BACKGROUND PAPER

BC ENDANGERED SPECIES PROTECTION WORKSHOP

West Coast Environmental Law Association
BC Endangered Species Coalition

Vancouver, BC - June 24 and 25, 1997

INTRODUCTION

Description of Workshop

The BC Endangered Species Protection Workshop is hosted jointly by West Coast Environmental Law Association and the BC Endangered Species Coalition. The aim of the workshop is to explore the adequacy of existing legislative and policy tools to protect species at risk in BC, and to identify the need for new and improved tools, including legislation, to protect species at risk in the province. The workshop is designed to be open and interactive in approach, with representation from government, industry, unions, community and environmental groups, First Nations and professional associations. Admission to the workshop is free.

A series of different panels will address topics such as: existing legislative and policy framework for protection of species at risk (see box below); process for listing species at risk; habitat protection; protection of trans-boundary species and recovery plans. Half the time in each session will be allocated to panel presentations, and the other half will be open for facilitated questions and discussions from the floor. The final session of the workshop will provide more time

for open discussion of the need for a multi-stakeholder process to improve tools for protection of species at risk.

A Discussion Paper will be prepared after the workshop and will be sent to all registered workshop attendees. A copy of the Discussion Paper will also be placed on West Coast Environmental Law Association's home page - http://vcn.bc.ca/wcel.

Workshop Objectives

The objectives of the workshop are as follows:

- To assess the adequacy of existing legislative and policy tools in B.C. to protect species at risk
- To identify the need for new and improved tools, including legislation, to protect species at risk in B.C.
- To explore the need for, and as necessary, build commitment to a multi-stakeholder process to improve tools for the protection of species at risk in B.C.

Purpose and Scope of Background Paper

This Background Paper is intended for your use throughout the workshop, as well as for reference prior to and after the workshop. The Background Paper:

- describes the scope and objectives of the workshop;
- provides background material to set the context for each panel session;
- highlights suggested key questions to be addressed during each panel session.

The numbered sections of the Background Paper match the Workshop Agenda.

You are encouraged to use this Background Paper to . . .

- do some background reading before the workshop;
- keep track of the overall workshop objectives as well as the key questions for each session; and
- use the spaces provided to keep your own notes, comments and questions and to organize your ideas.

"Protection of Species at Risk" - What does this mean?

"Species at risk" means all species negatively affected by human activities. It is an umbrella term which encompasses extirpated, endangered, threatened and vulnerable species. (Each of these terms is defined in the "Glossary of Terms" section below).

"Protection of species at risk" means protection to ensure that no further native species become extinct as a result of human activities, and that endangered, threatened and vulnerable species recover to healthy, self-sustaining population levels using the most efficient, effective and fair means possible.

GLOSSARY OF KEY TERMS

COSEWIC: Commitee on the Status of Endangered Wildlife in Canada (see Session 2: Identifying Species at Risk - The Listing Process).

CDC: Conservation Data Centre - Wildlife Branch, B.C. Ministry of Environment (See Session 2: Identifying Species at Risk - The Listing Process).

covenant: a promise; in real property law, a promise made by a landowner with respect to uses of the land limiting or prescribing the uses to which the land will be put (see Session 5: Habitat Protection for Species at Risk - Urban Areas).

critical habitat: habitat that is critical to the survival and recovery of a species (see Sessions 3 to 5: Habitat Protection).

endangered: a species facing imminent extirpation or extinction

extant: existing

extinct: a species that no longer exists.

extirpated: a species no longer existing in the wild in Canada, but occurring elsewhere.

Forest Practices Code/

the Code: the *Forest Practices Code of British Columbia Act*, R.S.B.C., c. 159 (see Session 4: Habitat Protection for Species at Risk - Forest Areas)

habitat: means the physical and biological setting or area in which an organism or population naturally occurs or formerly occurred and has the potential to be reintroduced (See Sessions 3 to 5 on Habitat Protection).

lepidotra: group of insects that includes butterflies and moths

listing: the process by which species at risk are classified according to identified for protection (see Session 2: Identifying Species at Risk - The Listing Process).

National Accord: the *National Accord for the Protection of Species at Risk* (see Session 1: Existing Legislative and Policy Framework for Species Protection).

rarity rank: internationally recognized ranking system used by the BC Conservation Data Centre to rank species at risk. Two levels of ranking involved - global and provincial (see Session 2: Identifying Species at Risk - The Listing Process).

recovery plan: plan outlining the measures to be adopted to ensure that the species in question recovers to viable, self-sustaining population levels (see Session 7: Recovery Plans).

RENEW: the Committee on the Recovery of Nationally Endangered Wildlife (see Session 7: Recovery Plans).

species: any indigenous species, subspecies, variety or geographically defined population of wild flora and fauna.

species at risk: species which are classified as extirpated, endangered, threatened or vulnerable.

threatened: a species likely to become endangered if limiting factors are not reversed.

vulnerable: a species of general concern because of characteristics that make it particularly sensitive to human activities or natural events.

Day 1 - Tuesday, June 24 1997

Session 1: Existing BC Legislative and Policy Framework for Species Protection

Key Questions:

> **Is the existing BC legislative and policy framework adequate to protect species at risk in the province?**
>
> **Do we need new and improved tools, including legislation, to**

ensure effective protection of BC species at risk?

National Overview - Legislative and Policy Framework

In October, 1996, Canada's federal and provincial/territorial wildlife ministers signed the *National Accord for the Protection of Species at Risk in Canada*, committing to a national approach for the protection of species at risk. The goal of the *National Accord* is "to prevent species at risk in Canada from becoming extinct as a consequence of human activity".

The *National Accord* specifically recognizes that:

- species do not recognize jurisdictional boundaries and cooperation is crucial to the conservation and protection of species at risk;
- the conservation of species at risk is a key component of the Canadian Biodiversity Strategy, which aims to conserve biological diversity in Canada;
- Governments have a leadership role in providing sound information and appropriate measures for the conservation and protection of species at risk, and the effective involvement of all Canadians is essential;
- species conservation initiatives will be met through complementary federal and provincial/territorial legislation, regulations, policies, and programs, and
- lack of full scientific certainty must not be used as a reason to delay measures to avoid or minimize threats to species at risk.

In signing the *National Accord*, the federal, provincial and territorial ministers responsible for wildlife specifically agree to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada, that will:

- address all non-domestic species;
- provide an independent process for assessing the status of species at risk;
- legally designate species as threatened or endangered;
- provide immediate legal protection for threatened or endangered species;
- provide protection for the habitat of threatened or endangered species;
- provide for the development of recovery plans within one year for endangered species and two years for threatened species that address the identified threats to the species and its habitat;
- ensure multi-jurisdictional cooperation for the protection of species that cross borders through the development and implementation of recovery plans;
- consider the needs of species at risk as part of environmental assessment processes;
- implement recovery plans in a timely fashion;
- monitor, assess and report regularly on the status of all wild species;

- emphasize preventative measures to keep species from becoming at risk;
- improve awareness of the needs of species at risk;
- encourage citizens to participate in conservation and protection actions; and
- provide for effective enforcement.

