

Canada's Wilderness

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Abstract: Canada is a large country with close ties to its wilderness heritage. This paper describes the extent of Canada's wilderness (both protected wilderness and remaining roadless areas) and discusses some of the challenges and opportunities facing wilderness stewardship.



Mt. Asgard from Fathom Glacier, Auyuittuq National Park, Baffin Island, Northwest Territories. Photo credit: W. Trotter.

Geography, Forests, and Wildlife

CANADA IS THE WORLD'S SECOND LARGEST COUNTRY (7% of the world's land area), with a land area of nearly 10 million square kilometers (3.86 million square miles)—about the size of Europe. Canada has six broad physiographic regions, including the vast Canadian Shield (60% of the country), the Interior Plains (18%), the Cordilleran Region (including Coast and Rocky Mountains—16%), the Arctic Islands (8%), the Appalachian region (4%), and the Great Lakes—St. Lawrence lowlands (2%).

Approximately 50% of Canada is forested, with remaining vegetation being primarily tundra or grasslands. Over 80% of its forests are boreal (or taiga) forests; the remaining 20% consist of Pacific and eastern forest types. Pacific forests include coastal temperate rainforests which comprise about 1% of Canada (2% of its forests).

Canada is renowned for its abundant and distinctive wildlife. Canada has most of the world's Stone (thinhorn) sheep, bighorn sheep, and mountain goats, and sizeable populations of many species that have become wilderness symbols, including grizzly bears, polar bears, caribou, wolves, and bald eagles.

Canada has one of the lowest population densities in the world (3 people per square kilometer). Most of Canada is largely uninhabited, since 30 million people mainly reside in urban areas close to the long southern border with the United States. Canada's economy is strongly natural resource-oriented, including logging, mining, fisheries, and resource-based tourism. Canada is comprised of ten provinces and two territories; over 90% of Canadian lands are publicly owned, with provinces having jurisdiction over most of the lands and resources.

Wilderness Values in Canada

In 1970, Bodsworth wrote "the Canadian land has shaped the spirit and nature of its people much more than Canadians, up to now, have reshaped the land. The Canadian wilderness selected and molded the Canadian character, for those who could adjust . . . stayed, and those who couldn't . . . went elsewhere" (Bodsworth 1970, 17–18). For many years, as Livingston (1070, 121) put it, Canadians felt: "We could never lose the wilderness. There is so much of it!" In fact, in 1070, Bodsworth estimated that over 90% of Canada could still be considered wilderness.

Leopold (1949) pointed out nearly 50 years ago: "In Canada . . . a representative series of wilderness areas can and should be kept. It will be contended, of course, that no deliberate planning to this end is necessary; that adequate areas will survive anyhow. All recent history belies so comforting an assumption. . . . To what extent Canadians . . . will be able to see and grasp their opportunities is anybody's guess."

Protected Areas and Wilderness—History

So what has happened and what is happening to Canada's wilderness? There has been a steady increase in protected areas and protected wilderness since Banff National Park was established in 1885. (See Nelson 1979, for an historical perspective.) Table 1, (updated from the International Union for the Conservation of Nature publication [IUCN] 1992) shows this steady increase in large protected areas (>5,000 hectares/> 12,345 acres) that are considered highly or partially protected: that is, areas with the degree of protection provided under the following IUCN categories I-IV:

- I. Scientific reserves/strict nature reserves
- II. National parks (and equivalent reserves)
- III. Natural monuments/natural landmarks
- IV. Managed nature reserves/wildlife sanctuaries
- V. Protected landscapes or seascapes

Protected Areas and Wilderness— Current Status

Canada has about 3,100 protected areas (IUCN categories I-V) amounting to about 79 million hectares (195 million acres); this represents almost 8% percent of the country (updated from Turner et al. 1991). Canada's protected areas range from federally owned national parks and migratory bird sanctuaries to provincial-owned parks, wildlife management areas, and wilderness areas. Table 2 provides a list of some of the more common types of protected areas (updated from IUCN 1992).

About 50% (by area) of the protected areas are either in national or provincial parks; these areas are generally considered to be highly protected where industrial activities like forestry and mining are usually prohibited. About 45% of the protected areas are in various federal and Provincial wildlife area designations; these areas are often only partially protected because forestry and mining activities may not necessarily be prohibited.

