Appendices to the Report of the British Columbia Task Force on Species at Risk
Appendices

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Species at Risk: Review and Analysis of the Current Legislative Framework and Governance Model for the Management and Recovery of Species at Risk in British Columbia and Canada – Challenges, Vulnerabilities and Opportunities
SPECIES AT RISK

Review And Analysis
Of The Current Legislative Framework
And Governance Model
For The Management And Recovery Of Species At Risk
In British Columbia And Canada

Challenges, Vulnerabilities and Opportunities

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Executive Summary

British Columbia has a rich legacy of biological diversity that is a provincial and national treasure. Yet biodiversity continues to be impacted by the relentless pressures of resource development and human population growth. This has prompted the provincial government to establish a Species At Risk Task Force in 2010 that is dedicated to updating the provincial vision for species and ecosystems at risk to ensure that British Columbia remains a leader in environmental sustainability and works more effectively across the full range of resources and commercial sectors, all levels of government and with individual citizens toward measurable species at risk outcomes that all British Columbians will support.

The regulatory and policy framework that is currently in-place in regard to species at risk is a mix of federal and provincial legislation (Acts), regulations under the Acts, and policy. The principal federal Act is the Species At Risk Act that is in effect across Canada. This Act has a number of provisions in regard to the assessment/identification, listing and development of recovery strategies and action plans for species at risk. British Columbia, unlike the majority of provinces in Canada, does not have a stand-alone Species At Risk Act. However, it does have a number of Acts and attendant regulations that support the maintenance, protection and management of wildlife species and ecosystems to varying degrees. The two principal Acts in this regard are the Wildlife Act and the Forest and Range Practices Act.

Beyond the specific pieces of provincial legislation and regulation that are in-place in regard to species at risk, there are also a number of policies that come into play as well. These include British Columbia’s Conservation Framework, Conservation Data Centre and strategic land use plans.

There are a number of challenges and vulnerabilities to achieving the province’s species at risk objectives:

- Effectively listing species as at risk.
- Developing appropriate recovery strategies and action plans.
- Addressing First Nations rights, title and fiduciary obligations.
- Including private land in species at risk management.
- Establishing a clear, consistent and broadly supported administration and decision-making process, including the role of socio-economic implications.
- Dealing with uncertainty.
- Standardizing the species at risk lexicon to avoid confusion and complexity.

There are a number of opportunities that should be explored by the Task Force to significantly improve British Columbia’s approach to species at risk management:
• Establishing a clear foundational provincial vision and objectives that state what the province wishes to achieve in regard to species at risk.
• Supporting the vision and objectives with precise, focused, internally consistent principles that state how the province will achieve its objectives.
• Clarifying the administrative and decision-making process, including timelines, to be used in British Columbia, and building broad support and acceptance for it.
• Considering the possibility of establishing new legislation that will codify British Columbia’s process and eliminate the existing duplication and confusion between the current provincial and federal legislation.

The paper concludes by identifying the following key issues to be considered and proposing some suggestions for resolving them:

• Legislative complexity.
• Administrative process.
• Private land.
• First Nations.
• Prioritization.
• Urgency.
1.0 Introduction

British Columbia has a rich legacy of biological diversity that is a provincial and national treasure. The province has recognized this legacy by expanding its parks and protected areas network to over 14% of the provincial land base and by establishing legislation (e.g. Wildlife Act, Forest and Range Practices Act, Environmental Assessment Act) that assist in the protection and maintenance of species and ecosystems. Further, the provincial government rarely misses an opportunity to declare its intention to have British Columbia seen as a national and global leader in environmental sustainability. Yet biodiversity continues to be impacted by the relentless pressures of resource development and human population growth with the result that BC now has 177 species listed in some manner under the federal Species At Risk Act and many more species and ecosystems considered to be of high conservation concern under the province’s Conservation Framework. This has prompted the provincial government to establish a Species At Risk Task Force in 2010 that is dedicated to updating the provincial vision for species and ecosystems at risk to ensure that British Columbia remains a leader in environmental sustainability and works more effectively across the full range of resources and commercial sectors, all levels of government and with individual citizens toward measurable species at risk outcomes that all British Columbians will support.

This paper has been prepared for the British Columbia Species At Risk Task Force to assist it in making its recommendations to government. The paper outlines the current federal and provincial regulatory framework governing species at risk, articulates challenges and vulnerabilities with the current system, and proposes opportunities that should be pursued to assist British Columbia to achieve its objectives relative to species at risk.

Species at risk are too often seen within a narrow focus of specific wildlife or plant species or populations that are endangered. This tends to encourage some to think that species at risk recovery planning and management is fundamentally a biological issue with a biological solution. Yet, species and ecosystems necessarily require habitat to survive and habitat requires land. This means that appropriate and durable species at risk decisions cannot be made outside of the larger general issues of land use and resource management, with full consideration for the resultant social and economic implications. Therefore, this paper will consider the challenges, vulnerabilities and opportunities for maintaining species and ecosystems within an overarching sustainable land use and resource management context. In the author’s view, this is where the greatest contribution to achieving the provincial vision for species and ecosystems at risk can be made. Getting this right is also the route to securing the greatest level of support from the full range of resource development and commercial sectors, all levels of government including First Nations, and the larger provincial public. British Columbia needs a clear, defensible, time bounded,
broadly understood and widely accepted process for making species at risk decisions.

While there is a wide spectrum of issues that are relevant to species at risk, this paper will address only those that touch on their identification and assessment, formal listing as at risk in some manner, and the development and acceptance of recovery strategies and action plans. Other issues, such as captive breeding programs or enforcement issues, are certainly important components of an overall provincial species at risk strategy but are outside the scope of this work.

2.0 Current Regulatory and Policy Framework

The regulatory and policy framework that is currently in-place in regard to species at risk is a mix of federal and provincial legislation (Acts), regulations under the Acts, and policy. Acts are law, as a result of being approved by a legislature (either federal or provincial) and given Royal Assent by the Governor General (for federal legislation) or a Lieutenant Governor (for provincial legislation). Regulations have the force of law in that they are established by a cabinet or a minister (either federal or provincial) under existing legislation. Policy is guidance that is established from time to time by a cabinet, minister or government official that is consistent with existing legislation and regulations and generally sets out the current view on how to interpret and/or implement existing legislation and regulations.

The above discussion implies that there is a hierarchy of legislation and regulations, with federal Acts, such as the Species At Risk Act (SARA) having greater authority or somehow ‘overriding’ provincial Acts. In reality, both federal and provincial legislation and regulations have equal authority and must be adhered to. Federal Acts only override provincial legislation if, for whatever reason, it is not possible to comply with both.

2.1 Federal Regulatory Framework

2.1.1 Species At Risk Act

The principal federal Act that is relevant to this discussion is the Species At Risk Act (SARA). This Act received Royal Assent on December 12, 2002, and is in effect across Canada. The Act has a number of provisions in regard to the assessment/identification, listing and development of recovery strategies and action plans for species at risk:

- The Preamble sets out a series of principles comprising the context and the legislative intention of the Act.
- A series of definitions specifically in regard to the term ‘species at risk’:
o ‘Extirpated species’ are those that no longer exist in the wild in Canada, but exist elsewhere in the wild.
o ‘Endangered species’ are those wildlife species facing imminent extirpation or extinction.
o ‘Threatened species’ are those species that are likely to become endangered if nothing is done to reverse the factors leading to extirpation or extinction.
o ‘Species of special concern’ are wildlife species that may become threatened or endangered because of biological characteristics or identified threats.

• A definition for ‘wildlife species’ which is a species, subspecies, variety or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and native to Canada or has been present in Canada without human intervention for at least 50 years.

• A definition for ‘critical habitat’ which is habitat that is necessary for the survival or recovery of a species and identified as critical habitat in a recovery strategy or action plan.

• A definition for ‘competent minister’ to include the Minister of Canadian Heritage with respect to species at risk in national parks or historic sites, the Minister of Fisheries and Oceans with respect to aquatic species at risk not found in parks, and the Minister of Environment with respect to all other species at risk.

• Determination of the scope of this legislation to include federal species on all lands and other species on land owned by the federal government, the internal waters and territorial sea of Canada and reserves and other land set apart for the use and benefit of a band under the Indian Act.

• Establishing a legislative basis for the Committee On the Status of Endangered Wildlife In Canada (COSEWIC) and specifying its functions, including assessing the status of wildlife species and identifying threats to their survival and classifying species as extinct, extirpated, endangered, threatened or of special concern.

• Creation by the federal cabinet, on the recommendation of the Minister of Environment, of a legal ‘List of Wildlife Species At Risk’.

• Prohibitions against the killing of a wildlife species that is listed as extirpated, endangered or threatened or of damaging or destroying the residence of a listed endangered or threatened species, or a listed extirpated species if a recovery strategy has recommended that the species be reintroduced into the wild of Canada.

• Requiring the competent minister or ministers to prepare a recovery strategy for every species listed as extirpated, endangered or threatened and, in preparing recovery strategies, action plans or management plans, requiring the competent ministers to consider Canada’s commitments to the conservation of biodiversity and to the precautionary principle.
• Requiring that recovery strategies be prepared in cooperation with the appropriate provincial and territorial ministers.
• Requiring the competent minister or ministers to prepare one or more action plans based on each recovery strategy.
• Allowing the payment of fair and reasonable compensation to any person for losses suffered as a result of any extraordinary impact of the prohibitions against destruction of critical habitat.

The Act also essentially functions as ‘safety net’ legislation. This means that provinces retain the primary management responsibility for the majority of species listed under SARA and the federal minister or ministers will only take action under SARA if:

1. The laws of a province do not effectively protect listed species or their residences.
2. After consultation with the provincial minister, the federal minister is of the opinion that critical habitat on provincial lands is not ‘effectively protected’.
3. The federal minister is of the opinion that there are imminent threats to the survival or recovery of any listed species.

2.1.2 Agreements

In an early agreement based partially on Canada’s commitment to species at risk under the 1992 Rio Convention, the ‘National Accord for the Protection of Species at Risk’, federal, provincial and territorial ministers responsible for wildlife committed in 1996 to a national approach for the protection of species at risk. The goal of this Accord is to prevent species in Canada from becoming extinct as a consequence of human activities. The Accord outlines commitments to:

• Participate in the Canadian Endangered Species Conservation Council in order to coordinate activities and resolve issues for the protection of species at risk in Canada.
• Recognize COSEWIC as a source of independent advice on the status of species at risk nationally.
• Establish legislation and programs that are complementary to SARA that provide for effective protection of species at risk throughout Canada.
• Refer disputes under this Accord to the Canadian Endangered Species Conservation Council for resolution.

SARA allows the competent minister to enter into an administrative agreement with any other government in Canada, organization or wildlife management board, for the administration of any provision of the Act. This may include the preparation and implementation of recovery strategies, action plans and management plans.
An example of an administrative agreement is the ‘Canada-British Columbia Agreement on Species at Risk’ where Canada and British Columbia, through the appropriate ministers, approved an agreement in 2005 to create an administrative framework within which the parties can cooperatively exercise their respective powers and duties to ensure a coordinated and focused approach to the delivery of species at risk protection and recovery through legislation, policies and operational procedures in British Columbia. This will be done by:

- Setting out the respective roles and responsibilities of the parties.
- Establishing the coordinating mechanisms needed to consult on key decisions, establish joint priorities, share information and design coordinated programs of work.
- Providing opportunities to jointly develop species at risk policies where appropriate.

This Agreement establishes that prior to a routine or emergency listing of a species:

- The federal minister will consult and seek the views and input of the provincial ministers on the implications of a listing.
- The provincial input will include socio-economic considerations.

In regard to recovery planning, this Agreement confirms that the parties will:

- Endeavour to develop recovery strategies and action plans that meet timelines and other requirements set in federal and provincial legislation.
- Continue to apply a two stage approach where:
  - The first stage, the preparation of a recovery strategy, will include the determination of whether recovery of the listed wildlife species is technically and biologically feasible.
  - The second stage, the preparation of action plans, will identify and prioritize detailed measures to achieve recovery, including an evaluation of the socio-economic costs of the action and the benefits to be derived from its implementation.
- Invite the other party to participate in a recovery planning process.
- Develop training for practitioners within government jurisdictions and stakeholder organizations to facilitate the preparation of recovery strategies and action plans.
- Ensure that the evaluation of socio-economic costs and benefits are an integral part of the development of action plans by working with stakeholders and other jurisdictions and orders of government to identify ways to minimize socio-economic impacts while identifying economic opportunities and benefits.
- Allow British Columbia, when addressing an aquatic species, migratory bird or their habitat on land other than federal land, the opportunity to take
action to prevent the reduction of loss of that species, subject to federal approval of the proposed plan of action.

A further example of an administrative agreement, approved in 2008, is ‘A Memorandum of Understanding to Harmonize the Designation of Rare, Threatened and Endangered Species Under the Nunavut Land Claims Agreement and the Listing of Wildlife Species Under the Species At Risk Act.’ This MOU between Canada and the Nunavut Wildlife Management Board, which is specifically not legally binding, sets out actions and timelines for fair and efficient listing decisions for wildlife species that meet the requirements of the Nunavut Land Claims Agreement and SARA.

2.1.3 Other Federal Legislation

There are a number of other pieces of federal legislation that are relevant to the management of species and habitat, for example: Canada Wildlife Act (1985), Migratory Birds Convention Act (1994), Canadian Environmental Assessment Act (1992), Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (1992). A complete listing of them is not presented here but suffice to say that they generally address other broad wildlife and habitat management issues and do not necessarily focus specifically on the recovery and maintenance of species at risk.

2.2 Provincial Regulatory Framework

British Columbia, unlike the majority of provinces in Canada, does not have a stand-alone Species At Risk Act. However, it does have a number of Acts and attendant regulations that, while not explicitly focused on species at risk, do support the maintenance, protection and management of wildlife species and ecosystems to varying degrees. The two principal Acts in this regard are the Wildlife Act and the Forest and Range Practices Act.

2.2.1 Wildlife Act and Wildlife Amendment Act

The current Wildlife Act has been in effect since 1996. A Wildlife Amendment Act (2004) has been passed by the legislature but is awaiting the passage of a regulation to bring it into force.

The Wildlife Act is, not surprisingly, legislation that is very much focused on the overall management of wildlife in British Columbia. The Act is the basic legislative tool that establishes that ownership of all wildlife in British Columbia is vested in the provincial government and gives the Minister of Environment the power and authority to:

- Establish, with the consent of the Lieutenant Governor in Council, Wildlife Management Areas and, within these areas, establish critical wildlife areas and wildlife sanctuaries.
• Regulate hunting, fishing, trapping, and guide-outfitting, including the issuance of licences.
• Control the importation and exportation of wildlife.
• Issue permits and charge fees.
• Impose penalties for illegal acts or non-compliance.

The establishment of Wildlife Management Areas, critical wildlife areas and wildlife sanctuaries is the mechanism for having perhaps the most direct effect of the Wildlife Act on the habitat of species at risk.

It has been recognized that the Wildlife Act as currently written does not adequately allow full and effective management for species at risk. Therefore, in 2004 the Wildlife Amendment Act was written specifically in response to SARA to address some of these shortcomings in British Columbia by:

• Including plants and invertebrates in the Act’s purview.
• Extending the prohibition against killing, harming, harassing, capturing or taking a listed species to include listed invertebrates and plants.
• Expanding protection of nests to include ‘residences’ (such as a nest or den), once residences are listed in regulation by cabinet.

2.2.2 Forest and Range Practices Act

The Forest and Range Practices Act (FRPA), passed in 2002, and its attendant regulations, is fundamentally an Act that establishes much of the legal authority for the minister responsible for the forests and range resources of the province to legally manage these resources. But in addition, this Act also gives authority to the minister responsible for the Wildlife Act to undertake specific legal actions.

FRPA explicitly defines ‘wildlife’ as:

• Vertebrates that are mammals, birds, reptiles or amphibians and are prescribed as wildlife under the Wildlife Act.
• Fish from or in the non-tidal waters of BC.
• Invertebrates or plants listed by the minister as endangered, threatened or vulnerable.
• The definition includes the eggs and juvenile stages of these vertebrates, invertebrates and plants.

In regard to species at risk, this Act authorizes the Lieutenant Governor in Council to:

• Make regulations prescribing objectives set by government, including in relation to:
  o Fish.
• Make regulations authorizing the minister responsible for the *Wildlife Act* to establish:
  o *Ungulate winter range* and objectives for this area.
  o *Wildlife habitat area* and objectives for this area.
  o General wildlife measures.
  o Categories of wildlife for the purposes of the above areas.

*FRPA* also includes the authority for the minister responsible for the *Wildlife Act*, under the *Government Actions Regulation*, to legally establish the following types of orders that may have implications for species at risk:

• General wildlife measures, to be applied to a specified area (also including wildlife habitat areas or ungulate winter ranges), for a category of species at risk, regionally important wildlife or specified ungulate species, if satisfied that:
  o The measure is necessary to protect or conserve the species in the category in the area to which the measure relates; and,
  o This regulation or another enactment does not otherwise provide for that protection or conservation.

• Establish a wildlife habitat area if satisfied that the area is necessary to meet the habitat requirements of a category of species at risk or regionally important wildlife.

• Establish a wildlife habitat area objective for a wildlife habitat area if satisfied that the wildlife habitat area requires special management that has not otherwise been provided for under this regulation or another enactment.

• Identify any or all of the following as a wildlife habitat feature:
  o Fisheries sensitive feature.
  o Marine sensitive feature.
  o Nest of:
    ▪ Bald eagle.
    ▪ Osprey
    ▪ Great blue heron
    ▪ Category of species of risk limited to birds.
  o Any other localized feature that the minister considers to be a wildlife habitat feature.

• Establish one or more categories identifying species of wildlife as species at risk if satisfied that the species are endangered, threatened or vulnerable.

It is through the legal setting of the above objectives or orders that cabinet and specific ministers can have a direct influence on the preparation and implementation of resource development plans for the forest and range resources of the province and thereby influence how these types of development impact on species at risk. However, it is important to recognize that this
legislation can only have an influence on forest and range tenure holders, and the FRPA habitat tools only apply if a species is listed under the Identified Wildlife Management Strategy (IWMS). Therefore FRPA cannot be seen as a general cure-all for species at risk management.

2.2.3 Other Provincial Legislation

2.2.3.1 Oil and Gas Activities Act

The *Oil and Gas Activities Act* (2008) is intended to establish for oil and gas activities the same model of regulation as that established by FRPA for forest and range practices. The Act does not mention species at risk directly, but it does allow the indirect consideration of species at risk by giving the Lieutenant Governor in Council specific authority to establish regulations that apply to an oil and/or gas activity permit holder to protect and manage some environmental values including:

- Wildlife habitat features.
- Wildlife.
- Old growth management areas.
- Wildlife trees.
- Biodiversity.

The Act links oil and/or gas exploration and development, including the siting and construction of pipelines, to these environmental values, and to some of the general environmental provisions of the *Forest and Range Practices Act*, by allowing the Lieutenant Governor in Council, by regulation, to authorize in regard to oil and/or gas exploration and development:

1. The minister responsible for the *Wildlife Act* to establish:

   - An area as an ungulate winter range.
   - An area as a wildlife habitat area.
   - A fisheries sensitive watershed

2. The minister responsible for the *Land Act* to establish:

   - An area as an old growth management area.

2.2.3.2 Ecological Reserves Act

The *Ecological Reserves Act* (1996) has been a helpful site-specific legislative mechanism for protecting important known habitat areas since it was established with the explicit objective of reserving Crown land for ecological purposes, specifically for:
Scientific research and educational purposes associated with studies in productivity and other aspects of the natural environment.

- Representative examples of natural ecosystems in British Columbia.
- Examples of ecosystems that have been modified by human beings and offer an opportunity to study the recovery of the natural ecosystem from modification.
- Areas where rare or endangered native plants and animals in their natural habitat may be preserved.
- Areas that contain unique and rare examples of botanical, zoological or geological phenomena.

2.2.3.3 Park Act

The Park Act (1996) offers the opportunity to preserve land for parks, conservancies and recreation areas. While there is no doubt that often these areas include, and therefore protect, important habitat areas for species at risk, this is generally not the principle reason for establishing such areas. The Park Act, therefore, can support the maintenance of species at risk but cannot be seen as a specific tool for this purpose.

2.2.3.4 Protected Areas of British Columbia Act

The Protected Areas of British Columbia Act (2000) is essentially an administrative piece of legislation that identifies the various protected areas in the province. The Act does not offer any substantive mechanism for addressing species at risk management issues.

2.2.3.5 Environment and Land Use Act

The Environment and Land Use Act (1996) may well be the most powerful and all-encompassing legislative tool available to cabinet in regard to the management of species at risk in that the Act states that “On the recommendation of the committee (Environment and Land Use Committee), and despite any other Act or regulation, the Lieutenant Governor in Council may make orders the Lieutenant Governor in Council considers necessary or advisable respecting the environment or land use.” Therefore, if need be, the cabinet under this legislation has the authority to make any order that it deems necessary or advisable in regard to the management of species at risk through a specific land use order.

2.2.3.6 Land Act

Amendments to the Land Act (1996) through the Land Amendment Act (2005), under ‘Part 7.1 Land Designation and Establishment of Objectives’, were established to ensure that the province could legally establish land use objectives from approved strategic land use plans where it was either necessary or advisable to do
These amendments were part of the overall package of land and resource legislative renewal required to ensure the effective functioning of the *Forest and Range Practices Act*. Probably the most important aspect of this legislation in regard to species at risk is the authority for the minister responsible for the *Land Act* to legally establish land use objectives, including old growth management areas (OGMAs) as legal objectives set by government under *FRPA*.

Section 93.1 of this *Act* is intended to give the Lieutenant Governor In Council (cabinet) the power and authority to make any necessary or advisable order to establish a broad suite of objectives for the management of the province’s lands and resources. While this section has been passed by the legislature, it is not currently in force.

### 2.2.3.7 Environmental Assessment Act

The *Environmental Assessment Act* (2002) includes requirements for proponents of development proposals to identify and consider the environmental implications of the proposed development if there is a likely adverse environmental effect and if the project surpasses specific threshold levels. While this legislation may therefore present some opportunities for addressing some aspects of species at risk, it cannot be seen as a particularly effective overall species at risk management tool.

### 2.2.3.8 College of Applied Biology Act and Foresters Act

The *College of Applied Biology Act* (2002) and *Foresters Act* (2003) respectively require biologists and foresters to manage the biological and forest resources of the province in a professional manner. They also require adherence to a Code of Ethics for practicing professionals. In some instances, the governing professional bodies may give specific guidance for how a professional is to consider and address particular issues, for example in November 2009 the College of Applied Biology of British Columbia and the Association of BC Forest Professionals jointly issued a document entitled *‘Managing Species at Risk in British Columbia: Guidance for Resource Professionals’*. This guidance is useful in that it establishes a standard of practice in regard to how professionals ought to consider species at risk in their work but it does not legally require or mandate a particular outcome or result for species at risk. It does, however, make it clear that considering species at risk is clearly a component of sound professional biological and forestry practice and therefore to not do so would be contrary to the Code of Ethics and expose the professional to possible sanction.

### 2.3 Provincial Policy Framework

Beyond the specific pieces of legislation and regulation that are in-place in regard to species at risk, there are also a number of policies, particularly at the provincial level, that come into play as well. While some of these policies may not be specifically targeted at species at risk, they still have a role to play in supporting
biological and ecological objectives that often augment more specific species at risk initiatives.

2.3.1 Conservation Framework

The British Columbia Ministry of Environment has established and is implementing a Conservation Framework as one component of its overall approach to managing species at risk. The Conservation Framework is described in a document that was released in November 2009 entitled: Conservation Framework- Conservation Priorities for Species and Ecosystems-Primer. The Conservation Framework presents government and non-government resource managers and practitioners with a consistent, science-based method to prioritize conservation challenges in order to allocate limited resources to actions that have the highest chance of success. It provides a set of decision support tools, using clearly defined criteria, to collaboratively:

- Prioritize species and ecosystems for conservation.
- Determine the most appropriate and effective management actions.

The Conservation Framework goals are to:

1. Contribute to global efforts for species and ecosystem conservation.
2. Prevent species and ecosystems from becoming at risk.
3. Maintain the full diversity of native species and ecosystems.

These goals are intended to be achieved through an approach that is:

- Based on specific goals to guide conservation efforts for species and ecosystems of conservation concern.
- Addresses the issue of jurisdictional rarity (where a species’ range “drifts” across a jurisdictional boundary).
- Proactive for species and ecosystems that are not yet at risk but are experiencing serious downward population trends.
- Adequately addresses British Columbia’s stewardship responsibility for globally important species and ecosystems.
- Based on the best available scientific information to quickly and transparently prioritize species and ecosystems and assign them to appropriate management actions.

Overall, the laudable objectives of the Conservation Framework are summarized in Ministry of Environment documents that make it clear that this policy establishes a new framework for conservation in British Columbia that will effectively conserve and recover native species and ecosystems by: acting sooner; acting smarter; acting together; and, investing more wisely.
2.3.2 Conservation Data Centre

The Conservation Data Centre (CDC) is the principle British Columbia source for information on species and ecological communities at risk in the province. The CDC was established in 1991 as a joint project of the Ministry of Environment, the Nature Trust of B.C., the Nature Conservancy of Canada and The Nature Conservancy (United States). Staff and associate scientists and experts throughout the province identify vulnerable vertebrate and invertebrate animals, vascular plants, mosses and lichens, and ecological communities and assign then conservation status rank according to agreed-to criteria. This information is used to establish the provincial ‘Red and Blue Lists’.

The CDC Red List includes any ecological community, and indigenous species and subspecies that is extirpated, endangered or threatened in British Columbia. Species and subspecies may also be legally designated as endangered or threatened under the provincial Wildlife Act.

The CDC Blue List includes any ecological community, and indigenous species and subspecies considered to be of special concern in British Columbia and are listed because of characteristics that make them particularly sensitive to human activities or natural events. Inclusions on the Blue List are at risk, but are not extirpated, endangered or threatened.

In addition to the Red and Blue Lists, the CDC also produces ‘Ranks’ of each list that highlight species and ecological communities that have particular threats, declining population trends, or restricted distributions that indicate that they require special attention.

Overall, the CDC information is used in a number of ways to assist in making conservation and land use decisions across the province.

2.3.3 Strategic Land Use Plans

British Columbia has been actively engaged in a broad program of developing strategic land use plans across the province for almost twenty years. One key deliverable of these plans has been the identification of lands that should be protected in some manner to maintain a number of important environmental values, including habitat areas for species and ecosystems that are threatened or endangered. Once identified and accepted by the provincial cabinet for protection, these areas have been formally established, for example as parks or conservancies. Some of these areas, such as the recent conservancies in Haida Gwaii and the North Coast and Central Coast Land and Resource Management Plan (LRMP) areas, have been extremely large and therefore make very significant contributions to ecological integrity and species at risk management.
One key characteristic of a strategic land use planning process is the direct engagement of a broad cross-section of participants, including environmental non-government organizations, industry and local government. Perhaps most important, particularly in recent planning processes, has been the partnership that has been established between First Nations and British Columbia on a ‘government to government’ basis. These inclusive processes have, after often a great deal of time, generally resulted in land use recommendations and decisions that are stable, broadly supported and therefore implementable.

3.0 Challenges/Vulnerabilities

While there is clearly a large body of federal and provincial legislation, regulation and policy that does or could be used to address species at risk, the fact remains that species and ecosystems continue to be lost or become threatened and endangered. So even with a plethora of laws, Canada and British Columbia are still not achieving their oft-stated objective of being seen as leaders of environmental sustainability and ensuring that species do not continue to be, or become, at risk. The obvious question is: “How can this be so? This section on challenges and vulnerabilities will look at this question.

3.1 Listing Species

Some of the challenges/vulnerabilities to legally listing species under SARA are:

- Some view the legal listing of a species as threatened or endangered as a purely technical scientific exercise that ought to be outside of any ‘political’ decision-making process, including any role for a ‘political’ minister or cabinet. This is likely compounded by the confusion between the scientific assessment of the status of a species versus the formal listing of the species under SARA.
- Listing takes too long, often because of the introduction of issues such as socio-economic considerations or First Nations rights and cultural interests.
- There is no clearly required timeline in SARA between when COSEWIC recommends to the minister that a species is at risk and when the minister must present his/her recommendation to cabinet. Therefore, the nine-month clock for a cabinet decision does not start.
- There is no clearly defined or accepted consultation process, timeline or dispute resolution procedure for listing a species.
- The Canada-British Columbia Agreement on Species at Risk requires the federal minister to consult British Columbia and gives the province the ability to input socio-economic considerations into the listing of a species even though SARA itself does not call for this. Yet, there is no generally accepted process or methodology for determining or incorporating these socio-economic considerations, nor any accepted hierarchy between
biological, ecological, social/cultural or resource development economic values if they are in conflict with one another.

Some of the challenges/vulnerabilities under the British Columbia approach are:

- Species can be listed by cabinet under the *Wildlife Act* as endangered or threatened and by the Minister of Environment under *FRPA* as endangered, threatened or vulnerable. These are different listings than that under *SARA* and so there is the potential for confusion and duplication.
- Even though there are a number of ways to list a species in British Columbia, there are no consistent resultant implications. For example, listing under the *Wildlife Act* offers no protection to ‘residences’ but listing under *FRPA* offers partial protection to ‘residences’. Further, listing under the *Wildlife Act* allows the possibility of undertaking recovery planning by policy direction but it is not mandatory. Yet listing under *FRPA* does not address recovery planning at all.

Most constructs of species at risk legislation and management, including *SARA* and the *Wildlife Act*, recognize essentially two steps: 1. Listing of a species as threatened or endangered; and, 2. Developing recovery and action plans. This implies to some that there is a straightforward process whereby unbiased scientists and experts (e.g. COSEWIC or the British Columbia Conservation Data Centre) assess a species’ status and then list a species as being at risk, based entirely on technical scientific evaluations. Only thereafter, ‘someone’ (perhaps again a team of ‘unbiased’ scientists) develops a recovery plan that will, if possible, reverse or remove the factors that led a species to be at risk in the first place. This simplistic model is not the real world. In reality there are actually five distinct steps: 1. Assessing a species as threatened or endangered; 2. Legally listing the species in some manner; 3. Developing recovery strategies and action plans; 4. Formally approving recovery strategies and action plans; and, 5. Implementing approved recovery strategies and action plans.

The key additional factors in this five-step process are that: 1. The technical exercise of assessing whether a species is threatened or endangered (through COSEWIC or the BC Conservation Data Centre) is separated from the legal act of formally listing the species; and, 2. There is explicit recognition that there are at least two steps that require a minister and/or a cabinet to exercise their authority to make a decision.

In regard to the decision-making authorities, introducing this into the overall process is not accidental or a mistake. In the legal listing of a species under *SARA*, for example, it is a clear recognition that legal listing comes with implications for the government, for current land and/or resource tenure holders, for First Nations, and for the general public. Some of these implications are:
• Government will be obligated to initiate the development of a recovery strategy and action plans. This has staffing and cost implications.
• It would now be an offence to kill, harm, capture or take an individual of a wildlife species that is listed. This may have social and cultural implications, e.g. hunting, trapping, guide-outfitting and the exercise of First Nations rights and cultural interests.
• It would now be an offence to damage or destroy the residence of a listed species. This has economic and legal implications for land and/or resource tenure holders such as logging companies (e.g. existing cutting permits), or it may result in the public being denied entry into previously available recreation areas.