Four provinces in Canada currently have endangered species legislation - Manitoba, Quebec, Ontario and New Brunswick. The federal government introduced endangered species legislation last October (Bill C-65, the *Canada Endangered Species Protection Act*), but it died on the Order Paper when the federal election was called. The Liberal government committed to passing endangered species legislation if re-elected.

British Columbia Overview

BC Ministry of Environment's *State of Environment Reporting - Species at Risk in British Columbia* states that there are now 68 species of animals and 224 species of plants listed as threatened or endangered in BC. An additional 451 species are classified as vulnerable.

BC has no stand-alone endangered species legislation. The two key pieces of provincial legislation which address endangered species are the BC *Wildlife Act* and the *Forest Practices Code of British Columbia Act*. Since 1980, only four species have been "listed" (see Session 2 of this Background Paper) under the *Wildlife Act* (burrowing owl, sea otter, white pelican and the Vancouver Island marmot), and the Act has been used only once to protect critical habitat, for the Vancouver Island marmot.

The *Forest Practices Code of British Columbia Act* (the "*Code*") also has limited application to species at risk in the province. Although the *Code* does have some provisions addressing endangered species, wildlife and biodiversity, these provisions have still to be implemented two years after the *Code* came into force. Once implemented, these provisions will also be subject to the overall ceiling (for all provisions of the *Code*) of 6% impact on current rate of cut. In addition, there are additional impact ceilings for specific provisions (e.g. maximum impact of 1% on rate of cut as a result of protecting Identified Wildlife Species). Finally, the *Code* is designed to addresses *forestry* related impacts on biodiversity and species at risk. Threats from urban development, agriculture, hydro electricity and other activities unrelated to forestry are not covered under the *Code*.

The BC government has indicated it does not intend to introduce stand-alone provincial endangered species legislation at this time. Environment Minister Cathy McGregor has stated that existing provincial initiatives are adequate to protect species at risk, citing the Protected Areas Strategy, the *Wildlife Act*, the *Code*, the *Ecological Reserve Act* and the *Fish Protection Act*. The BC government has,

however, confirmed that it still supports the *National Accord for the Protection of Species at Risk*.[1]

SESSION 1 - NOTES:

Session 2: Identifying Species at Risk - The Listing Process

Key Questions:

> **Are existing federal and provincial listing processes adequate to protect species at risk in BC?**
>
> **If not, what new tools could be utilized to improve species protection?**

The Listing Process

Listing is the means by which species at risk are identified for protection. Listing is the cornerstone of endangered species protection - until species have been listed, they cannot be protected.

There are three main listing processes which identify species at risk in British Columbia:

> (i) the national list - *Canadian Species at Risk* - generated by the Committee on the Status of Endangered Wildlife in Canada ("COSEWIC");
>
> (ii) the provincial tracking lists for vertebrate animals, vascular plants and plant communities, generated by the BC Conservation Data Centre, Ministry of Environment, Lands & Parks; and
>
> (iii) the provincial Red and Blue lists, originally developed by the Wildlife Branch for vertebrates, and now used for fish, vascular plants and selected invertebrate and non-vascular plant groups.

Currently, there is no automatic legal protection for species at risk on either the COSEWIC list, the provincial tracking lists or the Red and Blue lists. Listing in and of itself does not, therefore, ensure protection.

COSEWIC

COSEWIC was formed in 1977 as the result of a recommendation of a Federal-Provincial Wildlife Conference. COSEWIC arose from the identified need for a single, official, scientifically sound national listing of wildlife species, subspecies and separate populations at risk in Canada. COSEWIC's mandate is to determine the status of each of these elements at the national level.[2]

COSEWIC is composed of representatives from each provincial and territorial government wildlife agency, four federal agencies (Canadian Museum of Nature, Canadian Parks Service, Canadian Wildlife Service, and Department of Fisheries and Oceans), and three national conservation organizations (Canadian Nature Federation, Canadian Wildlife Federation and World Wildlife Fund Canada).

In addition to the Committee representatives, there are also subcommittees to address five biological groups - birds, terrestrial mammals, fish and marine mammals, amphibians and reptiles, vascular plants, non-vascular plants (mosses and lichens), and invertebrates (molluscs and lepidotra). These subcommittees are responsible for obtaining "status reports" (the basis for determining the status of a candidate species), reviewing their quality and presenting them. Status reports may be provided by COSEWIC member jurisdictions or individuals, or may be commissioned by COSEWIC. All status determinations for species at risk are based

on these reports, which include a up to date description of species distribution, abundance and population trends.[3]

COSEWIC determines the national status of wild species, sub-species and separate populations in Canada and publishes its findings annually in a national list.[4] All native fish, amphibians, reptiles, plants and animals are included in the list. In 1994, COSEWIC's mandate was expanded to cover freshwater and marine molluscs and lepidotra (moths and butterflies). Three lists are maintained:

> (i) species with designated status i.e. extinct, extirpated, endangered, threatened or vulnerable;
>
> (ii) species examined and designated in the "not at risk" category; and
>
> (iii) species examined and designated in the indeterminate category because of insufficient scientific information.

The key COSEWIC terms and definitions are as follows:

Species: Any indigenous species, subspecies, variety or geographically defined population of wild fauna and flora.

Extinct: A species that no longer exists.

Extirpated: A species no longer existing in the wild in Canada, but occurring elsewhere.

Endangered: A species facing imminent extirpation or extinction.

Threatened: A species likely to become endangered if limiting factors are not reversed.

Vulnerable: A species of general concern because of characteristics that make it particularly sensitive to human activities or natural events.

Not at Risk: A species that has been evaluated and found to be not at risk.

Indeterminate: A species for which there is insufficient scientific information to support status designation.

The Provincial Lists

There are three provincial lists for species at risk:

> (i) the species designated as endangered or threatened under the BC *Wildlife Act*;

(ii) the BC Conservation Data Centre tracking lists; and

(iii) the Red and Blue lists.

As indicated earlier, since 1980 only four species have been designated as endangered under the BC *Wildlife Act*, and so this list will not be addressed further. The main lists of species at risk in BC are the BC Conservation Data Centre tracking lists and the Red and Blue lists. These two lists are outlined below.

Provincial Tracking Lists[5]

Species in BC are ranked on two levels - global and provincial. The global rank is based on the status of the species throughout its entire range. The provincial rank is based solely on the species' status in British Columbia. This double ranking system was developed by The Nature Conservancy and is recognized and used internationally. The method of determining a species' status or "rarity rank" is outlined in the box below.

Species at risk in BC are identified in the "provincial tracking lists". These lists are generated by the BC Conservation Data Centre ("CDC") in consultation with experts using the ranking system described above. This ranking system is somewhat different to that used by COSEWIC.

The provincial tracking lists include the species' scientific name, common name, global rarity rank, provincial rarity rank and provincial list status (i.e. red list, blue list, yellow list - see section below - Red and Blue lists).

Determining Rarity Ranking

A species' status or rarity rank is indicated on a scale of 1 to 5, with 1 indicating critically imperiled because of extreme rarity (five or fewer extant occurrences) and 5 indicating common to very common. The number designation is based primarily on the number of extant (existing) occurrences of the species, but with consideration of other factors such as abundance, range, protection and threats. (An "occurrence" is more than just a sighting - there needs to be evidence of reproduction and an environment conducive to the species' continued survival). Generally speaking, only species ranked 1 to 3 are "tracked" - that is, breeding occurrences and, in some cases, non-breeding concentrations are mapped and the data assembled in a relational/GIS database.

