

# Submission On Managing Wildlife To 2001:

## A Discussion Paper

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British Columbia has one of the most varied and magnificent wildlife populations in North America. Seventy per cent of all native Canadian fauna breed in British Columbia. Although provinces like Ontario and Quebec are larger than British Columbia, B.C. contains more diversity of species than either of those provinces. [(1) -- 1. . Fred L. Bunnell and Laurie Kremsater, "Sustaining Wildlife in Managed Forests", *The Northwest Environmental Journal* Volume 6, No. 2 Fall/Winter 1990, pp. 245-6.] B.C. has the greatest number of bird and animal species in any Canadian jurisdiction and the greatest number unique to a province. [(2) -- 2. . Bunnell, Fred L. and Williams, R., "Subspecies and Diversity -- The Spice of Life or the Prophet of Doom" in *Threatened and Endangered Species and Habitats in B.C. and the Yukon*, Richard Stace-Smith, L. Johns, and P. Joslin, eds. (Victoria: B.C. Ministry of Environment, 1980), p.257. B.C. contains 288 breeding bird species and 117 mammal species. There are 25 more breeding bird species and 36 more mammal species than in any other jurisdiction in Canada. When subspecies are included, there are 392 breeding bird and 286 mammal species in B.C., 101 birds and 156 mammals more than any other province.] B.C. also has the richest flora in Canada, with over 7,000 species of plants native to the province. British Columbia's varied wildlife population enriches the lives of people who live here, and is a key reason why many tourists chose to visit our province. Eighty-seven per cent of British Columbians believe that maintaining this wildlife is an important goal. [(3) -- 3. . British Columbia Wildlife Branch, *Managing Wildlife to 2001: A Discussion Paper*, (Victoria: B.C. Environment, 1991), p. 1. ]

However, in the coming decades British Columbia's population will grow dramatically, as will industry and development in the province. We have seen what dramatic population and development growth has done to wildlife populations in other parts of the world. We have seen how the grizzly bear, which used to roam the breadth of North America, has retreated to small pockets of hospitable habitat in B.C., Yellowstone Park and Alaska. We have seen the wolf extirpated from 95% of its habitat in the contiguous states of the U.S. [(4) -- 4. . Fred L. Bunnell and Laurie Kremsater, "Sustaining Wildlife in Managed Forests", *The Northwest Environmental Journal* Volume 6, No. 2 Fall/Winter 1990, p.257.] We have seen virtually all U.S. **wilderness** areas outside Alaska lose at least some of their carnivore species. [(5) -- 5. . Bunnell, in "Sustaining Wildlife in Managed Forests" op. cit., p. 261.] In the Pacific Northwest we are observing

the disappearance of species that have large home range requirements. [(6) -- 6. . Bunnell, in "Sustaining Wildlife in Managed Forests" op. cit., p. 261.] We have seen duck populations across North America decline alarmingly due to loss of wetland habitat. [(7) -- 7. . North American Waterfowl Management Plan, *A New Beginning* (Ottawa: U.S. Fish and Wildlife Service and Canadian Wildlife Service, December 29, 1989), p. 1. ] Around the world over the next 25 years, it is estimated that loss of wildlife habitat will be a major factor in the destruction of more species on the earth than the entire process of evolution has destroyed over the past 3.5 billion years. [(8) -- 8. . Versteeg, Hajo, "The Protection of Endangered Species: A Canadian Perspective" *Ecology Law Quarterly* 11:3, 1984, pp. 267-269. ]

However, we need not look outside of British Columbia to see the impact of habitat destruction on wildlife. In the Fraser River Delta the snowshoe hare, the roosevelt elk, the cougar, the wolf, the yellow-billed cuckoo, the purple marten, the western bluebird, the horned lark, and the burrowing owl have all been completely extirpated in the last 100 years, to a large extent because of loss of habitat. [(9) -- 9. . Butler, Robert W. and Campbell, R. Wayne, *The Birds of the Fraser River Delta: Populations, Ecology and International Significance*, Environment Canada. Canadian Wildlife Service. Occasional Paper No. 65, 1987, p. 18. ] At least six native B.C. plant species have already been extirpated from the province. [(10) -- 10. . Sandborn, Calvin, ed. "Endangered Species and Biological Diversity" in *Law Reform for Sustainable Development in British Columbia* (Vancouver: Sustainable Development Committee. Canadian Bar Association. British Columbia Branch, 1990) p. 61. ] If we are to learn lessons from what has happened to wildlife in other parts of the world, and in B.C., we will have to do a better job of protecting our present wildlife -- and just as important, wildlife habitat.

## **The Strategic and Working Goals**

The proposed **Strategic Goal** of the Wildlife Program is:

To manage the province's wildlife resources for the benefit and enjoyment of British Columbians - by maintaining an optimal balance between ecological, cultural, economic and recreational needs.