These implications are real and they are often noisy. The result is that legislatures generally recognize the legitimate need for a minister and/or cabinet to be directly engaged in the legal listing process to ensure that these implications are recognized, considered and, where possible, managed. To do otherwise would not be good public policy and would very likely result in listing decisions that are problematic and perhaps even not sustainable over time.

The lack of clearly defined and broadly accepted consultation processes, timelines and dispute resolution mechanisms, and socio-economic consideration models and data, consistently frustrate land use decision-making. This is problematic for stakeholders, interested participants and decision-makers. Ultimately, this leads to uncertainty, delay and indecision, often at the expense of species at risk.

3.2 Recovery Strategies and Action Plans

Some of the challenges/vulnerabilities to developing and implementing recovery strategies and action plans, whether formally under SARA or perhaps under some other ad hoc process, are:

• There appears to be confusion and inconsistency between what SARA means in regard to recovery strategies and action plans versus what is meant under British Columbia’s approach.
  o **SARA:**
    ▪ Explicitly separates the recovery strategy and action plan whereby a federal recovery strategy is often seen as a ‘science’ process that determines whether a species’ recovery is technically and biologically feasible. If recovery is feasible, then the recovery strategy is to address the threats to the survival of the species and the species’ habitat, and to identify critical habitat where possible.
    ▪ The subsequent federal action plan would propose measures to be taken to implement the recovery strategies, set timelines and evaluate the socio-economic costs and benefits of
implementation of the recovery measures. This is more clearly a ‘science-based’ process.

British Columbia:
- Tends to combine the recovery assessment, recovery actions and socio-economic implications into one overriding document referred to as a provincial recovery strategy. This results in confusion about whether the development of a recovery strategy is really a ‘science’ or ‘science-based’ process.

- The development of recovery strategies and action plans cost time and money. They are a significant draw on existing staff resources and limited budgets that are usually already fully committed.
- There is no clearly defined or accepted development or consultation process, timeline or dispute resolution procedure.
- Not everyone agrees on what the right recovery options might be.
- While there may be some debate about whether or not the listing of a species has direct social, cultural and/or economic implications, there is no doubt that the implementation of recovery strategies and action plans will certainly have real on-the-ground implications. These implications often result in an inequitable distribution of costs and benefits.
- There are no guarantees that species at risk will actually recover and therefore there are no guarantees that the effort will be worth the result.
- There are almost never any ‘win-win’ solutions that will ensure the recovery of a species at risk while also having little or no impact on the economic, cultural and social aspirations and interests of stakeholders.
- The potential indirect benefits (e.g. ecological services) from maintaining a fully functioning ecosystem through the listing of a species or developing and implementing a recovery strategy and action plan are rarely included in the benefit/cost analysis as they are often difficult to measure or predict or are not seen as critical benefits, often with significant economic value.

Much of the same rationale presented in the previous section for the listing of species is also applicable to the development of recovery strategies and action plans. This work does not stand alone outside of real implications for real people. This is particularly true because now, particularly in regard to provincial processes, the species at risk work has often moved beyond the technical sphere of whether or not a species is threatened or endangered and moved into proposed strategies and actions that have real on-the-ground implications that may negatively impact the economic, social or cultural expectations, interests or rights of people. Assessing a species as being at risk and determining if recovery is feasible is rightly the purview of science. But then designing and implementing management actions to achieve such a recovery moves beyond pure science.

Therefore, at least in British Columbia, this is usually the point where species at risk management issues collide directly with land and resource development/use. For example, because often a major issue for species at risk is the maintenance of
sufficient habitat for their full life cycles, this will be where logging interests bump up against habitat maintenance requirements. Using the spotted owl as a real-life example, this is where the identification and preservation of old growth forests for the owls has consistently been subsumed by the existing contractual obligations that successive governments have made to logging companies in the form of timber tenures and cutting permits. Denying or changing these contractual obligations unilaterally by government will usually result in some type of legal action and the requirement for compensation of some kind.

The federal parliament has recognized in SARA the legitimate need for a minister or cabinet to be directly engaged in the approval process for recovery strategies and action plans to ensure that social, cultural and economic implications are recognized, considered and, where possible, managed. But here again it is important to point out that there is usually never any 'silver bullet' or 'win-win' solution that will allow the maintenance and recovery of a species at risk without some level of negative impact on other interests and rights. There will almost always be some level of pain as a result of approving and implementing a recovery strategy or action plan and therefore ministers and cabinets are often reluctant to make a final, binding decision without a full understanding of these implications. Unfortunately, there is no clearly accepted methodology for undertaking this analysis and, even if there were, there is often no a priori agreement about what will be acceptable input data.

It should also be mentioned that it is not even necessary for a government to explicitly deny existing contractual rights such as cancelling a cutting permit or a mining tenure. Legal action by a tenure holder can be initiated if their contractual rights and anticipated economic benefits are simply reduced or delayed even though a legal contract has not actually been abrogated. Therefore, even the uncertainty of not making a decision has potential implications.

### 3.3 First Nations Rights, Title and Fiduciary Obligations

First Nations have constitutionally protected rights in Canada under Section 35 of the Constitution Act. They also have, in some instances, treaty rights and legal rights established under a number of specific court cases, including the right to consultation and possible accommodation and possible aboriginal title to land and resources. Further, they also have an expectation that their rights and title will be effectively and responsibly managed for their benefit under the fiduciary obligations that the Crown, both federal and provincial, owes to First Nations. In British Columbia, under the 'New Relationship' between First Nations and the provincial government, they also have an expectation of being engaged in land and resource management issues on a government-to-government basis.

One of the basic rights that First Nations have is the right to the maintenance of their culture, including the use of land and species for cultural purposes. Obviously, the extirpation or extinction of species, or even the identification of culturally important
species as threatened or endangered, may have implications for First Nations, if this brings restrictions to their use in cultural activities. One such example of this is the catastrophic reduction of sea otter numbers and populations along the BC coast as a result of overharvesting for their pelts. Although some populations are now beginning to recover as a result of active reintroductions and the strict elimination of hunting pressure, this has resulted in significant direct negative impacts on many First Nations’ cultural use of these animals.

Unquestionably the federal and provincial governments have at least a fiduciary obligation to ensure that culturally important species do not become at risk due to human activities or that they have appropriate management objectives and plans to maintain them in the long term. Yet there is no clearly defined or accepted process by which First Nations can engage with the federal or provincial government to ensure that their interests and rights are identified, considered and incorporated into species at risk decision-making.

3.4 Existing Tenures, Contractual Rights and Compensation

British Columbia is fortunate in that over 90% of the total land base is Crown land rather than private property. To many, this would seem to suggest that the provincial government would have a great deal of flexibility and leeway in making decisions about how this Crown land, and the attendant resources, will be used, including the potential to set aside species at risk habitat or change the current management regime to one that takes greater account of species at risk needs. But in reality this is not actually true. Or at least, it usually cannot be done without imposing some type of negative economic implications. This is because although the land base is owned by the Crown, successive governments for over a century have been making legal commitments to the land base resources as probably the most important component of the province’s overall economic development strategy.

These commitments have been made in, for example, logging, mining, guide-outfitting, agriculture, ranching, tourism, independent power production, recreation and trapping, and they are usually legally binding through contractual obligations. Some of these contracts may, in fact, be extremely long-lasting tenures that remain in effect as long as the tenure holder maintains specific standards of use and stewardship. For example, some timber tenures under the Forest Act such as a tree farm licence (TFL), have an ‘evergreen’ clause that allows the tenure holder to renew the tenure before the end of its stated timeline. This ensures that there is continuity such that the TFL holder can justify significant long-term investments in equipment, infrastructure and jobs.

These tenure and contractual commitments cannot simply be denied, taken away or changed unilaterally by the government because there is now evidence that the land and/or resource is required for a species at risk. Or at least under law, this cannot happen without some type of due process and usually some requirement to pay compensation. Yet British Columbia has no clearly articulated and broadly accepted
process by which this can happen. Usually, each individual case develops its own *ad hoc* process as the situation warrants. This means that there is uncertainty for the government, stakeholders and species at risk.

### 3.5 Private Land

Only a small percentage (about 6%) of British Columbia is in private land status, yet this land is disproportionately important habitat since it contains a significant number of the known species at risk in the province. This land is also concentrated in some of the most disrupted ecosystems and biogeoclimatic zones in the province (particularly the Lower Mainland, Okanagan Valley, and south and east coast of Vancouver Island) due to extensive residential and industrial development and human population pressures. These areas also contain some of the most extensive tracts of private managed forest land (PMFL) in the province where the environmental values are managed under the *Private Managed Forest Land Act*. Recent Ministry of Environment data shows that there are approximately 3100 known occurrences of Red Listed species on crown land (about 94% of the provincial landbase) in the province but that there are almost 2500 known occurrences of Red Listed species on the much smaller amount of private land.

Some existing legislation and regulations (e.g. *Wildlife Act*) can be applied to private land to force landowners to address species at risk habitat and management issues. However, it is generally acknowledged that achieving species at risk objectives on private land can be more effective with the willing support of landowners through an appropriate suite of incentives. Therefore, in British Columbia a key vulnerability to achieving the province’s species at risk objectives is to fail to address private land issues; but the significant government (both at the provincial and local level) challenge is to identify and implement appropriate incentives that are effective and affordable. In any case, it is anticipated that any incentives, and the legislation or regulations that would be necessary to allow them to be implemented, would likely be more effective if they enabled private landowners to voluntarily undertake species at risk management initiatives rather than forcing them to do so against their wishes.

### 3.6 Administrative and Decision-making Process

*SARA* establishes a federal regime for addressing species at risk issues and does set some clear process, timelines and responsibilities for decision-making. This arguably may work for federal responsibilities and federally controlled species. But there is nothing comparable under provincial legislation. Certainly this province now has a growing history of addressing species at risk issues, and this has allowed the development of a generally standard approach to the usual administrative and decision-making process. But still, British Columbia has no clearly articulated and broadly accepted process by which species at risk can be addressed. Usually, each individual case has developed its own *ad hoc* process, e.g. mountain caribou, within the generally standard approach, as the situation warrants. This lack of a clear
process increases the level of uncertainty for the government, stakeholders and species at risk. Further, it means that the administrative process ‘wheel’ must usually be reinvented to some degree for each species and perhaps even for each individual population that requires attention. Species at risk issues are difficult enough to address without adding the additional burden of a lack of a clear and generally accepted administrative and decision-making process.

There is also the issue of the separation between science and decision-making as has been alluded to several times in this text. Clearly, there is a fundamental role for science in species at risk management. This has been mentioned above in regard to undertaking an assessment of the status of a species by COSEWIC or the British Columbia Conservation Data Centre – clearly a responsibility for scientists. Yet even here, there are varying degrees of scientific uncertainty depending on the species under consideration. Still, the need for science in this regard is clear and it forms the basis for any subsequent decision-making.

Any effective decision-making process needs to be very clear about what it means to have a ‘science-based’ process versus a ‘science’ process. In a ‘science-based’ process there is a role for science and scientists to inform the ultimate (usually elected) decision-makers about biological and ecological implications. In this type of process, there will likely also be a need for the clear consideration of socio-economic factors as well. This is very different from a ‘science process’ where the scientists themselves would be responsible for making the final decisions. In this process, the science would be determinant and socio-economic factors would likely not be considered or would be weighted relatively lightly. In this type of process there would be little or no need for the involvement of elected decision-makers.

In today’s real world, we have scientists assessing the endangered or threatened status of a species, generally through a ‘science’ process. This is generally well understood and accepted. But then we also have a subsequent ‘science-based’ process where scientists advise elected decision-makers when they recommend the legal listing of a species as at risk, or when subsequent management plans are developed. This is less well understood and not broadly accepted. Yet, the inclusion of socio-economic factors into management plans does not deny the ‘science-based’ nature of the process; it simply broadens the basis of information on which the final decision will be made. Interestingly, the courts are now increasingly commenting on whether recovery strategies and action plans under SARA are purely ‘science’ or ‘science-based’ processes but it remains to be seen whether this will improve the situation or only add another level of uncertainty and confusion.

### 3.7 Species Management Uncertainties

Species at risk exist, became threatened or endangered, and will be saved or lost, within a biological and ecological context. Species management is certainly science, but it is not like physics or chemistry where you can measure the boiling point of water and it will be the same everywhere and every time you measure it. Rather,
biology implies some level of uncertainty, for example spotted owls may well be on the periphery of their natural range in British Columbia and may also be at risk due to natural ecological pressures from barred owls. Therefore perhaps the biggest questions of uncertainty for species at risk management are: What should be done to increase the chances that a species at risk will recover? And, if we do it, are there any guarantees that we will achieve our objectives?

Neither of these questions can be answered with absolute certainty but one thing we do know absolutely- species cannot exist in the wild without their habitat and therefore the elimination of habitat will ensure the extirpation and extinction of species in the wild. We also know that human activities and resource development often changes or eliminates natural or wild habitat. Therefore, this means that we must address all of the myriad issues of land and resource use head-on if we want to maximize the possibility of maintaining species at risk. Even then, there will still be uncertainties as to whether or not we will be successful.

And this discussion has not even mentioned climate change, which opens an entirely new and unbounded level of management uncertainties.

### 3.8 Socio-economic Uncertainties

The development of recovery strategies and action plans costs money. The implementation of these strategies and plans costs probably even more money and usually upsets previous socio-economic plans and expectations. The amount of compensation for lost tenures or contract opportunities may be uncertain at the beginning of a process but these can usually be calculated over time. In the end, these economic values can be calculated and known and so they can be fairly incorporated into the decision-making process.

But there are also a number of socio-economic uncertainties that cannot be known, especially in regard to the preservation of land that is identified as critical habitat and therefore withdrawn in some manner from other resource development opportunities or social (usually recreational) activities. One frequently stated example is subsurface resources. These are usually not visible, generally poorly inventoried and, if economically viable, often of enormous value for relatively small parcels of land. Building these values into the decision-making process is fraught with technical difficulties and socio-economic uncertainty.

And then there is also the socio-economic uncertainty of not making appropriate species at risk decisions. What are the socio-economic values inherent in maintaining ecosystem services such as clean water and air? What role does socio-economic valuation play in decisions about keeping mountain caribou herds viable across their natural range? Is it sometimes perhaps appropriate and necessary to make decisions that are based on our set of values about what is right for future generations and for the species themselves, regardless of any socio-economic uncertainties?
3.9 Political Uncertainties

It is often said that politics is about making choices. Resource management is also about making choices, and often the past choice has been to commit (some would say over-commit) the province's lands and resources to development that has fueled the economy and supported jobs and communities. This has been a widely accepted strategy for building British Columbia for more than one hundred years.

But it should not be forgotten that managing to address species at risk issues is also about making choices, and having the political will to carry through on those choices. There are the many smaller choices, for example where and how to log or mine or whether to build a road through a previously undeveloped valley. But there is also the larger choice of whether to undertake truly sustainable development that fully and clearly considers species at risk and ranks them along side more traditional socio-economic values such as timber, or oil and gas deposits, or even backcountry recreation. This is where political uncertainty comes into the equation and where public support for maintaining species at risk is fundamentally important.

3.10 The Use of Language

As with all land and resource management issues, language is important and there is no universally accepted lexicon. It is probably not surprising that different people and groups use different words to mean different things. But in resource management, people often use the same words to mean different things, or they interpret the same words in different ways. One consistent example from strategic land use planning processes across the province is the use of the terms 'protect' versus 'preserve'. Some use the terms interchangeably, but some see them as very different in meaning, intent and result. For some, to 'protect' a species at risk means to stop or prevent any further impact on individuals or populations from human activity. For others, to 'protect' a species at risk is to give it some type of legally defined 'protection', such as listing it under SARA. For yet others, to 'protect' a species at risk is to ensure that its habitat is within some type of defined boundary such as in a park or a wildlife habitat area. These same people might use the term 'preserve' to mean the same things, or they might use 'preserve' to mean retention of the status quo and thereby not allow any further change in populations or habitat.

The above discussion can also apply to the term 'maintain' where some would argue that to 'maintain' a species at risk is to retain current individuals and populations as they presently exist, while others might mean that this term only indicates the long-term survival of the species at some level and within some current habitats but not necessarily all of the current ones.

Legislation and resource development management plans often use the term 'consider' in regard to wildlife, ecosystems and species at risk. Some interpret
'consider', especially if used in a clause such as ‘...resource development must/will consider species at risk...’ to mean that species at risk concerns will be paramount and nothing can be done that will impact on these species at risk. Others interpret this phraseology to mean that they will give some thought to species at risk but that subsequent decisions and actions are not necessarily bound only to the needs of species at risk.

For many years, one of the most contentious terms has been the ‘precautionary principle’. There has been a great deal of confusion and inconsistency in what it means, how it was to be applied in land and resource management, and what the results of applying this principle ought to be in regard to, for example, species at risk. Some took a strict interpretation that if we could not be fully sure of all of the results of some proposed land or resource development proposal (and we are essentially never fully sure of all of the biological and ecological implications of development) then application of the precautionary principle meant that the proposal could not go forward since we needed to err on the side of caution. Others took a more development-centred interpretation that essentially said that, while we may not be able to predict all of the biological and ecological implications of development, we know quite a bit and therefore we can and should proceed with the development proposal as long as we exercise some degree of caution. Of course others took any number of nuanced positions across this spectrum, and everyone said that their approach was consistent with the precautionary principle.

At a minimum, any progress in managing species at risk requires clarity of language and consistency in the definition and interpretation of terms.

4.0 Opportunities

Perhaps the biggest opportunity in regard to species at risk is the simple fact that there is an existing broad consensus of support for ensuring that species do not become threatened, endangered, extirpated or extinct. Over a period of many years, dealing directly with species at risk such as spotted owls, marbled murrelets, mountain caribou or Queen Charlotte goshawks, this author has never heard anyone say that they wanted to see a species become extirpated or go extinct. This is an excellent starting point! The only questions are:

- What can realistically be done?
- How will it affect me and/or my interests?
- What will it cost and who pays?

This does not mean that these are easy questions; it only means that we have a common point of departure from which to find a solution.

4.1 Objectives
Clarity about British Columbia’s objectives for species at risk is fundamental. These objective should clarify WHAT the province wishes to achieve in regard to species at risk. There should be a clear vision for effectively managing species at risk issues that is consistent with the province’s commitment to being a leader in environmental management within the concept of sustainable development. This means that the province must state these objectives in a manner and in language that is fully and demonstrably intellectually consistent with the province’s aspirations for continued land and resource development. Arguably this is the most important issue for the Species At Risk Task Force and the biggest challenge before it.

Greater clarity about the province’s objectives can also encompass the setting of specific goals for species at risk. For example, it would be valuable if the province could be clear about how many mountain caribou are to be maintained and where the herds will be situated. But, of course this is not a trivial exercise given that it will, once again, require the assessment of the species’ historical range, its current range and population dynamics and the socio-economic implications of any number of population options.

Setting these types of species and population objectives would likely also require that the province would have to explicitly decide that some species at risk, particularly those on the periphery of their current natural range in British Columbia (and where the population dynamics show that the species is collapsing out of the province rather than into it), would not be actively managed. They would be left to fend as best they could under current and future environmental conditions. This would likely be an unacceptable scenario for some stakeholders. Still, if it where possible to achieve agreement on these issues then the long-term management and maintenance of those species at risk that were to be actively managed would certainly be enhanced.

A key contributor to the setting of objectives would be the province’s Conservation Framework since it takes into account factors for priority setting such as natural rarity and the changing dynamics of populations.

4.2 Principles

The province should support its vision and objectives with clearly stated principles. These principles should be precise, focused, internally consistent and, in aggregate, state HOW the province will achieve its species at risk objectives. Principles should also help define key terms and explain how some of these terms are meant to be applied in practice.

Some examples of potential principles are:

- Administrative processes and timelines will be clear and broadly accepted.
• All decision-makers, up to and including ministers and cabinet, will be bound by a transparent process with firm timelines.
• First Nations will be engaged on a government-to-government basis.
• Traditional ecological knowledge will be considered along with western science in any ‘science’ assessments and processes.
• Species at risk assessment decisions will be ‘science’ and management decisions will be ‘science-based’, as specifically defined and applied.
• The precautionary principle will be used, in management decisions as specifically defined and applied.
• Approved strategic land use plans, where available and appropriate, will be used to help determine species at risk objectives.
• Triple bottom line (biological/ecological, social/cultural and economic) analyses and models, as specifically defined and applied, will be used in management decisions.
• Technical data input into biological and socio-economic analysis will come from broadly accepted sources such as:
  o Ministry of Forests and Range Timber Supply Reviews.
  o Ministry of Environment Conservation Data Centre.
  o COSEWIC.

4.3 Administrative Process and Timelines

Our ability to respond to issues around species at risk is out of proportion to our ability to impact on them and their habitat. Yet we continue to argue about listing new species at risk and take enormous time to develop recovery strategies and action plans... while time is running out for some species. The current administrative process is fraught with frustrations and uncertainty. The federal SARA may have hoped to help resolve some of these problems but issues continue. Therefore, the provincial government should as quickly as possible bring greater clarity to a specific provincial administrative process that is fair, transparent and time-bound. This process and timelines should also be broadly accepted and agreed to by First Nations, local government, scientists, resource development sectors and environmental groups.

The administrative process should clarify:

• Timelines for the listing of species and the development and approval of recovery strategies and action plans.
• What biological/ecological, social/cultural and economic considerations will be incorporated in the listing of species and in recovery strategies and action plans.
• How the biological/ecological, social/cultural and economic considerations will be weighed against each other in a triple bottom line analysis framework.
• The role and responsibility of recovery teams.
• The structure of, and representation on, recovery teams.
• The process for broad public and First Nations consultation, where required.
• The decision-making process and responsibilities.
• A dispute resolution process, if required.

The administrative process should be structured around five steps:

1. Assessing a species as threatened or endangered;
2. Legally listing the species in some manner;
3. Developing recovery strategies and action plans;
4. Formally approving recovery strategies and action plans; and,
5. Implementing approved recovery strategies and action plans.

Separating the process into these five steps will allow greater clarity around roles and responsibilities, timelines and socio-economic considerations. For example, this would allow COSEWIC and the British Columbia Conservation Data Centre to have a clear responsibility to undertake the assessment and identification of a species as threatened or endangered in step 1 as a scientific determination without any consideration for socio-economic factors. It would then clearly separate the actual listing of a species under SARA to step 2 where socio-economic considerations can come into play and where decision-makers can be held to account if they choose to hold up the listing of such an identified species. This has the benefit of separating a scientific determination from an economic or political decision. The further separation of the development of a recovery strategy and action plan from its approval and implementation also offers greater clarity in the process and keeps responsibilities more clearly pointed at the right place. For example, it allows the potential lack of resources/funds to implement a recovery strategy or action plan to be separated from a discussion about whether or not the recovery strategy or action plan is correct. This has the benefit of ensuring that any on-going discussion or debate is actually focused on the contentious issue and not on some adjacent issue where there is already substantive agreement.

A further, unstated, Step 6 is effective monitoring and evaluation to allow adaptive management and continuous improvement as recovery strategies and action plans are implemented. This has not been explicitly included here at this time since it is outside the specific immediate discussion, but it is fundamentally important to an effective overall species at risk management system.

**4.4 New Provincial Legislation**

As the above discussion shows, there is certainly a great deal of existing legislation, both at the federal and provincial level, that can and is being used in regard to species at risk. But there are gaps, issues, inconsistencies and a lack of clarity on many important components such that British Columbia is not being seen as a global, or even national, leader in species at risk management. When considered in
aggregate, the current system is overly complex and confusing. This is problematic for decision-makers, the public, and environmental or resource development stakeholders. And species continue to become threatened and extirpated.

It is certainly possible to take a more aggressive approach to utilizing the existing suite of legislation and regulation, and this ought to be done in any case, particularly over the short-term. There is also the opportunity to take a more stepwise approach by bringing into force the already passed *Wildlife Amendment Act* since this would address some specific gaps to the benefit of species at risk. For example, this would extend protection to plants, invertebrates and the residences of any group, thereby giving them the same individual and residence protection as under *SARA*. In addition, the *Environment and Land Use Act* could be utilized but this is unlikely given the past reluctance of cabinets to use such a broad-brush legislative tool and the risk that such a use for species at risk could be challenged as contrary to the original intent of the legislation.

Yet, there remains the opportunity to establish a new provincial *British Columbia Species At Risk Act* as a mechanism for clarifying, formalizing and integrating British Columbia’s new approach to species at risk management that supports and builds on existing legislation and regulation. The passing of this new legislation would also be a specific statement of the province’s clear commitment to species at risk and would position British Columbia as a leader in this regard.

A new provincial *British Columbia Species At Risk Act* could bring the following benefits (based partly on comments from the *Organization for Economic Cooperation and Development 2001 Environmental Outlook*):

- Clarity of jurisdiction between different levels of government and between the existing suite of federal and provincial legislation and regulation.
- Alignment and simplification of existing provincial species at risk legislation.
- Elimination of duplication and/or lack of clarity in existing provincial species at risk legislation.
- Clear, measurable and enforceable standards.
- Mandatory language and definitions, including clarifying the role of science in species at risk assessment and management decision-making processes.
- Effective compliance and enforcement mechanisms, including incentives and penalties.
- Effective consideration/inclusion of private land, including the establishment of effective and affordable incentives that will encourage private landowners to voluntarily undertake species at risk management on their land.
- Clarity around existing tenures and contracts, including compensation issues.

A new *British Columbia Species At Risk Act*, particularly through attendant regulations, could also offer the opportunity to establish clear and consistent direction on how provincially developed recovery strategies and action plans (or
whatever language we might choose to use in British Columbia to offset any potential confusion with existing SARA terminology) are to incorporate socio-economic analyses and assess their implications. This approach could also be used to formally incorporate the positive advances of the provincial Conservation Framework and Conservation Data Centre work into the province’s species at risk legislative suite.

One cautionary note is to recognize that even if British Columbia decided to proceed with a new provincial British Columbia Species At Risk Act, it would still be necessary to work with the existing suite of federal and provincial legislation in the interim until the new Act was passed, brought into force and implemented.

The above discussion about new provincial legislation has been focused explicitly on species at risk and has suggested some mechanisms for improving the management of these identified species through various legislative options. However, a more extensive option remains whereby British Columbia could consider pursuing a potential Ecosystems Act that would allow the province to take a much broader, holistic approach to manage and protect ecosystems generally. This option would move beyond the ‘fine-filter’ approach of dealing with species at risk in a one-off manner and instead take a ‘coarse-filter’ approach to maintaining effectively functioning ecosystems across the landscape and thereby incidentally achieve the province’s species at risk objectives. This approach, of course, could have significant socio-economic implications for land and resource development and utilization that would have to be thoroughly assessed prior to moving forward on this option.

4.5 Harmonization Agreement

Rather than establishing new legislation, it could conceivably be possible to work with the federal government to develop a harmonization agreement for the implementation of SARA in British Columbia. Such an agreement could be modeled after the harmonization agreement that was developed for the implementation of the federal Canadian Environmental Assessment Act with the provincial Environmental Assessment Act. SARA allows such administrative agreements to be put into place and it could be used to bring greater clarity to how British Columbia will establish and implement a provincial species at risk administrative process and timelines. However, this approach would likely not have the public profile or legislative clout that a new provincial Act would have and therefore it would likely not be as effective.

5.0 Key Issues

- **Legislative complexity:**
  - Consider the development of a new provincial British Columbia Species At Risk Act, that works in coordination with other existing federal and provincial legislation, for clarifying, formalizing and
integrating British Columbia’s new approach to species at risk management, and as a specific statement of provincial commitment and political will.

- Use this opportunity to clarify British Columbia’s objectives, approach and language in regard to developing recovery strategies and action plans.

**Administrative process:**
- Undertake a consultation process with key stakeholders (local government, scientists, resource development industries, environmental groups) to develop a clear and broadly accepted administrative process, with timelines, for the listing of species at risk and for the development of species at risk recovery strategies and action plans in British Columbia.
- Support a new administrative process for species at risk that is based on a five-step process as outlined above.
- Develop, and find broad agreement on, an analysis process that appropriately includes and considers a triple bottom line of biological/ecological, social/cultural and economic factors and values.
- Formalize, and find broad agreement on, recovery teams structure and representation.

**Private land:**
- Establish a fair and predictable system of incentives and/or compensation to improve species at risk management on private land.

**First Nations:**
- Engage First Nations on a government-to-government basis, consistent with the New Relationship, in the establishment of a new species at risk administrative process and potential new legislation.

**Prioritization:**
- Use the Conservation Framework process and Conservation Data Centre information to help establish species at risk provincial goals and objectives that will better focus what needs to be done and improve the efficient utilization of scarce resources.

**Urgency:**
- Start immediately.
Appendices

1. List of Some Key Acronyms

2. Definition of Some Key Terms

3. Summary of Legislative Implementation of Protection for Species at Risk on Private Land in Canadian Jurisdictions

4. Summary of Species at Risk Legislation by Jurisdiction in Canada: A Comparison
Appendix 1. List of Some Key Acronyms

CDC – Conservation Data Centre

CF – Conservation Framework in British Columbia

CESCC – Canadian Endangered Species Conservation Council

COSEWIC – Committee On the Status of Endangered Wildlife In Canada

ELUA – Environment and Land Use Act (provincial)

ELUC – Environment and Land Use Committee under ELUA (provincial)

FRPA – Forest and Range Practices Act (provincial)

GAR – Government Action Regulation under FRPA

IWMS – Identified Wildlife Management Strategy under FRPA

LGIC – Lieutenant Governor In Council

LRMP – Land and Resource Management Plan

MOU – Memorandum Of Understanding

OGAA – Oil and Gas Activities Act (provincial)

OGMA – Old Growth Management Area

PMFL – Private Managed Forest Land

SARA – Species At Risk Act (federal)

TFL – Tree Farm License

WA – Wildlife Act (provincial)

WAA – Wildlife Amendment Act (provincial)
Appendix 2. Definition of Some Key Terms

Action plan: A plan required under SARA that would set out the measures to be taken to implement a recovery strategy, set timelines, and evaluate the socio-economic costs and benefits of implementing the measures.

Assessment: The science process of determining the status of a potential species at risk.

Biogeoclimatic zone: A geographical area with a relatively uniform macroclimate, characterized by a mosaic of vegetation, soils and, to a lesser extent, animals, that reflects that macroclimate.

Conservancy: Crown land legally designated under the provincial Park Act or the Protected Areas of British Columbia as a conservancy to protect environmental values.

Critical habitat: Habitat that is necessary for the survival or recovery of a species and identified as such in a recovery strategy or action plan.

Critical wildlife area: An area in a wildlife management area that is designated under the provincial Wildlife Act as an area of critical habitat for a species.

Ecosystem: An area where the combined physical and biological components of an environment function and interact with each other.

Endangered species: A species that is facing imminent extirpation or extinction.

Extinct species: A species that no longer exists.

Extirpated species: A species that no longer exists in the wild in British Columbia but does still occur elsewhere.

Federal species: An aquatic species, migratory birds protected under the Migratory Birds Convention Act and all species on federal lands.

General wildlife measure: A provincial FRPA term whereby a general measure can be established and applied to a specified area for the protection or conservation of a species.

Identified Wildlife Management Strategy: This provincial strategy, authorized under FRPA and established by the minister responsible for the Wildlife Act, identifies two categories of wildlife which require special management attention to address the impacts of forest and range activities on crown land. The two categories are: species at risk; and, regionally important wildlife.
**Land use objective:** A provincial objective for the management and use of Crown land in British Columbia that has been determined through strategic land use planning processes or other land and resource planning processes. A land use objective may or may not be legally established under various legislation, e.g. FRPA or the *Land Act*.

**Listing:** The legal inclusion of a species at risk on the federal List of Wildlife Species At Risk under *SARA* or the inclusion of a species on the provincial CDC Red List or Blue List.