Provincial "wilderness area" designations are infrequently used in Canada, and vary considerably from province to province as to their meaning (McNamee 1990; Clowater 1991; British Columbia Ministry of Forests 1989; Province of Alberta 1970). Wilderness is most often protected in parks and wildlife area designations, the most formal protection provided through 1988 amendments to the National Parks Act which provide for the designation, by regulation, of wilderness areas within national parks. Less formal protection is provided through the establishment of wilderness zones in parks.

Table 3 (updated from IUCN 1992) shows 294 large protected areas (>5,000 hectares/> 12,345 acres) in Canada that have a high likelihood of having or protecting wilderness values. These areas total 63.X million hectares (157.5 million acres) representing about 6% of Canada.

Table 1-Protected Areas (>5,000 hectares) by Year of Establishment

Year	Protected Areas (millions of ha)	Total in 1994 (%)	Cumulative to 1994 (%)
1885-1889	2.6	4	4
1900-1909	1.1	2	6
1910-1919	0.3	<1	6
1929-1 929	8.5	13	19
1930-1939	3.9	6	26
1940-1 949	1.4	2	28
1950-1959	4.2	7	34
1960-1 969	13.4	21	55
1970-1979	11.8	19	74
1980-1989	9.2	14	88
1990-1994	7.4	12	100

Table 1 confirms that two-thirds of Canada's large protected areas were designated since 1959, more than one-fourth since 1980, and 12% during 1990-1 994

Table 2-Types of Protected Areas in Canada

Protected Areas	Number of Areas	Millions of hectares	Protected Areas (%)
National parks	35	20.9	27
Provincial parks	1,714	17.2	22
Wildlife management areas	185	20.8	26
Migratory bird sanctuaries	101	11.4	15
Wildlife protection areas	56	3.4	4
Ecological reserves	221	0.3	<1
Wilderness areas	44	0.8	1
Other	739	3.8	5
Total	3,095	78.6	100

Not all of these large protected areas are in a wilderness condition. About 85% of all large protected areas (>5,000 hectares/> 12,343 acres) were considered wilderness in British Columbia (Wilderness Advisory Committee 1986); that is, about 15% are influenced by roads and development. Assuming this factor is reasonably representative, the total amount of "protected" wilderness is likely to be about 54 million hectares (133.3 million acres)—approximately 5.4% of Canada—with about 32 million hectares (79 million acres)—3.2% of Canada—considered highly protected (i.e., in IUCN categories I-II), and about 22 million hectares

(54.3 million acres)—2.2% of Canada—considered partially protected. In comparison, the U.S. National Wilderness Preservation System now stands at about 40 million hectares (98.X million acres), representing approximately 4% of the United States (including Alaska).

Protected Areas and Wilderness: Progress and Targets

The Brundtland Commission's United Nations report, *Our Common Future*, had a profound impact on Canada. National, regional, and local "round tables" were

**Table 3-Protected Areas (>5,000 hectares) Most Likely to Protect Wilderness
[Area in Millions of Hectares (no. of areas)]**

Province or Territory	Total Area	Protected Areas IUCN I-II	Protected Areas IUCN III-IV	Total Protected Area	Total Area (%)
Northwest Territories	342.6	10.6 (5)	13.7 (15)	24.3 (20)	7
Quebec	154.1	0.5 (12)	8.3 (25)	8.8 (37)	6
Ontario	106.9	4.8 (34)	1.8 (7)	6.7 (41)	6
British Columbia	94.8	7.6 (110)	0	7.6 (110)	8
Alberta	66.1	5.6 (14)	0.1 (4)	5.7 (18)	9
Saskatchewan	65.2	0.5 (4)	1.0 (15)	1.5 (19)	2
Manitoba	65.2	4.0 (18)	0	4.0 (18)	6
Yukon	48.4	3.2 (2)	0.6 (3)	3.8 (5)	8
Newfoundland	40.6	0.7 (5)	0	0.7 (5)	2
New Brunswick	7.3	0.1 (3)	0.3 (8)	0.4 (11)	5
Nova Scotia	5.6	0.1 (2)	0.2 (5)	0.3 (7)	5
Prince Edward Island	0.6	<0.1 (1)	0.02 (1)	0.02 (2)	4
Total	997.2	37.8 (211)	26.0 (83)	63.8 (294)	6

formed throughout Canada to try to achieve the commission's goal of "sustainable development." The report is frequently cited to ensure Canada meets its global obligations. One of the report's recommendations was that the earth's protected areas should at least triple in size and represent all ecosystems. At the time, about 4% of the earth was considered to be in some form of protected status.

