INTERNATIONAL
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SCIENCE PANEL

Conserving the World's Last Great Forest Is Possible: Here's How

A science/policy briefing note issued under the auspices of the International Boreal Conservation Science Panel and Associates

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The International Boreal Conservation Science Panel is an interdisciplinary team of scientists from the U.S. and Canada. Its members have a wide range of expertise and experience gained from years of research, conservation, and writing about science issues related to North America and many other parts of the world. The panel is jointly concerned with the future of North America's boreal forest and in ensuring that the scientific issues related to the conservation of the boreal forest are clearly articulated to the public and decision-makers in government and industry. The panel enlists its member specialists and invited expert associates in producing science/policy briefing notes for issues of major relevance to the future of the boreal forest.

EXECUTIVE SUMMARY

From Yukon and the Northwest Territories in the west, stretching across the northern expanses of Canada to Newfoundland and Labrador in the east, the governments and communities of Canada's boreal forest are facing and struggling with unprecedented decisions about the future of their lands and their peoples. **It is vital that all those involved in shaping those decisions understand fully the context including the globally significant conservation and natural capital values of Canada's boreal forest.**

Some of the features of Canada's boreal forest that make it globally significant include its large, primary forests, peatlands, taiga, lakes, and rivers. These are among the world's last remaining examples of northern ecosystems that support healthy populations of large mammals, birds, and fish, many of which are extinct or endangered in other regions. Canada's boreal forest is one of the world's most significant land-based storehouses of carbon – carbon that must be kept out of the atmosphere to prevent further and potentially catastrophic global warming. The region contains more surface freshwater than any other nation on earth and some of the world's most extensive wetlands, largest lakes, and longest undammed rivers. Canada's boreal forest is also home to hundreds of Aboriginal communities who retain connections and use of the land and its animals and plants.

Canada has a responsibility as steward of the boreal forest and its globally significant conservation values.

These are among many of the globally significant conservation values that highlight Canada's global responsibility as steward of the boreal forest. At the same time, **there is rapidly escalating interest in the region from industries based on resource extraction. Yet, rules and regulations for managing industrial extraction of resources in Canada's boreal forest have not kept pace** with the rapidly expanding footprint of industrial activities and plans.

Whether it is the extinction of species, the increase in costs from polluted water or air, or the societal tragedy from collapse of an overused resource, history has shown

clearly the loss of conservation values when societies do not understand or react to the changes that they are imposing on natural systems. **Ultimately, we depend upon intact ecosystems and the services they provide more than the short-term profits of unsustainable resource extraction.**

Provincial, federal, and Aboriginal governments are making decisions today that will decide the fate of the peoples and the ecology of Canada's boreal forest. Science provides clear guidance about what needs to be done to ensure that these decisions balance the maintenance of the natural heritage of Canada's Boreal Forest Region with industrial development that extracts resources that other nations desire. **At the forefront of this scientific guidance is that no less than 50% of a region should be forever protected from development.** Industrial activities taking place in the remaining, unprotected areas should be carried out with the highest global sustainability standards. A network of large protected areas should be established before industrial development proceeds. Furthermore, both protected areas and industrial activities should proceed only with free, prior, and informed consent of affected Aboriginal communities.

Science provides clear guidance about how to balance conservation with development.

INTRODUCTION

Within Canada's national borders lies one of the world's greatest natural treasures: a 5.8 million square kilometre (1.4 billion acre) region of forests, taiga, tundra, peatlands, saltmarshes, rivers, and lakes that stretches from the Yukon to Newfoundland and Labrador. **This region – Canada's boreal forest – encompasses the largest blocks of intact forest and wetland remaining on the planet.** Along with its northern and southern siblings, the Siberian boreal forest and the Amazon forest, it contains the bulk of the world's forests that have never been touched by the large-scale footprint of human industrial expansion. In fact, Canada's Boreal Forest contains over half of the world's intact boreal forest and the largest area of surface freshwater on earth.