The Strategic Goal is expanded in five **Working Goals**:

**Goal One.** To maintain and enhance wildlife and their habitats, and thus ensure an abundant, diverse and self-sustaining wildlife resource throughout British Columbia. [(11) -- 11. . British Columbia Wildlife Branch, *Managing Wildlife to 2001: A Discussion Paper* (Victoria: B.C. Environment, 1991), p. 11. ]

The Strategic and Working Goals which are articulated on pages 11 and 12 of the Discussion Paper are excellent goals. The Strategic Goal and Goal One are particularly important statements of the principle of sustainable development. However, if such goals are simply statements of policy, there is a danger that they will simply become platitudes --and platitudes don't save wildlife. The Strategic Goal, and the Working Goals, should be enshrined in any new wildlife statute as statutory goals that *must* be

taken into consideration by any person making a decision under that statute. In that way, the public can be assured that the Goals are not simply vacuous statements, but that the goals will guide all actions or decisions made under the Act. And if decisions are made under the *Wildlife Act* that are clearly contrary to such goals, action can be taken by citizens to redress such destructive decisions.

Recommendation 1. The Strategic Goal, and the Working Goals, should be enshrined in any new wildlife statute as statutory goals that must be taken into consideration by any person taking an action or making a decision under that statute.

## **Who Should Make Decisions About Wildlife Habitat?**

As the discussion paper points out, less than one per cent of British Columbia's wildlife habitat land is actually administered by the Wildlife Program of the Ministry of Environment. Most of the wildlife habitat in the province is administered by other government agencies *e.g.* the Ministry of Forests, the Ministry of Crown Lands, the Ministry of Energy, Mines & Petroleum Resources, etc. In particular, eighty-five per cent of the land base of the province is designated for forest management in either provincial forests or tree farm licenses. [(12) -- 12. . Haddock, Mark "Forest Law Reform" in *Law Reform For Sustainable Development in British Columbia*, Calvin Sandborn, ed. (Vancouver: Sustainable Development Committee, Canadian Bar Association. British Columbia Branch, 1990) p. 75. ] Under the present system these other ministries and programs simply refer proposed decisions to the Wildlife Program for comments. [(13) - - 13. . In addition to the other ministries that refer decisions to the Wildlife Program for comments, other Ministry of Environment Programs, such as the Pesticide Management Program also refer pesticide proposals for comment. ] Too often, the Wildlife Program has not had sufficient resources and staff to fully evaluate and comment on decisions being made by other ministries. Most critically, the final decision is left to the ministries or programs administering resource exploitation. Those Ministries often have Ministerial goals that are at odds with habitat protection. Mark Haddock has pointed out the problem succinctly:

[T]he Ministry of Environment has an extremely limited mandate over the land base upon which these resources depend. For example, the Fish and Wildlife Branch rarely has direct jurisdiction over wildlife habitat. [(14) -- 14. . Section 4 of the *Wildlife Act*, SBC 1982, Chapter 57 allows for the designation of wildlife management areas, but this provision has not been used to any great extent by the Ministry. ] Yet the implications of timber harvesting are highly germane to the management of wildlife populations and habitat. The rate of harvest in a given area may affect the population dynamics of certain species, and the maintenance of stands of old growth forest may be a critical factor in the survival of ungulates and some threatened or endangered species. Yet the Fish and Wildlife Branch finds itself in a merely advisory role, with final decision-making power residing in the Ministry of Forests. The lack of capacity to control wildlife habitat limits the ability of the Fish and Wildlife Branch to achieve its mandate and sustain the wildlife resource. [(15) -- 15. . *Supra*, note 12, p. 77. ]

If we are to sustain healthy wildlife, fish and plant populations across British Columbia for generations to come, decision-making in other Ministries -- e.g. the Ministry of Forests, the Ministry of Energy, Mines and Petroleum Resources, the Ministry of Crown Land, the Ministry of Parks, and in the Ministry of Environment's Pesticide Management Program -- must routinely reflect concerns for wildlife, fish and plant populations. Any decisions made by those other Ministries must be subject to override by the Wildlife Program if such decisions will be significantly harmful to wildlife, fish and plant populations. If the Wildlife Program is not given such a veto, the danger is that Ministries charged with "development" will place their Ministry's development goals ahead of wildlife concerns. And the result of such a policy will be a "death of a thousand cuts" for wildlife habitat in the province. Each individual government decision to put development before habitat requirements may be small, but over decades and generations such a policy will inevitably allow further weakening of an already decimated wildlife habitat base. Just as the federal *Fisheries Act* for some years has given primacy to the preservation of fish habitat, [(16) -- 16. . By its general prohibition against the destruction of fish habitat, and its "no net loss" policy regarding habitat. ] it is time that the preservation of wildlife habitat be given primacy when decisions are being considered that could seriously impair wildlife habitat.

Recommendation 2. The Wildlife Program should have a veto over land use decisions made by other Ministries and Programs that would have significant negative impacts on wildlife, plants and fisheries. The Wildlife Program should also have the power to veto development on private lands that would be substantially detrimental to important wildlife values. Private landowners subject to such decisions should be provided with compensation, where appropriate.

## **WETLANDS PROTECTION**

Wetlands are a critical component of our natural heritage. The World Conservation Strategy has identified wetlands as the third most important life-support system on the planet, after agricultural lands and forests. [(17) -- 17. . *Draft Federal Policy on Wetland Conservation and Highlights of Draft Implementation Plan*, (Discussion Paper), 1989, p. 2. ] Yet the wetlands of North America are rapidly disappearing. British Columbians have already lost the vast majority of wetlands in the Fraser River Delta and in the Victoria region, and wetlands throughout the province are steadily being drained, filled or developed.