**List of Wildlife Species At Risk:** A legal listing of the species at risk approved by the federal cabinet under *SARA*.

**Management plan:** Any number of plans, usually required under various pieces of legislation and regulation, that are developed to achieve some type of land and/or resource objective.

**Old growth management area:** An area of crown land that has been identified for its old growth value and has been designated and reserved under legislation such as the provincial *Land Act*.

**Precautionary principle:** A land and resource management approach whereby if an action or policy has a suspected risk of causing harm to the public or to the environment, in the absence of scientific consensus to the contrary, the burden of proof that it is not harmful falls on those advocating taking the action.

**Private managed forest land:** Private land that is designated to be managed in the long term for its forest resources under the provincial *Private Managed Forest Land Act*.

**Recovery strategy:** A strategy required under *SARA* that assesses whether the recovery of a species at risk is technically and biologically feasible according to the best available information and, if feasible, addresses the threats to the survival of the species and the species’ habitat and identifies the species’ critical habitat to the extent possible.

**Recreation area:** Crown land reserved or set aside for public recreational use and legally established as a recreation area under the provincial *Park Act*.

**Residence:** A specifically identified area of occupation such as a nest or den.

**Species of special concern:** A species that may become threatened or endangered because of biological characteristics or identified threats.
**Strategic land use plan:** An approved provincial crown land and resource plan (e.g. LRMP) that establishes the strategic land and resource objectives for a specified area.

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

**Ungulate winter range:** An area of land that is necessary to the winter survival of an ungulate species.

**Wildlife habitat area:** An area of important wildlife habitat identified under the provincial FRPA.

**Wildlife habitat feature:** A specific feature important to wildlife that is identified under the provincial Government Actions Regulation under FRPA.

**Wildlife management area:** Crown land designated under the provincial Wildlife Act as a wildlife management area.

**Wildlife sanctuary:** Crown land in a wildlife management area designated under the provincial Wildlife Act as a wildlife sanctuary.

**Wildlife species:** Species, subspecies, variety or geographically or genetically distinct population of animal, plant or other organism, other than a bacterium or virus, that is wild by nature and native to Canada or has been present in Canada without human intervention for at least 50 years. (Note: This is the SARA definition. Other legislation often uses different language that captures or excludes some biological entities.)
## Appendix 3. Summary of Legislative Implementation of Protection for Species at Risk on Private Land in Canadian Jurisdictions

Note: This information was prepared by the Ministry of Environment, Ecosystems Branch.

<table>
<thead>
<tr>
<th>Application on private land</th>
<th>Canada</th>
<th>BC</th>
<th>AB</th>
<th>SK</th>
<th>MB</th>
<th>ON</th>
<th>QC</th>
<th>NB</th>
<th>NS</th>
<th>PEI</th>
<th>NFLD</th>
<th>YT</th>
<th>NWT</th>
<th>NU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approximate proportion of private land (%)</td>
<td>(NB 48% land in Canada is federal land)</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>11</td>
<td>11</td>
<td>51</td>
<td>69</td>
<td>92</td>
<td>1</td>
<td>?</td>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>Prohibitions for animals</td>
<td>● 8</td>
<td>● 9</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Prohibitions for plants</td>
<td>● 10</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Prohibitions for residences (nests, dens etc)</td>
<td>● 11</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Prohibitions for species habitat</td>
<td>● 12</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Compensation/purchase/expropriation</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Permits/Authorisation for incidental harm</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
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<td>●</td>
</tr>
</tbody>
</table>

**Legend:**
- ○ = not in legislation;
- ● = limited or partial ability in legislation;
- ● = full ability in legislation; blank = incomplete analysis

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2. Currently developing new species at risk legislation
3. Legislated stewardship funding and incentives in addition to prohibitions.
4. Legislated stewardship funding and incentives in addition to prohibitions.
5. Legislated stewardship funding and incentives in addition to prohibitions.
6. No species listed in legislation yet
7. Based on NWT’s legislation passed 2009, in force 2010
8. Requires safety net order to apply to private lands
9. Does not include invertebrates until *Wildlife Amendment Act 2004* brought into force.
10. Requires safety net order to apply to private lands
11. Requires safety net order to apply to private lands
12. Requires safety net order to apply to private lands
13. Compensation is available for property loss/damage caused by species at risk
Appendix 4. Summary of Species at Risk Legislation by Jurisdiction in Canada: A Comparison

Note: This information was prepared by the Ministry of Environment, Ecosystems Branch.

The ‘Jurisdiction’ table is available as a separate file.
<table>
<thead>
<tr>
<th>Jurisdiction</th>
<th>Stand-alone legislation?</th>
<th>Listing authority</th>
<th>Covers Plants and Invertebrates</th>
<th># of Species Listed (Plants)</th>
<th>Prohibition against harm</th>
<th>Protection of 'Residences'</th>
<th>Critical Habitat</th>
<th>Recovery Planning</th>
<th>Private Land</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Columbia</td>
<td>No</td>
<td>Yes (By Cabinet)</td>
<td>Yes (Animals, fish, plants &amp; other organisms – except bacteria &amp; viruses)</td>
<td>None</td>
<td>Yes (A person must not kill, harm, harass, capture, take, etc., species individuals)</td>
<td>Yes (A person must not damage)</td>
<td>Partial</td>
<td>Yes (By policy, not mandatory)</td>
<td>Not in effect</td>
</tr>
<tr>
<td>Wildlife Act 1996 (Current)</td>
<td>Yes</td>
<td>No</td>
<td>4 species (Through regulation in 2000; no plants included)</td>
<td>Yes (limited) (Prohibits hunting, taking, trapping, wounding or killing a wild vertebrate that is an endangered or threatened species)</td>
<td>No (Only some bird nests; depends on species or occupation)</td>
<td>Partial (Only within a wildlife management area for designated endangered or threatened species)</td>
<td>Yes (By policy, not mandatory)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Forest and Range Practices Act *[only applies to forest and range agreement holders]</td>
<td>Yes</td>
<td>Yes (By capital Minister of Environment – species at risk including endangered, threatened or vulnerable)</td>
<td>Yes ('Wildlife' includes vertebrates, non-tidal fish, invertebrates, plants)</td>
<td>85 species (Includes 17 plants and plant communities)</td>
<td>No</td>
<td>Yes (Partial) (Covered under Wildlife Habitat Features – forest and range activities must not damage or render ineffective)*</td>
<td>Partial (Prescribed – only for forest and range activities within Wildlife Habitat Areas; must comply with measures)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Canada</td>
<td>Yes</td>
<td>Yes (s.27(1) by Cabinet, on recommendation of Minister) (Extirpated, endangered &amp; threatened species)</td>
<td>Yes (Vertebrates, invertebrates and plants; not bacteria or viruses)</td>
<td>382 species (Updated regularly through OIC)</td>
<td>Yes (Not kill, harm, harass, capture or take)*</td>
<td>Yes (Not damage or destroy)</td>
<td>Yes (Designated 'Critical Habitat'; protection mandatory on Federal Lands)*</td>
<td>Yes (Mandatory)</td>
<td>Yes</td>
</tr>
<tr>
<td>Province</td>
<td>Endangered Species Act (Year)</td>
<td>Brought into force</td>
<td>Provisions for other species/lands</td>
<td>Yes/No</td>
<td>Partial Prohibition of hunting/trapping a 'specially protected mammal, amphibian, reptile, invertebrate or bird' or other bird that is wild by nature but not a game bird or swimming animals</td>
<td>No/Yes</td>
<td>Yes/No</td>
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<tr>
<td>Ontario</td>
<td>Endangered Species Act (2007)</td>
<td>30 June 2008</td>
<td>184 species (In regulation)</td>
<td>Yes</td>
<td>'No person shall kill, harm, harass, capture or take a living member of a species that is listed on the Species at Risk in Ontario List as an extirpated, endangered or threatened species'</td>
<td>Yes</td>
<td>Yes</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(Includes 75 plants)</td>
<td></td>
<td>(Not damage or destroy 'habitat' for listed species)</td>
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<td>(Habitat' may be prescribed in regulation; otherwise habitat is 'an area on which the species depends, directly or indirectly, to carry on its life processes...’‘and includes places...used...as dens, nests, hibernacula or other residences')</td>
<td></td>
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<tr>
<td>Quebec</td>
<td>An Act Respecting Threatened or Vulnerable Species 1989 [listing], and Act Respecting the Conservation and Development of Wildlife with consultation</td>
<td></td>
<td>77 species (see next page)</td>
<td>Yes</td>
<td>(Both plants/wildlife: 'No person may possess a specimen of a listed plant species outside its natural environment or harvest, exploit, mutilate, destroy, acquire, transfer,</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>(Includes 59 plants)</td>
<td></td>
<td>(Not disturb, destroy or damage the eggs, nest or den of an animal)</td>
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<td></td>
<td></td>
<td></td>
<td>(Through regulation; updated to 2007)</td>
<td></td>
<td>(Not hunt or disturb big game while it is in its yard.)</td>
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<td></td>
<td></td>
<td>Similar (Wildlife and plant habitat)</td>
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<td></td>
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<td></td>
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<td></td>
<td>(s. 111 Minister may include in a wildlife sanctuary any private land subject to an agreement)</td>
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<td></td>
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<td></td>
<td></td>
<td>(Inspector of plant life may enter onto private land)</td>
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<td></td>
<td>(s. 41: Landowner can't be convicted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alberta</td>
<td>No Wildlife Act 2000</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes (Partial)</td>
<td></td>
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<tr>
<td></td>
<td>Wilderness Areas, Ecological Reserves,</td>
<td>(By Minister in Act based on committee with independent scientific sub-committee; authority to list in Regulation)</td>
<td>(Animals, fish, invertebrates, plants, algae and fungi)</td>
<td>24 species (4 plants) (Through regulation in 1997; updated in 2000, 2002, 2006 &amp; 2007)</td>
<td>(Partial) (Habitat conservation areas may be established through regulation)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>24 species (4 plants)</td>
<td>(Through regulation in 1997; updated in 2000, 2002, 2006 &amp; 2007)</td>
<td>Yes</td>
<td>(A person shall not willfully molest, disturb, destroy a house, nest or den of prescribed wildlife in prescribed areas)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Yes (Partial)</td>
<td>(Partial) (Habitat conservation areas may be established through regulation)</td>
<td>Yes</td>
<td>(Not mandatory)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Yes – no distinction made except re: sanctuaries</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>- Hunting/ fishing, animal-by-animal</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Saskatchewan</td>
<td>No</td>
<td>Wildlife Act, 1998 Part V + Wildlife Habitat Protection Act (1998)</td>
<td>Yes (By Cabinet, where Minister determines – extirpated, endangered, threatened, vulnerable)</td>
<td>Yes (Plant, animal or organism; ‘wild species’ and ‘wild species at risk’)</td>
<td>15 species (Includes 6 plants) (Through regulation in 1999; no updates)</td>
<td>Yes (Partial) (In regulation: No person shall kill, injure, etc., genetically manipulate or interfere with any designated species)</td>
<td>Yes (Partial) (Cabinet has authority to make regulations re: habitat on Crown land)</td>
<td>Yes Discretionary</td>
<td>Yes</td>
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<td>---------------------------------------------</td>
</tr>
<tr>
<td>Manitoba</td>
<td>Yes</td>
<td>Endangered Species Act (1990)</td>
<td>Yes (By Cabinet, on advise of a majority-scientist advisory committee selected by Minister – extinct, extirpated, endangered and threatened species)</td>
<td>Yes (‘Plant or animal life’)</td>
<td>35 species (Includes 10 plants) (Through regulation passed in 1998; updates in 2001, 2006, 2007 and 2008)</td>
<td>Yes (Partial) (No person shall kill, injure, disturb or interfere with)</td>
<td>Yes (Not destroy, damage, obstruct or remove a ‘natural resource’ on which a listed species depends for its life and propagation)</td>
<td>Yes Partial</td>
<td>Yes Expicit</td>
</tr>
</tbody>
</table>

<p>| Natural Areas and Heritage Rangelands Act, R.S.A. 2000 | via WA 163(1)(z)) | and at prescribed times) (Prescribed in regulation: nests and dens of endangered animals throughout the year) | ecological reserves to preserve rare/endangered native plants/animals – can’t destroy or damage any land, water, plantlife or animal life without Minister’s permit) | WA – not willfully destroy nest or eggs of any game bird or any bird listed in Div. 6 of [Wildlife Act] | [WA – No person shall destroy or damage habitat on Crown land] |</p>
<table>
<thead>
<tr>
<th></th>
<th>Yukon</th>
<th>Northwest Territories</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Yes (Commissioner in Exec. Council – specially protected wildlife)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>No (Partial)</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>9 species (By regulation (Sched. H Part V) in 1982; updated in 2002, 2003 and 2006) (No plants)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>No (Partial)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Yes (Partial)</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>(92(1) Shall not harass wildlife; i.e. capture, handle, manipulate or attempt to do so (unless prescribed by regulation))</td>
<td>Partial</td>
</tr>
<tr>
<td></td>
<td>Yes (Partial)</td>
<td>(Habitat protection areas may be established)</td>
</tr>
<tr>
<td></td>
<td>(91(1) No person shall damage or interfere with a beaver dam, or the den, lair or nest of any wildlife); does not apply to private land</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>No (Partial)</td>
<td>Yes</td>
</tr>
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<td>Yes</td>
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<td></td>
<td>No</td>
<td>Yes</td>
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<tr>
<td></td>
<td>No</td>
<td>Yes</td>
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<tr>
<td></td>
<td>Nunavut</td>
<td>Newfoundland and Labrador</td>
</tr>
<tr>
<td>----------------</td>
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<td>---------------------------</td>
</tr>
<tr>
<td>Act</td>
<td>(Wildlife Management Board 'NWMB' – extirpated, endangered, threatened, special concern under S. 131(2))</td>
<td>(By Minister, with approval of Cabinet – extinct, extirpated, endangered, threatened and vulnerable)</td>
</tr>
<tr>
<td>Act</td>
<td>Yes Flora and fauna (Act excludes marine plants and fish, bacteria and viruses; S.7 (3))</td>
<td>Yes 'Species wild by nature' (Not exclusively saltwater fish, not bacteria, not viruses)</td>
</tr>
<tr>
<td>Act</td>
<td>Yes $62$ not harvest, harm, interfere – except for special concern species or unless specifically authorized by a SAR licence etc.)</td>
<td>Yes (Not disturb, harass, injure or kill)</td>
</tr>
<tr>
<td>Act</td>
<td>Yes (Must not destroy, damage, disturb, interfere with an 'abode' within critical habitat)</td>
<td>Yes (Not disturb or destroy) (Protection is automatic for all listed species that have a residence as defined in the Act)</td>
</tr>
<tr>
<td>Act</td>
<td>Yes (Critical habitat)</td>
<td>Yes (Critical habitat provisions)</td>
</tr>
<tr>
<td>Act</td>
<td>Yes</td>
<td>Yes (Mandatory)</td>
</tr>
</tbody>
</table>

for conservation of habitat
Must consult with private land-owner prior to making regulations or designating habitat

Yes  (Wildlife Management Board 'NWMB' – extirpated, endangered, threatened, special concern under S. 131(2))

No
For Nunavut, the Wildlife Act (2003) is applicable, but the Northwest Management Board (NWMB) has the authority to designate special concern species and provide protection for them.

For Newfoundland and Labrador, the Endangered Species Act (2001) is in effect, with the Species at Risk Regulations providing additional protection for species of concern.

For Nova Scotia, the Endangered Species Act (1998) and Species at Risk Regulations provide protection for species of concern, with the Minister given authority to designate core habitat on private lands where public land is insufficient for recovery.

The table outlines the key legislation and regulations in place for each jurisdiction, along with the specific protections and requirements for designated species.
<table>
<thead>
<tr>
<th>Province/State</th>
<th>New Legislation</th>
<th>Endangered Species Act (1996)</th>
<th>'Fauna and flora'</th>
<th>Critical habitat</th>
<th>Partial Protections</th>
<th>Protects</th>
<th>All land, including federal!</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Brunswick</td>
<td>Yes</td>
<td>Yes (Cabinet – 'endangered and regionally endangered' species)</td>
<td>16 species (Includes 8 plants) (Through regulation passed in 1996; no updates)</td>
<td>Yes (Not possess; or willfully/knowingly kill, injure, disturb or interfere with; or attempt to kill etc.)</td>
<td>Yes (Partial) (Not willfully or knowingly destroy, disturb or interfere with)</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>Wildlife Conservation Act (2004)</td>
<td>None (Therefore, prohibitions are Not in Effect)</td>
<td>Government website refers to federal listing</td>
<td>Yes (Not kill, injure, possess, disturb, or take any endangered or threatened species)</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Yes (Cabinet, where Minister considers extinct, extirpated, endangered, threatened and special concern)</td>
<td>56 species On proposed initial list</td>
<td>Partial Protctions NOT automatic on listing – Cabinet must apply provisions to species</td>
<td>Potentially Depends on Cabinet decision with regard to harm and recovery planning</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Yes</td>
<td>Yes</td>
<td>Similar</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>Doesn't appear to include plants</td>
<td>163 (includes marine fishes, federally or state listed)</td>
<td>wdfw.wa.gov/wlm/diversity/soc/soc.htm + (190 species on the State Monitor Species List; managed to prevent from being species of concern) + (113 on a Candidate Species)</td>
<td>Yes by ESA and Yes by WA state if deemed priority habitat</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Washington State</td>
<td>Yes</td>
<td>Washington Administrative Codes 232-12-014 and 232-12-011</td>
<td>Yes 'Species of concern' aka 'priority species' includes: endangered, threatened, sensitive, candidate + State Monitor Species List + Priority Habitats &amp; Species List (certain)</td>
<td>Yes (Not destroy or disturb) (Protection of 'wildlife habitat' is automatic for all listed species)</td>
<td>Yes by state law if deemed Priority Habitat</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>terrestrial/aquatic habitats and habitat features)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>of Concern list)</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

(Science-based in part, but uncertain if independent)
Appendix 2.

The New Relationship
The New Relationship

I. Statement of Vision

We are all here to stay. We agree to a new government-to-government relationship based on respect, recognition and accommodation of aboriginal title and rights. Our shared vision includes respect for our respective laws and responsibilities. Through this new relationship, we commit to reconciliation of Aboriginal and Crown titles and jurisdictions.

We agree to establish processes and institutions for shared decision-making about the land and resources and for revenue and benefit sharing, recognizing, as has been determined in court decisions, that the right to aboriginal title “in its full form”, including the inherent right for the community to make decisions as to the use of the land and therefore the right to have a political structure for making those decisions, is constitutionally guaranteed by Section 35. These inherent rights flow from First Nations’ historical and sacred relationship with their territories.

The historical Aboriginal-Crown relationship in British Columbia has given rise to the present socio-economic disparity between First Nations and other British Columbians. We agree to work together in this new relationship to achieve strong governments, social justice and economic self-sufficiency for First Nations which will be of benefit to all British Columbians and will lead to long-term economic viability.

II. Goals

Our shared vision includes a celebration of our diversity, and an appreciation of what we have in common. We recognize the vision of First Nations to achieve the following goals:

1. To restore, revitalize and strengthen First Nations and their communities and families to eliminate the gap in standards of living with other British Columbians, and substantially improve the circumstances of First Nations people in areas which include: education, children and families, and health, including restoration of habitats to achieve access to traditional foods and medicines;
2. To achieve First Nations self-determination through the exercise of their aboriginal title including realizing the economic component of aboriginal title, and exercising their jurisdiction over the use of the land and resources through their own structures;

3. To ensure that lands and resources are managed in accordance with First Nations laws, knowledge and values and that resource development is carried out in a sustainable manner including the primary responsibility of preserving healthy lands, resources and ecosystems for present and future generations; and

4. To revitalize and preserve First Nations cultures and languages and restore literacy and fluency in First Nation languages to ensure that no First Nation language becomes extinct.

The strategic vision of the Province for British Columbians is:

1. To make B.C. the best educated, most literate jurisdiction on the continent;

2. To lead the way in North America in healthy living and physical fitness;

3. To build the best system of support in Canada for persons with disabilities, special needs, children at risk and seniors;

4. To lead the world in sustainable environmental management, with the best air and water quality, and the best fisheries management, bar none; and

5. To create more jobs per capita than anywhere else in Canada.

This vision can only be achieved if First Nations citizens attain these goals. To achieve these strategic goals, we recognize that we must achieve First Nations economic self-sufficiency and make First Nations a strong economic partner in the province and the country through sustainable
land and resource development, through shared decision-making and shared benefits that support First Nations as distinct and healthy communities. All British Columbians will benefit from a richer understanding of First Nations culture and from economic, political and cultural partnerships with First Nations. We therefore agree to the following principles and action plan.

III. Principles to Guide the New Relationship

We will mutually develop processes and implement new institutions and structures to achieve the following:

• integrated intergovernmental structures and policies to promote co-operation, including practical and workable arrangements for land and resource decision-making and sustainable development;

• efficiencies in decision-making and institutional change;

• recognition of the need to preserve each First Nations’ decision-making authority;

• financial capacity for First Nations and resourcing for the Province to develop new frameworks for shared land and resource decision-making and to engage in negotiations;

• mutually acceptable arrangements for sharing benefits, including resource revenue sharing; and

• dispute resolution processes which are mutually determined for resolving conflicts rather than adversarial approaches to resolving conflicts.

This vision statement to establish a new relationship has been written as a measure of good faith by
the parties to put into words our commitment to work together to explore these concepts and
develop their full meaning.

IV. Action Plans

We agree to work together to manage change and take action on the following:

1. Develop new institutions or structures to negotiate Government-to-Government
   Agreements for shared decision-making regarding land use planning, management,
tenuring and resource revenue and benefit sharing;

2. Identify institutional, legislative and policy changes to implement this vision and
   these action items;

3. Develop additional protocols or accords to further the implementation of the vision,
as required from time to time;

4. Identify processes to ratify agreements;

5. Establish funding and distribution structures/institutions to support First Nations’
capacity development and effective participation in the processes established through
these action items;

6. Establish effective procedures for consultation and accommodation;

7. Appoint a joint working group to review Forest and Range Agreements and make
recommendations to the parties on options for amending those agreements, in order
to make them consistent with the Vision and Principles above;

8. Identify and develop new mechanisms on a priority basis for land and resource
protection, including interim agreements;

9. Develop impartial dispute resolution processes and work towards a decrease in conflicts leading to litigation; and

10. Create an evaluation process for monitoring and measuring the achievement of this vision and these action items.

V. Management Committee and Working Groups

The parties will establish a joint management committee of senior officials to:

• develop terms of reference, priorities, and timelines for the management committee and the working groups by May 31, 2005;

• identify current issues of substantial concern, and consider short and long term steps the parties could take to facilitate their resolution;

• jointly develop policy frameworks;

• establish joint working groups and provide direction, timelines and co-ordination to further the implementation of the action items;

• identify and allocate financial and technical resources for the work of the management committee and the working groups;

• make recommendations to the parties to address problems as they arise in the implementation of the vision; and

• engage the Government of Canada.
Appendix 3.

Submissions to the Ministry of Environment website
Importance of British Columbia’s Biodiversity

British Columbia is a special place for biodiversity. A full comprehensive review of this importance is found in *Taking Nature’s Pulse: The Status of Biodiversity*, prepared by Biodiversity B.C. in 2008.\(^1\)

Climate and physiography are the two most important determinants of this biological diversity. The interplay between warm, moist Pacific air and Interior and Arctic air masses occurring over a physically diverse landscape spanning 11 degrees of latitude has resulted in a dazzling array of climates, life forms, and ecosystems.

B.C. is a bi-geographic crossroads, featuring coastal mountains, lowlands, fjords and myriad islands; several parallel mountain ranges, from the Coast-Cascades to the Rockies; extensive plateaus in the southern and northern interior; and the northern portion of the Great Plains (east of the Rockies in the Peace/Fort Nelson region). The province falls within three of the four terrestrial ecodomains in North America, and includes some of the cool oceanic marine ecodomain. It includes elements of the north Pacific oceanic, humid temperate maritime, humid temperate continental, boreal and subarctic plains and highlands, and temperate steppe (grassland) ecozones. B.C. encompasses landscapes and ecosystems representative of parts of adjacent regions (Oregon, Washington, Idaho, Montana, Alberta, Northwest Territories, Yukon, and Alaska).

B.C.’s ecosystems range from massive coniferous rainforests to high elevation elfin forests and meadows, from hot dry grasslands and shrub-steppe in the southern interior to northern boreal forests and tundra, and include wetland systems as varied as alkaline marshes, peat bogs and cottonwood-dominated river floodplains.

B.C. hosts uncommonly high species richness (*alpha* diversity) for north temperate regions, especially considering its northerly latitudes, the preponderance of rock, ice and snow in much of its landscape, and the fact of Pleistocene glaciation. In addition, there is much between-habitat (*beta* diversity). Forests predominate, covering over 55 percent of the province’s total land area, and they include needle-leaf evergreen, deciduous, mixed-wood, and even a bit of broad-leaved evergreen (Georgia Basin) forest types.

B.C. also has extensive grasslands, wetlands, and alplands. In the ruggedly mountainous regions with sharp climatic gradients, the rate of change in species composition (*gamma* diversity) accelerates rapidly from low to high elevations (ocean through forests to alpine in many cases), from south to north, and from west to east, from the wet coast to the dry interior. And all this terrestrial ecosystem diversity is supplemented, enhanced, and connected by the aquatic realm, with its variety and range of freshwater and marine habitats.

The ecological diversity of B.C. is globally significant: 16 biogeoclimatic zones are defined by the Biogeoclimatic Ecosystem Classification, each with numerous diverse habitats, dry to wet, forested and/or non-forested. Two of these zones are not found anywhere else in the world.\(^2\)

Not surprisingly, B.C. is the most diverse province or territory in Canada, physically and ecologically, and has the highest number of native species. The number of at-risk species in the province is also high compared to other jurisdictions of similar latitudes.\(^3\)

The province currently has **global stewardship responsibility** for a large proportion of the world’s ancient temperate rainforests, wild rivers, salmon and rich marine ecosystems. By hosting a large portion of the world population or range of some species, such as mountain goat and sooty grouse, B.C. has a global responsibility for their conservation. The province has also become a globally important refuge for formerly common or widespread species, like grizzly bear and wolverine. Thus, B.C. has increased international responsibility for species—including several high profile carnivores and ungulates—once widespread across North America but whose ranges have collapsed towards the province.\(^4\)

This concept of global responsibility applies beyond species. B.C. has globally significant biophysical diversity and landscape complexity, as well as internationally significant, dynamic systems like the intact large-mammal predator-prey and wild river-salmon-grizzly bear-forest systems.
“Biodiversity conservation is not, and should not be, a sole question of the number of taxa in an ecosystem; rather, it must also address the maintenance and function of natural ecological and evolutionary patterns and processes in systems as undisturbed as possible.”

**B.C.’s globally significant biodiversity highlights include:**

- Approximately 60 percent of the province’s original forest remains, with high proportions of the world’s intact coastal temperate rainforests and Interior wetbelt snow-forests or ‘inland rainforests’.
- Vast intact wilderness areas encompassing entire mountain ranges and large watersheds, with large undeveloped river and lake systems sustaining pristine water quality and aquatic habitat (intact freshwater aquatic habitats are one of the rarest class of ecosystems in the world).
- Glacier-influenced watersheds (those with more than 5 percent of their area covered by glaciers) covering 20 percent of the province, and identified as one of the special elements of B.C.’s biodiversity.
- Intact large-mammal predator-prey systems with continentally important populations of grizzly bear, Stone’s sheep (*Ovis dalli stonei*), mountain goat, woodland mountain caribou (*Rangifer tarandus montanus*), grey wolf (*Canis lupus*), cougar (*Felinis concolor*), wolverine, lynx (*Lynx canadensis*), and fisher (*Martes pennanti*).
- Coastal predator-prey systems of peregrine falcon (*Falco peregrinus*) /bald eagle (*Haliaeetus leucocephalus*) and seabirds.
- Major North American flyways with important wetland staging, nesting, and wintering areas for waterfowl and neotropical migrants, along the coast, through interior plateaus and mountains, and the Interior Plains.
- Species for which B.C. has global stewardship responsibility. These include endemic taxa, for example, Vancouver Island marmot (*Marmota vancouverensis*), Newcombe’s butterweed (*Sinosenecio newcombei*), as well as those that have the majority or a large portion of their population or range in the province, for example, mountain goat, Stone’s sheep, sooty grouse, Barrow’s Goldeneye (*Bucephela islandica*), and white sturgeon (*Aci penser transmontanus*).
- Distinctive coastal and intermontane grasslands including the Okanagan Basin—a northern extension of Great Basin-type shrub-steppe and dry forest.
- Globally rare combinations of ecosystems of wet coastal and Mediterranean-type environments with mountain/forest/grassland ecosystems in close proximity, in the Georgia, Nanaimo and Fraser lowlands.
- Extensive island archipelago systems, for example, Haida Gwaii and its endemic biota.

**Summary of Biodiversity in B.C.**

British Columbia’s dazzling array of climates, landforms and ecosystems represents a natural heritage that is globally significant. From steppe to alpine, tundra to rainforest and mountain wilderness to rich coastal estuaries, these ecosystems provide habitat for assemblages of plant and animal species that are unusually rich for a northern temperate region. British Columbia is home to three-quarters of Canada’s mammal and bird species, 70 percent of its freshwater fish, 60 percent of its evergreen trees, and thousands of other animals and plants.

Some of these species, such as the Vancouver Island marmot, live nowhere else on earth. Some, such as mountain goat and mountain caribou, live mostly in this province. For others, such as grizzly bears and salmon, B.C. has become a globally important refuge as these species have declined precipitously or have been eliminated elsewhere across their historical range. British Columbia also has a global stewardship responsibility for a large proportion of the world’s remaining ancient temperate rainforests, wild rivers and rich marine ecosystems.
Summary of Future Ecosystem Responses

The predicted changes in climate in this century are expected to result in significant ecological change, in addition to what has been witnessed to date. Although uncertainties abound, two principles guide the interpretation of these changes. First, ecosystems do not migrate—species do. Second, most species cannot disperse (move) quickly enough to keep pace with the projected changes. These two factors together will affect how future ecosystems take shape as plant and animal species shift their ranges largely independently and at different rates.

Over time, projected changes will result, at least in southern B.C., in trends such as increases in weedy, drought-tolerant, and alkali-tolerant species, and decreases in moisture-loving and acid-tolerant species. Elements of southern forests and grasslands will expand northward but these grasslands will probably be ‘mongrel’ ecosystems with high proportions of invasive species. Forests will move upslope into alpine habitats. Decreasing snowpacks, shrinking glaciers, melting permafrost, warming streams and oceans, increasing frequency and intensity of disturbances—including pest outbreaks, wildfires, storms, floods, drought and erosion—will negatively affect the structure and function of all present-day ecosystems. In other words, they will undergo ecological upheaval and some will unravel. As agents of change, shifting disturbance regimes and patterns could become as important as increasing temperatures and changing levels of precipitation. The increasingly acute threat to nature as we know it is not climate change acting in isolation, but rather the combination of climate change and intensifying changes made to natural landscapes and systems by humans. Responses of B.C. ecosystems to these changes will be complex and are difficult to predict because they reflect the combined and synergistic effects of changing climate, natural disturbances, land and resource uses, and the spread of invasive species.