Canada's intact boreal forest and freshwater systems currently support a vast array of

conservation values, including:

- **A rich human cultural heritage** sustained over thousands of years by the Aboriginal peoples whose lives are intertwined within its ecological fabric (Karst 2010);
- **Vast forests and freshwater ecosystems** that provide over 700 billion dollars' worth of ecological services annually including carbon storage and sequestration, air and water filtration, and ecotourism among others (Anielski and Wilson 2009);
- **The world's highest densities of terrestrial carbon stores** with a minimum of 208 billion tonnes of carbon stored in the soils and plants of its forests, peatlands and wetlands (Bradshaw et al. 2009, Carlson et al. 2009, 2010);
- **The largest area of surface freshwater of any country**, with millions of pristine lakes, and a large proportion of the world's last free-flowing large rivers supporting the remaining wild runs of economically and ecologically important migratory fish (Wells et al. 2011);
- **Between one and three billion nesting birds** of more than 300 species including an estimated 26 million waterfowl and seven million shorebirds (such as sandpipers and plovers) (Blancher and Wells 2005, Wells and Blancher 2011);
- **Viable populations of large ungulates and large carnivorous mammals**, such as woodland and migratory tundra caribou, grizzly bear, wolverine, lynx, and wolf--these are species lost from much of their original North American range south of the Boreal forest boundary (Laliberte and Ripple 2004, Hummel and Ray 2008);

THE SHRINKING WILDERNESS

The intact nature of Canada's boreal forest presents an unprecedented opportunity for conservation but its resources are also highly valued for industrial natural resource extraction (Far North Science Advisory Panel 2010). International forestry, mining, oil and gas, and hydropower corporations are all active in Canada's boreal forest and the current extent of boreal forest land already affected by these industries and

their infrastructures is 960,000 square kilometres (237 million acres) – an area larger than Texas. **These impacts have moved from the south progressively northward as roads and other infrastructure are built that allow access to formerly remote and intact regions.** Less than fifteen percent of the 710,000 square kilometre (175 million acres) Boreal Plains ecozone (the portion of the southern boreal extending from the eastern foothills of the Canadian Rockies to south-central Manitoba) remains in large, intact forest landscapes. Between 1990 and 2000 over 4,000 square kilometres (988,000 acres) of the southern boreal forest region of Saskatchewan and Manitoba and over 24,000 square kilometres (5.9 million acres) of the boreal forest region of Quebec were disturbed by forestry, mining, hydropower production, road-building, and other infrastructure developments (Stanojevic et al. 2006a,b).

Canada's boreal forest presents an unprecedented opportunity for conservation, but its resources are also valued for extraction.

Since 1975 over 310,000 square kilometres (77 million acres) of Canadian forest have been cut (Canadian Council of Forest Ministers 2010). Between 1990 and 2008 the total area harvested in Canada was 184,000 square kilometres (46 million acres) (Canadian Council of Forest Ministers 2010). **Assuming the same rate of harvest and that 65% of the Canada's timber harvest occurs in the boreal forest region, about 60,000 square kilometres (15 million acres) – roughly twice the area of Vancouver Island – will be harvested in Canada's boreal region over the next 10 years.**

Many other kinds of industrial disturbances are taking place within the boreal forest region. Oil and gas exploration and extraction activities, especially in the western boreal forest region, are rapidly increasing. Over 155,000 active and 117,000 abandoned oil and gas wells exist in Canada's boreal forest with 87 percent of them falling within five kilometres of a river or lake. Approximately 10,000 new oil and gas wells were drilled annually in Canada from 1999 to 2009. There are approximately 7,000 abandoned mines requiring varying degrees of rehabilitation and 105 active mines within Canada's boreal forest (Wells et al. 2011). **The mining exploration and staking process can also be highly disruptive to land-use planning and conservation efforts** and often opens previously inaccessible lands for other

industrial uses. As of 2007, staked mineral claims occupied 583,000 square kilometres (144 million acres) within Canada's boreal forest (CBI 200x). **Large hydropower projects in Canada's boreal forest region are estimated to have inundated an area twice the size of Lake Erie – 52,000 square kilometres (12.9 million acres) of land in the reservoirs behind dams – and they have disrupted seasonal flows over thousands of miles of rivers and streams**, while infrastructure including transmission lines and roads has fragmented vast expanses of terrestrial habitat (Wells et al. 2011). There are many more large hydroelectric projects under construction, or under consideration (Lee et al. 2011, Far North Science Advsory Panel 2010).

