

**A Case Study of Conservation
in the Abitibi Region
(Quebec–Ontario Border)**

FINAL REPORT

Prepared for the

**National Round Table on the
Environment and the Economy**

as part of its

**Conserving Canada’s Natural Capital:
The Boreal Forest Program**

ArborVitae Environmental Services

Boldon Group

Alexandre Boursier

Lorne Johnson

Thomas Stubbs

July 21, 2004

This case study has been commissioned as background research for the NRTEE’s Conserving Canada’s Natural Capital: The Boreal Forest program. The views expressed in the case study are those of the authors, and do not necessarily represent those of the National Round Table, its members, or the members of the program’s Task Force.

Preface

The National Round Table on the Environment and the Economy (NRTEE), through its Conservation of Natural Heritage program, is exploring the status of conservation and identifying key challenges and opportunities at the national level in Canada. The results to date from that program have prompted the NRTEE to delve further into the extent and effectiveness of conservation on the working landscape in Canada. The agency recognizes that the extent of the non-reserved portion of the landscape, coupled with the growing pressure for use of these lands, makes it imperative to enhance conservation efforts and sustainable resource use on non-reserved lands. Moreover, as use pressure in the boreal forest in particular intensifies, and as the last remote areas are threatened by access, the NRTEE feels that there is a limited window of opportunity to establish the framework necessary for securing the natural capital of this ecoregion.

Accordingly, the NRTEE has established a spin-off program to examine ways to advance conservation on the working boreal forest landscape, with an emphasis on regulatory and fiscal policy reform. The new program, *Conserving Canada's Natural Capital: The Boreal Forest*, has the following objectives:

- to develop specific short- to medium-term recommendations in the area of regulatory and fiscal policy that will alleviate barriers to conservation;
- to identify best practices and national-level incentives and instruments; and
- to describe the current challenge, the role of major players and the range of policies that influence conservation in Canada's boreal forest.

To implement the program, the NRTEE struck a task force comprising representatives from extractive resource industry sectors, non-governmental organizations, academe and national Aboriginal organizations.

In support of the objectives defined above, the Boreal Forest program will yield two major products: a *State of the Debate* report and a set of three case studies. The *State of the Debate* report will outline current issues in Canada's boreal forest, identify best practices, and assess the potential use of regulatory and fiscal policy in furthering conservation and integrating it with economic activity in Canada's boreal forest. The report will assess the debate surrounding conservation in the boreal forest and summarize the extent of consensus and reasons for disagreement.

The role of the case studies is threefold:

- to outline key regulatory and fiscal barriers to conservation in the case study areas, focusing on those that are national in scope;
- to identify pragmatic and nationally applicable areas of recommendation on how regulatory and fiscal policy can promote conservation in the boreal forest in a way that supports the general program goal and informs policy development in this area; and

- to identify (where applicable) examples of current best practices and national-level incentives and instruments that seek to balance conservation with economic development.

Three regions have been selected as the case study areas:

- the Muskwa-Kechika Management Area (northwestern British Columbia including parts of Yukon and the Northwest Territories);
- the Al-Pac Forest Management Area (northeastern Alberta); and
- the Abitibi-Témiscamingue region (Quebec–Ontario border), which is the focus of the present report.

Case study regions were chosen by the Boreal Forest task force using the following criteria:

- pressure of multiple use and conflicts (many resource sectors involved);
- presence of multiple jurisdictions;
- presence of innovative approaches (examples of best practices);
- incorporation of aspen parklands, taiga and boreal forest;
- potential for generating forward momentum; and
- balanced geographic representation.

Regulatory and fiscal policies are of primary interest in the case studies. Regulatory policy is a key driver in determining how resource development is allocated and managed, and it has clear impacts on conservation. Fiscal policy is one of the most powerful means that governments have to influence outcomes in the economy, but it is not typically employed in a consistent and strategic manner to promote sustainable development objectives.

The case studies are concerned with conservation on the working landscape. Their focus is on facilitating development that is more sustainable than current approaches and not simply on creating more protected areas. Thus they will be exploring issues where the risk of environmental loss or degradation is real, where society's long-term interests would be better served by a more precautionary approach, and where there are gaps in the current set of checks and balances.

Executive Summary

Through its Conserving Canada's Natural Capital: The Boreal Forest program, the National Round Table on the Environment and the Economy (NRTEE) is examining how to advance conservation on the working boreal forest landscape. The Abitibi region case study is one of three conducted across the boreal forest region in Canada. The impetus for the Boreal Forest program came from the agency's Conservation of Natural Heritage program, which is exploring the status of conservation and identifying key challenges and opportunities at the national level in Canada.

The Abitibi region comprises northwestern Quebec and northeastern Ontario. It encompasses a large tract of predominantly forested land that is at or near the northern limit of commercial forest operations in the region. The Abitibi region is also world-famous as a mining centre and boasts many well-known mines and mining companies, such as Noranda, Falconbridge (59% of which is owned by Noranda) and Placer Dome. The area is heavily resource-dependent, and this has created an economic environment in which many jobs are highly paid, employment is declining and there are few opportunities outside the resource-based sectors. Consequently, populations in all major non-Aboriginal communities declined by 8% from 1996 to 2001. In contrast, the population of Aboriginal communities is rising, although the number of residents in these communities is roughly 5% of the regional total.

The Abitibi region has always been resource-dependent. It was on a major fur trade route in the late 17th century, and during the last century it yielded forest products, minerals and hydroelectric power. Forest management has certainly changed throughout this period, with the current approach of sustainable forest management becoming dominant in the last decade. The existing forest represents the net outcome of historical human and natural disturbance, with offsetting forest growth and development processes.

Although the case study area was almost equally split between Quebec and Ontario, many of the observations and recommendations pertain to the case study region as a whole. Perhaps the most striking conclusion is that, although the forest has been industrially exploited for the past century, the forest ecosystem is largely healthy. The main conservation concern in the region is woodland caribou, which is a threatened species under the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) rating system. The caribou is an "umbrella" species, meaning that the act of conserving it simultaneously conserves many other species and values. Caribou are very sensitive to human presence, and their range has been receding northwards and their populations declining as human use of the forest expands and intensifies. Access is a particularly critical factor, improving the ability of natural predators and humans to hunt them and expanding human presence. Development and implementation of an effective caribou conservation strategy would have a dramatic impact on current management and timber harvest levels.

There has been little effort to manage caribou and develop a conservation strategy due to many of the general constraints to conservation in the case study area. The consultants

found that there was no joint effort on the part of the two provinces to manage caribou, even though the species has a large range and crosses back and forth between Ontario and Quebec. Only the Lake Abitibi Model Forest has conducted caribou and other landscape-level research in both provinces that has also involved researchers from both provinces. Within Quebec, there is little forest management planning at the landscape level and little conservation effort directed toward caribou. In Ontario, while landscape-level planning approaches have been developed and are being implemented, caribou conservation guidelines have been developed only for the northwest and are not applicable or applied in the northeastern part of the province.

In both provinces, there is an absence of regional land use planning, which would integrate and balance the various uses of the land on a large-scale basis. Such a process would contribute to caribou conservation by leading to the development of a well-planned, multi-purpose road network and the identification of remote or roadless areas, which could shift over time around the landscape. An integrated regional land use planning process would also consider the cumulative impacts of all users over an extended period of time. Such a process might also improve the cohesiveness of the regional protected areas network, under which less than 3% of the area in the study zone is currently protected. Protected areas ought to form a major component of a sustainable forest management system, and our observation here is that there are too few protected areas in the Abitibi area to serve this purpose. (This statement must be put into context by noting that Ontario's Living Legacy brought the proportion of protected area up to 12% for the province as a whole and that Quebec is in the process of adding additional protected areas, some of which will be in Abitibi; however, the case study area is quite large, hence the observation.)

The development of a caribou conservation strategy would also provide some stimulus to address the lack of resources within the resource management ministries of Quebec and Ontario. This lack of resources, combined with capacity issues in many Aboriginal communities and their disinclination to participate in a resource management framework that many feel does not respect their values and rights, hinders the potential to develop and implement a comprehensive conservation strategy.

While extinction of the caribou is a glaring, imminent ecological threat unless current approaches are overhauled, there are a number of positive trends and developments. Perhaps one of the most significant is the growing importance of forest certification. The larger forest companies in Abitibi are committed to having their operations become certified, and Ontario has recently announced it will require the certification of all licence holders by 2007. This will push both companies and governments alike to adopt more conservation-oriented approaches, although it will also put substantial pressure on provincial governments and small and medium-sized forest companies to pull their weight. In Quebec, the provincial government has signed landmark agreements with the James Bay Cree (to the north of the study area) and a more focused agreement with the Algonquin south of Abitibi. These may serve as precedents and an incentive for First Nations in the Quebec part of the Abitibi region to reach a similar type of agreement. (In Ontario, no agreements of this type have been signed and none appear imminent.)

1 Introduction

The NRTEE is approaching its assessment of barriers to conservation in the boreal region by examining issues in the forest portion of that region and, more specifically, in the allocated portion of the boreal forest (also referred to as the “working landscape”). In general, the boreal region can be subdivided into areas that are (a) resource-productive, allocated and accessed, (b) resource-productive but not yet allocated and may or may not be accessed and (c) non-resource productive and which may or may not be accessed. The intention of the NRTEE’s Boreal Forest program is to improve conservation efforts in the allocated portion of the boreal region and, by extension, to ensure that encroachments into the other parts of the region are undertaken in a sustainable manner employing best practices.

The Abitibi region, bisected by the Quebec–Ontario border, provides a proxy for assessing conservation in the allocated portion of the boreal region in Eastern Canada. The boreal region in Eastern Canada is characterized by more than a century of resource exploitation (trapping, logging, mining, hydroelectric development, tourism, etc.). The land is almost fully allocated, and there is often a multitude of resource development pressures on the same landscape and a broad range of users and/or stakeholders. In addition, across this region numerous communities depend on resource exploitation for their survival, and many are facing aging and/or declining populations. Modification of land use and allocation and even land use practices is made highly complex by these factors.

Work for this case study included a review of the literature and studies relevant to the region, a review of legislation that affects the conservation and use of the boreal forest, and interviews with numerous stakeholders, researchers and other people who are knowledgeable about the region. The next section describes in more detail the study region, the geographic and political context, and the major players and stakeholders.

2 Case Study Area, Key Players and Land Use Context

The name “Abitibi” is derived from a Cree and Ojibway expression meaning “halfway water,” which refers to Lake Abitibi’s location at roughly the mid-point between James Bay and the Ottawa River (Marsh 2000). The name also hints at the area’s rich history during the fur trade period. The area’s economy continues to this day to be dominated by resource industries.

The case study area is bisected by the Quebec–Ontario border, which is also the basis for the boundaries of municipalities, wildlife management areas, forest management areas and provincial government districts. Each province has its own regulatory system, and although there are some similarities between requirements and practices on both sides of the border, the differences are more numerous and more profound. As a result, the research on the case study effectively split into two areas of investigation: Quebec and Ontario.

2.1 Physiographic Characteristics

The Abitibi-Témiscamingue region (also referred to as the Abitibi region in this report) is located in northeastern Ontario and northwestern Quebec, but there is no widely accepted definition of the region. Some people we spoke with felt that the clay belt could be considered as the Abitibi region. There is also a geological formation known as the Abitibi, and there are various Abitibi administrative areas, chiefly on the Quebec side. Lake Abitibi spans the Quebec–Ontario border, and the Lake Abitibi Model Forest takes in a large area north of Iroquois Falls, adjacent to the Quebec border and stretching almost to Cochrane in the west.

We chose to delineate our study area as consisting of a core and an extended area. Most if not all people would consider the core area to be part of the Abitibi region. The extended area has many of the characteristics of the Abitibi but may not fit within other definitions of the region. In Figure 1, the core area is shown as the area bounded by the heavy dashed line, while the extended area is between the core and the dotted line. The core area is approximately 350 km from east to west and 250 km north to south, for a total area of roughly 8.75 million ha. With the extended area included, the dimensions are roughly 550 km by 400 km, for a total area of 22 million ha.