Some of these changes may have short-term benefits for people, for example, a longer growing season, but most will adversely affect the province’s natural capital and the goods and services that British Columbians derive from nature. Climate-related impacts are already changing the way ecosystems work for us. The ability of ecosystems to produce oxygen, purify water, make soil or adjust to disturbances will be challenged in new and unpredictable ways. As well as natural disturbances, increased human disturbances, diseases, and invasive species will exacerbate the effects of climate change. What we do on land matters for the oceans as well. Oceans are a large sink for CO$_2$, but as emissions of CO$_2$ go up, oceans are absorbing more CO$_2$, forming more carbonic acid, and acidifying at an escalating rate. Thus as calcium carbonate becomes less available, the oceans are becoming less hospitable for many organisms—including shellfish—that store carbon in their bodies, shells, and skeletons, and on which we directly and indirectly depend for food and our economy.

Future Species Responses

Species confronting rapid environmental change will either go extinct or survive. The extinction risk increases if suitable habitat conditions either disappear entirely or, as is more likely, if habitats shift more rapidly than resident species can migrate. Species have three survival options: acclimatize to the new conditions, evolve new coping mechanisms, or migrate to suitable habitats elsewhere. For many organisms, evolution probably will not occur rapidly enough to keep up with the current and anticipated rapid pace of climate change, especially if habitats have already been degraded by various land uses.

Species of Most Concern

The conservation status of only 3,841 species native to the province has been assessed, a small fraction of the more than 50,000 species that exist here. The relatively well-known species include vascular and non-vascular plants, vertebrates (mammals, birds, amphibians, reptiles and freshwater fish), and selected invertebrates (non-marine molluscs, butterflies/skippers, and dragonflies). For these taxonomic groups, analyses of global and provincial conservation status (imperilled, vulnerable, apparently secure, and so on), trends, and patterns are available. More usefully, these species have also been assessed for the proportion of their global range that occurs in...
B.C. Thus we know that about 100 of the 3,841 species assessed have all or the majority (that is, greater than 50 percent) of their global range, area or population within our province. These 100 or so are the species for which British Columbia is known to have the greatest stewardship responsibility. Whether a species is a) endemic and secure, for example, Newcombe’s butterweed; b) endemic and at risk, for example, Vancouver Island marmot and several white sturgeon populations; c) widespread but vulnerable for example, bull trout (*Salvelinus confluentus*) or; d) widespread and secure, for example, mountain goat and sooty grouse. For most of these species the most favourable portion of their range, and the area best placed for their conservation is currently in B.C.

Many of the species officially listed as at risk in B.C. are either northern boreal or arctic-alpine taxa at the southern limit of their range, or they are southern taxa, whose northern range limits extend to southern parts of the province. The northern species are unlikely to persist in outpost localities as climate continues to warm and to push their climatic envelopes northward and upward. If populations of northern species peripheral in B.C. are widespread and secure in the Yukon, Northwest Territories and/or Alaska, B.C. conservation efforts need not be preoccupied with them. In contrast, species with southern affinities that reach their northern range limit in B.C. could spread farther north and become more frequent in a warmer, future B.C.

When one analyses the distributional patterns of species in the province, one quickly notices that both species richness and the numbers of species at risk are highest in southern B.C. The ecological impacts of urbanization and agriculture are also most pronounced in low-elevation areas throughout southern British Columbia. The Coastal Douglas-fir (CDF), Bunchgrass (BG) and Ponderosa Pine (PP) zones, all of which have a restricted distribution in B.C., have already been particularly affected.

Another way of addressing this issue is to look at the distributional patterns of species with a majority of their range in B.C., the ‘stewardship responsibility group.’ The resulting pattern is similar, with increased profile for Haida Gwaii and Vancouver Island and the north, and more focused emphasis on the Lower Mainland and the Southern Interior. Either way, the four lower elevation biogeoclimatic zones (CDF, BG, PP, and IDF) of southern B.C. host the most species diversity and concentrations of species at risk. These areas also have the highest densities of human population and have lost the most habitat to urbanization, rural residential use, transportation corridors, and agriculture. The same four zones plus parts of the Coastal Western Hemlock zone, particularly Vancouver Island and Haida Gwaii (both heavily logged), are most significant with respect to the stewardship species. Much habitat has been lost or degraded already and the remnants are particularly vulnerable to human impacts in addition to climate change.

### Specialised Species

Species of unusual specialised habitats (for example, archaeabacteri and molluscs in hot springs, ferns (for example, *Polystichum kruckebergii*, *P. scopulinum*) restricted to ultrabasic bedrock, and subterranean cave species) are more likely to persist—as long as their special habitats continue to exist. In any case, the special enduring features (hot springs, serpentine talus, and karst terrain) will probably continue to support regionally rare or unusual species and ecosystems indefinitely. The Grand Canyon of the Stikine, the ultrabasic bedrock of the Shulaps Range, hot springs, coastal dunes, karst on Vancouver Island and Haida Gwaii, and spray zones of waterfalls will continue to support some sort of regionally unusual biota almost regardless of how much the climate changes. It probably makes conservation sense to focus on the special enduring features as much as on their unusual contemporary species.

### Keystone Species

Some species are more important ecologically than others, regardless of their commonness or rarity. This includes animal species at higher trophic levels—abundant herbivores and top carnivores, responsible for top-down regulation of both terrestrial and aquatic ecosystems. The interplay and feedback among higher trophic levels (consumers: herbivores and predators) can have a large effect on plant species composition and ecosystem productivity. Examples are moose and gray wolf in boreal forest; black-tailed deer and cougar in coastal forests; snowshoe hare and Canada lynx in northern forests; overabundant Sitka black-
tailed deer introduced on Haida Gwaii and Rocky Mountain elk (numbers increased as a result of burning practices) in the northern Rockies. Keystone species are those that exert a disproportionately large influence on ecosystems, much larger than would be expected from their abundance. Some—like beaver—have been characterized as ecosystem engineers, creating habitat or niche space for a host of other species. Keystone species can also include ‘strongly interacting’ species, including top predators like gray wolf, cougar, lake trout, and falcons, as well as small mammals that form the prey base, such as voles and snowshoe hares. The reintroduction of gray wolves into Yellowstone National Park in Wyoming has demonstrated both the keystone role that top predators can perform and the importance of that role in the face of climate change. Wolves determine the availability of carrion and buffer the effects of climate change for the scavengers reliant on carrion. Without wolves prolonging the late winter carrion, many scavengers would go hungry as the winters warm and shorten.

If climate change has a significant impact on any of these sorts of species, most of which are not considered conventionally to be at risk, the cascading consequences for other species and for ecosystems could be huge. The overall effect on biodiversity and ecosystem services will be much greater than that from the extirpation of rare listed species.

**Significance of Trees as Foundation Species**

Trees also provide a hugely important role and have been described as ‘foundation’ species. Impacts on B.C.’s common and abundant tree species, which so dominate the province’s forests, will also have consequences for virtually every forest organism—from caribou to birds and beetles to boletes. Lodgepole and other pine species will probably continue to be attacked by bark beetles as well as by insects and diseases of young stands. The extent and severity of outbreaks of bark beetles and other pathogens on pine species have long-term effects; for example, attacks by bark beetles lead to declining mature overstory trees of ponderosa pine forests, in turn impacting wildlife species reliant on these trees for habitat. White spruce is vulnerable to a combination of spruce beetle and root rot and perhaps spruce budworm. Lodgepole pine and white spruce should persist in B.C. but likely will become less abundant in this century. Subalpine fir could decrease at lower elevations generally and at high elevations in southern B.C., but increase in abundance at higher elevations in the north. Deciduous trees—for example trembling aspen, paper birch, and cottonwood—are also having their own problems with defoliating insects and disease. After insect epidemics and/or fire, their ranges might shift into areas originally occupied by evergreens, in large part because of a pioneering/early successional lifestyle and the ability to reproduce vegetatively. The climate in central and parts of northern B.C. could become suitable for Douglas-fir and maybe even western hemlock within 80 years. Western redcedar, B.C.’s provincial tree, could expand its range significantly in the Kootenays, the central interior, and on the north coast, but could also suffer widespread decline in south coastal B.C. generally.

B.C. is a forested province. Individual tree species are of paramount importance to B.C.’s biodiversity and ecosystem services. Trees are integral to carbon sequestration and storage, and albedo characteristics (discussed in part 2 of this report). There are relatively few dominant tree species and not much redundancy in that ecological niche. Genetically, many of the province’s tree species may be severely impacted by the climate change challenge (see fuller discussion on genetics in the section on Adaptive Capacity of Trees). For all of these reasons, B.C.’s tree species should be of high conservation concern. Some, like whitebark pine and limber pine, could be legitimately considered to be at risk. Others, like western redcedar and yellow-cedar, deserve close attention, especially in light of their cultural and economic significance, and the chronic highgrading of these species on the coast.

**Summary of Future Species Responses**

Species confronting rapid environmental change will either go extinct or survive in one of three ways: by
acclimatizing, evolving, or migrating to suitable habitats elsewhere. Those that adapt in their original location will have additional competition from other species or genotypes better suited to the new local environment. Many species will not be able to keep up with the rapid pace of climate change, especially if habitats have already been degraded by various land uses. Both species richness and the numbers of species at risk are highest in low elevation areas of southern B.C., where the current conservation crisis will only get worse as land and water degradation exacerbates climate change impacts. Species adapted to specialised habitats are more likely to persist as long as their special habitats continue to exist. Impacts from climate change to keystone species, which exert a disproportionately large influence on ecosystems, will have huge cascading consequences for other species and for ecosystems. Indeed, the overall effect on biodiversity and ecosystem services will be much greater than extirpation of some threatened and endangered species.

Future Genetic Responses

Genes are the functional units of heredity and evolution. The genetic diversity that exists within species enables them to adapt to changing environments and is the ultimate source of biodiversity at species and ecosystem levels. Understanding species and ecosystems, their biology and ecology, requires at least a rudimentary understanding of genetics and systems of genetic variability. A key to conserving genetic resources is understanding how species adapt to heterogeneous environments, which B.C. has in abundance. This is particularly true when the heterogeneous environments are changing, in our case as a result of urbanization, landscape industrialization, natural resource management, and climate change. But we have been challenged by a lack of understanding of genetic variation for all but economically important or scientifically significant species, for example, commercial tree species and salmon. Fortunately, the well-studied commercial tree species are also important foundational species for vast areas of forest and our genetic understanding of other native trees is growing.

Clinal and Racial Variation

Patterns of genetic variation in species can be characterised as clinal and racial. Clinal variation is continuous variation in a character along some environmental gradient within a species’ range. For example, some species of *Pinus* exhibit continuous variation in needle length, chlorophyll content, cold hardiness, and rapidity of shoot development in the spring, along altitudinal and latitudinal temperature gradients. Most species (plants in particular) with a continuous range that includes more than one altitudinal or latitudinal climatic zone probably have clinal variation in physiological traits adapting them to the environmental conditions prevailing in the different parts of their range.

Racial variation is discontinuous, representing genetically distinct populations within a species. Ecotypes are a kind of racial variation and species can adapt to heterogeneous environments via different ecotypes, which can be geographic, elevational, climatic, or edaphic. Racial differences within a species can be greater than the differences between species in the same genus. Most wide-ranging forest tree species have such racial variation.

The genetic variation responsible for differences in these traits cannot be assessed or inferred from phenotype alone. The genotype must be studied, so as to sketch the genetic architecture of species and determine how the total variation is distributed among the different levels of organization: species, variety, race, provenance, family, and individual. Tracing this genetic architecture has been done (via tree
breeding research) for most major commercial tree species, some commercial fish such as salmon, some
mammals such as bears, major agricultural crop species, and a few other well-studied species (for
example, fruit flies). The genetic details of most other species are unknown. Because tree species are so
well studied and will have such a profound impact on B.C.’s ability to sequester carbon, the research into
genetic variation in trees provides some indications of impacts to genetic resources from climate change.

The Ecological Theatre and the Evolutionary Play:
B.C. Tree Species on Stage
The key differences within tree species tend to be physiological or phenological, not morphological. Such
functional characteristics relate to survival, growth, and reproduction. For example, when considering the
genetic variation of boreal forest trees, adaptations can be viewed very simply as representing a trade-off
between selection for high growth potential in a short but intense growing season and selection for
hardiness (high cold tolerance) in a severe climate. One can examine the trees of the boreal forest in terms
of this balancing act. Perhaps there is a prototypical boreal tree species, for example, white spruce, which
has life history traits including regeneration on a variety of seedbeds, shade tolerance, slow steady
growth, extreme cold tolerance, and abundant small, light seeds that disperse widely. But most other
boreal tree species do not seem to resemble this prototype. All species are different—they were molded
evolutionarily in different environments, they have different systems and patterns of genetic variability,
they achieve adaptation in different ways, and they ‘perceive’ their environment differently, which is why
they respond ‘individualistically’ to climate change.216
One can conclude that each of B.C.’s tree species will respond differently to climate change, and that the
wide-ranging species will probably respond in different ways in different parts of the province. It is likely
that species will adopt various adaptive strategies that stretch along a continuum ranging from:
- the specialised, with lots of genetic differentiation, like Douglas-fir. Specialists have physiological
processes attuned to a small range of environments; phenotype controlled by genotype; environmental
variability and change accommodated by genetic variation, to:
- the generalised, with lots of phenotypic plasticity, like western white pine (Pinus monticola) or Pacific
dogwood (Cornus nuttallii). Plasticity enables individuals to alter their morphology, physiology, or
development in response to environmental variation and change. Generalists have physiological processes
attuned to a broad range of environments; phenotype controlled by environment; and environmental
variation and change accommodated by phenotypic variation.
In the middle of this continuum are whitebark pine and Garry oak (Quercus garryana), which are plastic
and exhibit lots of genetic differentiation. Most B.C. conifers are genetically specialized.

Genetic Drift and Natural Selection in Trees
Random genetic drift refers to change in gene frequencies due to chance alone, change that results from
random breeding within very small populations. Genetic drift has not played a large role in the genetics of
most of B.C.’s native trees, due to high levels of gene flow via wind-dispersed pollen. However, genetic
drift could contribute to evolutionary processes in some geographically isolated forest stands. Where
could it happen? Perhaps, genetic drift might occur in skips—the small islands of trees that survive major
wildfires or insect epidemics or even urbanization. Chance selection of alleles from the few surviving
seed trees in a skip could lead to significant shifts in gene frequency in the offspring that reoccupy the
disturbed area. Presumably, in the wildfire scenario, genetic drift could happen in white spruce, subalpine
fir, tamarack and Douglas-fir, though not in the fire-adapted lodgepole pine.
Trembling aspen, the most widespread tree in North America, provides a very different scenario. It has a
largely clonal mode of reproduction. Sexual events are very infrequent. Perhaps aspen will respond to
climate change, especially to extreme events, with periodic intense bursts of sexual reproduction, as
happened after the big Yellowstone wildfires of 1988.217 This can result in a mosaic of genetically
different clones across the landscape, that is, genetic diversity at a landscape rather than a stand level.
However, aspen could be at as much risk from climate change as conifers because it is host to a much wider range of insects and diseases than conifers.\textsuperscript{218} Directional selection is probably happening to lodgepole pine under the onslaught of the mountain pine beetle. There is evidence that beetle resistance varies among races of lodgepole pine.\textsuperscript{219} Beetle-resistant genotypes will experience strong positive selection during a beetle epidemic.

As a generalisation, we can anticipate that genetically specialised species will respond to climate change by differential survival of the races or genotypes best suited to future conditions. This is the essence of adaptation and evolution, but climate change could be happening too fast to ensure healthy populations of species—like trees—with long generation times. Although most tree populations have enough genetic variation to recover in the long term, in the short term there will be forest declines. Species adapt to environmental changes through natural selection at a rate negatively related to their generation time (that is, reproductive age) and positively related to their within-population genetic diversity.

**Adaptive Capacity of Trees**

Conifer forest stands, whether naturally regenerated or planted, typically have high levels of genetic diversity.\textsuperscript{220, 221} There is, however, uncertainty about how resilient forest trees will be and how much genetic variation will be lost. Because of long-distance gene flow via pollen, widespread conifers and wind-pollinated broadleaves may not lose much genetic diversity, but those that have smaller ranges, occur at low population densities, or are suffering from population crashes due to insect or disease epidemics may.\textsuperscript{222} This suggests a large capacity for adaptation, but in the interim, populations could go through demographic reductions that lead to genetically impoverished forests.

Some population geneticists contend that climate warming could ultimately exceed the adaptive capacity of conifers because a) if populations (interbreeding individuals) are locally adapted, as they are in most of our conifers, climate change will cause conditions to deteriorate throughout a species’ range, not just at the margins of the range,\textsuperscript{223} and will push many populations beyond their physiological limits of temperature or moisture tolerances; b) mortality induced by extreme climatic or disturbance events will result in losses of genetic diversity; and c) the expected rate of change will be too fast for an adaptive tracking response by tree species with long generation times and life-spans.\textsuperscript{224} These factors could lead to significant genetic erosion and forest decline for several forest generations.\textsuperscript{225, 226}

Research suggests that temperature increases over 3 degrees Celsius would result in drastic declines and extirpation of local populations in the southern range of lodgepole pine.\textsuperscript{227} Thus long-lived specialists may have to migrate (or have facilitated migration) to survive, to where suitable environments exist. Many plant species, including trees, have survived past climate changes by migrating to suitable habitats elsewhere. This time, however, climate is expected to change, and suitable habitats to shift, at rates that will exceed the migration rates of many plant populations.\textsuperscript{228, 229, 230} This begs the question of the role of facilitated migration, as has been explored on an experimental basis by planting of whitebark pine north of its range, to help nucleate the northward migration of the species.\textsuperscript{231} Losses in productivity and increases in pest populations could be anticipated for several generations while species migrate and genotypes are rearranged by natural selection.\textsuperscript{232} During this ‘lag’ period, ecological opportunism will be an advantage.\textsuperscript{233} Invasive, annual, herbaceous species with long-distance seed dispersal, and pioneer tree species, will probably have the best chance of migrating and adapting in the short term to a changing climate.\textsuperscript{234}

Climax species that are not good colonizers, species with short-distance seed dispersal (for example, among B.C. trees, ponderosa pine, Douglas-fir, western white pine, and \textit{Abies} spp.), and small local populations (\textit{Larix lyallii}, \textit{Chamaecyparis nootkatensis}, and \textit{Pinus flexilis}) will probably be least successful at migration in the short term. Ironically it is the interior zones dominated by Douglas-fir and ponderosa pine that are predicted to substantially increase in areal extent, yet the tree species are predicted to be relatively poor migrants. This incongruence should be highlighted as a limitation to predicting ecosystem reorganizations with climate change. These specialized species, however, do have high adaptive capacity in the long term to respond evolutionarily to new environments.

In contrast, generalists with lots of phenotypic plasticity will respond to climate change by ‘attempting’ to
ride it out within the bounds of their plasticity. Individuals of highly plastic species can tolerate a wide range of environments and may be less sensitive to climate change. For example, there are 1000-plus year-old Sitka alder glades in B.C., while a sedge in the European Alps can be more than 2000 years old. Such clones presumably have persisted through a series of climatic variations (such as the Medieval Optimum and the Little Ice Age) without shifting to lower or higher elevations. However, they might have less adaptive capacity in the long term for the drastic changes anticipated. Eventually—when individuals of a plastic species can no longer tolerate the changes—they too will have to evolve or migrate but they may not have to move as far to survive. Or if an ecosystem has a high degree of inertia and its responses lag behind changes in climate, then at least some of the component species (like forest understory plants) could be buffered in the near term from climate change. On the other hand, if generalist species are handicapped by low levels of genetic diversity, as is often the case, including western white pine and yellow-cedar and Garry oak, they could be more susceptible to exotic pathogens (like white pine blister rust) or other manifestations of climate change, such as freezing damage.

Western redcedar, B.C.’s provincial tree, is an enigma. It is a relative newcomer to the province, is very long-lived and has rather sporadic low seedling survival and slow establishment. Yet it was able to infiltrate coastal and wet interior forests, and spread to its current range within a few thousand years. It also appears to be well-defended against insect pests and fungal pathogens. However, redcedar has very low levels of genetic diversity and is highly inbred—not a recipe for its long-term success. A possible explanation is that it has arbuscular mycorrhizae, which provide networks with a wide array of understory plants that might facilitate regeneration. British Columbia’s tree species are under threat. Of course these species have survived environmental change over millennia but the scale of change anticipated will challenge all of the province’s native trees, regardless of their adaptive strategies.

Genetic Responses in Other Species
In addition to trees, other forest organisms are vulnerable, for example understory plants. Although long-lived trees may buffer understory plants initially, once these foundational species die, the shifts in understory composition will be rapid because of the changing climatic conditions. Levels of genetic variation in herbaceous plants are usually low, at least within populations. They can, however, have lots of ecotypic variation. Many species exhibit local adaptation (for example, racial or ecotypic) to climatic conditions within their natural ranges. Is this true for the guild of understory herbs? What about shrubs? Currently, there aren’t enough data on shrubs to answer such questions. It is also unlikely whether answers would be amenable to generalisation. For example, in forest shrubs we would expect different patterns of genetic variation among major groups, including the Ericaceae (a family that dominates the shrub layer of many B.C. forests), willows, the Caprifoliaceae, and the Rosaceae, if only because they have different breeding systems and life history strategies. In tundra environments, dwarf birch (Betula nana) because of its ability to spread horizontally below ground (and avoid frost thaw problems) is already expanding northwards.

Also, the process of evolution cannot be discounted. While generally thought of as a slow, gradual process, it can occur rapidly, even in macro-organisms, and especially under strong directional selection, for example, due to fishing and hunting by humans. Paleoecological studies indicate that adaptive divergence can evolve on a time scale comparable to change in climate, within decades for herbaceous plants, and within centuries or millennia for longer-lived trees, which implies that biologically significant evolutionary responses could accompany the climate change underway now. Rapid genetic adaptation to recent climate change has already been documented for a few wild species.

Wild Salmon
Pacific salmon provide an excellent example of another scenario for genetically diverse specialists. Salmon have evolved a diversity of genotypes, populations, behaviours and environmental sensitivities in
response to considerable environmental variability and uncertainty. The salmonid evolutionary strategy of locally adapted populations works well when linked to a dynamic and variable (within limits) marine environment and to the availability of healthy, complex, and connected freshwater and terrestrial habitats. In Bristol Bay, Alaska, record catches of sockeye salmon have occurred from the late 1970s until recently. The Bristol Bay ‘stock complex’ consists of several hundred discrete spawning populations. Individual populations display diverse life history characteristics and local adaptations to the variation in spawning and rearing habitats in the area’s lake and stream systems. This ‘biocomplexity’ has enabled the aggregate of populations to sustain its productivity despite major climate change affecting the freshwater and marine environments during the previous century. Different populations that were minor producers during one climatic regime have dominated during others, thus maintaining the resilience of the stock complex to environmental change. Population-specific variability in response to climate fluctuations is ultimately responsible for the resilience of the entire stock.

“…the resilience of Bristol Bay sockeye is due in large part to the maintenance of the diverse life history strategies and geographic locations that comprise the stock. … If managers in earlier times had decided to focus management on the most productive runs and had neglected the less productive runs, the biocomplexity that later proved important could have been lost.”

Isolated Populations
Populations isolated geographically or environmentally from the main range of their species can evolve genetically distinct races or subspecies. In B.C., such differentiation is a fairly frequent theme of island and disjunct populations. The Kermode bear is a good example of how small population size, geographic isolation on coastal islands with water-barriers to dispersal, and random genetic drift can act in combination to maintain a high frequency of the genotype responsible for the white coat trait of kermodism. Climate change could increase such between-population genetic diversity, insofar as insularity increases (for example, in the alpine zone as treeline moves upward, or on the coast as sea level rises), as disjunctions increase (for example, by long-distance dispersal), or as currently continuous, widespread species distributions become fragmented. Many of the species officially deemed ‘at risk’ in B.C. occur peripherally in the province, as is clear from their distributions. Many of them have been listed, by the Conservation Data Centre, largely because their geographic ranges transcend political boundaries and marginally enter this province, where they are rare. However, some peripheral populations are more significant than others with regards to impacts of climate change. There is a difference between continuous peripherals and disjunct peripherals. Disjunct peripheral populations of long standing can make important contributions to diversifying genetic material in several ways:

- The more disjunct the populations are, the more divergent they are likely to be due to random founder effects, and the more likely they are to further diverge genetically.
- Geographically isolated populations generally are more genetically depauperate, which may handicap their survival, but also more genetically distinct, which could provide a greater evolutionary legacy to the species.
- Species with life-history attributes that reduce gene flow are more likely to form evolutionary significant peripheral populations, by imposing a form of isolation. As in self-fertilizing or allopolyploid apomictic plants. Pond-breeding amphibians in dry climates, for example, show greater between-population differences than does the stream-breeding tailed frog.
- Once isolated, species with short generation times will in principle diverge more quickly than species
with longer generation times.

- Genetic divergence can also occur when peripheral populations occupy habitats that are very different from, or more stressful than, habitats in the more continuous range of a species, and thus experience strong selection pressure. Selection could be stronger in disjunct populations or it could just be different—acting on different traits or selecting traits differently.

- Disjunct peripheral populations are more likely to be adapted to extreme environmental conditions than continuous peripheral populations due to isolation from gene flow, and therefore should be a conservation priority.

Northward migrations during the Holocene evidently had significant genetic consequences, such as reduced genetic variability in northern populations that passed through ‘serial bottlenecks’ and increased genetic variability in regions where populations from separate isolated refugia subsequently became mixed. Similar genetic consequences are likely in future northward migrations.

Cryptic Species

Many species possess ‘hidden’ intra-specific variation, that is, traits not obviously expressed in their phenotype, leading in some cases to what are referred to as ‘cryptic species’. If the genetic variation revealed by DNA analysis and other evidence is significant and has a distributional pattern, two or more reproductively isolated but morphologically indistinguishable species can be designated in what previously had been considered a single species. The plant genus Draba has many species in B.C., especially at high elevations, and an inordinate number of at-risk species in northwestern North America generally. Recent studies have revealed numerous cryptic biological species within some supposedly well-known, circumpolar, taxonomic species of Draba.

Oxyria digyna (mountain sorrel) is another circumpolar, arctic-alpine species common in the mountains of B.C. Though morphologically uniform, it has lots of genetic diversity that can be revealed by DNA analysis. The alpine biogeoclimatic zones of north central B.C. turn out to be a hotspot of Oxyria genetic diversity, an unexpected finding if the region was entirely covered by ice in the late Pleistocene, as is generally believed. The results have been interpreted as evidence for a refugium well within the accepted limits of the Cordilleran ice sheet.

If such genetic and molecular diversity exists in Draba and Oxyria, then other widespread arctic-alpine species could well exhibit similar patterns. And a refugium in the mountains of northern B.C. would suggest a much more complex biogeographical history for the region, with major implications for the origin and migration of many northern species. This suggests that there will be more impacts to genetic diversity due to climate change than was previously thought before cryptic species and hidden variation came to light. Soil microbes have even more cryptic intraspecific variation than plants, opening up another whole area of enquiry. Also, impacts to B.C.’s alpine ecosystems, traditionally considered biodiversity ‘coldspots’ and projected to shrink dramatically in this century, could be much more biologically significant than many realize.

Hybridisation

Hybridisation is an important evolutionary process, especially in plants but also known to occur in many vertebrates, including birds, freshwater fish, amphibians, and ungulates. Hybrid zones already exist in B.C. For example, much of central B.C. is a big zone of hybridisation between white and Engelmann spruce. B.C. also is part of a huge hybrid zone between red-shafted and yellow-shafted subspecies of the northern flicker. Hybridisation can result in the blending or homogenisation of genetically distinct lineages. It can also result in hybrid swarms with much genetic variation or (especially if accompanied by polyploidy) in new species—as it frequently has in plants. Hybridisation probably will increase as climate changes, as species and populations migrate and come into contact with related species or populations from which they were previously isolated, and as habitats themselves become mixed up, recombined, and effectively hybridised. A big danger is the introduction of alien congeners that can potentially swamp native species.
Summary of Future Genetic Responses
The ability of species to respond genetically to environmental change is difficult to predict. It depends on their population genetics and life history traits. However, other than a handful of commercially important species, such as the conifers, we know very little about the genetic architecture of B.C.’s native species. With respect to tree species, the factors of rapid climate change and increased disturbances will ultimately lead to genetic erosion (reduced genetic diversity) and declining productivity of populations for several forest generations at least. This decline probably will be greatest for genetically specialized species, for example, Douglas-fir and ponderosa pine. During this period, opportunistic pioneer species that can adjust phenotypically (by altering their morphology, physiology, or development) to different environments (thereby exhibiting ‘plasticity’) will have the best chance of migrating and adapting. Migrations will have variable consequences for different species.

There are likely to be different patterns of genetic variation among the major groups of plant species. Some shorter-lived herbaceous species, unlike trees, might be able to evolve on a time scale comparable to change in climate, that is, within decades. Invasive short-lived herbs with long-distance seed dispersal, for example, knapweed, will probably be most successful at migrating in a changing climate, but B.C.’s specialized native species could have the best genetic potential to adapt over time. Some species have evolved rich genetic resources to deal with considerable environmental variability. For example, sockeye salmon have developed much local, stock-level genetic variation in response to heterogeneous spawning and rearing habitats. This genetic diversity has enabled sockeye to adapt locally and quickly, and to sustain productivity despite past fluctuations in climate. This should help them respond—within limits—to future climate change.

British Columbia species that live at the edge of their range as peripheral populations (for example, burrowing owl), and species that harbour genetically distinct and reproductively isolated populations as cryptic species (for example, seaside juniper), will be important genetic resources in the future. Peripheral populations can possess valuable adaptations to local marginal environments that could become more widespread within the species. They also can have the genetic raw material for evolution in changing or new environments; populations close to northern and southern range boundaries are likely to be better adapted to some environmental changes than the modal (most frequent) genotype. But even if a species’ potential range expands, much of its newly available habitat may have already been converted or degraded and will most likely be increasingly vulnerable to invasive species. Hybridisation, a common process in many species and in B.C., will probably increase as species and populations migrate and mix with differing genetic consequences. Alien species—perhaps including genetically modified organisms—could genetically swamp related native species.

Summary of Resilience and Ecological Adaptation
Intact, functional, natural ecosystems probably are more resilient to climate change than are ecosystems that are fragmented, simplified or degraded by human activities. Resilient ecosystems can regenerate after disturbances, resist and recover from pests and diseases, and adapt to changes in temperature and water availability—including those resulting from climate change. More diverse, complex systems tend to be more resilient; fragmented, simplified or degraded systems tend to be less resilient; and even resilient systems will radically shift if the environment changes sufficiently. Intact systems tend to be more resilient than degraded systems for several reasons. At the local site level, natural ecosystems create their own sheltering and buffering microclimates, which slow the rate of change and give resident species more time to migrate or adapt. Natural forests in particular play a major role in protecting the quality and quantity of water by buffering the impacts of storms, floods, erosion, drought and rising temperatures. At the broader level, landscapes that are more intact (not fragmented by roads or shifted from natural patterns of habitat by industrial use) may enable populations to adjust to climate shifts by providing safer, less stressful, more functional enclaves for persistence, and linkages for migration.
Natural ecosystems soften the impact of migration lags—slowing the rate of landscape change, moderating microclimates, and providing alternative habitats. For species occupying discrete forest stands or habitat patches, successful migration may require maintenance of within-species gene flow among the stands or patches of ecosystem types. Intact landscapes can facilitate this flow, while fragmented landscapes can impede it.