Wetlands are important because:

a) *Wetlands provide critical habitat for birds and other wildlife.*

For example, the wetlands of the Fraser River Delta help support the highest winter-time densities of water birds, shorebirds, and raptors in all of Canada. The Delta is the most important migratory bird habitat on the Pacific Coast between Alaska and California. During the peak of migration, up to 1.4 million birds use the Delta -- exceeding the International Wetlands Convention [(18) -- 18. . *The International*

*Convention on Wetlands of International Importance Especially as Waterfowl Habitat* (The Ramsar Convention) ] minimum criteria for "internationally important wetlands" by some 30 to 60-fold. [(19) -- 19. . Butler, Robert W. and Campbell, R. Wayne, *The Birds of the Fraser River Delta: Populations, Ecology and International Significance*, Environment Canada. Canadian Wildlife Service. Occasional Paper No. 65, 1987, pp. 6 and 62. ] The largest single threat to these birds is loss of habitat, including critical wetlands. [(20) -- 20. . *Ibid*, p.61. ]

Interior wetlands also provide important habitat for birds [(21) -- 21. . Across Canada, more than 100 species of birds make use of Canada's marshes, swamps and sloughs. *See, Wetlands: Where We Live* (Ottawa: Environment Canada. Canadian Wildlife Service, 1980), p.4.], as well as for moose and other ungulates, bear, fur-bearers and amphibians, including species believed to be endangered such as the spadefoot toad. [(22) -- 22. . Personal communication, Ted Lea, B.C. Ministry of Environment, March, 1990.] Wetlands are generally one of the most biologically productive types of habitat. [(23) -- 23. . *Ibid.*, and *Protecting America's Wetlands: An Action Agenda -- The Final report of the National Wetlands Policy Forum*, (Washington, D.C., The Conservation Foundation, 1988) p.9. ] As an Ontario government policy statement document has put it: "Wetlands comprise the most diverse of wildlife habitats, some of them of continental importance." [(24) -- 24. . Ontario Ministry of Natural Resources, *Wetlands Planning Policy Statement, Implementation Guidelines*, (Toronto: The Ministry, January 1989), p. 2. ]

**b) *Wetlands provide critical fish habitat.***

Wetlands provide fish with nutrient-rich spawning and nursery areas, as well as with vital transition zones between fresh and salt water for migrating fish. A majority of B.C.'s commercial fish depend directly or indirectly upon wetlands during at least one stage in their lives. [(25) -- 25. . Personal communication with Otto Langer, Department of Fisheries and Oceans, March 26, 1990. ]

**c) *Wetlands maintain and improve water quality.***

Wetlands are Mother Nature's kidneys -- they filter pollutants out of the waters of our lakes, rivers and streams. Wetlands are such effective water purifiers that they are sometimes used in the tertiary treatment of industrial and municipal waste water. [(26) -- 26. . *Protecting America's Wetlands: An Action Agenda - The Final Report of the National Wetlands Policy Forum* (Washington, D.C.: The Conservation Foundation, 1988), p. 10. ]

**d) *Wetlands aid in flood control and ease drought.***

Wetlands act like giant sponges, soaking up rain and snow melt, and slowly releasing water in drier seasons. In this way they reduce soil erosion and fish-threatening stream sedimentation. Coastal wetlands act as protective buffers against destructive wave action.

**e) Wetlands provide an important source of oxygen, and are a vital element in the natural evapo-transpiration and climatic cycles.**

**f) Wetlands provide agricultural products such as cranberries and blueberries, fish, seafood, peat, and other products.**

**g) Wetlands provide educational and recreational opportunities to observe birds and other wildlife, and opportunities for hunting and fishing.**

Environment Canada has estimated that the economic value of the functions performed by Canada's wetlands is over five billion dollars annually. [(27) -- 27. . *Wetlands of Canada* (Ottawa: Environment Canada, 1989)]

Yet wetlands are under siege. Across North America, wetlands have been drained or filled, cultivated by farmers, converted by property developers, and used as dumps and landfill sites. More than half of the original wetlands of the United States have now disappeared. California has lost 91% of its original wetlands acreage. [(28) -- 28. . "Building a Better America", Policy Statement issued by U.S. President George Bush, February 9, 1989, P. 90; see also The Conservation Foundation, *op. cit.*, pp. 11-12. ] In Southern Ontario, only one quarter of the original wetlands remain. [(29) -- 29. . *Wetlands Policy Statement* (proposed), (Toronto: Ontario Ministries of Municipal Affairs and Natural Resources, June 1, 1989), p. 1. ] In British Columbia, approximately 75% of the Fraser River Delta wetlands have already been lost, [(30) -- 30. . Butler, *op. cit.*, p. 6. ] as have approximately 70% of the wetlands in the Victoria region. [(31) -- 31. . *Wetlands in Canada: A Valuable Resource*, Lands Directorate, Environment Canada Fact Sheet 86-4, pp. 1 and 7. ] Since 1880 wildlife have lost 99.9% of the seasonal wet meadow habitat and 84.6% of the bog habitat once available to them in the Fraser River Delta. [(32) -- 32. . Butler, *op. cit.*, p. 16. ] This constitutes loss of a rare resource -- coastal wetlands made up only 2.3% of B.C.'s 27,000 km of coast line. [(33) -- 33. . Bjornhold, B.D. and Clague, J.J., "Morphology and Littoral Process of the Pacific Coast of Canada" in *The Coastline of Canada*, S.B. McCann, ed., Geological Survey of Canada, Paper 80-10. ]