TIME IS OF THE ESSENCE

The wave of development pushing north through Canada's boreal forest leaves, in its wake, an expanding list of impacted species and widespread degradation of ecosystem services. Woodland Caribou have disappeared from the southern tier of the boreal forest and are federally listed in Canada as a Threatened species (IBCSP 2011, Festa-Blanchet et al. 2009, Hummel and Ray 2008). Wood Bison, Wolverine, Grizzly Bear, Eastern Wolf, and Newfoundland Pine Marten are among other boreal forest species that are now federally listed in Canada as endangered, threatened, or of special concern (COSEWIC 2011, Noss et al. 2001). Boreal forest dependent bird species like the Olive-sided Flycatcher, Canada Warbler, and Rusty Blackbird are federally listed in Canada as well (Cheskey et al. 2011). Most healthy Atlantic Salmon populations now occur only in the undammed rivers of the boreal regions of Quebec and Newfoundland and Labrador, with more southerly populations either locally extinct or federally listed as endangered, threatened, or special concern (Wells et al. 2011). Most boreal Lake Sturgeon populations are now federally listed as endangered, threatened, or special concern (COSEWIC 2011). On the broader ecosystem scale, **in the eastern portion of Canada's boreal forest there is evidence that the scale and pace of logging activity has dramatically transformed large**

Loss of habitat diversity makes forests vulnerable to insect pest outbreaks and makes it harder for boreal-dependent species to sustain their populations.

forest landscapes to a more even-aged and younger forest than occurred naturally (Cyr et al. 2009). Such loss of habitat diversity makes the forests more vulnerable to insect pest outbreaks, and also makes it more difficult for many other species to find the habitats they need to sustain their populations.

CONSERVATION FIRST

It is imperative that conservation be given top priority in planning for the future of Canada's boreal forest. Industrial use of the region is expected to increase. Investments in mining exploration in Canada (with much of it within the boreal forest region) have reached all-time highs in the last ten years and are expected to top three billion dollars in 2011 (Canadian Mineral Exploration and Deposit Appraisal 2011).

Without broad-scale land-use planning before development, the boreal forest's unique natural assets will be impaired and lost.

The Mining Association of Canada (2011) expects about $130 billion in various investments to the mining industry in the next five years across Canada. Annual investments in oil and gas activities in the western boreal forest are also in the billions of dollars. The forestry industry holds over 2.3 million square kilometres of land tenures (leases) within Canada's boreal forest and there are over 1000 mills processing wood products currently in operation in Canada. In the hydropower sector there are at least twelve new large-scale hydro dams and hundreds of potential new hydro facilities under consideration (Lee et al. 2011, Wells et al. 2011). In Quebec alone, there are plans for an investment of $47 billion in hydropower development over the next 25 years.

Without careful planning before development, the unique, last-of-their kind natural assets of Canada's boreal forest will be impaired and lost – a reiteration of the pattern in much of the rest of the world. Planning for the long term is key. This means **broad-scale land-use planning is needed that embraces a "conservation first" principle, so that large protected areas are established first and foremost, and then that resource extraction activities planned in remaining areas are undertaken according to the strictest possible standards of sustainability.**

THE SCALE OF PROTECTION

Maintaining the full complement of species, communities, and ecosystem services in the Canadian boreal forest requires that at least half of the area be protected from industrial disturbance. Habitat loss and degradation reduces populations and increases extinction risk for many species, and also impairs vital ecosystem processes.

Planning must consider not just rare species, but entire plant and animal communities as well as ecological processes.

This poses an important question for society: **how much habitat should be protected to maintain abundant wildlife and achieve an acceptably low risk of species extinction and loss of ecological processes?** Early efforts to answer this question focused on the amount of habitat that might be needed to maintain populations of single endangered or threatened species.