The different climate scenarios project a wide range of future conditions, so an integrated approach is needed for an on-the-ground, decision-making process about land use that:

- Focuses on maintaining ecosystem and evolutionary processes, including disturbance regimes and nutrient cycles;
- Enhances the capacity of ecosystems to self-adapt and reorganise;
- Focuses on reducing the vulnerability of biodiversity elements to climate change and on making decisions that deal astutely with uncertainty and risk;
- Evaluates what we know about the sensitivity of target organisms and ecosystems to climate (for example, in terms of resilience), about synergism with other threats, and what can be done practically to maintain the viability of species and the integrity of ecosystems in light of multiple threats;
- Maintains or strengthens the resilience of ecological systems, and builds flexibility and responsiveness into our planning and management of them. Healthy ecosystems are the cornerstone of a plan that protects biodiversity and our life support system;
- Reorients conservation efforts from trying to maintain historical species distributions and abundances or the status quo towards: a) maintaining well-functioning, resilient ecosystems of sometimes novel composition that continue to deliver ecosystem services; b) maximising the diversity of native species and ecosystems;
- Determines which ecological zones, ecosystems, and species (including invasive species) are of greatest conservation concern. Brings together ‘species of provincial concern’ under specific ‘zones of concern’ to best implement protection of habitat and make best use of resources;
- Evaluates peripheral species in terms of ecosystem function, genetics and evolutionary potential, and sensitivity/projected response to environmental change;
- Recognizes that species are adapting and moving largely independently as climate changes, that new ecosystems will arise, and that the genetic consequences of change will be as significant as species and ecosystem consequences;
- Applies the concept of stewardship to B.C.’s biota generally, so as to address our endemic species and their habitat, as well as those that have the majority of their global range or population within the province;
- Applies the concept of stewardship to B.C.’s globally significant ecosystem diversity and landscape complexity, and to intact dynamics such as the large-mammal predator-prey and the wild river-salmon-bear-forest systems;
- Focuses attention on selected species that are ecologically critical, regardless of their commonness or rarity. Such focal species would include top carnivores, abundant herbivores, keystone species, and ecosystem engineers;
- Focuses attention on tree species for reasons relating to ecosystem role (structure and function), ecosystem services, carbon dynamics, genetics and life history characteristics, and economic significance;
- Recognizes that, compared to simplified or degraded ecosystems, intact natural ecosystems have a more diversified portfolio of ecological assets, more heterogeneity and diversity of structure, composition and function, and a more complex network of interactions, thus tend to be more resilient to disturbance and change. Their diversification reduces the risk of unacceptable losses of biodiversity. Such risk cannot be eliminated but it can be managed;
- Allows for different adaptive strategies of species and enables different types of evolutionary processes to continue, by protecting large unfragmented natural areas as well as sanctuaries with connectivity;
- Re-examines the roles of protected areas, buffer zones, connectivity, ‘special’ management zones, and matrix management.
Building a Safety Net for BC’s Biodiversity

Defining Vision, Principles and Outcomes

The quality of our lives in British Columbia relies on the diversity of species that surround us; they feed us, cloth us, house us, and inspire us. We share this province with over 50000 species of plants and animals, which live in a variety of ecosystems, from the arid grasslands of the Okanagan to the temperate rain forests of coastal Vancouver Island. These ecosystems provide us with our core needs for clean air, water, and climate regulation. A preliminary assessment of these ecosystem services suggests they represent $5.4 billion in annual benefits for the Lower Mainland area alone. Biodiversity also serves as a treasure trove of new pharmaceuticals, agricultural varieties, and evolutionary potential in the face of a changing climate. With every species that becomes extinct or extirpated, with every unique natural habitat that becomes developed or destroyed, we lose a bit of BC’s biodiversity capital for all future generations.

Sadly, the safety net for species at risk has holes too big to protect the species that are imperiled in British Columbia. Endangered species lack adequate legal protection in BC. The BC Wildlife Act does prevent the direct killing of endangered wildlife, but this Act has rarely been applied. Of the 1597 red- and blue-listed species compiled by the BC Conservation Data Centre, only four are legally protected under the Wildlife Act. Species listed under the federal Species at Risk Act (SARA) and living on Federal Crown lands are covered by this federal legislation, but federal lands amount to only 1% of the land base in BC. Furthermore, the legal protection provided by SARA is weak, at best, because there are no enforced timelines to insure that recovery strategy and action plans are developed and applied. Indeed, not a single species in British Columbia has both a recovery strategy and action plan in place, as directed by SARA (only one species in Canada does, the Banff Springs snail). For the numerous species not occurring solely on federal lands in BC, a provincially-based solution is required.

In British Columbia, we have watched as the status of species continues to deteriorate. A comparison of the status of species in BC from the 1990s to the mid 2000s found that more species had declined in status than improved (Figure). Although several breeding birds improved in status, most of these cases involved expanding northern ranges in response to climate change. The status of many other bird species has declined; for example, one of the species most at risk of extirpation from BC is the Northern spotted owl, which has declined from one hundred individuals in the early 1990s down to two breeding pairs in the latest census. Even relatively common species such as the horned grebe have undergone continued population declines. These declines mirror the loss and declining status of biodiversity worldwide. Globally, over one in five species of vertebrates and plants are now estimated to be at risk of extinction (critically endangered, endangered, or threatened).

In 1996, British Columbia, along with the other provinces and territories, signed the national Accord for the Protection of Species at Risk, a multi-lateral agreement coming out of Canada’s 1992 ratification of the UN Convention on Biological Diversity (CBD). In 2002 Canada and its provinces and territories committed to a United Nations initiative to “achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional, and national level as a contribution to poverty alleviation and
to the benefit of all life on Earth”\(^\text{10}\). In the recent words of the Executive Secretary of the CBD, “we have failed”\(^\text{11}\). Nonetheless, biodiversity targets have been reinvigorated at October’s CBD meeting in Nagoya, Japan, and British Columbia is in the position to be a Canadian and global leader in meeting biodiversity conservation commitments.

We, the undersigned scientists, have worked on conservation and biodiversity issues in British Columbia and beyond. We call upon British Columbia to develop binding legislation to protect species at risk and their critical habitats within the province. We call upon British Columbia to fulfill our global obligations and to avoid the risk of an irreversible loss in the quality of our lives through species extinction.

**Principles:**

- **Unimpeded listing process** – British Columbians are entitled to unbiased assessments of the status of species living in the province. These assessments should be scientifically based and should not be subject to approval based on the potential economic consequences of listing (economics should be considered in the management process, not the assessment and listing process). We do not consider that this principle has been satisfied with SARA, because the Minister of the Environment can choose whether or not to accept the assessments of COSEWIC and to list species under the Act (SARA Schedule 1). Species such as Chinook salmon (Okanagan population) and the winter skate have been denied Schedule 1 listing because of potential impacts to the fishing industry\(^\text{12}\). As a result, fewer than 10% of marine fish assessed by COSEWIC as “at risk” have been officially listed as such\(^\text{13}\). Without listing, management and policy decisions that could improve status are unlikely to be identified or enacted. As an example, it has been projected that the lack of listing for the eastern Hudson Bay beluga whale (*Delphinapterus leucas*) will lead to its extinction within the near future (10-15 years)\(^\text{11}\).

- **Oversight of the listing process** – Currently, the status of species at risk in the province is assessed by the BC Conservation Data Centre under the provincial Ministry of Environment. Our group was generally satisfied with the process and progress made by the BC Conservation Data Centre and with the open access of available data. We are concerned, however, that if species at risk were legally protected, political pressure might impede the assessment activities or countermand the assessment outcomes. We recommend that an independent oversight board be tasked with reviewing progress and decisions of the BC Conservation Data Centre. The board, composed of individuals with relevant scientific expertise, would be obliged to ensure that British Columbians have accurate and valid assessments of species in our province, and it must be given sufficient powers to ensure that this occurs. In particular, the oversight board would have the authority to revise a status assessment if it is deemed to have been unduly influenced and to contract out assessment reports if they are not made in a timely manner.

- **Scientific analysis of critical habitat** – Identification of critical habitat, i.e., the habitat that is necessary to ensure the survival of a species, should be coupled with the assessment process. It is during the initial scientific assessment that the ecological literature and monitoring reports are evaluated in depth for trends in species numbers and historical effects of habitat deterioration. It is at this time that the critical habitat should be identified in light of available information, with the possibility of future amendments. A major potential problem with SARA is that critical habitat is identified after listing (and, for most listed species, has not been identified), leading to substantial delays in determining what protections are needed to prevent further declines. We are concerned that recovery teams have been advised to exclude detailed descriptions of critical
habitat in BC (in violation of federal policies\textsuperscript{14}) and that current guidelines for provincial recovery planning do not require identification of critical habitat\textsuperscript{15}. Critical habitat is the cornerstone of endangered species legislation in developed countries worldwide. Again, British Columbians are entitled to unbiased assessments of what lands and waters would be needed to preserve a species at risk.

- **Recovery planning** – Because recovery is largely a management issue (although scientifically grounded), the province should lead recovery efforts for “non-federal” species, in close collaboration with stewardship groups, stakeholders, and scientists. To ensure that action is not too little and too late, legislation should mandate reasonable recovery planning and timely action on these plans. Current provincial policies are too vague with respect to what species are covered and what actions must be taken with respect to restorative measures and habitat protection for species at risk. Further hindering effective action for protecting species at risk in BC has been a lack of resources, both in terms of funding and manpower. At present the province has no field program, staff, or budget for monitoring the efficacy of recovery actions, which risks wasting the limited funds that are in place on activities that are not cost-effective in achieving our conservation goals for preserving species and ecosystem at risk.

- **Balanced socioeconomic analyses** – Armed with the knowledge of which species are at risk and what is needed to reverse the declining status of a species, we recognize that a decision process for action will be taken that accounts for socioeconomic impacts. The assessment of any impacts of species recovery must, however, be **rigorous, balanced, and transparent**. It is insufficient and out of step with current best practices for socioeconomic analyses to account only for the short-term financial interests of immediate stakeholders. Management practices in fisheries and forestry are aimed at avoiding irreversible losses of major natural resources for future stakeholders. These management practices do not, however, adequately protect non-commercial species that are harmed as a result of by-catch or habitat destruction. Such species will continue to be imperiled as long as socioeconomic analyses focus on short- and long-term losses to stakeholders involved in natural resource extraction. Yet **British Columbians value biodiversity, and this valuation must also be assessed**, broadening the definition of ‘stakeholders’ to include those who value biodiversity for non-commercial purposes. Surveying the interests of Canadians, Rudd (2010) evaluated support for 20 quality-of-life initiatives and found that the top ranked initiative was “Protect our environment, ecosystems, and biodiversity” alongside “Reduce poverty and inequalities in wealth within Canada.” Furthermore, in an earlier study, Rudd\textsuperscript{16} found that Canadians were individually willing to increase taxation to conserve species at risk. Summed over the population, Canadians were willing to pay tens of millions of dollars for protection measures for relatively unknown species such as the porbeagle shark and up to hundreds of millions for Atlantic salmon\textsuperscript{17}. Balanced socioeconomic assessments must consider the value that citizens place on conserving species at risk within British Columbia and should be overseen by a board with economic, social, and scientific expertise.

- **Appropriate action within mandated timelines** – One of the main lessons learned from equivalent federal legislation (SARA) is that if timelines are not in place, plans for action stall. Following listing, **strict timelines must be in place** for protective actions. At the federal level, protection for many species has stalled at the recovery strategy stage, before a finalized action plan has been approved. In part because of this lack of action, the status of many species listed under SARA has continued to decline or at least not to improve. Of 269 species at risk that have been reassessed by COSEWIC, the majority of changes in status have been declines (46 species) with only 27 species improving in status\textsuperscript{18}.
• **Protect against our ignorance** – We do not have a complete list of species within British Columbia. Our knowledge of microbes (of particular value in terms of the ecosystem services they provide) and invertebrates is particularly poor, but we are continually discovering new species within our province, even among vertebrates (e.g., the newly distinguished Pacific wren, *Troglodytes pacificus*). Because we cannot assess the status of unknown species and because rare and endemic species are particularly likely to remain undiscovered, **protecting species at risk must be coupled with an ecosystem-based reserve design**. While we applaud the fact that the province has set aside 14% of habitat for preservation, future preserves must be better concentrated in areas containing high densities of species and ecosystems at risk. We note the lack of extensive protected areas in the most endangered ecosystems in BC (the Coastal Douglas Fir, Bunch Grass and Ponderosa Pine BEC Zones, as well as coastal marine areas). With BC’s extensive coastline and imperiled marine fisheries, we are particularly concerned by the fact that only 0.64% of Canadian marine areas are protected.

• **Protect against future climate change** – In the face of global climate change, protecting biodiversity in BC also requires that we plan for plausible range shifts. This is particularly important for peripheral species whose ranges primarily occur to the south of BC. Given limited resources, protecting peripheral species with healthy populations south of the border should not generally be given as high a priority as protecting species endemic to or largely residing within BC. That said, we should prioritize peripheral species if it is likely that ranges would shift north in the face of climate change. Indeed, a recent study showed that most species with a reduced range persisted at the periphery of their historic ranges. To the extent that peripheral species in BC are locally adapted to the physical and biotic community at the northern end of their current range, we risk reducing the genetic variation – the evolutionary capacity – for species to respond rapidly enough to selection to persist and move further north. Not only does habitat destruction and fragmentation cause the loss of these peripheral individuals, but it can also create a migration barrier preventing northern range expansion. In such cases, British Columbians could well be responsible for declines in a species even if the majority of its range is south of the border because we have obstructed range shifts to the north in response to climate. Protecting species at risk in a changing environment thus requires that we preserve genetic diversity at range edges and provide corridors to areas that are likely to become critical habitats in the future.

• **Judicial use of funds** – Funds for preserving species and ecosystems at risk are limited, and we run the risk of funneling the majority of these funds into monitoring and repeated reassessments, rather than actions that ameliorate the risks faced by imperiled species and ecosystems. We recommend that a decision tree approach be used to guide how funds are spent (such as that outlined in reference 22); for example, if the threats to a species are known and the best management option is clear, this decision tree framework guides us to implement the best management option immediately, rather than a monitoring program. **Limited resources should be allocated in a manner that most directly protects species at risk from further declines.**

• **Stable funding** – Identifying, monitoring, and protecting species at risk should not be subject to the vagaries of annual budgets and must remain a core function, with stable staffing, of provincial government agencies. Actions that protect a species at risk only in some years are meaningless if extinction occurs in the intervening time periods. An effective model for stabilizing funding might be an independent endowment similar to the Habitat Conservation Trust Fund (HCTF) model. HCTF provides funds for projects that enhance populations of wildlife species, using income generated from a permanent endowment as well as sales of hunting and fishing licences. A similar **“Biodiversity Trust Fund” should be developed** with an initial endowment, supplemented by opportunistic annual budget supplements from various
A considered delisting process – For species whose status does improve, care must be taken when delisting the species so that we do not place the species back in peril. If protection of critical habitat is what allowed the species to improve in status and the species is subsequently delisted, the critical habitat should not then be allowed to deteriorate. Otherwise, we will end up with a morass of listing and de-listing actions as species recover, only to decline thereafter, creating an inefficient species protection process. Similarly, we must be careful not to delist a species when it first starts to increase in numbers, rather delisting should be considered only when the species is self-sustaining and no longer reliant on current conservation measures.

Evaluation of efficacy – Whatever legislation and practices are put in place, their efficacy must be evaluated at regular intervals by an independent body. The litmus test of efficacy should not be a measure of how many more laws, assessments, reports, or plans that we have, but a measure of the changes in health of species and ecosystems.

We do not comment specifically on the other areas of input requested by the task force (“Regulatory Framework”, “Private Land Stewardship”, “Effective First Nation and Stakeholder Communications and Engagement”), as these fall largely outside of our area of expertise. We do, however, note that protecting BC’s biodiversity requires action by all parties. Protection for species at risk should occur where it is most needed and most effective, regardless of whether that land or water falls on private, provincial, or federal territory. We all benefit from BC’s biodiversity and natural resources, and we must all work together to protect them.

We recognize that protecting species at risk comes with costs. Costs through reduced harvesting, costs to identifying and preserving species at risk through by-catch, costs to not developing critical habitat. But there are also costs to not acting. Costs of reducing future natural resources, costs through disruptions in water filtration, biotic processing of pollutants, pollination, and other ecosystem services, as well as the moral costs of failing as stewards of BC’s biodiversity. A balance must be struck that allows for a healthy economy in BC and that protects species within our borders. Fortunately, these need not be opposing forces. Protecting species at risk and ecosystems in peril is in the best of interest of BC’s future economy, including future natural resource extraction, agriculture, bio-prospecting, human health and well-being, tourism, etc. Furthermore, a reputation as an environmental bad guy harms exports and the reputation of BC companies abroad; lax protection regulations also leave BC vulnerable to economic sanctions based on identification of a poor regulatory framework as a trade subsidy. Our economy is not helped when Canada ranks poorly on international assessments such as the Environmental Performance Index, where we were recently ranked 80th among 163 countries for preserving biodiversity and habitat and a sobering 140th for preserving the vitality of ecosystems overall23.

“In British Columbia, Slaney et al. (1996) found that 142 salmon populations had gone extinct since recording began in the mid-20th century and that 624 more populations were at high risk out of 5487 salmon populations that could be assessed (57% of the total number of populations).”24
SINCERELY,‡

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3 Number of red (extirpated, endangered or threatened) or blue (special concern) listed species from the BC Species and Ecosystem Explorer, http://a100.gov.bc.ca/pub/eswp/ (date of search October 28, 2010)

4 The Vancouver Island Marmot (Marmota vancouverensis), American White Pelican (Pelecanus erythrorhynchos), the Burrowing Owl (Athene cunicularia), and the Sea Otter (Enhydra lutris). http://www.env.gov.bc.ca/wld/faq.htm

5 http://www.agf.gov.bc.ca/clad/crownland_factsheet.pdf


7 Secretariat of the Convention on Biological Diversity, Global Biodiversity Outlook 3 (Convention on Biological Diversity, Montréal, 2010).


9 http://www.sciencemag.org/cgi/content/full/330/6000/24

10 UNEP, Report on the sixth meeting of the Conference of the Parties to the Convention on Biological Diversity (UNEP/CBD/COP/20/Part 2) Strategic Plan Decision VI/26 in CBD (UNEP, Nairobi, 2002).

11 Statement by Mr. Ahmed Djoghlaf, Executive Secretary of the Convention on Biological Diversity: "we have failed to fulfill the promise to substantially reduce the rate of loss of biodiversity" London, 18 January 2010 (http://www.cbd.int/doc/speech/2010/sp-2010-01-18-london-en.pdf)

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PROTECTING AND PRESERVING BRITISH COLUMBIA’S SPECIES AT RISK

“The vast majority of life forms on our planet are still undiscovered and their significance for our own species remains unknown [...] We are flying blind into our environmental future.” (Edward O. Wilson)

“To keep every cog and wheel is the first precaution of intelligent tinkering.” (Aldo Leopold)

The biodiversity of British Columbia makes important contributions to our quality of life, and these contributions must be understood and sufficiently valued if we are to continue to benefit from them. The ecosystems of the province provide critical ecosystem services including timber, clean air, clean water, and climate moderation. The province’s biodiversity (both species and genetic strains within species) yield practical benefits such as pharmaceutical compounds, domesticated species and varieties, and biocontrols. It also yields important intangible benefits that both residents and visitors greatly value. We would not be ‘Beautiful British Columbia’ with missing biodiversity.

Threats to biodiversity in British Columbia include ecosystem degradation and ecosystem conversion, loss of habitat connectivity, the impact of invasive species, and climate change. The province has many important ecosystems, such as grasslands and estuaries, that are of conservation concern. There is no complete list of species occurring in British Columbia, and most of the province’s species are of unknown conservation status. Of those that have received conservation assessment, about half are of conservation concern. In recent years, efforts to improve the conservation status of species at risk have not kept pace with increasing threats.

The main focus of our remarks is on the first two topics to be considered by the Species at Risk Task Force. We urge an emphasis on the following points:

- **Protect habitat in areas under threat.** Few protected areas exist in the most endangered terrestrial ecosystems in BC (the Coastal Douglas-fir, Bunchgrass and Ponderosa Pine BEC Zones) or in coastal marine areas. The recent global biodiversity meeting in Osaka, Japan (COP10) has called for 17% of terrestrial and 10% of coastal areas to be protected. Such protection offers the best chance of safeguarding species at risk, especially in BC where some relatively pristine habitats still remain.

- **Protect against our ignorance: fill gaps in knowledge to facilitate scientific decision-making.** We lack conservation information for most of the known species in the province. More importantly, for most of these species we lack the ecological understanding that provides a basis for conservation assessments. Identification of critical habitat requirements and vulnerable life stages is needed both to assess risk and to make management recommendations. Assessment of genetic variation and taxonomic context provide an essential basis for sound decision-making, and help us to ensure that species retain the evolutionary potential to adapt to changing environmental conditions. We also have insufficient knowledge of many habitats in the province. For example, the mountains and marine coastal regions of British Columbia harbour habitats and
species of global significance, but we know little about what species are there, and how they are likely to be impacted by changing climate.

- **Preserve genetic diversity and protect against future climate change by protecting peripheral populations.** Protecting biodiversity in BC requires that we plan for plausible range shifts. This is particularly important when evaluating peripheral species whose ranges mainly occur in adjacent jurisdictions. In general, protecting species found primarily within BC should be our highest priority. However, peripheral populations may harbour distinct genetic resources, and if ranges shift north in the face of climate change, it may become increasingly important to preserve BC populations that are locally adapted to the physical and biotic community at the northern end of their current range. Connectivity of habitat is also of critical importance. Loss of peripheral habitat can create a barrier to northern range expansion, leading to the decline of species that are shifting their ranges northward. On a continent-wide scale, BC has important peripheral populations and habitat that may be key in mitigating the biodiversity impacts of changing climate in the coming century.

We emphasize that protection of BC’s biodiversity is a cooperative endeavour that will require action by diverse stakeholders, in both public and private sectors, and involving both agencies and individuals. Endangered Species legislation in other provincial jurisdictions has provided a key component of overall biodiversity management tools: for example, in Nova Scotia where only 30% of the provincial land base is owned by the Crown, the Endangered Species Act provides an important and highly successful tool for government in collaborating with the federal government, industry, and private landowners to provide even great biodiversity protection. Protection for species at risk should be available where needed, whether on private, provincial, or federal territory. We all benefit from BC’s biodiversity and natural resources, and we must all work together to protect them. We urge in the strongest possible terms that the Province of British Columbia develop and implement binding legislation to protect species at risk and their critical habitats within the province. In combination with the above bulleted points, strong provincial species-at-risk legislation provides a powerful tool for ensuring that BC’s biodiversity is protected for generations to come.

Signed:

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Dr. Bruce Fraser, Chair
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env.gov.bc.ca/sartaskforce/

Dear Dr. Fraser and the Species At Risk Task Force:

We are a group of concerned biologists at Simon Fraser University who wish to contribute to the discussion around creating species protection legislation in British Columbia. We offer our answers to the questions set in your terms of reference; the answers are a mix of the general and the specific and most touch on only a small set of possible interpretations. If your committee were interested in more input on a more focused set of queries, we would be happy to contribute. Overall, we find it very important to get any new regulatory frameworks right.

1a. Where should our conservation efforts be focused?

At the level of assessment and prioritization we should focus on those species that are susceptible and/or sensitive to human activity, not simply those species at current highest risk of extinction.

Ecological Risk Analysis (or Productivity Susceptibility Analysis) is a method increasingly used to rank species for conservation management action. The approach has been developed and best used to evaluate the relative vulnerability of marine assemblages to fishing impacts\(^1\); however, it would be highly suitable for prioritizing any species for conservation action. The approach measures and combines two attributes: 1) the intrinsic productivity of each species and 2) a measure of species susceptibility to a natural or human pressure. Productivity and susceptibility values are usually indexed to range from zero (lowest) to one (highest) and the results are visually presented on x-y scatter plots or in tables ordered by productivity and susceptibility. The approach can be implemented in either a qualitative or quantitative manner depending on data availability. For assemblages comprised of many data-poor species, pressure and sensitivity scores have been based upon expert assessment. Productivity is typically indexed by attributes related to life histories, demography and the capacity to withstand and rebound from additional mortality. Typical productivity traits include a measure of body size (mass or length), population growth rate, maximum age and generation time. Susceptibility is a measure of the potential impact of a given threat across the range of each species. A simple measure is the degree of spatial overlap between a threat, such as fishing, logging, or urban development, and the spatial extent of a species, such that species whose Canadian or BC distribution coincides completely with the distribution of the threat would be assigned the highest value. Conversely, species whose spatial distribution does not intersect that of the threat would be assigned the lowest susceptibility score. A key strength of this approach is that it can be applied to a wide range of species and a range of human pressures. Indeed, an ecological risk analysis can be undertaken for different pressures independently.
1b. What principles should guide future development of a species at risk program in BC?

1. Biodiversity is important to British Columbians both as part of our identity (“Super, Natural BC”) and our economic future, with ecosystems in the Lower Mainland alone providing on the order of $5 billion per year in services.

2. The management of BC biodiversity must benefit all, including current and future generations of British Columbians.

3. Biodiversity protection requires healthy, resilient ecosystems.

4. The process for creating a regulatory framework, and the framework that flows from this, must be transparent.

5. Protection of species deemed at risk of extinction in BC must be legally binding.

6. Scientific assessment itself should be insulated from outside influence, but recovery planning should both be evidence-based and include socioeconomic considerations and all stakeholders (First Nations, private landowners, industry, ENGOs, with expert economic and scientific support), to allow for costs and benefits associated with species recovery to be clearly delineated to the public.

1c. What are the measurable outcomes that best address the fundamental threats to biodiversity in B.C. and help us achieve our vision?

Measuring the fundamental threats to biodiversity in BC begins with objective assessment of the number of species that are at risk within the province (e.g. by the BC CDC). As management and recovery plans are implemented, the number of at risk species should decline over time (i.e., species should recover and be removed from the list). This is the clearest measureable outcome.

For this to be a successful measure of progress, however, we must have strict criteria as to how to define a species as ‘recovered’. To be considered recovered a species must persist with self-sustaining population(s) for a predetermined amount of time. Factors such as habitat quality and availability, disease threats, number of populations, and population sizes should be taken into consideration when determining if a population is self-sustaining. A target minimum viable population size, or equivalent, should be incorporated into species recovery plans and should be based on the best available data for the species. These data should come from scientifically peer-reviewed publications when possible. One approach to calculating minimum viable population sizes is to conduct a population viability analysis (PVA) in which the probability of species extinction over time is estimated. PVAs allow managers to model different threats to populations or species and examine the risks of certain actions in terms of species recovery. If a PVA process is determined to be unfeasible for a species, it is still recommended that recovery be based on minimum viable population sizes, determined by a team of experts, and best available data should be used. Minimum viable population sizes and PVAs are commonly used in the scientific community and would therefore be reasonable to implement in species recovery strategies. Overall, applying the above standards for species recovery will serve as a litmus test for BC biodiversity and will help BC monitor and achieve its goal of conserving biodiversity.

2. In light of climate change and multiple development demands, what management methods need to be advanced to meet our conservation targets?

Populations of species and their associated habitats are more likely to be resilient to climate change, and recover from climate-related disturbance when they are intact and healthy. Maintaining functioning ecosystems is vital as they
perform ecological services such as regulating the water cycle, nutrient cycles, storing carbon, modulating micro- and macro- climates, and creating and conserving soils. The value of these services is largely unrecognized in land use decisions. However, both aquatic and terrestrial systems have become increasingly degraded and fragmented through unsustainable activities for short-term economic gains. The decline in native species and genetic diversity that results from this degradation threatens the evolutionary potential of species and, at least in part, the ability of ecosystems to absorb and recover from further anthropogenic stresses. Consequently, our conservation targets can only be met by thoroughly assessing and accounting for the social and economic value of ecosystem services in BC’s environmental policymaking. You cannot manage what you do not measure.

This fall the David Suzuki Foundation heightened public awareness of these values by conducting a financial evaluation of the natural capital in BC’s Lower Mainland. This study totaled the value of services provided by the region’s farmland and green space (e.g., climate regulation, flood protection, water regulation, waste treatment and pollination) at $5.4 billion a year, or $2,462 per person. Internationally, The Stern Review on the Economics of Climate Change completed in 2006 and The Economics of Ecosystems and Biodiversity (TEEB) review completed in October 2010 have taken the lead in recommending a valuation framework and methodology. In fact, one of six audience-specific reports to be released by the TEEB initiative will be geared towards local-level policy makers and present relevant tools and applications in fields such as spatial planning, urban management, natural resource management and protected areas for better consideration of natural capital services in policy and public management.

It is also important to note in the British Columbian context that there is a likelihood that species ranges will shift into the province as a result of climate change. Based on paleoecological evidence, and documented poleward range shifts over the last 30 years, we can expect that species with ranges extending into the south of BC will shift further northward into the province, and that species not currently occurring here may shift into the province. It is especially important to consider these future shifts when considering global responsibility for species in conservation decisions, as responsibility values will likely not be static over time. Therefore, it is essential to ensure that wildlife corridors are maintained, particularly throughout the south of the province (where land development demands also tend to be the most intense).

Ignoring the undisputed scale and rate of biodiversity and ecosystem function loss in the face of human population expansion and uncertainty about future climatic conditions is dangerous. Municipal and resource-use planning should be forward thinking and act in greater accordence with the precautionary principle. Such a focus will help ensure future provision of natural services and enduring human well-being.

3. What changes are required to the existing regulatory framework to ensure we balance ecological and socio-economic considerations and best achieve our conservation targets?

A potential process would begin with risk assessment for all species, carried out by an independent scientific body. We suggest an Ecological Risk Assessment method (see question 1a) for analyzing each species’ risk ranking, which will determine their place in the queue for scientific assessment. This way, species that are more threatened (through a combination of intrinsic and extrinsic factors), or more data-poor, will be prioritized for assessment.

An independent scientific body would be responsible for producing threat status reports following the national COSEWIC model based on empirical evidence. These reports must be unbiased and must give a clear and realistic presentation of the biological trends and prospects of wildlife species in BC. These reports will be the basis for consideration for legal protection and recovery. We suggest that a minimum level of mandatory action flow from status reports that designate a species to be at high risk, such as monitoring, or resource allocation if more information is
needed to complete a draft recovery plan. Hard deadlines following at risk assessments for a legal decision regarding the level of protection and/or recovery are also absolutely necessary.

Recovery planning should be initiated following assessments of at-risk status. Prioritization for recovery planning is a considerable challenge. We suggest a multi-faceted point-system approach whereby a species will obtain a score based on its level of endangerment, presumed ecosystem function value, BC’s global responsibility for the taxon, and its presumed value as a proxy for other rare species and ecosystems.

For recovery planning, we propose a multiple outcome approach (such as the one employed by the Intergovernmental Panel on Climate Change), which combines the information presented by the biological status and threat reports with socio-economic analyses presented by appropriate experts. These fundamental considerations can then be supplemented by stakeholder opinion. Our vision of recovery planning includes as many representatives of BC’s citizens as possible, potentially through a two-phase system: a public consultation phase (through public hearings or written submissions), followed by a roundtable phase which brings together biologists, social economists, representative stakeholders (e.g. from forestry, NGOs, natural resources, First Nations) and the public opinions gathered in phase one. At this roundtable phase alternative outcome scenarios are developed. Participants are responsible for defining several realistic, achievable and comprehensive strategies to recover species of concern, with a view to BC citizens and global environmental responsibility. The plans will also explicitly define and highlight costs and benefits of alternative scenarios to BC’s current and future citizens. The purpose of these alternative scenarios is to allow stakeholders to represent their specific interests in recovery plans that will affect them. Some of the alternative plans will emphasize short-term over long-term benefits, and others will be desirable to smaller or larger groups within BC.

