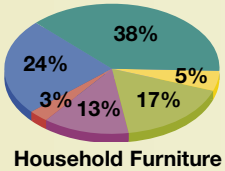
Cabinets
($235,499,795)



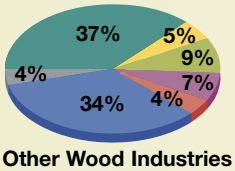
Doors and Windows
($276,579,000)



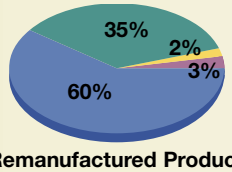
Other Converted Paper Products
($28,200,000)



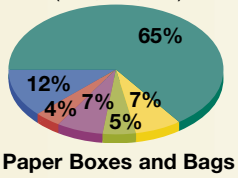
Household Furniture
($29,459,430)



Other Wood Industries
($35,177,857)



Remanufactured Products
($136,041,136)



Paper Boxes and Bags
($163,066,667)

Source: Bohning et al., 2002.

Emerging Opportunities and Traditional Uses

First Nations Forestry Program (FNFP): Helping to Create Opportunities and Jobs

The FNFP aims to improve economic conditions for First Nation people in forest communities by providing funds for forestry development and increasing their forestry-related knowledge and capabilities to facilitate greater participation in Canada's forest sector. It is a joint initiative of Natural Resources Canada's Canadian Forest Service and Indian and Northern Affairs Canada in partnership with First Nations.

Since its establishment in 1996, the FNFP has supported 84 projects in Manitoba with $2 million of FNFP funding that, in turn, leveraged another $3.8 million from other sources and resulted in over 5,000 person-weeks of work.

More information about the FNFP can be found at www.fnfp.gc.ca

A New Way of Doing Business in the Conventional Forest Sector

Partnerships between First Nations and forest companies operating in Manitoba are changing the face of Manitoba's conventional forest industry.

For many years, Aboriginally owned and operated companies have performed logging, hauling, and other contracts tendered by existing larger forest companies such as Tembec Inc., Louisiana-Pacific Canada Ltd., and Tolko Industries Ltd. Other Aboriginal business people operate small sawmills or run small secondary operations such as manufacturing posts and poles. In 2001, 58% of Manitoba's First Nation and Reserve communities surveyed were involved in the forest industry or other related activities.

Photos: R.A. Bohning

As the potential for major new forest industry development in areas either formally set aside by treaty or occupied by Aboriginal peoples is identified, a new approach to such development is emerging – that of a shared economic future.

For example, several large forestry companies in Manitoba are exploring opportunities with First Nation communities to share/build processing facilities and to share resource stewardship responsibilities.

The Forest: An Ages-old Provider

About three-quarters of Canada's Aboriginal people live within the boreal and temperate forest regions. For thousands of years they have depended on the plant and animal resources of the forest for food, clothing, and shelter and to meet their medicinal and spiritual needs.

Seneca root, for example, is a plant widely used by Aboriginal people in Manitoba's boreal forest. This versatile plant is used on its own or mixed with other herbs to treat a variety of ailments such as sore throat and toothache, to relieve pain and prevent infection, or as a heart medicine or blood purifier.

There is a burgeoning market worldwide for medicinal plants, edible mushrooms, and syrups from trees, as well as twigs, mosses, and other plants that can be used in floral arrangements and for crafts. In fact, Canada's non-timber forest products (NTFP) industry, as it's becoming known, brings in revenues of more than $442 million annually.

Seen in this light, it would appear that the growing NTFP industry offers solid opportunities for Aboriginal people to earn incomes in an environment in which they are familiar – the forest. It is not that simple, however. While some members of the Aboriginal community have chosen to pursue economic opportunities offered by the NTFP industry, others strongly believe that some provisions from the forest (and plants with healing qualities, in particular) are gifts from the Creator and as such cannot have a monetary value attached to them. Such differences in views will affect how the NTFP industry develops in Manitoba and elsewhere across Canada.

Putting Woodlots to Work

Woodlots, the small, forested areas that dot farmlands or follow watercourses, are an integral part of local ecosystems. Woodlots help to prevent soil erosion on open land and watersheds, serve as windbreaks, provide habitat for many animal and bird species, and have aesthetic and recreational value.

About 7% of Manitoba's productive forest lands are privately owned. Carefully managed woodlots on these lands can provide a landowner with significant income.