Red and Blue Lists

The provincial Red and Blue lists were originally developed by the BC Wildlife Branch for vertebrate species. However, the Red and Blue lists are now also used for fish, vascular plants and selected invertebrate and non-vascular plant groups.

The Red and Blue lists are derived from CDC rarity ranks. In general, species ranked 1 or 2 on the provincial tracking lists are placed on the Red list, and species ranked 3 are placed on the Blue list. In contrast to the provincial tracking lists, however, the Red and Blue lists do not include species that do not breed in B.C..

The Red and Blue lists have certain other functions as well. Under the *Forest Practices Code of British Columbia Act*, Operational Planning Regulations use the Red and Blue lists in the development of the "Identified Wildlife" list. The Red list also provides a list of species suitable for more formal designation as Extirpated, Endangered or Threatened, either provincially under the BC *Wildlife Act*, or nationally by COSEWIC.

The categories used for the Red and Blue lists are as follows:

Red List:	Includes any indigenous species or subspecies (taxa) considered to be Extirpated, Endangered or Threatened in B.C.. Extirpated taxa no longer occur in the wild in BC, but do occur elsewhere. Endangered taxa are facing imminent extirpation or extinction. Threatened taxa are likely to become endangered if limiting factors are not reversed. Red-listed taxa include those who have been, or are being, evaluated for these designations.
Blue List:	Includes any indigenous species or subspecies (taxa) considered to be Vulnerable in B.C.. Vulnerable taxa are of special concern because of characteristics that make them particularly sensitive to human activities or natural events. Blue-listed taxa are at risk, but are not Extirpated, Endangered or Threatened.
Yellow List:	Any indigenous species or subspecies (taxa) which is not at risk in B.C.. Some yellow listed species are tracked which are vulnerable during times of seasonal concentration (e.g. breeding colonies).
Excluded Taxa:	Marine reptiles and marine mammals are not within the Ministry of Environment's mandate, but the CDC does track rare taxa in these groups. They are assigned global and provincial rarity ranks, and their list status

appears in CDC reports as "N/A" (not applicable).

SESSION 2 - NOTES:

Habitat Protection Overview for Sessions 3 to 5

Sessions 3 to 5 address the issue of habitat protection. Each session focuses on a habitat protection in a key area - session 3 (agricultural and ranching areas), session 4 (forest areas) and session 5 (urban areas). In each session, the key issues to be explored are:

- should habitat protection be an integral element of protection for species at risk in B.C.?
- are existing tools and mechanisms for habitat protection adequate to protect species at risk in B.C.?
- if not, what new tools could be utilized to ensure adequate habitat protection?

This section of the Background Paper provides a brief overview of the importance of habitat protection and the current level of habitat protection in the province.

The Importance of Habitat Protection for Protection of Species at Risk

There has been a continued deterioration in the status of endangered species and their habitats across the country over the past ten years.[6] Habitat loss has been identified as the major factor in species decline across the country, and is the single most important factor affecting species loss in BC.[7]

"Habitat" is the physical and biological setting in which organisms live and in which the other components of the environment are encountered. There is "no disagreement in the ecological literature about one fundamental relationship: sufficient loss of habitat will lead to species extinction."[8]

"Critical habitat" is the minimum amount of habitat that is essential to the continued survival and recovery of a species. Without preservation of this habitat, the species will decline, and if no steps are taken to help the species recover, it will go extinct. Protection of critical habitat is, therefore, a minimum requirement for effective protection of species at risk.

A 1996 provincial report identified the main threats to species at risk in British Columbia, in order of priority, as:

1. urban/agricultural development

2. logging

3. livestock grazing

4. environmental contamination

5. human disturbance

6. poaching and accidental catches

7. random events, and

8. alien introductions.[9]

The top five threats all relate to habitat damage or destruction.

The 1996 report also identified the eco-provinces with the largest number of species at risk as some of the most populated parts of the province, areas such as the Georgia Depression and the Southern Interior (Okanagan and Thompson regions).[10]

These areas both contain biologically diverse valley bottoms which are attractive areas for human settlement.

Current Level of Habitat Protection in B.C.

The amount of land currently protected in the province specifically for wildlife habitat is less than .010% of the total land base. The protected habitat areas consist of:

- seven Migratory Bird Sanctuaries (federal), amounting to .003% of the provincial land base;
- five National Wildlife Areas (federal), amounting to .002% of the provincial land base
- one Ramsar site (federal), statistically insignificant portion of the provincial land base
- thirteen Wildlife Management Areas (provincial), amounting to 0.028% of the province's area.[11]
- coastal and marine protected areas, amounting to less than 1% of B.C.'s coastal areas.[12]

The BC government's Protected Areas Strategy is intended to be the primary tool for conserving habitat. One of the Strategy's goals is to preserve a target amount of 12% of the area of each of B.C.'s biogeoclimatic zones. Alpine and sub-alpine areas have high representation levels in the protected areas system. However, many of the major ecosystem types of B.C. remain under-represented, and significant gaps remain in the protected areas system, particularly in the southern Interior, central and south coasts, and north-central and north-east portions of the province.[13]

The B.C. *Park Act* is the primary legal mechanism used to establish protected areas. However, parks are neither chosen on the basis of their importance as habitat for species at risk, nor is protection of habitat the primary management consideration in provincial parks.

Protected areas can also be legally designated in B.C. under the *Ecological Reserve Act*.[14] Reserves are found in all of B.C.'s 14 biogeoclimactic zones. Reserves have been established for important and threatened plant and tree species such as wildflower stands, stands of Douglas fir, Ponderosa pine and Engelmann spruce as well as Garry oaks and Arbutus. Seabird colonies have been protected in 20 ecological reserves. Other wildlife protected in reserves include eagles, falcons, sandhill cranes and killer whales. The average size of an ecological reserve is 1,212 hectares, though reserves range in size from 0.6 to 48,560 hectares.[15] Larger areas are often required to preserve viable populations of rare species.

There are a number of other programs within the province that include some form of habitat protection for species at risk, such as the Grizzly Bear Strategy, the Biodiversity Strategy, the B.C. Heritage River System, and the Western Hemisphere

Shorebird Network Program.

Session 3: Habitat Protection for Species at Risk - Agricultural and Ranching Areas

Key Questions:

> ***Should habitat protection be an integral element of protection for species at risk in B.C. ?***
>
> ***Are existing tools and mechanisms for habitat protection adequate to protect species at risk in agricultural/ranching areas in B.C.?***
>
> ***If not, what new tools could be utilized to ensure adequate habitat protection in agricultural/ranching areas?***

Extent of Agricultural Land in B.C.

Agricultural land in BC is located within the Agricultural Land Reserve (ALR), which was established by legislation to preserve agricultural land and open space, and to encourage development of the agricultural industry.[16]

The ALR constitutes about 5% of the province's land base, with approximately 4.7 million hectares of both private and Crown land in the ALR. Most of the ALR was designated in 1974, and 1975-1976.[17] Although the amount of land in the ALR has fluctuated, overall there has been a "net decrease" of about 0.2% from the original amount of land designated to the ALR.[18]

Of this agricultural land, farm holdings cover 2.4 million hectares. An additional 1.27 million hectares are used for pasture or grazing.[19]

Extent of Rangeland in B.C.