If this rapid rate of loss is not halted, we will lose the many benefits that wetlands offer society, and the world will lose an extraordinarily rich and productive -- and biologically critical -- part of the biosphere. For these reasons, U.S. President Bush pledged in his 1989 State of the Union Address that he was committed to a national policy of "no net loss of wetlands." [(34) -- 34. . *Newsweek*, July 24, 1989, p. 40, and Bush, *op. cit.*, pp. 90-92. ] This same goal of "no net loss of wetlands" is a recommendation that arose from the U.S. National Wetlands Policy Forum, a broadly-based blue-ribbon panel representing industry, agriculture, developers, environmentalists and prominent government officials. This Forum, chaired by the Governor of New Jersey and co-chaired by the Governors of South Carolina and Washington State, adopted the goal of "no net loss of wetlands" as its overarching goal. [(35) -- 35. . The Conservation Foundation, *op. cit.*, p. 3. ] For the same reason, the province of Ontario has proposed a Wetlands Policy that would place provincially significant wetlands into a restricted zoning category which would prohibit wetlands development if the development would

be incompatible with the maintenance of the wetland. [(36) -- 36. . *Wetlands Policy Statement* (proposed), *op. cit.* ] Similarly, New Jersey recently outlawed development of any freshwater wetland if there is a practical alternative to the proposed development. [(37) -- 37. . Tubman, Lloyd, "New Jersey's *Freshwater Wetlands Protection Act*", *Current Municipal Problems*, 15 [1988/89] 259, p.260. ]

## **No Net Loss**

The only current wetlands that are currently subject to a "no net loss" regime are those fish habitat wetlands that are under federal fisheries jurisdiction (e.g., wetlands that support saltwater fish and anadromous fish such as salmon). [(38) -- 38. . The federal *Fisheries Act* prohibits the destruction of fish habitat, but federal fisheries policy allows such destruction if mitigation is such that there is "no net loss" of habitat. See s. 35 of the *Fisheries Act*. ] Wetlands that do not contain federally-protected fish are not subject to comprehensive protection. The province needs to implement a "no net loss" protection policy for all wetlands -- a policy that would allow loss of wetlands only if such wetlands could be adequately compensated for, e.g., by creation of equivalent wetland habitat.

In addition, British Columbia should adopt the New Jersey approach -- conversion of wetlands should not be allowed if there is a practicable alternative to such conversion. In other words, necessary water-dependent uses (marinas, bridges, etc.) would be allowed, with appropriate compensation measures; but where a practicable alternative exists (for example, where a developer proposes to build a shopping centre in a local marsh instead of in a non-wetland area) conversion of the wetland would not be allowed.

Recommendation 3. The Province of British Columbia should reform its legislation and policy to ensure that British Columbia suffers no overall net loss of its remaining wetlands base.

## **Inventories**

Ontario's proposed wetland policy statement adopts this approach of calling for identification of provincially significant wetlands, in which only wetland-compatible development will be allowed. [(39) -- 39. . *Wetlands Policy Statement* (proposed), *op. cit.*, pp. 3-4. ] While the province should adopt a province-wide no net loss goal, the focus of planning, resources and enforcement should be on provincially significant wetlands that are under threat.

Recommendation 4. The Province of British Columbia should prepare a comprehensive inventory of provincially significant wetlands. Development that would not be compatible with such significant wetlands should be prohibited.

## **Policy and Legislative Review**

Ontario recently established a Conservation Land Tax Reduction Program that offers property tax rebates to owners of significant wetlands who preserve such wetlands in their natural state. [(40) -- 40. . See Ontario Ministry of Natural Resources Press Release, October 13, 1988, discussing this program established under the *Conservation Land Act*, chapter 4, S.O., 1988.] The province of Alberta's new rural property assessment manual will apply lower tax rates to "marginal" wetlands acreage -- and thus remove some of the financial incentive to "develop" wetlands. [(41) -- 41. . *Alberta Conservation Strategy Update*, December 1989, p. 1. ] The state of Minnesota now offers a tax credit to landowners who decide not to drain their wetlands. [(42) -- 42. . Jamieson, Cheryl, "An Analysis of Municipal Wetlands Laws", *Pace Environmental Law Review*, 4 [1986] 177, p. 201. ] The U.S. government has acted to prevent farmers from deducting wetland drainage and filling costs from income tax, and has authorized the withdrawal of farm subsidies from farmers who destroy wetlands, through the so-called "swampbuster" legislation. [(43) -- 43. . Jacobs, Sherry Lynn, "Strengthening Wetlands Protection Through State Regulation", *University of California, Davis, Law Review*, 21:227 [1987] p. 243. ] The establishment of such economic incentives and disincentives is critical if we are to induce private preservation of wetlands. [(44) -- 44. . The importance of such incentive mechanisms has been stressed by the U.S. National Wetlands Forum. See The Conservation Foundation, *op. cit.*, pp. 27-29. ]

Recommendation 5. The Province of British Columbia should comprehensively examine (a) agricultural programs and subsidies, (b) property and income tax structures and (c) property development and industrial legislation and policy, to identify areas in which incentives to wetlands preservation can be instituted and disincentives to wetlands preservation can be removed.