Woodlot owners are also taking advantage of the many non-timber forest product opportunities that woodlots offer. For example, the Manitoba maple is tapped to produce high-quality syrup. About 9,100 litres of syrup from Manitoba trees were produced in 2001.

Other woodlot owners are responding to the increasing consumer demand for edible mushrooms by growing delicacies such as shiitake and oyster mushrooms on oak and poplar logs. Christmas tree farms have long been a preferred source of additional income for small landowners: 11,000 Christmas trees were harvested from private lands in 2001.

Woodlot management programs delivered by the Manitoba Habitat Heritage Corporation and Manitoba Forestry Association provide a wealth of information and assist landowners to develop management plans. These associations also promote working cooperatively with other sectors (including agriculture, fisheries, and wildlife) and sponsor field days and workshops throughout the year.

Photos: R.A. Bohning

Traditional Aboriginal Uses of Products from the Forest

Manitoba's Aboriginal peoples have long relied on both softwood and hardwood species to furnish products meeting a wide variety of food, shelter, technological, health, and social needs.

Wood: Used as structural components in a wide range of items such as frames for tipis, canoes, sweat lodges, and toboggans. Also used to make tools and implements such as canoe paddles, arrow shafts, fish net floats, traps and snares, hide scrapers, and berry mashers. Branches can be used to make lean-to shelters, meat drying racks, and hide stretchers. Dry or rotting wood of various species is burned to smoke meat. Wood is also important as a fuel source.

Pitch: Melted spruce pitch is used to seal the joints in birch bark canoes and baskets, to stick together strands of willow bark twine, and to waterproof rawhide ropes and twine.

Bark: Spruce bark is used to make canoes, mats or tent flooring, and shingles.

Food: Spruce cambium can be eaten as an emergency food; the inner bark of white birch can be eaten in early spring as a sweet treat and starvation food and can also be boiled to make a drink. Birch sap can be collected and drunk as a health food or boiled down to make syrup.

Medicinal: Leaves, inner and outer bark, powdery outer layer (lichens and dead periderm), buds, roots, pitch, and wood can be prepared in a variety of ways. Ailments and conditions treated range from relatively minor, temporary conditions such as colds, insect stings, and frostbite to more serious and chronic conditions such as heart disease, arthritis, and cancer. Specific plants are also used to help alleviate menstrual discomforts and to treat infertility. A sleeve of birch bark from the trunk can be used as a cast for a broken arm or leg, sprained ankle, or swollen limb.

White Spruce: Manitoba's Provincial Tree

White spruce was an invaluable resource in building the famous York boats used by Hudson's Bay Co. traders to transport furs to York Factory on Hudson Bay, where they were put on sailing ships bound for England. York boats were about 36 feet long and could weigh up to 3,000 pounds empty.

From York boats to newsprint to still-untouched forests, white spruce has been, and continues to be, a priceless part of Manitoba's natural and human landscape. For this reason it has earned its status as Manitoba's provincial tree.

JOBS AND PRIDE

Forest Industry Provides Work for 1 in 25 Manitobans

One in 25 Manitobans works directly or indirectly in the province's forest industry. Chances are you know someone whose occupation relies on the forest, because the kinds of jobs the industry provides are varied and diverse: a feller-buncher operator out in the bush, the receptionist who does word processing at a lumber brokerage, a shift worker at the local planer mill, and the purchasing agent ordering supplies needed by a furniture manufacturer.

Statisticians and others who analyze employment trends categorize jobs into two groups: direct and indirect employment. In the forest industry, direct employment refers to jobs generated in either the primary or secondary forest industries (see explanation of primary and secondary industries on page 9).

Indirect employment refers to jobs where people are not necessarily working 'hands on' with forest products but have a connection with primary or secondary forest product manufacture or processing. An example here would be a worker with a lumber and hardware store.

Even more indirect employment is created further down the line through forest products destined for export. For example, the dockworker who loads lumber into the hold of a freighter bound for Japan is gaining indirect employment from the forest industry.

Recreation and tourism, and particularly eco-tourism, also contribute positively to Manitoba's overall employment picture. People who run these types of businesses in Manitoba's forested areas know just how important the experience of the forest is to their clients – and to their bottom line.