After alternative plans are developed, a tightly time-controlled decision-making period will ensue. In this phase, public transparency is of utmost importance. All the developed plans, with the alternative projected outcomes and cost/benefit analyses, must be freely available to the people of BC and other interested parties. Lawmakers will be responsible for choosing and implementing the recovery plan that they feel is most appropriate and suitable to the needs of the province, but cannot amend the chosen plan, its timelines or outcomes. Mandated reporting on progress is essential. Delisting should be informed by meeting the recovery objectives defined in the selected recovery strategy. It is worth noting that some plans may not include delisting as an expected outcome over the short or medium term. Also, lawmakers may choose to publically reject all plans, in which case the species is not offered legal protection and recovery. The species will still be monitored and its trajectory reported within the species at risk (SAR) legislation.

4. How do we advance private land stewardship and conserve species and ecosystems at risk on private land in B.C. while respecting the interests of taxpayers?

An effective conservation strategy for SAR in BC will only be accomplished if legislation includes provisions for private lands, as they are often in close proximity to key stressors (e.g., rapidly expanding and/or high-density human habitation) for species in need of conservation efforts. Currently only 1% of land in BC falls under the jurisdiction of the Federal SAR Act, 94% is designated as BC Provincial Crown land, and 5% is private land. As a result, successful
conservation of BC’s biodiversity will require legislative provisions that encompass both Provincial Crown lands and private land holdings. To accomplish such legislation, private land stewardship and protection from sub-division and development must be heavily incentivized. Two strategies in particular have been proven effective elsewhere and deserve consideration in this process. 1) *Expand the tax benefits of conservation easements to address the needs of species at risk*, and 2) *Make costs associated with restoration activities that address the needs of species at risk on private land tax deductible*. Conservation easements have emerged as a key tool for successful private land protection in the United States, and have been increasing in popularity in Canada over the past decade. For example, a single non-profit land trust in the US (The Nature Conservancy) currently holds 3.1 million acres in easements that prevent future development of private land in perpetuity⁷. Such easements are voluntary, legally binding agreements that limit specific uses, most commonly sub-division and development, according to the wishes of the current landowner. The incentive for private landowners to enter into such agreements is that by legally limiting future development of their land, the assessed value of their land declines, as does their tax burden. For example, land values are assessed and taxed based on the potential maximum value, which incorporates the market-driven potential for sub-division and development for larger land holdings. By protecting land with conservation easements, specifically preventing development or sub-division, the future development value is reduced to zero, dramatically lowering the assessed property value and the landowner’s subsequent tax burden. This is often a mechanism that allows current landowners and their descendents to maintain ownership of large pieces of land by buffering the effect of escalating property values and property tax burdens. This in effect provides a tax-based incentive to preserve lands that might otherwise be under the highest development pressure (e.g. large parcels in areas of rapidly expanding development or increasing property value). Easements can be a critical tool of private land stewardship in Provincial SAR legislation by including additional tax-based incentives that encourage land-based protections specific to listed species, their critical habitats, and recovery needs. For example, if critical habitat for a listed species includes seasonally flooded wetlands with 1km minimum forested buffers, a private landowner could be encouraged to protect such land from future development under current conservation easement rules, but if the area of critical habitat is small relative to the landowner’s overall land holding, the tax benefit would be relatively small. Provincial SAR legislation should expand the tax-benefits of conservation easements to include protections specific to listed species by offering landowners a tax credit or lower assessment beyond what is already available. Such tax incentives typically result in relatively small reductions in tax-generated revenue to municipalities, and would help protect species at risk immediately following listing, when populations are still robust, and species recovery is most likely. In the example above, the landowner could be encouraged to include provisions in their easement specifying that wetlands on their property would never be filled or drained, and that forest buffers would be maintained and protected from timber harvest in perpetuity, and in return receive a reduction in the assessed value of their entire parcel of land and not just the area protecting flooded wetlands.

In addition to expanding conservation easements, Provincial SAR legislation can create further incentives for land stewardship by making restoration activities that address the needs of listed species on private land directly tax deductible. Again returning to the example above, if critical habitat for the listed species includes that seasonally flooded wetlands be protected from invasion by exotic plants that interfere with wetland function, the cost of eradicating the exotic plant from could be directly applied to reduce the landowner’s taxable income and subsequent tax burden. Such incentives increase the likelihood that landowners invest the time and energy needed to help recover provincially listed SAR. By including tax-based incentives for private landowners to contribute to the conservation of BC’s biodiversity, BC’s Provincial SAR legislation could become the marquee example of successful private land stewardship throughout Canada and contribute to our global leadership in biodiversity conservation.
5. What are the key elements of a communications and engagement strategy to ensure communities, First Nations, private landowners, and all other stakeholders who operate on the province’s land and water base understand and value the benefits of species at risk conservation?

Conservation management is essentially a problem of managing people, more than it is of managing nature. Therefore, engaging and informing the public about the species and ecosystems around them is an essential element of encouraging species conservation stewardship. To this end, providing easily accessible information about species and their status in the province should be a priority in an effective conservation strategy. Particularly, conducting locally based educational campaigns about local species and their habitats, as well as providing information about stewardship actions that people can take on their personal lands would likely help encourage public engagement. Social marketing around conservation initiatives has been successfully implemented internationally by organizations such as Rare Pride, which uses multimedia messages to “inspire...people to care about and protect nature”⁸. British Columbians are concerned about their natural environment and have deep connections to the wild species and spaces around them⁹, and it would therefore likely not be difficult to use such tools to engage the public more deeply in conservation stewardship.

It is also essential to engage with the public and other stakeholder groups in the process of creating species conservation legislation. As outlined above (Q3), communication and transparency are important components of ensuring that any legislation that is enacted will be publically supported and effective.

To end, we note that, with this legislation, British Columbia has the opportunity to become an innovator in conservation policy. By building on initiatives that have led to conservation successes in other jurisdictions and adapting strategies to the British Columbian context, engaging with stakeholders and the public, and allocating conservation resources efficiently, British Columbia can enact legislation that will be effective at protecting our province’s vast biodiversity for future generations to benefit from and enjoy. We have a strong interest in seeing our province’s natural heritage protected by strong and effective legislation, and we hope we can continue to contribute.

Sincerely,

Prof. Isabelle Côté
Anna Drake
Dr. Nick Dulvy
Janie Dubman
Amanda Kissel
Emily Meuser
Prof. Arne Mooers
Sacha O’Regan
Dr. Wendy Palen
Prof. John Reynolds

2 David Suzuki Foundation (2010). Natural capital in BC’s Lower Mainland: Valuing the benefits from nature.


5 TEEB (2010). The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB.


Open letter from senior BC scientists for strong endangered species legislation
Received: Mon 27 Sep 2010

Mr. Doug Konkin, Deputy Minister
Ms. Kaaren Lewis, Director, Ecosystems Branch
Mr. Bruce Fraser, Chair, Species at Risk Task Force

Dear Mr. Konkin, Ms. Lewis and Mr. Fraser,

We have sent the following open letter concerning endangered species legislation to the Premier and the Minister of the Environment, and hope to release it to the public on Tuesday. We hope that you can forward the letter on to the relevant people (e.g. to the Task Force members).

If you would like to contact the signatories en masse, you can do so most effectively through me. We hope we can be of help, and look forward to ongoing discussions with you all.

Most sincerely,

Dr. Arne Mooers
Simon Fraser University

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September 27, 2010

The Honourable Gordon Campbell
Premier of British Columbia
PO Box 9041, Station Provincial Government
Victoria, BC V8W 9E1

Dear Premier Campbell,

We write to ask that your government put in place effective legislation to improve the protection of species at risk in British Columbia, specifically legislation complementary to the Federal Species at Risk Act (SARA). We are senior scientists that work in relevant fields with knowledge both of the state of species decline in the province and of the potential to mitigate that decline if suitable policies are put in place. We are aware that your government has recently struck a nontechnical task force to investigate how such legislation might look. While we are pleased that things have begun to move forward, we write to emphasize that the final legislation must be firmly grounded on sound science in order to achieve the goal of protecting species at risk.

As your government knows, British Columbia is home to more plant and animal species than any other province in Canada. The province is the also the last holdout for many large mammals that once roamed much of North America. Alarmingly, over 40% of the 3808 species assessed by the province are of conservation concern in B.C.(1); over 80% per cent of these 1640 imperiled species are at risk because of habitat loss and degradation (2). Unfortunately, British Columbia currently lacks effective legal tools to protect and recover species at risk (3).
Our province has committed both internationally and nationally to protect biodiversity in the province. British Columbia actively participated in the negotiations for the United Nations' Convention on Biological Diversity (the CBD), and supported Canada's ratification of it (4). Progress on the goals of the CBD will be evaluated this year (5). The CBD requires each country that ratifies it to "establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity", to "promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings", and to "develop or maintain necessary legislation and/or other regulatory provisions for the protection of threatened species and populations" (6). British Columbia accepted these commitments and responsibilities when it supported Canada's ratification of the CBD. In order to help implement the CBD in Canada, the federal, provincial and territorial governments, including the B.C. government, signed the National Accord for the Protection of Species at Risk in 1996. Each signatory agreed to "establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada" (7).

The province has made progress in conservation by establishing new parks and protected areas in recent years, but species at risk remain threatened outside of formally designated conservation areas. Their imperilment is due, in the main, to the absence of effective legislation for their protection and recovery. To fulfill its commitment to protecting species at risk, we call on the B.C. Government to enact meaningful legislation to complement SARA. At a minimum, such an Act would include science-based identification of imperiled species and science-based actions including habitat protection provisions for recovery of those species afforded legal protection. It should also explicitly recognize the importance of ongoing and accelerating climate change, which may necessitate planning for the protection of those peripheral populations whose survival is crucial to their species' future. A forward-looking Act would also include provisions for integrated management and protection of the functionality of ecosystems.

Many of us, and many of our colleagues, would be happy to contribute necessary technical expertise to ongoing discussions.

Sincerely,

Prof. Sally Aitken, Director, Centre for Forest Conservation Genetics, University of British Columbia
Dr. Bradley Anholt, Canada Research Chair in Experimental and Applied Community Ecology, University of Victoria
Prof. Peter Arcese, Forest Renewal B.C. Chair in Applied Conservation Biology, University of British Columbia
Dr. John H. Borden, Fellow of the Royal Society of Canada, Contech Enterprises Inc.
Dr. Kai Chan, Canada Research Chair in Biodiversity and Ecosystem Services, University of British Columbia
Prof. Isabelle Cote, University Chair, Simon Fraser University
Prof. Lawrence Dill, Fellow of the Royal Society of Canada, Simon Fraser University
Dr. Nicholas Dulvy, Canada Research Chair in Marine Biodiversity and Conservation, Simon Fraser University
Dr. Lauchlan Fraser, Canada Research Chair in Community and Research Ecology, Thompson Rivers University
Prof. Robert Guy, Department Head, Forest Sciences, University of British Columbia
Dr. Karen Hodges, ex-Bert Brink Canada Research Chair in Conservation Biology, University of British Columbia Okanagan
Dr. Dezene Huber, Canada Research Chair in Forest Entomology and Chemical Ecology, University of Northern British Columbia
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Dr. Mark Vellend, Canada Research Chair in Conservation Biology, University of British Columbia
Dr. Amanda Vincent, Canada Research Chair in Marine Conservation, University of British Columbia
Prof. Andrew Weaver, Fellow of the Royal Society of Canada, Canada Research Chair in Climate Modeling and Analysis, University of Victoria
Dr. Jeanette Whitton, Director of the University of British Columbia Herbarium, University of British Columbia
Prof. Mark Winston, Fellow of the Royal Society of Canada, Simon Fraser University
To correspond with all the signees, please contact:
Dr. Arne Mooers (amoowers@sfu.ca)
Biological Sciences, Simon Fraser University
8888 University Blvd, Burnaby BC V5A 1S6

References


5. Convention on Biological Diversity (CBD), at www.cbd.int

6. CBD, Article 8(a), 8(d) and 8(k).


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http://www.ecoevo.ca (Canadian Society for Ecology and Evolution)
http://www.vanevo.ca (Vancouver Evolution Festival 2009)

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PROTECTING CRITICAL HABITAT ON PRIVATE LAND

by

Karen N. Calla
BSc Biology, Simon Fraser University, 1992

PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF BUSINESS ADMINISTRATION

In the Executive Master of Business Administration Program
of the
Faculty
of
Business Administration

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SIMON FRASER UNIVERSITY
Summer 2009

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Abstract

Private lands will be important to recovering endangered species in Canada. Reliance on public lands will not satisfy the requirements of all endangered species, particularly those whose habitats are at risk from human development. Canada requires a critical habitat policy for endangered species on private land that protects a sufficient quality and quantity of habitats to enable recovery of species. This policy should accomplish this as efficiently as possible with deliberate consideration to the distribution of costs between taxpayers and landowners. The cooperation of landowners is necessary to protect critical habitats because uncooperative landowners can deliberately destroy habitats before regulatory tools can be put in place.

This paper evaluates four policy alternatives individually and in combination. These alternatives include the purchasing of private land, the use of regulatory prohibitions, the creation of markets for critical habitats, and the provision of incentives to landowners. Case studies help explore each alternative which is then evaluated against policy goals and constraints. Analysis showed the selection of a policy portfolio that combines regulatory prohibitions with landowner incentives offers a good foundation to protect critical habitats on private lands. Making landowner incentives performance-based further ensures Canada will achieve the desired results from participants in the program. Canada’s Species at Risk Act has the necessary legal tools and it promotes incentives to encourage habitat protection which supports this approach.

Keywords: Critical habitat; endangered species; private land; incentives; conservation policy
Executive Summary

The diversity of life on earth is being lost at an unprecedented rate because of human activities. Loss of habitat is an important driver of species loss. The resultant loss of ecosystem services hinders achievement of global social goals to reduce poverty, hunger, and disease. Protection of biodiversity is a challenge requiring global contributions. Canada is a signatory to the 1992 United Nations Convention of Biological Diversity that seeks to foster this necessary global action.

In 2003, Canada proclaimed the Species at Risk Act (SARA) to prevent wildlife species from becoming extirpated or extinct. It directs the recovery of endangered or threatened species and encourages the management of other species to prevent them becoming at risk. SARA recognizes that protecting habitat is central to successful species conservation and prohibits the destruction of critical habitat. Private lands will be important to recovering endangered species in Canada because public lands cannot satisfy the requirements of all endangered species, particularly those whose habitats are at risk from human development.

Distributional issues are at the core of protecting critical habitats. The public and landowners must share the costs of protecting habitats of endangered species on private lands. Landowners derive benefits from their lands and should pay for associated costs. Canadians desire protection of biodiversity and should pay for improvements. Historic critical habitat losses provided benefits to Canada; current owners of undeveloped lands should not bear the full cost for these historic losses.

It is very hard to determine the total economic value of endangered species. Economics plays a role in decisions because human actions affect the survival of species but there are serious limitations. The impact to an ecosystem of losing an individual species is very difficult to determine. Economic losses to protect endangered species and their habitats can include less
production of food or timber, less mineral production, displacement of jobs resulting in unemployment, and more subtle losses such as higher prices for products and less investments in lands. The recovery of species is an incremental decision because potential costs depend on how much recovery is wanted and the level of certainty desired. A desire to protect endangered species often has less to do with expected welfare or utility and more to do with moral principles. Decisions to protect endangered species are value laden and the existence value of endangered species is a powerful concept that has given rise to protective legislation in many countries.

While SARA requires federal and provincial governments to prevent the destruction of critical habitats, it does not identify the mechanism to use to accomplish this. Canada requires a critical habitat policy for endangered species on private land that protects a sufficient quality and quantity of habitat to enable recovery of species. This policy should accomplish this as efficiently as possible and with deliberate consideration to the distribution of costs between taxpayers and landowners. The cooperation of landowners is necessary to protect critical habitats because uncooperative landowners can deliberately destroy habitats before regulatory tools are in effect.

This paper evaluates four policy alternatives individually and in combination. These alternatives include the purchasing of private land, the use of regulatory prohibitions, the creation of markets for critical habitats, and the provision of incentives to landowners. Case studies help explore each alternative which is then evaluated against policy goals and constraints. Policy goals are efficiency, which considers monetary costs and habitat quality and quantity benefits, and equity to landowners and to taxpayers. All options must also be feasible politically, fall within anticipated budgetary constraints, and ensure the critical habitat protected has scientific integrity.

Analysis showed the selection of a policy portfolio that combines regulatory prohibitions with landowner incentives offers a good foundation to protect critical habitats on private lands. Regulatory prohibitions will identify habitats that cannot be destroyed while incentives will reward private landowners who take good care of habitats on their lands. Making landowner incentives performance-based further ensures achievement of the desired results from
participants in the program. While government agencies could administer both programs, placing the administration of the incentive program under the authority of a not-for profit organization offers several advantages. Landowners may be more willing to participate in programs offered by non-government organizations because there is no perceived conflict with regulatory prohibitions and government can focus more clearly on their core mandate and competencies so their strategy and actions are more cohesive. Canada’s Species at Risk Act has the necessary legal tools and it promotes incentives to encourage habitat protection which supports this approach.
November 12, 2010

Species at Risk Task Force

James Quayle
Manager, Conservation Planning Section
Ecosystem Branch, Ministry of Environment
PO Box 9338 Station Prov Govt
Victoria, British Columbia, V8W 9M1

Dear Mr. Quayle

Re: BC Species at Risk Task Force

Coast Forest Products Association (CFPA) understands the Species at Risk Task Force (SRTF) has been given the mandate to provide recommendations to the BC government to help it update its vision for the conservation of species and ecosystems at risk. While we also understand the process was not originally designed to gather information or to seek public input, as a sector that depends on access to the forest land-base, we believe it is important to offer a number of comments for the SRTF’s consideration.

CFPA and its member companies are supportive of the overall objective to conserve species and ecosystems at risk and to ensure British Columbia remains at the forefront of environmental stewardship. Our members are well positioned to offer insight on opportunities to manage for species and ecosystems of concern as they have participated on a number of Recovery Teams including the Northern Spotted Owl, Marbled Murrelet and Northern Goshawk to name a few. As on the ground resource managers, they have found the move from a particular vision, to policy, and to implementation can be slow, unnecessarily over prescriptive and often results in significant business uncertainty.

CFPA supports the need to assess overall statutory jurisdiction when it comes to species conservation and management. We also support the goal of modernizing and streamlining legislation as long as proposed changes contemplate and address environmental, social and economic considerations. Unfortunately, many land-use planning initiatives in British Columbia, including legal orders for the Central Coast have failed to consider and excluded economic objectives. In managing resources such as species at risk it is imperative legislation and attendant regulations, if deemed to be required, be developed with the underpinning of an appropriate balance between social, economic and environmental objectives.
The forest sector is already subject to a number of key federal and provincial statutes when carrying out its day to day operations. Federally, there is the Species at Risk Act (SARA), the Migratory Birds Convention Act (MBCA) and the Fisheries Act. Provincially there is the Forest and Range Practices Act (FRPA), the Wildlife Act as well as the Identified Wildlife Management Strategy (IWMS). All of these statutes come with a plethora of regulations and measures that have specific requirements to follow. Interestingly the same degree of rigor does not encompass other sectors or agencies when it comes to meeting consistency tests with FRPA objectives. CFPA suggests that from a forest sector perspective there are sufficient statutes in place both at the federal and provincial level. The SRTF should look at a new approach building on the Conservation Framework developed by the province. The framework has the potential to provide government and non-government resource managers the ability to prioritize as well as determine appropriate effective management actions relative to species conservation. A shortcoming of the framework is the lack of application of an economic lens when it comes to conservation options.

Instead of more regulation the province should assess the use of cooperation and voluntary stewardship measures to enhance overall conservation of species at risk. The forest sector also recommends adding in the provision of incentives to promote habitat conservation, with regulatory enforcement as an alternative if such voluntary measures turn out to be insufficient. From CFPA’s perspective SARA does not provide the mechanisms necessary to ensure a cooperative and/or voluntary approach to species conservation.

One of the key components of species at risk conservation must be the assessment or prioritization of a specific species or the potential to have overlapping management of a number of species. Unfortunately the inventory information needed for the assessment phase is seriously lacking in British Columbia. As a result the focus on conservation measures by default is continually aimed at the harvestable land base – the accessible portions of the coast. When the Coast Action Plan was released by government in 2007 it noted only 2.5 million hectares make up the Crown timber harvesting land base, while 3.1 million hectares are in parks and other protected areas excluded from harvesting. The remaining 10 million hectares also include forested areas which provide habitat for many species. As well, ecosystem-based management objectives in the central and north coast land use planning areas further reduce areas for timber harvesting.

It is hoped one of the key recommendations the SRTF would consider is to compel government to provide funding to carry out inventories for suspected species at risk not only within the harvestable land base but on the 3.1 million hectares that have been excluded from industrial activity and the 10 million additional hectares that make up the coast. Only through sufficient inventories of the entire coast can the assessment phase be considered science based and have sufficient rigour to enable listing of species. This level of assessment would be helpful for decision makers considering species
designations to be added on the SAR list as well as for species to be delisted. It would be a fair observation that species to date have been more readily added to listings than they are taken off.

While the requirement to identify and assess the economic and social impacts of a species listing is part of the federal regulation-making process, it is at the back end of the process. The SRTF must consider making the requirement for socio-economic analysis mandatory at the front end of the decision making process. By so doing, the decision maker will be apprised of and understand the implications upfront and be in a position to ensure the appropriate rigour is applied to the relevant biological aspects. The socio-economic assessment should follow relevant pre-set guidelines at the listing or prioritization stage in the conservation approach. The analysis should take into account the best available biological information, including inventory data for the species and use both qualitative and quantitative methods to support its conclusions.

Another component that must be considered in the conservation vision is the results based foundation of FRPA incorporated with professional reliance. All federal and provincial ministries empowered to manage resources must buy into the professional reliance model, it cannot be a selective approach – government is government when it adopts specific policies.

The SRTF will need to ensure that when the assessment phase including the socio-economic analysis of the vision is complete and a decision to act on a conservation measure is made, the vision is supported by a transparent and workable compensation mechanism where forest tenure agreement holders are unable to exercise rights granted in their agreements. Finally, the conservation vision should include a viable recovery planning process, a manageable shared implementation approach and a monitoring and evaluation follow-up. It is hoped that government will consult its stakeholders in developing these key components of any conservation framework.

Coast Forest has provided some suggestions for consideration in the hope that the SRTF development of a vision for species at risk conservation avoids duplication with federal and provincial statutes as well as provincial ministry overlaps, and recognizes the significant economic importance of the forest sector on communities and the province. We look for further opportunities to provide input when government considers the SRTF recommendations.

Yours truly,

Les Kiss,
Vice-President, Forestry
December 2, 2010

Bruce Fraser, Chair
BC Species at Risk Task Force
c/o Ministry of Environment
PO BOX 9338 Stn Prov Govt
Victoria BC V8W 9M1

Dear Bruce Fraser:

Re: Submission to the BC Species at Risk Task Force

I am writing to provide information and recommendations for consideration by the BC Species at Risk Task Force when preparing its final report to the government of British Columbia.

The Islands Trust Council is a federation of independent local governments that represents some 25,000 people living in the Islands Trust Area. The Islands Trust, established through the provincial Islands Trust Act, is responsible for preserving and protecting the unique environment of the Islands Trust Area through planning and regulating land use, development management, education, cooperation with other agencies, and land conservation.

The Islands Trust Area includes the islands and waters between the British Columbia mainland and southern Vancouver Island, including Howe Sound and as far north as Comox. This is a unique and special place composed of 13 major islands and more than 450 smaller islands covering approximately 5200 square kilometres of land and water.

The Islands Trust Area contains one of the highest levels of biodiversity in British Columbia and is home to many species at risk, some of which are at the northern extreme of their range, and are not found elsewhere in Canada. Taking Nature’s Pulse: The Status of Biodiversity in British Columbia 2008 by Biodiversity BC, identifies the Coastal Douglas-fir biogeoclimatic zone, the zone which encompasses most of the Islands Trust Area, as being the stronghold for many species at risk of extinction or extirpation, and as having the highest density of species of both global and provincial concern of all sixteen zones in British Columbia. The islands in Howe Sound fall into the Coastal Western Hemlock biogeoclimatic zone, which also supports a large number of species at risk. Within the entire Islands Trust Area, there are a total of 177 red-listed species (21% of the provincial total) and 178 blue listed species (23% of the provincial total). There are also fifty-one red-listed ecological communities and 21 blue-listed ecological communities. The Islands Trust Area supports some of Canada’s last remaining Garry Oak ecosystems and the associated rare plants, mosses, butterflies, and reptiles.

I have had some preliminary discussions with our staff to develop some ideas and recommendations that we hope will inform the task force’s work. Please note that many of the recommendations in this letter are similar or related to those put forward in the draft discussion paper recently produced by the Species at Risk Local Government Working Group. Our input below is grouped according to the topics laid out in the BC Species at Risk Task Force’s terms of reference. Due to time constraints, these points have not been considered by the entire Islands Trust Council but I believe they are consistent with our Policy Statement and other Islands Trust initiatives.

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1 Islands Trust Area numbers are determined by search criteria that isolate species by biogeoclimatic zone and regional district.) (BC CDC, 2010)
Defining Vision, Principles and Outcomes

Above all, I hope your final report and recommendations will be rooted in the need to find a balance between the need to study, inventory and map species at risk, and, the need for the Province of British Columbia to show strong leadership by taking, and enabling others to take, meaningful, timely actions that provide strong protection for the ecosystems and critical habitats that support species at risk. We cannot continue to focus on studying and planning while we lose the genetic diversity of our ecosystems and lose irreplaceable species forever. I hope your recommendations will lead to actions and tools that take all of us beyond documenting what we are losing. More than 8,800 ha (11%) of the area occupied by the nine ecosystem types of East Vancouver Island and Gulf Islands measured by the Sensitive Ecosystem Inventory in the early 1990s had been disturbed by 2002. The new visions, principles and outcomes that you recommend must move British Columbia beyond documenting and learning about species at risk to quickly implementing concrete, effective measures for their protection.

Environmental Management

I suggest that the Province of British Columbia should consider:

• funding and updating ecosystem maps;
• when developing management methods for species at risk, the special challenges that species-at-risk and ecological communities on small islands face when adapting to climate change;
• adequately funding the Conservation Data Centre;
• providing leadership on the reduction of greenhouse gases to mitigate climate change and its impacts on species at risk;
• when developing management methods for species at risk, the negative impact that ocean acidification due to increasing greenhouse gases will have on both marine species at risk and all species that depend on marine species and ecosystems for food or habitat; and,
• demonstrating leadership on species at risk by protecting species at risk on all Crown lands.

Regulatory Framework

The recommendations below should encourage and empower local governments to protect species at risk, recognizing that additional powers may result in high workloads for local governments and may require provincial funding and/or staff support.

I suggest that the Province of British Columbia should consider:

• bringing the BC Wildlife Amendment Act (2004) into force requiring habitat protection for species at risk and reconcile the requirements with the Private Land Management Act and the Agricultural Land Commission Act to ensure avoidance of conflicting legislation and coordinated implementation;

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2 Redigitizing of Sensitive Ecosystems Inventory Polygons to Exclude Disturbed Areas Summary Report, prepared for Canadian Wildlife Service, revised June 2005, page i.

3 With regard to the need for funding for ecosystem mapping, the Terrestrial Ecosystem Mapping (TEM) for the Islands Trust Area is vital to our land use planning work and has been instrumental in the development of the Islands Trust Fund’s newly adopted 2011-2015 Regional Conservation Plan.

The TEM for our area was developed with collaborative funding from Parks Canada, Islands Trust and the Province of BC. With this data we are developing an open-source, GIS based, conservation priority model that we trust will prove invaluable as an acquisition decision support tool. It is our hope that the model will also serve as a demonstration project for all levels of government and other local and regional organizations with conservation mandates. This model, which will allow us to prioritize conservation protection measures based on ecosystem protection priorities, would not be possible without TEM. It is simply beyond the capacity of small and/or rural local governments and local trust committees to produce and update this data, which serves as the foundation dataset for our ecosystem protection efforts.
• giving explicit authority for the Approving Officer (whether employed by the local government or Ministry of Transportation and Infrastructure) to refuse subdivision applications for environmental protection reasons;

• increasing the scope of controlled alien species to include both terrestrial and marine plant and invertebrate species;

• providing clear direction on roles and responsibilities of provincial and local governments with respect to species at risk, recognizing that local governments cannot take on additional responsibilities without resources and support;

• enabling (but not requiring) local governments to create bylaws for the protection of biodiversity values;

• enabling (but not requiring) local governments to take strong enforcement action on Development Permit Areas outside the judicial system (e.g. ticketing, injunctions, stop work orders);

• enabling (but not requiring) local governments to require developers to provide their data on species at risk occurrences to the BC Conservation Data Centre;

• allowing regional districts and the Islands Trust to adopt tree protection bylaws and ensure that this new power is clearly reconciled with other legislation relating to forestry and agricultural activities;

• providing and maintaining clear, mandatory guidelines (terms of reference) for resource professionals on how to gather species information. There are lessons to be learned from the experience with the Riparian Area Regulations;

• amending the Water Act to include changes that prioritize water for ecosystems, functioning watersheds and basic human needs; and provide better protection for riparian areas and riparian habitats;

• ensuring that the Province’s Coastal and Oceans Strategy includes actions for protecting marine species at risk such as oil spill prevention and response measures; and

• ensuring all legal references to BC local governments, regional districts and municipalities explicitly include the Islands Trust.\(^4\)

Private Land Stewardship

The role of private land stewardship is of particular importance to the Islands Trust, as more than 68% of our land base is privately owned compared to about 5% of British Columbia being held privately. The cooperation of private landowners is key to protecting species at risk in our region.

I suggest that the Province of British Columbia should consider:

• providing funding to stewardship groups and local governments for landowner outreach programs;

• planning for and undertaking comprehensive inventories for species at risk occurrences and potential habitat;

• providing funding to stewardship groups and local governments for the strategic acquisition of critical habitats and the on-going stewardship costs of the protected lands and consider options for new funding mechanisms and models; and,

• providing or enabling programs for property tax reductions for biodiversity measures.

\(^4\) The Islands Trust has a unique legal status in BC’s local government legislative framework, and must be specifically named in order for legislation to apply to it. The Islands Trust wants to ensure it is included as it is already making an important contribution to protecting species at risk.
With regard to property tax incentives, the Islands Trust has been fortunate to have the Natural Area Protection Tax Exemption Program (NAPTEP) in place since 2005. NAPTEP is a property tax incentive program designed in partnership with the Province of British Columbia to encourage landowners to protect the natural features of their land. It provides a 65% exemption on annual property taxes for the protected portion of a property (land value only). Through this program, 17 landowners have protected 19 properties totalling 67 hectares.

NAPTEP was designed for Islands Trust's unique local government structure which includes having a conservation land trust, the Islands Trust Fund. Since NAPTEP’s launch in 2005, we have fielded many calls from other local governments in British Columbia interested in adopting the NAPTEP model. We advise them that while our model is not easily transferable, there are other property tax exemption programs that British Columbia can look to such as Ontario’s Conservation Land Tax Incentive Program and Nova Scotia’s Conservation Property Tax Exemption Program. The following are four key lessons we have learned by administering NAPTEP.

1. The upfront costs to landowners for legal surveys, appraisals, and baseline reports needed to register a conservation covenant can be a barrier for some landowners. The financial motivation intended by the property tax incentive can be lost if the pay back period is considered to be too long or if property owners cannot afford the upfront costs.