There are approximately 9.9 million hectares of rangeland in British Columbia which provide spring, fall and summer forage to mainly cow/calf and yearling operations.[20] The range resource is used by livestock (primarily cattle) and wildlife for forage and cover. The majority of the rangeland in BC is Crown range administered by the Ministry of Forests.

The most extensively used BC rangelands include the dry fir and larch forests, forest lands in transition to rangeland, open range and lodgepole pine forests. All of these are primarily located throughout the south and central interior of the province.[21] The potential for the province's Crown rangeland to support an increased level of grazing use is not known, but it is generally acknowledged that the carrying capacity

of Crown range is approaching the maximum limit in the southern part of the province.[22]

Impact of Agricultural/Ranching Activities on Species at Risk

Valuable wildlife habitat is often found on agricultural or ranch land. This is particularly the case in the Central Interior/Southern Okanagan grasslands area of B.C., which have high numbers of species listed at risk on BC's provincial tracking lists.[23] Examples of these species include the Burrowing Owl, the Tiger Salamander, the Short Horned Lizard, the Sage Grouse, the Pallid bat and the Sage Thrasher. Grasslands are under-represented in the protected areas system, as less than 1% of the province's grasslands are designated as some form of a protected area.[24]

The impact of agriculture on the environment can be substantial. As the 1991 *State of Canada's Environment Report* stated:

Of all human activities, agriculture has probably had the greatest effect, directly and indirectly, on wildlife. By clearing forests, replacing natural vegetation with crops, draining wetlands, and destabilizing natural biochemical balances by the use of chemical fertilizers, insecticides and herbicides, agriculture has been responsible for dramatic reductions in numbers and range of some species and the introduction of other species into new areas.[25]

A joint federal-provincial committee on environmental sustainability in agriculture listed soil degradation and stream sedimentation; wildlife habitat conservation; contamination of surface and ground water by agricultural by-products, pesticides and nutrients from fertilizers and manure as the largest environmental problems associated with farming in British Columbia.[26] In regard to pesticides, the use of pesticides in B.C. continues to increase, both in relation to the overall quantities used and the amount of agricultural land that is treated with pesticides.[27]

Livestock grazing and range improvement also have adverse impacts. Grazing may have less impact than range improvement on habitat in the longer term, but may result in loss of current suitability for species habitat, especially in areas of cattle concentration. The impacts of range improvement vary depending on the activity. Range burning to remove sagebrush affects species that require shrubs for cover or food, and some species, like the Sage Thrasher, specifically depend on sagebrush for nest sites. Use of herbicides for range improvement can also affect non-target plant and animal species.[28]

The impact of human settlement on species in the Okanagan area has been quite marked. Since European settlement, four vertebrate species have been extirpated : the Sage Grouse, the Sharp-tailed Grouse, the Burrowing Owl and the White-tailed Jackrabbit. In addition, the Short Horned Lizard may also be extirpated, since it has not been positively identified in B.C. since 1898. Population trends for species such as the Tiger Salamander, Sage Thrasher and Peregrine Falcon are also regarded as

"not good".[29]

Species decline in the Central Interior and Southern Okanagan have been attributed to a number of factors. Habitat loss has been considerable through extensive conversion of grasslands to agriculture and residential development.[30] Intensive agriculture, such as cultivation for crops and tree fruits, changes the suitability of the land to support certain plants and animals. Furthermore, insecticides and mowing may also directly kill many native species.[31]

Other related threats to habitat that occur in agricultural and ranching areas include:

- river channelling/irrigation and flood control, which can greatly reduce wetland and riparian habitat
- introduction of exotic species
- public attitudes - some species should be killed on sight (rattlesnakes, scorpions); other species are unappealing or attractive (bats, snakes, lizards, toads, lower plants) and therefore receive less attention and protection.[32]

Existing Tools for Habitat Protection

There are a number of laws, programs and policies on pollutants, land use, and farming and grazing practices that affect habitat in the province's agricultural and ranching areas.

The main laws are the *Agricultural Land Commission Act* which applies to agricultural land, and the *Range Act, Land Act* and the *Forest Practices Code of British Columbia Act,* (the "*Code*") which apply to rangeland. Except for the *Code*, these laws do not concern wildlife or habitat protection, and as the discussion of the *Code* in Session 4 shows, the key mechanisms for wildlife protection under the *Code* have not yet been implemented.

A variety of financial subsidies are available to agricultural producers from the federal and provincial governments including income, revenue and crop insurance programs; tax breaks; price stabilization programs; subsidizing the cost of farming practices, capital improvements or management plans; and grants for taking land out of or not putting land into production.[33]

The *Pesticide Control Act* is the provincial law controlling pesticide use. Pesticide safety and registration is regulated by the federal government.

The provincial *Waste Management Act* includes an Agricultural Waste Control Regulation, governing the storage and spreading of manure, disposal of dead animals, exhaust from building ventilation systems and the proximity of agricultural operations and livestock feeding areas to watercourses. There are also regulations under the federal *Fisheries Act* which control pollutants from different agricultural

sectors, such as meat and poultry product plants, and potato processing plants.[34]

Programs such as the Interior Wetlands Program, the Waterfowl Management Program, and the Delta Farm and Wildlife Trust also contribute to habitat protection in agricultural and ranching areas.

SESSION 3 - NOTES:

Session 4: Habitat Protection for Species at Risk - Forest Areas

Key Questions:

> ***Should habitat protection be an integral element of protection for species at risk in B.C.?***
>
> ***Are existing tools and mechanisms for habitat protection***

adequate to protect species at risk in forest areas in B.C.?

If not, what new tools could be utilized to ensure adequate habitat protection in forest areas?

Extent of Forest Land in B.C.

Approximately 86.7% of the province is in a timber supply area or under a tree farm licence or other form of tenure such as a woodlot licence.[35] As a result, the Ministry of Forests has the primary responsibility for the management of most provincial Crown land. The Ministry of Forests also controls all grazing leases in the province. The laws regulating forests are therefore an integral part of the legal framework for endangered species protection because such a large proportion of B.C.'s wildlife habitat occurs on forested land.

