CANADIAN INSTITUTE FOR
ENVIRONMENTAL LAW AND POLICY

L'INSTITUT CANADIEN DU
DROIT ET DE LA POLITIQUE
DE L'ENVIRONNEMENT

Since/depuis 1970

130 Spadina Avenue Suite 305
Toronto, Ontario M5V 2L4

Tel: (416)923-3529
Fax: (416)923-5949
www.cielap.org

PROTECTING THE BIODIVERSITY OF THE AMERICAS

LEGAL AND POLICY MECHANISMS CONCERNING GENETIC RESOURCES IN CANADA

By Karen Clark and Ian Attridge
Research Associates

The Canadian Institute for Environmental Law and Policy
January, 1997

Advancing the Environmental Agenda

TABLE OF CONTENTS

Preface

The Canadian Institute for Environmental Law and Policy

The Canadian Institute for Environmental Law and Policy (CIELAP) was established in 1970 in response to the continuing need for objective analysis in environmental law and policy. Independent of both government and industry, CIELAP is a national, charitable, not-for-profit research and education institute committed to reforming environmental law and public policy in Canada.

The Protecting the Biodiversity of the Americas Project

CIELAP has entered into a partnership with eight environmental law centres in South America, Central America and the United States to undertake a comparative analysis of legislation and policy options pertaining to genetic resources in each country. Analysis of each country's case studies will ultimately point to areas where collaboration could promote the development of fair and effective legal and policy regimes for regulating access to and compensation for genetic resources in the Americas. It is expected that the establishment of such regimes will strengthen the recognition of the economic and social value of biologically diverse systems of flora and fauna, and strengthen the case for their protection.

Acknowledgements

Funding for this project by the International Development Research Centre is gratefully acknowledged as is support from the MacArthur Foundation and the Global Environmental Facility.

We wish to thank all of the CIELAP staff and volunteers who worked very hard on this project, and without whose help much of the work could not have been done. Thanks to Risa Schwartz, Colin Jones, Rhiannon Davies, Jan Rabantek, Nancy Palardy and Nadya Tymochenko.

Our thanks, too, to the reviewers who generously gave their time and learned consideration to two drafts of the report: Brad Fraleigh, Howard Mann, Michelle Swenarchuk, Linda Nowlan, Laurie Henderson, Alex Mosseler, David Brooks, James (sa'ke'j) Youngblood Henderson, David VandersWaag, and Yves Couriveau.

We also would like to thank the dozens of provincial ministry staff across who generously gave us their time, and embellished our understanding of the applicability of provincial law to genetic resources.

Special thanks are extended to John Herity, Director of the Biodiversity Convention Office and his staff for all their help.

CHAPTER ONE: THE CANADIAN CONTEXT

1. INTRODUCTION

The purpose of this report is to describe legal mechanisms in Canada pertaining to genetic resources. The question driving the analysis, agreed to by the partners, is "if a bioprospector were to look to gain access to genetic resources in Canada, what laws would apply?" The specific areas of our interest are, therefore, provisions pertaining to ownership of genetic resources; provisions controlling access to genetic resources; provisions for the sharing of benefits arising from access to and use of genetic resources; and provisions for the conservation of genetic resources.

This introduction is to provide some context for the discussion, and to define some of the terminology used. In describing the Canadian context, it also provides a tentative explanation for why things are as they are in Canada. The terms of the partners' agreement for this report did not specifically require this kind of explanation, but, it is important for the future purposes of this project to not only describe what is (or is not) in place, but to account for why that might be. The accounting for the Canadian situation is for the most part dealt with below in the sections "Legal Status of Genetic Resources in Canada" and "Actual or Potential Value."

i) The Convention on Biological Diversity

The touchstone for this report is the Convention on Biological Diversity[1] (CBD) to which Canada has been a signatory since 1992.[2] It will serve the purposes of the report to review some of the history of the Convention, and the understanding between the parties who have signed it. The objectives of the CBD are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources.[3]

> The underpinnings of the main bargain between the North and South in the Biodiversity negotiations is often seen as the acceptance by the South of the obligation to conserve biodiversity and by the North of the obligation to share in the costs and benefits of this conservation. Central to this bargain are the provisions on access and on the equitable sharing of benefits and rewards. ...The recognition of national sovereignty over genetic resources is generally understood as the main underpinning of the implementation of the

---

[1] *Convention on Biological Diversity*, UNEP, Na. 92-7807, 5 June, 1992

[2] Environment Canada. *Canadian Biodiversity Strategy: Canada's Response to the Convention on Biological Diversity*. (Ottawa: Supply and Services Canada, 1995) at 7.

[3] In "Objectives," *A Guide to the Convention on Biological Diversity*, at URL: http://tor.ngb.se/mancon.html, at 1 of 4.

> provisions of the Convention in relation to access to the resources, as well as a sharing of the benefits that result from such access The ability to control access to the resource is universally understood as the source of the leverage to negotiate with private companies the sharing of benefits and access to the results and technologies associated with the access being granted.[4]

In his literature review of intellectual property rights, biotechnology and the protection of biodiversity, Howard Mann notes that many authors stated that critical to the process described above is the national implementation of provisions regulating access by the country of origin of genetic resources, as well as by the country receiving the import of the genetic material:

> ...implementation of Article 19 is linked to the regulation of access to genetic resources: the only point in time when a mutual agreement on the distribution of potential profits can be realistically made is when an access agreement is created.
>
> However, to effectively implement these provisions, steps will have to be taken by the developing countries to regulate access to genetic resources, but also by developed countries through, [for example] prohibiting import of materials obtained contrary to the rules of the providing state.[5]

Other mechanisms pertaining to access and the sharing of benefits described by Mann include: provisions in the patent laws of developed countries requiring, prior to the issuing of a patent, the disclosure of the source of a genetic resource and evidence of prior informed consent in obtaining it; and obligations on the part of countries of origin of genetic resources to maintain access for developed countries.

It should be noted that there is a perceived division in the interests of Northern and Southern countries in these proposed mechanisms (and in the original bargain) that Southern Countries will for the most part be the source of genetic resources, and that Northern countries will for the most part be either the consumer of the resources, or, at least, will provide intellectual property rights protection and markets for the products created from these resources. If this division does exist, then it is important to note that Canada straddles the divide. Canada is an important source of genetic resources --especially in the fields of agriculture and forestry;[6] Canadian research in

---

[4] Howard Mann, *Intellectual Property Rights, Biotechnology and the Protection of Biodiversity: Literature Review*, Report for Industry Canada, November 1995, at 27.

[5] Burhenne-Guilimin and Casey-Lefkowitz, "The Convention on Biological Diversity: A Hard-Won Global Achievement", pp. 43-59 in Handl, Gunther, ed., Yearbook of International Environmental Law, Vol 3, 1992, (Graham and Trotman, 1993), at pp 52-55.

[6] Alex Mosseler notes that "It is true that in terms of forest tree species diversity [Canada] may have a relatively low diversity. However, at the genetic level, [Canadian] tree species are

plant genetic resources (the agri-food industry) is of global importance; Canada also considers biotechnology to be a major growth area in its own economy. If the terms of the bargain struck in the CBD assume an agreement between the "technology rich but gene poor" North and the "gene rich but technology poor" South, then Canada is an exceptionally obligated signatory because it is, generally speaking, both technology and gene rich.

ii) Terminology

The term "genetic resources" could conceivably include every organic thing, living and dead, on the planet. The scope of this report is not so wide. It was agreed among the partners that access to and use of human genetic resources would not be discussed. This still leaves extensive ground to be covered. "Genetic resources" are defined by the CBD as meaning "genetic material of actual or potential value."[7] "Genetic material" is defined as meaning "any material of plant, animal, microbial or other origin containing functional units of heredity."[8] The full definition of genetic resources for the purposes of this report is, therefore, "any material of plant, non-human animal, microbial or other origin containing functional units of heredity of actual or potential value."

Within this definition, there are at least four different categories of genetic resources. The first of these categories is *in situ* genetic resources, genetic resources "in place." While the term *in situ* by itself could include cultivated or farmed species, its use in the Convention indicates that *in situ* genetic resources are for the most part understood to be "wild."[9] Article 8, *In situ Conservation*, identifies the Parties' obligation to "establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity" and to "promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings."[10] When used in this report, the term *in situ* refers to genetic resources in

---

among the most diverse organisms on earth... Canadian landscapes are surprisingly diverse in terms of ecosystem variability... and our native tree species are quite diverse genetically." Correspondence with the author, dated 15 October, 1996.

[7] Article 2.

[8] Ibid.

[9] An understood exception to this is genetic resources that are the product of "informal plant breeding" -- plants that have been selectively bred by indigenous communities. These genetic resources are neither "wild" nor are they commercially "domesticated" as their use may not extend far beyond the communities that grow them. At issue for people in these communities in particular is the bioprospecting of genetic materials from these plants and the subsequent application of intellectual property rights to the products created from the genetic material.

[10] Article 8, (a) and (d).

their natural habitat, possibly managed and protected by human beings, but largely left to natural processes.

The second category is *ex situ* genetic resources, or genetic resources "out of place." In Canada, and in this report, the term generally applies to seed and germplasm collections and plant and animal gene banks. This use coincides with the use in the CBD, which also notes that *ex situ* conservation should be "predominantly for the purpose of complementing *in situ* measures."[11]

The third category is comprised of "captive" and "commercially domesticated" genetic resources which do not comfortably fit in either the *ex situ* or *in situ* categories. This category includes commercial crops growing in farmers' fields, cultivated plants such as garden flowers, ornamental trees and shrubs, farm animals (including fish in fish farms and non-domesticated farmed animals such as mink and buffalo), animals held captive in zoos, specimens in museum collections, and plants and trees in botanical gardens. These genetic resources have been put in a special category for a number of reasons. The most important has to do with the partners' proposal that the laws examined should be read with the activity ofbioprospecting in mind. This requires some discussion of the term "bioprospecting" itself.

Bioprospecting is, generally defined, the activity of gathering genetic material, usually by methods no more complicated than taking specimens found in fields, along roads, and even taking samples of fruits and vegetables from market stalls.12 Gathering genetic materials can be for a number of purposes: general research, research for commercial purposes, conservation purposes, and so on. There is implicit in the partners' understanding of the term as used in this report that "bioprospecting" is for commercial purposes. This is consistent with the nature of the bargain struck in the CBD, and is directly related to concerns of benefits sharing. The

---

[11] Article 9.

[12] I.R. Reid, in the *Canada Country Report, infra*, describes the "bioprospecting" undertaken by Canadian scientists: "Most collecting trips are focused. However, while there, opportunistic collections are made. Over the last three decades, slightly over 100 scientists have visited over 40 countries where they collected approximately 100 genera of nearly 50 different plant families. ...The most of these collections were for breeding and selection, preservation of genetic diversity and taxonomic research. Collections were also made for botanical gardens, *ex situ* conservation of species, other research and other reasons. Depending on the location and species, samples are derived from roadsides, markets and remote areas, in order of frequency. Order of preference is: remote areas, roadsides, markets. Following collection, the accessions are tested for germination, disease and regeneration. As time permits, evaluations are carried out for a series of agronomic characteristics pre-determined for the species. Germplasm which does not correspond to criteria for preservation in our own national collections is offered to the appropriate world genetic resources centre, subject only to assurances that it will be well managed, and that Canadians will be able to maintain right of access to samples of the germplasm as needed. Canada Report Plant Genetic Resources, at 16.

understanding is that, should commercial use be made of genetic resources, some of the benefits accruing from the use should return to the country of origin of the genetic resources.

With this understood, "domesticated" genetic resources occupy a special category in the activity of "bioprospecting." They may exist *in situ* (in a field or paddock), but they are not "wild." They are commercial products, created by selective breeding or biotechnology. Individuals seeking to "bioprospect" the genetic resources in these plants and animals can usually simply purchase them. Moreover, many "domesticated" genetic resources are available allover the world. While there may be for anyone of them an identifiable country of origin, wide availability of the resources would make it impossible for the country of origin to control access, which would in turn make it difficult to contract for the sharing of benefits.

"Captive" genetic resources occupy a special category because, at least in Canada, they have not to date been the target of bioprospecting. The only potential exception to this is plants and trees in some botanical collections in Canada. A recent conference at the Royal Botanical Gardens in Hamilton devoted time to discussion of issues surrounding bioprospecting in botanical collections. The outcome of that discussion has not yet been published, but David Galbraith of the Royal Botanical Gardens did note that, as of late 1996, no Canadian botanical collection has been approached by a commercial interest requesting access to genetic resources.

The fourth category is "manufactured" genetic resources, the products of biotechnology and plant breeding. *In situ* and *ex situ* genetic resources generally serve as the raw material from which manufactured genetic resources are made, although manufactured genetic resources may, in their turn, also provide the raw material for new genetic resources. This category of genetic resources is distinct from all other categories in that the intellectual property in manufactured genetic resources is protected under Canadian law. These laws are discussed below.

iii) The Legal Status of Genetic Resources In Canada

In the years since Canada signed the Convention and it came into force, not one law or regulation regarding access or benefits sharing along the lines of those suggested above has been passed. It is the Canadian federal government's firm policy that compliance with the CBD, especially as pertains to questions of access and benefits sharing, will be accomplished without a regulatory framework. This position is supported by reasoning detailed below, but it should also be noted that it creates a high degree of uncertainty regarding the "legal status" of genetic level genetic resources in Canada.

Federal policy is that access to *ex situ* genetic resources in Canadian gene banks will be unrestricted to bona fide researchers and breeders anywhere in the world, for the purposes of research and breeding. The understanding informing this policy is that providing free access to

genetic resources is the best way to share the benefits arising from their use.[13] Canada stated its position on benefits sharing clearly at the Second Conference of the Parties to the CBD:

> Canada believes that building Parties' capacity to add value to their own resources will be the most effective way of sharing benefits equitably in the long run. Incentives to develop genetic resources sustainably, including bilateral and multilateral cooperation, appropriate intellectual property rights, and appropriate incentives for local and indigenous communities are elements of this equation. [emphasis in original][14]

These and other elements of the Canadian position describe the general situation. Assuming that to do so would place unnecessary and counterproductive restrictions on access to genetic resources, Canada is firm on not legislating these elements of compliance with the CBD.

As regards *in situ* genetic resources --which fall to a large extent under the jurisdiction of the provinces --there is very little legislation, and virtually no policy, that pertains specifically to genetic resources at the genetic level. Instead, as described in detail below, there are various laws and policies pertaining to parks, ecological reserves, wildlife, wild plants, endangered species and protected ecosystems such as wetlands. As well, there are many resource management laws, forestry acts, the federal fisheries act and so on. Genetic resources are governed by these laws insofar as genetic resources make up all or part of what the laws apply to. Although most of these laws do not specifically contemplate genetic level genetic resources, it is safe to conclude, as, indeed, the Canadian Biodiversity Strategy concludes, that laws pertaining to the conservation of species and habitat also pertain to the conservation of genetic level genetic resources.

However, these acts and policies do not provide answers to questions that might arise regarding the rights of either the owners or the potential users of genetic resources. For example, if

---

[13] Informing this position is the understanding that "value" in genetic resources exists elsewhere than in requiring a fee for access: "...in many conversations related to genetic resources, reference is made to the wealth of resources that have been obtained from the developing countries. This "wealth" [sic] refers to the perceived value of the genetic resources in their raw state as obtained from the source of diversity and used by [developed nations]. However, benefits flow both ways, as indeed they should. There is considerable redistribution or repatriation of specific genetic resource to the developing countries, with 14% of the shipments of germplasm sent outside of Canada in the last five years having gone to developing countries. The unfettered exchange of germplasm is crucial to worldwide breeding success." I.R. Reid and A. Mosseler, "Country Report for Canada to the International Conference and Programme for Plant Genetic Resources," (Agriculture and Agri-food Canada, 1995) at 34.

[14] Briefing for the Canadian Delegation, CONVENTION ON BIOLOGICAL DIVERSITY SECOND CONFERENCE OF PARTIES, Canadian Position: para. 6. On file at CIELAP offices.

someone were to bioprospect an Altantic cod in Canadian waters, and derive a substance from the cod to be used as the active ingredient in some product, the federal government, which has jurisdiction over fisheries, would be hard pressed to base on any existing legislation an argument for a right to share in any benefit arising from access to and use of the genetic resources in the cod. It must also be noted, however, that, given the current policies regarding access to genetic resources, it is not likely that the federal government would seek such a right.

Some Canadian laws establish property rights in some species by providing that certain animals or plants are the property of the Crown. Some laws indirectly control access to genetic resources by controlling access to some habitats and living things by requiring hunting licenses and research permits, for example. But, beyond scattered provisions that the results of research be shared, no law expressly contemplates the rights and remedies of the Crown or any other person with the capacity to control access to genetic resources in the event that someone uses the resources to develop new technology and/or generate commercial profit. Existing law might provide limited remedies under the Criminal Code (theft) and common law (trespass), but even this is a speculative conclusion: there is no case law in Canada dealing with the rights of the owners of *in situ* genetic level genetic resources.

On the other side of the question, those seeking access to Canada's *in situ* genetic resources are operating in a legal vacuum. Ministry staff interviewed averred that, for the most part, legislative provisions regarding research on provincial and federal lands were not drafted with access to genetic resources for commercial purposes in mind. While most believed that such research would likely be permitted under the law, decisions to permit access would be subject to unpredictable variations in Ministerial discretion. A few acts require that the findings of research be shared with the government permitting access. None of these provisions were drafted with consideration of the researcher's concern for protecting intellectual property. There is a high degree of uncertainty, therefore, as pertains to the rights of those seeking access to *in situ* genetic resources, especially those who may also have an interest in protecting the results of their research.

The greatest degree of uncertainty in the Canadian context relates to the fundamental question of who owns genetic resources. Genetic resources are understood to exist at three levels: the genetic level (individual genes and groups of genes), the species level (the animals, microbes, plants and other living things the genes comprise) and the ecosystem level (a whole operative biological web comprised of species comprised of genetic material). None of these terms have been expressly incorporated into Canadian law. At best, laws pertaining to plants and animals, and laws pertaining to public lands and protected areas can be interpreted to include genetic resources at the species and ecosystem levels.

However, questions as to the ownership of genetic level *in situ* genetic resources present a more thorny problem. At first blush, it might seem evident that anyone who owns an animal or plant owns everything in it, including its genetic resources (this is what current Canadian government policy assumes). But, ownership, that is to say property, is generally understood as a bundle of

rights, and those rights have been defined over many hundreds of years of evolution of the common law, civil law, statute law, and judicial interpretation of the law and statutes. It is to these laws and their interpretation that people look when they are seeking to establish, protect or challenge the existence of a property right.

It has been said that there is no property without law. It could follow, therefore, that in the absence of any law -- that is, in the absence of any state declaration of sovereignty over genetic level *in situ* genetic resources, and in the absence of any statute or common law doctrine dealing specifically with ownership of genetic level *in situ* genetic resources (in other words, the law as it stands in Canada) there are no property rights in them.

Based on the present state of the law, it is this report's tentative conclusion that no one "owns" genetic level *in situ* genetic resources in Canada. It may be that a case could be made, relying on the common law and other principles described below, that property rights to genetic level *in situ* genetic resources do exist. The difficulty for this report is that, to date, the case has not been made.[15]

iv) Actual or Potential Value

The *Preamble* to the CBD establishes that the Parties are conscious of "the intrinsic value of biodiversity and of the ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values of biological diversity and its components." "Components" of biological diversity include genetic resources, so it can be surmised that the actual or potential value of genetic resources can be realised or expressed by any of the means listed. This report touches on most of these values in the discussions of conservation of genetic resources.

However, for the discussion of ownership, access and benefits sharing, the actual or potential value of genetic resources is understood to be primarily economic. The basis for this understanding arises, in part, from the partners' concern with bioprospecting and compensation. It arises as well from the position of the Southern parties to the CBD and the perceived inequity of local genetic resources becoming the "property" of transnational corporations.

> When intellectual property rights are granted on new plant varieties which are later sold subject to such protection in developing countries, the countries supplying the genetic

---

[15] It has been a topic of ongoing debate among the partners that one of the purposes of this report should be to make the case. That is, the report should attempt to determine if laws drafted or interpeted without any contemplation whatsoever of genetic level genetic resources could be understood to apply to them. Where relevant, this report attempts some tentative conclusions regarding the applicability of some laws to genetic level *in situ* genetic resources --the common law, for example, and some elements of aboriginal law. However, other than these areas, the report avoids consideration of laws never intended to apply to genetic level *in situ* genetic resources.

> material begin to grasp the contradiction of the situation: on the one hand, the genetic resources are considered "mankind's common heritage," but on the other, access to improved seeds, subject to intellectual property protection, is restricted.[16]

The understanding also arises from the fact that, the values enumerated in the CBD notwithstanding, calculations of the value of natural resources is still predominantly economic all around the world. Canada is no exception in this. Furthermore, just about everywhere in the world, activities that transform natural resources into money --mining, mono culture, forestry, fisheries, megaprojects and other kinds of development --pose the greatest threat to and have caused the greatest loss of biodiversity, and the loss of the actual or potential value of genetic resources. Again, Canada is no exception.

The statistics in Canada are disturbing. Less than 1 per cent of Canada's original tallgrass prairie remains. Wetland losses are high across the country: 80% lost in British Columbia's Fraser River Delta, 71 % on the prairies, 70% in southern Ontario, and 65% of Atlantic coastal marshes are gone.[17] Other habitats are threatened or degraded. After five years of a concerted campaign, only about 5.5 % of Canadian wildlands are represented in a protected area system.[18] The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has identified 275 species at some risk of decline towards extinction. This number does not include the twenty species which have become extinct or are no longer found in Canada.[19] Not just wild populations and the habitat they rely on are at risk. Intensive livestock breeding through artificial insemination has seriously depleted the gene pool. As indicated by the state of the tallgrass prairie, agricultural methods in Canada also degrade biodiversity.

The relevance of these observations to this report is that they provide a partial explanation for the comparative dearth of Canadian legislation regarding *in situ* genetic resources. There are acts and policies in Canada pertaining to forestry, fisheries and so on, but few even mention genetic resources, let alone consider their actual or potential value. Rather, these laws embody the presumption that the potential and actual value of Canada's *in situ* genetic resources is in the commodities that they become: board feet, pulp products, and fish sticks, to name a few. In other

---

[16] Jorge Caillaux, "Between Two Fires: Intellectual Proeprty Rights Over Biological Resources and the Convention on Biological Diversity," *Journal of Environmental Policy and Law in Latin America and the Caribbean*, Vol. 1. No.1. 1994 pp. 9-26 at 12.

[17] Environment Canada, *The State of Canada's Environment* (Ottawa: Minister of Supply and Services, 1991) at pp. 26-27.

[18] World Wildlife Fund (Canada), *Endangered Spaces Progress Report -- 94/95*, Number 5 (Toronto: World Wildlife Fund (Canada), 1995), p. 1; and *Report* -- 95/96, Number 6, p. 59.

[19] Pamphlet on endangered species legislation produced by the Canadian Endangered Species Coalition, Ottawa, 1995.

words, there is little direct acknowledgement in resource management and development law in Canada of the economic value of *in situ* genetic level genetic resources.

However, it is also generally recognised in the Canadian literature that *in situ* genetic level genetic resources have actual and potential value, and that, as provided in the CBD, one effective way to retain the maximum potential value of these resources is *in situ*.

> *In situ* genebanks are ideally suited to the long term maintenance of the genetic resources of wild populations. The diversity of wild genetic resources is so great that it is doubtful that even *ex situ* and *in situ* genebanks combined could safeguard more than a small fraction. That fraction will be very much smaller if *ex situ* genebanks alone must do the job. Many wild plant and animal species are very difficult to maintain in adequate numbers outside their natural habitats. Large animals and large perennial plants (notably trees) take up a lot of space, and correspondingly large areas and/or large number of areas are needed to maintain a representative range of gene combination A further advantage of *in situ* genebanks is that they could serve several sectors at once. Gene pools of value to agriculture, horticulture, forestry, aquaculture and wildlife management may overlap and so could be conserved in the same protected area.[20]

The contradiction between what is evidently understood about *in situ* genetic resources in Canada, and what is embodied in resource management law and practice is a symptom of a larger conflict. Canada (not alone in the world on this) has yet to resolve the conflict between the need to protect biodiversity and the resource management, development and agricultural polices that are fundamentally destructive of biodiversity.

Understanding this conflict allows one to understand other contradictory facts about the Canadian context. Canada mines its forests of both trees and minerals, imperfectly protects its wetlands and carpets its prairies with pesticide-dependent monoculture, all at significant cost to biodiversity However, Canadian governments also maintain a reasonably extensive network of protected areas supported by unevenly effective conservation policies. Canada both exploits and protects its natural resources, then, with the greatest weight of the balance still falling on the surer economic return of consuming natural resources rather than on the speculative economic return of protecting them.