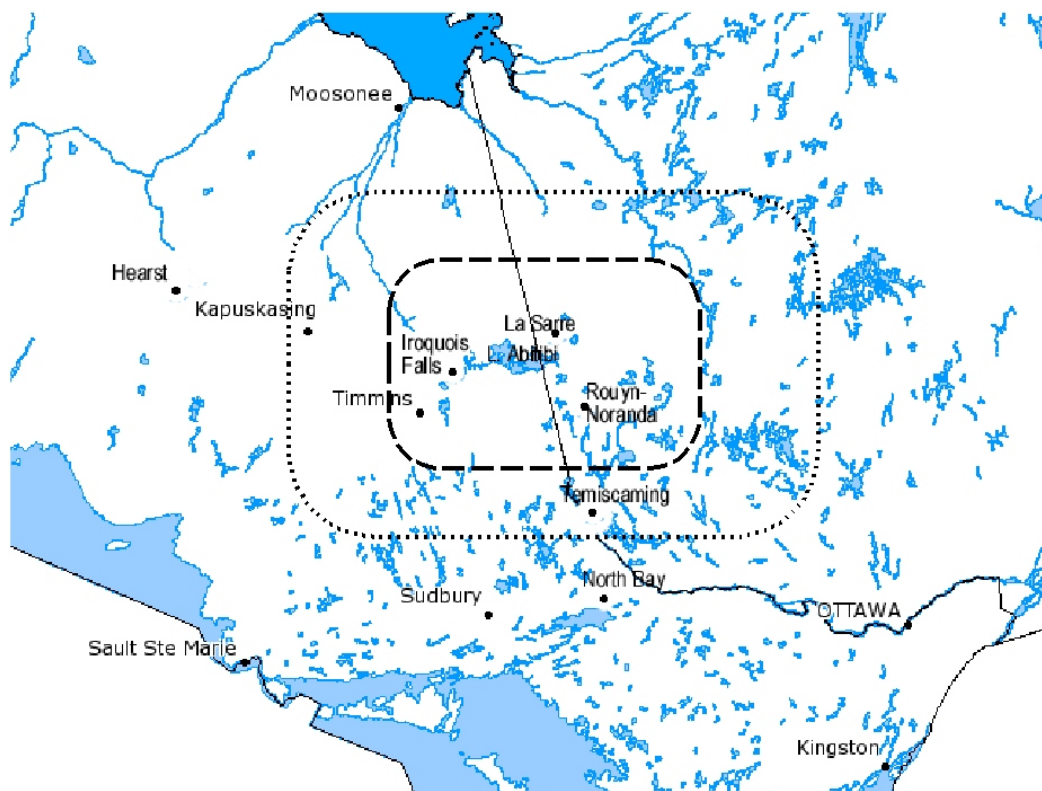
The core area is the focus of our study, and it is where we concentrated our research and local interviews. Where we came across issues in the extended area, we pursued those but generally found that they were also present in one form or another in the core area.

The Abitibi region is largely flat, having been the bottom of Lake Barlow-Ojibway, which formed during the retreat of the Wisconsin glacier some 9,000 years ago. Deep deposits of clay, silt and some sand were laid down during this period; some long eskers were also formed. The flat topography inhibits the drainage of the area, and many areas have wet to moist organic soil that favours black spruce, larch and cedar. Aspen, white

birch and jack pine are found on higher areas, often in mixtures but occasionally in pure stands.

The Abitibi and Mattagami Rivers flow northward through the Ontario section of the core area. Further west, in the extended area, is Mattagami Lake, which is fed by the Mattagami and Groundhog Rivers. In Quebec, the major river in the area is the Harricana, which flows into James Bay. There is a fine network of smaller rivers throughout the Quebec side of the study region. Lake Abitibi is interesting in that it has an average depth of 3 m (LAMF 2003).

Figure 1. Map of Abitibi Study Area.



2.2 Social Characteristics

The core area includes the communities of Timmins, Iroquois Falls, La Sarre and Rouyn-Noranda. It extends down to Kirkland Lake and to an area somewhat north of Témiscaming in Quebec. Table 1 shows eight of the largest communities in the core area of the Abitibi region, as well as their populations in 1996 and 2001. Timmins is the largest community in the region, but the total population in the Quebec part of the Abitibi region exceeds that in the Ontario sector, in the major communities and in general. Table 1 also shows that all eight communities lost from 4% to 13% of their population between 1996 and 2001. The average decline across the region was 7.8%, with similar declines in

both Quebec and Ontario, and with the largest communities each experiencing a loss of roughly 8%.

Table 1. Population Declines in Main Abitibi Communities

Community	1996 Pop'n	2001 Pop'n	Loss	% Change
Timmins	47,499	43,686	3,813	-8.0
Cochrane	5,955	5,690	265	-4.5
Iroquois Falls	5,714	5,217	497	-8.7
Kirkland Lake	9,905	8,616	1,289	-3.0
Rouyn-Noranda	30,936	28,270	2,666	-8.6
Val d'Or	24,479	22,748	1,731	-7.1
La Sarre	8,345	7,728	617	-7.4
Amos	13,632	13,044	588	-4.3
TOTAL	146,465	134,999	11,466	-7.8

Figure 2. Comparison of Population by Age Class in Timmins and Rouyn-Noranda in 1996 and 2001.

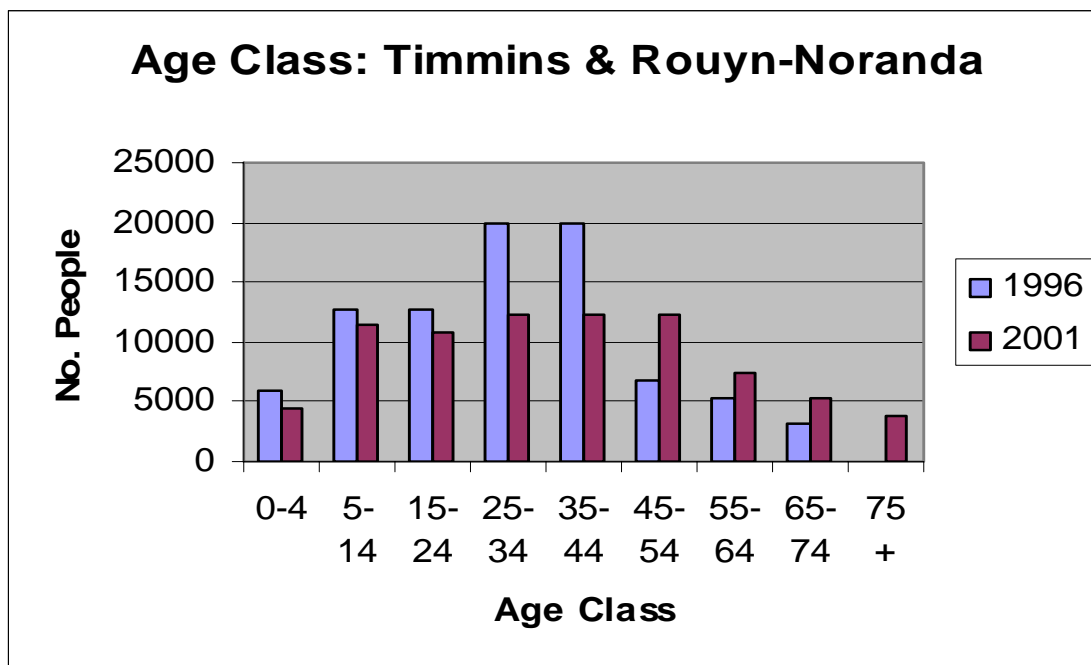


Figure 2 compares the combined population by age class of Timmins and Rouyn-Noranda in 1996 and 2001. The figure clearly shows that the population declines have been concentrated in the 25- to 44-year age classes, while there have been increases in the older age classes. This indicates that many people in the prime of their working career are leaving, due to lack of employment opportunities.

Major highways provide access to the area. Highway 101 runs inside Quebec along the Ontario border and thence north from Nôtre-Dame-du-Nord, intersecting Highway 117 (numbered 66 in Ontario), which connects Rouyn-Noranda with Kirkland Lake. Further north, Highway 101 (Ontario) runs east-west, becoming Highway 388 in Quebec. This

road joins Timmins and Matheson with Duparquet. In Ontario, Highway 11 is the main north–south route through the area; from New Liskeard it heads northwest through Cochrane, from which it proceeds mostly westward.

The study area is in the Algonquin traditional territory—the Cree are to the north. In Ontario, First Nations are signatories to Treaty 9, which was negotiated in 1906 in response to petitions from Cree and Ojibway. In contrast, there was no treaty signed in northwestern Quebec (or indeed in much of Quebec). As Table 2 shows, there are three Algonquin First Nation communities on the Quebec side of Abitibi—Pikogan, Kitcisakik and Lac-Simon—with a combined population of 1,795. The total area of the communities is 426 ha (two reserves, one settlement). There are 712 Algonquin from these three villages who live outside their community, which makes for a total native Algonquin population of 2,507. In Ontario, there are four Aboriginal communities, all located in Indian reserves. Population data were incomplete. New Post is a Cree reserve; the others are Algonquin.

Table 2. Population Growth in Main Abitibi First Nation Communities

Community	Prov	1996 Pop'n	2001 Pop'n	Variation	% Change
Pikogan	Q	446	482	36	8.1
Kitcisakik	Q	215	204	-11	-5.1
Lac-Simon	Q	927	1,109	182	19.6
Abitibi (IR 70)	O	92	127	35	38.0
Flying Post (IR 73)	O	n/a	n/a	n/a	n/a
Matachewan (IR 72)	O	53	61	8	15.1
New Post (IR 69)	O	n/a	n/a	n/a	n/a
TOTAL		1,733	1,983	250	14.4

Source: Les populations algonquines de l’Abitibi-Témiscamingue [on-line]. Available at: www.observat.qc.ca/Portraits/Portrait%20des%20autochtones%20en%20Abitibi-T%20C%20A9miscamingue.doc [visited March 31, 2004].

Kitcisakik Anicinape Aki is a small First Nation community located in La Verendrye Provincial Park, at the southern part of the study area. The people of Kitcisakik are considered by some to be “squatters” resisting the move to a reserve community. They continue to live in their traditional territory; however, with no official status, they do not have access to funding for fundamentals such as housing, water supply, sanitation, local education and a sustainable economic base. Kitcisakik is approaching planning for a new community with a comprehensive grassroots approach. The community is also engaging in the management of the natural resources of their traditional territory to ensure sustainable socio-economic development. A newly formed forestry committee is participating in land use planning processes such as forest management plan consultations and in a university study that is attempting to define Aboriginal forestry.

2.3 Economic Characteristics

The Abitibi region has a long and proud history of resource use. Prior to European contact, Aboriginal peoples were entirely dependent on nature for sustenance. In 1670, the Hudson's Bay Company was established and, over the next 15 years, set up major trading posts at the mouths of key rivers emptying into Hudson and James Bays. Lake Abitibi was the site of a trading post established in 1686 by Chevalier de Troyes (Marsh 2000). The rivers and long lakes provided access for traders and trappers into northern Ontario and Quebec, including the Abitibi region, as well as providing a long connecting route to Montreal. While trapping still provides some economic benefits for the people of the Abitibi region, the past century has seen the rise of an industrial economy in the region.

Today, mining, forestry, and tourism and recreation are the major non-institutional sectors in the region. Timmins has become the regional centre of northeastern Ontario, and Rouyn-Noranda (formed by the amalgamation of two separate communities in 1986) is the key community in northwestern Quebec. Timmins, Val d'Or and Rouyn-Noranda are world-renowned mining centres.

2.3.1 Mining

The Abitibi area has long been known to be rich in minerals. A map entitled *Carte des Lacs du Canada* published in 1744 showed a spot called *Ance à la Mine* on the east side of Lake Timiskaming (www.science.uwaterloo.ca/earth/waton/s002.html), which was the site of a silver-rich galena deposit. Over 150 years later, William Logan, mapping for the Geological Survey of Canada, discovered a vein of cobalt ore on the shore of Lake Timiskaming about 2 km south of Haileybury.

The mining industry, though, did not develop until settlement of the area was stimulated by the arrival of the railroad in Temiskaming in 1903, and the staking of numerous silver claims at Cobalt that year brought an influx of settlers. The next year, William Logan's silver deposit became the Agaunico Mine. Towns such as Cobalt, Haileybury and New Liskeard grew rapidly. The mining boom spread to Elk Lake (1906), Gowganda and Larder Lake (1907) and Kirkland Lake in 1911. In 1909, the Dome and Hollinger gold mines were discovered, followed soon after by the McIntyre mine. These three mines supported the establishment and development of Timmins.

In 1917, a prospector named Edmund Horne found a promising mineral deposit at the present site of Rouyn-Noranda, but it was not until 1926 that the mine was constructed and began operation. The mine was small and mining conditions difficult. Then, during sinking of a shaft in 1928, a massive ore body was discovered that supported the development of the Noranda mining company.

The rich mineral deposits in the area are typical of geological formations known as "greenstone" belts, which are zones of very old rock that has been metamorphosed under certain pressure and temperature conditions to produce an abundance of green minerals (Downey 2001). Some of the oldest rock on the planet is found in greenstone belts, and

the geology is often very complex. Greenstone belts contain high concentrations of minerals such as gold, silver, copper, iron, chromium, nickel, manganese, barium and associated metals. The Abitibi greenstone belt, underlying much of the study area, is dotted with many different mines producing gold, silver, copper and tin. New mines are still being developed, and Falconbridge is bringing its Montcalm mine into production in the next year or so.

Due to its long history of mining and the small scale of many early operations, the Abitibi region is dotted with numerous orphaned or abandoned mine sites. These are currently being assessed through national processes (e.g., the National Orphaned and Abandoned Mines Initiative), as well as provincial efforts in Quebec and Ontario, to identify the potential environmental impacts of these sites and to prioritize sites for reclamation or mitigation.

The area remains a major production centre, and mining activity has picked up with the recent increase in mineral prices. In 1998, the Abitibi-Témiscamingue administrative region in Quebec produced a total of 66.4 million kg of copper (equivalent to 10% of Canadian production), 27.4 million g of gold (16.6% of national output) and 60 million g of silver (5.5%) (Quebec government statistics). Mining in the Abitibi-Témiscamingue administrative region in Quebec supported 3,458 direct jobs in 1998, which represented 6.5% of all full-time jobs (57,300) in the region. In Timmins in 1996, there were 3,615 mining jobs, representing 15.8% of the local workforce (www.city.timmins.on.ca/tables.pdf).