Photos: R.A. Bohning

Employment in Manitoba's Forest Industry, 2000–2001

	No. Firms	Direct Employment (Person-years)	Indirect Employment[a] (Person-years)	Total Employment[a] (Person-years)
Primary Industry[b]				
Sawmills				
Production: More than 5 MM fbm	5	1,040	1,560	2,600
Production: 1 MM fbm - 5 MM fbm	14	180	270	450
Production: 100 M fbm - 1 MM fbm	29	90	135	225
Production: Less than 100 M fbm	140	85	127	213
Wood Treating Plants	3	142	213	355
Pulp, Paper and Fiberboard Mills	6	1,495	2,243	3,738
Fuelwood Producers	N/A	56	84	140
Miscellaneous Wood-using Industries	14	39	59	98
Independent Log Producers	N/A	190	285	475
TOTAL	**211**	**3,317**	**4,976**	**8,293**
Secondary Industry[c]				
Prefabricated Buildings	66	402	338	740
Cabinets	98	2,408	2,023	4,431
Doors and Windows	10	1,740	1,462	3,202
Architectural Woodwork / Fixtures	12	460	386	846
Engineered Building Components	19	591	496	1,087
Remanufactured Products	16	513	431	944
Millwork	17	231	194	425
Boxes and Pallets	19	452	380	832
Other Wood Industries	14	292	245	537
Household Furniture	18	347	291	638
Upholstered Furniture	6	4,008	3,367	7,375
Office Furniture	7	66	55	121
Commercial and Institutional Furniture	6	330	277	607
Other Furniture and Fixture Industry	4	63	53	116
Paper Boxes and Bags	9	730	613	1,343
Other Converted Paper Products	7	399	335	734
TOTAL	**328**	**13,032**	**10,946**	**23,978**
Combined Total for Primary and Secondary Industries	**539**	**16,349**	**15,922**	**32,271**

[a] Numbers rounded off to nearest whole number.

[b] Indirect employment in the primary wood-using industry is calculated by multiplying direct employment by 2.5.

[c] Indirect employment in the secondary wood-using industry is calculated by multiplying direct employment by 1.84.

N/A = not available.

Source: Bohning et al., 2001 and 2002, and Manitoba Bureau of Statistics, n.d.

SHARING THE FOREST

A Role for Government

Manitoba's forest policies take into account the many competing uses of the forest and balance those needs for the benefit of all. These policies have been developed by the provincial government after consulting with the many users of the forest. They set the direction for future forest management.

Protected Areas Initiative (PAI)

Manitoba's Protected Areas Initiative is a provincial government program dedicated to building a network of protected areas that contains the tremendous biological diversity found in Manitoba's varied landscapes. Manitoba's commitment to establish a network of protected areas began in 1990, when the province became the first jurisdiction in Canada to commit to World Wildlife Fund Canada's Endangered Spaces Campaign. Since 1990, 53,650 km² have been set aside in Manitoba under the Protected Areas Initiative.

More information about the PAI can be found at www.gov.mb.ca/natres/pai

On March 5, 2002, the government released Next Steps: Priorities for Sustaining Manitoba's Forests, a document outlining the direction for government, industry, and First Nations to help Manitoba's forests thrive in the future. The document builds on past policy work and outlines the government's three primary goals for the survival of Manitoba's forests:

- protecting forest ecosystems throughout the province
- increasing opportunities for Aboriginal communities; and
- making Manitoba a leader in the promotion of a sustainable forest economy.

The Manitoba government will work with forestry companies, contractors, quota holders, Aboriginal organizations, First Nations, research agencies, environmental organizations, and other governments to address these priorities.

Photos: R.A. Bohning

Multiple Use Resource Values, 2000–2001

Fish

Angling Licenses ('000) 186

Estimated Fish Permit Revenue ('000) $2,216

Estimated Recreation days ('000).....2,700

Commercial Fish Catch ('000 kg) 14,097

Estimated Market Value of Fish Catch ('000) $27,706

Game

Hunting Licenses ('000) 83

Estimated Game Permit Revenue ('000) $3,590

Estimated Recreation Days ('000).....385

Outdoor Recreation[a]

Visitors ('000).....5,662

Camping Groups ('000) 250

Estimated Park Permit Revenue ('000).....4,840

Trapping

Trapper Licenses ('000) 6

Estimated Value of Fur Harvest ('000) $1,967

Watershed Benefits

Net Mean Annual Yield[b] in River Discharges ('000 000 m^3) 65,500

[a] Combined provincial and federal park figures.