What is relevant to this report is that an analogous pattern of economic decision-making exists regarding Canada's genetic resources. Canada invests considerable resources and expertise in agriculture and forestry genetic resources, including the maintenance and development of *ex situ* collections. In comparison, there is much less government activity and investment in "non-commercial" *in situ* genetic resources. Canada --at least for the present time -- has decided to focus on the surer economics of the actual and potential value of its plant genetic resources (crops and trees), and to grant lower priority to the speculative economics of conserving the

---

[20] Prescott-Allen, op-cit, at 5.

potential value of *in situ* genetic resources.

This last observation may provide the ultimate explanation for why Canadian jurisdictions have not concerned themselves to date with the task of regulating *in situ* "bioprospecting", over and above, that is, the firm federal policy that compliance with the CBD will be accomplished outside of a regulatory framework. The "actual or potential value" of Canada's crop and forestry genetic resources is well known around the world. As already noted, access to these genetic resources in *ex situ* collections is unrestricted, for the purposes of research and breeding, to bona fide plant breeders and researchers. To quote one ministry staff person in British Columbia, people looking for the "best" genetic material in Canada do not need to "root around in the wild." Years of research and selective breeding have created significant pools of high-quality, commercially-important genetic resources in Canada's *ex situ* collections, many of demonstrated value to forestry and agriculture. Given that testing genetic materials for their potential to increase crop yield, increase pest resistance, increase drought tolerance -- or what have you -- is expensive, laborious, and still a hit-and-miss process, it is not surprising that researchers would turn first to better-known resources also available at no cost.

This is the "market" for genetic resources in Canada. It is very different from the "market" in the South where, apparently, the greatest potential value is percieved to lie in *in situ* genetic resources. Whether or not there is potential or actual value in Canada's *in situ* genetic resources, there is virtually no "market" in them. That is, there is almost no commercial research into *in situ* genetic resources in Canada. The simple explanation for this may be that the richness and variety of Canadian *ex situ* collections makes research of *in situ* genetic resources for commercial purposes unnecessary, or, at least, unnecessarily expensive.

On this reasoning, one might understand why Canadian jurisdictions have not sought to regulate access to *in situ* genetic resources over and above the few provisions in existing legislation.

v) Summary and Conclusions

The purpose of this introductory section has been to make a general description of the Canadian legal landscape, and to draw attention to this country's particular idiosyncracies as they pertain to the interests of the partners to this project. As reviewed in detail below, there are few clear answers in Canada to the question posed by the partners --"if a bioprospector were to look to gain access to genetic resources in Canada, what laws would apply?" For Canada's government-held *ex situ* genetic resources the answer is "no law applies," but the policy regarding access and benefits sharing is quite clear. For *in situ* genetic level genetic resources variously under the control of the federal government, the provincial governments, the territorial governments, joint aboriginal/government resource management boards under land claims agreements, and private land owners, no law or policy provides a clear answer one way or the other. Aside from limited provisions for specifically identified endangered or threatened species in new or proposed legislation, most of the potentially applicable law in Canada fails to even denote the existence of genetic level genetic resources, let alone the practice of bioprospecting these resources.

One concluding observation: the western legal tradition, of which Canada is a part, conceives the function of law, among other things, to be to resolve disputes and set specific rules for proceeding through activities. It can be surmised from Canada's general strategy regarding its obligations under the CBD that it wishes to retain a maximal flexibility regarding compliance with the convention, and assumes that mechanisms other than domestic law will be used in the event of a dispute. It may best serve the purposes of this report to give due emphasis to these elements of Canada's strategy. Canada has determined to focus what resources it has on opportunities for cooperative "capacity building" rather than on formulating legislation. If this is the case, then for the time being, participating in cooperative capacity building is also the area of greatest potential for cooperative international action.

2. NATURE AND STRUCTURE OF THE CANADIAN FEDERAL STATE -- JURISDICTION OVER GENETIC RESOURCES

Canada is a federal state based on the Constitution Act, 1867.[21] There is a federal government with powers to legislate on matters set out in s. 91 of the Constitution Act. There are ten provinces, with powers to legislate on matters set out in s. 92 of the Constitution Act. There are two northern territories, the Yukon and the Northwest Territories,[22] with powers to legislate but which, as federal territories, are ultimately subject to federal jurisdiction. Some of Canada's indigenous people have entered into land claim agreements with the federal government regarding the joint control of significant portions of the north and other regions. Each of these levels and kinds of government has special responsibilities and jurisdiction regarding natural resources including, potentially, genetic resources.

i) The Federal Government

The federal government has exclusive federal jurisdiction over international and interprovincial trade and facilities (or undertakings), navigation and shipping, sea coast and inland fisheries, Indians (including Inuit peoples) and lands reserved for Indians, criminal law, federally-declared public works, and treaty-making.[23] The federal government may impose taxation and spend funds, as well as use its "peace, order and good government" (POGG) power to address issues ordinarily within provincial jurisdiction but that are understood to have achieved a "national dimension" or are a matter of national concern.[24] The POGG power has the potential to be broad

---

[21] See, generally: Hogg, Peter. Constitutional Law of Canada 2nd ed. (Toronto: Carswell Publishers, 1985). At 80: In a federal state governmental power is distributed between a central authority and several regional authorities... The central authority and the regional authorities are "coordinate", that is to say, neither is subordinate to the other. The powers of the Legislature of Ontario are not granted by the Parliament of Canada, and they cannot be taken away, altered or controlled by the Parliament of Canada. And the Legislature of Ontario, even acting in concert with all the other provincial Legislatures, is likewise incompetent to take away, alter or control the powers of the Parliament of Canada.

[22] In 1999, there will be three Canadian territories: the Yukon, West Arctic and Nunavut.

[23] *Constitution Act*, 1867 (U.K.), 30 & 31 Vict., c.3 (formerly, the *British North America Act*. 1867 (U.K.)), sections 91(2), (10), (12), (24) and (27), and 92 (10)(c), and 132, respectively. If the subject of a treaty is within provincial competence -- such as controlling access to natural resources within the province -- then generally the province must pass legislation to give effect to the treaty.

[24] The leading case of R. v. *Crown Zellerbach Ltd.* (1988), [1988] 1 S.C.R. 401 upheld the former federal *Ocean Dumping Control Act* and elaborated the national concern test. This analysis could be significant for other areas within the environmental and biodiversity fields, and

and sweeping, but is generally constrained by provincial jurisdiction.

As pertains to the specific matters discussed here, the most important powers of the federal government are: agriculture (jurisdiction shared with the provinces), Indians (see discussion of self-government policy, below), intellectual property rights (see discussion of the Patent Act and Plant Breeders' Rights Act, below), international trade, international treaties, and its jurisdiction over federal lands.

As regards the CBD and the federal/provincial role in implementing it, the generally applicable rule is:

> In Canada, treaties are not self-executing. Therefore, Canada's international obligations do not have the direct force of law in domestic law. An international obligation may require domestic legislation, either federal, provincial, or both, for its implementation. The division of powers between the federal and provincial governments is unaffected by the fact that the Royal perogative to conclude treaties is exercised exclusively in the name of the Crown.[25]

The implication of the general rule as regards compliance with the CBD is, generally, in order for there to be controls on genetic level genetic resources on provincial lands or in provincial waters, there would need to be provincial law or policy; such controls are generally understood to be beyond the jurisdiction of the federal government. However, genetic level genetic resources in species that migrate across provincial or international boundaries could fall under federal jurisdiction. Sedentary species, such as plants, would fall under federal jurisdiction only on federal lands. A potential exception could be made to the points just raised if the federal government could successfully characterise the control of genetic resources (and their conservation) as being either a matter of ' 'national concern" or a matter with a "national dimension." So characterized, the case could be made that the control and conservation of genetic level genetic resources comes under the federal government's POGG power (see above). However, it is more generally (and increasingly) the case that the federal government leaves to provincial control matters that fall wholly within the provinces, such as resource management, including the management and conservation of plants and animals. environmental groups are advocating such an approach for new federal endangered species legislation.

---

[25] Legal Bureau Memo, January 4, 1992, 30 **Canadian Yearbook of International Law** 363.

ii) The Provincial/Territorial Governments

Provincial governments have exclusive control over natural resources[26], public lands belonging to the province (and the timber and wood located on these lands), municipalities, any matters of a local or private nature, and over property and civil rights (including the right to carry on businesses and make contracts).[27] Provinces share jurisdiction with the federal government in some areas, such as agriculture and forestry. Provinces may also impose taxes. Their jurisdiction gives the provinces the primary lead in conserving wildlife and habitat, and in managing how biodiversity is used. This has translated into key legislation for provincial parks, wildlife management, public and private land use planning, and a host of land management agencies and programs. Specific powers may also be found in the constitutional agreements which brought new provinces into Confederation.[28]

The most important provincial capacities are their power to legislate on property and civil rights, their jurisdiction over natural resources within the province, and their jurisdiction over provincial lands.

Territorial governments are established on the basis of delegated powers from the federal government; they do not have their own independent constitutional mandate. Municipal governments also have this derivative authority, conducting their affairs within the limits prescribed by the provinces. While both territorial and municipal governments are established and operate at the discretion of their parent governments, they are well established institutions and exercise substantial powers and political influence. Control over natural resources in the territories is primarily within the jurisdiction of the federal government, but both the territorial governments and First Nations are increasingly involved in developing and delivering management programmes.

iii) Canadian Aboriginal Peoples

There is no debate whatsoever that aboriginal peoples were the first to inhabit the land that came to be known as Canada. However, there has been and continues to be considerable debate about

---

[26] Except for uranium, which is under federal control. Provincial responsibility for non-renewable natural resources was further confirmed in article 92A of the *Constitution Act, 1867*, as amended by the *Constitution Act*, 1982.

[27] *Constitution Act, 1867*, sections 92(5), 92(13), 92A, and 109. The prairie provinces were not granted section 109 jurisdiction over public lands and resources until 1931, after they became provinces.

[28] For example, the limited application of western provinces' wildlife legislation affecting Aboriginal subsistence hunting, fishing and trapping rights, or affecting fisheries, national parks or migratory bird sanctuaries: eg. *Constitution Act, 1930* (U.K.), R.S., App. II, No. 26.

what are the rights of Canada's First Nations; in particular, what are their rights to claim ownership and control of lands in Canada and all the resources upon (and under) them, including, presumably, genetic resources.[29]

Canada's aboriginal peoples have understood themselves to be responsible for the land and the animals and plants living on it since time immemorial. However, as has been the experience of most "discovered" peoples, aboriginal peoples in Canada were displaced from their lands and overwhelmed by the pressures of European settlement which began in earnest in the eighteenth century. At one time, portions of what is now known as Canada were controlled by French and English imperial forces. England won sole dominion over Canada in 1759, and the protection of all of Canada's aboriginal peoples became the concern of the British Crown. The Crown's Royal Proclamation of 1763 attempted, among other things, to establish the basis for treaty relations with Canadian aboriginal peoples.

The Royal Proclamation did not, however, forestall or prevent further encroachments on lands reserved for first nations, nor establish a consistent pattern of aboriginal rights across Canada. Quebec and the Atlantic provinces, following a practice established under French imperial rule, set aside lands not by treaty, but by executive order. Ontario and the Prairie provinces conformed substantially to the treaty regime set out by the Royal Proclamation. British Columbia, although subject to the Proclamation, dealt with its aboriginal peoples as it saw fit at the time.[30] The ramifications of all of these different treatments have reverberated down to the present day, creating a vastly complex picture of aboriginal rights that is relevant to this discussion, but also far beyond its scope.[31]

There are, very generally speaking, three important (at least for this report) areas of aboriginal

---

[29] Perhaps the most important case currently before the courts dealing with the fundamental issue of the basis for the authority of the government of Canada over aboriginal peoples is *Delgamuukw et. al. v. The Queen in right of British Columbia et. al.* [1993] 104 Dominion Law Reports (4th) 470, (British Columbia Court of Appeal) leave to appeal to the Supreme Court of Canada granted.

[30] See *Delgamuukw v. B.C.* [1993] 5 W.W.R. 261.

[31] Richard Bartlett has authored a body of work that provides a scholarly and encyclopaedic description of Aboriginal rights and title in Canada. See, *inter alia*, Bartlett, Richard H. Indian Reserves in the Atlantic Provinces of Canada. (Saskatoon: University of Saskatchewan Native Law Centre, 1986); Aboriginal Water Rights In Canada. (Calgary: Canadian Institute of Resources Law, 1988); Indian Reserves and Aboriginal lands in Canada. (Saskatoon: University of Saskatchewan Native Law Centre, 1990); Resource Development and Aboriginal Land Rights. (Calgary: Canadian Institute of Resources Law, 1991); Aboriginal Title in British Columbia (Lantzvill B.C. and Montreal, Quebec: Oolichan Books and The Institute for Research on Public Policy, 1992)

rights. The first is "aboriginal rights" as recognised and affirmed by s.35(1) of the *Constitution Act*, 1982.[32] Over the past decade, judicial determination of the content of the term "aboriginal rights" has been the subject of many court cases. Cases recently decided by the Supreme Court of Canada have not completely clarified the increasingly complex (and contradictory) set of "tests" set out by the lower courts to determine what are the "aboriginal rights" that the Constitution recognises.[33]

Very briefly, one of the chief points of contention hinges on the question of whether" aboriginal rights" attach only to the resources and uses required to meet "traditional" needs (hunting, fishing, and trapping for food and ceremonial purposes --the "frozen" rights argument) or attach to the resources required to sustain a viable, changing aboriginal culture (the "social" rights argument).[34] The outcomes of the recently-decided cases indicate that the "frozen" rights

---

[32] S. 35(1) provides "The existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed."

[33] R v. *Gladstone*, decided August 21, 1996 (not yet reported); R. v. N 7: C. *Smokehouse Ltd 1995*, decided August 21, 1996 (not yet reported); *R. v. Van derPeet*, decided August 22, 1996 (not yet reported).

[34] See Louise Mandell, *"The Birth of the White Buffalo: Aboriginal Law, Issues that Matter in the 1990's*," (Toronto: Canadian Bar Association -Ontario, February 10, 1995). Mandell surveys the British Columbia Court of Appeals' reasoning in *R. v. Van der Peet* (1991) 58 B.C.L.R. (2d) 392, reversed (1993),80 B.C.L.R. (2d) 75 (C.A.), *R. v. Gladstone* (1993),80 B.C.L.R. (2d) 133 (C.A.) andR.. v. NTC *Smokehouse* (1993),80 B.C.L.R. (2d) 158. The two poles of the debate, "frozen versus social rights" are represented in the statements below:

The "social rights" argument allows that s. 35 of the *Constitution Act* could not have intended to lock Canada's aboriginal peoples in a time warp:

> The purpose of s. 35 when it was prepared in 1982 cannot have been to protect the rights of Indians as they lived in 1778...lts purpose must have been to secure to Indian people, without any further erosion, a modern unfolding of rights... That modern unfolding must come... in the reflection of those rights in a social organization and in an economic structure which will permit the Indian peoples to manage their affairs with both some independence from the remainder of Canadian society and also with honourable interdependence between all parts of the Canadian social fabric. (*per* Lambert l.A., *Delgamuukw v. British Columbia* [1993] 5 W.W.R. 97 at 277-278.)

The "frozen rights" argument allows that while the legal system is a "living tree," aboriginal rights are, by definition, traditional rights:

> Aboriginal rights to fish have their origin in the traditional fishing practices of the

argument has achieved greater sway than" social" rights. The recently-decided trilogy of cases, all concerned with the rights of aboriginal peoples to sell fish commercially, held:

> To be recognized as an aboriginal right an activity must be an element of a tradition, custom, practice or law integral to the distinctive culture of the aboriginal group claiming that right.[35]

On the basis of this holding -- consistently applied across the recent cases (but not without dissent) -- it appears that, in order to claim the aboriginal right to control genetic level genetic resources -- to either control the right of access, or to be entitled to contract for sharing the benefits arising from access -- it would have to be demonstrated that such activity had been an element of a tradition, custom, practice or law integral to the distinctive culture of the aboriginal group claiming that right. Elders consulted by sa'ke'j Henderson for this report resisted concluding that aboriginal beliefs did not in any way incorporate an understanding of what modem technology calls genetic resources. So, although it does not seem likely that trading in genetic resources -- as the raw material for the processes of biotechnology -- was ever a practice of aboriginal peoples in Canada, this is not sufficient information to conclude that the Supreme Courts' ruling absolutely precludes a finding that controlling access to genetic level genetic resources is an aboriginal right.

The second area, "treaty rights", is also recognised and affirmed by s.35(1).[36] There has been in

---

> aboriginal people. They are those traditional activities which are integral to the Indian culture and traditional way of life: see Sparrow at p. 1099. They reflect the right to carry on their traditional way of life "as their forefathers had done for centuries" without unjustified interference (*Calder v. A.G.British Columbia*). The "common law can only give effect to those incidents of that enjoyment of the land that were themselves given effect by the regime that prevailed before." (*per* Wallace J.A, R. *v. Van der Peet, supra*, at 98-99.)

[35] *R. v. Gladstone, supra*.

[36] The Supreme Court of Canada has distinguished treaty and aboriginal rights:

> There is no doubt that aboriginal and treaty rights differ in both origin and structure. Aboriginal rights flow from the customs and traditions of the native peoples... they embody the right to native people to continue living as their forefathers lived. Treaty rights, on the other hand, are those contained in official agreements between the Crown and the native peoples, Treaties are analogous to contracts, albeit of a very solemn and special, public nature. They create enforceable obligations based on the mutual consent of the parties. It follows that the scope of treaty rights will be determined by their wording, which must be interpreted in accordance with the principles enunciated by this court. (per Cory J.) *R v. Badger* (1996) 133 D.L.R. (4th) at 354.

Canada's history a varied and inconsistent pattern of governments treating with aboriginal peoples so that generalization is almost impossible, except to note that the content of "treaty rights" is whatever is set out in individual treaties (and agreements subsequent to the treaties that may have the effect of enlarging or extinguishing the original treaty rights, and any natural resource transfer agreement that may have had a similar effect). They apply to the members of the aboriginal communities --and their descendants --whose leaders signed the treaties. However, not all aboriginal peoples in Canada are subject to treaties and no two Canadian treaties are the same.

The rules of treaty interpretation require that all treaties should be liberally interpreted and as much as possible be interpreted as the aboriginal peoples signing them would have understood them.[37] Any ambiguities in the text should be decided in favour of the aboriginal peoples.[38] While the rules of interpretation are reasonably broad, no First Nations group or individual can claim to have a treaty right that cannot be found in the words of the treaty (and subsequent agreements, including negotiations around the treaty and subsequent agreements and natural resource transfer agreements). Resolution of any question regarding treaty rights to control access to genetic resources and to contract to share in the benefits arising from access would require, therefore, a close reading of the instant treaty and later agreements. It seems to be a safe conclusion that, since no treaty mentions or even contemplates genetic level genetic resources, let alone considers trading in genetic resources for the purposes of developing commercial products, no existing treaty would establish an aboriginal right to own or control them.[39]

---

[37] *R. v. Badger*, [1996] 1 S.C.R. 771 at 793-794: "First, it must be remembered that a treaty represents an exchange of solemn promises between the Crown and the various Indian nations. It is an agreement whose nature is sacred. See *R. v. Sioui*, [1990] 1 S.C.R. 1025, at p.1063…. Second, the honour of the Crown is always at stake in its dealing with Indian people. Interpretations of treaties and statutory provisions which have an impact upon treaty or aboriginal rights must be approached in a manner which maintains the integrity of the Crown. It is always assumed that the Crown intends to fulfill its promises. No appearance of "sharp dealing" will be sanctioned."

[38] *R. v Badger, supra*. "... any ambiguities or doubtful expressions in the wording of the treaty or document must be resolved in favour of the Indians. A corollary to this principles is that any limitations which restrict the rights of Indians under treaties must be narrowly construed."

[39] The following short excerpts from three Canadian treaties should indicate their general character and their terms:

...allow the said Chiefs and their tribes the full and free privilege to hunt over the territory now ceded by them, and to fish in the waters thereof, as they have heretofore been in the habit of doing, saving and excepting only such portions of the said territory as may from time to time be sold or leased to individuals or companies of individuals, and occupied by them with the consent

It would appear that if aboriginal peoples wish to have the capacity to control access to genetic level genetic resources on their lands --with the proviso that traditional aboriginal rights may include such a capacity -- they would be ill advised to go to court to seek the right. However, the holdings of the courts notwithstanding, under current federal policy, there may be the potential for negotiation of agreements that could permit aboriginal control over genetic level genetic resources.

The third and final area of aboriginal rights is the broad range of activities that fall under the rubric of" self-government." The inherent right to self-government has long been asserted by aboriginal peoples in Canada. The first official recognition of this was the federal government's aboriginal land claims policy which arose in 1973 in response to the Supreme Court decision Calder v. A. G. of British Columbia. [40] This case recognised the concept of aboriginal title as part of Canadian common law. Often criticized, and changed a number of times over the past two decades, the policy is still the chief mechanism by which the federal government settles its unfulfilled legal obligations (such as unfulfilled treaty provisions) and settles broader, more comprehensive disputes arising around questions of aboriginal rights to lands not covered by a treaty or claims agreement. The policy's articulation of constitutionally protected aboriginal rights "is based on the view that the Aboriginal peoples of Canada have the right to govern themselves in relation to matters that are internal to their communities, integral to their unique cultures, identities, traditions, languages and institutions, and with respect to their special relationship to their land and their resources. ,,41 The policy notes that negotiations for self-government may include "natural resource management" (including, presumably, genetic level genetic resources). Arguably, therefore, under the land claims agreements, self-government agreements, new treaties, and additions to existing treaties contemplated within the federal policy, aboriginal control over genetic resources could be negotiated.

As described in greater detail below, although none currently address the issue of the legal status

---

of the Provincial Government. (Robinson Huron and Robinson Superior Treaties of 1850)

...the said Indians, shall have the right to pursue their avocations of hunting and fishing throughout the tract surrendered as hereinbefore described, subject to such regulations as may from time to time be made by Her Government of Her Dominion of Canada, and saving and excepting such tracts as may, from time to time, be required or taken up ... (Treaty 3 of 1873)

... having claimed ... such interests being the Indian title of the said tribe to fishing, hunting and trapping rights over the said lands, ... hereby cede [etc.] ... all the right ... [to] all other lands [in Ontario] ... except such reserves as have heretofore been set apart for them ... (Williams Treaty of 1923)

[40] *Calder* v. *A.G. British Columbia* [1973] S.C.R. 313

[41] *Federal Policy Guide: Aboriginal Self-Government*, at 3.

of genetic resources or any kind of control over them specifically, comprehensive land claim agreements, particularly through their resource management provisions, conceivably could. It must be noted that although land claims agreements show some capacity for including consideration of genetic resources, not all aboriginal peoples in Canada will be able to benefit from a land claims settlement agreement.[42]

Finally, if current federal policy appears to at least have the potential to permit negotiation for aboriginal control of genetic resources on their lands, it is still an open question whether First Nations would want to enter into such an activity without careful deliberation and long consideration of the matter. As described below, aboriginal cultural beliefs may find the idea of commodified genetic resources to be repugnant and unethical.

This discussion of aboriginal rights in Canada has been of necessity too brief, and sins of omission have doubtless been committed. However, forty more pages of discussion would only bring into clearer focus the observation that can be made in any case: presently, and possibly for a long time to come, there cannot be only one answer to the question of whether or not aboriginal peoples in Canada have the legal capacity to control access to genetic level genetic resources for commercial purposes. Existing treaty rights do not by themselves appear to have the capacity to do this, but federal policy appears to include the potential that agreements pertaining to control over genetic resources could be negotiated. Land claims agreements, and resource management committees formed under these agreements may have the capacity to create a property regime around genetic resources. The answer to any question regarding aboriginal ownership and control of genetic resources will depend on which of these rights can be invoked by the aboriginal people concerned with the question. Depending on the circumstances, the answer could be different every time the question is asked. Without question, the final answer remains with the members of the aboriginal communities themselves.

---

[42] There are as well in Canada some aboriginal communities who have taken matters into their own hands. On September 23, 1995, the Government of Saugeen issued *The Duluth Declaration*, affirming the jurisdiction of the sovereign people of the Saugeen Nation over the Saugeen/Bruce Peninsula (lands on the shores of Lake Huron and Georgian Bay in Ontario).

> We assert jurisdiction over these waters in their entirety, which includes the fisheries, lands and minerals, above and below the waters, including the lake bed. We do so for the immediate purpose of the full regulation and management of these resources, over which we have inherent rights, treaty rights and unextinguished sovereign authority.

Contrary to federal policy, and contrary to the holdings of the courts, the Saugeen nation considers itself to be sovereign, and considers its rights to extend past what has been held to be constitutionally protected under s. 35(1).