2.3.2 Hydroelectricity

A great deal of hydroelectric power is generated through many dams and water-control facilities in the Abitibi region. Many of these are administered by the provincial utilities, Hydro-Québec and Ontario Power Generation, although private companies such as Brascan have recently been purchasing power generation facilities.

George et al. (1995) describe how the hydro resources in the Ontario part of the study area were originally developed by forestry and mining companies between 1911 (when Sandy Falls was constructed by Hollinger Mines on the Mattagami River south of Timmins) and the mid-1930s, after which the provincial power utility came to dominate power generation and transmission. Forest companies such as Abitibi-Consolidated (formerly known as Abitibi Power and Paper Co.) have also had power generation rights for almost a century. On the Abitibi River, there are hydro dams on Fredrickhouse Lake, Watabeag Lake and Lake Abitibi and generating stations at Otter Rapids, Abitibi Canyon and Lac Desserat. On the Mattagami River, there are dams on Horwood Lake, Mattagami Lake, Peter Long Lake and Minisinakwa Lake. Generating stations have been built at Kipling, Little Long, Harmon and Smoky Falls north of Kapuskasing, while the Timmins area has the Little Sturgeon, Wawaitin and Sandy Falls generating stations.

In the 1960s, power generation capacity in the region was again expanded, and in the 1990s, Ontario Hydro tried to further increase power generation capability. However, challenges by First Nation groups and others blocked these efforts.

The hydroelectricity production on the Quebec side of the Abitibi region comes from a few dozen dams, five of which are owned and operated by Hydro-Québec but account for 93% of the production. These five dams are all found in the extended area of the study, at the border of the Abitibi-Témiscamingue region. Hydro-Québec recently began a multi-phase project to completely modernize two of its older 48-MW hydro plants to improve their reliability and generating capacity. The Rapide-2 and Rapide-7 hydropower plants, built in the 1940s and 1950s, are part of a succession of run-of-river plants located in the Abitibi-Témiscamingue region of the Outaouais River.

2.3.3 Forestry

Much of the Abitibi region is forested, and commercial timber production and the manufacture of forest products are important economic activities throughout the region. Due to the nature of the forests in the region, pulp and paper production is the principal forestry activity.

Early forest products manufacturing development proceeded in tandem with hydro developments as the pulp and paper facilities, and the communities that were built around them, required large amounts of power. For example, the pulp and paper mill at Iroquois Falls was constructed in conjunction with the Iroquois Falls dam in 1914. This was the earliest pulp mill in the study area. Other early mills in the area were located in Smooth Rock Falls, Kapuskasing, Timmins and Témiscaming. In 1925, Abitibi Power and Paper Co. acquired the Island Falls dam (built by Hollinger Mines). Railroad development was another prerequisite; by 1915, there were at least three rail lines in the study area (George et al. 1995).

As might be expected, the forests of the region have been shaped by almost 90 years of harvesting, intensive human access accompanied by fires (especially in relation to the railways), and fire protection that became effective after the Second World War. Forest management options today are constrained by decisions taken and practices employed half a century ago (e.g., the location of merchantable timber vis-à-vis the location of mills). While it is possible to change practices in the forest, changing the forest or changing the infrastructure on which the forest industry depends can only be done over decades.

In Quebec, Témiscaming and La Sarre are important forestry communities, while in Ontario, Timmins, Cochrane, Englehart and Iroquois Falls are the sites of major mills. Abitibi-Consolidated has a long-term forest licence to manage the forest in most of the Ontario core area, while Tembec holds licences in the Quebec portion of the core area as well as in the Ontario extended area. There are several major hardwood users, including oriented strand board producers Norbord (La Sarre and Val d'Or) and Grant Forest

Products (Timmins and Englehart), and numerous operators of smaller sawmills and veneer mills, as well as specialty product producers.

The City of Timmins reports that forestry, logging and lumber production accounted for 1,780 jobs (www.city.timmins.on.ca/tables.pdf), and LAMF (1999) reported that Norbord in Cochrane employed 250 people while Abitibi-Consolidated in Iroquois Falls provided work for 800 people (providing \$65 million in incomes and benefits). In Abitibi-Témiscamingue, forestry employed 1,300 people (Quebec government statistics).

2.3.4 Agriculture

In the southern parts of the study area, in the vicinity of Témiscaming in Quebec and New Liskeard and Kirkland Lake in Ontario, there is a substantial amount of agriculture. The 2001 Agricultural Census shows 810 farms covering a total of 200,000 ha in the Abitibi-Témiscamingue-Nord-du-Québec region; in the Cochrane District, which is in the heart of the Abitibi, there were 204 farms covering approximately 31,000 ha. In the Timiskaming District on the Ontario side, there were 532 farms on 87,000 ha. These three census areas include all of the core area and about 75% to 80% of the extended area. Ignoring the small portion of extended area that is not covered, we estimate that the total agricultural area in the core and extended area is roughly 318,000 ha, or 1.5% of the entire study area.

The case study will not consider the agricultural sector for two reasons: (a) it is relatively small and has mainly local impact, and (b) it is not expanding, thus there is little or no pressure for land use changes resulting from agriculture. For example, the City of Timmins reported that 100 jobs were due to agriculture, fishing and trapping (www.city.timmins.on.ca/tables.pdf); this was 0.4% of the total workforce.

2.3.5 Tourism and Recreation

Tourism and recreation is an important use of the forest in the Abitibi. Local people use the area for fishing, hunting, canoeing, snowmobiling and other forest-based pursuits. There is a network of local snowmobile trails that link into a national trail system, with abundant hotels that cater to snowmobilers. In summer, these trails can be used by all-terrain vehicles (ATVs). Many local people feel that the area offers an excellent quality of life that more than compensates for the economic challenges facing the region. In contrast, the area is not widely appreciated for nature tourism, since it has no “landmark” parks and it is far from major population centres. However, the area has abundant lakes and rivers, and it is easy to get into remote areas.

Unfortunately, employment and revenue statistics for the tourism sector are difficult to come by (Statistics Canada does not separate forest-based tourism from other tourism, including business travel). The Tourism Abitibi-Témiscamingue website lists 23

outfitters in the Abitibi-Témiscamingue area of Quebec and four ZECs.¹ There are also 26 hotels, motels and inns listed in the region, which cater to visitors of all types. However, the sector is one of the few in the region that is growing (see, for example, LAMF 1999) and has potential for further growth, based on its relatively remote character, underdeveloped tourism services, and historical and cultural significance.

In addition, a private company has been marketing tourism in northeastern Ontario to francophones in Quebec, who are often unaware that many people in northeastern Ontario are also francophone. Some businesses have packages geared to French-language speakers.

2.3.6 Resource Sector Employment

The resource sectors provide a high proportion of the employment in the Abitibi region. Table 3 shows employment by major industrial sector in 2001 for the main communities in the Abitibi case study area. While the table does not provide the ideal level of detail, many of the jobs in the agriculture and resource-based sector are in mining and forestry, with relatively few in agriculture. Employees in smelter and other mineral processing facilities, as well as in the wood processing mills, are included under construction and manufacturing. With an approximate deduction for the amount of agricultural and construction employment, the data indicate that about 20% of total employment is directly dependent on the mining and forestry sectors, with an even higher level of indirect and induced employment based on mining and forestry.

Table 3. Employment by Major Industrial Sector in the Case Study Area (2001)

Sector	Employment	%
Agricultural & other resource-based	10,785	13.48
Manufacturing & construction	11,560	14.44
Financial/real estate	2,920	3.65
Wholesale/retail trade	14,135	17.66
Health & education	15,100	18.87
Business services	10,715	13.39
Other services	14,820	18.52
TOTAL	80,035	

Data from Statistics Canada.

Based on the (incomplete) information provided above for each sector, mining employs at least 7,000 people and forestry provides work for at least another 4,000 people.

¹ ZECs, or controlled harvesting zones, are “territorial infrastructures that were set up in 1978 to take over [from] private clubs. The management of these zones was entrusted to non-profit organizations. The latter are managed by honorary administrators who are elected by the members of each ZEC. These organizations are responsible for the management and conservation of wildlife on their territories.” Source: www.zecquebec.com/english/zec.htm [visited July 27, 2004].

2.4 Jurisdiction

We found very few institutions or organizations that spanned the border. While federal law is the same throughout, provincial ownership and management responsibility for natural resources substantially reduces the federal government’s role. Some of the larger companies, such as Tembec, Abitibi-Consolidated, Domtar, Falconbridge and Noranda, operate on both sides of the border. However, they are often organized internally in a way that mirrors the jurisdictional differences. The Lake Abitibi Model Forest (LAMF), which has its core land base of 1.2 million ha in Ontario, has instigated a number of studies with regional scope and the involvement of organizations in Quebec and Ontario. Aside from the federal government, this was the closest thing to a pan-regional organization.

LAKE ABITIBI MODEL FOREST

The Lake Abitibi Model Forest is one of 11 Model Forests in Canada. Model Forests are intended to showcase excellent and innovative approaches to sustainable forest management and were originally established in 1992 under Canada’s Green Plan. Funding is provided from Natural Resources Canada over five-year planning periods, but the Model Forests operate with a high level of autonomy. The three goals of the LAMF, which may be viewed on the LAMF website (www.lamf.net), revolve around forest sustainability, the implementation of on-ground practices and public involvement in decision making. The LAMF has been a driving force behind the development and spread of a partial harvesting system appropriate for the clay belt, and it has funded large, multi-year projects on local-level indicators of sustainable forest management, old growth and biodiversity, fire history and landscape dynamics, fish community assessment, habitat associations of forest songbirds, marten habitat, and habitat utilization by woodland caribou in northeastern Ontario and northwestern Quebec.

The relevant ministries of the Quebec and Ontario governments are organized in a similar fashion. Table 4 shows the ministries and their areas of responsibility on both sides of the border. The key forest management ministry in Quebec is the Ministère des Ressources naturelles, de la faune et des parcs du Québec (MRNFP), while the Ontario Ministry of Natural Resources (MNR) plays that role in Ontario.

Table 4. Relevant Provincial Government Ministries

Area of management/ regulation	Quebec government	Ontario government
Forests	Ministère des Ressources naturelles, de la faune et des parcs	Ministry of Natural Resources
Wildlife	Ministère des Ressources naturelles, de la faune et des parcs	Ministry of Natural Resources
Access	All ministries	All ministries

Mining	Ministère des Ressources naturelles, de la faune et des parcs	Ministry of Northern Development and Mines
Tourism and Recreation	Tourisme Québec; Ministère des Ressources naturelles, de la faune et des parcs	Ministry of Tourism and Recreation; Ministry of Culture; Ministry of Northern Development and Mines; Ministry of Natural Resources
Water quality *	Ministère de l'Environnement; Ministère des Ressources naturelles, de la faune et des parcs	Ministry of the Environment

* The federal Department of Fisheries and Oceans has a major regulatory role in navigable waters.

3 Analysis Methodology

The project team conducted numerous interviews, contacted a variety of organizations (see Appendix 1) and reviewed a wide range of documents and legislation, as well as drawing on its members' knowledge of the area. The information reporting and analysis process was structured through the use of a framework organized according to the criteria and elements of sustainable forest management (SFM) developed by the Canadian Council of Forest Ministers (CCFM). It is important to understand that, while these criteria and elements provide a basis for evaluating the sustainability of the boreal forest in the Abitibi region, that they are not specifically concerned with forestry or forest management activities. They provide an objective framework for assessing the impacts of any or all economic activities on the ecological integrity of the boreal forest.

The CCFM has developed a hierarchical view of SFM, with six criteria that need to be met if forests are to be considered sustainable. For each criterion, there are several elements that provide a more specific indication of the nature of the values to be sustained, and under each element there are a number of suggested indicators. In our template, we used the criteria and elements as a basis for organizing information and framing key strategic questions that we wished to assess as part of this case study. Table 5 shows the six CCFM criteria of SFM and the elements of each criterion. Note that Table 5 is also a highly condensed version of our analysis template.

Table 5. The Six Criteria of SFM and Associated Elements Developed by the CCFM

CCFM criterion	CCFM elements
1. Conservation of Biological Diversity	Landscape Diversity Landscape Fragmentation Species at Risk Species Diversity Genetic Diversity Protected Areas
2. Maintenance and Enhancement of Ecosystem Condition and Productivity	Ecosystem Processes Ecosystem Productivity
3. Conservation of Soil and Water Resources	Soil Conservation Water Conservation
4. Forest Ecosystem Contributions to Global Ecological Cycles	Carbon Sequestration Forest Land Conversion Forest Restoration
5. Multiple Benefits to Society	Sustainable Flow of Benefits Economic Diversification Community Development Equity
6. Accepting Society's Responsibility for Sustainable Forest Management	Aboriginal and Treaty Rights Aboriginal Values Public Participation Capacity Building

The table shows that the conception of SFM espoused by the CCFM is very broad and includes economic and social/cultural dimensions. This approach was derived from the so-called Montreal Process (arising from the Seminar of Experts on the Sustainable Development of Boreal and Temperate Forests held in 1993), and it has been widely implemented throughout the Canadian forest sector. It is also consistent with international approaches to SFM and with the requirements of the major independent forest certification schemes.