Canada has continued to increase the size of its protected area systems, continued to give more protection, and increasingly given special recognition to protecting wilderness.

As a consequence, Canadian conservation groups like the Canadian Parks and Wilderness Society and the World Wildlife Fund of Canada initiated an "Endangered Spaces" campaign in 1989 and a Canadian Wilderness Charter (Hummel 1989). The charter calls for at least 12% of Canada to be in protected areas by the year 2000, with representation in each of Canada's natural regions. Over 600,000 individuals have signed the charter (World Wildlife Fund 1995).

The federal government responded with Canada's Green Plan (Government of Canada 1990), which states that "Canada's long-term goal is to set aside as protected space 12% of the country" through various federal and provincial

designations, and that these areas should represent Canada's natural regions. Achieving this target would mean that about 120 million hectares (296.3 million acres) of Canada would be in various protected areas with at least 80 million hectares (197.5 million acres) likely in some form of wilderness-like protection. This projection is based on the current situation where over two-thirds of Canada's pro-

ected areas are considered "protected" wilderness.

A. Hackman reports that every province has stated their commitment to achieving this goal according to the World Wildlife Fund of Canada (personal comment 1995). For example, British Columbia's protected areas strategy states that 12% should be protected by the year 2000 and represent ecosystems; further, it defines protected areas to be "fully" protected (IUCN I-II) and prohibits resource uses such as logging, mining, and hydroelectric development. The B.C. Parks Act was just amended in 1995 to provide legislative protection for 2.4 million hectares (5.9 million acres) of new parks created under the protected areas strategy, and

also to establish a target of land to be protected by the year 2000 in the act itself.

Biodiversity and Ecosystem Representation

One of the important stated objectives of protected areas, including wilderness in Canada, is to help maintain natural biological diversity. Maintaining biodiversity also requires careful management on other lands. British Columbia, for example, has recently enacted the *Forest Practices Code of B.C. Act* to address (among other things) biodiversity at both landscape and stand-level in all provincial forests.

The Canadian Parks Service recognizes 39 terrestrial natural regions. National parks have been established in 23 of the 39 regions, and some kind of protected area exists in 34 of the 39 regions (Government of Canada 1991). The provinces and territories have developed their own, more detailed natural regions, with 25 (6%) considered fully represented, 47 (11%) moderately represented, 132 (31%) partially represented, and 220 (53%) with little or no representation (WWF 1995).

Various public opinion polls have shown strong support for additional wilderness protection in Canada. Although many Canadians take wilderness trips (a recent British Columbia study indicated 50% of the residents there had at some time in their life, with 16% having done so in 1992), the most commonly cited reasons for wilderness preservation are for *bequest* (for future generations) and *existence* (just knowing the wilderness is protected for its own sake) motives rather than *use* motives (British Columbia Ministry of Forests and Ministry of Environment, Lands and Parks et al. 1994). Tourism values associated with wilderness trips by non-residents are also a significant value to Canadians.

Roadless Areas

Canada's vast tracts of roadless wilderness is one of the country's most defining features. McCloskey and Spalding's (1989) global wilderness inventory estimated that about 65% of Canada (640 million hectares/1.58 billion acres) is in large (>400,000 hectares/>988,000 acres) roadless areas. This represents about 12% of the world's wilderness (18% excluding Antarctica). These large roadless tracts



The Rocky Mountains in Canada contain extensive park and wilderness opportunities, many of which are already protected. Photo credit: T Vold

mainly occur in northern Canada. If smaller tracts of roadless areas are included, this total would increase. For example, in British Columbia, Vold et al. (1993) note that about 63% of that province was roadless in 1988 when looking at areas >1,000 hectares (>2,470 acres) in size, and this estimate of the total roadless area is much larger than shown by the global inventory.