CHAPTER TWO: PRESENT PRACTICE -- THE FEDERAL GOVERNMENT

1. *IN SITU* RESOURCES

As has been noted before, no Canadian federal law directly addresses genetic level genetic resources as such, and there is no legislative recognition of the economic value of genetic level genetic resources. However, genetic resources are clearly a part of many things that are currently subject to federal legislation. The sections that follow describe in some detail federal conservation activities.

i) Conservation

a) Species Conservation –Wildlife

A number of federal statutes provide for the conservation and use of wildlife. The Migratory Birds Convention Act[43] was first enacted in 1917 to implement the international Treaty signed by the United States and the United Kingdom (on behalf of Canada). A new Protocol was signed on December 14, 1995. The Act regulates hunting seasons, sets kill limits for migratory game birds, and prohibits the hunting of migratory insectivorous birds and other migratory non-game birds. The eggs and nests of all three types of birds are protected, although they may be collected for scientific or propagation purposes. Subject to the regulations, the Act prohibits the possession, transfer and sale of migratory birds.[44] Migratory bird sanctuaries may be established under the Act.

The *Canada Wildlife Act* enables the Minister of the Environment to coordinate, encourage, develop and implement wildlife education, research and conservation programmes and policies.[45] Wildlife is defined as wild animals, plants or other organisms, or species "not easily distinguishable from such species"; the provisions may also apply to habitat and marine areas.[46] The Minister may enter into agreements with provinces, municipalities, organizations or individuals to carry out wildlife programs.

Under the *Canada Wildlife Act*, in cooperation with the province(s) concerned, the Minister may take measures deemed "necessary for the protection of any species in danger of extinction".

---

[43] *Migratory Birds Convention Act*, 1994, S.C. 1994, c.22

[44] Ibid, s. 5

[45] *Canada Wildlife Act*, R.S.C. 1985, c.W-9, as extensively amended by S.C. 1994, c.23.

[46] Ibid, adding a new definition of "public lands" in subsection 2(1), and extending the Act's application in the new subsection 2(4).

Besides enhanced protection of "threatened" and "protected" species in the National Parks Act[47], this was, until very recently, the only federal provision for species at risk in Canada. Numerous reports have recommended more specific federal endangered species legislation, and on November 17, 1994, the Minister announced a consultation process to develop a "national approach to endangered species". A new federal statute is intended to be the centrepiece of this approach, and will encompass at least a national committee to list species at risk, development of recovery plans, and protection for identified species on federal lands or lands which fall clearly within the federal mandate for migratory birds, other transboundary species, fish, and marine mammals. [48]

There are two national committees: the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and Recovery of Nationally Endangered Wildlife (RENEW). COSEWIC is composed of federal, provincial and a few non-government representatives who commission an expert to prepare a status report on species of concern, and then make a determination of its risk of endangerment. There are no powers to regulate or make recommendations, and individual jurisdictions can accept or reject the status determination and have the freedom to determine whether species will be given any legal protection. RENEW is similarly a federal-provincial partnership which, in conjunction with others, develops recovery plans for species at risk.

Both committees have had to operate with limited funds and mandates that do not include the full range of biodiversity: invertebrates, aquatic species and non-vascular plants in particular have suffered. To help address the key financial limitation, the World Wildlife Fund (Canada) administers a substantial Endangered Species Recovery Fund. Canada Life, an insurance company, has funded programs to assist the American White Pelican, resulting in the bird becoming the only species to have been delisted. In spite of these few successes, recovery plans have been few and slow to develop, and have tended to focus on individual species rather than on

---

[47] *National Parks Act*, R.S.C. 1985, c.N-14, subsections 8(1.1) and (1.2), and Schedule II.

[48] In the Second Session of Canada's Thirty-Fifth Parliament, *An Act Respecting the Protection and Rehabilitation of Endangered and Threatened Species* (Bill C-238) was tabled in the Commons. The act provides for the identification, protection and rehabilitation of flora and fauna in Canada threatened or endangered by human activity and provides for the protection of habitat and the restoration of populations. The Act, if passed into law (an eventuality that is apparently in some doubt as Canada's present government prepares for both a new budget and an election), may apply to bioprospecting, but only for species designated in the Act's schedules as endangered or threatened and only in those areas designated for recovery or designated as protected. The Act contemplates permitting some activities in these areas and that would affect designated species. If the Act becomes law, and if the required regulations are passed, then, for the designated species and areas, bioprospecting may be subject to permit and environmental assessment requirements.

a suite or community of species and their ecosystems.[49]

b) Trade in Wild Species

The key impetus for wildlife trade legislation comes from the *Convention on the International Trade in Endangered Species of Wild Fauna and Flora* (CITES)[50], which regulates through permits the international trade in thousands of plant and animal species and their parts and products. Ratified by Canada in 1975 and administered in this country by the Canadian Wildlife Service, CITES is implemented through a number of federal statutes related to the transport of wildlife across Canada's international or provincial boundaries. Key among these is the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* (WAPPRIITA)[51], which consolidates federal authority over the import, export, transport and possession of wild animals, plants and their parts and products. The Act defines plants and animals to be those listed in CITES Appendices, or other species designated by regulation that are within federal jurisdiction or are requested by a provincial government. [52]

Under section 6 of WAPPRIITA, such plants, animals, their parts and derivatives may not be imported into Canada where they were taken, possessed, distributed or transported in contravention of any law of a foreign state. They also may not be imported or transported interprovincially, out of a province, or in contravention of provincial law, without appropriate federal or provincial permits or other authorization in the regulations. Additional provisions deal with the issuing of permits, the keeping of documents and other records, and provide a considerable range of inspection and enforcement authority.

Although enacted in 1992, WAPPRIITA was only proclaimed in force in 1996, coinciding with the passage of an implementing regulation that essentially rolls over the somewhat narrow lists of species found under the Export and Import Permits Act.[53] As with permitting for game export[54], the federal CITES permitting role is usually delegated to the provinces.

---

[49] Jacques Prescott and B. Theresa Aniskowicz, "Helping Endangered Species: COSEWIC and RENEW. Is This the Best We Can Do?", 2(1) *Canadian Biodiversity* 23 (1992).

[50] (1973), 12 I.L.M. 1085.

[51] *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act,* S.C. 1992, c.52

[52] Sections 2 and 21(1)(c).

[53] *Export and Import Permits Act*, R.S.C. 1985, c.E.-19.

[54] The *Game Export Act*, R.S.C. 1985, c.G-1, provides for export permits, and a means for provinces to levy game export fees.

The *Customs Tariff Act*[55] has a long history in controlling wildlife trade. It prohibits the import into Canada of various wildlife species and products, with numerous exceptions for domestic birds, feathers, and birds used for entertainment, in zoos or museums, or for scientific or educational purposes.

c) Species Conservation -- Wild Plants

Most federal legislation has focused upon migratory species. The stationary nature of plants have generally precluded them from federal coverage, except as they are transported by human activity (and thus governed by statutes such as WAPPRIITA). However, plants are included in the *Fisheries Act*[56], in the amended, extended application of the *Canada Wildlife Act*, and in proposals for new federal endangered species legislation. This may indicate a new willingness to apply federal efforts to this aspect of biodiversity, especially since habitat -- primarily plants – is key to the survival of animals within federal jurisdiction.

Concerning plant pests and diseases, the *International Plant Protection Convention* was approved by the Food and Agriculture Organization (FAO) conference in 1951 and ratified by Canada in 1953. In a 1985 F AO Legislative Study, Canada was considered to have substantially implemented key legislative aspects through the Plant Protection Act7, other general quarantine measures associated with international trade, as well as making administrative and reporting arrangements on plant pests and diseases to the F AO.[58]

d) Implementation Programmes

The federal government has adopted several key wildlife policies and programmes that help implement its wildlife legislation. These policies also set a context in which legislative developments can take place. *A Wildlife Policy for Canada* was developed with federal and provincial involvement after considerable input from a broad range of government and wildlife interests, and was adopted by the Wildlife Ministers' Council of Canada in 1990. The Policy defines wildlife broadly to include:

> all wild organisms and their habitats --including wild plants, invertebrates, and microorganisms, as well as fishes, amphibians, reptiles, and the birds and mammals

---

[55] R.S.C. 1985, c.C-54.

[56] Section 44.

[57] *Plant Protection Act*, R.S.C. 1985, c.P-14.8.

[58] Canadian Environmental Law Association, *The Environmental Implications of Trade Agreements*, supra note 84, at pp. 324-325 and 331-332.

traditionally regarded as wildlife.[59]

The Policy is a statement of intent to guide actions and the development of policies, programs and legislation. It is based upon a broad ecosystem approach, with the goal of maintaining or enhancing wildlife for its intrinsic value as well as its value to humans.

As part of the federal Green Plan, the 1991 *Federal Policy on Wetland Conservation* was announced, with important implications for wildlife and biodiversity values.[60] The objective of this Policy is to "promote the conservation of Canada's wetlands to sustain their ecological and socio-economic functions, now and in the future." Other federal policies which may relate to wildlife and especially their habitat include the 1987 Federal Water Policy, the Environmental Quality Policy Framework, the Arctic Marine Conservation Strategy, and the Federal Policy on Land Use.[61] In the Yukon and Northwest Territories, the Department of Indian Affairs and Northern Development plays an important legal and policy role in conservation efforts.

e) Habitat Conservation -- Protected Areas

It is well recognized that protected areas provide substantial cores for a natural heritage system and are complemented by other approaches to conserve and sustainably use the surrounding landscape. Canada has many different protected area designations, and has been a leader in protected area systems and management.

The *Canada Wildlife Act* and the *Migratory Birds Convention Act* provide flexible, public and also private methods to establish some protection for wildlife falling within federal jurisdiction. Both the Acts bind the provincial and federal Crown to follow the Acts and their regulations. These areas positively contribute to the suite of federally protected areas, and avoids some of the delays and missed opportunities of the more strictly protected and publicly-owned system of national parks. Both designations could be more widely used, given their potential to act as buffer areas around or links between more strictly protected areas such as national or provincial parks.[62]

---

[59] Wildlife Ministers' Council, *A Wildlife Policy for Canada* (Ottawa: Canadian Wildlife Service, 1990), p.6.

[60] Environment Canada, *The Federal Policy on Wetland Conservation* (Ottawa: Supply and Services, 1991).

[61] Richard D. Lindgren, "Wetlands", in David Estrin and John Swaigen, *Environment on Trial* (Toronto: Emond Montgomery Publications Ltd., 1993) at p.330.

[62] Kevin McNamee, *Preserving Ontario's Natural Legacy*, note 89, at pp. 278-279.

National wildlife areas are established under the authority of the Canada Wildlife Act to promote wildlife research, interpretation and the conservation of wildlife habitat. For these purposes, the Minister may administer public lands or otherwise acquire lands or interests, may enter into agreements with provincial or municipal governments, private landowners or organizations, and may alter the boundaries of national wildlife areas.[63] However, such areas may only be established where there is provincial agreement.[64] Extractive activities are not precluded, although the Minister may only or permit activities which are compatible with wildlife research, conservation and interpretation.65 The Wildlife Area Regulations implement these broad objectives by controlling or preventing access, and by directing research, management and visitor activities.[66]

Migratory bird sanctuaries are established under the *Migratory Birds Convention Act*.[67] These sanctuaries may be established only where the public or private land owner consents, and only where the site remains essential to the protection of migratory birds. Regulations under the Act may control hunting, or prohibit the taking of eggs or nests or the pollution of habitat.[68]

f) Habitat Conservation -- National Parks

The *National Parks Act*, its regulations and policy provide a comprehensive framework for designating and managing such areas.69 National parks are legally established through a process of identifying candidate sites, public notice and consultation as required under the Act, agreement with the province or territory concerned, and then addition to the list of national parks either through legislative amendment to the Act's Schedule, or through another federal statute.[70]

Both the national park and national marine park systems are established within the context of

---

[63] Supra note 45, sections 4 to 9.

[64] Sections 4(2)(c), 7(2) and 9(1).

[65] Section 9.

[66] C.R.C., Vol. 18, c.1609, p.14355, as amended.

[67] Section 4(2)(t).

[68] See the *Migratory Bird Sanctuary Regulations*, C.R.C., Vol. 11, c.l036, p.8181.

[69] R.S.C. 1985, c.N-14, as amended by S.C. 1988, c.48.

[70] Ibid, and see the *Western Arctic (Inuvialuit) Claims Settlement Act*, S.C. 1984, c.24, s. 7, and the *Mingan Archipelago National Park Act*, S.C. 1984, c.34.

Parks Canada's National Parks System Plan.[71] The goal of the Plan is to establish a representative park in each one of the 39 terrestrial and 27 marine regions. Given the small size and threats to the ecological integrity of some national parks, particularly in Ontario, existing parks may not be of a sufficient size to truly represent these regions.[72] There are also significant limitations and challenges in the process to acquire new parkland.[73] Provincial wildlife, trespass and other statutes may be used as interim measures in the land acquisition and negotiation process.[74]

Section 4 of the Act states that national parks are II dedicated to the people of Canada for their benefit, education and enjoyment" and "shall be maintained and made use of so as to leave them unimpaired for the enjoyment of future generations."[75] Adding more specific direction to the "unimpaired" requirement, wilderness areas may be designated by Cabinet, and the Minister may not authorize any activity within these areas which "is likely to impair the wilderness character", except basic user, safety and administration facilities.[76] A significant addition in the 1988 amendments to the Act, section 5(1.2) further prescribes that:

> Maintenance of ecological integrity through the protection of natural resources shall be the first priority when considering park zoning and visitor use in a management plan.

---

[71] Environment Canada, Parks, *National Parks System Plan* (Ottawa: Minister of Supply and Services Canada, 1990).

[72] Kevin McNamee, *Preserving Ontario's Natural Legacy*, at p.276.

[73] Rosemary E. Nation, "The Acquisition of National Parkland: A Challenge for the Future", in *Dalhousie L.* J. 261 (1983). See also the long-running legal battle to evict former residents from their expropriate lands in Kouchibouguac National Park: *Canada (A. G.)* v. *Vautour* (1980), 28 N.B.R. (2d) 434, 63 A.P.R. 434 (C.A.); *Vautour* v. *New Brunswick* (1985), 62 N.B.R. (2d) 142, 161 A.P.R. 142 (C.A.); and also (1985), 62 N.B.R. (2d) 162, 161 A.P.R. 162 (C.A.). Expropriation has also led to other legal challenges in P.E.I.: *Shaw* v. *Canada* (1980), [1980] 2 F.C. 608 (T.D.).

[74] See Kevin McNamee, "Preserving Ontario's Natural Legacy", at p.274.

[75] This statement has been considered to be among the best examples of the "public trust doctrine" in Canada, which holds that lands are held in trust by governments on behalf of their citizens, and thus are not subject to absolute discretion. Canadian common law has examined the notion of public trust primarily in terms of navigation, and on more limited terms than that evolving in the United States. Nonetheless, note the success of the Wood Buffalo case (if not the entire argument), infra note 82, and its unsuccessful precursor *Green* v. *Ontario* (1984), [1973] 2 O.R. 396, 34 D.L.R. (3d) 20 (H.C.J.) in relation to a similar statement in the Ontario *Provincial Parks Act*.

[76] lbid, subsections 5(8), (9) and (10).

Industrial development is not specifically prohibited in the Act, but the regulations prohibit logging, mining and hunting within national parks. No new ski developments are allowed within national parks except through an amendment to the Act, and existing ski facilities are circumscribed by a boundary.[77] This provision is particularly significant in Banff National Park, in the province of Alberta, where development and ski facility expansion proposals have been controversial and subject to litigation. Penalties are gradated to correspond to the severity of the offence, particularly the maximum of a $150,000 fine or six months imprisonment for hunting or disturbance of protected species identified on a Schedule to the Act.[78] However, the Act does not make the capture of invertebrates illegal: a recent trio of butterfly poaching cases in the U.S. revealed that thousands of the insects were taken within Canada's national and provincial parks, and confiscation of captured butterflies and prosecution were prevented due to these limitations in the Act.[79] Stronger enforcement actions and powers have been recommended, including broader arrest and search powers and anticipatory compliance measures, to ensure effective protection of Canada's national parks.[80]

In the past, national park policy and administration has led to considerable erosion of biodiversity

---

[77] Ibid, s.8.1 for townsite boundaries, and s.8.3(2) for downhill ski facilities.

[78] Ibid, s.8. See elaboration, supra note 49. Much higher and gradated fines were put in place in the 1988 amendments, up from the maximum fine of $500 in existence since 1919. In *R.* v. *Mota* (1991), 117 A.R. 42, 2 W.A.C. 42 (concerning a repeat market and trophy poacher fined $10,000 or six months imprisonment), the Alberta Court of Appeal commented that the Act's new penalties are "moderate", Mr. Mota's sentence was "fit and appropriate" (and suggested civil actions to enjoin him from future use or possession of firearms), and "wildlife must be accorded the priority of a treasured national heritage -which it is". The Court at page 44 also urged Parliament to consider "increasing the penalties, both maximum and minimum, for repeat offences of this kind that occur in our National Parks".

[79] Alanna Mitchell, "Butterflies aren't free", *The Globe and Mail*, June 3 1995, citing U.S. prosecutions of Richard Skalski, Thomas Kral, and Marc Grinell. On a non-park issue, the article also mentions a Canadian conviction and $10,000 fine against Kenneth Thome for the illegal import and export of Asian butterflies.

[80] L.J. Gregorich, *Poaching*, supra note 23, at pp.25 and 73. But see *R.* v. *Matson* (1987), 82 A.R. 86 (prov. Ct., Crim. Div.), where random stop checks were not authorized under the Act, and even so, for offences lesser than drunk driving, they would violate the *Charter of Rights and Freedoms*, sections 8, 9 and 10(b). For judicial comment on procedural fairness in the use of order powers (to remove from and destroy dogs in a national park), see: *Skinner* v. *Canada (Minister of Environment)* (1986), 10 F.T.R. 67 (F.C.T.D.); and *Perry* v. Canada (Minister of Environment) (1982), CCH DRS 1984 P90-468 (F..C.T.D.).

values when they have come in conflict with tourism and extraction activities.[81] Together, the "unimpaired" dedication and "ecological integrity" management plan clauses provide strong legislative direction for protection of biodiversity within national parks. A recent court case has also helped reinforce this priority, and found existing logging agreements within a national park to be "invalid and unauthorized" by the Act or Regulations.[82]

A number of international protected area designations should be noted.[83] Most of these carry little or no legal authority. Nonetheless, they inform management policies for areas concurrently designated under other legislation.

World heritage sites are recognized under the World Heritage Convention.[84] By adhering to the Convention, Canada agreed to be bound by the "duty... of ensuring the identification, protection, conservation, presentation, and transmission to future generations of the cultural and natural heritage", including taking the "appropriate legal ...measures."85 Several outstanding natural sites have been identified in Canada and listed with the associated international committee, including the Kluane-Tatshenshini-Wrangell, St. Elias (Yukon, B.C., Alaska) and Wood Buffalo National Park (Alberta, Northwest Territories).

The *Convention on Wetlands of International Importance Especially as Waterfowl Habitat*,

---

[81] Samuel Silverstone, "Canadian Park Systems As Open Space: How Much Protection?", 22 Chitty'sL. J 324 (1974). Ian Rounthwaite, "The National Parks of Canada: An Endangered Species?", 46 *Saskatchewan L. Rev*. 43 (1981). Under emphasis on maintaining biodiversity in national parks remains a problem: W. D. Newark, "A Land-Bridge Island Perspective on Mammalian Extinctions in Western North American Parks", 325 Nature 430 (1987).

[82] See Canadian *Parks and Wilderness Society v. Canada (Minister of Environment)* (1992), 55 F. T.R. 286 (FCTD), regarding the invalidation of a 1983 permit to log in Wood Buffalo National Park. This was a consent judgement, whereby the government did not defend against the action. Concerning the scope of administrative action, an older case determined that perpetual renewal clauses in Jasper National Park leases were authorized under early Regulations and were thus enforceable: The *Queen* v. *Walker* (1970), 11 D.L.R. (3d) 172 (S.C.C.). A park Superintendent was also held incapable of varying the Regulations through making an order restricting aircraft landings: *R*. v. *Tilroe* (1990), 115 A.R. 216 (Prov. Ct.).

[83] For a more detailed discussion, see: E. Neville Ward, with Beth Killam, *Heritage Conservation: The Natural Environment* (Waterloo, Ontario: Heritage Resources Centre, University of Waterloo, 1987), pp. 3-11.

[84] UNESCO *Convention for the Protection of the World Cultural and Natural Heritage* (1972), 11 I.L.M. 1358.

[85] Ibid, Articles 4 and 5(b).

otherwise known as the Ramsar Convention,[86] recognizes the importance of a network of significant wetlands. Any agency or individual owning a wetland site may nominate it for inclusion on the List of Convention wetlands. If the site meets certain criteria and the province or territory in which it is located approves, the Canadian Wildlife Service will coordinate and facilitate review of the nomination with appropriate organizations and then forward it for acceptance to the Ramsar Convention Bureau.[87]

The Ramsar Convention directs that "permitted activities should not alter or destroy the ecological character of the wetland", and thus the Canadian Wildlife Service only supports nominations where there is a management planning and conservation commitment (although not necessarily through a legal designation), and where the maintenance of ecological and cultural characteristics and functions of the site can be assured. If the ecological character of listed sites changes due to human interference, Canada must notify the other Parties to the Convention and arrange for these matters to be discussed at the next Conference of the Parties.

UNESCO designates international biosphere reserves where there is an integration of human and conservation land use and planning, and where research is being conducted to learn how to manage such a range of uses. Again, this is an honorary designation with opportunities for educational exchanges. Canadian examples include Riding Mountain National Park (Manitoba), the Niagara Escarpment (Ontario), and Mont St. Hilaire (Quebec). Other recognized sites include those inventoried and recommended for statutory protection by the International Biological Program (IBF) in the 1970s, international shorebird reserves, and recently designated monarch butterfly reserves.

g) Habitat Conservation --Aquatic Areas

Federal jurisdiction over inland waters primarily extends to fisheries and navigation. One cooperative programme with the provinces is the Canadian Heritage Rivers designation, which gives national recognition to important Canadian rivers, and helps ensure they are managed to conserve and interpret the natural and cultural heritage they represent. This is a cooperative designation which is derived from provincial or territorial nominations to a national Canadian Heritage Rivers Board, followed by formal designation within three years if a management plan has been prepared. Recognition of a Canadian Heritage River carries with it no legal status. It leaves the choice of rivers, ownership, and management to the nominating agencies. Nonetheless, the profile of the designation carries with it the message that the river is significant, and provides

---

[86] (1971), 11 I.L.M. 963. Canada acceded to the Convention in 1981: Ward and Killham, *Heritage Conservation: The Natural Environment*, 83, p.8.

[87] Canadian Wildlife Service, *Nomination and Listing of Wetlands of International Importance in Canada: Procedures Manual* (Ottawa: Canadian Wildlife Service, 1994), pages 4-5. The criteria relate to representation, uniqueness, plants or animals, and waterfowl importance, as approved by the Fourth Conference of the Contracting Parties in July 1990.

an opportunity to draw together enhanced resources and access to the country's river management expertise.

h) Species Conservation – Marine

Fisheries is an important industry and cultural practice for many of Canada's coastal communities. However, the east and west coast fisheries are in serious trouble. There have been recent reports of "commercial extinction" of some eastern groundfish stocks. Canada has been involved in fish enforcement conflicts on the high seas with European fishing vessels, and in escalating disagreements with the United States. British Columbia has reported "missing" stocks and near over-fishing of salmon runs.[88]

The federal *Fisheries Act* was first enacted in 1868, and gives the Minister of Fisheries and Oceans the authority to manage fisheries in all of Canada's fishing zones, territorial sea and inland waters.[89] Fish under the Act include "shellfish, crustaceans, marine animals [including marine mammals] and [their] eggs, spawn, spat and juvenile stages". Regulations have been adopted which allow for open seasons and licences for angling and commercial fishing.[90] The proposed new Fisheries Act in Bill C-115 reorganizes and makes more clear the existing provisions, and includes separate divisions for habitat conservation (Part II) and enforcement (Parts III and IV).

The *Fisheries Act* recognizes the important link between fish and the habitat upon which they depend.[91] The Act includes strong prohibitions against the "harmful alteration, disruption or

---

[88] See Chris Wood, "Northern Defiance", *Maclean's*, July 24 1995, pp.12-14.

[89] *Fisheries Act*, R.S.C. 1985, c.F-14. See the *Territorial Sea and Fishing Zones Act* R.S.C. 1985, c. T-8, for definitions of the extent of the fishing zones, territorial sea and internal waters of Canada.

[90] For comprehensive treatments of the protection of Canada's marine biodiversity and environment, see: David VanderZwaag, *Canada and Marine Environmental Protection: Charting a Legal Course Towards Sustainable Development* (London: Kluwer Law International, 1995); and David VanderZwaag (ed.), *Canadian Ocean Law and Policy* (Markham, Ontario: Butterworths, 1992).

[91] The definition of "fish habitat" in s.34 is:

> "fish habitat" means spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes.