2. There are long-term costs associated with monitoring and legally defending conservation. A funding mechanism for these costs should be determined in advance whether from an endowment funds or secure on-going sources.

3. Program success depends on a strong communications program and on-going landowner education.

4. There is a need for clear criteria for program eligibility.

Effective First Nation and Stakeholder Communications and Engagement

I suggest that the Province of BC should consider:

- recognizing that protecting species at risk requires strong leadership from the Province supported by collaboration of all levels of government, First Nations, industry, non-government organizations, private landowners, communities and concerned citizens;

- providing a ‘single window’ for information on species at risk, such as links to useful websites, information updates, case studies of successful partnerships and programs, and up-to-date data on species at risk by electoral area and for the Islands Trust Area; and,

- creating positions within the provincial government dedicated to supporting local government species at risk protection efforts.

Thank you for serving on the BC Species at Risk Task Force and for considering the points in this letter.

Yours truly,

Sheila Malcolmson
Chair, Islands Trust Council

pc: Islands Trust Council
Islands Trust Area MLAs
Co-Chairs, Species at Risk Local Government Working Group
Land Trust Alliance of British Columbia
Trust Fund Board
Islands Trust website
November 15, 2010

Attention: James Quayle  
BC Species at Risk Task Force  
Ministry of Environment  
PO Box 9338, Station Prov Gov’t  
Victoria, BC V8W 9M1

Dear Mr. Quayle:

Re: Species at Risk Task Force

Please find enclosed a submission from BC Nature (Federation of BC Naturalists) to the BC Species at Risk Task Force chaired by Dr. Bruce Fraser. We have also submitted this text electronically.

Thank you for the opportunity to comment.

Yours truly

[Signatures]

John Neville  
President

Rosemary Fox  
Conservation Chair

1620 Mt. Seymour Road, North Vancouver, BC V7G 2R9  
T: 604 985 3057 F: 604 985 3059 www.bcnature.ca
November 15, 2010

To: BC’s Species at Risk Task Force

From: BC Nature (Federation of BC Naturalists)

1. DEFINING VISION, PRINCIPLES AND OUTCOMES: Where should our conservation efforts be focused, what principles should guide future development of a species at risk program in B.C., and what are the measurable outcomes that best address the fundamental threats to biodiversity in B.C. and help us achieve our vision?

BC Nature (Federation of BC Naturalists) Response: It is well known in the biological and social science disciplines that the wellbeing of people and sustainability of communities ultimately depends on the health and sustainability of the biosphere. The government’s goal must therefore be to ensure that BC conserves its full natural endowment of ecosystems and species for the health and wellbeing of future generations. The outcome sought is successful restoration of species at risk, as well as provincial policies and management practices established that maintain healthy ecosystems and prevent species extirpation. We support the goals and tactics advocated in the provincial government’s 2009 Conservation Framework.

2. ENVIRONMENTAL MANAGEMENT: In light of climate change and multiple development demands, what management methods need to be advanced to meet our conservation targets?

BC Nature (Federation of BC Naturalists) Response: Management agencies need to be flexible and capable of responding to climate change. Protection of large blocks of conservation areas, with strong connecting corridors of natural habitat, is important to increase the ability of wildlife (including plants) to adapt to climate change.

Also, environmental assessments of major developments, most obviously, but not solely, those proposed by the fossil fuel industry, must consider “cradle to grave” impacts on global GHG emissions. For example, in assessing proposed new coal mines, the government must consider the implications for GHG emissions and associated climate change, not only of extraction of coal in BC, but the burning of that coal in the jurisdiction of its eventual destination.

The precautionary principle needs to be applied in all management of species at risk and in assessing the possible or likely effects of various human activities on the health of critical habitats and the species’ survival. As Aldo Leopold, one of North America’s
one - to determine how it can go ahead, rather than assessing objectively whether it should proceed. This "mindset" negatively affects the conduct of the review. Certainly, unnecessary delay needs to be avoided, but the strict timelines imposed by legislation are unreasonable and seriously undermine the efficacy of the review process. To shortchange assessments of ecological impacts and downsize the Ministry of Environment and other government agencies with environment assessment responsibility is false economy.

Threatened and encangered species and the ecosystems that sustain them will be incrementally compromised and lost if they have to be "balanced" against socio-economic considerations when decisions are made on development projects. The fate of Spotted Owls in BC is a good example of what can happen to an endangered species when its habitat needs are incrementally diminished due to the higher value placed by government on logged old-growth timber. Development regulations must recognize that protection of biodiversity requires a conservative approach to land-use decisions, incorporating the principle that a healthy environment is the foundation of a healthy economy and sustainable communities.

Legislation must be comprehensive enough to address 'critical habitat' and allow for critical habitat for specific species to be delineated and protected on the ground.

Finally, we fully endorse the letter of September 27 2010 from concerned scientists to the then-premier, the Hon. Gordon Campbell, and its emphasis that Species-at-Risk legislation must be based on sound science (see www.scientists-4-species.org).

4. PRIVATE LAND STEWARDSHIP: How do we advance private land stewardship and conserve species and ecosystems at risk on private land in B.C. while respecting the interests of taxpayers?

**BC Nature (Federation of BC Naturalists) Response:** The BC government should consider enacting legislation similar to Ontario’s *Conservation Land Tax Incentive Program* and Nova Scotia’s *Conservation Property Tax Exemption Act*, which provide property tax incentives to private landowners who wish to protect their land and its biodiversity by covenant from future development.

A similar initiative exists now in BC, namely, the Gulf Islands Trust’s bylaw, *The Natural Area Protection Tax Exemption Program (NAPTEP)*, which provides a substantial annual property tax reduction to covenant private land on a number of BC’s Gulf Islands.

An alternative to tax incentives is upfront payment to landowners for retention of a natural value on their land, in return for which a covenant is registered against the land title that protects that natural value in perpetuity. This principle should apply as well to First Nations lands when and where the Bands concerned are interested in participating. Funds for this can come from public money and/or land trusts. A BC example is the payment that Ducks Unlimited has made to farmers in the Fraser River delta, in return for a covenant on the land title that ensures the land is retained for soil based agriculture in perpetuity. This arrangement benefits waterfowl that use the farmland during fall and winter. A similar consideration could be enacted for other natural attributes such as wetlands, forest or grasslands. That is, rather than a tax incentive, landowners could receive upfront payment, in recognition of the public value
of the natural habitat they 'own'. With the payment to the landowner and the covenant on the title, the landowner becomes a 'steward' of that natural habitat, rather than the owner.

Additional financial support could be provided to non-government organizations that have private land stewardship programs of education, habitat and species assessment, and assistance with protection measures (fencing, restoration of habitat, etc.). Such NGO's may at times be more acceptable to private landowners, and able to achieve significant results in habitat and species protection and/or restoration.

5. EFFECTIVE FIRST NATION AND STAKEHOLDER COMMUNICATIONS AND ENGAGEMENT: What are the key elements of a communications and engagement strategy to ensure communities, First Nations, private landowners, and all other stakeholders who operate on the province's land and water base understand and value the benefits of species at risk conservation.

BC Nature (Federation of BC Naturalists) Response: Education is crucial, and funding to relevant ministries is required to fund programs on conservation. The Ministry of Environment needs adequate funding to raise public awareness of species-at-risk and the importance of conservation (for example through increased website coverage, pamphlets, meetings with stakeholder groups and others in different communities, and interpretation programs in BC Parks).

Long-term funding should be made available to NGO's to implement programs of habitat conservation and restoration, and stewardship education. Government funding to NGO's for stewardship is an avenue that can be a very effective means to involve and educate the public.

For example, BC Nature provides Interpretive Programs in BC Parks, including several programs on species-at-risk, and these provide well-received outreach to a wide range of ages, with over 100,000 visitors participating each summer. Increased and long-term funding could expand this public outreach to many more people and to schools (to date funds support only limited fall through spring school programs in Provincial Parks). Other BC Nature projects, namely Important Bird Area Caretakers, Wildlife Tree Stewardship, and Living by Water, involve private landowners, First Nations and other community members in stewardship of species-at-risk. BC Nature's fifty community based clubs throughout BC provide nature education through speakers, field trips, and/or hands-on stewardship of local areas, frequently involving private landowners. Several nature clubs are also involved with school education, as is our partner organization, the Young Naturalists Club.

Many stewardship organizations deliver similar education programs and/or stewardship activities, on shoestring budgets. Adequate, long-term government funding could greatly improve the success of such programs, but unfortunately most NGO's lack adequate funding to undertake them. Adequate government funding is critical to the success of such programs.

First Nations Elders are often an invaluable source of knowledge on species-at-risk, as some of the best habitat and populations of these species exists on Indian Reserves. The government should confer with First Nations with a view to using this knowledge as a source of education for both First Nations people and non-natives as well.
Garry Oak Ecosystems Recovery Team submission
To the BC Species at Risk Task Force

Background on Species at Risk in Garry Oak Ecosystems
Garry Oak and associated ecosystems are home to more plant species than any other land-based ecosystem in coastal British Columbia. Many of these species occur nowhere else in Canada. At this time, because so much habitat has been lost or degraded, more than 100 species of plants, mammals, reptiles, birds, butterflies and other insects are officially listed as “at risk” in these ecosystems. Several species have already been extirpated from British Columbia, including fragrant popcornflower (Plagiobothrys figuratus), the Georgia Depression population of the Western Bluebird (Sialia mexicana), and the Island Large Marble butterfly (Euchloe ausonides insulanus). Collectively, Garry Oak and associated ecosystems are among the most endangered in Canada — less than 5% of the original habitat remains in a near-natural condition. It is important to retain the components of these ecosystems as much as possible in order to preserve their integrity and biological diversity.

- Defining Vision, Principles and Outcomes: Where should our conservation efforts be focused, what principles should guide future development of a species at risk program in B.C., and what are the measurable outcomes that best address the fundamental threats to biodiversity in B.C. and help us achieve our vision?

Focus on BC’s biodiversity hotspots with rare ecosystems and a high number of species at risk. Embrace an approach that aims to restore disrupted essential ecosystem processes in order to restore ecosystem integrity and benefit multiple species at risk and biodiversity and ecosystem function in general.

A guiding principle should be that all species at risk native to BC have an inherent right to existence.

The BC species at risk program should also recognize and protect imperiled ecosystems.

Priority for action should be in the following order:
1. Species at risk globally
2. Species at risk in Canada
3. Species at risk in BC

For more specific priorities refer to recommendations in recovery planning documents.
Measurable Outcomes:
- No net loss of SAR populations and their critical habitat
- Number of SAR populations secured, stable or increasing
- Amount of habitat, including rare ecosystems, secured and ecological integrity maintained
- Number of landholders and other citizens actively engaged in restoration/recovery initiatives

- **Environmental Management:** In light of climate change and multiple development demands, what management methods need to be advanced to meet our conservation targets?

We need to follow sustainable development principles in BC, and conduct cumulative environmental assessment on new development in order to adequately consider species at risk needs in BC. Environmental assessments must incorporate existing information on rare species or ecosystems, and when rare species are not known from the site, a survey should be conducted by a rare species expert in the appropriate season.

For situations where the social need is great and demands impacts to a species or ecosystem at risk we need to follow principles that will more than offset those impacts (such as the requirement for protecting two times the amount of habitat lost for any particular species or establish twice as many individuals in suitable habitat to offset development impacts).

An ecosystems-based approach to environmental management should be adopted, including consideration of changing ecosystems, development of novel ecosystems, and effects of climate change on ecosystems and species at risk.

We need to ensure the requisite Provincial Ministry staff and other resources are dedicated to delivering a coordinated rare species and ecosystem recovery program for British Columbians that meets commitments under the National Accord for Species at Risk, the Canada-BC Bilateral Agreement on Species at Risk, and BC’s Conservation Framework.

- **Regulatory Framework:** What changes are required to the existing regulatory framework to ensure we balance ecological and socio-economic considerations and best achieve our conservation targets?

We need to push the Wildlife Act Amendment regulations through and afford the federally-listed and BC red and blue-listed species and ecosystems at risk the protection needed for their successful recovery. This protection needs to span all non-federal lands in the Province (Crown land, regional land, local government lands, and private lands). An alternative would be to be more consistent with other jurisdictions in
Canada and the National Accord for Species at Risk in Canada and develop and implement a BC Species at Risk Act that complements Canada’s Species at Risk Act. We need to ensure that regardless of what regulatory framework is in place, it embraces critical habitat for species at risk, and incorporates public, stakeholder, First Nation and industry consultation. Legislation and regulations need to include fines and penalties equal to or greater than Canada’s Species at Risk Act.

We need to add many additional invasive non-native plant species to the Noxious Weed Act in order to support the management of invasive species as one of the primary threats to species at risk in BC.

We need to establish a requirement that SAR surveys for plants, vertebrates and invertebrates be conducted by qualified experts in appropriate seasons for all proposed developments on previously undeveloped land.

- **Private Land Stewardship:** How do we advance private land stewardship and conserve species and ecosystems at risk on private land in B.C. while respecting the interests of taxpayers?

As above, we need to ensure we have legislation and regulations in force in BC that afford protection to species and ecosystems at risk on private land. To complement this and encourage collaboration and stewardship, we need to develop incentives for landowners to protect their land and the rare species and ecosystems that occur on it.

Incentives can include tax incentives, compensation, assistance with stewardship agreements, and rewards and recognition programs. Financial support, technical advice and assistance could also be provided where needed (e.g. invasive species SWAT teams to help landowners). Incentives could be provided to help nurseries produce and sell more native plants for SAR habitat restoration projects and to reduce the impacts of invasive plant species used in restoration and in gardening.

We need to support NGOs that are working on species and ecosystems at risk and conducting landowner contact and stewardship programs.

- **Effective First Nation and Stakeholder Communications and Engagement:**

What are the key elements of a communications and engagement strategy to ensure communities, First Nations, private landowners, and all other stakeholders who operate on the province’s land and water base understand and value the benefits of species at risk conservation.

Maintain the BC Species at Risk Registry.

Conduct targeted consultations on federally-listed species at risk in collaboration with the federal government.
Conduct comprehensive consultations on BC-listed species at risk.

Develop provincial multimedia campaigns (using traditional and new social media) to raise awareness about species at risk and encourage the public to take positive actions to protect species at risk and endangered ecosystems.

Develop ongoing relationships with impacted First Nations to work collaboratively on sustainable natural resource management.

Provide training, technical advice and financial support to assist First Nations with their SAR and endangered ecosystems recovery efforts.

Thank you for the opportunity to comment on this important work.

Sincerely,

Shyanne Smith
Vice-Chair, Garry Oak Ecosystems Recovery Team
Additional Input received by the BC Species at Risk Task Force

25 October 2010
The best advise I can offer is to create the communications and engagement strategy in conjunction with First Nations. Unless the process itself is created with First Nations input then it won't work. There are already too many existing processes that have conflicting timeframes with First Nations cultures. Time frames imposed by government dictated processes infringe on First Nations abilities to carry out their traditional ways. For example, big house ceremonies or traditional greiving and funeral processes, hunting and gathering of various resources and spiritual ceremonies. Aboriginal peoples are the holders of historic knowledge about species and ecosystems.

3 November 2010
People have to be educated, and it should not matter if the land is privately owned or not, species are much more important than peoples' personal interests. There should be guidelines in place, and for people to know before they commit to purchasing land, that these guidelines will need to be followed in order to protect the wildlife.

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BC needs to create an endangered species act quite similar to other successful acts already in place in many other countries, such as in the United States. I find it shameful that a prosperous province such as BC cannot even create laws to protect such valuable species, when even 3rd world countries are ahead of this province on that front.

4 November 2010
The task force should look closely at problems created by the American Endangered Species Act, where mandatory protection meant that citizens developed a "shoot and shovel" approach to endangered species on their land to protect their financial interests (http://www.lewrockwell.com/orig4/reiland3.html) - financial incentives to protect species on private lands may be the best approach. Cattle ranchers often work well with and participate in conservation initiatives (e.g. Nature Conservancy; Environmental Defense Fund) - perhaps these partnerships would serve as a good model.

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I feel strongly that habitat and land area protected is the best answer to all three questions. BC doesn't protect enough land area within its unique habitat-types - most of our protected land is in mountain ranges with low species diversity. Species conservation should be focused on protecting substantial amounts of the type of habitat an endangered species uses and establishing habitat corridors to ensure viable genetic populations. This has the potential to create an umbrella effect for other species within those habitats so that they don't end up becoming endangered as well (and will ultimately save costs - if we run around putting out individual fires without dealing with the cause of most of them (habitat loss) then we waste resources, time and effort).

Climate change is a potential wild card and, again, protecting substantial areas of land probably has the best chance of protecting species, rather than working with minimum areas and trying to predict where/what habitat shifts will occur.

Finally, habitat and land area under protection is an easy, non-disputable, metric.

5 November 2010
I have written a paper on this recently that I am interested in sharing. "Protecting Critical Habitat on Private Land" was accepted by SFU as an MBA project in 2009. It evaluates the use of incentives, regulatory tools, stewardship, land acquisition, trading development rights, etc. as methods to protect the critical habitats of species on privately owned lands. Please note that this is an individual should not be considered to represent the views of my employer, the Department of Fisheries and Oceans. DFO is committed to protecting the critical habitats of aquatic species but has not prepared an official position for submission on this matter.
6 November 2010

Besides social and economic criteria and objectives, we need to include environmental and conservation objectives, for the public benefit and for the society’s good.

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The provincial legislation should protect species at risk of extinction even on private lands.

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We need provincial legislation requirement to specify and preserve the critical habitat needed to prevent extinction of species at risk in our province. The US Endangered Species Act is a good start. We urgently need laws in B.C. that protect species at risk of extinction.

7 November 2010

Each conservation value, including priority species, should have one or more performance measures assigned to it. For example, for a species that is sensitive to human disturbance one performance measure might be the proportion of a landscape unit that is >500m from an open road.

Ideally, a legal objective would be set for the most important performance measures and would be binding on statutory decision-making. In the absence of a legal objective, a no net loss policy could be set (as in no net deterioration in the important performance measures) with the caveat of net losses being allowed but requiring: a higher level of authority to approve and/or appropriate compensation.

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We need to acknowledge that we are losing ground in terms of our knowledge of the natural world as climate change re-writes the rules. What is required are management systems that recognize this uncertainty instead of relying explicitly or, more often, implicitly on assumptions based on the past.

In terms of addressing the issue of declining knowledge, I suggest that, given its relatively low biodiversity from a global perspective (a drop in the bucket compared to our namesake in South America), it is entirely feasible as well as highly desirable for the province to build high resolution distribution maps of all vertebrates and vascular plants and to link these to climate models to predict change. We can use tools like Hectares BC (www.hectaresbc.org) both to build these maps and to enable decision-makers and stakeholders to use them to determine what species and ecological communities may be present at the locations of proposed development or conservation activities. Note there are >1,000 high priority Conservation Framework species and >600 ecological communities (almost the entire number described in the province) mapped in Hectares BC now with a direct link to their Conservation Framework status and other information.

What is needed is a plan to maintain and improve this tool and the information it contains over time and the processes to ensure it is used in decision-making. In addition to identifying values potentially present at a location, Hectares BC could readily be used to track any performance measures associated with those values.

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Request for the BC Government to enact legislation to provide property tax incentives for those wishing to protect their own property from development

Whereas the province of Ontario has enacted the Conservation Land Tax Incentive Program

and Whereas Nova Scotia has enacted the Conservation Property Tax Exemption Act to reward conservation land owners who legally protect their property with property tax reductions

and Whereas the Gulf Islands Trust has enacted a bylaw, The Natural Area Protection Tax Exemption Program (NAPTEP) that provides a substantial annual property tax reduction to covenant private land on certain Gulf Islands

Therefore be it resolved that the Government of British Columbia be requested to enact legislation to provide property tax incentives to those private land owners who wish to protect their land and its biodiversity by covenant from future development.

Explanation:

Private land owners who choose to protect high quality ecosystems including species at risk for perpetuity by conservation covenant are not eligible for property tax relief unless the property is in certain Gulf Islands, Ontario or Nova Scotia. The protected land, even though the public has no access, benefits the entire region by providing habitat for flora and fauna, as well a host of ‘green infrastructure’ services, such as storm water reduction and pollution absorption-services that would cost the municipality (and tax-payer) if the land was developed.

Encouraging private landowners to protect their land is an important part of conserving ecosystems in any region. Every tool counts and property tax reduction is a tool that has been successful in other jurisdictions. At very low cost to the public, property tax incentives for private land protected by legal covenant seems to be a win-win situation that governments should encourage. Hopefully the BC Government will follow the lead of the Gulf Islands Trust, Ontario and Nova Scotia and implement a property tax incentive for those who choose to protect their own land.

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The Bamfield Huu ay aht First Nations Community Abalone Project has recently been closed. This project was a partnership between the Bamfield Marine Sciences Centre (S Universities), the Huu ay aht First Nations, and the community of Bamfield through the Community School Association. The goal of the project was to develop knowledge and skills for the successful out-planting of abalone, a species at risk, to the wild, while providing community economic development by providing employment and training. The cultured abalone raised by BHCAP should have been sold to market to support the research, jobs and training. SARA regulations and DFO enforcement prohibited unrestricted sale of cultured abalone, prohibiting the growth of the initiative to provide jobs, research and out-planting. The BHCAP struggled for 11 years. The facility has now been closed and all BHCAP hatchery animals redistributed to DFO labs, out-planted to Barkley Sound or to the Bamfield Marine Sciences Centre for future research.

If regulations had allowed cultured abalone to be sold on the market, the initiative would have become self-supporting, increased knowledge about the species and why it is at risk, and provided community employment. The SARA regulations should be assessed by species and project, not grouped under a broad umbrella of species at risk.

There will be a community event in Bamfield on November 20 to mark the closure of BHCAP.

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Our conservation efforts should be focused on the elements of our biodiversity that are most unique globally. While there are a small number of full species that are endemic to the province it is at the species assemblage/community level that the province stands out internationally.

I believe, for example, that our large mammal predator-prey systems and old growth temperate rainforests are far more significant than the conservation of token numbers of species that are not globally at risk. Arguably it is the abundance of life that is truly special in B.C., not its variety which is why seasonal concentrations such as those of salmon and migratory birds should be an area of focus.

British Columbia is a topographically complex jurisdiction that is typically cold, steep and high and these are the landscapes that contain what is really unusual and important even though their species diversity is much less than the warm, flat, low places that are rare but contain the vast majority of our human population and associated developments. Not surprisingly, there are many species that live in these landscapes that, by definition, have always been rare that are at some risk of extirpation. Focusing on the conservation of those species will be expensive, risky and even if successful will keep the exceptions to the rule of what makes the province special while the rule itself is potentially broken.

I urge the task force to carefully review "Taking Nature's Pulse: The Status of Biodiversity in British Columbia" as part of your deliberations. It can be found at: www.biodiversitybc.org

9 November 2010

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First Nations already do value SAR, it's non-First Nations and the current provincial government who don't. We need extension programs to get people interested in SAR, once interested in them they will want to work towards conservation. There needs to be funding for landowner contact programs. CWS needs to get out of Delta and engage people. There needs to be more money for people like Park rangers to engage and interest the public.

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We need to make it easier and CHEAPER for landowners to put covenants on their lands. Currently it is an expensive bureaucratic nightmare to put a conservation covenant on private land (I've facilitated one, I know). We need stiffer penalties to stop people from destroying habitat needed by SAR and all wildlife.

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We need to take the responsibility for SAR off of First Nations! SARA should apply to ALL lands, not just federal lands. The BC government needs to step up its work on SAR, BC's response to SARA has been an embarrassment (especially in response to spotted owls and critical habitat designations).

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Efforts need to focus on habitat securement and protection for species at risk. The provincial government needs to spend some money on surveying for species at risk (especially plants, amphibians and reptiles). We need to do basic fundamental research on some SAR because we don’t know their basic habitat requirements. This type of research has been underfunded so we don’t even know what to tell developers when they ask what to do to help a SAR on land they are developing - we just don’t know!

10 November 2010
BCTS Kootenay Again, I forgot our comments on the last question awareness of the species list, legislation education with face to face meetings, not fancy broshures managed Forest Land could be targetted somehow as they are getting a tax break Other incentives whether it's financial (taxes) or otherwise
The TFL and woodlot issue of taking private land from managed tenures and convertying to private land for development should be reviewed.

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Financial incentives. Look at what other provinces have done, survey of information legislation to establish the list and the process for the list Guidelines and policy for management of the species that is specific to the list (which is geographically explicit).

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BC needs to implement and enforce an endangered species act similar to the US. This would pave the way for biodiversity credit trading systems and conservation banks. These have been proven to be spectacularly successful at preserving ecosystems and protecting endangered species. They also allow certain flexibilities in land use and land use change, which will allow communities in BC to preserve ecosystems without constraining social development.

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The Conservation Framework has good relevence. But more experts should be able to provide input to it. (E.g. whitebark pine should have a higher feasibility rating).

Principles should include effective enforcement of regulations plus monitoring of population trends.

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Please ensure open communication through ads and emails to all stakeholders, licensees and public, not just the most vocal stakeholders. It is critical that licensees have an opportunity for input to ensure that conservation measures are operationally feasible.

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There needs to be a fund available to groups or individuals to help maintain ecosystems at risk and habitat for species at risk on private lands.

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There is a requirement to have ecosystem at risk legislation along with species at risk legislation - both are necessary. Many of the ecosystems at risk in the province are going quickly and need protection - many are on private land or surrounding communities.

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Species at risk protection cannot be separated from ecosystems at risk protection, and cannot be separated from protecting habitat and areas for both.

12 November 2010

I agree that the focus should be on both species and ecosystems. I don't really know any specifics to say, as I am not fully familiar with the current species at risk management efforts. However, as a concerned BC resident, I just want to give my full support in creating a species at risk act that actually has some teeth. Make this mean something! I support a tough stand on issue such as species at risk. Humans are becoming increasingly aware of our dependence/survival on a certain level of diversity of our world. People/companies that violate the new laws should be held fully accountable and should face severe penalties. There really is no excuse for harming or destroying a native species' habitat. These laws should be science-based, not political. Measurable outcomes would include rigorous monitoring programs that see populations at question increase over time and that their habitat in question is healthier (i.e. by other indicators such as populations of prey/food species/plant densities etc) and habitat availability. Moreover, a measurable outcome could include the EXCLUSION of humans and human-related development to the area if a species is at risk of extinction.

15 November 2010

There needs to be recognition that the landscape is changing very rapidly and that the rate of change is not consistent across the province. A significant driver is climate change and how it is affecting forest pests. Where the mountain pine beetle has infested large tracts of pine, it is likely that previously established targets and objectives are no longer realistic or achievable. Social, environmental and economic objectives will likely have to be revisited and the re-balancing of objectives will need to occur to reflect the "new" public values.

Any management decisions including the establishment of targets must incorporate and plan for change.

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The process to obtain funding for SAR-related projects has become too onerous for many non-profit agencies. The time required to write proposals, administer projects and write reports has put funding dollars out of reach for many organizations, especially those without a paid co-ordinator. Therefore, put more money and staff resources into assisting local, regional and provincial conservation groups with:
- raising public awareness of species at risk at the local level through displays, presentations and news articles.
- habitat protection and restoration.
- land acquisition for habitat protection
- Making knowledge of our province’s diverse habitats, plants and wildlife species part of the school curriculum in the primary, middle and high school years.

REFERENCES CITED:

This response is being submitted on behalf of BC’s Association of Professional Biology (APB). Where the terms “qualified” and or “qualified registered Biology Professional” are used this infers those registered with the BC College of Applied Biology. A component of the APB mission statement relevant to this section states our purpose as being “to... maintain competence and achieve high professional standards, advance the development and application of sound biological principles in the management and conservation of BC's natural resources...” It is the APB’s opinion that the necessary changes to existing regulatory frameworks must include greater reliance upon, and mandatory requirement for, assessments to be conducted by qualified, registered Biology Professionals. Furthermore to ensure species at risk and their habitats are sustainably managed, recovery and action planning must include mechanisms that will ensure and protect ecosystem integrity and critical habitats and key features at the landscape or ecoregional level. In addition, information gaps that abound in current available species at risk information need to be addressed through research and inventory to support ongoing and future regulatory frameworks and decision making. Finally, regulatory frameworks must include approaches that integrate and assess a broad range of cumulative effects for multiple species including those provincially red and blue listed whether they are federally listed or not.

Biodiversity is important to British Columbians both as part of our identity (“Super, Natural BC”) and our economic future, with ecosystems in the Lower Mainland alone providing on the order of $5 billion per year in services
2. The management of BC biodiversity must benefit all, including current and future generations of, British Columbians.
3. Biodiversity protection requires healthy, resilient ecosystems.
4. The process for creating a regulatory framework, and the framework that flows from this, must be transparent.
5. Protection of species deemed at risk of extinction in BC must be legally binding.
6. Scientific assessment itself should be insulated from outside influence, but recovery planning should both be evidence-based and include socioeconomic considerations and all stakeholders (First Nations, private landowners, industry, ENGOs, with expert economic and scientific support), to allow for costs and benefits associated with species recovery to be clearly delineated to the public.

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1) individual species at risk, their current habitats and ranges, survival and occupation sites, and potential range contraction or expansion from land use activities and climate change,
2) existing restoration and recovery plans and requisite habitat features identified for long-term population persistence and,
3) present ecosystem conditions overall, viewed from an ecoregional perspective and perceived changes to those conditions over time.

Currently, decision making on effects of recovery actions for species and ecosystems at risk are often done on an individual species or site by site level. Little is taken into account from a much needed multi-species perspective or from looking at cumulative effects of climate change or multiple development demands across multiple ecosystems. The outcome of not employing this approach will result in an inability to address long-term impacts.

Of further concern is the fact that the extent of information available for many species at risk in BC is not only dated, but does not even include potential climate change impacts, exacerbating risks of ineffective conservation efforts made without afore-mentioned expertise in specific species, groups of species, and ecosystems.

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It is not enough to simply identify threats to biodiversity and develop a set of recommendations without any built-in form of accountability as to whether those recommendations were acted upon. To address threats to BC’s
biodiversity those threats must first be indentified and prioritized using real world understanding of the trade-offs and costs associated with their reduction, mitigation and elimination. These costs must be equally valued between those that will be incurred to tackle the problems (direct economic costs) as well as the costs associated with lack of action both to human society and the species and ecosystems concerned (e.g. costs to ecological goods and services provided or cost of extinction or extirpation). Actions to address threats must have the necessary commitment and planning in place, supported by all levels of government. The metrics and measurable outcomes that best address threats to BC’s biodiversity must include effectiveness and compliance monitoring of restoration and recovery plans and action plans as they are implemented. This is best accomplished through use of qualified, registered Biology Professionals who have a demonstrated capability and level of expertise in the species and ecosystems being recovered. Periodic audits should be conducted by other independent, qualified, registered Biology Professionals to ensure that actions taken are showing beneficial and or desired outcomes. If threats are not being adequately addressed, resources must be in place that will allow for integration of newscience, knowledge and actions needed to evolve and adapt activities to ensure beneficial outcomes.

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The conservation program must be real and achievable, and widespread, not just focused on a few so-called indicator species, although they may be important re public awareness and support. The conservation effort must try to balance all species at risk, large and small, plant and animal in an ecosystem recovery program and/or resource development project, taking into account the enormous effort and cost that can go into conserving (not always successfully) just one species. Better to conserve now than to try and recover later.

Conservation efforts must consider the cumulative effects of resource and other development and human encroachment on ecosystems. We should not consider just the impacts of a single project or development in isolation from the cumulative impacts of everything that is happening on the landscape. We need a landscape-level approach to resource planning and management, and this, combined with an overarching cumulative approach, might give us our best success with the conservation and recovery of species at risk.