It is critical to recognize that the SFM criteria developed by the CCFM pertain to the forest as a whole. The activities of all sectors that affect the forest are to be considered in the assessment of sustainability, not just the activities of the forest sector. For example, the element under biodiversity that is concerned with forest fragmentation and maintenance of connectivity will consider not only harvest blocks and access roads built by the forest companies but also the impacts of mineral exploration (line cutting, drilling, and especially access construction), the strong desires of a major tourism and recreation constituency for greater forest access, and hydro transmission line corridors. Another element of the SFM template addresses the conversion of forest land to other uses. Here, we will be concerned with issues in sectors such as agriculture (are there incentives to convert forest to agriculture?), hydro (is more flooding planned?) and mining (the development of mine sites and their rehabilitation).

As mentioned above, Table 5 is a condensed version of our analysis template. Under each SFM element, the consulting team identified the relevant indicators developed within two prominent certification standards: the Forest Stewardship Council (FSC) boreal standard and the Canadian Standards Association (CSA) SFM standard. We then identified key general questions to address as we evaluated the extent to which existing legislation, planning processes, and implementation and monitoring activities protected the values and met the principles espoused in the SFM systems incorporated in the template.

For example, regarding landscape fragmentation, an issue under criterion 1, we asked the two following questions:

- How fragmented is the boreal forest in the Abitibi region and what are the principal causes of fragmentation?
- To what extent can connectivity be increased and which agencies, policies and/or regulations are standing in the way?

These questions guided our review of legislation, reports and plans and were also used to develop the interview guides for the project. It must be emphasized that the role of the template in this study was to provide guidance as we collected data—it helped to ensure that all team members were consistent and thorough in investigating the many dimensions of conservation and sustainability. However, we did not adhere slavishly to the content of the template. As issues emerged and gaps were identified, these were explored in our analysis. In this way, the template provided guidance but was not a constraint.

4 Findings and Analysis

4.1 Regional Goals and Objectives

We found that there were no clearly defined sustainable development or land use goals and objectives for the study region. When asked if there was a shared vision for the region, all interview subjects replied in the negative. This is not a surprising finding, given the bifurcated nature of the study area and the lack of a mandate or a strong need for the two provincial governments to develop a regional land use or development plan for the study area.

Moreover, within the provincial government and various industry organizations, there is not a great deal of awareness or communication with counterparts on the opposite side of the border. This represents a missed opportunity, since there are many common problems and issues that might be better handled if there were an exchange of ideas and experience.

It might be expected that the federal government could or should play a role in attempting to provide a greater level of cohesion in the study area. But with the area firmly dependent on natural resources, and with provincial governments owning and managing public land under the Constitution Act of 1867 (formerly the British North America Act),² there is little role for the federal government in land use planning or development programs. The federal Canadian Forest Service does undertake some research in the area and provides funding to the Lake Abitibi and Waswanipi Model Forests, but beyond this it has little direct interest. We did not review federal environmental assessment requirements or trade issues, since these areas were either of little relevance to the case study or were difficult to grapple with and/or of very indirect local relevance. Aboriginal rights are very relevant to the case study, but a discussion and analysis of these rights and their implications is very complex and was beyond the scope of the case study.

There are some organizations that do operate on both sides of the border. Most obvious are the large resource extraction and processing companies, such as Abitibi-Consolidated, Domtar, Noranda-Falconbridge and Tembec, which have operations in Quebec and Ontario. The Lake Abitibi Model Forest also stands out for its numerous research collaborations involving people from both provinces: interprovincial cooperation has been a key goal of the LAMF that the Université du Québec at Témiscamingue has bought into and supported. Finally, the Cree and Algonquin also collaborate in both provinces. Snowmobile and ATV trail networks were also identified as examples of networks spanning the two provinces.

In a sense, therefore, although both the Quebec and Ontario portions of the study area have many common ecological characteristics, there are relatively few social and institutional commonalities. This is not intended to be a criticism, since the same situation, to a greater or lesser degree, would be found on both sides of every provincial

² Section 92 of the Constitution Act, 1867, gives to the provinces the exclusive power to make laws regarding “the management and sale of the public lands belonging to the province and of the timber and wood thereon.”

border in Canada. The advantages of increased cross-border collaboration were recently recognized in a proposed agreement between the governments of Ontario and Quebec regarding transboundary environmental impacts, which was posted for public comment on the Environmental Bill of Rights Registry website (EBR registry number PA04E0006). This proposal, initiated by the Ontario Ministry of the Environment, proposes the formation of a joint task force to meet at least once a year to encourage mutual understanding and cooperation regarding air quality and atmospheric pollution, water, and environmental conservation, protection and restoration.

There are some issues on which increased cross-border collaboration would be beneficial in the Abitibi region. These issues include caribou management, landscape-level research and management, watershed planning and impact assessment (especially with respect to Lake Abitibi), and access planning and management. These are discussed more fully below.

Recommendation 1: Organizations should step up efforts to meet with counterparts in the other province to exchange ideas and experience. Greater awareness is needed of the opportunities available under the proposed agreement related to transboundary environmental impacts, as well as of other issues. Examples include issues related to the economic restructuring of resource industries and northern communities and leveraging the advantages and resources of regional communities and organizations.

Even though it does not make sense to develop a regional land use plan for the study area, there are stronger arguments for the development of regional land use plans within Ontario and Quebec. In Ontario, the Lands for Life planning process was undertaken at a very high regional level, but it produced no substantive changes and was transformed into a negotiation process between the parties that were willing to make trade-offs. The intent had been to develop sub-regional plans as a second stage, but this is no longer an active proposal. What Ontario does have for land use planning is a set of District Land Use Guidelines that were originally drawn up 25 years ago and have occasionally been modified in the interim. However, they do not adequately cover issues such as access, especially ATV and snowmobile access, and remote or roadless areas. As a result, it falls to the forest management planning process to handle forest access roads and other use issues, especially those concerned with remote tourism.

The Ontario government has recently introduced the Resource Stewardship Agreement (RSA) mechanism. Under an RSA, two (or more) private parties, usually a remote tourism operator and a forest company, decide how to balance the interests of both parties. The RSAs can be seen as an effort to remove MNR from the role of intermediary and allow the parties to work out a mutually satisfactory agreement. However, MNR becomes involved when parts of an RSA have a bearing on forest management planning.

In Quebec, local round-table initiatives, usually called integrated resources management (IRM) tables or tables de gestion intégrée des ressources (tables de GIR), have been organized to exchange information about land use. In addition, municipal strategies are coordinated in the Quebec part of Abitibi through the IRM tables. One particular Abitibi

IRM table is organized by the Regional Development Council of Abitibi-Témiscamingue. The Quebec Ministry of Regions finances this IRM table through a fund that makes the table very independent of the funder. The table has been one of the most effective in the province, with 77 members, including outfitters, ZECs, trappers, municipalities, MRNFP, industry and environmental non-governmental organizations.

The Quebec Forest Act requires companies to elaborate the management plan of each common area with the input of the various stakeholders. However, the latter have been overwhelmed by the process. In the Vallée de l'Or municipality, for example, there are nine common areas, which means nine pre-consultations and nine consultations must take place when it is time to elaborate the management plans. There are also the more regular meetings of the many IRM tables. Companies have a hard time achieving a significant level of participation because individual stakeholders and small organizations do not have the resources to participate in all meetings. A proposal by Vallée de l'Or municipality to channel all pre-consultations, consultations and IRM tables through their IRM initiative has been a success. They even have participation from one First Nation. MRNFP Terres, however, the most relevant government partner for IRM tables, is not present at regular IRM table meetings because of insufficient resources and absence of legal recognition of the tables. The Ministère de l'Environnement was never present for the same reasons. The consultants conclude that the Abitibi IRM tables are an excellent basis for beginning a process that includes a decision-making element and goes beyond socio-economic concerns.

Regional land use planning can advance conservation in a variety of ways, chiefly by providing a forum in which all interests come to the table with the same amount of power. If the table is well managed—people are given time to develop mutual trust and respect—and given suitable direction, the results can be positive for conservation.

A second advantage is that many issues are best resolved at a regional scale, which is broader than the scales of many existing planning practices and management zones. Examples of such large-scale issues are harvest intensity in watersheds, access networks, and the placement of large disturbance areas, remote or roadless areas and protected areas. Working at a large scale also provides opportunities to trade wood supply between different forest management units. As well, species with large ranges, such as woodland caribou, wolves and wolverine, are best served by strategic plans developed at a large scale. To be effective, regional planning should be conducted at a scale that is broader than individual forest licence areas, wildlife management unit areas, provincial ministry administrative districts and a welter of other overlapping zones.

Finally, it is noted that with the increasing intensity of forest use, greater extent of forest access and the increased value of such attributes as roadlessness, regional plans or land use guidelines developed even 10 years ago can be out of date.

Recommendation 2: Quebec and Ontario should initiate and facilitate regional land use planning processes in their respective portions of the Abitibi region.

4.2 Economic Barriers and Incentives to Conservation

The thesis of the NRTEE's Boreal Forest program is that there remains a window of opportunity to get the right balance of conservation and development in the boreal forest. The NRTEE believes (and the consultants agree) that there are continuously increasing pressures for resource exploitation and environmental degradation. The principles of sustainable development can easily be sidestepped because long-term accountability is often absent. Once implemented, a large-scale use or development project based on optimistic or, worse, misleading projections is not reversible, and many times the negative impacts cannot be completely mitigated.

The Abitibi region, like most rural areas in Canada, is experiencing a seemingly intractable economic and social decline. As Table 1 shows, all non-Aboriginal communities in the region have experienced a substantial attrition of their population in recent years. This is largely because the economic opportunities are not expanding and prospects are insufficient to retain large numbers of young adults, especially ones with a higher education. These communities are desperate to hold onto existing jobs, let alone create new ones. In such a situation, it is difficult for a community to reject a proposal that promises to create local employment. There is also great pressure to maintain the current levels of timber harvesting.

For these reasons, economic development is often in opposition to conservation—or anything else that will reduce employment or other economic benefits. During the course of this case study, the consultants identified several issues stemming from the fact that the impetus for economic development was not adequately balanced by controls or safeguards. These issues relate to hydroelectricity, protected area establishment, forest certification and orphaned and abandoned mines.

4.2.1 Hydroelectricity

Hydroelectric power generation is widespread in the Abitibi region. The water levels in many lakes and rivers are regulated by dams, and the recent changes in the electricity markets, especially in Ontario, led dam owners to use their legal rights to maximize profits during the period of high electricity prices and shortages in the summer of 2003. As an indication of the extreme prices that could be received from power sales, Abitibi-Consolidated was reported to have suspended daytime production at its pulp and paper facility to sell power into the provincial grid.

As all power generating companies had strong incentives to produce power at times of peak prices, water levels were allowed to vary over ranges not previously seen during summertime, when what are essentially gentleman's agreements to keep water levels steady were overridden. (As an example, Figure 3 shows the Ontario Power Generation operating limits prescribed for Mattagami Lake, with a narrow range during summer and a wider range of almost 5 m throughout the remainder of the year.) This means that dams were opened up wide very quickly on occasion to capitalize on a period of high prices, then closed again when the price dropped. This played havoc with streamflow and lake

levels, affecting aquatic populations and recreationists. (Opening a dam wide several times in succession can flush the majority of fish out of small lakes.)

At the same time, many power leases in Ontario are up for renewal and are being renegotiated. Water management plans are required. According to one government staff person, many people in the hydro sector feel that any drop of water that is not used to drive a turbine is wasted: “It’s like talking with the forest companies 30 years ago.” There is a need for hydro managers to recognize the ecological impacts of extreme water regulation methods and avoid them, but at present there does not seem to be the means to legally require such conservation efforts.

On the Quebec side of the Abitibi region, the impact of water fluctuation due to hydroelectric production is limited. There has been a case in the southern part of the study area, in the north of La Vérendrye wildlife reserve, where recreationists were complaining about the swift changes in water level. The participation of Hydro-Québec in the integrated resources management table of Val d’Or municipality successfully resulted in decreased negative impacts of fluctuating water levels on the park users.

4.2.2 Impediments to the Establishment of Protected Areas

A second issue concerns the lack of protected areas in the Abitibi case study area. Currently, it is estimated that the amount of protected land in the case study area will rise to approximately 2.5%, as Ontario moves to gazette the protected areas identified through Ontario's Forest Accord. However, the consultants were unable to obtain exact figures on which candidate protected areas were in the process of obtaining protected status. Moreover, the Quebec government has indicated that new protected areas will be announced in the fall of 2004, and these will include areas in the Abitibi region.

The consultants recognize that representation in the Abitibi region needs to be considered in the context of planning processes that cover much larger areas. In particular, Ontario's Forest Accord has brought the total proportion of protected area in Ontario to 12%. Quebec is also moving to increase its protected areas. In 2000, Quebec protected areas categorized as I, II or III by the IUCN (World Conservation Union) represented about 2.8% of the province, with more than half of this area in the tundra (1.6%). Of the 1,091 protected areas in Quebec in 1999, 943 were less than 10 km² in size, 117 were 10–100 km² and 31 were larger than 100 km², for a total area of 47,355 km². Less than a quarter of these areas fall into IUCN categories I or II. In 2002, however, the Quebec government announced the creation of six parks and 11 territorial reserves of protected area in the boreal forest and on the North Shore. These will increase the total protected area of Quebec territory from 2.8% to 4.8%. This announcement was part of the Quebec Action Plan, whose objective is to protect 8% of the total area of Quebec by 2005.