To fall within the Act's scope, fish habitat need only contain one of these elements: *R.* v. *Maritime Electric Co.* (1990), 4 C.E.L.R. (N.S.) 289 (P.E.I. Provo Ct.).

destruction of fish habitat" or the discharge of any substance into water which may be "deleterious to fish or fish habitat or to human use of fish."[92] However, such prohibitions may be overridden by the Minister's authorization of plans that will prevent or mitigate effects on fish habitat, or by regulations that authorize deleterious discharges.[93] The Minister's authorizations are guided by the 1986 Policy for the Management of Fish Habitat.[94] The Department applies the Policy's principle of "no net loss of fish habitat productive capacity" by first mitigating and then compensating for any habitat losses through creation of new habitat or enhancement of existing fish habitat.

The *Fisheries Act* prohibitions are backed by penalties of up to $1 million, three years imprisonment for repeat offenders, and a variety of court order powers.[95] Citizens may prosecute offences under the Act and are entitled to one half of any fine imposed. Enforcement of fisheries concerns in provinces without a sea-coast (Alberta, Saskatchewan) is delegated to those provinces. Enforcement of fish habitat-related matters has remained with the Department of Fisheries and Oceans, although recent announcements indicate delegation of habitat protection provisions to and partnerships with those inland provinces with existing responsibility for

---

[92] lbid, sections 35(1) and 36(3). Environment Canada administers the latter section concerning the control of pollutants affecting fish through a Memorandum of Understanding with Fisheries and Oceans Canada. It is the nature of the substance that is deposited which must be determined to be deleterious, not the quality of the water before or after the deposit. See: *R.* v. *MacMillan Bloedel (Alberni) Limited* (1979), 47 C.C.C. (2d) 118 (B.C.C.A.).

[93] lbid, section 35(2). A number of these regulations have been passed to date: *Pulp and Paper Effluent Regulations, Petroleum Refinery Effluent Regulations, Metal Mining Liquid Effluent Regulations, Meat and Poultry Products Plant Liquid Effluent Regulations, Potato Processing Plant Liquid Effluent Regulations, Chlor-Alkali Mercury Liquid Effluent Regulations, Alice Arm Tailings Deposit Regulations, Petroleum Refinery Liquid Effluent Regulations and Port Alberni Pulp and Paper Effluent Regulations.*

[94] Canada, Department of Fisheries and Oceans, *Policy for the Management of Fish Habitat* (Ottawa: Department of Fisheries and Oceans, 1986). The 1990 Wildlife Policy for Canada also includes fish within its scope, and is described in the section on the *Canada Wildlife Act*.

[95] See sections 40 to 42, and 63 to 83 (especially 78.1 and 79.2), among others. The highest penalty was a $1 million fine and $3 million paid under a discretionary court order into a fund to be used to rehabilitate the St. Lawrence River: Paul Gavrel (legal counsel, Environment Canada Legal Services), 1996, "Prosecutions under CEP A and the fish habitat protection and pollution prevention provisions of the *Fisheries Act*", presented at the Toronto Environmental Conference and Tradeshow, "Environmental Compliance – '96", p.13.

management of provincial fisheries[96]. Given this constitutional and administrative division of responsibility, it is not surprising that the fisheries enforcement track record has been mixed and often caught up in provincial politics.

i) Habitat Conservation --Marine Protected Areas

National Marine Conservation Areas (NMCAs) may be established under the *National Parks Act*[97], although only a few have been established to date. One of the important differences between national parks and NMCAs is that the commercial use of resources is permitted within the latter, including fishing and ship travel. A number of federal statutes may be brought to bear on the regulation of activities within NMCAs, and the use of a broad range of provisions for marine protected areas has been recommended.[98] Some national parks may extend their terrestrial boundaries to include a marine component, thereby accomplishing a coordinated land and water management structure.[99]

Marine protected areas may be established under the newly amended Canada Wildlife Act[100] within the internal waters, territorial sea, or any fishing zone prescribed under the Territorial Sea and *Fishing Zones Act*.[101] The Minister may provide advice on research, conservation and interpretation, and carry out conservation measures in marine protected areas. However, unlike the National Parks Act's provisions for terrestrial parks, no further conservation priorities or program directions are given in the Act. A more comprehensive *Canada Oceans Act* has been introduced as Bill C-98 (now C-26), which includes broad provisions for the designation and

---

[96] Recent funding cutbacks have been severe for the Freshwater Institute, and the experimental lakes area in northwestern Ontario.

[97] See S.C. 1988, c.48,' s.1(1) "park"; and s.17, which adds a new section 10 to S.C. 1974, c.ll.

[98] For example, the *Fisheries Act*, R.S.C. 1985, c.F-14, and *Canada Shipping Act*, R.S.C. 1985, c.S-9; see the recommendations in Robert Graham et al., "The Protection of Special Marine and Coastal Areas", In: David VanderZwaag (ed.), *Canadian Ocean Law and Policy*, (Markham, Ontario: Butterworths, 1992).

[99] See Table 7.4, footnote d, in Environment Canada, *The State of Canada's Environment*, note 49, p. 7-11. The *Migratory Bird Convention Act*'s provisions for Sanctuaries have also been used to accomplish this arrangement: Clayton Rubec, Canadian Wildlife Service, personal communication, February 19, 1996.

[100] S.C. 1994, c.23, sections 4(1) and 8 [sections 2(1) and 4.1 of the consolidated Act].

[101] Territorial Sea and Fishing Zones Act, R.S.C. 1985, c.T-8, s.4.

establishment of marine protected areas.[102] Section 35 of the Bill enables the establishment of such areas for the purposes of conserving and protecting: commercial and non-commercial fishery resources, including marine mammals, and their habitats; endangered or threatened marine species and their habitats; unique habitats; marine areas of high biodiversity or biological productivity; and other marine resources or habitat for which the Minister of Fisheries and Oceans is responsible. Along similar lines, fish sanctuaries may be designated under the *Fisheries Act*, and through variation orders, fishing may be prohibited in sites such as spawning and nursery grounds.[103]

The National Marine Parks Policy was released in 1986 by the Department of Environment,[104] and was revised in 1994 by the National Marine Conservation Areas Policy.[105] Parks Canada as also developed a system plan for National Marine Conservation Areas (NMCAs). These are to be managed as models for sustainable use (eg. sustainable, traditional fishing, but not mining, oil and gas exploration and extraction, or ocean dumping), and contain smaller zones of high protection for biodiversity and associated ecological processes.[106]

ii) Sustainable Use

The Biodiversity Convention calls for the sustainable use of biodiversity, and in Canada, this primarily involves the forestry, fishery, recreation and agricultural industries. Federal jurisdiction is shared with the provinces for each of these three sectors. The federal government also has an important mandate to support scientific research in these areas, and there remains a large need for ecosystem-based, trans-disciplinary, and applied research to support policy and legal decision

---

[102] However, the Bill does not apply within lakes and rivers, including the Great Lakes, and thus does not facilitate protected areas in these freshwater ecosystems.

[103] Section 43, in particular paragraphs (b) and (I). Also see the regulations, eg. *Ontario fisheries Regulations, 1989*, SOR 89-93, p.1232, 15/2/89, section 5, as amended.

[104] Environment Canada, Parks, *National Marine Parks Policy* (Ottawa: Supply and Services, 1986). It establishes policies for: the system, identification and selection of sites, park establishment, resource conservation and management, fishing, marine transportation, environmental assessment, visitor activities and information, visitor services and facilities, management planning, and research.

[105] See Parks Canada, *National Marine Conservation Areas Policy* (Ottawa: Parks Canada, 1994).

[106] Parks Canada, *Sea to Sea to Sea: Canada's National Marine Conservation Areas S}'stem Plan* (Ottawa: Minister of Supply and Services Canada, 1995).

making.[107]

a) Forestry

Forestry is an industry with great national importance, employing more than 800,000 people and contributing in 1993 some $22.4 billion from forest product exports.[108] It is not surprising, then, that the federal government plays some role in this field, even though the provinces have primary responsibility under the Constitution Act, 1867.[109] Through the Department of Natural Resources and the Forestry Act[110], the federal government had entered into a series of federal-provincial Forest Resource Development Agreements guiding research and management, pilot projects, funding, incentives and related activities; however, these have all expired and not been renewed.[111]

The federal government has also played an important role promoting national-level policies and strategic directions advanced over the last few years. With federal leadership, the Canadian Council of Forest Ministers coordinates the implementation of the "Canada Forest Accord" and its companion document, Sustainable Forests -A Canadian Commitment (the "National Forest Strategy"). The National Forest Strategy, along with sustainable use directions, contains a number of recommendations related to the conservation of biodiversity .[112]

---

[107] Nina-Marie Lister, Ph.D. candidate, University of Waterloo (Ontario), personal communication, May 8 1996.

[108] Federal-Provincial- Territorial Biodiversity Working Group, *Canadian Biodiversity Strategy: Canada's Response to the Convention on Biological Diversity* (Ottawa: Minister of Supply and Services Canada, 1995), p.37.

[109] Provincial powers are found in sections 92(5) (management and sale of provincial public lands and "the timber and wood thereon"), 92(13) (property and civil rights), 92A(I)(b) (natural resources, indirect taxation, and interprovincial resource trade), and 109 (proprietary rights in all lands and royalties). The federal government has powers over trade and commerce in s.91(2), as well as spending powers and an international role.

[110] Forestry Act, R.S.C. 1985, c.F-30.

[111] Monique Ross, Research Associate, Canadian Institute of Resources Law, personal communication, April 22, 1996.

[112] The Goal Statement reads: To maintain and enhance the long-term health of our forest ecosystems for the benefit of all living things, both nationally and globally, while providing environmental, economic, social and cultural opportunities for the benefit of present and future generations. Strategic Direction 1 (Forest Stewardship) states that "forest management activities maintain the diversity of our forests", implemented in sections 1.6 to 1.11.

The Department has an increasingly important international role concerning the promotion and defence of Canadian forestry products, providing technical advice to other countries. It supports negotiations of such international agreements as the Statement of Forest Principles signed at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992, and such institutions as the International Tropical Timber Organization.[113] At the Helsinki conference on forest protection in 1993, Canada helped lay the foundations for sustainable forestry through environmental criteria and indicators.[114] The Canadian Council of Forest Ministers and the Canadian Standards Association have applied these criteria to Canada, and were circulating proposed standards for comment during the spring of 1996.[115]

Federal authority indirectly influences forestry through legislation such as the *Fisheries Act* provisions protecting fish habitat (used to prevent forestry operations' slash and erosion from entering forest streams), the *Fisheries Act* and *Canadian Environmental Protection Act* controls on mill effluents.[116]

b) Agriculture

Of all human activities in Canada, agriculture has likely had the single greatest impact upon biodiversity.[117] While meeting the important need for food production over the centuries, agriculture has also resulted in the simplification of ecosystems and the loss of genetic variability. There is also a need to reconcile private property rights and efficient food production, on the one hand, with farm production externalities and the environmental services farms provide

---

[113] For a discussion of these and other aspects of forests in international law, see: Canadian Council on International Law, *Global Forests and International Environmental Law* (London: Kluwer Law International, 1996).

[114] Jacques Prescott and Jean-Pierre Drapeau, "Measuring the Environmental Impact of Natural Resource Consumption", 16 Ecodecision 76 (Spring 1995), at page 78.

[115] See Chris Elliott and Arlin Hackman, *Current Issues in Forest Certification in Canada*, Discussion Paper (Toronto: World Wildlife Fund Canada, 1996).

[116] For example, see: *Pulp and Paper Effluent Regulations* [need cite; under FA], with an accompanying environmental monitoring system to test the adequacy of the regulations; *Pulp and Paper Mill Effluent Chlorinated Dioxins and Furans Regulations*, SOR 92/267; and the *Pulp and Paper Mill Defoamer and Wood Chip Regulations*, SOR 92/268.

[117] Department of Environment, The State of Canada's Environment, at page 6-6; Biodiversity Science Assessment Team, Biodiversity in Canada: A Science Assessment for Environment Canada, at page 65.

on the other.[118]

Sustainable agriculture challenges industrial agriculture, takes into account farmers' innovation, reduces intensification, and supports efforts such as organic farming and permaculture[119]. Critical needs in developing sustainable agriculture include market access and development, communications and educational/resource infrastructure within the organic sector, removal of technical problems and economic barriers to transitions, and analysis of long-term policy issues.[120]

The federal role in agriculture is similar to that articulated above for forestry: research, pilot projects, transport and export policy, and funding (primarily income support), among other things. This is distinguished from the provinces' principal roles in agricultural technology transfer, extension and land policy. Many income support programs are cost shared, some provinces (eg. Ontario) support research, and both conduct inspection and grading.

The Prairie Farm Rehabilitation Administration has some of the most biologically significant land left on the prairies, and sustainable management and the protection of these lands from cultivation contributes signficantly to biodiversity conservation.[121] Agriculture and Agri-Food Canada also has the significant role of administering the approval and grading of foods, seeds, and crops, with implications for influencing the patterns and practices of agricultural operations.

There are no objectives within general agricultural legislation or that governing the Department of Agriculture for the conservation of biodiversity, particularly at the genetic level, nor for the sustainable use of biodiversity over the long term. However, over the years the Department has used plant breeding as a non-chemical method to overcome plant stresses and pests. The Department has also researched and developed integrated pest management techniques, and established the Plant Gene Resources of Canada to preserve crop and economically-important plant genetic material. These are a few examples of how biodiversity and production objectives

---

[118] Brad Fraleigh, Special Advisor, Biodiversity and Genetic Resources, Agriculture and Agri-Food Canada, personal communication, April 15, 1996.

[119] There has been much proactive work recently, such as increased no-till practices, decreased summer fallowing, decreased pesticide use, environmental farm plans, and development of an organic certification program is under development. Sheila Forsythe, National Agriculture Environment Committee, personal communication, May 8 1996.

[120] Mark Winfield and Jan Rabantek, Environmentally Sustainable Agriculture in Canada: An Overview and Assessment of Critical Needs (Toronto: Canadian Institute for Environmental Law and Policy, 1995), at page 34.

[121] Paul James, Biodiversity Specialist, Saskatchewan Environment and Resource Management, personal communication, April 7 1996.

have converged.[122]

In 1989 a new approach to federal agriculture policy was developed,[123] followed by the *Report to Ministers of Agriculture, Federal-Provincial Committee on Environmental Sustainability*.[124] Agriculture and Agri-Food Canada has also produced a 1995 *National Environmental Strategy for Agriculture and Agri-Food.*[125] These documents have provided new impetus for some integration of environmental and social concerns into agriculture, providing leadership to provincial Ministries of Agriculture across the country.

iii) Ownership

As already noted, no federal statute declares a property right in genetic level genetic resources *per se*.[126] In the absence of a statutory declaration, the government's rights to claim ownership over genetic resources on federal lands are defined by the common law (see discussion below). As does any private property owner, the government has the capacity to control access to lands it owns and to control access to any resources on them.

The common law does not, however, provide for clear remedies in the event that genetic resources are taken without permission (as may be provided by permit; see discussion on access, below) from federal lands and used in some commercial application. The government's

---

[122] Brad Fraleigh, Special Advisor, Biodiversity and Genetic Resources, Agriculture and Agri-Food Canada, personal communication, April 15, 1996.

[123] Agriculture Canada, Growing Together: A Vision for Canada's Agri-Food Industry (Ottawa: Agriculture Canada, 1989).

[124] Ottawa: Agriculture Canada, 1990.

[125] The Strategy was prepared at the same time as the *Canadian Biodiversity Strategy*, and declares on page 27: "The agriculture and agri-food sector will not adopt new environmentally friendly practices if they damage the economic or social viability of the sector. Producers and the agri-food industry will only protect the environment if they can afford to do so." While this recognizes the need to integrate economic, social and environmental concerns, it does not recognize that these concerns are interdependent, nor does it say anything about the need for legislation to guide the industry through transition or reorientation of subsidies.

[126] The declaratory power of states was described by the US Court of Appeal in *United States v. McClain* (1977) 545 F. 2d 988 (USCA, 5 Cir): "The state comes to own property only when it acquires such property in the general manner by which private persons come to own property, or when it declares itself the owner; the declaration is an attribute of sovereignty."

remedies would appear to be limited to damages for trespass.[127] Alternatively, the government could bring criminal charges for theft against whomever took the genetic resources.[128] Given that the genetic resources taken would have little monetary value, the penalty would likely not be very severe.

As pertains to marine areas, Canada's jurisdiction over its many thousands of miles of shoreline conforms to the provisions of international law.[129] Canada has not established an exclusive

---

[127] Actions in trespass give rise to a remedy without proof of damage. That is, the government would not have to demonstrate to a court that it suffered any monetary or other loss because of the trespass in order to claim damages. However, in absence of damage, court awards in cases of trespass tend to be very low. An action would not lie for conversion (the wrongful taking of private property and 'converting' it to another purpose) because the subject matter of conversion must be specific personal property; the action will not lie for fixtures, trees, crops or minerals attached to the freehold unless by an express or implied agreement between the parties that they are severable.

[128] Section 322 of the *Criminal Code* R.S.C. 1985, c. C-46, states "every one commits theft who fraudulently and without colour of right takes, or fraudulently and without colour of right converts to his use or the use of another person, anything whether animate or inanimate, with intent,

> (a) to deprive, temporarily or absolutely, the owner of it, or a person who has a special property interest in it, of the thing or of his property or interest in it "

Note should be made of subsection 322(5) which provides that "a person who has a wild living creature in captivity shall be deemed to have a special property interest in it while it is in captivity and after it has escaped from activity." Compare this with holdings in the common law courts, discussed below.

Section 323 of the Criminal Code creates a special property right in oyster beds, and s.333 creates an exception where it is not theft if a person, for the purposes of exploration or scientific investigation takes a specimen of ore or mineral from land that is not enclosed and is not occupied or worked as a mine, quarry or digging.

[129] Not without some disagreements with the provinces, in particular British Columbia and Newfoundland, over who has jurisdiction and the capacity to claim rights to resources. The present circumstances are summarized by L. Alan Willis:

> All of our constitutional disputes have concerned the continental shelf and not the water column, where of course the principal concern is fisheries. This is because the Canadian constitution addresses the question of fisheries in clear terms and makes it a matter of federal legislative jurisdiction. No question of property rights arises [under the provincial

economic zone. However, the "fishing zone" created by the Territorial Sea and Fishing Zones Act[130] is an EEZ in all but name. Canada's proposed Oceans Act will establish an EEZ once in force. As mentioned in the note below, the common law recognizes no property right in fisheries. Marine mammals are understood to be *res nullius* and there is no Canadian policy regarding the ownership of genetic level genetic resources in Canadian territorial waters.

iv) Access

The department in charge of controlling access to Canada's national parks is Heritage Canada.[131] According to a spokesperson for the department, while genetic research projects have been ongoing in Canadian parks,[132] sometimes in conjunction with a science department at a Canadian university, there have been no requests for access to genetic resources by private interests for commercial purposes.

Federal law requires a permit for any collecting of any kind within a national park.[133] There is no

---

power to regulate property and civil rights within the province] because the common law recognizes no property rights in ocean fisheries, in contrast to fisheries in rivers and lakes. As far as environmental protection and other EEZ issues are concerned, these too are clearly federal in areas beyond the territorial sea because it is now clear that the geographical limits of the provinces are restricted either to the low water mark or at least to areas landward of the outer limits of the territorial sea. "Legal Regimes of the Continental Shelf and the EEZ," in Donat Pharand and Umberto Leanza (eds.) The Continental Shelf and the Exclusive Economic Zone: Delimitation and Legal Regime. (Dordrecht: Martinuus NijhotTPublishers, 1993) at 242.

[130] *Territorial Sea and Fishing Zones Act*, R.S.C. 1985, c.T-8, s.4.

[131] While the federal and provincial Crowns hold extensive lands in Canada, it was decided for the purposes of this report that only access to parks and protected areas would be investigated, on the understanding that protected areas would be the areas of greatest biological diversity and of greatest interest to researchers. Heritage Canada also has jurisdiction over Canada's marine parks. The discussion regarding access may, therefore, be understood to include access to genetic resources in marine areas.

[132] There have been studies undertaken on various species, such as the pine martin and speckled trout. A study is currently underway to determine a process of "genetic fingerprinting" using grizzly bear fur. The intention is to find a way to track grizzly bears for conservation purposes, and to aid in controlling poaching.

[133] *National Parks Act*. R.S., c.N-13. Section 7(1)(c) provides that the Governor in Council may make regulations for "the protection of the fauna, the taking of specimens thereof for scientific or propagation purposes..." and the *National Parks General Regulations*, R.R.C.

fee required to obtain the permit, but every permit application is evaluated according to certain criteria. There must be some demonstrated need to enter a national park in order to retrieve the desired sample (that is, the species should not available anywhere else). The extraction must be ecologically benign and nondisruptive of any of the parks' ecosystems. Heritage Canada also prefers that it have some interest in the research, so that it may benefit from the findings. Research results must be shared with Heritage Canada. Depending on the nature of the sampling to be undertaken, an environmental assessment under the *Canadian Environmental Assessment Act* may be required before work can begin.

The Heritage Canada spokesperson did not think Heritage Canada would be opposed to any commercial research that met these criteria.

v) Benefits Sharing

Aside from the condition that Heritage Canada share an interest in the findings of the research, and that the findings be shared, there are no requirements for benefit sharing.

2. *EX SITU* RESOURCES

i) Conservation

The federal government's activities relating to the *ex situ* conservation of genetic resources are largely focused on agricultural plants (including "wild" germplasm that may be used to enhance desirable genetic traits in "domestic germplasm"), with significant attention also paid to forestry genetic resources, and some activity in the area of livestock genetic conservation. Almost no activity is evident in the area of the conservation of wild animal genetic resources.[134]

---

c.1124, s. 12 provides that "No person shall pick wild flowers or remove any shrubs or plants from park lands, but the Director may issue permits for the taking of flowers, shrubs and plants for scientific purposes."

[134] A few federal statutes concern the *ex situ* holding of animals and plants. Most of these Acts strive to reduce unintended impacts of non-conservation activities, although a few provide for direct conservation efforts, as required under Article 9 of the *Convention on Biological Diversity*. The *Health of Animals Act* and *Plant Protection Act* and their associated regulations provide for disease and pest control while species are in possession or transport into or out of the country, and accordingly regulate facilities where these species are held. *Health of Animals Act*, S.C. 1990, c.21 (R.S., c.H-3.3); and Plant Protection Act, S.C. 1990, c.22 (R.S., c.P-14.8). Under the *Fisheries Act*, the *Marine Mammals Regulations* are concerned with the regulation of the capture and exhibition of live marine mammals, while the *Fish Health Protection Regulations* govern cultured fish, the movement of fish and fish diseases. *Marine Mammal Regulations*, SOR/93-56; and *Fish Health Protection Regulations*, C.R.C. 1978, Vol. VII, c.812. Animal pedigree associations can make by-laws to recognize and inspect pedigree and breeding records,

a) Plant Genetic Resources

There is a growing awareness of the need to conserve commercial and heritage varieties of domesticated agricultural and horticultural plant species, as well as commercially-valuable forest species. For agricultural crops, an International Undertaking on Plant Genetic Resources was adopted by 110 countries in 1983. The Undertaking's purpose is to "ensure that plant genetic resources of economic and/or social interest, particularly for agriculture, will be explored, preserved, evaluated and made available for plant breeding and scientific purposes." The U.N. Food and Agriculture Organization (FAD) is currently facilitating negotiations to revise the Undertaking to address the concerns of Parties making reservations by finding a balance between the rights of breeders and farmers, ie. access to products of biotechnology (commercial varieties, breeders' lines) on the one hand, and farmers' varieties and wild material on the other. A Global Plan of Action for the Conservation and Sustainable Utilization of Plant Genetic Resources for Food and Agriculture was adopted at the 1996 International Technical Conference on Plant Genetic Resources in Leipzig, Germany.[135]

To meet these international commitments, the Plant Gene Resources of Canada (PGRC, within the Department of Agriculture and Agri-Food Canada) is mandated to protect, preserve and enhance the genetic diversity of Canadian crop plants and wild plants of economic importance by acquiring, evaluating, researching, documenting and distributing samples of plant genetic resources for food and agriculture.[136] The national network preserves over 110,000 samples, and has signed a Memorandum of Understanding with Seeds of Diversity Canada (a non-profit organization formerly known as the Heritage Seed Program) to work together to preserve heritage crop varieties. The Research Branch of Agriculture and Agri-Food Canada houses and curates the largest living collection of fungal isolates (more than 10,000 strains) in Canada, and holds numerous bacteria and virus collections. Canada has agreed to put its national *ex situ* collections under the auspices of the FAD, through its agreement with IPGRI, and store

---

and thus assess any needs for genetic conservation. *Animal Pedigree Act*, R.S.C., c.8 (4th Supp.).

[135] Food and Agriculture Organization, *Report*, International Technical Conference on Plant Genetic Resources, Leipzig, Germany, 17-23 June 1996 (Rome: FAD, 1996), p.4.