From this beginning grew efforts to estimate habitat needs for a number of species inhabiting the same landscape. Such efforts have culminated in planning that considers not only the needs of a handful of rare species but, ultimately, the needs of entire plant and animal communities. Far-ranging and migratory species must be included, as well as the continuation ecological processes. We also need to find ways to ensure that animal and plant communities are resilient to stressors and can adapt effectively to climate change. **As conservation planning has evolved to consider these broader conservation values and to limit ecological risk, it has become apparent that substantially more habitat protection than previously recognized is needed** (Svancara et al. 2005, Gaston 2003, Solomon et al. 2003). Older recommendations – that setting aside 10-12% of a region's land base would be sufficient to maintain a region's biodiversity and ecological processes – are now known to reflect major underestimates (Justus et al. 2008, Gaston 2003). It is expected that if approximately 10% of an ecological landscape were maintained in a natural state while the remainder was heavily impacted, as much as half of the original species of an area could be lost (Svancara et al. 2005, Soulé and Sanjayan 1998). Protection targets

Previous habitat conservation recommendations have underestimated the actual need.

that are based in conservation science have been found to be nearly three times higher than those motivated by political expediency (Svancara et al. 2005). **Modern, comprehensive conservation plans typically identify protection targets of 25% to 75% of the landscape (Noss and Cooperrider 1994), with a median protection objective above 50%** (Schmiegelow et al. 2006).

KEEPING CARIBOU…AND EVERYTHING ELSE

The protection of biodiversity requires extensive reserve networks capable of supporting abundant and persistent populations of native species (Possingham et al. 2006). Although consideration of each species' needs is impractical, **conservation planning can focus on a subset of species that exhibit life histories or population dynamics making them particularly vulnerable to threats**, and therefore at risk of decline or extinction.

The Woodland Caribou is a species highly vulnerable to forest disturbance. Long-term persistence of this iconic species will require protecting large, intact landscapes with sufficient areas of old forest (Environment Canada 2011). Achieving the objective of caribou recovery is made more challenging by the species' sensitivity to extensive industrial activity. Research suggests that for this species to survive, intact landscapes of 10,000-20,000 square kilometre in size are likely required (IBSCP 2011).

In order to protect biodiversity, abundant and persistent populations of native species, such as Woodland Caribou, must be supported.

To maintain forest-dwelling caribou, therefore, the reserve network should contain multiple protected areas that are at least 10,000-20,000 square kilometres, ideally distributed across the species' range in order to maintain the species' natural distribution (IBCSP 2011). Caribou conservation may also enhance the persistence of other species with smaller range requirements, but a wider suite of species should be considered during planning to ensure the broader goal of protecting biodiversity.

MAINTAINING THE DYNAMIC FUNCTIONING OF ECOSYSTEMS

Ecological processes, such as natural disturbance regimes, forest succession and hydrologic and nutrient cycles, maintain the dynamic functioning of ecosystems (Schindler and Lee 2010). Ecological processes in northern environments, such as fire and the hydrologic cycle, operate at large spatial scales (Far North Science Advisory Panel 2010). **Given the immense scale of these processes and their potential sensitivity to industrial development, maintaining naturally functioning ecosystems requires large intact landscapes.** Such landscapes characterized by well-functioning ecological processes are far more likely to support the natural complement of species, and can therefore anchor a conservation areas network (Soule and Terborgh 1999). To incorporate natural fire regimes, protected areas should be large enough to contain the largest expected fire while still maintaining examples of all habitat types, so as to provide the sources for recolonization of populations detrimentally affected by the disturbance (Leroux et al. 2007). Conservation areas also need to be large enough to accommodate shifts in species' ranges in response to climate change (Lawler and Hepinstall-Cymerman 2010, Carlson et al. 2009, Kharouba et al. 2009).

Conservation areas must be large enough to accommodate range shifts due to climate change, and to survive natural fires while maintaining all habitat types.