Some roadless areas are recognized as backcountry or wildland areas in land-use planning. For example, in Alberta, along the eastern slopes of the Rocky Mountains, plans have recognized wildland areas outside of protected areas. Recently in British Columbia, land-use plans have given emphasis in some areas to backcountry values. For example, the Cariboo-Chilcotin Land Use Plan (Province of British Columbia 1995), covering a 0 million-hectare (22.2 million-acre) area, establishes 12% in protected areas (1 million hectares/2.5 million acres), and also targets another 14% (1.3 million hectares/3.2 million acres) to remain in a roadless backcountry condition.

The British Columbia Ministry of Forests (1994) projected that roadless areas (> 1,000 hectares/>2,469 acres) would decline from about 56% of British Columbia (53 million hectares/130.8 acres) in 1994 to about 42% (40 million hectares/98.8 million acres) in 2014 due to road access to commercial forests. This 13 million-hectare (32.1 million-acre) decrease in roadless areas over 20 years averages to about 650,000 hectares (1.6 million acres) per year. If extrapolated to Canada as a whole, the decline of roadless areas would be about five times greater, since British Columbia harvests about 30% of the overall area harvested in Canada, or about 3.25 million hectares (8 million acres) per year. This estimate of reduction in roadless areas may also be conservative in that it does not include road access



development for oil, natural gas, and mining which is especially significant in northern Canada.

Although Canada is making progress in protecting more wilderness, it is also very reliant on developing roadless areas to support its resource industries. For every hectare of wilderness protected, about 3 hectares (7.4 acres) of roadless wilderness is likely being roaded and harvested or developed. Yet, still a sizable area of Canada, about 60%, or 600 million hectares (1.5 billion acres), will likely remain as either protected or unprotected wilderness by the year 3000. However, many natural regions in southern Canada have few remaining roadless areas and these ecosystems are "endangered spaces" in terms of wilderness protection.

Wilderness Stewardship— Future Prospects

Canada has continued to increase the size of its protected area systems, continued to give areas more protection, and increasingly given special recognition to protecting wilderness. These trends will likely not just continue, but increase more rapidly in the years to come.

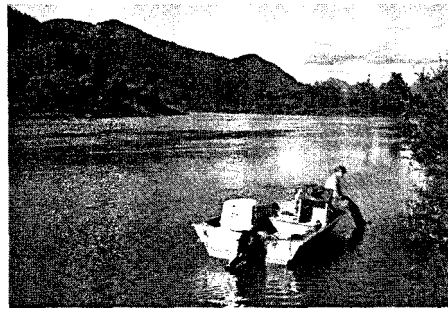
At the same time, Canada's economic dependence on its natural resources will mean that many roadless areas will be open to resource extraction and that only some roadless areas will be formally deferred from development until a land-use decision can be made. Backcountry tourism-related developments will also likely increase in the future.

As we have seen, Canada has a history of wilderness protection going back over 100 years with about 5.4% of the country now afforded some level of protection from industrial development. But what of the future? Rollins and Dearden (1993) provide a useful typology with which to highlight some current initiatives, challenges, and future opportunities for the protection of wilderness values in Canada.

Legislation and Policy Issues

The "lack of clear legislation and policy with regard to parks and protected areas" has led to ad hoc decisions by many provinces (Rollins and Dearden 1993, 294). Recent initiatives like British Columbia's Protected Areas Strategy (Province of British Columbia 1993) have sought to clarify both the objectives of wilderness protection (e.g., ecosystem representation) and appropriate uses of wilderness resources. While such efforts to broaden wilderness protection policy to encompass concepts like ecosystem management have occurred, legislative renewal to enforce these changes by statute has been minimal or nonexistent at the provincial level.

The level of legislative protection in Canada varies. National parks and some provincial parks are guided by their respective acts. Changes in boundaries or status requires legislative debate and approval. Most other protected areas are created through cabinet approval (by Orders-in-Council.) As a consequence, boundaries or status can be changed and regulations altered with



Canada has large river systems in existing or protected wilderness. Kitlope wilderness in coastal mountains of western Canada (left) Photo credit T Vold. River boats are used to provide access to many of Canada's remote wilderness and roadless areas (above) Photo credit T Vold and E Lea

only cabinet approval and no legislative debate needed (Government of Canada 1991). Thus, there remains the need to examine and update the "real levels of legal protection afforded" by the various provincial park and protected area acts and regulations (Government of Canada, 294).