[b] Difference between outflow and inflow river discharges, with the majority of the water being produced in a forested area.

Source: Manitoba Conservation, 2001a.

Photos: R.A. Bohning

The Forest as Teacher

The Manitoba Forestry Association (MFA) operates four interpretive centers in Manitoba, each of which offers educational programs and hands-on experiences of the forest environment: Sandilands Forest Centre (located near Hadashville), Interlake Forest Centre (Fisher Branch/Hodgson), Duck Mountain Forest Centre (Minitonas), and Atikameg Forest Centre (The Pas).

For more information, contact the MFA at (204) 453-3182 or visit the MFA Web site at www.mbforestryassoc.ca

Photos: R.A. Bohning

Management & Protection of a Valuable Resource

Silviculture

The theory and practice of controlling the establishment, composition, growth, and quality of forest stands to achieve the biological and economic objectives of forest management.

Endings and Beginnings

As with all living organisms, as forests get older their growth and other biological activities slow down. The forest canopy closes in, preventing direct sunlight from reaching the forest floor and inhibiting the growth of understory species. Moss, lichens, and disc-shaped fungi called conks start to appear on tree trunks; carpenter ants or root rot move in. The forest is ready for renewal.

R.A. Bohning

C. Kuzenko

Once a tree succumbs to the carpenter ants excavating its base or to the rot that has invaded its core, it falls over and the decay process begins, releasing nutrients into the soil to be used by other plants. Sunlight can again shine down, stimulating growth on the forest floor.

Extreme outbreaks of insects or diseases, however, can have a negative impact on Manitoba's timber supply and therefore on its economy. Manitoba Conservation monitors forest insects and diseases to anticipate and manage outbreaks that could significantly impact Crown or private forest lands. Natural Resources Canada's Canadian Forest Service provides scientific expertise to help the province identify and manage these insect and disease problems.

Forest fires are also a powerful agent of renewal. When fire starts in the forest, timber supply, wildlife habitat, property, and human lives are all at stake. In the summer of 2000, close to 1,700,000 m^3 of merchantable volume (trees that could have been harvested for commercial use) were lost to wildfire. That's enough timber to run Tembec's Pine Falls newsprint mill for five years or to build about 3,600 homes!

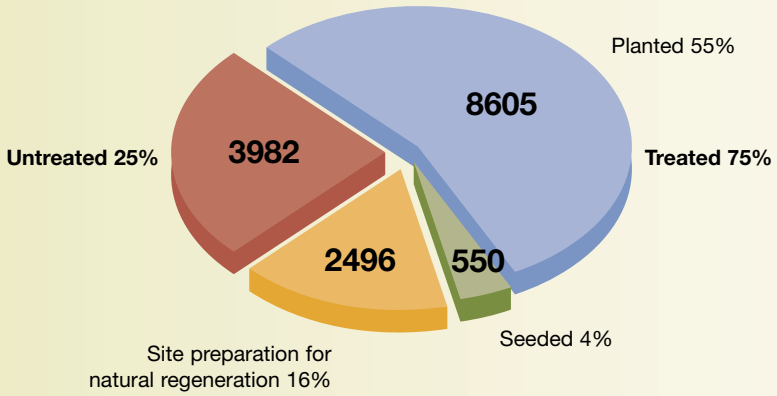
W.J. de Groot

Manitoba Conservation monitors conditions to determine the probability of fire starts and mobilizes resources such as air tankers and firefighting crews to respond quickly to outbreaks. Manitoba's fire season begins as early as April and lasts through October each year. Up-to-date fire situation reports can be found on Manitoba Conservation's Fire Program Web page at www.gov.mb.ca/conservation/fire/index.html.

Canadian Forest Service fire researchers are working with Manitoba and the other provinces and territories to develop Web-based fire management information systems to help them to quickly identify the nature and extent of forest fire conditions.

R.A. Bohning

Silvicultural Activities, 2000–2001[a] (hectares)



[a] Total area of forest renewal activity was 15,633 hectares in 2000–2001. Of that, 11,651 hectares (75%) were treated with planting of seedlings, sowing of seeds, or site preparation. The remaining 25% was left to regenerate naturally.