Nevertheless, the consultants note that even with these considerations, the proportion of protected area in the case study region is well below common benchmarks. While this case study is mainly concerned with the non-reserved portion of the land base, a protected areas network forms the backbone of any sustainable forest management strategy. The small extent of many of the protected areas, coupled with the lack of connectivity between them, means that they make a negligible contribution to overall conservation in the Abitibi region, particularly given the scale of natural disturbances, patch sizes and wildlife ranges.

A noteworthy recent development is the establishment of the Boreal Forest Conservation Framework, spearheaded by the Canadian Parks and Wilderness Society (CPAWS) and WWF Canada. The Canadian Boreal Initiative calls for the protection of at least 50% of the boreal region in a network of large interconnected protected areas. Signatories to the Framework include Alberta-Pacific Forest Industries, CPAWS, the Deh Cho First Nations, Domtar Inc., Ducks Unlimited Canada, Forest Ethics, the Innu Nation, Poplar River First Nation, Suncor Energy Inc, Tembec Forest Industries and WWF Canada.

In view of these findings, and given the Quebec government's intention to increase the protected area within the province, we make the following recommendation.

Recommendation 3: The Abitibi area should be a high priority region for the establishment of additional protected areas.

The consultants note that the Ontario Forest Accord contains a mechanism called “Room to Grow.” This mechanism prescribes that the expansion of any new wood supply be tied to an equivalent expansion of protected areas in the province. It is suggested that the Room to Grow mechanism would be an appropriate way to increase protected areas in Ontario, given that the Forest Accord was intended to substantially complete Ontario’s protected areas network. As mentioned above, the Quebec government is in the process of increasing the protected areas in Quebec, and this provides an opportunity to address this recommendation on the Quebec side of the study area.

4.2.2.1 Public Opinion

We believe that one reason for the low proportion of protected areas in the Abitibi is a lack of local support. However, in our interviews, this perspective came primarily from industry (including the tourism sector) and municipal governments. The local public seems to be supportive of more protected areas, as evidenced by comments at the workshop held in Rouyn-Noranda.

The Canadian Boreal Initiative kindly provided the consultants with excerpts from public opinion research undertaken in April 2003 by McAllister Opinion Research. Separate sub-polls were done in each of Ontario and Quebec. The Canadian Boreal Initiative summarized relevant results as follows:

The Ontario sub-poll³ found that 60% of Ontario residents would strongly support, and 30% would somewhat support, the creation of more protected natural areas in the province where industrial activities like logging and mining would be prohibited, although recreational activities like camping and fishing would be allowed. The poll also found that 68% of respondents believe that before any new industrial development is allowed in the boreal region, land use plans should be created to set out which areas will remain protected as wilderness and which areas can be used for industrial activities like logging or mining. Only 28% of respondents believed that decisions about industrial development in the Boreal region should be made on a case-by-case basis, without waiting for land use plans.

In Québec, 76% of respondents⁴ would strongly support the creation of more protected areas in Québec where industrial activities like logging or mining would be prohibited, although recreational activities like camping and fishing would be allowed. When asked to weigh the trade-off between creating more protected areas in Québec’s boreal region to conserve natural ecosystems, or maintaining jobs and investment by NOT increasing

³ The findings of the Ontario research are based on a random sample of 425 adults, aged 18 and above, living in Ontario, drawn using random-digit dialling methodologies. A random sample of this size has a margin of error of 4.75%, 19 times out of 20.

⁴ The findings of the Quebec research are based on a random sample of 426 adults, aged 18 and above, living in Quebec, drawn using random-digit dialling methodologies. A random sample of this size has a margin of error of 4.75%, 19 times out of 20.

protected areas, 87% of respondents indicated that the Québec government and industry should create more protected areas.

The results of this polling work also support the contention that a substantial proportion of the general public favours increased protected areas, although it should be emphasized that these polls were conducted among the population as a whole and were not specifically targeted at the Abitibi case study region.

4.2.2.2 Mining Claims

Another reason for the lack of protected areas in the case study area is, the consultants believe, the strong legal protection given to mining claims. Under the mining acts of both provinces, a “mining claim” means a parcel of land, including land under water, that has been staked and recorded in accordance with the mining acts and their regulations. The mining acts stipulate where claims may be staked and the rights of a claim holder. The basic principle is that the mining claim, once it is patented, has a very high legal standing. Because the Abitibi region has such high mineral potential, most of the area is staked out, making it very difficult for the provincial governments to override or have a forced buy-out of the claim holder. This difficulty is exacerbated by provisions in the Abitibi Mining Act, which allow a claim holder to maintain a claim for an extended period of time, provided the conditions set out in the Act are met. We were informed that many of the Living Legacy protected areas that have not yet been gazetted have been held up by negotiations over mining claims.

Comments at the workshop held in Rouyn-Noranda suggest the case study region may not be a representative, nor fair, example of the impact that mining has on the establishment of protected areas: the study area coincides perfectly with the Abitibi geological area, the most important target for the mining industry in all of Quebec. “Of course this region will be more impacted,” said one participant, at the same time pointing out that, in Quebec as a whole, only 4.5% of the territory is under mining claims. A large proportion of these claims relate to diamonds (i.e., they are in the Far North).

The mining industry generally feels that its economic contributions are undervalued in land use planning and in general. At the heart of the valuation issue is the difficulty of assessing the present net worth of mineral potential in given area: while the probability of finding a mineable deposit is very low on any given hectare, if a mineable deposit is found the benefits will be very large. Because the probability of mine development on a given hectare is low, the expected value per hectare is low. When incorporated into a land use planning framework, this valuation puts mining near the bottom of the list of “valuable” land uses. The consultants agree that this is something that causes a divergence of perspectives regarding the valuation of mining claims. However, the industry cannot expect to have such a high priority for use of the land that other potential land uses, including protected areas, are effectively blocked.

The consultants suggest that a middle road may be to revise the standing of mining claims that are essentially inactive. It may be that the legal definition of what constitutes “a required level of activity” on a mining claim needs to be changed. Alternatively, it

may be fair to steeply increase the cost of claim renewal, which would provide a disincentive to hold a claim without actively investigating it. It may also be appropriate to make it easier for the government to buy out claims in areas that are designated as conservation reserves.

Recommendation 4: The provincial governments should review the legal requirements of mining claims holders, including renewal provisions, to ensure that claims are actively investigated in an expeditious manner and inactive claims do not block land use decisions.

4.2.2.3 Annual Allowable Cut

The consultants were also informed that there is a great deal of pressure coming from provincial governments to maintain the existing annual allowable cut (AAC). This pressure appears to be especially strong in Quebec, and it may be another reason why the proportion of protected areas in Quebec is low relative to national standards and benchmarks. The pressure comes from the desire to maintain employment in remote areas, support the Canadian forest industry (which is facing a number of challenges at present) and, perhaps secondarily, maintain stumpage royalty income. Industry also sees maintenance of the AAC as an element of both profitability and company size, which is viewed as beneficial when competing against other large multinational companies in the sector. In Quebec, the Commission d'étude sur la gestion de la forêt publique québécoise (task force on the management of Quebec's public forests) is examining these and other issues. The Commission, headed by Guy Coulombe, was triggered by a provincial auditor general report that found Quebec's method of harvest determination to be outdated and prone to overestimation. The Commission is expected to report in December 2004.

AACs in many Ontario forest management units have been declining in recent years, and both the government and industry feel pressure to maintain harvest levels. In both Ontario and Quebec, static or declining harvest levels can be attributed to recent environmental protection guidelines (especially those that increase the amount of timber retained on harvest blocks and those pertaining to leaving large forested blocks for habitat purposes) and changes in the age class structure of the forest. In the forests of the study area, there is a great deal of old timber and a lesser amount of younger and intermediate-aged timber. As the mature timber is harvested and the area of up-and-coming timber contracts, the AAC declines. However, one of the key ecological issues is how much old timber should be retained in the forest. Evidence suggests that in the absence of harvesting, more than 55% of the clay-belt forest would be older than 100 years, and studies of two areas of 825,000 ha and 1,580,000 ha reveal a current average age of 172 and 139 years, respectively (Lefort 2003). This is due to the relative lack of disturbance in the area following a series of large fires in 1923. Suffice it to say, however, that many conservation gains will come at some expense to the current AAC unless mitigative measures are taken.

One of the more obvious mitigative actions is to intensify forest management. While the conservation benefits of intensification may seem counterintuitive, an approach known as

the “triad” approach has been advocated and adopted in some jurisdictions. At its simplest, the triad conceives of three intensities of forest management on the land base: intensive management on some areas, low intensity or extensive management on others and no forest harvesting (i.e., protected areas) on the remainder. The concept can be applied in many ways with many variations, but typical applications may allow 10% to 15% of the land base to be managed intensively, the same amount to be protected, and the other 70% to 80% to be managed extensively. The triad essentially takes advantage of the potential for intensive management to at least double conventional mean annual timber yields, allowing for an increase in protected areas and a relatively low intensity of management on the remaining area. The triad underlies the Ontario Forest Accord.

It is important to note that the triad approach is not painless, since it involves increasing forest management expenditures. There is a question of who will pay. There is also a concern on the part of industry that tenure is not sufficiently secure. This lack of security has long been cited by industry as a primary reason for the relative lack of intensive forest management investments in Ontario and Quebec, although the consultants feel the problem has been overstated by industry on occasion.

Recommendation 5: The triad approach should be adopted in Quebec and implementation through Ontario’s Living Legacy should continue.

4.2.3 Forest Certification

Over the past 10 years, forest certification has evolved from a concept to a point where forest managers have a real choice of whether to certify their forests or not. Forest certification is conferred by third-party organizations on forests that have put in place management systems and approaches that meet high standards, which are codified. There are four certification options in Canada:

- the Z809 Sustainable Forest Management System Standard of the Canadian Standards Association (CSA);
- the Boreal Forest Standard of the Forest Stewardship Council Canada (FSC);
- the Sustainable Forest Initiative Standard of the American Forest & Paper Association (SFI); and
- the ISO 14000 standard tailored to forest operations.

Each of these four standards differs in its scope and rigour. The CSA, FSC and SFI standards are broad in scope, covering ecological, social and economic dimensions. They contain a number of elements that go beyond their minimum requirements and represent excellence in forest practices. ISO 14000 is compliance-oriented and more narrowly focused on the existence of a management system.

Certification is primarily of interest to companies that sell forest-based products to consumers, as well as forest companies that are anxious to maintain their “social licence” to operate and differentiate themselves from the remainder of the industry. Eventually,

certification can be expected to raise overall standards within the industry. Ontario has recently announced that all forest licensees in that province will be required to be certified to the CSA, FSC or SFI standards by 2007.

While there are many questions concerning the extent of demand for certified forest products, and the willingness of customers to pay a premium for certified products, most forest companies are currently pursuing at least one certification standard. In the Abitibi region, the Gordon Cosens Forest has recently been audited for FSC certification and the Romeo Malette Forest is about to be audited; Tembec has made a commitment to have all of its forest licence areas certified by the end of 2005. The Iroquois Falls Forest and the Nighthawk Forest of the Abitibi-Consolidated Ontario East Woodlands have been recommended for certification to the CSA Z809 standard. Abitibi-Consolidated has already obtained CSA Z809 certification for 1.6 million ha of forest in the Quebec portion of the Abitibi region. Another 3.4 million ha is certified under SFI for other companies. With 8% of its forest area certified under one of the three major certification schemes (FSC, CSA and SFI), Quebec is still below the 25% Canadian average, although much of this area is under the ISO 14000 standard.

There are several key points relevant to this study. The first concerns the role that the provincial governments may play with respect to company certification. While the onus is currently on companies to do what is required to become certified, certification standards concern the forest as a whole and not a particular company. Since provincial governments are responsible for managing the non-timber parts of the forest resource (e.g., wildlife), they can be an obstacle to certification if they fail to meet this responsibility.

The second point concerns the costs of certification. One study, which assessed the potential impacts of certification on two forest management units (one of which was located in the Abitibi region), estimated that the wood supply would be reduced by between 10% and 30% (Callaghan and Associates 2003). Complying with certification requirements also results in significant additional costs per cubic metre of wood harvested.

The final point is that some tenure arrangements do not lend themselves to supporting certification. An example is the common tenure areas in Quebec, which are defined areas in which different companies operate but no company has primary responsibility. The tenure arrangements provide for a volume of timber that can be harvested. In this situation, because there is no controlling licensee, it is in no one's interest to go beyond the minimum requirements because there is no certainty of capturing the future benefits of adopting higher standards. Although the CSA specifically addresses the requirements for becoming certified under volume-based tenure arrangements, there is no question that achieving certification is more difficult than in situations in which a single company is licensed to operate on a prescribed area. The consultants note that British Columbia until recently had a number of areas managed in a similar manner (known as Timber Supply Areas), but these have been allocated on an area basis to specific companies, partly because of certification.

Recommendation 6: The provincial governments should support forest companies' efforts to become certified by removing institutional obstacles to certification, fully meeting their management obligations and providing incentives, such as streamlined operational planning requirements and reduced stumpage rates, for companies to become certified.