Public Participation

Historically, land-use planning, including the planning of parks and protected areas in Canada, has used the synoptic planning model with its authoritarian "top-down" approach. Critics have cited its tendency to be elitist, centralized, resistant to change, and unresponsive to the concerns and needs of the public (Ashor et al. 1985). The synoptic approach began to come under increasing attack in the 1970s as alternatives, such as Friedmann's (1973) transactive planning model with its emphasis on communal learning combining personal and processed knowledge were elaborated (Friedmann and Weaver 1979).

Now, two decades later, Canadians are disillusioned with the traditional approach to land-use decision and are demanding more meaningful input into decisions that directly affect them or the place where they live. This demand for direct input is evident in stakeholders' views toward both the allocation and day-to-day management decisions associated with protected areas and wilderness. Gillespie (1995, 17) describes some of the reasons why national and provincial governments in Canada should incorporate more direct public involvement in decision-making processes like the planning and management of protected areas and wilderness.

In today's world, the reasons for not involving citizens in the planning and management process are no longer valid. People are far better educated than in previous decades and they can contribute well to the development of government decisions. The contemporary reality is that through consultation, governments today can make more insightful decisions that are better supported by their publics, and are therefore more likely to work when they are implemented.

Nowhere is the need for stakeholder support greater than in the implementation of management plans for wilderness protection. While natural resource managers actually administer management policy and direction, it is the actions of users and other interested stakeholders that often determine the effectiveness of these policies. "The future success of our parks and protected areas relies largely upon continued public support (Rollins and Dearden 1993, 297). Effective public involvement in developing area-specific management policies is one key element in creating a feeling of ownership that generates such support. The challenge in Canada is one of meeting the continuing public demand for meaningful public participation in the management of the wilderness resource while minimizing what some have termed "consultation fatigue" and imbalances in interest group power and resources.

In order to more clearly guide the management of protected areas, resource agencies are also recognizing the need for explicit area-specific management plans. The trend has been for increased public participation and to provide clearer and more reasonable objectives. Examples include park master plans created for various national and provincial parks throughout Canada.

The Role of Indigenous Peoples

"Most of the Yukon, Northwest Territories, British Columbia, Quebec and the Atlantic provinces were never covered by treaties" with indigenous peoples (Berg et al. 1993, 228). Negotiations are now underway in many of these areas to define Aboriginal rights, interests, and title to their traditional lands and the natural resources they contain. As Rollins and Dearden (1993, 297) indicate: "Many parks and protected areas are located in parts of the country that are important territories for native peoples. South Moresby Island, Pacific Rim, Head-Smashed-In Buffalo Jump, and Nahanni are examples of this situation. Management of these places requires special sensitivities and strategies."

"In the planning of new protected areas, aboriginal people also expect to be involved from the very beginning. They want protected area managers to realize that their participation in planning and management is not a threat, but a guarantee of their own livelihood and a positive contribution to the preservation of wild spaces" (Morrison 1995, 28). This is occurring in northern Canada where parks are tied to settlement of federal land claims. Agreements are also being negotiated for South Moresby National Park Reserve between the Haida and the Government of Canada regarding the operation and management of the park including park management plans and annual work plans (Berg et al. 1993).

The direct involvement of indigenous people in the joint management of parks and protected areas at the provincial level is growing as well. The Province of British Columbia has recently announced the creation of the first provincial park to be jointly managed by government and a First Nations tribal council, the Nisga'a Memorial Lava Bed Provincial Park. A memorandum of understanding has also been developed which outlines the mutual commitment between the Nemiah Valley Indian Band and the provincial government to work together in managing the newly created Ts'yil-OS Provincial Park.

Research

Canada has long been recognized as a unique natural laboratory for wilderness research, but until the last decade the level of research was minimal. Today, more researchers in the biological sciences, especially, have begun to take advantage

of Canadian wilderness to increase our understanding of ecological processes, particularly the boreal forests and the northern Arctic ecosystem.