Clearly, maintaining the conservation values that make Canada's Boreal Forest Region unique will require the establishment of large, connected representative protected areas distributed across the region (Slattery et al. 2011, Wiersma and Nudds 2009). In addition to strengthening the conservation areas network, these intact landscapes will act as experimental controls to inform the development of sustainable management practices that are vital to the success of these conservation initiatives (Far North Science Advisory Panel 2010, Schmiegelow et al. 2006).

SOCIALLY AND ECOLOGICALLY SENSITIVE DEVELOPMENT

For northern communities to survive and thrive they need to maintain long-term economic opportunities with carefully considered industry partners that respect the authority of local people to make decisions about current and future activities. Industry partners should also be committed to ensuring that economic prosperity benefits the local community over the long term. **Conservation science research has demonstrated that without consideration of land-use activities in the matrix of lands outside of protected areas it is impossible to maintain the full complement of biodiversity features and ecosystem functions required for true ecosystem sustainability** (Far North Science Advisory Panel 2010). Fortunately, many industrial sectors and progressive companies have either established or begun identifying standards and guidance to minimize negative ecological and social impacts.

Some core elements and precepts of ecologically sensitive boreal development include:

- **Planning should be integrated across industrial sectors** to minimize habitat loss and ensure that cumulative impacts do not lead to long-term biodiversity losses and ecosystem impairment. For example, in Woodland Caribou, populations tend to decline when more than one third of a herd's range is disturbed;
- Because native biota are adapted to natural processes, **industries like forestry and hydropower production should manage resource use and development in ways that strive to mimic patterns imposed by natural regimes** (e.g. natural disturbance and seasonality and rates of water flow);
- **Industrial activities should not sacrifice the connectivity of aquatic and terrestrial habitats** so that animal movements, plant dispersal, and flows of water and nutrients are not impeded;
- **Pollution must not degrade ecosystem processes or threaten wildlife populations.** Production of mine waste, transportation systems, and use of pesticides must be carefully controlled and monitored. Clean-up and control

of toxins, including associated costs, must be included in long-term business plans;

- **Ecological impacts must be monitored by independent entities** and reviewed by independent scientists and traditional knowledge holders whose management recommendations are implemented quickly and there must be agreements or regulations that require industry to follow such recommendations;
- **Research by independent scientists into ecological processes, industrial impacts and ways to mitigate impacts should be financially supported** as part of long-term business plans;

ABORIGINAL COMMUNITIES LEADING THE WAY

Aboriginal cultural practices have been integral to boreal forest landscapes for thousands of years. Today, hundreds of Aboriginal and Metis communities, made up of tens of thousands of individuals, continue to live in and near Canada's boreal forest. As these communities adapt and change, there continues to be important recognition of their responsibilities as stewards of the land and the cultural values of their heritage. **Many Aboriginal communities have developed world-leading comprehensive land-use plans that show a remarkable balance of maintenance of cultural and ecological values and opportunities for long-term economic development** to sustain viable futures for their communities. Outcomes dramatically improve when Aboriginal peoples maintain their leadership in decision-making, providing also many benefits in terms of preserving cultural integrity and heritage.

Outcomes dramatically improve when Aboriginal peoples maintain their leadership in decision-making.

To incorporate cultural values and local knowledge, as well as the appropriate balance between development and protection, land use decisions should be driven by comprehensive land use planning processes at both the community and regional scales.

Recent land-use planning efforts led by Aboriginal communities in Canada's boreal forest provides evidence that such recommendations are feasible:

- **The Poplar River First Nation** in Manitoba that finalized its land-use plan with 90% of its traditional territory in conservation areas encompassing over 8,000 square kilometres (two million acres);
- **The Blood Vein First Nation** in Manitoba that has completed a draft plan recommending more than 50% of its traditional territory be included in conservation areas – an area of over 2,400 square kilometres (590,000 acres);
- **The Peel River Watershed Planning Commission** with representation from a number of First Nations has proposed that 80% of the Peel River Watershed in the Yukon be protected – an area of 53,789 square kilometres (13 million acres);
- **The Deh Cho First Nation** in the Northwest Territories completed its land-use plan, calling for 50% of its traditional territory be in protected areas – an area of over 100,000 square kilometres (24.7 million acres);
- **The Taku River Tlingit First Nation** in British Columbia identified 55% of their lands for conservation status in their land-use plan though their recent compromise agreement with the B.C. government, providing for protection of about 25% – an area of over 5,600 square kilometres (1.4 million acres);
- **The Innu Nation** in Labrador whose Forest Ecosystem Strategy Plan calls for over 50% of the 71,000 square kilometre agreement area to be protected for ecological or cultural values – an area of 35,000 square kilometres (8.6 million acres).