Source: Manitoba Conservation, 2001b.

Setting a Good Example: the Manitoba Model Forest

In 1992 the Canadian Forest Service established a network of 11 model forests across the country to find new, innovative ways of managing our forests' sustainability. Manitoba Conservation has been a partner in the Manitoba Model Forest since its inception and is one of 25 partner organizations. The Manitoba Model Forest comprises 1.05 million hectares of boreal forest, stretching eastward from Lake Winnipeg to the Manitoba-Ontario border.

The Manitoba Model Forest funds a wide range of research, development, and educational projects. Examples include development of a computer program to help predict the occurrence of archaeological resources in the forest, research into woodland caribou habitat, and the Green Kids Program.

More information about the Manitoba Model Forest can be found at www.manitobamodelforest.net

C. Kuzenko

Growing the New Forest

Once-forested areas must be returned to the same forest types as were there before. Following a site assessment, forest or land managers will decide whether the area should be left to regenerate naturally or if planting will be required.

Both for stands left to regenerate naturally and where planting has taken place, various silvicultural treatments may be undertaken at different times to ensure that young trees are able to establish themselves and to continue growing well. Such treatments can include thinning of stands to permit more light and nutrients to reach stronger trees and suppressing competing plant species. Seventy-five per cent of the total area harvested in 2000-2001 received some kind of silvicultural treatment to foster regeneration. Forest renewal and harvest areas for a given year will not be equal as the renewal activity occurs on lands harvested the previous year.

The overall objective is to ensure that all stands meet a standard known as Free to Grow, wherein individual trees have the space required for optimal growth. Surveys to determine whether stands have met the Free to Grow standard are generally undertaken 14 years after the stands have been established.

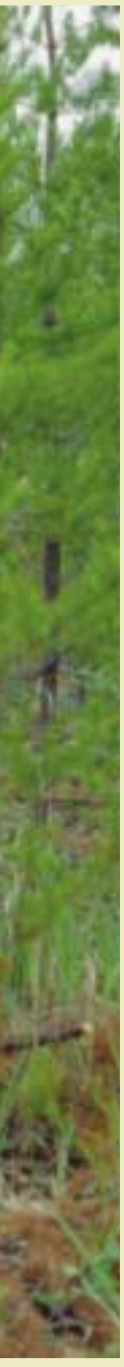
R.A. Bohning

W.J. de Groot

R.A. Bohning

Forest Certification

Consumers of forest products are increasingly requiring that forest products companies manufacture their products in ethical and sustainable ways. Certification by internationally recognized standards organizations is one means by which forest industry companies can show consumers that their forest stewardship practices are sound. Two of Manitoba's Forest Management License holders, Tolko Industries Ltd. and Tembec Inc., are International Standards Organization (ISO) certified. Louisiana-Pacific Canada Inc. is certified by the Sustainable Forest Initiative (SFI). Tembec is also working toward Forest Stewardship Council (FSC) certification.



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Cette publication est aussi disponible en français.

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Working Together to Address Climate Change

Scientists believe that increased greenhouse gases (particularly carbon dioxide) in the atmosphere are contributing to global warming. Atmospheric carbon dioxide is increased by the burning of fossil fuels. At the same time, carbon dioxide is removed from the atmosphere by forests, agricultural soils, and oceans.

Canada's forests hold large stocks of carbon stored in trees, soil, and peat. When a forest's carbon stock is increasing, the forest is called a sink, and when it is decreasing, the forest is called a source. Whether a forest is a sink or a source can change over time. When the forest is affected by disturbances that are natural (such as fire, insects, and diseases) or human-caused (such as harvesting), some of the carbon is returned to the atmosphere as carbon dioxide – the forest is a source. As the forest grows again, it absorbs carbon dioxide from the atmosphere and uses the carbon to produce plant tissue (which falls and accumulates in the soil) – it is a sink.

Canada's federal and provincial governments are working together to better understand the potential impacts of climate change and how these impacts can be mitigated. This includes joint data collection, research, and participation in initiatives such as the Canadian Climate Impacts and Adaptation Research Network's Forest Sector (http://www.forest.c-ciarn.ca). They are working together to ensure that Canada's forests and their management are part of the solution and not part of the problem.

Natural Resources Canada
Canadian Forest Service
Ressources naturelles Canada
Service canadien des forêts

Manitoba

Canada