[136] Plant Gene Resources of Canada was created in 1970. The agency is mandated to preserve and enhance the genetic diversity of Canadian crop plants and their wild relatives. PGRC acts as a clearinghouse for information and samples for breeders in Canada. In agreement with the International Plant Genetic Resources Institute (IPGRI) it is formally responsible for the world base collection of oats and barley, and duplicate collections of pearl millet and oilseed Brassicas. Over 100,000 seed samples are preserved at the Seed Genebank in Saskatoon (recently moved from Ottawa). PGRC's genebank is focused on four genera: barley (41.4%), oats (31.4%), wheat (12.4%) and pearl millet (4.0%).

international collections in its genebanks.[137]

For trees, the presentations at a national workshop on forest genetic resources document numerous *ex situ* measures to conserve and use certain commercial tree species across Canada, such as collecting, provenance testing, researching and maintaining collections of germplasm (eg. seed orchards and arboreta).138 As has occurred for crops with the federal agriculture Department, efforts at forest genetic conservation are largely led by the research institutions within the Canadian Forestry Service and its provincial counterparts. Many of the provincial programs have been developed through Federal-Provincial forest agreements, which are due to expire in 1996, subject to new negotiations and arrangements.

b) Animal Genetic Resources

The partners in this project have proposed that, by establishing an economic value in genetic resources, greater weight might be given to the case for their conservation. This may in fact be the case. However, it should also be noted that the opposite effect might arise, as is illustrated by the present state of livestock genetic diversity in Canada. Human beings have been selectively breeding their domesticated animals in order to reinforce desirable traits for many centuries. In the past, this behaviour resulted in greater diversity of genetic traits in domesticated animals than in the wild. Now, however, with the advent of artificial insemination technologies, and mass market preferences determining the best characteristics for livestock, the genetic diversity of Canada's farm animals is reaching crisis level lows.[139]

For farm animals, a genetic resources conservation plan has recently been proposed.[140] The key components of an Action Plan are:

---

[137] Food and Agriculture Organization, *International Technical Conference on Plant Genetic Resources*, Document ITCPGR/96/INF/2, May 1996 (Rome: FAO, 1996), p.9.

[138] See T. Neiman, A. Mosseler and G. Murray, *Forest Genetic Resource Conservation and Management in Canada:* Proceedings of a Workshop (Petawawa, Ontario: National Forestry Institute, Information Report PI-X-119, 1995),

[139] Consider the story of Starbuck, a very popular bull at the Centre d'Insémination Artificielle de Quebec (CIAQ). By the fall of 1994, 38,500 cows tested as being his daughters. Starbuck's male progeny also significantly dominate the gene pool: eleven of thirty-two black and white Holstein bulls in the 1994 CIAQ catalogue are Starbuck's sons, and another featured bull is his grandson. For more spine-chilling statistics, see F.G. Silversides and D.L. Patterson, Conservation of Animal Genetic Resources, Canadian Animal Germplasm Technical Experts Board, Centre for Food and Animal Research, Agriculture and Agri-Food Canada.

[140] E.E. Lister and S.K. Ho, *Canadian Farm Animal Genetic Resources Conservation: A Plan for the Future* (Ottawa: Research Branch, Agriculture and Agri-Food Canada, 1995).

- develop an inventory of Canadian farm animal genetic resources, and provide public access and database linkages;
- assist and encourage development of systems to coordinate conservancy efforts;
- encourage and support research that will improve preservation technologies for use of farm animal genetic resources;
- establish a network of gene banks that meet animal health regulations;
- develop a framework for a Canadian Foundation for the Conservation of Farm Animal Genetic Resources;
- develop prototype contractual arrangements on ownership, access and use of genetic resources and inventory information;
- develop an emergency response/rescue network plan for immediate rare farm animal breed protection and subsequent evaluation;
- develop and implement a communication strategy;
- prepare cost-benefit analyses on conservation of farm animal genetic resources; and
- prepare criteria and systems for establishing Canadian priorities for farm animal conservation.[141]

For *ex situ* conservation, the maintenance of living animals and preserving their genetic material are the two key approaches. The Plan discusses the importance of setting priorities for particular breeds and genes, identifying populations at risk, minimizing inbreeding, disease control, and a gene bank strategy. [142] On the latter subject, the Plan discusses how genetic resources for storage should represent samples of significant value, how animal health considerations are paramount and should follow uniform protocols, how techniques must be tested first on known populations of lesser value, how viability of stored material must be regularly tested, and how measures must be in place to ensure safe storage (storing duplicates, monitoring of cryopreservant, and security from fire and unapproved access). Towards these ends, Agriculture and Agri-Food Canada generally provides financial and technical support to prepare systems and manuals for the conservation of farm animal genetic resources, while some private breeders, researchers and Rare Breeds Canada Inc. are active in implementing these strategies within their organizations.

In general, then, formal and funded efforts towards *ex situ* genetic conservation in Canada have focused on agricultural, horticultural and forestry species of plants and animals. Law and policy have rarely been directly oriented towards this subject, but rather have attempted to enable and regulate collections at the species level with health concerns being of prime importance. Administrative and voluntary efforts by researchers and key non-governmental organizations have produced a number of frameworks and approaches towards *ex situ* genetic conservation within different sectors.

---

[141] Ibid, p.8

[142] Ibid, pp.12-22.

ii) Ownership

Official policy regarding ownership of the crop plant genetic resources in Canada's *ex situ* collections is that they are the "common heritage of humankind" and belong to no one. This fundamental presumption underlies the open access policy.

The answer regarding questions of ownership of animal genetic resources appears to be the same as for plant genetic resources. Current policies recognise an owner's property rights in whole animals, or animal parts, but not in animal genes. In the case of live animal conservation, where a rare breed has been "placed" with an individual farmer, the conservation organization owns the original animal. In the case of offspring, "contracts stipulate that the increase in numbers are jointly owned by the Rare Breeds Conservancy Inc. and the individual farmer." However, Lister and Ho also note that

> it appears well beyond the capability of governments to take ownership or part ownership of animals or to set up a continuing programme to provide funds for routine maintenance of animals except under some very specific circumstances and for a very short period of time. Live animal conservancy with concomitant ownership is preferably left in the hands of the private sector.[143]

In the case of cryropreserved genetic resources, the understanding among those involved in the market is that once a purchase of semen or ova is complete, the purchaser has untrammeled rights to whatever offspring occur. There are no ownership rights attached to "artificial genes" or natural genes.

iii) Access

The official policy in Canada regarding access to *ex situ* resources provides for free access to bona fide researchers and breeders anywhere in the world, for the purposes of research and breeding. Animal sperm and ova are marketed as commodities, and may be purchased frozen.[144]

---

[143] Lister and Ho, ibid, at 23.

[144] Agriculture and Agri-Food Canada reports the following statistics on the importation and export of bovine sperm and embryos:

Importation of semen and embryos:	Year	Total
	1993	93,332
	1994	549,616
	1995	669,045
Export of bovine semen (doses)	1991	3,371,827
	1992	4,272,622

Brad Fraleigh describes the practical considerations and policy decisions that have led to Agriculture Canada's access policy regarding plant genetic resources. He notes "three good reasons" for unrestricted access to plant genetic resources:

- plant genetic resources are often readily available in many locations, so access is difficult to control;
- germplasm development has long been a cooperative undertaking among plant breeders, and open access reinforces this collegial and mutually beneficial aspect of the activity;
- plant germplasm collections have in the past helped war-ravaged zones restore their agricultural base (such as Kampuchea and Nicaragua); international cooperation is necessary for conservation and food security.[145]

Fraleigh notes that, so long as there are no restrictions on access for the purposes of research and breeding, then the question of ownership is "moot." He also articulates three more reasons why restricting access by charging a fee would not improve the *status quo*:

- as plant genetic resources are of little intrinsic value on their own, it would be difficult to establish a monetary value for a transaction;
- research to find a particular desirable genetic trait might entail testing hundreds or even thousands of samples of genetic material, so meeting a requirement to pay for the samples places a limiting factor on the progress of research;
- plant genebanks in Canada and elsewhere are generally government-run, not-for-profit organizations, which underscores the public service aspect of maintaining germplasm collections. (The implication is that the public service aspect of such collections makes charging fees for access inappropriate.)[146]

When interviewed for this report, Mr. Fraleigh confirmed that this policy regarding access to Canada's *ex situ* plant germplasm collections will be maintained for the foreseeable future, and for the reasons just set out.

Export of bovine embryos	1991	5580
	1992	7268
	1993	7824
	1994	8012
	1995	9490

[145] Brad Fraleigh, "Access and Ownership of Plant Genetic Resources: Historical Context, Current Practices and Recent Trends," from: Proceedings: Workshop on National Policy Issues in Plant Genetic Conservation, Ottawa, October, 1991.

[146] Ibid.

iv) Benefits Sharing

The position of the federal government is that the provision of free access to *ex situ* genetic resources benefits all countries. Canada's Biodiversity strategy also indicates that the government will be "exploring mechanisms" to "facilitate access to samples of Canada's genetic resources on mutually-agreed terms, and under the understanding that arrangements will differ for each sector using these resources."[147] To date, there have been no agreements made.[148]

---

[147] Canada's Biodiversity Strategy, at 65.

[148] Telephone interview with John Herity, Director, Biodiversity Convention Office, 13 September, 1996.

CHAPTER THREE: PRESENT PRACTICE -- THE PROVINCIAL/TERRITORIAL GOVERNMENTS

1. *IN SITU* RESOURCES

i) Conservation

a) Habitat Conservation --Provincial and Territorial Parks

As at the federal level, there are a variety of protected areas designations used by the provincial and territorial governments to conserve resources *in situ*. These designations include provincial parks and ecological reserves in most jurisdictions, as well as a more mixed variety of wilderness and wildlife areas. None of these programmes provide for the protection or conservation of genetic resources per se, but it will serve present purposes to discuss each in turn.

While certain trends are apparent, the legislation governing parks across Canada does vary considerably. Quebec provides some of the strongest legislated protections for parks. Nova Scotia and Prince Edward Island have created interesting twists in their legislation that accommodate a land base which largely consists of private holdings. Saskatchewan has one of the newest revised version of the parks statutes, and provides for park reserves, legislated parks and detailed procedures in some situations. The approach taken in British Columbia is unique in some respects, while the legislation in the Northwest Territories is more reflective of the rights and roles of aboriginal people in parks.

Provincial parks, and, to a lesser degree, territorial parks have combined conservation and recreation objectives.[149] Governments generally attempt to balance these sometimes conflicting objectives by way of creating different classes of parks, and creating zones for specific uses within parks.

Parks legislation uses several methods to distinguish the purposes for which particular areas are

---

[149] The relevant legislation for provincial and territorial parks: *Park Act*, R.S.B.C. 1979; c.309, hereafter BC; *Provincial Parks Act*, R.S.A. 1980, c.P-22, hereafter AB; *The Parks Act*, 1986, S.S. 1986, c.P-l.l, hereafter Sask; *Provincial Park Lands Act*, R.S.M. 1987, c.P20, hereafter Man; *Provincial Parks Act*, R.S.O. 1990, c.P.34, hereafter Ont; *Parks Act*, R.S.Q. 1977, c.P-9, hereafter Que; *Parks Act*, S.N.B. 1982, c.P-2.1, hereafter NB; *Provincial Parks Act*, R.S.N.S. 1989, c.367, hereafter NS; *Recreation Development Act*, R.S.P.E.I. 1988, c.R-8, hereafter PEl; *Provincial Parks Act*, R.S.N. 1970, c.312, hereafter NF; *Parks Act*, R.S.Y. 1986, c.126, hereafter YT; *Territorial Parks Act*, R.S.N.W.T. 1988, c.T-4, hereafter NWT. Territorial parks are not as important as provincial parks for conservation purposes. Territorial governments have jurisdiction for the most part only over communities and roads; most land in the Territories is under federal jurisdiction. Territorial parks, therefore, tend to be small and often contiguous with lands devoted to roads.

established and managed: protected area designations, park classes, zoning, and management prescriptions. These frequently have the purposes and/or objectives for which parks are established and managed set out in sections defining or creating the designation. In over half of the jurisdictions, there is a dedication statement committing the parks to long-term protection and enjoyment by the public.[150] The dedication statement can be a principal window on the objectives of the parks statute, and has been the basis of more than one argument that the parks are subject to a public trust whereby the government must manage the parks to meet these long-term commitments.[151] These brief statements of purposes or objectives are sometimes complemented by additional references requiring the exercise of particular regulation, permitting, and development powers to be compatible with the purposes or objectives for which the park was established[152]. A State of the Parks report is required of the Minister in Manitoba (and at the federal level), and this provides a formal means to monitor parks management against such specified purposes.

A great diversity of activities is either prohibited or regulated within parks across Canada. The discussion below will be fairly general and reflects merely the situation presented in the legislation, as opposed to that found in government policy or practice. However, further detail may be found in the Federal/ Provincial Parks Council's 1990 report, "A Survey of Resource Extraction and Land Use Policies in Canada's Park Systems."[153]

Most activities are regulated by either prohibitions in the statute, restrictions in the statute or regulations, requirements to obtain permits, and by generally permitted activities. Mining, forestry, hunting, fishing, trapping, vehicle traffic and the use of fires are often subject to other legislation. An authorization or permit system can be managed at several levels, ranging from Cabinet or Ministerial approval through formalized mechanisms, to the provision of a permit by the park superintendent, designated staff, or those private individuals licensed to sell public access permits. For camping, traffic and general entry situations, some legislation provides that the superintendent or park warden's posted or oral directions are to be followed, thus adding a more immediate and responsive level of regulation for these activities[154].

---

[150] BC s.5(3); Sask s.3; Man s.2(2); Ont s.2; NB s.2; NS s.2(2).

[151] See *Green v. Ontario* (1972), [1973] 2 O.R. 396 (H.C.J.); *Canadian Parks and Wilderness Society v. Canada* (Minister of Environment) (1992), 55 F.T.R. 286 (FCTD); and H. Ian Rounthwaite, "The National Parks of Canada: An Endangered Species?" (1981) 46 *Saskatchewan Law Review* 43.

[152] BC s.8; Man ss. 12(1), 13(1); Qué ss. 8, 8.1; YT s.8.

[153] Available from the Federal/Provincial Parks Council, or from its author, William G. Watkins of the Parks Branch, Manitoba Department of Natural Resources, Winnipeg, Manitoba.

[154] See, for example, NS s.34.

Québec has the strongest statutory restrictions. The province prohibits mining, forestry, hunting and trapping, and only allows utility lines for park purposes and pre-existing uses.[155] Nova Scotia and New Brunswick only allow mineral and aggregate extraction for park purposes or pre-existing uses.[156] British Columbia has incorporated the novel concept of a minimum area, so that no extractive activity except hunting or fishing should take place in any park of less than 2023 ha in area.[157]

Other jurisdictions use a more regulated approach for most activities, by setting particular conditions or procedures in the legislation, and/or requiring a certain level of authorization for the activity. The types of activity generally regulated in the legislation include: transportation or utility corridors, non-renewable resource extraction, renewable resource extraction, businesses and sports facilities, vehicle use and park entry, park occupancy and camping, domestic animal use nuisance behaviour and interference with or removal of park wildlife or other features.

The extended application of parks statutes beyond park boundaries and the use of buffer zones are approaches which have yet to become well developed in Canadian legislation. Nonetheless, Nova Scotia enables the Cabinet to make regulations "respecting the management or preservation of areas adjacent to provincial parks", and enables the Minister to enter into management agreements with owners of lands adjacent to provincial parks in order to "manage or preserve those lands so that they complement" park objectives.[158] Similarly, British Columbia enables the Parks Branch to manage and administer private lands for recreation purposes where there exists an agreement with the landowners.[159] Alberta, New Brunswick and Nova Scotia have adopted or implied a regulatory approach for landing planes, fishing or boating on lakes which fall at least partly within a park's boundaries.[160] Restrictions are placed on the location of an activity, or its distance from a specified location such as a dock or swimming area, and in so doing may extend the legislation's effect to all areas fitting the prescribed location, including those lying outside of the park boundaries.

Traditional aboriginal activities such as hunting, fishing, trapping and gathering are recognized in a few of the country's parks statutes. Subsection 6(4) of the Northwest Territories statute also makes the establishment of territorial parks subject to the settlement of aboriginal land claims.

---

[155] Qué ss.7-9.

[156] NB s.15(2); NS ss.19-21.

[157] BC s.9(1)(c).

[158] NS ss.18, 37(1)(v); Regulations, s.6.

[159] BC s.6(e).

[160] Alta s.15.1(b), and see also s.7.1(a); NB s.16(1)(q); NS Reg. ss.32(2),(3), and 33(1)(b).

The NWT recognizes traditional aboriginal hunting and fishing for food, while Ontario's legislation recognizes aboriginal treaty rights to hunt, fish and trap in one remote park, and aboriginal guides' motorized access to another.[161]

Taking their cue from the governing Act and regulations, as well as any land claim settlements or treaties, park management plans are required by the Yukon, and are enabled by the Ontario and Nova Scotia statutes.[162] The Yukon also requires a specific site plan as a precondition before any development may occur.[163] Most other jurisdictions may set out the nature, form, scale, building materials, and location of commercial or park developments either in regulations, or by means of a Minister's or Director's order.[164] These combined requirements help to ensure that management of a park will conform with the purposes for which the park was established.

Canadian parks legislation has tended to provide the Minister with a wide scope of discretionary park management powers. However, recent reviews and enactments of new parks legislation have recognized developments in parks systems planning and trends towards more public involvement in decision-making. Such changes are reflected in a range of specified park classes with particular objectives, requirements for the preparation of management plans, more particular limits placed upon the discretion exercised by the Minister and parks staff, directions to involve the public and procedures to notify and involve the public in park policy, establishment, planning and operations. Aboriginal and other local communities are also increasingly recognized in the various processes and outcomes, both within parks legislation and in the role of parks within other settings such as land claims and community development.

b) Habitat Conservation -- Ecological Reserves

Ecological reserves are similar to parks in that they establish a strong conservation mandate and administration within a defined area. However, ecological reserves are focused essentially upon conservation and associated research, and do not have a strong recreational component. There are stronger restrictions on what uses can be made of such areas.

All Canadian provinces and the Yukon Territory have ecological reserves legislation; Ontario has related legislation that is used for similar purposes[165]. The mandates of these areas focus on:

---

[161] NWT s.3(a); Ont Reg s.29(2)(cb) and (d).

[162] Ont s.8; NS s.13(m); YT s.9.

[163] YT s.ll.

[164] A particularly detailed example may be found in Sask ss.44-51.

[165] *Ecological Reserves Act*, R.S.B.C. 1979, c.101; *Wilderness Areas, Ecological Reserves and Natural Areas Act*, R.S.A. 1980, c.W-8; Ecological Reserves Act, S.S. 1979-1980, c.E-0.01;

- conservation of areas representative of ecosystems, ecological processes, habitats and species;
- conservation of areas which contain unique or rare ecosystems, species or other features; and,
- sites for scientific research or education on natural phenomena, including restoration and recovery of ecosystems.

Only one of the statutes directly contemplates establishment of ecological reserves for purposes of genetic conservation. In Newfoundland, ecological reserves may be set aside

> (g) to preserve organisms in their natural habitat to ensure the preservation of their gene pools[166].

That there is only one province with such a clear genetic conservation purpose for ecological reserves is typical of protected areas legislation in Canada more generally. The purposes for establishing ecological reserves in most provinces refer to protecting rare or endangered species, or unique or rare biological features. The latter concept could, of course, include the habitat of particular genotypes as well as species, while the former also incorporates the notion of threat to maintenance of genetic diversity, albeit at the species level.

As for parks, regulations are passed or amended to establish specific ecological reserves, and a general regulation sets out restrictions on the use of such areas. Such restrictions generally entail:

- prohibitions on commercial development or extraction, use of motorized vehicles, cutting trees, and hunting, trapping or other taking or disturbance of wildlife;
- restrictions on public access and recreational activity; and,
- permits for access for scientific collection (under limited administrative review and, in some cases, requirements to report on research results).[167]

Ecological Reserves Act, R.S.M. 1987, c.E-5; *Ecological Reserves Act*, R.S.Q. 1977 c.R-26; *Ecological Reserves Act*, S.N.B. 1975, c.E-l.l; *Special Places Protection Act*, R.S.N.S. 1989, c.438; *Natural Areas Protection Act*, R.S.P .E.I. 1988, c.N-2; *The Wilderness and Ecological Reserves Act*, S.N. 1980, c.2. Ontario's Nature Reserve Provincial Park class accomplishes similar purposes under the Provincial Parks Act, R.S.O. 1990, c.P.34.

[166] *Wilderness and Ecological Reserves Act*, s.5(g). This Act is one of the more sophisticated and conservation-oriented statutes of its type in Canada.

[167] See particularly Saskatchewan's *Assiniboine Slopes Provincial Ecological Reserve Regulations*, Chap. E-O.Ol Reg. 1, and New Brunswick's Ecological Reserves Regulations, Reg.83-79.

Ecological reserves generally provide the strongest protection for biodiversity at the provincial and territorial level. However, while they have a representation mandate, most ecological reserves are small in size and thus do not conform to nor encompass ecological landscape units (eg. a watershed) in a manner sufficient to incorporate all essential ecological processes which determine the ecosystems, habitats or species represented within the site. As is the case for parks, mechanisms to achieve compatible management of the surrounding landscape tend to be limited, unintegrated or non-existent, with available mechanisms generally falling within the jurisdiction of other provincial/territorial agencies or even other governments.[168] Many do not contemplate aquatic conservation in any detail, but the maritime provinces and especially British Columbia are leading the country in attempting to apply these concepts within ecological reserves as well as parks.

c) Wilderness, Wildlife and Other Protected Areas

A wide range of other protected areas designations to complement parks and ecological reserves can be found in Canada's provinces and territories. A review of all of these other designations is beyond the scope of this study. However, several categories and examples may be noted:

- large wilderness areas where natural processes predominate and substantial components of ecosystems may be encompassed;[169]
- wildlife areas managed for particular species, habitats or for hunting and fishing use;[170]
- regional parks or recreational sites established primarily for scenic and recreational purposes along waterways or near to communities;[171]
- local parks with intense human recreational use but also protecting some habitat and offering links to more rural areas.[172]

---

[168] These may be municipal governments and their land use planning functions within the provinces, or the federal government's land use planning and permitting powers in the Territories.

[169] *Willmore Wilderness Park Act*, R.S.A. 1980, c.W-I0; *Forillon Park Act*, R.S.Q. 1977, c.P-7; *Mauricie Park Act*, R.S.Q. 1977, c.P-8.

[170] These are usually established under the authority of wildlife statutes, and managed through regulations.

[171] *Park (Regional) Act*, R.S.B.C. 1979, c.310; *RegionaI Parks Act*, 1979, S.S. 1979, c. R-9.1; *Niagara Parks Act*, R.S.O. 1990, c.N.3; *St. Clair Parkway Commission Act*, R.S.O. 1990, c.S.23; *St. Lawrence Parks Commission Act*, R.S.O. 1990, c.S.24.

[172] Most provincial statutes establishing municipal governments and their powers include the ability to create and manage local parks. Other local examples include: *Public Parks Act*, R.S.O. 1990, c.P.46; *Tri-Village Recreation and Parks Commission Act*, S.N.B. 1970, c.64; *Pippy Park Commission Act*, R.S.N. 1970, c.298; *St. John's Municipal Council Parks Act*, 1973,

Many of these areas are established for environmental protection, recreation, and historic purposes, but also to ensure the retention of wilderness, tourism or local recreational and aesthetic values. The types or classes of areas are generally distinguished by their names, by specific purposes or objectives set out for them, and/or by certain powers in the legislation made applicable only to them. Many have much less legislative, policy or administrative guidance on their role in conserving biodiversity generally, or in their use by the public.

d) Species Conservation -- Wildlife

Each of Canada's provinces and territories has a program and principal statute concerned with the protection and management of wild animals[173]. These programs have a long history, arising from the need to regulate human use of wildlife --hunting, trapping and fishing -- and to respond to increasing pressures and population dynamics.

The scope of "wildlife" within the principal statutes varies. Some legislation recognizes all species of wild animals, while most focus on game and fur-bearing species. Such definitions often include only mammals and birds, and overlook invertebrate species and plants. Many of these jurisdictions include fish through the application of provincial authority over property, although the federal Fisheries Act remains a primary consideration concerning fish, other aquatic animals (eg. shellfish and marine mammals), and their habitat. In the following discussion, "fish" will be included within the term" animals." Definitions of wildlife include wildlife body parts; however, in some cases these may not cover all juvenile stages or reproductive parts. Consequently, for genetic resources purposes, wildlife legislation may or, in many cases, may not encompass and regulate the use of all species and the full range of body parts.

Wildlife conservation is achieved through prohibitions or restrictions on various aspects of the use of wildlife, with associated offences for violating these rules:

- particular species or classes of species (eg. migratory birds, fur-bearing animals, or frogs);
- closed seasons or times of the year when use is not permitted, (such as during nesting or rearing periods);
- areas in which animals may be taken (perhaps determined by specified wildlife management areas, protected areas, traplines, camps or blinds);

S.N. 1973, c.63.