GENERAL CONSERVATION PLANNING GUIDANCE

- **Land-use planning must be led by the communities**, especially Aboriginal communities, which are inseparable from these landscapes.
- **Conservation of lands should accommodate Aboriginal traditional uses of the land** and should be managed or co-managed by Aboriginal governments. In all cases there should be protection of traditional values and uses, including

hunting, trapping, gathering plants for food, materials, medicines, and spiritual and ceremonial practices.

- **Land-use planning should precede decisions regarding industrial development**, so that lands requiring conservation status can be identified based first and foremost on an understanding of what is required to maintain biodiversity and ecological processes rather than on what is least economically valuable.
- **To maintain ecological processes and the full complement of wildlife species, at least 50% of an ecosystem** or broad-scale landscape should be incorporated into a network of conservation areas that are free of industrial disturbance including from forestry, mining and mining exploration activity, oil and gas extraction and exploration, agriculture, and hydropower production.
- **The conservation areas network must include very large areas** – on the order of at least 10,000-20,000 square kilometres in size – to maintain large mammal and migratory bird populations, and the required range of habitat diversity and ecosystem functions, and to serve as biodiversity reservoirs in the face of climate change.
- **Conservation areas must consider interconnectivity of aquatic and terrestrial ecosystems** and strive to ensure that animal movements, nutrient cycling, and hydrological processes are not impaired. Conservation areas that encompass entire catchments should be a priority.
- **Conservation of lands should be enshrined in civic institutions** that provide the highest measure of certainty that its future use and management will remain with conservation as a priority and cannot be changed to accommodate short-term political pressures or sensitivities or swapped for less economically valuable land that has been impacted by past industrial activity.
- **Industrial activities on lands outside those where development is prohibited should be carried out with the lowest possible impacts** to biodiversity and ecosystem processes. Intensive developments, such as mines, should be managed such that impacts remain localized and regional biodiversity and ecological processes are not degraded.

- **The impacts of land use should be rigorously monitored** and regularly and meaningfully reviewed by independent experts. Necessary adaptations should be made quickly based on the recommendations of such reviews and there must be agreements or regulations that require industry to follow such recommendations. In addition, continued scientific research fundamental to understanding the ecological complexities and impacts of industrial development and ways to minimize impacts should be financially supported.
- **Planning should consider the cumulative impacts of development over meaningful time periods** (i.e. decades) to ensure that the full consequences of land use are understood and addressed. Planning should be regional in scale, and seek to maintain large areas of intact habitat on the landscape. Given the unprecedented speed of climate change impacts to ecological systems, especially in northern regions, the viability of wildlife populations is increasingly contingent on managing land use so as to maintain large, intact habitat areas and landscape connectivity

LAST-OF-OUR-TIME CONSERVATION OPPORTUNITIES

There are a number of immediate opportunities for maintaining the full complement of boreal forest biodiversity and ecosystem processes within current land-use planning initiatives and discussions. We outline here some of these opportunities in each province and territory within Canada's boreal forest and provide recommendations that are consistent with the scientific background described above.

- **The 283,000 square kilometres within the boreal woodland caribou range that the Forest Products Association of Canada (FPAC) member companies have deferred** from current logging operations under the recent Canadian Boreal Forest Agreement (CBFA) should be considered for long-term conservation status. Such an action can, of course, only be carried out under the direction and consent of Aboriginal governments in partnership with provincial governments.