Eagles (1993) described a number of Canadian studies investigating the ecological functions and environmental management of provincial and national parks. Examples include research into: past forest fire behavior and prescribed burning to mimic natural fire regimes (Lopoukhine and White 1985); evaluating and ranking flora and fauna species in Canada (Hoose and Crispin 1990); the reintroduction of declining species of Atlantic salmon in protected area rivers (Eagles 1993); the maintenance and restoration of a prairie nature preserve (Ontario Ministry of Natural Resources 1991; Pratt 1979); and assessing the protection of rare bird breeding sites (McColeman and Eagles 1990).

Other Canadian research efforts have examined the attitudes and preferences of wilderness recreationists. Two recent examples include investigations to: identify desired ecotourism opportunities including preferences for nonconsumptive forest-based activities, unmodified pristine forest settings, and remote wilderness experiences (Robinson et al. 1995); and determine the importance and acceptability levels of impacts from recreation use on wilderness experiences (Rutledge in progress, and Rutledge and Trotter 1995). Canadian wilderness research studies are also incorporating concepts and theories from disciplines such as marketing, social science, and social psychology in their efforts to investigate how to integrate wilderness in land-use and tourism strategies as well as basic wilderness management. However, much more will be required from the research community in the future.

As the complexity of the management situation increases, so will the need for information and understanding on which to base decisions. A vast increase in biophysical and socioeconomic scientific research will be required to meet this demand. This will entail not only the establishment of more in-house expertise but also a willingness to enter into cooperative research with universities and non-government organizations (Rollins and Dearden 1993, 297-298).

Educating the Public and Resource Managers

The education of both resource managers and the people who visit parks and

protected areas presents challenges but also future opportunities for the management of Canada's internationally significant wilderness values.

Walter Lusigi (1988) at the 4th World Wilderness Congress in 1987 called for the development of a "new resource manager" which . . . should be a broadly educated person with equal emphasis in biological as well as social sciences . . . The new resource manager will have to be more outward looking and place emphasis on managing the whole region where the resource is situated. This will mean dealing with people of all walks of life and other resource managers.

The challenge to Canada's educational institutions is to train natural resource managers for the future. An important objective of degree programs will be to prepare professionals to manage, market, and interpret the natural, aesthetic, and cultural values found in parks, wilderness areas, forests, heritage sites, and other special resource-based areas that serve as tourist destinations.

Teaching and communicating minimum-impact ethics among wilderness users is another challenge and opportunity for the wilderness movement in Canada. While not yet experiencing use pressures typical of some U.S. wilderness areas, impacts from recreation use, like litter accumulation, trampled vegetation, tree damage from horses in campsites, and human-made salt licks are already present in some Canadian wilderness areas. Although long advocated by the broader conservation community in Canada, local and specialized user groups and managers are working to promote wilderness use ethics to combat such impacts.

Contributions to International Conservation

Canadian involvement in international conservation efforts has taken many forms over the past century. With almost 10 million square kilometers (3.86 million square miles) of land and inland waters, Canada can make its major contribution to global wilderness protection by being a prudent steward of its own resources (Eidsvik 1989; 1993).

Some of Canada's commitments to future international efforts toward achieving global environmental stability and providing future generations with a viable biodiversity legacy include: the designation of ten Canadian World Heritage Sites



Expansive flowers, Taimenish Wilderness Park
Photo credit: T. Vold

and six Biosphere Reserves; the administration of controls over trade in endangered wildlife and wildlife products; the designation of 12.9 million hectares (31.8 million acres) of internationally significant wetland sites; the regulation of migratory bird hunting, and the establishment of sanctuaries and restoration programs to protect endangered species (i.e., whooping cranes) and wetland habitats; signing the Antarctic Treaty of 1988 to protect and conserve all living resources; a leadership role in the development of the World Conservation Strategy by IUCN in 1980; and preparation of *Caring for the Earth: A Strategy for Sustainable Living*. Through its support of these international initiatives combined with increased efforts at wilderness protection at home, Canada has the potential in the future to redize a national and international identity as a wilderness steward. IJW

ACKNOWLEDGEMENTS

The authors wish to thank K. Morrison, B.C. Parks, and A. Hackman, World Wildlife Fund of Canada, for reviewing an earlier draft of this paper.

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