## **Restoration**

Once the government has stopped the ongoing attrition of wetlands, it should turn to the task of restoring a portion of the vast inventory of wetlands that have previously been lost. Current wetland restoration programs such as the Pacific Estuary Conservation Program should be expanded.

Recommendation 6. The Province of British Columbia should expand its efforts to restore lost wetlands habitat.

## **Education**

Part of the reason that wetlands have been so randomly and broadly destroyed is that they have had a bad public image. Education of the public about the incredible environmental and economic importance of wetlands would do much to create an atmosphere in which both private and government decision-makers will decide to stop the destruction of wetlands, to enhance the value of those wetlands remaining, and to restore previously damaged wetlands. The Washington State Department of Ecology is a good example of a government agency that has taken on the challenge of educating the public about the importance of wetlands -- producing videos, a film, books, and a detailed wetlands curriculum for school children.



Recommendation 7. The Province of British Columbia should take measures to educate the public, and specifically students, about the vital contribution that wetlands make to ecological balance.

**ENDANGERED SPECIES AND BIOLOGICAL DIVERSITY [(45) -- 45. . "BIOLOGICAL DIVERSITY" REFERS TO THE FULL RANGE OF VARIETY AMONG LIVING ORGANISMS. AN IMPORTANT ASPECT OF SUCH DIVERSITY IS THE GENETIC DIVERSITY THAT OCCURS BETWEEN DIFFERENT SPECIES OF PLANTS AND ANIMALS.**

]

Man did not weave the web of life; he is merely a strand in it...The white man must treat the beasts of this land as his brothers...What is man without the beasts? If all the beasts were gone, man would die from a great loneliness of spirit. For whatever happens to the beasts, soon happens to man. All things are connected...

- Chief Seattle, 1854 [(46) -- 46. . Chief Seattle, 1854 speech recorded in Vol. 42, No. 11, Fellowship from the Fellowship of Reconciliation, NY.]

Everything [in an ecosystem] interconnects...The disappearance of a species from the earth marks not the beginning, but the end of the process of deterioration. It is a sign that the ecosystem in which the species played its integral role has also been damaged. At some point, the ecosystem itself may be so destabilized by the loss of interactive species that it will lose its integrity and collapse. Should the actions of man place that sort of stress upon the biosphere, then the human species, for all its inventiveness, could well be the author of its own extinction.

- Environment Canada Publication, 1989 [(47) -- 47. . J.A. Burnett et al., On the Brink: Endangered Species in Canada, Environment Canada, 1989, pp. 6 and 13.]

Human beings do not live separate and apart from other living things. Our existence depends on a delicately balanced web of interrelationships amongst living things. We depend upon plants to transform carbon dioxide into breathable oxygen. We depend upon complex food chains to provide us with the food we eat. In addition, we rely upon the plant and animal world to stabilize our soils, moderate our climate, and purify our water, as well as to supply us with everything from leather to 2x4's, from essential medicines to industrial supplies.

Today, the delicate balance of our "web of life" is under severe strain. Among other things, we are currently involved in the "largest and fastest mass extinction of species ever experienced on earth." [(48) -- 48. . Burnett, *op. cit.*, p. 9.] As a result of human activity, several species are becoming extinct each *day*, as compared to the previous rate of losing one species per year. By the year 2000, this rate of loss may well increase to several species extinctions *per hour*. [(49) -- 49. . *Ibid.*] Experts estimate that in the next 25 years human beings will destroy more species than the entire process of evolution has culled over the past 3.5 **billion** years. [(50) -- 50. . Hajo Versteeg, "The Protection of Endangered Species: A Canadian Perspective" 11:3, *Ecology Law Quarterly*, [1984], pp. 267-269.]

Why should we act quickly to halt this mass extinction of species? There are a number of good reasons:

### **To protect human health**

Nature is the greatest single source of human medicine. The willow tree gave us aspirin, the belladonna plant produced the antispasmodic drug atropine, the cinchona tree gave us antimalarial quinine, the foxglove plant provided us with the heart medicine digitalis. In fact, approximately *fifty per cent* of all prescriptions written in North America contain naturally-derived ingredients. [(51) -- 51. . Versteeg, *op. cit.*, p. 271.]