4.2.4 Orphaned/Abandoned Mines

The mining industry is required by law to decommission and rehabilitate mine sites once they are closed, in order to remove public safety hazards and reduce environmental risks. Companies are required to file a closure plan and provide financial assurance of their ability to fund the plan. This is relatively recent legislation, however, and there are numerous old mine sites and tailing ponds in Abitibi that originated prior to current closure requirements. These old sites can pose both safety and environmental risks, and dealing with them has recently migrated to the top of many governments' environmental agendas. Nationally, the National Orphaned/Abandoned Mines Initiative was established in 2002 and has begun the process of dealing with issues such as cost-sharing for cleanup, prioritization of sites for rehabilitation and legislative issues (see www.abandoned-mines.org).

The Quebec government has been very active on this issue for many years.⁵ By 1985, an inventory of hazardous mine openings had been developed, with 1,650 sites identified. More were added in subsequent years. In Abitibi-Témiscamingue alone, 1,157 such sites were identified. As of 2001, 1,129 openings had been secured and 200 remained to be dealt with. The government has also been active cleaning up mine waste, especially old tailings ponds. In 1982, an inventory of tailing ponds in Abitibi-Témiscamingue resulted in the identification of 50 sites; 423 have been identified throughout the entire province. Cleanup efforts started in 1989, and spending increased rapidly to the point where, between 1994–95 and 2001–02 (year of most recent data), an average of more than \$2 million per year was being spent. Total public and private spending to date is \$40 million; an estimated \$75 million is required to clean up the remaining hazardous sites.

4.3 Conservation of Biological Diversity

Within the past two decades, the conservation of biological diversity has become a key element of sustainable development in general and sustainable forest management in particular.

The federal government has sponsored the development of a National Forest Strategy and a Canadian Biodiversity Strategy. Both of these strategies support the conservation of

⁵ Information is taken from a 2001 presentation by R. Tremblay, Ministère des Ressources naturelles, available at www.abandoned-mines.org/pdfs/quebec.pdf.

biological diversity but did not have any real regulatory leverage until the passage of the federal Species at Risk Act. Ontario and Quebec both attempt to conserve biological diversity on the non-reserved part of the forest through control over forest management; conservation of biodiversity at the landscape level is most apparent in the long-term forest plans that are developed on forest management units within each province. The two provinces, however, have taken very different approaches to landscape-level biodiversity.

4.3.1 Biodiversity at the Landscape Level

In Ontario, the Crown Forest Sustainability Act mandates that the sustainability of the forest is the primary goal of forest management on Crown land. MNR requires that forest management plans (FMPs) develop direction at the landscape level, and landscape-level considerations have come to play a major role in forest planning. MNR has prepared forest management guidelines regarding natural disturbance emulation and the provision of caribou and marten habitat. These guidelines contain direction, including minimum acceptable levels of habitat that are required in all 20-year forest management plans. The natural disturbance emulation guideline seeks to continue the “natural” pattern of patch size, location and structure, as a coarse-filter approach to biodiversity conservation. One of the impetuses for this guideline was the recognition that fire suppression and limits on harvest block size had reduced the average size of patches being created in the forest, making them far smaller than those produced by natural processes. Although the science behind these guidelines is still emerging, they do represent the best available information. Nevertheless, questions remain about the impact of the measures in the guidelines and about the benefits and costs of these measures. (Note that the caribou guideline applies only to northwestern Ontario; there is no equivalent in northeastern Ontario.)

Conservation biology, which has emerged as a discipline in the last two decades, has provided forest managers with a working set of principles that will go a long way to conserving biological diversity if implemented. While proof that these principles are effective is some decades away, they are widely supported and form part of the framework for SFM certification standards, criteria and indicators. Ontario has incorporated a number of landscape-level planning requirements that are among the most forward-looking in the country. However, few of these ideas, especially with regard to landscape-level planning, have entered forest planning requirements in Quebec. Furthermore, long-term wildlife planning and spatial modelling are not being done in Quebec, even though they have been in place in other jurisdictions for many years.

Specific landscape-level planning requirements have been selectively introduced at the forest management unit level in Quebec. Most prominently, MRNFP is using mosaic cuts as a coarse-filter approach to providing wildlife habitat management (as well as establishing protected areas and maintaining late seral stage forests). Although there is scientific evidence on how mosaic cuts affect on biodiversity in some regions, the impact has not been established in the Abitibi region. There is concern among researchers that mosaic harvests could significantly modify natural distribution and configuration patterns of the future forest and increase fragmentation. Most importantly, the practice does not emulate the natural landscape patterns, patch sizes and configurations of the Abitibi

forest. On the other hand, most interviewees agreed that the practice has positive impacts on visual aspects and wildlife.

A constraint on the effectiveness of landscape-level planning is that plans are developed for individual management units (average size about 750,000 ha). The Ontario caribou guideline recommends habitat assessment at a scale of 700,000 ha, and the marten guideline recommends that 10–15% of the forest in a management unit should be in blocks of 3,000 to 5,000 ha. Maintaining this proportion of the forest in large blocks of mature conifer creates significant constraints for planning, and it has the effect of reducing the AAC. Planning to create very large blocks of forest may best be done at a scale greater than a single management unit, because individual management units are too small to provide leeway in meeting both habitat and harvest requirements. Similarly, the natural disturbance emulation guideline envisages planning at a sub-regional level.

When planning for such large landscape blocks in areas near the provincial border, it would be beneficial to consider the landscape in the adjoining province.

Recommendation 7: The provincial governments should develop methods for forest planning at scales larger than the individual management unit.

Fragmentation is a common and widespread threat to biological diversity, and it is of some concern in the boreal forest; the Ontario marten and caribou guidelines both require connectivity. Fragmentation and connectedness indices are monitored in FMPs; however, the interpretation of index values is subject to debate. In general, the consultants feel that fragmentation is not an important issue in the Abitibi region—other issues are more pressing at this time.

Finally, increased attention is being given to old forests of all types. Most forest plans now have targets to maintain certain proportions of the area of each working group in old and very old stages, with the target proportions often based on fire models. The “oldest first” harvest principle has fallen out of use. In Quebec, there is still direction given to create a forest with a roughly equal area in each age class (i.e., a normalized forest). Because strict adherence to this strategy would lead to the elimination of old growth, Quebec has set new objectives for the maintenance of 33% of historic old growth proportions in each management unit. This objective, which will be effective in the next general management plans (due in January 2006), will be gradually implemented over a 15- to 20-year period in order to mitigate its socio-economic impacts. Many groups have argued that this timid objective would not stop the current decrease in the proportion of late seral stage forests.

4.3.2 Biodiversity at the Species Level

A second scale of biodiversity is the level of the individual species. There are several broad approaches taken to conserving species diversity, in addition to the landscape level measures described above. One concern is species at risk, which have degrees of legislated protection at both the federal and provincial levels. The federal Species at Risk

Act (SARA), which was given royal assent in December 2002, prohibits the killing, harming, harassing or capturing of listed species. The act is limited to species under federal jurisdiction, which means that it applies to all navigable waters (which come under Department of Fisheries and Oceans regulation). However, the provinces are largely responsible for species protection on Crown and private lands. Ontario has an act similar to SARA—the province’s Endangered Species Act prohibits the wilful destruction of regulated endangered species and their habitat.

In forest management planning in Quebec and Ontario, fine-filter (i.e., species-specific) strategies are required for species at risk and others. In Ontario, the FMP is required to discuss the contribution of the management unit to the provision of habitat for vulnerable, threatened and endangered (VTE) species. In both provinces, the FMP values database is required to include information on important habitat for VTE species. In the Abitibi region, the most notable designated species are woodland caribou, wolverine and bald eagle, as well as possibly the eastern cougar. There is a forest management guideline for bald eagle nests and caribou guidelines that were developed for northwestern Ontario. Fine-filter guidelines are applied in Quebec for other VTE species such as the wood turtle and peregrine falcon. Guidelines are being elaborated for several other VTE species.

Other forest management guidelines are directed toward non-VTE species, including marten, moose, raptors (other than the bald eagle) and herons. In addition, in Ontario the silvicultural guideline prescribes measures for tree species at the extremes of their ranges. Individuals at the extremes are likely to have genetic characteristics that are different from those of the median individual in the population and will be critical in enabling species to migrate as climate change takes hold.

4.3.3 Biodiversity at the Genetic Level

The conservation of genetic diversity is perhaps the most difficult aspect of diversity to monitor and conserve. The landscape- and species-level measures are also intended to support genetic diversity conservation. In addition, tree ranges have been divided into seed zones that constrain seed movement.

4.3.4 Biodiversity Summary

The desire to conserve biological diversity has shifted the primary goal of forest management. Rather than the production of flows of products, the emphasis now is on conserving the ecological health and integrity of the forest and utilizing the products that such a forest is capable of producing. While conservation biology is still developing, and the effectiveness of measures taken thus far remains unknown, the principles of biodiversity conservation have been translated into practices on the ground at multiple scales. The measures that have been taken appear to have limited the ability of the forest industry to expand. They have also banned mineral exploration in various areas. Perhaps these measures will stabilize biological diversity at present levels. However, when the underlying causes of scarcity of some species include sensitivity to human activity and

access, it is not clear that the sacrifices required to conserve those sensitive elements of diversity will be made.

In addition, it is an operating assumption that new approaches to designing harvest interventions will provide ecological conditions similar enough to those that would be present if fire and insect infestations were less well controlled. This is a strong assumption, and the degree to which it is accurate will go a long way in determining future health of the resource.

4.4 Conservation of Water Resources

Water quality is a critical element of sustainable management and one that is growing in importance and public profile. The forest industry has been subject to a great deal of regulation and strong enforcement action in this area. There is anecdotal evidence that mining companies are less tightly regulated (or enforcement is lax) when it comes to crossing streams and working around water bodies, while agriculture is able to undertake practices that would not be permitted within other sectors. The impact on water quality of orphaned or abandoned mines is also under assessment. Water regulation by hydro generators also arose as a conservation issue in the Abitibi region; these were described in section 4.2.

In forestry, the major water quality conservation measures include leaving buffers along waterways and lakes, as well as careful planning and construction of water crossings and culverts. Companies are also beginning to consider upper limits on the proportions of watersheds that can be in a recently harvested state at any point in time. On the other hand, the pressure to maintain the harvest level is leading companies to consider partial harvesting in the riparian buffers. Such harvesting is rarely practised but currently allowed in circumstances where impacts on the water body are expected to be negligible (such as areas with flat banks and stable shorelines). To date, many companies in Ontario have avoided cutting riparian areas because the cost per cubic metre is higher than average and because it could provoke public complaints.

The value of leaving buffers and the impacts of fully or partially cutting in riparian areas are somewhat contentious. Few dispute that the buffers provide a high level of protection. However, wildfire often burns to the shore and, in a policy framework where mimicking natural processes is desirable, some cutting to shore would be consistent with this general direction. In addition, riparian buffer strips often blow down fairly soon after they are created. The wood quality in riparian areas is often high, which is an added incentive for cutting. The challenge here is to determine when harvesting in riparian areas creates a high risk of ecological degradation, bearing in mind that the buffers often provide connecting routes across the landscape for wildlife. Where a water body has recreational value, visual impacts should also be considered.

4.5 Access Management

Roads and trails pose one of the greatest resource management challenges across the boreal forest, and the situation is no different in the Abitibi region. Technically, there are two parts to the issue: the construction of access roads and the regulation of their use. However, in practice, these aspects are almost inseparable.

Access controversies stem from the fact there are many different impacts, interest groups and perspectives. Some First Nations and stakeholders (such as remote tourism outfitters, backcountry recreationists and environmental groups), prefer access to be limited and use restricted. As more and more remote areas are accessed, remoteness (often equated with roadlessness) becomes more valued. Many other recreationists, some First Nations and other forest users prefer more roads and unregulated use. These have formed a strong and vocal lobby for unfettered motorized access to public land where roads exist, and a sub-group among them flouts efforts to control the use of access roads. The use of snowmobiles and all-terrain vehicles is particularly difficult to regulate effectively. Even winter roads and trails can be used by snowmobiles and ATVs, so once a road or trail is built it is difficult to prevent it from being used and kept open.

In both provinces, timber access roads, which constitute the majority of new and existing access in the Abitibi region, are planned through the forest management planning process. Mineral exploration activity may also create new access, but exploration crews tend to use existing roads until a potential deposit is found, at which point any desired new access is more likely to be built. Trails are often cut through the bush for exploration, but these are usually rough and not suitable for vehicles, except perhaps ATVs and snowmobiles.

Forest access is generally planned and constructed as required and must pass through the public and stakeholder consultation components of planning. However, there is no strategic access planning process, even within the forest management plan, to develop a comprehensive access strategy that would serve all interests. Access decisions are primarily based on the amount of timber involved, cost and ability to minimize impacts on values. In Quebec, all access roads become the property of the provincial government, and there is no restriction on their use, except for fire prevention measures. Ontario now requires new access roads to have a life cycle plan, which includes decommissioning if the road is temporary. Decommissioned roads may eventually become impassable to trucks but can usually still be used by ATVs and snowmobiles.

Efforts to develop comprehensive access strategies have been largely unsuccessful. One partial exception, which is within the case study area, is the Cochrane District Remote Wilderness (Tourism) Strategy. This strategy was developed between 1993 and 1997 in response to an environmental assessment “bump-up” (under provincial legislation) during one of the forest planning processes and the general complexity of issues in the area. It identified a zone within the Cochrane District where remote tourism is the primary activity. In this zone, logging is prohibited and public hunting and fishing are by traditional access only. The strategy details how access to individual lakes within the district will be classified and managed. This seemingly sensible approach has not been

applied elsewhere. Possible reasons include its time-consuming nature and resistance from tourism operators. More recently, tourism operators have begun to see benefits and to view the strategy more positively.