Impact of Forestry Activities on Species at Risk

Forest fragmentation has been recognized as a serious problem for animal and plant populations. Breaking up large habitat areas into smaller islands can reduce the probability of individual species survival - by actual destruction of habitat, increasing microclimatic and edge effects as the size of forest patches is reduced, and through the increasing isolation of the remaining forest patches, thereby imposing barriers to gene flow and dispersal.[36] Bird populations are vulnerable to the impacts of forest fragmentation that logging can cause. Intensive forestry also negatively affect invertebrates.[37]

Many species at risk are affected by logging, such as the endangered Vancouver Island marmot, the grizzly bear, the Pacific giant salamander, and the Queen Charlotte goshawk. Red-listed species relying on old growth forest habitat include: long-eared Keene's myotis bat, the marbled murrelet, the sharp-tailed snake, the spotted owl, and ancient murrelet. Blue-listed species include: Bald Eagle, caribou, Cassin's Auklet, fisher, flammulated owl, fork-tailed storm petrel, Great Blue Heron, Rhinocerous Auklet, White-Headed Woodpecker and Williamson's sapsucker.[38] The multi-stakeholder cooperative venture "Mountain Caribou in Managed Forests" has found that clearcutting in critical caribou habitat regions will not allow the long term survival of caribou (a vulnerable species on the provincial Blue List) and is now developing a provincial strategy for caribou habitat management.[39]

Existing Tools for Habitat Protection

The *Forest Practices Code of British Columbia Act* (the "*Code*") regulates forest practices in BC. The *Code* is supplemented by a number of Guidebooks which describe procedures, practices and results that are consistent with the legislated requirements of the *Code*. The recommendations in the Guidebooks are not mandatory. The three Guidebooks of most relevance for biodiversity protection on forest land in B.C. are: *Biodiversity Guidebook* (September 1995); *Riparian*

Management Area Guidebook (December 1995) and *Managing Identified Wildlife Guidebook,* (not yet released). Together, these three Guidebooks are intended to address the majority of biodiversity concerns on forested land in the province.

The *Code* and associated Guidebooks contain five key mechanisms to protect endangered species, wildlife and biodiversity:[40]

1. *Landscape Units* - Landscape Units provide the key mechanism in the *Code* for protecting biodiversity and operate at the broad landscape or watershed level. In theory, Landscape Units are designed to ensure that a variety of different habitat types are protected and connected (through wildlife movement corridors) so that healthy populations of native species are maintained throughout their historic range. A District Manager, Ministry of Forests has the discretion to make this decision - there is no legal obligation to establish Landscape Units. If designated, the Units must be assigned a rating of either high, intermediate or low biodiversity emphasis, which determines the minimum percentage of mature and old growth forest that must remain unlogged. Limits have been set by the government on how much land in each Landscape Unit can receive each rating - only 10% of each Unit may be given a high biodiversity emphasis. Furthermore, the impact of Landscape Units is set at a maximum of 2.3% of the current rate of cut. To date, no Landscape Units have been designated, and low biodiversity emphasis is the "default position".

2. *Old-Growth Management Areas* - The *Code* provides for designation of Old Growth Management Areas intended to maintain or re-create old growth habitat conditions, in which clear cutting is generally prohibited. To date, no such Areas have been designated.

3. *Identified Wildlife Species* - The *Code* provides for the designation of "Identified Wildlife Species", which are endangered, threatened, vulnerable or sensitive wildlife species. Once a species has been designated, general wildlife measures are to be developed to maintain the habitat of those species. Logging companies are required, as part of the planning process, to identify objectives for the management of Identified Wildlife, and to protect or minimize any negative impacts on Identified Wildlife. However, there is a ceiling of maximum impact of 1% on provincial rate of cut as a result of protecting Identified Wildlife Species. As at the date of this Background Paper, no species have been designated as Identified Wildlife.

4. *Wildlife Habitat Areas* - The *Code* also provides for the designation of "Wildlife Habitat Areas" to protect the habitat of Identified Wildlife Species. These Areas must be shown in logging plans, but do are not subject to other restrictions. To date, no Wildlife Habitat Areas have been designated under the *Code*.

5. *Sensitive Areas* - The *Code* requires District Managers to designate "Sensitive Areas" where special circumstances require different treatment in order to manage or conserve forest resources. Sensitive Areas are designed to provide protection for areas with unique or special environmental attributes. However, Sensitive Areas are restricted to a maximum of 1000 hectares. To date, one Sensitive Area has been

designated under the *Code*.

SESSION 4 - NOTES:

DAY TWO - JUNE 25 1997

Session 5: Habitat Protection for Species at Risk - Urban/Private Land Areas

Key Questions:

> ***Should habitat protection be an integral element of protection for species at risk in B.C.?***
>
> ***Are existing tools and mechanisms for habitat protection***

adequate to protect species at risk in urban areas?

If not, what new tools could be utilized to ensure adequate habitat protection in urban areas?

Extent of Urban/Private Land in B.C.

Approximately 5.3% of the province's land area is privately owned.[41] There are no exact figures for the amount of settlement land (land developed for residential, commercial and industrial uses) in the provincial land base, but it is estimated that urban and rural settlement lands amount for approximately half of the 5.3% of private land in the province.[42] About 80% of the province's population lives in urban areas.[43]

Impact of Urbanization on Species at Risk

Habitat is altered and damaged in urban areas in a number of ways. An average of 20-30% of the land surface in urban areas is paved and much of the remainder is covered by buildings. Native plant and animal species are often replaced with exotic or alien species.[44] Habitat can also be destroyed through urban sprawl, land clearing and pollution. Urban streams and riparian areas are frequently culverted, buried underground and stripped of streamside vegetation.

The province's two largest urban areas, the Greater Vancouver Regional District and the Capital Regional District, both contain a number of rare plants and other species at risk.[45] These and other urban areas in the province have experienced loss and alteration of habitats with consequent reductions in biodiversity. The rare Garry Oak ecosystem has been substanially reduced through development. Wetlands have been drained, filled and altered by residential and industrial development. Almost all the first growth forest has been removed from B.C.'s urban centres. The consequence of all these developments has been great alterations in native wildlife habitat.[46]

Habitat for species at risk in urban or semi-urban areas is often found on privately owned land. A combination of "carrots" (positive incentives) and "sticks" (prohibitions and other command and control regulations) may provide the most comprehensive protection for endangered species in urban areas.

Existing Tools for Habitat Protection

There are a number of tools which can be used to protect habitat on private land, including:

Conservation Covenants under the Land Title Act

Section 215 of the *Land Title Act* authorizes the creation of a conservation covenant,

a legal tool used to conserve private land or a particular feature of the land. This type of covenant is a voluntary agreement between a private landowner and the Crown or Crown corporation or agency, municipality or regional district or a local trust committee under the *Islands Trust Act*. The agreement is registered against title to the affected land; the burden of the covenant runs with title to the land and; therefore, binds the successors in title to it. Municipal governments have made use of section 215 covenants to protect fish habitat on privately owned land, although the results have been somewhat mixed, due to lack of enforcement and lack of local resident knowledge of the conditions attached to the covenant.[47] Conservation covenants can now be granted to qualified conservation organizations to protect private land in British Columbia, which increases the potential for this legal tool to be more effective in the future in protecting private land.

Acquiring Land and Creating Wildlife Management Areas under the Wildlife Act

Section 3 of the *Wildlife Act* gives the Ministry of Environment, Lands and Parks the power to:(a) acquire and administer land, improvements on land and timber, timber rights and other rights on private land; and (b) enter into and carry out an agreement with a person, association or other body. Each year, under this authority, the Ministry purchases land for wildlife protection, often with other agencies, such as the Canadian Wildlife Service, a municipality, or a non-governmental organization such as the Nature Trust of BC, Nature Conservancy of Canada or Ducks Unlimited Canada. The *Wildlife Act* also gives the Minister the authority to designate land under his or her control as a Wildlife Management Area (WMA). These powers have been used to protect wildlife residing in wetlands, primarily migratory birds. For example, the South Arm Marshes WMA protects several small islands in the mouth of the Fraser Estuary which are valuable habitat for Canada's largest assemblage of migratory birds. The province currently has designated twelve WMAs, totalling 0.021 per cent of the province's land base.