[173] *Wildlife Act*, S.B.C. 1982, c.57; *Wildlife Act*, S.A. 1984, c.W-9.1; *Wildlife Act*, S.S. 1979, c.W-13.1; *The Wildlife Act*, R.S.M. 1987, c.WI30; *Game and Fish Act*, R.S.O. 1990, c.G.l; La Loi sur la conservation et la mise en valeur de la faune, L.R.Q., c.C-61.1); *Fish and Wildlife Act*, S.N.B. 1980, c.F-14.1; *Wildlife Act*, R.S.N.S. 1989, c.504; *Fish and Game Protection Act*, R.S.P.E.I. 1988, c.F-12; *WildLife Act*, R.S.N. 1990, c.W-8; *Wildlife Act*, R.S.Y. 1976, c.178; and *Wildlife Act*, R.S.N.W. T. 1988, c.W-4.

- quotas on the numbers of animals that may be taken;
- characteristics of the animal or its behaviour and habitat (such as sex, size, age, presence of antlers, colouring, accompanying young, or nests);
- characteristic of the person (for example, training, group size, residency, citizenship, Aboriginal status, or handicap);
- the manner of taking wildlife (eg. methods, animals or equipment used for taking wildlife, or human safety); or
- purpose and manner of the final use (such as recreational, commercial, display or research purposes and authorized persons).

Each species or class of species requires different considerations and combinations of controls. Most require protection during breeding and rearing periods, and selection away from females and some males at juvenile and peak breeding ages or in vulnerable locations or habitat. Different practices in different jurisdictions make it difficult to generalize. However, a combination of regulations that set out broad practices and associated permits issued for specific areas or types of users are often employed by provincial and territorial governments. Licences or permits are required for hunting large game species or for trapping fur-bearers, and a tagging procedure is usually necessary to correlate the carcass of a taken animal with the person licenced to take it.[174] For large game hunting by non-residents, the use of guides may be required, both to ensure appropriate conservation practices and to support a local economy.[175] Efficient use of the meat or pelt of an animal is usually required, thereby ensuring that wastage does not lead to the taking of more wildlife than would be necessary.[176] Nuisance animals which damage or destroy property, such as tree-cutting beaver or farm-raiding foxes, may be subject to fewer restrictions or particular exemptions from the general regulatory framework, or government compensation to people affected by their activities.[177]

Individual animals or species introduced from other jurisdictions may carry diseases or parasites, may be less genetically adapted to a new area, or may out-compete local wildlife populations, and thus may lead to their decline. Over-harvesting for export --to Asian pharmaceutical markets

---

[174] For example, *Wildlife Act*, R.S.Y. 1986, c.178, ss.11-12, 81-86; *Game and Fish Act*, R.S.O. 1990, c.G.1 *Fish and Game Protection Act*, R.S.P.E.I. 1988, c.F-12, ss.7, 21; *WildLife Regulations*, Nfld. 17/84.

[175] Yukon's *Wildlife Act*, ss.41-42; Ontario Regulation 478.

[176] For example, the Yukon's *Wildlife Act*, ss.23-26; and Ontario's *Game and Fish Act*, s.86.

[177] Yukon's *Wildlife Act*, ss.36 and 38~ Ontario's *Game and Fish Act*, ss.2(1) and 55, and the *Livestock, Poultry and Honey Bee Protection Act*, R.S.O. 1990, c.L.24, s.3; *Wildlife Act*, R.S.N.S. 1989, c.504, s.28.

for example --may also lead to wildlife decline. Recognizing these impacts, the export and introduction of wildlife may be controlled by provincial wildlife legislation,[178] although the federal *Wild Animal and Plant Protection in International and Interprovincial Trade Act* is now the primary statute in this area. Nonetheless, provincial permits or other authorizations may be required to release animals from other jurisdictions into the wild, while regulations and permits will govern the process for collecting, handling and exporting domestic species. Such approvals will consider the health, population status, and potential impacts of the introductions or export of wildlife.

Beyond the often sophisticated mechanisms to regulate hunting, trapping and fishing, other legal provisions in wildlife legislation may serve to conserve wildlife. These include prohibitions against taking eggs, or chasing or harassing wildlife,[179] or those funding or otherwise enabling the acquisition of habitat or the rehabilitation or restoration of wildlife.[180]

Four of Canada's provinces have endangered species protection legislation,[181] while several others recognize species at risk within general wildlife legislation.[182] Protected species are usually designated by regulation, and such listed species are protected from hunting and other forms of taking or disturbance. The designations may recognize simply endangered species or other levels of risk, such as threatened or vulnerable identified by the national Committee on the Status of Endangered Wildlife. The protection of habitat from alteration may also accompany such legislation, and in Quebec, critical habitat may be specifically designated. Legislation in

---

[178] Yukon's *Wildlife Act*, ss.28(2), 30 and 62; *Wildlife Act*, R.S.N.W.T. 1988, c.W-4, s.59(2); Ontario's Game and Fish Act, ss.32-33, 83-84, and O.Reg. 267/95; Nova Scotia's *Wildlife Act*, ss.62-63.

[179] Yukon's *Wildlife Act*, ss.36-37; *Wildlife Act*, S.B.C. 1982, c.57, s.35; *Wildlife Act*, S.A. 1984, c.W-9.1, s.38(2); *Wildlife Act*, R.S.M. 1987, c.WI30, s.20; *Fish and Game Protection Act*, R.S.P.E.I. 1988, c.F-12, S.7.

[180] Yukon's *Wildlife Act*, ss.138.3, 179; B.C.'s *Wildlife Act*, s.3, and the Habitat Conservation Fund and Forest Renewal B.C. program; Alberta's *Wildlife Act*, s.970) [although not yet used], and the *Alberta Sport, Recreation, Parks and Wildlife Foundation Act*, S.A. 1994, c.A-37.6; *Natural Resources Act*, S.S. 1993, c.N-3.1, ss.19 and 21; *Ontario's Game and Fish Act*, s.6; *Environment Act*, S.N.S. 1994-95, c.l, s.2 and the Environmental Trust Fund; and *Forest Management Act*, R.S.P.E.I. 1988, c.F-14, s.10.

[181] *Endangered Species Act*, S.M. 1989-90, c.39 (c.Elll); *Endangered Species Act*, R.S.O. 1990, c.E.15; *La Loi sur les espèces menacées ou vulnérables*, L.R.Q., c.E-12.01; and *Endangered Species Act*, S.N.B. 1996, c.E-9.101.

[182] See YT ss.184-185, BC ss.5-6, SK s.63, MB s.20, NS ss. 6(2), 19 and 113. See citations to wildlife Acts in footnote, above.

Quebec also provides for a prohibition of genetic manipulation of designated plants.[183] As recovery plans are developed for particular species, the territorial or provincial governments often provide support, funding or invoke other land management powers to assist in conservation efforts.

However, the practice concerning species at risk has often resulted in few species being listed, due to the lack of citizen access to the designation process and political concerns about resulting limitations on private land use. Enforcement is almost non-existent for species at risk, with only four known prosecutions, all occurring in Ontario. Consequently, protective legislation serves largely as a rhetorical background against which disturbance and development is scripted.

Wildlife enforcement powers tend to be broad, with designated wildlife officers and other enforcement officials having the ability to inspect, search, confiscate or seize, and arrest.[184] Penalties for wildlife offences can be substantial, but many jurisdictions have yet to adopt a sufficiently comprehensive penalty system to fully address commercial poaching, corporate involvement and sensitive species issues. 185 Further, enforcement capability is often overextended where a large land area is under supervision by fewer officers with dwindling resources, in the face of mounting commercial and recreational pressures on wildlife.

e) Species Conservation -- Wild Plants

At common law, wild plants are considered the property of the landowner. Provinces and territories have developed extensive controls over commercial forestry, especially on public lands where the substantial royalties return to the jurisdictions' treasuries. There has been more reluctance to regulate plants, given their private property nature, than there has developed for wild animals.

Over the years, numerous approaches and practices have developed for forestry, one of Canada's most significant natural resources sectors. Different land tenures, operators, licence terms and planning and management practices have evolved, focused almost exclusively upon production

---

[183] *La Loi sur les espèces menacées ou vulnérables*, L.R.Q., c.E-12.01, s. 16.

[184] For example, the Yukon's *Wildlife Act*, ss.113, 119-137; focused efforts in B.C. through establishment of a Special Investigation Unit [British Columbia, *Ministry of Environment, Lands and Parks - Annual Report, 1993/94* (Victoria: MELP, 1994), p.18]; and Ontario's *Game and Fish Act*, ss.8, 10, 14 and 16.

[185] See L.J. Gregorich, *Poaching and the Illegal Trade in Wildlife and Wildlife Parts in Canada* (Ottawa: Canadian Wildlife Federation, 1992) for a survey and discussion of these concerns. Note, however, recent enhanced penalties for bear poaching in British Columbia (S.B.C. 1995, c.53, s.52) and more controls on bear parts and hunting proposed in Ontario's *Ministry of Natural Resources Statute Law Amendment Act*, 1996 (Bill 36).

of forest products.[186] Conservation and wider ecosystem provisions have been secondary, often with little legislative or policy support. What conservation mechanisms are in place are oriented towards general "sustained yield,"[187] or ancillary objectives and policy of wildlife and watershed protection.[188] The latter are achieved by management plans or permits' terms and conditions that avoid sensitive areas or non-target species and reduce forestry operations' impacts (eg. on stream habitat and age classes and old growth, and from road building, forest fragmentation and wildlife habitat loss, among others).

New forestry legislation in British Columbia and Ontario and developments elsewhere are pushing these practices further towards considering the entire forest ecosystem and its social goods rather than just the commercial extraction of trees. In B.C., the Forest Practices Code lists biodiversity as one purpose for which forests can be managed and used, and associated regulations specifically allow for operational standards respecting biodiversity, including establishment of sensitive areas, objectives protection of "riparian management areas."[189] Ontario's *Crown Forest Sustainability Act* contains broad biodiversity-oriented principles, requires the Minister to approve forest management plans only when satisfied that they provide for the "sustainability of the Crown forest" (having regard to a wide range of non-timber values), and that such plans address ecological and forest diversity objectives as are to be prescribed in

---

[186] See Monique M. Ross, *Forest Management in Canada* (Calgary: Canadian Institute of Resources Law, 1995) for a comprehensive discussion offorest law, policy and practice.

[187] See Forests Act, R.S.A. 1980, c.F-16, s.16(1); *Forest Management Act*, R.S.P.E.I. 1988, c.F-14, s.ll(l); and the Forestry Act, R.S.N. 1990, c.F-23, s.8.

[188] For example, *Forest Management Act*, R.S.N.W.T. 1988, c.F-9, where "forest management" is defined to include conservation; protection of watercourses and lands around protected areas in regulations under the *Loi sur les forets*, L.R.Q., c.F-3.1.1; *Crown Lands and Forest Act*, S.N.B. 1980, c.C-38, s.29(4), where a management plan is to include fish, wildlife and watershed protection; Crown Lands Act, S.N.S. 1987, c.5, ss.2, 5, 24 and 25, concerning forest ecosystem sustainability and setting aside sensitive areas, and the *Forests Act*, R.S.N.S. 1989, c.179, s.2(e) and 10, and *Forest Enhancement Act*, R.S.N.S. 1989, c.178, s.2(e) state their purposes as including maintenance and management of wildlife habitat; and P.E.I.'s *Forest Management Act*, ibid s.9, where the Minister is responsible for conserving wildlife in the forests, protecting representative areas, and preparing a Forest Policy and Crown Forest Land Management Plan.

[189] Forest Practices Code of British Columbia Act, S.B.C. 1994, c.41, s.2; *Strategic Planning Regulation*, B.C. Reg. 180/95, s.10; *Operational Planning Regulation*, B.C. Reg. 174/95, ss. 72-77. See also the 1995 non-binding *Biodiversity Guidebook*, *Riparian Management Area Guidebook*, and *Managing Identified Wildlife Guidebook.*

the Forest Management Planning Manual.[190] These principles, definitions, management practices, measures for enhanced public involvement and commitments to reforestation add legal and policy support for conservation, yet evaluation of their contributions towards enhanced practice must still await further implementation.

Beyond forestry on public lands, provinces may enable municipal restrictions on tree-cutting, or may provide support for tree-planting.[191] Rarely does such consideration of plants encompass non-woody species, except to control weed species that may affect agriculture and horticulture.[192] Other non-woody applications exist for particular species such as the commercial harvest of wild rice and sea plants (eg. kelp and Irish moss).[193] Conservation practices are rarely prescribed for particular non-woody species, although many landowners, naturalist organizations and wildflower societies are active in trying to conserve species through stewardship and education activities.

Provincial planning legislation may conserve sensitive areas and habitat of sensitive species. This may occur through direct provincial planning for a given region, or through requirements, principles and guidelines affecting planning by municipalities at a more local level. Typically, provincial planning will respond to a mounting crisis in a certain region, resulting in a consultation process, plan and provincially-administered rules guiding land use decisions in the area.[194] At the local level, municipalities take more leadership in advancing their own and responding to private plans. Conservation can be incorporated into these plans and implementing by-laws through identification of significant sites, prohibitions or restrictions on certain damaging uses in these areas, requirements to dedicate a certain percentage of an area towards public parks, and municipal powers to affect better site planning and design that reduces environmental impacts, both on-site and for surrounding properties. Urban municipalities accustomed to development practices and pressures tend to be more sophisticated in their abilities to use these tools for conservation purposes, and in some cases have been given

---

[190] *Crown Forest Sustainability Act*, S.O. 1994, c.25, ss.9(2), 16(1), and 68.

[191] *Municipal Act*, R.S.B.C. 1979, c.290, ss.929.01 and 929.02, and *Forest Land Reserve Act*, S.B.C. 1994, c.40, s.13(d); *Planning Act*, R.S.A. 1980, c.P-9, s.l(d); *Trees Act*, R.S.O. 1990, C.T.20, s.4 and the *Municipal Act*, R.S.O. 1990, c.M.45, s.223.2; *An Act Respecting Land Use Planning and Development*, R.S.Q., c.A-19.1, s.113(12).

[192] See various Weed Control Acts: R.S.B.C. 1979, c.432; R.S.O. 1990, c.W.5; R.S.N.S. 1989, c.501; and R.S.P.E.I. 1988, c.W-2.1.

[193] *Wild Rice Harvesting Act*, R.S.O. 1990, c.W.7; *Sea Plants Harvesting Act*, R.S.N.S. 1989, c.416.

[194] Eg. *Meewasin Valley Authority Act*, S.S. 1979, c.M-ll.l; *Niagara Escarpment Planning and Development Act*, R.S.O. 1990, c.N.2; *Planning Act*, R.S.P.E.I. 1988, c.P-8, ss.7-8

additional planning and development control powers to deal with these pressures. Rural municipalities tend to see development as an unmitigated advantage for their area; as a consequence, they are less likely to use, or want to use, such conservation opportunities in the planning process, leading to less planned and often more environmentally-destructive development in rural and urban fringe areas.

e) Species Conservation -- Marine

Responsibility for marine life is principally within the scope of the federal government. The provinces and territories have little role in this area for conservation or other purposes. There are, however, a few exceptions.

Some provincial protected areas extend into marine waters, especially in British Columbia. Coastal zone management is poorly developed and lacks a strong legislative basis in Canada, but controls on beaches, shoreline development, riparian areas and plants growing in the foreshore in the eastern Maritime provinces relate to impacts upon the marine environment and species, such as sea turtles and crabs, which cross or live at the marine/terrestrial interface.[195] Provincial jurisdiction over property establishes their ability to control the processing of ocean catches, such as in fish plants. Also, the provinces' ownership of provincial Crown land gives them jurisdiction over marine operations that take place on this land, such as salmon farms in BC. Title to most of the foreshore is vested in the province and anyone wishing to operate a salmon farm on provincial Crown land must obtain tenure of Crown lands for the purpose of aquaculture.[196]

Further inland, provincial controls on forestry and other land uses have significant impacts on the quality of spawning streams for salmon, and erosion- and other pollution-related impacts upon estuaries, bays and similar downstream habitats.

ii) Ownership

As is the case for the federal government, in the absence of any statutory declaration of ownership of genetic level genetic resources, the common law applies in terms of the rights of provinces to control access and to contract to share the benefits of access. As is also the case with the federal government, the present state of the common law does not provide for clear rights and remedies in the event of a dispute over access or benefits sharing in relation to genetic resources taken without permission from provincial lands.

---

[195] For example, *Clean Water Act*, S.N.B. 1989, c.C-6.1 concerning watercourse alterations, Beaches Act, R.S.N.S. 1989, c.32, Sea Plants Harvesting Act, R.S.N.S 1989, c.416, and Recreation Development Act, R.S.P .E.I. 1988, c.R-8

[196] *British Columbia Land Act*, R.S.B.C. 1979, c.214.

iii) Access

Access to genetic resources (were anyone to request access) in provincial parks, protected areas and ecological reserves either requires a permit, or, in some provinces, in some areas, is not permitted at all.[197] Most Ministry staff in most of the provinces could not recall a single instance where such a request had been made.[198] Most also allowed that, were someone to want to go into a park or protected area and take samples of genetic material "there would be no way of knowing, and no way of stopping them."

In the Northwest Territories most protected lands are under federal jurisdiction, and require a federal permit (see above); in the Yukon, permits under the Scientists and Explorers Act,199 are required. Section 2(1)(a) of the Act imposes the condition that "the objects of entry of the holder of the licence into the Yukon are exclusively for scientific or exploration purposes and not, in any way, political or commercial." While this condition would appear to preclude research into genetic resources for their commercial application, a spokesperson for the Yukon did not believe the condition was so restrictive. On the face of the statute, however, it would appear that it is so restrictive. The British Columbia *Park Act*, 200 provides that "no natural resource.. .in a park of Class A or Class C shall be granted, sold removed, destroyed, damaged, disturbed or exploited

---

[197] For example, in British Columbia, the *Protected Area Management Principles* provide that scientific research will be allowed in protected areas subject to a management plan, but also that "manipulative activities normally [would not be] allowed. Specimen collection only allowed if results in information providing increased scientific knowledge (e.g. geology, forestry, etc) or protection and/or understanding of protected area values." The Ministry spokesperson for British Columbia was of the opinion that these requirements would exclude research for the purposes of commercial extraction of genetic resources. In Saskatchewan, the regulations under the *Ecological Reserves Act*, R.S.S. 1978, c.E-0.0l allow a permit to authorize "monitoring of and research with respect to the interrelationships between living organisms and their environment" only.

[198] The exceptions were British Columbia, which maintains its own tree clone banks; but the requests are almost always for the seedlings in the banks. "Why would anyone root around in the wild, when we have the best stuff here?" Another exception was Saskatchewan, where some "exploratory requests" have been made regarding wild plant genetic resources. These requests may have arisen from the fact that one of Saskatchewan's university's houses a large plant science and biotechnology department. A spokesperson for the Yukon Territory thought there may have been some requests under the Yukon Scientists and Explorers Act. She also believed that people did "helicopter in" to harvest wild mushrooms, but not for the purpose of commercial research into their genetic material.

[199] R.S.Y. 1986

[200] R.S.B.C. 1979, c.309, s.9(1)(a)

except as authorized by a valid and subsisting park use permit." The Alberta *Wilderness Area, Ecological Reserves and Natural Areas Act*,[201] prohibits anyone "unless authorized by the Minister [to] collect, destroy or remove any plant life or animal life..." The Alberta Ministries of Recreation and Parks, and Environmental Protection publish pamphlets, "Research and Collection Activities" and "Research and Collection Activities in Ecological Reserves" setting out the requirements for permits and the kinds of research permitted in parks and ecological reserves. In Ontario, the Ministry of Natural Resources' Policy No. PM 2.45, Research Activities in Provincial Parks includes the requirement that an application that must be filled out before any research permit is granted. In Quebec, Section 7 of the *Loi sur les espèces menacées ou Vulnérables*[202] authorizes "des recherches, des études ou des analyses a l'égard des espèces qui semblent nécessiter une protection..." and Section 8 of the Regulations requires prior authorisation before any research commences. In New Brunswick, there is no permitting system, but if anyone does think to ask the Minister, the Minister may grant or withhold approval, and mayor may not attach terms and conditions to his approval. In Newfoundland, the one-page application form (which requires that full details regarding the nature, purpose, approach and methods of the research be attached to the form) states: "In accordance with the Provincial Parks Act, the Wilderness and Ecological Reserves Act and pursuant regulations scientific research shall not occur unless specifically authorized in writing by means of a Scientific Research Permit."

In most provinces where extraction is permitted, applications are evaluated according to a varied set of criteria and on a case-by-case basis. Some of the provinces require that the research findings be shared.[203] Some provinces maintain a property interest in the samples taken; some require that the samples be returned to provincial museums.[204]

The primary significance of most of these requirements for the purposes of this report is that most of them were passed into law prior to the CBD coming into force. They were not drafted with compliance with the convention in mind; they only imperfectly apply to the activity of bioprospecting. As noted in the introduction, and as evidenced by the responses of ministry staff, the "bioprospecting" that does occur in Canada -- at least that anyone knows about -- is focused on *ex situ* genetic resources, not *in situ*.

iv) Benefits Sharing

There are no provincial laws nor any provincial policy in place to provide for the sharing of

---

[201] R.S.A. 1980, c.W-8, s. 8(1)

[202] L.R.Q., c. E-12.01

[203] Prince Edward Island, British Columbia, Ontario.

[204] Ontario and Newfoundland.

benefits accrued from access to and use of *in situ* genetic level genetic resources. As noted in the introduction, the absence of legislation may arise from a fact no more complicated than that such activity seems to be quite rare in Canada.

2. *EX SITU* RESOURCES

i) Conservation

At the provincial level, one of the most specific statutes oriented towards *ex situ* conservation is the private Royal Botanical Gardens Act. It establishes a corporation and Board in the Hamilton-Burlington area with objects to "develop, assemble, document and maintain living collections of plants and animals", "protect specific environments and flora and fauna that are of special value as parental stocks or may be in danger of extinction", "develop supporting resources such as herbaria, libraries, conservatories, greenhouses and propagation facilities", and "co-operate with other institutions", among others.[205] As in other provinces, the *Royal Ontario Museum Act*[206] and *Science North Act*[207] contain very general objects to support the collection, exhibition and education of the public about various objects and other materials, and these have been used to authorize the collection and display of wildlife.

Provincial laboratory and animal research statutes are concerned with licensing facilities that test specimens from the human body, including microbes, or the use and care of any type of animal, but do not contain any specific criteria to evaluate licence applications for either biosafety or *ex situ* conservation purposes.[208] Wildlife legislation, municipal statutes and Acts governing fur

---

[205] *Royal Botanical Gardens Act*, S.O. 1989, c.Pr.22, s.3, paragraphs (a), (c), (h) and (I). This institution was first established under the Royal Botanical Gardens Act, S.O. 1941, c.75.

[206] *Royal Ontario Museum Act*, R.S.O. 1990, c.R.35. The objects in s.3 include "(a) the collection and exhibition of objects, documents and books of any kind to illustrate and make known to the public the natural history of Ontario, Canada and the world". The Board of Trustees' powers to make by-laws under s.5 include those for operating and public use of the museum, and the making of agreements with other similar organizations.

[207] *Science North Act*, R.S.O. 1990, c.S.4. This is a Crown agency (s.5(2)), with general collection, exhibition and operation objects in S.3.

[208] For example, the *Laboratory and Specimen Collection Centre Licensing Act*, R.S.O. 1990, c.L.l; and *Animals for Research Act*, R.S.O. 1990, c.A.22. In the former, there are general application evaluation criteria in section 9 to consider the "public interest" and whether "equipment and premises are not suitable". Regulations under section 18 may be made respecting "the management and operation", keeping and reporting records, and "classes of tests" by licensed facilities, but Regs. 682 and 683 are more generally concerned with operator

farms may enable subordinate legislation to prescribe some conditions for holding animals in captivity, but again without a focus on conservation.

Beyond such statutes, most other public museums, zoos, plant collections, or research facilities have very general legal mandates to collect, display and exchange material for educational and research purposes. For *ex situ* holdings outside of government, there are also few governmental regulations that govern such collections, and almost none which provide any comprehensive framework for conservation, particularly of genetic material. At most, the focus is upon the prevention of importation or transfer of individuals carrying disease or parasites that may cause harm to human health or safety, commercial agriculture, horticulture or forestry, or concern for a minimum level of animal welfare. See below for a fuller discussion of these matters.

---

qualifications and patient comfort.

CHAPTER FOUR: PRESENT PRACTICE -- ABORIGINAL PEOPLES

1. *IN SITU* RESOURCES

i) Conservation

a) Traditional Wildlife Management

The cultural patterns and societal ordering of Canada's aboriginal peoples have been profoundly and intimately shaped by the lands they have occupied since time immemorial. The different cultural orderings are, therefore, as varied as the Canadian landscape. It is impossible to do justice to this variety within the confines of this report. However, it should serve present purposes to provide one example of aboriginal understanding of how people, animals, the land and story combine to create a resource management system.

Many aboriginal communities in Canada are intimately connected to an oral tradition.