Yet, despite the enormous medicinal benefits already provided by nature, scientists have only examined a minute fraction of the world's species for medicinal properties. As numerous species become extinct, we lose untold medical breakthroughs. If the endangered Florida manatee becomes extinct, scientists seeking a cure for hemophilia will forever lose evidence of the manatee's unique blood-clotting characteristics. Similarly, if the rare desert pupfish disappears, we may never know why it can tolerate salinity extremes -- and we may lose a cure for kidney disorders. The U.S. National Cancer Institute is acutely aware of the problem of species extinction. The Institute is currently racing against time, trying to collect numerous endangered species and test them for anti-cancer potential -- before those species disappear forever. [(52) -- 52. . Versteeg, *op. cit.*, p. 272. *See also Summary Report*, Division of Cancer Treatment, National Cancer Institute, Oct. 1, 1988 - Sept. 30, 1989.]

### **To increase the world's food supply**

If we hope to increase the world's food supply, it is critical that we maintain our present diverse variety of species. Such variety is necessary for the cross-breeding of plants and gene-splicing that improves agricultural yields and produces new types of food. For example, American wheat only became resistant to a variety of disease after agronomists crossbred it with a strain of wild wheat from Turkey. Geneticists saved the Cornish chicken from extinction by crossing it with other breeds to produce the modern, fast-growing broiler chicken. Scientists are crossing a rare Mexican tall grass with corn in the hopes of producing a virus-resistant corn. The American Council on Environmental Quality has emphasized the importance of this issue:

Employment of the earth's reservoir of biological diversity to increase [food] yields and develop new and pest-resistant crops is essential to the billions of humans that need to be fed. [(53) -- 53. . Versteeg, *op. cit.*, p. 271.]

## **To provide alternative sources of raw material**

In a world of diminishing resources, biological diversity will play an increasingly critical role in providing alternative sources of raw materials for our industrial society.

For example, the U.S. Department of Agriculture screened 6,400 plants in an attempt to find a cheap local alternative to imported petroleum lubricants -- and they discovered the unique Jojoba shrub. This Southwestern U.S. plant is the only known plant that produces liquid wax. The Jojoba has now been used in the manufacture of polishes, linoleum, chewing gum, adhesives, disinfectants, detergents, corrosion inhibitors, shampoos, lipstick, sunscreens, etc. Similarly, a variety of plant species have the demonstrated potential to become inexpensive local alternatives to current energy resources. [(54) -- 54. . Versteeg, *op. cit.*, p. 274, citing Gutschick, "Energy Farming", 30 *BioScience*, 221 (1980); Maugh, "Unlike Money, Diesel Fuel Grows on Trees", 206 *Science*, 436 (1979); Nielson, "Plant Crops As a Source of Fuel and Hydrocarbon-Like Materials", 198 *Science*, 942 (1977).] As species die out, we lose untold raw resources.

## **To Maintain Ecological Stability**

Diversity of genetic traits -- including diversity of species -- is essential for the long-term survival of any ecosystem. When inevitable environmental change occurs (e.g., climate change, catastrophic disease incidents, other environmental stressors), a complex ecosystem with diverse species is more likely to survive than a simple system with few species. Maintaining a highly diverse variety of species maximizes the long-term survival prospects of any ecosystem -- including the one that we depend upon for our biological survival. [(55) -- 55. . Versteeg, *op. cit.*, pp. 275-276.]

## **To Respect Others**

Finally, we should stop exterminating other species because those species -- from the Vancouver Island marmot to the southern maidenhair fern, from the Enos Lake stickleback fish to the peregrine falcon -- have a life, and a value, of their own. That life may well be useful to us. And its unique nature may well appeal to our aesthetic appreciation of nature. However, such unique life forms deserve to exist, quite aside from their value to us. As one modern commentator has put it:

They should be conserved because they exist, and because this existence itself is the present expression of a continuing historical process of immense antiquity and majesty. [(56) -- 56. . Versteeg, *op. cit.*, pp. 277, citing Rudhyar, *Directives for New Life*, 21-23 (1971).]

Or, as Chief Seattle said:

[E]very clearing and humming insect is holy in the memory and experience of my people. [(57) -- 57. . Chief Seattle, *op. cit.*]

## **The Canadian Experience**

In gross numbers, Canada is losing far fewer species than are currently being lost in the earth's tropical regions. Canada has actually lost little more than a dozen species, and lists fewer than one hundred species as endangered or threatened. However, Canada had far fewer species to begin with -- nature has had only 12,000 years to repopulate Canada since the Great Glaciers retreated. As a result, the loss of a single species in Canada may reduce our biological diversity as much as the loss of several hundred species in a more developed tropical ecosystem.

The government of British Columbia needs to do more to protect British Columbia's endangered and threatened species, and to ensure biological diversity.

## **Protection of All Species**

At the present time, section 6 of the *Wildlife Act* [(58) -- 58. S.B.C. 1979, Chapter 57, Index Chapter 433.1.] -- the provincial statute dealing with endangered and threatened species -- only allows non-fish, vertebrate species to be designated as "endangered" or "threatened". Plants, invertebrates and fish are not included in endangered or threatened species protection. [(59) -- 59. . Because of federal jurisdiction over seacoast and inland fisheries, under Section 91 (12) of the *Constitution Act, 1867*, ultimate protection of endangered and threatened fish may fall to the federal government. The province should, however, take all possible steps to ensure special protection of endangered and threatened fish, by either the provincial or, if necessary, the federal government.]