Using Municipal Act Powers for Preservation of Habitat

Local government decisions about planning, zoning, park and land acquisition, bylaws, and environmentally sensitive areas all have a major impact on habitat protection. The *Municipal Act* gives municipalities a number of different powers which can be used to achieve environmental objectives, such as protecting habitat. Some examples are: a municipality may adopt an Official Community Plan (OCP) which may use designations such as Conservation and Open Space to protect habitat , or use any of the following:

- Density Bonus Zones which allow developers to increase density on all or part of the site in exchange for provision of an amenity;
- Comprehensive Development Areas which enable local governments to negotiate complex multi-use sites and to develop customized zoning regulations;

- Development Permit Areas which may be designated in areas for protection of the natural environment;
- zoning powers to impose buffer zones around habitat, and to regulate permitted uses near habitat and other environmentally sensitive areas; and,
- bylaws regulating tree cutting, flood prevention, drainage, watercourses and soil removal.

Using Growth Management Legislation for the Purpose of Preserving Habitat

Provincial growth management legislation has been introduced to begin to deal with the increasing pressure of urbanization in the province's major cities. Potential benefits of the *Growth Strategies Act* include providing regional districts with the authority to adopt regional growth strategies, establishing mechanisms for co-ordination between municipalities and regional districts on issues crossing municipal boundaries, and establishing tools for co-ordinating local and provincial government actions for implementing a regional growth strategy. The *Act*, which amends the *Municipal Act,* states that the purpose of a regional growth strategy is to "promote human settlement that is socially, economically and environmentally healthy and that makes efficient use of public facilities and services, land and other resources.[48] Potential drawbacks of the *Act* are that it does not set any overall provincial objectives or targets that must be met in the regional growth planning process, nor does it require even the fastest growing regions to embark on the process.[49]

Using the Powers of the Fish Protection Act

This new Bill, now before the legislature, includes a number of provisions which could facilitate protection and enhancement of fish habitat. These provisions include: the prohibition on new dams on protected rivers (s.4); the power to designate sensitive streams and prepare recovery plans for these streams (s.6 and 7); the power to designate water management areas and prepare water management plans for these areas (s.22.1 of the *Water Act*) ;and the ability for community or conservation groups to take out a streamflow protection licence to protect the amount of flow of water in a particular stream or river (s.8). Other parts of the bill also provide powers to protect habitat.

However, consideration of the needs of fish and fish habitat when making decisions, such as issuing water licences under the *Water Act* will still be discretionary, rather than mandatory (s.5) The Act will give the government the power to establish "policy directives" for riparian area protection, to be developed for each local government, but it is not clear whether these directives will be legally enforceable.

The *Fish Protection Act* also amends the *Wildlife Act*, s.25 - 35. These changes give the government the power to designate fish, aquatic invertebrates and aquatic plants as endangered and threatened species. In theory this is a positive

development, especially considering that a recent survey of the status of anadromous salmon stocks from streams in B.C. and the Yukon found that 140 salmon runs were extinct and another 624 were at high risk of extinction.[50] But in practice, this change will not make a difference in improved fish protection unless these species are actually designated under the *Wildlife Act*. As mentioned earlier, since 1980, only four species of wildlife have been listed under the *Wildlife Act* as endangered.

Incentives for Habitat Conservation

Several laws provide economic incentives for habitat conservation. The federal *Income Tax Act* has been amended to encourage donations of ecologically sensitive land. The provincial *Assessment Act* requires assessors to consider the existence of conservation covenants when determining the actual value of the land. Recent amendments to the *Municipal Act* also include incentives for conservation. There is growing interest in the topic of incentives for habitat conservation.

SESSION 5 - NOTES:

Session 6: Transboundary Species

Key Questions:

> ***Which levels of government should be responsible for inter-provincial and international transboundary species?***
>
> ***Are existing measures adequate to protect transboundary species?***
>
> ***If not, what new tools are required to ensure effective protection for transboundary species?***

Jurisdictional Issues

Protection of transboundary species, both inter-provincial and international, raises jurisdictional questions. Both Professor Dale Gibson, (a Canadian constitutional law expert) and the Canadian Bar Association (June 4, 1996 letter to Hon. Allan Rock) agree that the federal government has jurisdictional authority to protect inter-provincial and international transboundary species. However, since the provinces have jurisdiction over endangered species within their territory, overlap exists between the federal and provincial powers for transboundary species.

The *National Accord for the Protection of Species at Risk* recognizes this shared responsibility for transboundary species by advocating a national approach for the protection of species at risk, with specific recognition that "species do not recognize jurisdictional boundaries and cooperation is crucial to the conservation and protection of species at risk".

Currently, however, aside from the *National Accord*, there is no specific legal framework in place between the BC government and the federal government for protection of transboundary species at risk. The federal endangered species legislation proposed by the Liberal government before the election (Bill C-65, the *Canada Endangered Species Protection Act*) did contain a provision addressing protection of international transboundary species. Pursuant to section 33, listed international transboundary animal species received automatic legal protection *unless* the province had an equivalent provision protecting such species, and had entered into an agreement with the federal government that the provincial provision would apply in place of the federal provision.

The BC government objected to the inclusion of the transboundary provision in Bill C-65 on the grounds that it constituted an unwarranted intrusion into provincial jurisdiction.[51] The issue remained unresolved between the federal and BC governments prior to the election.

SESSION 6 - NOTES:

Session 7: Recovery Plans

Key Questions:

> ***Is the existing framework/approach to recovery plans adequate to protect species at risk and promote species recovery?***
>
> ***If not, what tools/measures should be adopted to improve recovery plans?***

Role of Recovery Plans

The ultimate goal of endangered species protection, and especially endangered species legislation, is to allow species to recover to viable, self-sustaining population

levels. Prohibiting direct harm to the species and protecting its critical habitat are two key steps on the road to recovery, but other steps are also needed, including:

- monitoring species populations;
- purchasing additional habitat;
- manipulating habitat to make it more suitable for the species in question;
- reintroducing the species into formerly inhabited areas,
- captive breeding (in some cases).

Responsibility for Preparation of Recovery Plans

At present, recovery plans in Canada are prepared through RENEW (the committee on the Recovery of Nationally Endangered Wildlife). The RENEW committee consists of provincial and territorial wildlife directors, and representatives from the Canadian Nature Federation, the Canadian Wildlife Federation, and the World Wildlife Fund (Canada). Recovery teams, made up of representatives and experts from a wide variety of organizations, work to ensure the survival of endangered species across Canada. Currently, RENEW's mandate focuses primarily on the protection and recovery of terrestrial invertebrates (including mammals, birds, reptiles and amphibians). However, its mandate may expand in the near future to include other biota, such as plants, fish, marine mammals, and insects.[52]

RENEW's mandate has the following national objectives:

- no endangered species in Canada will be allowed to become extirpated or extinct;
- no new species will be allowed to become threatened or uplisted to endangered;
- when and where possible, extirpated species will be reintroduced to Canada;
- recovery plans will be prepared for all threatened and endangered species;
- recovery programs will be initiated, where feasible, to work towards removing species from threatened, endangered, or extirpated status.