> Young people learn indigenous wildlife management skills and principles from listening, watching and then doing with parents, extended family members and elders, Storytelling has a pedagogical function...legends and lore live on through the storytelling experience.[209]

This is a traditional Anishinaabe (Ojibway) story:

> Nanabozho [a central character in Anishinaabe legends -- the first man] was munching...berries [when] he heard a great tumult of wings over his head. He looked up and saw a flock of geese. They were weary after their journey from the north where they had spent the summer, and were wheeling overhead preparing to land on the lake. Nanabozho hurried in the direction of the flight and saw the birds come to rest on the water with the great flurry and folding of wings. Now he would have a great feast.
>
> But first he had to contrive a scheme to capture as many as possible, for if he dashed in among them he would catch only one or two... Going quickly but quietly back into the woods, he peeled off strips of cedar bark and made a long rope which he coiled in his hand, Then he slipped cautiously into the water, being careful not to disturb the weary birds. He swam under them and tied their legs together with his cedar rope. At the same time he tied each goose to the next so that he could pull them all up on shore together.

---

[209] This discussion and the story of Nanabozho are taken from: Andrew J. Chapeskie, "Aboriginal Customary Hunting and Trapping Law and State Defined Aboriginal Hunting and Trapping Rights In Canada: A Case Study in Conflict Creation," in Sixth International Conference on Hunting and Gathering Societies, Volume II (Fairbanks, Alaska: University of Alaska Fairbanks, 1990), at 31.

> At first all went well, for Nanabozho was so cunning and swift that the geese did not notice him or know what was happening. But his greed betrayed him. Instead of being content with a few geese, he went on to tie up the whole flock, and just as he was finishing, he had to come up for air. He made such a loud swoosh when he inhaled that the geese took fright. The first goose to fly up was in the middle of the rope and all the others followed.
>
> As they rose for the lake they formed a V because they were tied together, and Nanabozho dangled at one end. He shouted to the birds to stop, but the geese only beat the air more desperately with their strong grey wings. Already he was far above the tree tops, which looked very sharp and unyielding. Just then the birds flew over a stretch of soft swampy ground. Nanabozho let go of the rope and landed in a bed of oozing mud.
>
> As for the geese, they continued on their way, still flying in a V because of the rope that joined them together. Wild geese have been flying that way ever since...[210]

Stories like this one are told and retold, along with many others, creating a story of the whole world, incorporating moral, spiritual and social values, and in particular the value of the relationship between humans and the plants and animals that sustain them.

Chapeskie relates the story of Nanabozho as part of the web of story informing the understanding of one Anishinaabe elder who had been charged with an offence under the Migratory Birds Convention Act when he hunted geese for "the spring feast of migratory waterfowl... [a] pivotal celebration in a cycle of celebrations based upon seasonal changes."[211] The charge arose from a concerted effort on the part of Ontario Ministry of Natural Resources (MNR) staff to stop aboriginal people from hunting migratory waterfowl in the spring in the Allanwater Bridge area of northern Ontario.

> When Elder Belmore was first interviewed with respect to the charge which had been laid against him by MNR officials he expressed through the Chief of the Band, who was interpreting, a profound anxiety about not being able to hunt. Hunting according to customary practices for him was conceptually inseparable from maintaining an abundance of game. Were the community members to be stopped from giving this Thanksgiving, Elder Belmore stated that he was certain the result would be the decline of game in the territory. The game was put there for a purpose. The purpose was to nourish certain animals of the forest and human beings. Unless the fabric of feasting and celebration was held the relational balance between these animals and Elder Belmore's indigenous people

---

[210] This story is reprinted in Chapeskie's report at pp. 31-32. Chapeskie cites as his source: Dorothy M. Reid, Tales of Nanabozho (Toronto: Oxford University Press, 1963) at pp. 19-21.

[211] Ibid, at 32.

would be severed.[212]

Chapeskie also notes that Elder Belmore's grandson was with him, watching him hunt, at the time charges were laid:

> Within their society they were entering into a process whereby their hunting experience was being used to pass on a body of indigenous knowledge through which the game in their region has been preserved to the present time. Generations of experience and knowledge was being transferred to the younger generation not only about how to successfully stalk migratory birds, *but also how to hunt under carefully prescribed rules and conditions according to techniques which maximized game conservation*. The grandchild would learn from his grandfather, for example, to look for situations where they would be more than one drake (male duck) swimming with or chasing one hen (female duck) indicating a situation where there was more of one sex of the species required for breeding purposes. [emphasis added][213]

The stories and the intergenerational sharing of knowledge and experience construct and preserve a cultural relationship with the land and animals where harvesting and conservation are the same practice. Aboriginal wildlife harvesting is vital to wildlife conservation. In other words, as noted by sa'ke'j Henderson at the Aboriginal Law Centre at the University of Saskatchewan, "there is no such thing as an unregulated hunt."[214]

These Anishinaabe practices are, as noted, just one example of aboriginal resource harvesting/ management. Stories, knowledge, and beliefs vary among different aboriginal peoples, but they have several key elements in common, the most important of which for the purposes of this discussion is the intrinsic connection between traditional knowledge, resource use and resource conservation.

b) Aboriginal Rights and Treaty Rights

As indicated by the plight of Elder Belmore, aboriginal traditional practices and their treaty rights can conflict with provincial and federal conservation measures. The leading case on the question of the rights of aboriginal peoples where such a conflict arises is *R. v. Sparrow*.[215] Very briefly,

---

[212] Ibid, at 33.

[213] Ibid, at 33-34.

[214] Telephone interview with James (sa'ke'j) Youngblood Henderson, Native Law Centre of Canada, University of Saskatchewan, Saskatoon, Saskatchewan, 31 May, 1996.

[215] *R. v. Sparrow* (1990),56 C.C.C. (3d) 263,70 D.L.R. (4th) 385, [1990] 1 S.C.R. 1075. It should be noted that at issue in Sparrow were the accused's *aboriginal* rights rather than his

the *Indian Act* provides that provincial laws of general application will apply to Indians, except where they conflict with aboriginal or treaty rights, in which case the latter must prevail. In claiming that an aboriginal right is in conflict with a provincial law, the onus is on the accused to show that the right has been infringed. The onus then switches to the Crown to demonstrate that the legislation in question advances important general public objectives -- such as conservation -- in such a way that it ought to prevail over aboriginal rights. Sparrow also set forth the principle that, in determining a conservation strategy, governments must accord priority to aboriginal uses of a resource.[216] There appears to be the potential, then, that some confluence could be achieved between conservation efforts on the part of government and treaty rights of aboriginal peoples. What the case record shows, however, is that aboriginal rights more often bear the brunt of unsuccessful resource management policy.[217]

c) Land Claims Agreements

None of Canada's Aboriginal Treaties or Comprehensive Land Claim Settlements address genetic resources directly. The definitions of "wildlife" in recent land claim settlements recognizes species but not their genetic code. The earlier Agreements were more general: the 1978 James Bay and *Northern Quebec Agreement* defined "wildlife" to mean "all mammals, birds and fish", while the 1984 *Inuvialuit Final Agreement* defined it to mean" all fauna in a wild state other than reindeer"[218]. The 1993 *Vuntut Gwitchin First Nation Final Agreement* and the overarching Yukon

---

treaty rights, as he was not a member of an aboriginal community that had ever entered into a treaty with the federal government. However, subsequent decisions by the Supreme Court have applied the findings in Sparrow to cases where treaty rights were an issue. See *Badger v. The Queen* (1996)133 D.L.R.(4th) 324. The test in Sparrow applies to both aboriginal and to treaty rights.

[216] *R. v. Sparrow, supra*, at 1110: "Section 35(1) suggests that while regulation affecting aboriginal rights is not precluded, such regulation must be enacted according to a valid objective. Our history has shown, unfortunately all too well, that Canada's aboriginal peoples are justified in worrying about government objectives that may be superficially neutral but which constitute de facto threats to the existence of aboriginal rights and interests. By giving aboriginal rights constitutional status and priority, Parliament and the provinces have sanctioned challenges to social and economic policy objectives embodied in legislation to the extent that aboriginal rights are affected. Implicit in this constitutional scheme is the obligation of the legislature to satisfy the test of justification."

[217] See, *inter alia, R. v. Little*, [1995] B.C.J. No. 2633, Vancouver Registry No. CAO17091; *R. v. Ellsworth* [1992] 4 C.N.L.R. 89.

[218] *James Bay and Northern Quebec Agreement* (Quebec: Les Publications du Quebec, 1991 edition), Art. 24.1.12 "faune"; and The *Inuvialuit Final Agreement* (Ottawa: Indian and Northern Affairs Canada, 1984), p.2.

Umbrella Final Agreement were more specific to define "wildlife" to mean "a vertebrate animal of any species or sub-species that is wild in the Yukon, but does not include Fish, and does not include Exotic Species or Transplanted Population", unless otherwise agreed.[219] In these latter two Agreements, "Exotic Species" means a "vertebrate animal of any species or sub-species that is not indigenous to the Yukon."

The parts and products of "terrestrial, aquatic, avian and amphibian flora and fauna ferae naturae" have been included in the definition of "wildlife" in the Nunavut Final Agreement, although this does not include trees for commercial use (Art. 1.1.1 "flora" and "wildlife"). The definition of "fish" in other newer Agreements also includes recognition of parts, gametes and fish products.[220] While portions or parts could include extracted genetic material, this would be an extended meaning of the usual use of the term from past practices in provincial and territorial wildlife legislation.

Conservation is achieved through a number of mechanisms in Treaties and Land Claims Settlements. In Treaties, rights are often made subject to federal laws (eg. concerning fisheries or migratory birds), and in the case of the Prairie Province Resource Transfer Agreements of the 1930s, to provincial wildlife legislation as well. Treaties may also be interpreted by governments and the courts to extend only so far as subsistence use (and thus reduce pressures on wildlife populations from commercial harvesting levels), and the Sparrow case identified conservation as a legitimate area for government regulation of Aboriginal and treaty rights.

For Land Claim Settlements, the arrangements are more elaborate. Conservation principles are explicitly stated in all Agreements; these principles guide the interpretation of rights and the making of wildlife management decisions.[221] There are restrictions on the persons who may hunt, trap and fish, for what purposes (eg. meeting basic needs or for commerce), where, for what quotas, at what time of year, in what manner, and similar conditions on wildlife harvesting rights, priorities and privileges. Such conditions are typically determined by a wildlife management board that comprises representatives from the various interested groups, usually the federal and provincial/territorial governments, and First Nation people (as corporations, governments or other forms of organization). The boards will refer to the conservation principles established at the outset of the parts of the agreements concerning wildlife.

---

[219] Vuntut Gwitchin First Nation Final Agreement Between the Government of Canada, the Vuntut Gwitchin First Nation and the Government of the Yukon, Chapter 1 -Definitions, "wildlife"; Umbrella Final Agreement (Yukon), Chapter 1 -Definitions, "wildlife".

[220] For example, the Inuvialuit Final Agreement, s.2 "fish"; and Vuntut Gwitchin Final Agreement, Chapter 1 -Definitions, "fish".

[221] For example, see the conservation principles in the Nunavut Final Agreement, s.5.1.5, which are somewhat more detailed than the mere mention of "conservation" in Art. 24.2.1 of the James Bay and Northern Quebec Agreement.

Other mechanisms exist for achieving conservation.[222] Research into wildlife populations and uses made of them, traditional knowledge, and sensitive sites is repeatedly identified as important objectives and priorities in implementing the conservation objectives of the Agreements.

As part of the Agreement process, lands are allocated to various purposes. Of particular note, new National or Territorial Parks, Wildlife Areas or other protected areas are frequently established or, existing boundaries and management practices clarified.[223] This ensures clear jurisdiction and management responsibility for conservation purposes so that lands are protected from inappropriate development. Other lands are often managed by local communities, with access within conservation limits; in other cases, particularly productive or sensitive lands are identified and protected.[224] Consultation and approval processes for local and large-scale resource developments, and associated land use controls, are also increasingly included in Land Claim Settlements.[225]

In future land claims, wildlife hunting, fishing and trapping, land and natural resources management, and associated property rights, tenure and zoning are clear areas identified for negotiations between the federal government and First Nations; however, primary law-making power would reside with the federal or provincial/territorial governments for fisheries and migratory birds co-management and environmental protection[226].

---

[222] See the broader discussion in Laurie A. Henderson, "Biodiversity Law and Policy in the Yukon and Northwest Territories", in: Ian Attridge (ed.), *Biodiversity Law and Policy in Canada: Review and Recommendations* (Toronto: CIELAP, 1996).

[223] For example, Vuntut National Park and the Fishing Branch Ecological Reserve, established by the *Vuntut Gwitchin First Nation Final Agreement*, Chapter 10, Schedules A and B; Pingo and Nelson Head Canadian Landmarks recognized under the *Inuvialuit Settlement Agreement*, ss. 7, 12, and Annexes H-2 and H- 7; and acknowledgement of migratory bird protections and sanctuaries, among other areas, in Articles 24.3(b) and 24.14 of the *James Bay Agreement*.

[224] For example, the *Inuvialuit Settlement Agreement*, s.14(75- 78); and the *James Bay Agreement*, chapters 9-13 and 24.

[225] Yukon *Umbrella Agreement*, chapter 12; *Vuntut Gwitchin First Nation Final Agreement*, chapters 11 and 12; *Inuvialuit Settlement Agreement*, s.11.

[226] *Aboriginal Self-Government: The Government of Canada's Approach to Implementation of the Inherent Right and the Negotiation of Aboriginal Self-Government*, Federal Policy Guide (Ottawa: Minister of Public Works and Government Services, 1995), p.5-6.

ii) Ownership/ Access/Benefits Sharing

a) Traditional Concepts

The concept of "ownership" as understood by European-based legal systems does not describe the relationship understood by aboriginal peoples to exist between themselves and the land that supports them. Very generally speaking, aboriginal conceptions of the roles and responsibilities of the human animal include the management of and regulation of human uses of the environment, but land itself cannot be "owned." Other animals such as bear, salmon and deer are understood as peoples or nations unto themselves who provide sustenance for aboriginal peoples, who, in their turn, express their gratitude in a number of ways, including careful management of the other animals. Trapped and captured animals may be sold or traded in whole or part, but the nations of animals themselves are no more "property" than are people. Moreover, aboriginal peoples do not separate species according to which are "potentially or actually valuable" and which are not. All other beings --plants, animals and fish --exist for their own sakes and purposes, just as people do. All beings are interconnected, so that they all rely on one another to some extent for mutual benefit. This understanding could possibly fit within the concept of "benefits sharing" as understood by the Biodiversity Convention, but is also somewhat removed from the Convention's primary meaning of the term.

Finally, just as ownership is not a concept that fits comfortably into traditional aboriginal thought, the idea of "exclusive occupation" (which is the opposite of "access"; the individual who holds exclusive occupation is normally the person who ultimately controls access) is neither a comfortable fit. The general, and not very surprising, conclusion that may be drawn from the above is that ages old traditional beliefs that accept the sacredness of all things do not readily accommodate the notion of property in the smallest particles of sacred life.

b) Aboriginal Rights and Treaty Rights

As already discussed, the issue of aboriginal ownership of lands in Canada is hotly disputed in the courts and elsewhere. Furthermore, given the current state of court doctrine regarding the content and extent of treaty rights, it is not likely that these rights will establish the basis for aboriginal control of genetic level genetic resources.

c) Land Claims Agreements

Land claims operate on the understanding that aboriginal peoples have some kind of legitimate claim to title. The content of the "bundle of rights" in title tends to be determined by the contents of land claim agreements. As such, as noted elsewhere, the process of negotiating land claims agreements do appear to have the capacity to recognise genetic resources as one of the exploitable resources on aboriginal lands.

CHAPTER FIVE: PRIVATE PROPERTY

1. *IN SITU* RESOURCES

i) Conservation

a) Stewardship Techniques

Voluntary stewardship of lands by private owners is critical to conservation and sustainable use of biodiversity, particularly in southern Canada where much of the land base and a rich suite of biodiversity are held in private hands. Regulatory means have been and continue to be used, but often encounter resistance and misunderstanding on the part of the public affected by them. Voluntary approaches to land conservation have fared more successfully in this regard as they enable individuals to select the methods, timing and partnerships most appropriate to their needs. Creative approaches to land acquisition and management are important components of voluntary stewardship, and are enabled under a large number of general real property and contract laws. The law can support voluntary conservation by creating organizations, defining mandates, and by providing incentives and tools to accomplish particular tasks. Some of these tools are described below.

Many private and volunteer conservation organizations across Canada are making great efforts to protect environmentally significant lands: remnant woodlots, patches of long grass prairie, agricultural landscapes and historic trails. These conservation organizations come in several forms:

- large, sophisticated national or provincial non-government organizations such as the Nature Conservancy of Canada, Ducks Unlimited Canada, Nature Trust of British Columbia, Federation of Ontario Naturalists, or Island Nature Trust (P.E.I.);
- quasi-governmental organizations active in a similar fashion at the provincial scale, for example the Alberta Sport, Recreation, Parks and Wildlife Foundation, Manitoba Habitat Heritage Corporation, and Ontario Heritage Foundation;
- local naturalist, trail or game and fish associations which have become involved in the acquisition and management of lands, often as a secondary aspect of their activities, such as the Bruce Trail Association and Hamilton Field Naturalists in Ontario; and
- community-based land trusts that focus on acquiring, managing and encouraging private landowners' stewardship of lands, for example the Turtle Island Earth Stewards (B.C.), Georgian Bay Trust Foundation Inc. (Ontario), and Ruiter Valley Land Trust (Quebec).

With limited funds, and large measures of energy and creativity, these groups use a range of private conservation methods to achieve conservation, particularly in the southern part of Canada where the country's population, private property, agriculture and biodiversity (and all the conflicts that can arise from this mix) are concentrated. The private conservation methods used include a range of federal and provincial tax incentives and land acquisition and management

techniques. These methods enable private landowners to achieve long-term conservation and financial planning goals, and enhance the conservation management of lands in partnership with private organizations.

Land acquisition to move private properties into conservation ownership is a growing practice in Canada. This has traditionally involved the simple donation to or purchase of the property by a conservation organization. Management agreements or long-term leases may be used to enable local involvement while title to the property remains with larger organizations or governments.

Until recently, conservationists in Canada have lacked one of the key acquisition tools that their counterparts in the United States and Great Britain have used to great advantage: the private conservation easement. Conservation easements are agreements containing restrictions on land use that are then registered on the land title and are enforceable against current and future landowners by a conservation organization holding this agreement. Most provinces and territories have historic or archaeological easement laws, or allow for various agreements to be registered on title. Many of these are also applicable to conserving open landscape values for natural, agricultural or scenic purposes.

In Canada, most of the old (and some of the new) applicable legislation gives only governments the authority to hold conservation easements. This tends to frustrate conservation because governments have limited resources and priorities, and cannot match the volunteer and local efforts that can be harnessed by land trusts. Governments also have been reluctant to creatively apply, or to allow others to use, this flexible legal tool. Further, some jurisdictions do not have any broad purpose easement laws at all. Much of the legislation that did exist had limited scope, contained cumbersome procedures, or did not adequately address certain issues.

This situation led to almost no use of conservation easements in Canada (except a few in Ontario and P.E.I.), and thus legal reform was necessary. Today, many provinces and territories have recently passed or are considering legal reforms, particularly to tailor the use of conservation easements and land trusts to a broader spectrum of purposes and to non-government players.[227] Now, in B.C., Nova Scotia and Newfoundland, conservation easements may be held by private groups, but only after receiving a discretionary government designation on the land or of the

---

[227] *Environment Act*, S.Y. 1991, c.5, ss.76-80; *Land Title Act*, R.S.B.C. 1979, c.219, s.215; *Environmental Protection and Enhancement Act*, S.A. 1992, c.E-13.3, s.22; *The Conservation Easements Act*, S.S. 1996, c.C-27.01; *Heritage Resources Act*, C.C.S.M. c.H39.1, s.21; *Conservation Land Act*, R.S.O. 1990, c.C.28, s.3; *Ontario Heritage Act*, R.S.O. 1990, c.O.18; *Conservation Easement Act*, S.N.S. 1992, c.2; *Natural Areas Protection Act*, R.S.P.E.I. 1986, c.N-2, s.5; and *Historic Resources Act*, R.S.N. 1990, c.H-4, s.30. For a fuller discussion of conservation easement legislation and use in Canada, see: Thea M. Silver, Ian C. Attridge, Maria MacRae and Kenneth W. Cox, *Canadian Legislation for Conservation Covenants, Easements and Servitudes: The Current Situation*, Report No.95-1 (Ottawa: North American Wetlands Conservation Council (Canada), 1995)

organization. The Yukon, Saskatchewan, Ontario, Manitoba and P.E.I. have taken a less bureaucratic approach, with the former three enabling qualified private organizations and the latter two allowing individuals to hold these interests in land.

As the legislation changes to allow or streamline procedures for conservation easements, interest in the applied use of this mechanism across the country has increased. A handful of private conservation easements have now been approved in Nova Scotia, a dozen or more are completed and others are under negotiation in each of P.E.I. and Ontario, and B.C. is very active with numerous easements registered and more on the way.

With new and updated conservation easement legislation across the country, Canada's private sector will be better legally equipped to respond. The challenge now is for Canadian conservation organizations to use these mechanisms in each jurisdiction, and to promote and elaborate their application based upon experience elsewhere.

ii) Ownership

a) Common Law

The Dominion of Canada appropriated and continues the "common law" tradition of England. The English common law builds on a series of precedents that extend back many hundreds of years. The general rule of applicability is that where statute law does not apply, the common law applies and the common law may be amended or codified by statute.

The concept of property under the common law is understood to be a "bundle of rights." This section deals with the question of whether private property owners have among their bundle the right to claim a property interest in genetic resources on their property.

The Canadian Biodiversity Strategy notes that the terms "wild flora and fauna and other wild organisms, refers to any wild and native species, including mammals, birds, fishes, reptiles, amphibians, invertebrates, plants, fungi, algae, bacteria, viruses, protozoa and other organisms."[228]

To date, the common law has answered questions regarding property interests in only a few of the items on this list. Any domesticated animal, cattle, or crop belonging to the owner on or off the owner's real property is, obviously, understood to be the personal property of the owner.[229] Any wild plant on the owner's real property is understood to be a fixture to the estate, and as such

---

[228] Biodiversity Strategy, at 20.

[229] *Ebers v. MacEachern* (1932), 4 M.P.R. 333 (P.E.I.C.A.); see also Re Swans (1592),7 Co. Rep. 15b. If an animal belongs to the class of domestic or tame animals it is a subject of absolute property.

is the property of the owner. Any wild animal (mammal, fish or bird) living on the estate that is not sedentary is not owned by anyone until it is "reduced to possession."[230] Reducing a wild animal to possession means capturing it, and restraining its movement so that it cannot get away, or killing it.[231] However, if a person reduces a wild animal to possession on property that is not hers and onto which she has not been invited (that is, she is trespassing on the property), then her claim to ownership is not as clear as the claim of the owner of the land.[232] This general rule of the common law applies unless, by legislation, the state has declared otherwise.[233] The state's capacity to confiscate part of an animal (a cougar hide) by virtue of a declared property right in a statute[234] was an issue in *R. v. Lancour and Bunn*.[235] The court denied the province's right to keep the hides from persons who had killed two cougars on their own property. The province's response was to make amendments to the Wildlife Act that may prevent this conclusion being arrived at again by the courtS.[236]

Property rights pertinent to water -- riparian rights -- deal only with the right to use water, and not directly with anything living -- bacteria, microbes, viruses, or other cell-level life – within the water. The common law would permit the use of any of these things, including their removal, so long as the use did not excessively interfere with the rights of other riparian rights, holders. Aquatic plants growing in the water that is considered part of the private property would be the property of the owner.[237] Fish, salamanders, invertebrates and mammals that can freely move on and off the property would be considered wild, and depending on provincial and federal

---

[230] Pierson v. Post (1805) 3 Caines (S.C. N.Y.)

[231] Ibid.

[232] *Pammet v. Thompson* (1921), 20 O.W.N. 89 (C.A.) Wild animals in a state of nature when killed belong to the owner of the land upon which they are killed, no matter who kills them, unless the owner has in some way parted with the right to them.

[233] See *Endangered Species Act*, R.S.O. 1990, c. E.15, s. 5 which prohibits the killing of animals threatened with extinction.

[234] *Wildlife Act*, 1966 (B.C.), c. 55 s. 52.

[235] *R. v. Lancour and Bunn* (1979) 13 B.C.L.R. 179 (B.C.P.C.).

[236] Section 2, Property in Wildlife, of the British Columbia Wildlife Act, S.B.C. 1992, c. 57 reads: "Ownership in all wildlife within the Province is vested in the Crown in right of the Provence," and "... ss. (1.1)(3) Where a person by accident or for the protection of life and property kills wildlife, that wildlife... remains the property of the Crown."

[237] But, navigable waters fall under the jurisdiction of the Crown. In Ontario, for example, the Beds of Navigable Waters Act, 1990. R.S.O., c.B.4. provides that the beds of all navigable waters in the province remain vested in the crown irrespective of prior grants.

legislation, either belong to the state, or belong to no one until rendered into possession by either the owner of the property or an individual invited onto the property for such a purpose by the owner.