Unregulated access has a number of potential ecological effects, all of them negative. These include:

- rapid depletion of fish stocks—this occurs when access is extended into areas with hitherto unaccessed, small to medium-sized lakes;
- over-exploitation and persecution of furbearers and carnivores;
- human disturbance of species that are sensitive to human influence, notably (in the Abitibi region) caribou;
- entry of predators and competitors into new areas;
- entry of exotic and invasive plants and pests into new areas; and
- increased fire ignitions through human carelessness.

Noss (1995) commented: “If I had to choose one indicator to assess and compare the ecological integrity of woodlands, it would be road density, as roads make most other human disturbances possible and have cumulative effects that persist as long as the roadbed is in place.”

Recommendation 8: Provincial governments should provide forest land managers with adequate tools to regulate road use and road density, as well as provide adequate enforcement.

Various measures can be applied to regulate access where appropriate, including the use of signage, gates and obstacles such as berms on the road. Bridges can also be removed. In many situations, these measures can be considered to be largely effective if they prevent vehicular traffic from passing—snowmobiles and ATVs are more difficult to stop. The choice of bridge location on a road that will later be decommissioned should be made with the effectiveness of the decommissioning process in mind. Access regulation should be accompanied by awareness programs (e.g., to explain why the government is limiting access). Moreover, it is helpful if there is a local forest advisory committee or integrated resource management table that agrees with the approach and has helped to design its implementation. A reasonable amount of enforcement is also necessary in some cases.

Recommendation 9: Comprehensive regional access strategies should be developed, preferably as part of regional land use plans but, in the absence of those, as stand-alone plans.

While development of comprehensive regional access strategies will not solve all of these issues, it represents a useful starting point. At a minimum, a regional access strategy would require a comprehensive decision-making process, and ideally it would identify goals and objectives, access zones (including remote areas), preferred or allowable access control measures, and planning approaches to improve the functionality of permanent

roads. Without this, access decisions and disputes will continue to be dealt with on a case-by-case basis, which obscures the cumulative and strategic aspects of access.

4.6 Cumulative Effects

Much of the Abitibi region is managed through forest tenures. There is a long history of mineral extraction, rivers are managed to produce hydroelectric power, and fisheries and wildlife are exploited by local residents and tourists. While each of these (and other) uses is regulated independently and monitored to various extents, there is no process that explicitly considers the effects of other uses in identifying a resource-specific management regime, or attempts to consider the effects of management in identifying an integrated management approach for the resources of the region. Concerns have been expressed that the cumulative effects of the resource management industries have not been assessed and are not taken into account in any management planning process. Frameworks for cumulative effects assessment exist, but have not, to the knowledge of those with whom we spoke, been applied in the Abitibi region.

The consultants view the concern over cumulative effects as being the other side of the “integrated land use planning” discussion. The major reason for integrating planning is to enable planners to consider all impacts. Where cumulative effects assessment may be more explicit is in the temporal dimension—the accumulated effects from all sources should be considered over time.

In decision making, one ideally wants to assess the cumulative effects of activities taking place in a variety of sectors over long time periods. This would be one of the characteristics, and benefits, of a well-designed regional planning process that brought the range of relevant interests to the table. Conducting access planning on a case-by-case basis, without the benefit of an overall guiding document, is an excellent example of the disregard for cumulative effects.

Recommendation 10: When environmental assessments are undertaken in the region in the future, they should take into account the cumulative environmental effects of existing and proposed development activities.

4.7 Aboriginal Peoples

The key themes of the sixth SFM criterion developed by the CCFM (see Table 5) are respecting Aboriginal values and incorporating them into decision making. This entails encouraging and facilitating the involvement of Aboriginal peoples in aspects of resource management ranging from planning to harvesting agreements and licences. Many Aboriginal people would also like to receive some share of resource royalties. Most Aboriginal people believe that respect for Aboriginal and treaty rights should be paramount in any resource decisions and agreements—a view underscored through their participation in the development of the Forest Stewardship Council’s national boreal standard.

Respect for Aboriginal and treaty rights, coupled with meaningful Aboriginal participation in resource-based economic opportunities, would contribute to conservation on several levels. For example, it would promote the sustainability of Aboriginal communities by helping to address the high unemployment and social dysfunction present in many of these communities. It would also contribute to the conservation of natural heritage, since Aboriginal people are major harvesters of fish and game—over the long term, they need to be involved in wildlife management. Finally, many Aboriginal people have traditional knowledge that, if integrated into forest planning and use, would help to improve improve the overall quality of management.

Within the forest sector, there have been incentives to include Aboriginal communities in forest planning and management and encourage their entry into the forest sector. These incentives include certification requirements, legal requirements and provincial government direction. However, as one Aboriginal representative mentioned at the Rouyn-Noranda workshop, there are major differences in how the two governments are moving to address First Nation issues.

Since 1998, the Quebec government has signed several agreements with Aboriginal communities, most notably the James Bay Cree, and a trilateral agreement with the Barriere Lake Algonquin community (in the Outaouais) and the Canadian government. Small parts of the territories covered by both these agreements overlap with the Abitibi region. For this reason, and because these accords represent an interesting precedent that could lead the way to similar agreements with the Aboriginal communities of the Abitibi, we will briefly describe the most substantial of these accords: the James Bay Cree accord.

The Paix des Braves is the biggest agreement between First Nations and government in world history: \$3.5 billion over 50 years plus a share of the benefits from natural resources taken from Cree land. Nine Cree communities in Quebec voted to accept this deal on January 30, 2002. On one hand, the massive extension of the James Bay and Northern Quebec Agreement promises more Hydro-Québec development and jobs for the Cree people north of the present study area of Abitibi. On the other hand, the required diversion of the Rupert River and construction of the Eastmain 1,200-MW power plant will decimate certain Cree trap lines and disrupt lives, some believe at significant cost to the Cree traditional way of life.

The provisions of the agreement regarding forestry aim, among other things, to establish a concrete, adapted forestry regime that establishes particular rules and procedures to better reconcile forest activities with the hunting, fishing and trapping activities of the Cree. The special measures imposed by this accord will have a direct impact on the Quebec forest industry. Close to 2 million m³ will be subtracted from the actual AAC. On top of that, 350,000 m³ will be transferred from the industry's current forest licences and given to the Cree. The industry estimates these changes will cost it an additional \$1.25 million per year (the Cree are expected to sell the 350,000 m³ of wood back to the industry at a profit).

Wood volumes have been allocated to many First Nation communities in other parts of Quebec. For example, a joint forestry plan has been elaborated with the Manouane Atikamekw, and a fauna–forest management accord has been reached with the Gesgapégiag Micmacs. Excluding the 350,000 m³ allocation given to the Cree under the Paix des Braves agreement, the volumes allocated to Quebec First Nation communities and corporations went from 247,000 m³ in 1998 to 651,000 m³ in 2003. These volumes do not include the contracts given to First Nation communities by various forest industries for harvest, transport, road construction and silviculture interventions.

Finally, the Quebec government has been negotiating with the Innu, the Montagnais and the Atikamekw to clarify their traditional rights and allow them to better develop socially and economically. An accord was reached in 2002 with the Innu to increase their territory, recognize the autonomy of their government and return them 3% of royalties paid from natural resources extracted in the Nitassinan (their traditional land).

The Ontario government has taken a very different approach to working with First Nations. Rather than negotiating agreements like those in Quebec, Ontario is moving toward issuing sustainable forest licences to Aboriginal communities such as the Moose Cree in the area north of the existing licensed forest area. Because the area of interest is well north in the province, most Aboriginal groups in Ontario will not benefit or have a role in these developments. In 1994, the Class Environmental Assessment of Timber Management produced Term and Condition 77, which required forest managers to make efforts to increase the participation of Aboriginal people and communities in the forest sector. Some positive developments in the Abitibi region include the creation of an active and successful logging business by New Post First Nation and the participation in the Lake Abitibi Model Forest to varying degrees by the Wahgoshig First Nation. The forest management planning process also includes provisions for a special Aboriginal consultation process. However, Ontario's efforts to work with Aboriginal peoples have been a relatively low priority for the provincial government and have yielded few solid achievements, especially compared with Quebec.

Recommendation 11: There is a need to accelerate the progress that has been made to provide Aboriginal communities with meaningful involvement in resource management, especially in Ontario.

At the Rouyn-Noranda workshop, one working group recommended the formation of an Aboriginal Table of Forests, suggesting that it would be an important champion for landscape-level planning and management. The consultants feel that such a table would likely be redundant, since at the level of the case study area, individual First Nations and tribal councils are able to play this role. Provincially, such a table would likely founder on regional differences; the National Aboriginal Forestry Association is an effective national voice. Moreover, the consultants feel that the Ontario provincial government's reluctance to make serious concessions is the main obstacle in the case study area.

4.8 Lack of Capacity

A pervasive concern in the forest sector is lack of capacity. This comes to the fore most prominently in the case of provincial governments and First Nations.

4.8.1 Aboriginal Communities

Lack of capacity within Aboriginal communities is a major obstacle to their advancement. Many Aboriginal communities are small, and typically there are about a dozen people who do the bulk of the administration, development and negotiation work. These people are overtaxed, with the result that communities must be very selective about what processes they engage in. While there is a new generation of well-trained and educated people coming of age, their impact will take time to become apparent to outsiders. In the meantime, many processes that would welcome First Nation representation do not receive it.

Many Aboriginal communities also lack the funds required to fully participate in many processes. This is another significant limitation and one reason why Aboriginal people would like timber licences and allocations, if not outright resource ownership.

A number of sources of assistance are available for First Nation business start-ups and entrepreneurs. Within Quebec, the Aboriginal Tourism Corporation helps Aboriginal enterprises involved in tourism by providing advice on issues such as marketing and product development. The Association is supported by the Assembly of the First Nations of Quebec and Labrador, Tourisme Québec and the Canadian Tourism Commission. The website (www.staq.net) lists one operation in the Abitibi region, a tourism operation based in Pikogan. In Ontario, the equivalent organization is the Northern Ontario Native Tourism Association based in Thunder Bay. More widely, the Aboriginal Business Program of the federal government is intended to provide assistance related to business planning, feasibility studies, product development, marketing and management.

4.8.2 Provincial Government

An extended period of fiscal restraint by the Ontario and Quebec provincial governments has substantially reduced the resources provided to government departments. Recent provincial budgets clearly indicate that restraint will continue for the foreseeable future. In both Ontario and Quebec, the natural resources ministries have limited resources. Cost cutting has been achieved in part by transferring forest planning and operational tasks to the licensees. The ministries retain responsibility for policy setting and regulation, planning approval, and wildlife and recreation management.

Both MRNFP and MNR appear to lack the capacity to effectively meet their retained responsibilities. The auditor general of Quebec identified MRNFP's management weakness in his 2001 report. A number of interview subjects observed that both MNR and Ontario conservation authorities need more funding to ensure adequate levels of staff and adequate resources to invest in management. In Quebec, industry foresters remarked that MRNFP does not have the capacity to analyze and use all the data from the public

consultations and resource inventories carried out by industry to comply with provincial norms and regulations. Senior MRNFP employees confirmed that the ministry needed more funding to better address these issues. Provincial government researchers also lack funds to undertake major studies: they must rely on multi-party approaches. Under-funding has meant that government has difficulty fulfilling its obligations, turnaround times are slow, and there is little capacity for non-mandatory analyses and investigations. For example, independent forest audits regularly cite MNR's under-funding of values collection, which leads to more time-consuming revisions later on; delays in the provision of new forest inventories by MNR are not uncommon.

Industry staff and others felt that a better allocation of present resources could improve this situation. In their view, the problem is not lack of financing but the heavy reliance on process and overly strict standards. For example, MRNFP's requirements will force the industry to provide a lot of inventory data for regions of high homogeneity. We agree that there may be opportunities, especially in longer term with the increase in forest certification, to reduce administrative time. However, we also think that MNR and MRNFP have insufficient resources to adequately meet their obligations.

As government has assumed a greater regulatory role, a greater emphasis on process is to be expected. This is not necessarily a bad thing. A well-designed and well-applied process can help provincial governments efficiently and consistently meet standards. Indeed, we and others view the long-term forest planning processes as a strength. However, some interview subjects felt that the need to follow process had reduced content quality and that some annual operational planning and revision processes had become unnecessarily onerous. They felt that an excessive use of process had exacerbated capacity shortages at the provincial government agencies. Furthermore, the consultants have observed that few provincial government staff are able to get out into the field: it is common to find district foresters who get out into the field no more than two or three days in a year.

Recommendation 12: Provincial governments should consider streamlining selected administrative processes for licensees that consistently meet or exceed standards. This is frequently identified as a potential incentive that can be offered to managers of certified forests.

4.9 Carbon Management

Management of forests as carbon stocks is in its infancy, and there are no regulations or requirements yet in place. The Forest Products Association of Canada has negotiated a memorandum of understanding (MOU) with the federal government on reducing greenhouse gas emissions. The MOU includes provisions for the development of forest-based carbon offsets. The rules of the federal government's Offset Trading System are currently in development, and forest carbon offsets will be a component of the system when it is launched in 2006. Thus, there are excellent opportunities to implement clever and innovative approaches that will support conservation. For carbon management, the dictum "think globally, act locally" applies in spades. While the extent of Canada's

commitment to the Kyoto Protocol is questionable, it is not a necessary condition to advancing carbon management. Some certification standards already contain indicators related to carbon management.