Current Legal Status of Recovery Plans

Recovery plans prepared through RENEW currently have no legislated goals, have no legal force, and rely primarily on voluntary efforts for their development and implementation. Bill C-65, the *Canada Endangered Species Protection Act*, proposed that recovery plans be implemented by regulation.

Current Extent of Recovery Plans

The latest RENEW report states that 17 recovery plans have been approved to date, and there are 35 active recovery teams at present.[53] Recovery plans have therefore

not been prepared for the vast majority of species at risk in Canada.

Bill C-65 proposed that recovery plans be developed within one year after listing for endangered species, and two years after listing for threatened species. In addition to recovery plans for threatened and endangered species, Bill C-65 also proposed that management plans be prepared for vulnerable species, consistent with a preventative approach to species protection.

SESSION 7 - NOTES:

Session 8: A Multi-Stakeholders' Process for Improving Protection of Species at Risk?

Key Questions:

Is the existing legislative and policy framework in BC adequate

to protect species at risk?

Is there a need for new and improved tools, including legislation, to protect species at risk in B.C.?

Is there a need for a multi-stakeholder process to improve tools for the protection of species at risk in B.C.?

What form should this process take and who will be involved?

Task Force on Federal Endangered Species Legislation - A Potential Model for BC?

Introduction

Session 8 of the workshop will review the need and commitment for a multi-stakeholder process to improve tools for the protection of species at risk in British Columbia. To assist in promoting discussion on the type of process which could be used, the Task Force on Federal Endangered Species Conservation will be presented as a potential model for British Columbia.

Role of the Federal Task Force

The Task Force on Federal Endangered Species Conservation (the "Task Force") was established by the Honourable Sheila Copps, former Environment Minister, in the spring of 1995. The stated function of the Task Force was "to assist in the development of concepts for the federal component of a national approach to endangered species conservation".[54] A copy of the Terms of Reference for the Task Force is set out in the box below.

Task Force Composition

The members of the Task Force were: Animal Alliance of Canada, Canadian Association of Petroleum Producers, Canadian Federation of Agriculture, Canadian Pulp and Paper Association, Canadian Wildlife Federation, Fisheries Council of Canada, ICUN, Island Nature Trust, Mining Association of Canada, National Agriculture Environment Committee, Sierra Legal Defence Fund, Trailhead, University of Alberta and University of Laval.

Task Force Findings and Reports

The Task Force produced two reports and a separate document addressing associated aspects of a federal endangered species program which did not need to be addressed by legislation. Each of these three documents is considered below.

First Task Force Report

The first report of the Task Force was submitted on May 31, 1995, with terms of reference (see below) and initial list of members. The report covered the period from the Task Force's first meeting on April 11-12, 1995 to May 31, 1995. During this period, the Task Force held four two day meetings, and its members participated in 14 public consultations across Canada. The Task Force also had discussions with a representative of the U.S. Fish and Wildlife Service on the United States' experience with endangered species legislation.

The first report addressed three key areas:

> (i) the principles underlying endangered species conservation;
>
> (ii) the essential elements of federal legislation, which was considered to be a necessary part of the strategy; and
>
> (iii) supporting federal activities, including support for education and the dissemination of information, the use of incentives and other economic instruments, and the provision of funding.

A key concern emphasized in the first report was that insufficient time was allowed for Task Force members to complete their work and to prepare a report acceptable to all members. It was noted that on some issues where consensus could not be reached, clarification and agreement might have been reached if further time had been available. Several Task Force members also indicated that insufficient time was provided for effective consultation with the interest groups that the members represented.

Second Task Force Report

The second Task Force report was submitted a year later in May, 1996. Following the submission of the first report, the Task Force met on five occasions from October, 1995 to May, 1996, and had several conference calls. Meetings were also held with representatives of federal departments and the subcommittee responsible for drafting the *National Approach to Endangered Species Conservation*. In addition, Task Force members attended a National Workshop on endangered species in December. These meetings took place in context of Environment Canada's document, *The Canadian Endangered Species Act - a Legislative Proposal*.

The second report outlined what the Task Force perceived to be the key elements of a legislative proposal. The report contained wording which could be used as the basis for instructions for legal drafters and also contained notes which embodied the agreements and areas where consensus could not be reached among the Task Force members.

Supporting Elements of a Federal Endangered Species Program

In addition to the two reports, the Task Force produced a separate document - *Supporting Elements of a Federal Endangered Species Program*. This document outlined the associated aspects of a federal endangered species program that the Task Force felt did not need to be detailed in new legislation (e.g., education, incentives and funding). The Task Force indicated it did not make as much progress on these issues as it would have liked, but sought to "stress the importance of these aspects for a coordinated and effective endangered species program in Canada".

Success of Task Force

Despite differences in approach on certain issues (as highlighted in the two Task Force reports), the federal Task Force appears to have been viewed by its members as a productive and worthwhile process. In the preface to the second report it was noted:

The Task Force was privileged to have worked together in a fine spirit of cooperation, camaraderie and open and honest discussion. The points of agreement reflect the high level of cooperation among the members. Also, the way in which those areas where agreement could not be reached are recorded to reflect the respect and understanding amongst the various groups and opinions are represented in a fair manner.[55]

TERMS OF REFERENCE

Task Force for Deputy Prime Minister

and Minister of the Environment

on federal endangered species conservation [56]

1. The members of the task force are requested to assist in the development of concepts for the Deputy Prime Minister and Minister of the Environment concerning the federal component of the national framework.

2. Without otherwise restricting the freedom of the task force, its members are requested to monitor and analyze input from participants in the public consultation workshops to take place in April and May in at least 12 locations across Canada. To this end, it is anticipated that one member of the task force will, if possible, be present at each consultation session. Members of the task force will be provided with a summary of each meeting, copies of any written submissions received and reports of other stakeholder comments. Members of the task force will also be invited to take part in a national-level public consultation workshop to be held in mid-May in Ottawa.

3. The members of the task force are asked to discuss among themselves the concepts to be included in the federal component of the national framework,

including possible legislation, and to present their concepts in a final report to the Minister not later than May 31, 1995. Members who do not agree with any part of the report may indicate areas of disagreement or alternate views. The members of the task force are also requested to provide advice on a public document describing a draft bill in plain English or French.

4. Administrative support will be provided by the Canadian Wildlife Service of Environment Canada, which will reimburse members for authorized travel and related expenses incurred while serving on the task force. There will be no per diem payment.

SESSION 8 - NOTES:

ENDNOTES

1. Interview with Cathy McGregor, in vol. 8 *British Columbia Environmental*

Report, no. 8, Spring 1997 at 9

2. Munro, W. T., "National Criteria for the Designation of Endangered and Threatened Species, Subspecies and Populations by COSEWIC", in Harding, L. (ed.), *Biodiversity in B.C. - Our Changing Environment*, Environment Canada, 1994, 23-25.