Yet, plants, invertebrates and fish are every bit as ecologically critical as the politically sexier vertebrates. As Cornell University Biologist Thomas Eisner stated in testimony before a U.S. Congressional committee in 1982:

I am aware that some have proposed that plants and invertebrates be excluded from protection under the *Endangered Species Act*. Such proposals can be supported by neither scientific nor human welfare considerations. They reflect instead a misunderstanding of the reasons for protecting biological diversity so fundamental as to warrant the label "biological illiteracy." [(60) -- 60. . Laura Tangley, "Protecting the `Insignificant'", *BioScience*, Vol. 34:7, July/August, 1984.]

Six species of B.C. plants are currently endangered, and exist nowhere else in the world. Another five species are endangered in B.C. and are listed as rare or endangered in adjacent provinces or states. [(61) -- 61. . Ted Lea, B.C. Ministry of Environment, Wildlife Branch, personal communication, August 1989.] These plants need protection, as do endangered butterflies (invertebrates), and threatened fish such as Vancouver Island's Enos Lake Stickleback fish.

British Columbia should follow the U.S. example [(62) -- 62. . *Endangered Species Act*, 16 U.S.C.S. Paragraph 1532 (8), (14), 16 and paragraph 1533.], and that of the Ontario *Endangered Species Act*, [(63) -- 63. . *Endangered Species Act*, R.S.O. 1980, c. 138.] and give Cabinet the power to grant endangered species protection to any species of *animal or plant*.

Recommendation 8. British Columbia's endangered species legislation needs to be broadened, so that Cabinet can grant endangered and threatened species protection to any endangered or threatened species, whether that species be plant or animal, vertebrate or invertebrate.

## **Protection of Habitat**

Unlike Ontario's *Endangered Species Act*, British Columbia's legislation does not *automatically* protect the habitat of endangered species from interference. [(64) -- 64. . *Ibid*, s. 5.] Destruction of habitat is probably the chief threat to most endangered species, [(65) -- 65. . Versteeg, *op. cit.*, pp. 296-297. For example, Versteeg quotes Argus, in "Threatened and Endangered Plants in North America" as stating, "The most effective way to protect rare and endangered plants is through the protection of their habitats or natural ecosystems".] and this legislative omission should be corrected. Although Section 5 of the *Wildlife Act* gives the British Columbia Minister of Environment the *discretion* to designate special critical wildlife areas to protect endangered and threatened species, this power has never been exercised. Under the *Ecological Reserve Act*, [(66) -- 66. . R.S.B.C. 1979, c. 101, sections 2 and 3.] the British Columbia Cabinet has a discretion, that has been exercised in the past, to set aside ecological reserve to protect endangered species. However, again this is a discretionary decision. Habitat of an endangered species should *automatically* be protected, and not be dependent upon a discretionary decision.

Recommendation 9. British Columbia law should be reformed to automatically protect the habitat of endangered species.

## **Designation of All Endangered Species**

All species that are truly endangered or threatened should be designated as such, and properly protected by law. Under the present *Wildlife Act*, the decision to designate a species as endangered or threatened is in the absolute and confidential discretion of Cabinet. This has led to a less than satisfactory result. To date, the provincial government has only designated four species as endangered in British Columbia -- the sea otter, the Vancouver Island marmot, the burrowing owl, and the white pelican. Yet, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) [(67) -- 67. . COSEWIC consists of representatives from federal, provincial and territorial governments and of three non-governmental national wildlife conservation groups. COSEWIC commissions scientific reports on jeopardized species - and if the evidence is clear on a species, COSEWIC designates the species as endangered or threatened (see Versteeg, *op. cit.*, p. 279).] lists the spotted owl, the anatum peregrine falcon, and the leatherback turtle as also being endangered in British Columbia. [(68) -- 68. . And,

unlike plants and invertebrates, these are organisms currently eligible for designation under present legislation. The COSEWIC information cited comes from the COSEWIC *List of Species with Designated Status, April 1989*, and personal communication with Chris Dodd, Wildlife Branch, B.C. Ministry of Environment, October, 1989. ] These latter animals lack legislative protection because Cabinet has not yet made the discretionary decision to designate them.

Recommendation 10. Statutory reform should be implemented to ensure that all biologically endangered and threatened species receive Cabinet designation as such.

### **Scientific Advisory Board**

One way to encourage Cabinet to make endangered species decisions based on the actual biological vulnerability of a species is to establish an Endangered Species Scientific Advisory Board. This Board of biologists could report to Cabinet on a regular basis as to which species should be designated, which species should perhaps be delisted, what specific protected habitat zones should be established, and what the government could do -- by changing legislation, policy, and government programs -- to better protect and enhance endangered and threatened species.

The Board's reports would first be submitted to the Minister of Environment, and subsequently to the Legislature, and thus to public review. In this way the public would be able to contrast the board's scientific recommendations with Cabinet's subsequent action or inaction. Cabinet would remain the final decision-maker, but would become more politically accountable for its decisions. In addition, the Board would serve an important educational function in raising British Columbians' awareness of their rare natural treasures.