As noted in the introduction, while these general provisions of the common law may apply to a dispute over the ownership of genetic level genetic resources --when and if such a dispute makes its way to the courts -- until such time as a court has ruled on the matter, there can be no certainty as to their precedential weight on the issue.

b) Quebec Civil Code

The civil law tradition in Quebec is set out in the Quebec Civil Code. The French colony that ultimately came under British rule in Canada in 1763 had a codified set of laws in place when "conquered" and held thereafter onto the French practice of organizing private law by way of a written code.

The Quebec Civil Code breaks property rights into different categories[238], and different kinds of property into different categories. All property is either corporeal or incorporeal, both of which categories are further divided into moveables and immoveables.[239] The distinctions between moveable and immoveable generally determines the law applicable to different kinds of property. For example, houses are considered immoveables and can be mortgaged; moveable property may not be mortgaged. Plants and trees are considered to be immoveables, except when they are to be sold.[240] The general principle that wild animals belong to no one unless the state has declared otherwise is the same in Quebec as in the rest of Canada.[241] At present the Code does not consider ownership of genetic resources *per se*.

Riparian rights are also recognized in Quebec as usufructuary only (articles 913, 979-983), but water, as in the rest of Canada, may be taken and sold, so long as the rights of other riparians are not interfered with excessively. The exception to this general rule is ground water, full

---

[238] Property rights are codified, for example, as "Property in Relation to Its Proceeds," "Property in Relation to Persons Having Rights in It or Possession of It, " "Certain De Facto Relationships Concerning Property" such as "Possession," and "Acquisition of Vacant Property" among others.

[239] Code Civil du Quebec, art. 899.

[240] Code Civil du Quebec, art. 900, "Plants and minerals, as long as they are not separated or extracted from the land, are also immoveables, Fruits and other products of the soil may be considered to be moveables, however, when they are the object of an act of alienation. "

[241] Code Civil du Quebec, art. 934, "Animals in the wild, or formerly in captivity but returned to the wild, aquatic fauna... are things without an owner."

ownership of which currently resides with the owner of the surface property. There are plans to change the regime regarding ground water to conform with surface water law.

The Civil Code, unlike the common law, cannot "evolve" to accommodate new concepts. It is unclear, therefore, whether the Code can apply, without revision, to the ownership of genetic resources.

iii) Access

a) Common Law

Private land owners have as two rights in their bundle the right to prohibit entry of any person onto their property (with a few exceptions, including state enforcement officers) and the right to invite anyone on to the property for whatever legal purpose. These two principles suggest that a property owner may sell for any terms any genetic resources on his property not previously legislated as being subject to a property interest of the state. Any property owner may also prohibit access to any genetic resources on his property so long as there is no state legislation declaring otherwise.

b) Quebec Civil Code

The Quebec Civil Code provides that a property owner has the right to object to any unauthorized encroachment or use of his property.[242]

iv) Benefits Sharing

a) Common Law

"Alienability" is one of the most fundamental rights in the common law bundle of property rights. Subject to applicable statute, contract and criminal law, property owners are free to dispose of their property as they see fit. This right would include entering into contracts with persons or agents seeking access to genetic resources and to any agreements regarding sharing the benefits arising from access. Applicable laws in some provinces would include prohibitions on the sale of some endangered species.

As noted elsewhere, in the event that a dispute arises under a "benefits sharing" contract, the full extent of remedies available under the common law is unclear. For example, a property owner contracts with a bioprospector, permits entry onto her lands and agrees to sell whatever samples are taken at an agreed-upon price. Once the prospector has the samples in his possession, he

---

[242] Code Civil du Quebec, art. 954, "The owner of property has a right to revendicate it against the possessor or the person detaining it without right, and may object to any encroachment or to any use not authorized by him or by law."

refuses to pay. Should the property owner pursue the action in court, she will have to establish as part of her case that she was in a legal position to make the contract. As noted above, the common law is clear that plants and other sedentary species on private property belong to the property owner. So the property owner may argue that she owns the samples taken. However, the prospector is free to argue that the property owner may own the plants, but not the genetic material in the plants, and that, as damages for breach of contract, the property owner is entitled only to the value of the plants themselves. In support of his argument, the prospector could cite the policies applied to plant and animal genetic resources described elsewhere in this report -- that no ones "owns" animal genetic material, and that genetic resources in *ex situ* gene banks are the common heritage of humankind. The prospector could use the same policies to support the argument that the contract is void on the grounds that the property owner could not legally enter the contract because she does not own the genetic resources collected from her property.

The preceding analysis is not offered as the final word on the nature of rights to contract to share the benefits arising from access to and use of genetic level genetic resources in Canada. Rather, its purpose is merely to emphasize that, for the time being, it is very difficult to say with certainty what are and are not the common law rights and remedies of parties in a position to control access.

b) Quebec Civil Code

The Code provides that the nature and extent of the right of ownership includes the right to dispose of property fully and freely, subject to applicable laws.[243] Applicable law in Quebec would include prohibitions on the sale of some endangered species. It appears that the uncertainty under the common law as regards genetic level genetic resources also exists under the Quebec Civil Code.

2. *EX SITU* RESOURCES (Zoos, Aquaria, Botanical Gardens and Museums)

There are about thirty botanical gardens in Canada, some privately, some publicly owned. There are seven aquariums, almost twenty zoos, and several dozen museums (excluding art museums).[244] All of these collections engage to a greater or lesser degree in the transfer and collection of genetic resources. Some (the aquaria and museums) serve commercial and recreational purposes. The organisations on this list that include conservation in their mandate achieve this either through research, preservation of living specimens in their collections, breeding programmes done in conjunction with other collections, or some combination of the

---

[243] Code Civil Du Quebec, art. 947, "Ownership is the right to use, enjoy and dispose of property fully and freely, subject to the limits and condition for doing so determined by law."

[244] These numbers are taken from the Statistic Canada *Heritage Institutions 1992-93* Report, the last time this report was issued.

above.[245] All are subject to legislation and international treaties already discussed in this paper. Several of the institutions interviewed were aware of the importance of the question of controlling access to genetic resources and expressed an interest in the potential for government legislation or policy on the matter. None of the collections, to the best recollection of the people interviewed, had ever been approached by a company requesting access to genetic resources in their collections for the purposes of biotechnology research.[246]

i) Conservation

The Canadian Botanical Conservation Network has evolved out of several decades of discussion on the need for a national botanical garden, and the realization that a network of gardens would better represent the diverse regions of Canada and make more efficient use of existing resources. The mission of the Network is to "aid the botanical gardens, arboreta, and other institutions maintaining living collections of plants in Canada to realize their potential to contribute to the conservation of biological diversity". Based upon the work of its predecessor, the Network pursues a number of conservation goals for wild and horticultural plants:

---

[245] The *Museums Act* establishes a number of national museums, including the Museum of Nature with a mandate to "collect natural history objects", "maintain its collection by preservation, conservation and restoration", and dispose, exchange or display its collections. *Museums Act*, S.C. 1990, c.3 (R.S., c.M-13.4), s.12. Research, education and provision of expertise are also prominent in this museum's legal mandate. This is the clearest and most detailed expression of an *ex situ* mandate as it relates to the Convention, but departmental statutes may also provide broad authority for retaining *ex situ* collections (eg. for agriculture or forestry). Nonetheless, these mandates are largely based upon use of the species for other purposes but can be adapted to assist in conservation efforts, especially to support reintroduction or future breeding programs.

[246] At least, they have not been contacted yet. According to a recent Rural Advancement Foundation International (RAFI) newsletter, botanical gardens in the United States and Germany have been approached by biotechnology companies:

> Pharmaceutical corporations making a bid for Northern botanical garden germplasm include GlaxoWellcome, Merck, Pfizer, Phytera, and Shaman. Botanical garden directors confirm several more companies are seeking access, though details are not available. SmithKline Beecham is using the expertise of a Northern botanical garden to grow an important Chinese drug-producing plant in the U.S. and avoid sourcing the plant in Asia. Intermediaries like the New York Botanical Garden have collected plants for other Northern Botanical Gardens to provide to corporation and the U.S. National Cancer Institute. The rights of indigenous peoples and farmers are being bypassed by corporate deals with botanical gardens. "Pharmaceutical Companies Bid for Northern Botanical Garden Collections in Attempt to Avoid the Biodiversity Convention," in July/August, 1996, RAFI Communique at 1.

To strengthen ties among Canadian gardens;

- To ensure that a gene bank of horticultural material be maintained;
- To create and maintain an information network of rare, endangered and threatened native plants in Canada.
- To provide a data base which could lead to a Red Data Book for Canada."

The intent is to promote research, produce a newsletter, develop uniform signage, provide an advisory service, and support conservation of valuable plant collections. Currently, discussions have begun with the Canadian Nature Federation, Ontario Natural Heritage Information Centre, and others to draw up a list of priority species of Canadian plants for conservation projects in June, 1995. The Network is now developing a practical pilot project for the Wood Poppy (Stylophorum diphyllum), a species listed by COSEWIC in 1993 as Endangered. The Wood Poppy's Canadian range is restricted to two small populations in the London, Ontario area, with perhaps fewer than 300 individuals. The Network is now coordinating a pilot study on the genetic status of the Canadian populations at McMaster University.

The American Association of Botanical Gardens and Arboreta (AABGA) is the professional association for public gardens in North America (including some from Canada), supporting the public horticulture community in its mission to study, display and conserve plants. Without a coordinated effort to broaden the genetic diversity of collections and share preservation responsibilities, botanical gardens continue to duplicate one another’s efforts in the collection of some species, while remaining unaware that other plant groups are not found in botanical garden collections. In response, the North American Plant Collections Consortium network will take official responsibility for collecting and preserving specific plant groups and the genetic resources they represent. Botanical gardens will apply to the Consortium to become the official North American caretakers for plant groups and must meet strict standards for collections management and genetic quality. Botanical gardens with official North American collections will be committed to developing, documenting, verifying, maintaining, sharing, propagating, and disseminating their plant collections. Official North American collections will serve as reference centres for plant identification, cultivar registration, nomenclature, and plant exploration. For example, the Morden Research Farm in Manitoba has an arboretum that serves as the International Registration Authority for Shrubby Cinquefoil (*Potentilla fruticosa*).

ii) Ownership

The question of ownership of specimens, animals and plants in most of these institutions is perhaps best described as "unexamined." Most people interviewed believed the specimens in their collections (many botanical gardens do not keep complete catalogues of their holdings, so they do not even know what they have, let alone whether they own it or not) belong alternatively to the institution itself, or to the larger organization (such as a university) of which the institution is a part, or fall under the amorphous category of "common heritage." Some responded that the question of ownership had never arisen. Wild animals kept in zoos would fall under the Criminal Code provision cited above, but that would only provide an answer in the event that an

animal escaped.[247]

Otherwise, in terms of applicable laws, it appears that the legal status of the genetic level genetic resources held by these institutions is no more clear than for *in situ* genetic level genetic resources.

iii) Access

According the museums surveyed, there are no formal policies regarding access to genetic materials in museum collections. Generally described, the informal procedures are that a request for resources must go to the curator of the particular collection (zoology, botany, etc.) and the final decision is made by the Collection Manager for the museum. As a general rule, genetic resources are not sold. The practice is similar for botanical gardens. Transfer of animals among zoos is largely either for breeding purposes, or for "loans" of special attraction animals such as pandas.[248]

iv) Benefits Sharing

There are no policies in place in any of the institutions interviewed for the sharing of benefits arising from access to genetic resources as contemplated by the Biodiversity Convention.

---

[247] See discussion and notes in the section on Ownership in Chapter Two.

[248] A spokesperson for the Assiniboine Zoo in Winnipeg, Manitoba indicated that "many CITES permits" need to be filled out in order to transport animals. There is an established practice regarding who "owns" the offspring of any successful breeding. The zoo that owns the female has claim to offspring number 1, 3, 5 and so on (depending on how many offspring there are) and the zoo that owns the male has claim to offspring number 2,4,6, and so on.

i) Plant Breeders' Rights

The few other discussions that deal with genetic resources in Canada include the *Plant Breeders' Rights Act*,[249] (PBR), understanding that the Act "incidentally legislates genetic material."[250] As described below, the Act provides for certain rights of plant breeders to protect their intellectual property in plant varieties that meet the criteria set out in the legislation. However, as with the other Acts in Canada that regulate things (bees, livestock, fish, trees) that are made up of genetic resources, the PBR does not deal directly with genetic level genetic resources. One of the rights the Act does not create is the right of ownership of the particular genes of plant varieties registered under the Act.

The PBR protects the rights of plant breeders in Canada, and in any country which has a bilateral agreement with Canada, enabling a breeder to hold certain exclusive rights to a developed plant strain for eighteen years.[251]

In applying for plant breeders' rights, a breeder must show that the plant variety is clearly distinguishable or distinct from other varieties, stable, sufficiently homogenous and has not already been commercialized.[252] The plant breeder must also provide sufficient disclosure about the new variety, must maintain the propagating material, and must give the new variety a name.[253]

Plant breeders' rights in Canada create exclusive protection to sell propagating material, to make repeated use of propagating material to produce commercially another plant variety, to use any ornamental plants (for which rights have been granted) or their parts commercially as propagating material in the production of ornamental or cut flowers, and to authorize any of the

---

[249] *Plant Breeders' Rights Act*, S.C. 1990, c.20.

[250] Allin, *Convention on Biological Diversity: Report on Canadian Legislation and Policy Regarding Access to Genetic Resources*, 1995, submitted to the Secretariat of the United Nations Convention on Biological Diversity on behalf of Canadian Biodiversity Convention Office, at 1 of 4.

[251] The Act defines "breeder" as "the person that originates or discovers the plant variety." This definition appears to suggest that rights could be applied to a "discovered" as well as developed varieties.

[252] Section 4.

[253] Sections 19-20 of the Regulations.

above.[254] Plant breeders' rights in Canada extend only to the propagating material (the seeds, cuttings or other regenerative part of the plant variety) and not to the actual plant. The "farmers' privilege" is a limit on plant breeders' rights which permits farmers to plant seed, grow it, retain the subsequent seed, grow the subsequent seed and then sell the resulting plant without infringing the breeders' exclusive rights. If, however, the farmer were to grow seed, and then sell the seed, that would be an infringement of the breeder's rights.

The *Plant Breeders' Rights Act* does not create a right of ownership in the genetic material of which the propagating material is composed. The Act does not preclude another plant breeder from using a protected variety as an initial source of variation. "Given that variation in a plant occurs due to changes in its gene complement, it follows that in order to exercise the breeder's exemption a breeder must be given access to the individual genes."[255]

The Plant Breeders' Rights Act applies to bioprospecting in so far as a plant breed developed with prospected material may be registered under the Act.

ii) Patent Rights[256]

For the time being in Canada, it is still not permitted (as it is in some other jurisdictions) to patent whole life forms. Canada's participation in bi- and multilateral trade agreements such as the Canada-United States Free Trade Agreement (FTA) and the North American Free Trade Agreement (NAFTA) may require that Canada revise its patent law. Intellectual property law falls under the jurisdiction of the federal government. The ruling statute is the *Patent Act*.[257]

A Canadian patent is a lawful monopoly to make, use or sell an "invention" in Canada. The lawful monopoly permits the patentee to exclude others from making, using or selling the "invention" in Canada during the lifetime of the patent. A patent lasts for a maximum of twenty years.

According to the Canadian Patent Office, patentable subject matter (an "invention") must:

---

[254] Section 5.

[255] Natalie M. Derzko, "Plant Breeders' Rights in Canada and Abroad: What Are These Rights and How Much Must Society Pay for Them?" [1994] 39 McGill Law Journal 144 at 163. It is also noted in the Canada Report that "Since protected species may be used for research and breeding, plant breeders' rights should have no impact on plant genetic resources," at 31.

[256] The discussion on patents is taken from R.E. Dimock, et. al. Eureka! Now What? (Toronto: CCH Canada Ltd., 1993) and G.F. Takach, Patents: A Canadian Compendium of Law and Practice (Edmonton, Alberta: Juriliber Ltd., 1993).

[257] *Patent Act*, R.S.C. 1985, c.P-4, as amended.

- relate to a useful as opposed to a fine art;
- be operable, controllable and reproducible as disclosed in the application, and inevitably lead to the desired result;
- have practical application in industry, trade or commerce;
- have a licit object, and be more than a mere scientific principle or abstract theorem, and be beneficial to the public.

An "art" may be defined as a method of accomplishing a certain result as opposed to the result itself and includes a "process." "Machinery" is any mechanism that functions or operates to accomplish a desired result. A "manufacture" is defined as anything that is made by hand or machine. A "composition of matter" includes chemical compounds, compositions and substances that are the result of a chemical reaction or a mechanical mixture.

Although plants, animals and their breeding processes are unpatentable, both (I) processes to produce them that require significant technical intervention and (ii) new microbial life forms such as algae, bacterial and cell lines and processes for using them may be patentable, subject to the requirements of disclosure under the Act. Reproducible, man-made living matter may be patentable, at least when produced in a manner analogous to chemical compounds and in such volumes that any measurable qualities will produce uniform properties and characteristics.

The Canadian Supreme Court has so far resisted ruling clearly as to whether or not whole plants or animals may be patented.[258] While the patentability of life forms is for many a moral issue, for the Court it is more a matter of establishing whether or not whole plants and animals, however they came into being, meet patentability requirements.[259]

As regards the matters of special interest to this report, that is, questions regarding the ownership of genetic resources, the rights to control access to them and their subsequent use, and provisions for the sharing of benefits arising from their use, the following can be said. Patent rights do establish the right to exclude others from using, selling or making patented genetic material. However, it is reasonably clear that patent rights cannot be applied to "found" or "naturally-occurring" genetic material -- in other words, an *in situ* genetic level genetic resource – because it does not meet patentability requirements. Genetic material that has been subjected to some mechanical, biotechnological or other process, as described above, and has been changed from its

---

[258] The leading case is still *Pioneer Hi-Bred Ltd v. CP* (1989) 60 DLR(4th) 223 (SCC); see as well C.l. Ledgley & M.I. Stewart "Patent Protection for Animals in the Wake of *Pioneer Hi-Bred*" (1991) 7 *CanIPRev* 290-345.

[259] For extensive discussion of what many believe the Court held incorrectly in *Pioneer Hi-Bred*, see, *inter alia*, Danyl M. Stotland, "Is Biotechnology Patentable in Canada?" (1992) 9 *CanIPRev* 1-23; Eileen McMahon, "Nucleic Acid Sequences and Other Naturally Occurring Products: Are They Patentable In Canada?" (1993) 10 *CanIPRev* 11-21; Dr. Patricia A. Rae, "Patentability of Living Subject Matter," 10 *CanIPRev* 41-49.

original form may be patentable, or the process used to change it may be patentable, but the "raw material" does not appear to meet the tests set out above.

Given that the considerations of access to genetic resources and provisions for sharing the benefits accruing from access to genetic resources, as delineated by the CBD, apply to *in situ* genetic resources, (and, in Canada, to *ex situ* resources that current policy maintains belong to no one), patent law in Canada would not apply to bioprospecting, at least not at the point of gaining access to genetic resources. However, as noted in the introduction, one course Canada could choose in implementing its compliance with the CBD would be to revise the Patent Act so that applicants for patent rights to an invention comprised of or using genetic resources in some fashion would have to demonstrate the prior informed consent of the country of origin of the genetic resources. Canada has not made such a revision to the Patent Act, and, consistent with its position described above, currently has no intention to. However, as also noted in the introduction to the report, Canada appears to intend to include in its "cooperative capacity building" efforts, "appropriate intellectual property rights."

iii) Aboriginal Intellectual Property Rights

Just as western legal concepts such as "ownership," "exclusive occupation," and "actually or potentially valuable" genetic resources do not fit comfortably in aboriginal world concepts, so too do the requirements of most western intellectual property rights protection laws poorly relate to traditional aboriginal knowledge. This section will deal briefly with the question of whether the intellectual property rights in the legislation described above can serve to protect the interests of aboriginal peoples against individuals who would benefit commercially from aboriginal traditional knowledge. In other words, would plant breeders' rights or patent protection grant aboriginal peoples in Canada defensible rights against a party who uses them without their authorization?

Aboriginal knowledge assists bioprospecting in at least two ways. First, aboriginal knowledge of the special properties of wild (and cultivated) plants can provide a bioprospector a short cut to the discovery of commercially valuable substances in plant genetic material. Second, informal plant breeding practices of local and indigenous communities can create plants with desirable characteristics and can, again, provide a short cut to "high quality" genetic material. The inequitable result that may arise is that the bioprospector may use intellectual property laws to protect his interests after gaining access to and using genetic materials whose value was made manifest by aboriginal knowledge.

There are several difficulties in applying patent protection to the intellectual property of aboriginal peoples:

> the "novelty" requirement [of Canadian patent law] has presented a number of difficulties to ...groups seeking to conceptualize patent-type rights for local and indigenous knowledge. While indigenous and local knowledge includes informal innovations, these would be

> difficult to bring within the traditional concept of "novelty" in patent law, which requires a discrete invention and application.
>
> For local and indigenous groups, the novelty requirements has been viewed as an insurmountable barrier to patent protection, since the knowledge to be protected has been in existence in the community for years, [more often] generations.[260]

The justification often put forward for intellectual property rights protection is that it encourages innovation, so that inventors know that the fruits of their labour will be exclusively theirs for a given number of years. This rationale alone might indicate how such laws would not readily accomplish the task of protecting ages-old knowledge from appropriation by others. Plant strains created by informal plant breeders could conceivably be protected under the *Plant Breeders Rights Act*, but, as noted above, the rights created by the Act do not prohibit other plant breeders from using the genetic material in a registered plant strain to create a new strain.

It appears that, for the time being, existing laws in Canada have little utility in serving to protect aboriginal knowledge. However, as noted elsewhere in this report, some aboriginal communities have, through land claims agreements, gained greater control over the lands that support them, and greater say in how these lands are used. This increased capacity to govern themselves may also create an increased capacity to determine how, and by whom, aboriginal knowledge is used.

---

260 Howard Mann, supra, at 8-9.

CHAPTER SEVEN: CONCLUDING OBSERVATIONS

The primary purpose of this report has been to describe the current state of law and policy pertaining to genetic resources in Canada, with the understanding that this information may serve a larger purpose of indicating areas where opportunities may lie for international cooperation regarding access and benefits sharing agreements and/or legal regimes pertaining to same.

As regards the federal government, which takes the lead role in Canada's compliance with the CBD, activity regarding genetic resources is split on the divide articulated between *in situ* and *ex situ* genetic resources. As noted in the introduction, for *in situ* species-level genetic resources, attention is directed at habitat and species conservation, with questions around ownership, access and benefits sharing largely unaddressed. For *ex situ* genetic resources, the focus is primarily on research in and conservation of economically significant forestry and agricultural genetic resources, to which bona fide researchers and plant breeders anywhere in the world have free access for the purposes of research and breeding. This access policy includes among its rationales the understanding that it is counterproductive and unnecessarily restrictive of the purposes of plant breeding to restrict access to plant genetic resources in any way.

Canada's provinces, with very few exceptions, have for the most part failed to acknowledge in their legislation three of the four points of interest to this report. That is, most provinces have legislation pertaining to the conservation of ecosystem-level and species-level *in situ* genetic resources (which sometimes include terms that could be read to include genetic level genetic resources, and that could potentially be applied to the activity of bioprospecting), but that do not deal with questions of ownership, access and benefits sharing. Provincial and federal laws acknowledge activities that may be destructive of wildlife and biodiversity --poaching, reckless destruction of habitat, unpermitted hunting, and so on --and also contain provisions controlling research within protected areas, but the specific activity of bioprospecting has not been clearly provided for in most of these laws. As noted in the introduction, this may only be because the activity of bioprospecting in Canada rarely occurs *in situ*. At least, five months of research revealed no conclusive evidence (no evidence, actually) that there is any activity in this area at all.

Canada's aboriginal peoples have, some of them, an increased capacity through land claims agreements to control what happens on their lands. To date, little consideration appears to have been given to what will happen if someone wishes to bioprospect on aboriginal lands. As discussed in detail in the body of the report, whether or not aboriginal peoples will accept the commercial exploitation of genetic level genetic resources originating on their lands is a matter they will have to determine themselves.

Finally, as noted throughout this report, conservation efforts, with a few exceptions, suffer from inadequate enforcement, inadequate funding and limited mandates. As noted in the introduction, Canada has yet to resolve the conflict between the surer economic gain of exploiting natural resources (and destroying biodiversity) and the more speculative economic gain of conserving it.

Even as this report is being completed, one of Nova Scotia's protected areas has been opened to mining.

There have been a number of tentative conclusions offered by this report. We will close with one more: there would appear to be in Canada a very great potential for future cooperative international action under the CBD in the areas of access to and sharing benefits arising from access to genetic resources, if only because there is still so much left to be done. The federal government's statement of Canada's position on the CBD emphasizes "capacity building" and it would appear that Canada could stand to benefit from this -- especially as regards *in situ* conservation of biodiversity --as much as any other party to the convention.