3. Ibid. at 214.

4. Information about COSEWIC and its listing process was obtained from: COSEWIC, *Canadian Species At Risk,* April 1997.

5. Information about the BC Conservation Data Centre and the Provincial Tracking Lists was obtained from BC Conservation Data Centre staff, as well as the BC Conservation Data Centre, *Provincial Tracking Lists for Vertebrate Animals, Vascular Plants and Plant Communities,* June 10, 1996.

6. *Saving Species: Building Habitat into Endangered Species Conservation in Canada*, (Wildlife Habitat Canada: Ottawa, 1995).

7. B.C. Ministry of Environment, Lands and Parks, *State of the Environment Report for British Columbia* (Victoria, 1993) at 55.

8. National Research Council, Committee on Scientific Issues in the Endangered Species Act, *Science and the Endangered Species Act*, National Academy Press, 1995, at 72.

9. B.C. Ministry of Environment, Lands and Parks, *Species at Risk in British Columbia*, Environmental Indicator Series, June 1996.

10. Ibid.

11. Morrison & Turner, "Protected Areas" in L. Harding, ed. *Biodiversity in B.C., supra* n. 2 at 360.

12. Richard Paisley, Regional Marines Issues Overview Paper - West Coast. Prepared for National Marine Conservation Strategy Program in the CARC/CNF *National Marine Conservation Strategy Program Vancouver Workshop*, Westwater Research Centre March 7-8, 1995 at 11.

13. B.C. Land Use Coordination Office, *A Protected Areas Strategy for British Columbia — Provincial Overview and Status Report*, April 1996, 74.

14. R.S.B.C. 1979, c.101.

15. *A Protected Areas Strategy for British Columbia — Overview and Status*

Report, supra n. 13 at 375.

16. Information regarding the ALR and percentage of agricultural land in B.C., including grazing land, has been obtained from: Ministry of Environment, Lands and Parks, *British Columbia Land Statistics 1996*, February 1996.

17. Ibid at 13.

18. Ibid at 14.

19. Ibid at 16.

20. Ibid at 25. "Rangelands" re defined as the lands suitable for grazing and browsing by livestock and wildlife and include natural grasslands, savannah, shrub land, some wet meadows, forests and lands vegetated naturally or artificially to provide a forage cover that is managed like native vegetation.

21. Ibid.

22. Ibid.

23. The Canadian Parks and Wilderness Society ("CPAWS") has identified 47 species at risk in BC's grasslands ecosytems: CPAWS, *Parks and Wilderness Quarterly*, Fall 1996 at 1. See also: Harper, Lea, Maxwell, "Biodiversity Inventory in the South Okanagan", in Fenger, Miller, Johnson & Williams, *Our Living Legacy-Proceedings of a Symposium on Biological Diversity*, Royal British Columbia Museum at 249-265, who note that species at risk in the South Okanagan include 12 mammals, 20 birds, 4 reptiles and 1 amphibian. In addition, 67 rare, threatened or endangered plant species are located in the South Okanagan.

24. Michael Pitt and Tracey Hooper, "Threats to Biodiversity of Grasslands in British Columbia", in L. Harding, ed. *Biodiversity in B.C., supra* n. 11 at 282.

25. Canada, *The State of Canada's Environment* (Ottawa: Supply and Services, 1991) at 6-6.

26. The Advisory Committee to the Accord on Environmental Sustainability in the Agri-Food Sector, *A Strategy: Towards Environmental Sustainability in the Agri-Food Sector in British Columbia*, 1993.

27. *1993 State of Environment Report, supra*, n. 7 at 64.

28. Harper, Lea & Maxwell, *supra* n. 23 at 257.

29. Ibid., at 256.

30. Scudder, G.E. "Threatened and Endangered Invertebrates of the South Okanagan" in Rautio, S. (ed.), *Community Action for Endangered Species: A Public Symposium on BC's Threatened and Endangered Species and Their Habitat*, September 28-29, 1991, citing (Nicholson et al, 1991).

31. Harper, Lea & Maxwell, supra n. 23 at 256-257.

32. Ibid.

33. Chris Rolfe, *Using Subsidies to Promote Environmental Protection in Agriculture*, (Vancouver: West Coast Environmental Law Research Foundation, 1993).

34. *Meat and Poultry Products Plant Liquid Effluent Regulations*, C.R.C. 1978, c. 818; *Potato Processing Plant Liquid Effluent Regulations*, C.R.C. 1978, c. 829.

35. B.C. Ministry of Forests, *1994 Forest, Range & Recreation Resource Analysis* at 38.

36. Ministry of Forests, *Forest Practices Code of BC. Act, Biodiversity Guidebook*, 1995, at 78.

37. Harding, L. "Threats to Diversity of Forest Ecosystems in British Columbia" in L. Harding, ed. *Biodiversity in B.C., supra* n. 2 at 264.

38. Ibid. at 254-255.

39. *1993 State of Environment Report, supra* n. 7 at 76. The venture was established in 1988 with wildlife groups, government agencies and the local forest industry. The goal of the program is to develop integrated solutions that allow both loggers and caribou to share the mountains.

40. The information in this section has been prepared with reference to the report by Sierra Legal Defence Fund, *Wildlife at Risk — The Lack of Protection for Endangered Species, Wildlife and Biodiversity under the BC Forest Practices Code* (April, 1997). Although the report focuses on the five mechanisms outlined above, consideration should also be given to a sixth tool under the *Code* — protection for riparian or stream-side areas. However, Sierra Legal Defence Fund's citizen audit of stream protection showed that despite these provisions, a high proportion of BC's streams in coastal old-growth are being cut right to the banks, and that logging companies are routinely failing to identify or correctly classify streams.

41. *BC Land Statistics, supra* n. 16 at 7.

42. Ibid at 47.

43. Ibid.

44. Valentin Schaefer, "Urban Biodiversity" in L. Harding, ed. *Biodiversity in B.C., supra* n. 2 at 307.

45. Ibid.

46. B.C. Round Table on the Environment and the Economy, *Georgia Basin Initiative: Creating a Sustainable Future*, May 1993 at 9-10.

47. Department of Fisheries and Oceans, *Protection of Aquatic and Riparian Habitat on Private Land — Evaluating the Effectiveness of Covenants in the City of Surrey*, 1995.

48. Section 942.12 (2) of the amended *Municipal Act* contains the minimum requirements for a growth strategy.

49. *Growth Strategies Act*, S.B.C. 1995, c. 9.

50. T.L. Slaney *et al*, "Status of Anadromous Salmon and Trout in British Columbia and Yukon," vol. 21, *Fisheries* , n. 10, October 1996, 20-35 at 24.

51. Interview with BC Environment Minister, the Hon. Cathy McGregor, *BC Environmental Report, supra* n. 1 at 9.

52. Information about the RENEW committee and its work was taken from *RENEW Report #6 : 1995-1996*, Minister of Public Works and Government Services Canada, 1996.

53. Ibid. at 4.

54. Task Force on Endangered Species Conservation, *Report of the Task Force on Federal Endangered Species Conservation*, Terms of Reference, Annex 1, May 1995 at 11.

55. Task Force on Federal Endangered Species Conservation, *Task Force on Federal Endangered Species Legislation — Second Report*, May 1996 at 1.

56. Task Force on Federal Endangered Species Conservation, *Report of the Task Force on Federal Endangered Species Conservation*, May 31, 1995, at 11.