- **In Ontario and Quebec**, where provincial governments have made pledges to protect 50% of the northern regions, Aboriginal-led land-use planning should commence immediately to identify areas in the range of 10,000-20,000 square kilometres in size that are ecologically most important. Areas retracted from ongoing forestry operations under the Canadian Boreal Forest Agreement should be given highest priority for consideration as protected areas co-managed between Aboriginal and provincial governments.
- **In Ontario**, priority conservation sites should include Ontario's Caribou Forest, to expand the areas protected as part of Wabakimi Provincial Park and the forests of Northeastern Ontario. Large intact forests within Ontario's Ogoki, Kenogami, Trout Lake, and Lac Seul Forests should be immediately withdrawn from further logging or other industrial development to become protected areas co-managed with Aboriginal governments.
- **In Quebec**, areas identified by the Cree between James Bay and Lac Mistasinni, including in the Broadback Valley region, should be accepted for protected areas designation. Also, the Montagnes Blanches region within the Nitassinan of Mashteuiatsh and Pessamit should be a priority for protection of its large intact forest blocks.

In the remaining boreal jurisdictions, provincial, territorial and federal governments should commit to protecting at least 50% of remaining intact boreal landscapes subject to Aboriginal prior and informed consent and co-management, Priorities for expanding conservation area networks in these jurisdictions include:

- Proposed and interim protected areas in the **Northwest Territories** identified through the Northwest Territories Protected Areas Strategy in partnership with Aboriginal governments should be made permanent as quickly as possible.
- **In the Yukon Territory**, the recommendations of the Peel River Commission for protecting 80% of that region should be adopted by the Yukon government.
- **In British Columbia**, Aboriginal land-use planning should be supported, including conservation area proposals advanced by First Nations.
- **In Alberta**, protected areas should be identified through the Land Use

Framework to balance economic development with ecological objectives including the protection of entire caribou ranges. For example, the Lower Athabasca Land Use Plan should be revised to increase protection of the Richardson herd, the most intact range in the planning region. Areas prioritized by First Nations, such as the Athabasca Chipewyan's homeland zones, should also be protected.

- **In Manitoba**, protection priorities should include already identified Areas of Special Interest, as should areas identified through the provincial Boreal Peatlands Stewardship Strategy. The proposed Pimachiowin Aki World Heritage site is a world-class model that should be supported. This should be increased by expanding the protected areas network to link Atikaki Provincial Park with Pimachiowin Aki, encompassing lands that are currently part of CBFA signatory company tenures. The very large remaining blocks of intact forest within the tenures of CBFA company signatories in the northeastern part of the boreal Woodland Caribou range in Manitoba should be considered for protected areas in the range of 10,000-20,000 square kilometres in size.
- **In Saskatchewan**, CBFA signatory company tenures within the Suggi-Amisk-Kississing Woodland Caribou herd range should be high priorities for consideration as protected areas in order to expand Nipawin Provincial Park. Large protected areas at least 10,000-20,000 square kilometres in size could be established in this area.
- **In Nunavut**, boreal regions along the border with Manitoba and NWT should be considered for large protected areas as well as areas along major river systems that cross the NWT border.
- **In Newfoundland and Labrador**, the government should adopt a plan to protect at least 50% of its intact boreal landscapes subject to Aboriginal prior and informed consent and co-management. The protection of more than 30% of the Mealy Mountain caribou herd range within the recently established 10,000-square-kilometre Mealy Mountains National Park is an example for all jurisdictions to follow.

SUMMARY

Aboriginal and provincial governments and the federal government of Canada have an opportunity to maintain the ecological integrity of one of the world's most globally vital ecosystems: Canada's boreal forest.

Without rapid and major changes in on-the-ground policy implementation, the opportunity to maintain the globally important values of this region will be lost. Such a loss will be a tragedy, not only for the Aboriginal peoples who have had a sustaining relationship with these lands for thousands of years but for all Canadians who understand that the legacy of a nation and so much of its prosperity is built on the long-term care of its renewable natural resources. **The boreal forest of Canada presents us with a compelling opportunity and a challenge to conserve a unique and critically important ecosystem while setting a global standard for others around the world to follow.**

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