The more important obstacles to greater carbon management include:

- uncertainty over who would own carbon credits generated from Crown lands; and
- the current lack of credible markets for carbon offset credits.

While there are many science-related questions and uncertainties, these tend to be related to quantification, measurement technology and sampling procedures, and understanding the details of biophysical processes. In the view of the consultants, the existing base of scientific knowledge is functional.

Forest managers are beginning to understand that carbon sequestration is a real value and that, once ownership rights over carbon credits are established, it will begin to figure more prominently in forest management. Carbon sequestration is strongly aligned with conservation, especially biodiversity conservation, and the consideration of carbon value has the potential to profoundly reorient forest management in a region where there is abundant carbon in the humus and soils and the economic returns from timber production cannot be high. Gorham (1991) estimated that northern peatlands contain one-third of the global soil carbon, and Rouse et al. (2001) found that boreal forests in the Hudson Bay Lowland are carbon sinks while fens are carbon sources. The forest sequestered three times as much carbon as was emitted by the fen, per unit area.

Recommendation 13: The provincial governments should resolve issues of carbon credit ownership in Crown forests. At the same time, they should look for ways to provide suitable incentives for forest managers to consider carbon values in forest management decision making.

4.10 Caribou Management

Caribou management is the headline conservation concern in the Abitibi region, and it crystallizes many of the issues and obstacles identified in this paper. We believe that the management of caribou is a litmus test of society's seriousness about conservation. Many of our interviewees expressed concern that we as a society are not willing to make a serious effort to maintain caribou in their current range.

Woodland caribou populations have been declining across North America since the 1800s, and during this period their range has shifted northwards. However, there is controversy over the reasons for these declines. Forest management has been strongly implicated, in concert with shifts in the densities and distributions of moose and wolves (facilitated by access construction). Woodland caribou are designated as a threatened species by the Committee on the Status of Endangered Wildlife in Canada.

In the northern part of the Abitibi region, woodland caribou occur in reasonable numbers, but their long-term survival prospects are not encouraging. Caribou are widely considered to be very sensitive to human influence, suggesting that intensifying resource use and increased access will drive continued loss of range. Recent estimates by MNR indicate that their population is declining, and there is concern that the area to which they are now relegated may be marginal habitat in the context of their original distribution.

The elusiveness of caribou contributes greatly to the relative lack of knowledge about them (lack of provincial government capacity and non-involvement of First Nations in management are factors here). In fact, a sizable herd was discovered in the Detour Lake area less than 10 years ago, and the range of this herd is now known to include parts of both Ontario and Quebec.

The Ontario government has developed a set of landscape-level forest management guidelines for the conservation of woodland caribou. These guidelines are based on the philosophy that the species is best managed by providing a continuous supply of large intact areas (at least 10,000 ha in size) of winter and summer habitat, taking account of current habitat usage and future requirements (OMNR 1999). Preferred winter habitat, which is particularly crucial, consists of mature, open coniferous forest, with abundant lichen cover. In essence, the approach for managing caribou involves concentrating operations on a relatively few blocks of forest, while undertaking no operations and limiting access in the remainder of the forest. One-kilometre-wide no-harvest buffers should be placed around calving areas. Forest access roads should be temporary when constructed in significant habitat tracts. Once harvesting is complete, access to the blocks should be removed, and the blocks left undisturbed for at least 100 years; in this manner, operations will rotate around the forest over a 100- to 120-year period. This approach contrasts strongly with the more common management approaches whereby operations are widely dispersed across the forest to minimize overall disturbance in any particular area.

The Ontario guidelines are applicable to northwestern Ontario; a set of guidelines appropriate for northeastern Ontario and northwestern Quebec might differ in some details, due to ecological differences, but the main approach would not change. Currently in northeastern Ontario, only selected high-value sites, such as calving grounds, are protected.

A landscape-level conservation approach to caribou management provides many additional conservation benefits besides simply conserving caribou. For this reason, the caribou is an example of an umbrella species: if caribou are protected, a wide range of other species will also be protected (under the umbrella of caribou conservation). For example, in northwestern Ontario, preferred caribou wintering areas are typically large expanses of forest dominated by mature conifers on less fertile, dry, outwash plains, eskers, sand dunes and areas of thin, rocky soils. Caribou also do well where alternative ungulate prey are scarce, predator densities are low and road densities are low or nil. Thus, examples of other values that would be protected under a caribou management

strategy include marten, wolverine and many boreal bird species. Remote and/or roadless areas would also be a value that would accompany a caribou management strategy.

Management goals regarding caribou populations are oriented toward limiting future declines, rather than reestablishing populations. Resource managers and society in general face some hard choices given the seeming incompatibility of caribou with resource management and development. The key issue may be whether society is willing to limit development opportunities in order to spare caribou.

Recommendation 14: An integrated, regional caribou management strategy should be developed in the Abitibi region.

5 Summary of Recommendations

Recommendation 1: Organizations should step up efforts to meet with counterparts in the other province to exchange ideas and experience. Greater awareness is needed of opportunities available under the proposed agreement related to transboundary environmental impacts, as well as other issues. Examples include issues related to the economic restructuring of resource industries and northern communities and leveraging the advantages and resources of regional communities and organizations.

Recommendation 2: Quebec and Ontario should initiate and facilitate regional land use planning processes in their respective portions of the Abitibi region.

Recommendation 3: The Abitibi area should be a high priority region for the establishment of additional protected areas.

Recommendation 4: The provincial governments should review the legal requirements of mining claims holders, including renewal provisions, to ensure that claims are actively investigated in an expeditious manner and inactive claims do not block land use decisions.

Recommendation 5: The triad approach should be adopted in Quebec and implementation through Ontario's Living Legacy should continue.

Recommendation 6: The provincial governments should support forest companies' efforts to become certified by removing institutional obstacles to certification, fully meeting their management obligations and providing incentives, such as streamlined operational planning requirements and reduced stumpage rates, for companies to become certified.

Recommendation 7: The provincial governments should develop methods for forest planning at scales larger than the individual management unit.

Recommendation 8: Provincial governments should provide forest land managers with adequate tools to regulate road use and road density, as well as provide adequate enforcement.

Recommendation 9: Comprehensive regional access strategies should be developed, preferably as part of regional land use plans but, in the absence of those, as stand-alone plans.

Recommendation 10: When environmental assessments are undertaken in the region in the future, they should take into account the cumulative environmental effects of existing and proposed development activities.

Recommendation 11: There is a need to accelerate the progress that has been made to provide Aboriginal communities with meaningful involvement in resource management, especially in Ontario.

Recommendation 12: Provincial governments should consider streamlining selected administrative processes for licensees that consistently meet or exceed standards. This is frequently identified as a potential incentive that can be offered to managers of certified forests.

Recommendation 13: The provincial governments should resolve issues of carbon credit ownership in Crown forests. At the same time, they should look for ways to provide suitable incentives for forest managers to consider carbon values in forest management decision-making.

Recommendation 14: An integrated, regional caribou management strategy should be developed in the Abitibi region.

6 Literature Cited

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Appendix 1

List of People Consulted and Interviewed

Interview Record for Abitibi Conservation Case Study

Government

<i>Agency</i>	<i>Interview Subject</i>	<i>Result</i>
Federal Government		
Natural Resources Canada Laurentian Forestry Centre	Normand Lafrenière General Director Denis Ouellet, ing.f., Ph.d. Research Director (Ecosystems) Augustin Lebeau, MBA Director, Policy and Liaison	Interviewed in person March 8
Canadian Wildlife Service	Patricia Dwyer Chief Aboriginal Affairs and Transboundary Wildlife	Interviewed April 7
Canadian Forest Service	Bill Meades Acting Director, CFS SSM	Interviewed March 29
Provincial Governments		
FAPAQ: Direction du développement de la faune	René Lafond Chef d'équipe Gestion intégrée des ressources Lothar Marzell Géographe Isabelle Gauthier Biologiste, Équipe Biodiversité	Interviewed in person March 8
FAPAQ	Mario Poirier Biologist, Integrated Resources Management Société de la Faune et des Parcs	Interviewed March 23
Ministère de l'Environnement	Vincent Gérardin Direction du patrimoine écologique et du développement durable	Interviewed in person March 8
MRNFP FORESTS Bureau régional de l'Abitibi- Témiscamingue et du Nord-du-Québec	Denis Audette Coordonnateur pour affaires autochtones et fauniques Michel Thouin, ing.f. Responsable de la division de l'assistance technique	Interviewed by phone March 17 Interviewed by phone March 23
MRNFP MINES	Louis Bienvenue, ing.	Interviewed in person in

	Direction de la politique et de l'économie minérales Lucie Ste-Croix Chef de service des titres miniers	Quebec City, March 8
Ontario Ministry of Natural Resources	Jim Duncan, Forest Industry Liaison Officer Forest Business and Economics Section, Timmins Region Rob Galloway Regional Director, Northeast Region Bob Watt Coordinator, Northeast Science and Technology Unit	Interviewed by phone March 23 Interviewed March 30 Interviewed March 31, and by e-mail June 2
Ministry of Northern Development and Mines	Graham Campbell Northern Development Advisor, Tourism	Interviewed by phone April 2
Ministry of Citizenship; Ministry of Culture; Ministry of Tourism and Recreation	Laurier Gadoury Regional consultant to all three ministries, Timmins	Interviewed by phone March 25
Ontario Ministry of Agriculture and Food	Ray Valaitis	Interviewed by phone April 5
Municipal Government		
Timmins	Robert Calhoun Timmins Economic Development Officer	He referred us to Mattagami Region Conservation Authority
Mattagami Region Cons. Authority	Kees Pols General Manager	Interviewed March 30
Iroquois Falls	Ken Graham Mayor	Interviewed March 26
Hôtel de Ville de Rouyn-Noranda	Pierre Cartier Service de l'aménagement	Interviewed by phone March 30
Hôtel de Ville de Rouyn-Noranda	Jean-François Turcotte Responsable du module de la planification du territoire	Interviewed by phone March 31
MRC de la Vallée-de- l'Or	Nathalie Dallaire, Chargée de projets GIR	Interviewed by phone March 24

Industry

<i>Sector</i>	<i>Interview Subject</i>	<i>Result</i>
Forestry		
Domtar inc.	Guy Boucher Vice-président Section environnement Bernard Sénécal	Interviewed in person March 5 Interviewed by phone March 17
Domtar Inc.	Jacques Bray Director, Forestry and Environment Brian Nicks Director, Forestry and Environment	Group meeting March 9
Abitibi-Consolidated Inc.	Francine Dorion Vice-President Sustainable Development and Environment Guy Tremblay Forest Certification Coordinator	Group meeting March 9
Tembec Inc.	Luc Houde Vice-President, Forest Resources Management Véronique Têtu Forestier Divisionnaire, Boreal Forest Chris McDonell Director (Environment)	Group meeting March 9 Also interviewed by phone April 5
Mining		
Quebec's Mining Exploration Association (AEMQ)	Renald Gauthier, géol., DESS Directeur général	Interviewed by phone March 24
Association minière du Québec inc.	Jean-François Doyon, M.Sc. Directeur, Environnement	Interviewed in person March 8
Ontario	Robert Calhoun Project Manager, Discover Abitibi Project Jamie Robertson Exploration Manager Falconbridge and Noranda	Interviewed March 25 Interviewed with Gino Roger March 29; e-mails June 17
Agriculture		
Union des Producteurs Agricoles	Nicole l'Anglais UPA Secrétaire	Interviewed by phone March 22

Secrétaire		
Tourism and Recreation		
Association des Gestionnaires de Zec de l'Abitibi-Témiscamingue (AGZAT)	Mylène Raimbault, ing.f. Chargée de projet GIR	Interviewed by phone March 23
Northern Ontario Tourist Outfitters Association	Todd Eastman Research Analyst	Interviewed by phone March 30
Destination Nord Kapuskasing, Ontario	Nicole Guertin	Interviewed by phone April 5
Western Wildcat Tourism Resource Development	Rosanne Van Schie	Interviewed by phone April 5

Other (Aboriginal, ENGO, Universities and Others)

<i>Organization</i>	<i>Interview Subject</i>	<i>Result</i>
Université Laval	Luc Bouthillier, Ing.f., Ph.d. Forestry Economics Professor	Interviewed in person March 8
Université du Québec à Montréal	Pierre Drapeau Groupe de recherche en écologie forestière interuniversitaire	Interviewed April 8
	Brian Harvey	Interviewed March 29
N.A.	François Gendron P.Q. Deputy for West-Abitibi	Interviewed by phone March 16
Lake Abitibi Model Forest	Suzanne Parton General Manager	Interviewed by phone March 29
First Nations		
NAFA	Harry Bombay Director	Interviewed March 23
ENGOS		
Action Boréale	Henry Jacob and Ivan Croteau	Interviewed by phone March 25
World Wildlife Fund	Lorne Johnson Advisor, Forestry and Forest Certification	Group meeting March 9
	Gaétane Boisseau Coordinator (Conservation and GIS)	Interviewed March 26
	Tony Iacobelli WWF Ontario	

Additional people contacted for interviews did not respond.