An example of such an environmental advisory council reporting to a Cabinet minister and subsequently to the Legislature (and hence the public) is found in New Brunswick's *Ecological Reserves Act*, RSNB 1973, c. E 1.1, sections 9-12. [(69) -- 69. . See Versteeg, *op. cit.*, pp. 295-296 for further discussion of such a board.]

Recommendation 11. The province should establish an endangered species scientific advisory board to make public recommendations regarding the designation of species and of specific protected habitat zones, [(70) -- 70. . In addition to *automatically* protecting habitat of endangered species, it is anticipated it will still be advantageous to also have well-defined protected habitat zones around certain species, similar to the critical wildlife areas currently authorized under s. 5 of the *Wildlife Act*. Thus, the s. 5 provisions of the *Wildlife Act* should be preserved and extended to apply to plants, invertebrates and, possibly fish, when endangered species legislation is extended to cover those species.] and regarding legislative reform, policy reform, and other actions that the government can take to protect endangered and threatened species.

### **Governmental Actions**

Governmental decisions -- from issuance of energy project certificates to forestry cutting permits -- may well put in jeopardy the continued existence of endangered species. British Columbia should follow the example set in United States federal *Endangered Species Act*, [(71) -- 71. . 16 U.S.C.S., section 1536.] and legislate a requirement that government actions and decisions not jeopardize endangered species.

In situations where compliance with this requirement clearly has a serious negative impact upon other aspects of the public interest (e.g., would cause serious economic dislocation), Cabinet could be given the power to grant an exemption from the above requirement, if there is no reasonable and prudent alternative for meeting the same social objectives. Such a decision by Cabinet would be public, and subject to public scrutiny and debate.

Recommendation 12. The provincial government should be bound, by law, to ensure that actions authorized, funded, or carried out by the provincial government do not jeopardize the continued existence of any endangered species -- unless Cabinet grants a special exemption for such an action based upon a greater public interest.

## **Biological Diversity**

Loss of endangered species is just one aspect of the larger problem of loss of genetic variability generally. Around the world, the rate of loss of genetic diversity is now far greater than the rate at which diversity is being created by natural forces of evolution. According to a 1987 U.S. Congressional report, this accelerating loss of diversity may have serious consequences for civilization. [(72) -- 72. . Susan Shen, "Biological Diversity and Public Policy", *Bioscience*, Vol 37:10, November 1987, pp. 709-710 discusses this U.S. congressional Office of Technology Assessment report.] Loss of diversity may have enormous impacts upon agriculture, forestry, fisheries, and general environmental stability.

Over 140 U.S. Congressmen have now sponsored legislation to ensure routine U.S. governmental assessment of government actions upon biological diversity. [(73) -- 73. . "Biodiversity Bill Moves Forward", *BioScience*, Vol 38:8, September 1988, p. 539, and personal communication with Cathy Boyer, U.S. House of Representatives Science Committee staff, February 7, 1990.] At the very least, the provincial government should conduct a one-time audit of its laws and policies, in order to determine how such laws and policies can be reformed to better protect biological diversity.

Recommendation 13. The provincial government should conduct a comprehensive review of its legislation and policy to determine ways in which Biological Diversity -- i.e., diversity of species, genetic variability within species, and genetic variability among ecosystems -- can be enhanced and promoted.

## **PROTECTING REPRESENTATIVE ECOSYSTEMS**

The network of protected areas that the world will need in the future must include much larger areas brought under some degree of protection...a consensus of professional opinion suggests that the total expanse of protected areas needs to be at least tripled if it is to constitute a representative sample of Earth's ecosystems. [(74) -- 74. . World Commission on Environment and Development, *Our Common Future: April 1987* (New York: Oxford University Press, 1987), pp.13, 165-166. ]

New parks, ecological reserves and other protected areas must be established if British Columbians are to maintain our current biological diversity. Much remains to be done. Of 59 different landscapes identified in British Columbia, the Ministry of Parks has declared that 42 require much greater representation in the parks system. Of 540 special biological, physical and cultural features identified in British Columbia, only 186 are already protected. [(75) -- 75. . *Draft Working Map, Parks Plan '90, Areas of Interest to B.C. Parks* (Victoria, Ministry of Parks, 1990), pp. 3, 5. ] The World Wildlife Fund has lobbied for twelve per cent of our lands and waters to be set aside. This target has been widely supported by a broad spectrum of political parties and government organizations. This is probably a worthwhile goal -- as long as the twelve per cent is not largely high altitude rock and snow and if it includes adequate representation of all the significant types of ecosystems in the province.

Recommendation 14. In the next decade a complete system of protected areas should be established that represents all of the terrestrial and aquatic ecosystems in the province.

### **Preserving Private Lands**

In the United States conservation easements are used widely to preserve critical habitat on privately-owned lands. Some 1.7 million acres of important American habitat is now protected by such easements. In "Habitat Preservation Through Conservation Easements", *Law Reform for Sustainable Development in British Columbia*, David Loukidelis has pointed out how legislative reform in British Columbia could facilitate the preservation of important habitat located on private land. We support Mr. Loukidelis' position.

**Recommendation 15. The Province of British Columbia should enact legislation to facilitate the preservation of privately-owned habitat by way of conservation easements.**