Conservation efforts must be realistic. For example: in the “BC Journal of Ecosystem Management – Vol.10, No.3 (2010); pages 9-13, 35-41.” there are two extension notes, being habitat decision aids for species at risk: fishers in the central and northern interior, and badgers in the southern interior. The principles and outcomes should address how, as an example, all of the detail contained in just these two decision aids, along with all other species considerations, can be taken into account when planning a forest, range, mining, oil and gas, wind, hydro, micro hydro, or other development. The task for one resource manager or planner seems almost insurmountable when looking at just this one example; how can this be made more realistically manageable? The answer to this dilemma might lie in part in a cumulative effects approach – see above – whereby more significant resources can be applied to multiple overlapping projects than would be possible with one project. Conservation efforts should focus special attention on ecosystems where knowledge is seriously incomplete or lacking and that are at risk; especially those that have taken thousands of years to evolve to their present complexity and that could essentially be irreparably lost; and/or where there are known and potential non-traditional values that might far exceed traditional resource values. For example, consider the northernmost stands of ancient interior western red cedar in the Rocky Mountain Trench, and the associated lichen, fungal, and soil communities that have evolved through thousands of years of no major natural disturbances. These areas typically have very high, very long-term biological and potential non-timber forest values, and low timber values capable of supporting one or two small mills employing a handful of people for a relatively short period producing low-value forest products. Some jurisdictions in the world are starting to value natural services as a basis for full accounting of development decisions; and the Suzuki Foundation recently released a report claiming $5.4 billion/year ecosystem services value in the lower mainland of B.C. mainly through climate regulation, water supply and flood protection. (Vancouver Sun, October 28, 2010.)

Conservation efforts should consider the unanticipated effects of current and previous management actions on other species – once you start managing an ecological system, there’s no end to it, with cascading effects. We’re already well down this road.

Conservation efforts should aim limited resources at areas of highest potential return. For example, in the mountain caribou recovery program, we could focus on the populations that have a realistic chance of successful
recovery in the Hart Ranges and Cariboo Mountains, and perhaps let less-viable populations to the south take their chances rather than engage in expensive and uncertain translocations and maternity pens.

Finally, conservation efforts require an ongoing investment in inventories in order to be able to develop viable plans and measure outcomes. This seems to be spotty at best today, and falling further behind.

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Dear Task Force,

Your work is important in a way that may not be fully understood for generations. While conservation of existing species and their environments is vital, future migration and climate change may expand the mandate of your task. For this reason, I would ask that you consider the future needs of conservation and protection of wildlife over a period of 100 years.

For example, cross-border species whose range seasonally extends into BC may, as global warming proceeds, migrate north and become fully introduced into BC's jurisdiction, necessitating a plan for their protection. In a slightly different vein also related to the future, the prospect of future gas and oil development and shipping on the coast may reverse the victory conservationists seem to have won with the return of large numbers of Pacific salmon to their seasonal spawning grounds.

One conservationist argument says that it makes more sense to focus on species which can be efficiently addressed and helped by the limited resources available to conservationists, and therefore certain species which are most at risk are not economically viable conservation candidates. Is this not a perverse argument in which economics triumphs over ecology? Could this situation not be avoided by increasing the monetary, intellectual, and physical resources available for conservation? Since the work of conservationists will probably increase as we become more aware of the enormity of the task ahead, and also because the harvesting of economically valuable resources such as fossil fuels will become more invasive as the less accessible deposits are exploited, it makes sense to seek to increase the funding available for this most valorous cause of safeguarding life. Rather than continually being at loggerheads with economic development, why not create a funding model in which those corporations who wish to harvest economically valuable resources from a region pay the full cost of their activities, which includes, for the corporation in question, the previously externalized cost borne by the wildlife of the region? In this way, economic development might lead to an enriching of the ecology of a region, and still be economically sustainable. The present model allows a deficit to be run up on the ecosystem in question, for which no one is held accountable. Simply changing the requirements for these corporations would go far in limiting ecological damage, providing resources for remediating any oversight, and rebuilding the diverse ecosystems of BC toward a peak state where life flourishes.

Establishing a balance between economics and ecology is the crucial task ahead which would allow future generations of BC to enjoy the benefits of healthy ecosystems. My best wishes to you in this noble task.

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Private landowners are taxpayers. As the largest private landowner in Western Canada (with over 300,000 hectares) and a member of the Private Forest Landowners Association, TimberWest continues to lead the way in private land stewardship. Private forest landowners in the PFLA are owners of land classified as managed forest and taxed at a rate that encourages use of a renewable resource while still protecting key public environmental values, including critical habitat. This promotes sustainable economic activity while managing for species and ecosystems. The Province can spread the efficiency and accountability of the managed forest program by encouraging similar, results based, regulatory frameworks for other types of private (or public) land use, including those under the current 25 hectare size threshold necessary to be in this program. The general public gets excellent value by having low program costs that keep expected environmental results of landowners high.

Private landowners need to have a value proposition put to them that justifies their attention to species and ecosystem conservation. The Private Managed Forest Land Council (in the Ministry of Forests, Mines, and Lands) annually confirms that private managed forest landowners understand and meet their management commitment, with many having further formalized it through consumer driven certification protocols for their products. Greater awareness of species and ecosystems among broader landowner types will be the end result of providing clear expectations through information campaigns, coordination between different types of private land use frameworks, and providing respectful compensation schedules for landowners that suffer material devaluation of land that is affected by new constraints.
Please ensure you have considered the successes of private land management highlighted in the following websites:
http://www.pfla.bc.ca http://www.pmflc.ca/
Feel free to contact me any time to discuss this issues further.

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Government’s primary responsibility is to “protect the commons” as the regulator, licensor, compliance and enforcer. After that, it can be complicit in the sale and development of the province’s resources.

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Species at Risk Task Force,

I appreciate the opportunity to make a few comments on two of the questions posed on the website: What principles should guide future development of a species program? Where should conservation efforts be focused?

I probably have nothing new to offer that the Task Force has not either heard or deduced for itself, but I want to be another voice to emphasize some points that this government has studiously avoided so far.

It is getting “late in the game” for many of BC’s threatened and endangered species. I sincerely hope that any approach the Task Force recommends will reflect today’s immediate stark realities, rather than the usual government wishful and often irrelevant “management principles”:

1. An approach that deals only with individual species will not deliver what is needed.

Concentrating exclusively on ways to prioritize individual species and recovery plans, as government has done to date, is of questionable long term value. There will simply never be enough money to adequately fund the number of individual recovery plans that are needed. Nor is there any hope on the horizon that this will change with any future government. In the next decade all across North America, the hard facts are that most major government expenditures or surplus funds will go for health care and education. It is folly to think that animals and plants will receive a meaningful amount.

What is a meaningful amount? One successful program to date is the Vancouver Island Marmot Recovery Program. Bringing this animal back from less than thirty in 1980 to over 500 animals to date has cost society about $15 million dollars. Conservatively, there are another 1000+ species that require some type of similar attention. You do the math. The funds are simply not there, nor will they be in our lifetime.

We are thus forced to accept the necessity of more refined methods of species prioritization, the end point being the recovery of a relatively few high profile species. In the present climate, there is no realistic political or social option except to prioritize to some extent to prevent imminent extinctions. But given the limited dollars that accompany this approach, it is an admission of a failure in management and the acceptance of an inevitable continuing decline in biodiversity. The end result of this approach will be a “clowns pants” of small areas across the province where some efforts (some successful, some not) are being made for species recovery.

But across the larger landscape the factors that created the declines and will continue to do so are largely unaddressed.

You will never get ahead of the endangered species „dilemma” using only this species prioritization approach. You have to also do something meaningful at the landscape/ecosystem level to start correcting the root causes of the declines.

2. Endangered species legislation directed at individual species in site specific situations is also of questionable value, given the gravity of the economic, resource and social problems the province and the country face. Shiny new legislation by itself is worthless unless it comes with a total package that includes:

- Adequate enforcement staff with attendant funding. - No last- level „veto” on recommended actions by the ministers of the day. - Open and transparent reporting of scientific findings and conclusions.
- Some method of assessment of social, economic and environmental values that does not depend totally on traditional economic accounting.
- Avoidance of a decision- making framework where economic, resource, cultural and social considerations always trump environmental ones.
Let’s face it - no current government of any stripe will pass or enable such legislation, given the poor state of the NA economy and employment. To spend a lot of time devising an Act that will deliver on only a few peripheral issues is of questionable value. More important, it is highly unlikely that any such new legislation will give the public enough scope to take any meaningful action on their own.

3. A main thrust of the Task Force’s recommendation should be to put measures in place to curtail future disastrous species declines and not just deal with the species already in trouble that are causing the current political problem.

A useful analogy is the health care system. As long as we concentrate only on reducing the waiting times in hospital lineups, we are just “pushing the mountain ahead of us” – we have to come up with preventative measures that reduce the need for a person to get in the lineup in the first place.

So it is with species at risk.

It must be obvious by now that any effective approach to reversing species declines has to concentrate on the ecosystem level. Any number of individual recovery plans taken collectively will not necessarily add up to a better functioning landscape. On the other hand, a totally functioning ecosystem that has been given an adequate degree of protection will almost certainly maintain the species within it.

Accordingly, a few of the critical actions that are needed are: (1) More formal protection for the four most vulnerable ecological zones identified in “Taking Nature’s Pulse”. (2) More than lip service to the other 23 key findings in this report (2) A new thrust to ensure better connectivity and ecological integration between the existing parks, PA’s, WMA’s and private ecological holdings of groups as Nature Trust and the Nature Conservancy, Ducks Unlimited, etc.

(3) A major push to rehabilitate and restore some of the degraded lands that are now protected so we can maximize their contribution to biodiversity.

Government will not like much of this, because it smarts of more protected areas. But it has to be pointed out that government have almost “run out of options” because they never supported better management at a time when less restrictive options than complete protection were available. When one does not support routine management and protection, you eventually come to the point when only heroic and costly measures will suffice.

Funding will be a problem. However there are two types of money:

(1) Funds which are currently in the provincial coffers and allocated to other priorities - the annual government budget allocations.

(2) New revenues that would be generated if certain resource options were developed. It would admittedly be difficult to get the public to agree to a major re-allocation to species at risk from existing health and social budgets. However, there could be a convincing case made that foregoing some as yet undeveloped resource opportunities could be an effective way to protect species without detracting from the actual budget allocations already made. What the government or the public have not yet enjoyed, they will not miss as much. So, while there may be very little actual money available, there may be opportunities for increased ecosystem protection through foregone opportunity costs.

And if government is unwilling to “ransom” even a moderate amount of future resource/economic development for the sake of species at risk, we should stop fooling ourselves that anything really meaningful is possible.

I hope some of these musings help. Thank you for giving me the opportunity to share my views.

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utilize existing predictions of future ecosystems in light of climate change, ensure a wide variety of ecosystems protected to provide flexibility

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Landscape level planning and cumulative effects assessment. See also comments in the first section, above.

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Provide real process ownership and incentives in the engagement process, similar to that which was achieved with many of the historic public land use planning processes of the 1990s.

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- need a regulatory framework that applies to the full range of species.
- need to protect occurrences on all types of land tenure when that is appropriate
- needs to provide incentives on private lands (tax incentives, stewardship funding)
- needs to provide access to ministry staff to private land to ascertain if a SAR is present, protected or damaged.
- needs to provide exemptions for spp in cultivation and agriculture without requiring permits (load is too high) while protecting wild populations from unregulated exploitation.
- response needs to vary dependent on the threat, tying up lands in critical habitat for species at risk from overharvest or disease is not appropriate, critical habitat protection is appropriate for species where habitat loss is an issue.
- need to be developed in concert with a program to deal with alien species. - requires adequate funding and staffing.
- needs to contain BOTH an ecosystem approach and fine filter mechanisms for protecting species at risk.

More work needs to be done on recovery plans. The promised regulations around SARA are not even planned so what has been happening is regulators have no way to judge proposals and as a result work and development comes to a halt.

Similar laws should apply. However, beware of creating a situation such as in South Carolina where there are extensive laws to protect threatened species to the point of incentivizing some landowners to quietly cut/remove protected habitat trees rather than report. We need to find ways of incentivizing landowners to protect critical habitat, species etc.

Hold public information meetings to explain the context of SAR conservation in very simple terms. Ensure you show what different private, municipal, government and industrial players are doing for SAR conservation.
Additional input received by the BC Species at Risk Task Force

Private landowners operate on private land within the Province’s land base. Certainly this land and the water that flows through it is governed by provincial regulations, but providing any strategy for engaging stakeholders who operate on it must start with clear expectations of what each operators’ impacts may be on “target” resources and “non-target” resources. Private landowners are distinct amongst stakeholders because of their ongoing maintenance costs (like taxes) and general risk in owning a real estate asset. Actions on their land provide real risks or rewards that can affect any part of an ecosystem. Learning more about the ecosystems they interact with improves their likelihood of making good decisions for the long term financial health of an asset for which they can confidently plan over significant time horizons. Consequently, this long time perspective on natural resources promotes better results for ecosystems and the species composing them.

As mentioned in the submission to the previous question, private landowners, like any stakeholder, need to be rewarded for taking risks in managing land. If an ecosystem service is deemed to be more valuable than other services produced by the stakeholder operating on lands or waters in the Province, than that same Province, acting on behalf of the public, owes that stakeholder another opportunity. That opportunity may include compensation or many other creative options that can arise in an atmosphere of mutual respect.

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BC’s diverse topography and climate support tremendous habitat diversity which in turn supports a vast number of species. Many species found in BC are the outer limits of their habitat range resulting in low population numbers and limited management opportunities. Furthermore, because these species are found at the limits of their habitat range, they are often more vulnerable to predation or other random environmental events.

i) Decisions must be science based and able to withstand scientific scrutiny;

ii) must recognize that one cannot manage for everything on every hectare and that one cannot protect everything, everywhere

iii) decisions and actions must be realistic and practicable;

iv) Actions must be consistent with government’s overall objectives;

v) Must be results based;

vi) Need a predictable framework to provide certainty for decision making and business investment;

vii) Need to establish minimum data requirements that must be met prior to conducting any assessments. This will ensure that data deficient species are not assessed;

viii) Priority rankings must be based on assessments across a species entire habitat range. Assessments must not be truncated by an artificial boundary such as a border

The lack of identification of what a “fundamental biodiversity threat” is makes this question impossible to answer.

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To: Species at Risk Task Force

Preamble

We are but 1 species on the face of this Earth and as such we must use every fibre of our spirit, intellect, compassion and reason to ensure that we respect and nurture all other lifeforms on this incredible planet. Our species is at a crossroads: we have impacted every ecosystem around the world to varying degrees, but sadly many of them are collapsing because of our approach to meeting our own wants and needs. We must step back and reflect on our entitlement to the “resources” of this planet. We can continue to entitle ourselves to almost everything, as we have to this point, or look for a better way that balances our needs with those of other lifeforms. Nature is certainly abundant enough to support every creature that lives, as long as we don’t abuse her generosity. It is fundamental in all that we do to acknowledge that a vibrant, healthy ecosystem is what underpins our well being.

That being said, and serving as a foundation for a new approach, here are my thoughts.

Where should our conservation efforts be focused?

With limited resources to focus on conservation, it is imperative to change how we plan, assess and approve all forms of development so that ecosystem degradation and damage is avoided in the first place.

For threatened and endangered species, look at creating legislation that protects their life requisite habitat not only on Crown land, but on private property as well. Establish the authority of designated professionals to enter
private property to assess possible vital habitat for these species. Compensate the landowner through a tax credit or other incentive to preserve this habitat if it is identified on their property. On both public and private lands, encourage leaving vegetation for wildlife in hedgerows, parts of road ROW's, etc. so that valuable habitat isn’t lost for reasons of 'visual sanitation'. This is particularly essential for many species of birds, who are suffering needless habitat losses because many in our populace are unaware of the significance of even small patches of trees and brush.

What principles should guide future development of a species at risk program in B.C.?

Pay attention to what conservation ecology is revealing so we act in a truly sustainable way.

Use the precautionary principle, which is particularly important since global warming is causing greater weather and ecosystem instability. If there are information gaps, gain the necessary knowledge BEFORE making decisions which could be ecologically damaging.

DO NOT entrench remediation and restoration as an acceptable practice for development to take place. This can be of limited use in specific situations, but is no substitute, for example, for preserving a wetland (destroying an existing wetland and 'recreating' one in a more desirable location).

Look at the primary factors that have driven a species to the brink of its survival and incorporate this knowledge to ensure the situation isn’t perpetuated in current practices.

Take a close look at best practices around the Province used by municipalities and regional districts. For example, the Central Okanagan Regional District requires that land under consideration for redevelopment be environmentally assessed by a recognized professional and environmentally sensitive areas delineated with the most sensitive areas afforded protection, including a buffer. Wildlife corridors are identified and also given protection to try to ensure ecosystem resilience.

Establish more ecological and nature reserves, conservation areas and parks to preserve habitat not only for ecosystems at risk, but to maintain healthy populations for non-threatened species as well.

What are the measurable outcomes that best address the fundamental threats to biodiversity in B.C. and help us achieve our vision?

Less species on the at-risk list! Hectares of habitat under management or protection for SAR.
Appendix 4.

Review of Species-at-Risk Stewardship Incentives and Funding Mechanisms
STEWARDSHIP FOR SPECIES AT RISK
IN BRITISH COLUMBIA:

KEY STRATEGIC ISSUES

A Summary based on:

The Centre for Environmental Stewardship and Conservation Inc. (March 2010)
REVIEW OF SPECIES AT RISK STEWARDSHIP INCENTIVES AND FUNDING
MECHANISMS. Contributing Authors: C. Rubec, D. Wolthusen and O. Williams.
THE ROLE OF SAR STEWARDSHIP IN BRITISH COLUMBIA

The U.S. Environmental Protection Agency (USEPA) defines environmental stewardship as the responsibility for environmental quality shared by all those whose actions affect the environment. Stewardship is thus the recognition of a collective responsibility to retain the quality and abundance of our land, air, water, and biodiversity and to manage our natural capital in a way that conserves its value. This paper will examine the role of stewardship in conservation of species at risk in British Columbia.

According to the B.C. Conservation Data Centre, approximately 38% of known at-risk plants and 3% of known at-risk animals occur on private land. Only 5 to 6% of land in B.C. is under private ownership, but these lands provide valuable habitat because they are often located along river valleys and shorelines or in deltas. Some of the greatest impacts to biodiversity (particularly fish habitat) are caused by development of land within local communities. As a result, concentrations of species that are at risk occur in high population areas such as the Okanagan, Lower Mainland, and Vancouver Island.

Many practitioners agree that only a small fraction of biodiversity at risk will likely be addressed by the costly and labour-intensive single-species approach that is inherent in current legislative models.

Even with a strong regulatory framework, stewardship is a necessary part of conserving species at risk. Habitat stewardship approaches, supported by enabling legislation or other tools, might offer an efficient approach to protecting species at risk with limited resources. The Municipal Act, Land Title Act, and Condominium Act provide municipalities with some tools to maintain habitat and promote local community stewardship. But currently provincial tools are very limited that require the legal protection on private land of a SAR, its residence, or its habitat.

The current model for recovery of SAR in B.C. and Canada relies heavily on voluntary stewardship initiatives undertaken by private landowners, non-profit organizations, industry, local governments, and many others. Most prominently, the federal Species at Risk Act enables the development of stewardship agreements around species at risk between the federal government, and other governments, agencies, or individuals. The Canada-British Columbia Agreement on Species at Risk (2005) specifically indicates that “stewardship by land and water owners and users is fundamental to preventing species from becoming at risk and in protecting and recovering species that are at risk.” Stewardship, in this context, includes mobilizing citizens and groups toward shared priorities, outreach and technical information exchange and research and data collection from networks of volunteers. The Agreement encourages the use of stewardship activities in all SAR initiatives.

Generally speaking, over the last 10 years, stewardship has been recognized as a critical element of conservation in Canada. British Columbia has emerged nationally as a leader within the stewardship community for engaging its citizens and community groups in conservation. The environmental merits, social benefits, and positive economic impacts
of these activities have gained prominence in the forward-looking programs and environmental policy frameworks in the private sector and at all levels of government. British Columbians have undertaken thousands of innovative stewardship activities representing a broad range of interests that includes landowners, land managers, naturalists, community groups, land trusts, and corporate and government partners.

British Columbia has perhaps the most diverse array of NGO and corporate stewardship activities of anywhere in Canada. The contribution of these groups cannot be over-emphasized. A recent review indicates that stewardship initiatives in the province involve over 300 stewardship organizations, 37 land trusts, 20,000 woodlot owners (with holdings over 20 hectares in size), over 52 million hectares of certified forest lands on public lands (through the Sustainable Forest Initiative and Forest Stewardship Council), and over 3000 farms with Environmental Farm Plans.

The government’s role in stewardship has been to attempt to leverage action through directed funding, to steer local effort in a coordinated manner, and to work to build partnerships. Many of these groups rely on government resources that have dwindled in recent years, and the remaining government support is often tied to specific objectives that limit the ability of these stewardship groups to support core functions. As a result, voluntary stewardship groups, of necessity, have learned to be very efficient at making progress with limited resources. There is also a growing realization by many NGOs of the need to align their objectives more closely to partners and government funders.

Efficient as it may be, stewardship is not widely appreciated for its role as a source of jobs and economic activity, despite recognition that such voluntary contributions carry both significant ecological and economic value.

KEY STRATEGIC ISSUES FOR SAR STEWARDSHIP IN B.C.

Among its other functions, the federal/provincial bilateral coordinating committee on species at risk (SARCC) is working to define the role of stewardship in SAR conservation. In doing so, the committee has identified a number of key strategic issues with regard to SAR stewardship in the province, using points of reference in other national and provincial documents, some endorsed at the Ministerial level. The following section is adapted from the work of this committee, with examples drawn from A Policy Review of Stewardship Activities in Canada’s Provinces and Territories 2009 (The Centre for Environmental Stewardship and Conservation Inc., 2009).

**Issue: Facilitation of Multi-agency Collaboration**

**Goal:** Protection of species at risk is an integral part of regular government operations at all levels.

Multi-agency collaboration across jurisdictions is a key step in implementing SAR stewardship and recovery in a comprehensive manner. Non-SAR agencies need to be
engaged to clarify their legal role in supporting SAR recovery activities, including protecting critical habitat. There are existing opportunities for non-SAR agencies to collaborate in SAR stewardship and threat abatement. Stewardship is improved when we address knowledge gaps and develop aligned priorities while fully implementing policy and regulatory mechanisms across all jurisdictions for the protection of SAR.

Examples:

- The Conservation Framework was designed to help different agencies align work against common, science-based priorities for species and ecosystem conservation. The Framework prioritizes species and ecosystems against specific goals (e.g. protect species for which BC has global responsibility) and identifies key actions (e.g. protect habitat) that must be taken to conserve a species or ecosystem. These priorities and actions are published on the internet to provide a basis for collaboration among agencies and governments with interests in conservation.

- The Stewardship Centre of B.C. provides an excellent example of how government and the NGO sector can work together to promote stewardship and address the needs of stewards. Oversight of the Centre is provided by a board of directors made up of personnel from various government and non-government agencies to ensure continued collaboration. Starting in 1992, the Centre has developed 19 best management practices guides for stewardship activities to help local governments, developers, and stewardship groups. The Centre is currently committed to building the capacity of the community-based stewardship sector by actively developing resources and tools based on their framework for capacity building (Capacity Building: A Framework for Strengthening Stewardship in British Columbia, 2009). Work includes pilot testing a core funding grant with 10 stewardship groups over 3 years to demonstrate the effectiveness of this type of funding model.


- Many NGOs and smaller land trusts are also engaged in securement of ecologically sensitive lands in the province: Nature Conservancy of Canada, Land Trust Alliance of B.C., Nature Trust of B.C., and Ducks Unlimited Canada.

Potential Strategies

- Assess where leverage points exist within the operations of agencies to protect SAR.
- Engage non-SAR agencies in areas of common interest such as land-use planning, sustainability planning, and management of growth in order to develop opportunities for joint actions that address SAR priorities in the region.
- Develop coordinated multi-jurisdictional projects or programs to target high-priority SAR objectives and address knowledge gaps.
Issue: Effective Engagement of Local Governments

Goal: Barriers to effective protection of SAR by local governments are effectively addressed.

A large number of species at risk occur on private lands, and private lands are subject to increasing pressures from land development and other competing issues. To implement an effective stewardship program for SAR, private landowners need to value and be engaged in protecting SAR. Local governments are the level of government closest to the communities and citizens and therefore have a critical role to play in implementing conservation initiatives on private lands. The staff, resources, and regulatory capacity for environmental planning varies greatly between local governments and there may be gaps in the existing tool set and support networks. A lack of information exchange and cooperation between levels of government and private landowners could lead to further declines of species at risk.

Potential Strategies

• Explore incentive packages that will help local governments to encourage landowners to participate in SAR stewardship.

• Develop consistent standardized guidelines and policies specific to local governments (e.g., user-friendly, consider model bylaws, clarify areas of responsibility) with training support and information exchange.

• Develop a joint stewardship program for SAR on private land (incentive programs, compliance promotion, consultations on legal rights, design protection regime that will work for landowners, etc.).

Examples

• Over the past year and a half, the provincial Ministry of Environment has worked with a group of local governments to develop the draft paper, *Working together to protect species at risk: recommended strategies to improve conservation on local government and private lands in British Columbia* (also available within SAR Task Force briefing binder). MoE plans to present the paper at the UBCM convention this fall to broaden the discussion on how provincial and local governments can work together to protect SAR.

Issue: Effective Engagement of Partners

Goal: Barriers for SAR stewardship programs are effectively addressed.

Partners, stewardship organizations, and stewardship groups are absolutely essential for the protection of SAR in B.C. How we engage this group will determine the level of access that we have to valuable information they possess, and determine how we can influence their priorities and modify our own to be more coordinated. Coordination will prevent private landowners from getting burned out due to mixed messaging and
consultation overload. There is a history of lack of trust between land trust partners and government due to a lack of certainty regarding government priorities and how information they provide will be used by government. Providing a meaningful level of support for these partners will greatly increase the effectiveness of our relationship. The failure to address capacity issues for stewardship groups could lead to the disappearance of this valuable resource.

Examples:
- The Land Conservancy of British Columbia achieves its conservation goals through acquisition, long-term lease arrangements, conservation covenants, stewardship agreements and education and outreach programs. The Land Conservancy’s Conservation Partners Program focuses on agricultural lands, providing recognition and incentives to producers including a green labeling program.
- Examples of stewardship leverage include the Habitat Acquisition Trust (HAT), the South Okanagan-Similkameen Stewardship Program (SOSCP), East Kootenay Conservation Program (EKCP), Grasslands Conservation Council of B.C., Garry Oak Ecosystems Recovery Team (GOERT), and South Coast Conservation Program (SCCP).

Potential Strategies
- Support the B.C. Stewardship Centre as it works to implement a framework for stewardship group capacity building.
- Improve linkages between SAR funding programs – i.e., land acquisition partners (Habitat Sponsorship Program, HSP) and Aboriginal partners (Aboriginal Funds for SAR, AFSAR).

**Issue: Effective Engagement of Stakeholders**

**Goal:** Barriers for SAR stewardship programs are effectively addressed.

A significant number of sensitive species and habitats occur on private land in B.C. Currently, it is difficult to increase involvement of private landowners and managers to effectively protect SAR and critical habitat. Limited incentives for private landowners, as well as a lack of understanding of how to appropriately manage for SAR and critical habitat, make it difficult to elicit the proper behaviour from these target audiences. In addition, many stakeholders, such as unregulated license holders, do not have direct legal responsibility to ensure that SAR are protected. To more effectively engage this group, SARCC needs to work at increasing the understanding of shared stewardship needs for this issue. It is recognized that to be successful in protecting SAR on private land, SARCC must work at being more effective in engaging private landowners, land managers, license holders, and unregulated users.
Examples:

- Since 1981, the Habitat Conservation Foundation has provided more than $100 million to support over 2000 conservation projects within British Columbia. Funded largely by a levy on hunting and fishing licences, many of these projects have a stewardship component.

- The Pacific Salmon Foundation’s Community Salmon Program uses funds from federal conservation stamps on saltwater sport and commercial fishing licences for monitoring, rehabilitation and restoration projects.

- The Fraser Salmon Watershed Program is managed by the Fraser Basin Council and Pacific Salmon Foundation with a focus on changing behaviour. This program is funded by Living Rivers BC and Fisheries and Oceans Canada.

- The Strategic Salmon Recovery Program was initiated through the Pacific Salmon Endowment Fund Society to develop recovery plans and implement actions including restoration, monitoring and education.

- The Pacific Streamkeepers Federation supports community groups providing technical support, insurance, standardized monitoring protocols, and enhancement projects.

Potential Strategies

- Develop incentive packages that will encourage stakeholders to participate in the protection of SAR.

- Consult stakeholder groups to identify effective strategies for SAR protection.

- Explore the use of biodiversity conservation offsets. These are conservation actions undertaken to compensate for the residual, unavoidable harm to biodiversity caused by a development project or an extractive industry, so as to aspire to no net loss in biodiversity.

Issue: Stewardship of Species at Risk by First Nations

Goal: Aboriginal communities manage activities to ensure conservation of species and habitats.

Many species at risk exist on reserve lands and are iconic in the traditions and beliefs of First Nations. We have a federal mandate to support and apply Aboriginal Traditional Knowledge and species and habitat protection within the Species at Risk Act. Stewardship programs are a great resource for engaging and building capacity of FN groups. There is a history of lack of trust between First Nations and government due to a lack of certainty regarding government priorities and how information they provide will be used by government, which they perceive as one entity. Providing a meaningful level of support will greatly increase the effectiveness of our relationship. The failure to address capacity issues could lead to the disappearance of SAR in First Nation territories.
Examples:

- In the Musqueam Creek Program in south Vancouver, the local reserve worked with the David Suzuki Foundation to restore in-stream habitat.
- The Coldwater River Recovery Strategy, developed by the Pacific Salmon Foundation with seven First Nations, used traditional knowledge in a planning, rehabilitation, and protection program.
- The Nicola Watershed Stewardship and Fisheries Authority blended Traditional Knowledge and stewardship through a partnership program involved in road deactivation and stream-bank restoration.

Potential Strategies

- Identify opportunities with Indian and Northern Affairs Canada’s environmental programming.
- Foster an environment that provides access / opportunities for SAR partnerships / funding.

Conclusion

Key strategic issues for SAR stewardship revolve around building relationships among partners and with stakeholders. Stewardship may play a particularly critical role in the conservation of SAR on private lands and First Nations territories.
STEWARDSHIP FOR SPECIES AT RISK IN BRITISH COLUMBIA

SOME INTERESTING INCENTIVE MEASURES AND FUNDING MECHANISMS

A Summary based on The Centre for Environmental Stewardship and Conservation Inc. (March 2010) REVIEW OF SPECIES AT RISK STEWARDSHIP INCENTIVES AND FUNDING MECHANISMS. Contributing Authors: C. Rubec, D. Wolthausen and O. Williams.


1.0 INTRODUCTION

According to the U.S. Environmental Protection Agency (EPA), environmental stewardship is the responsibility for environmental quality shared by all those whose actions affect the environment. Environmental stewardship, often led by non-government organizations (NGOs), initiates and supports some of the most important conservation activities in British Columbia (B.C.), including those for species at risk and particularly on the private land base of the province. Stewardship plays an essential role in engaging landowners and land managers in maintaining local environments. Community-based natural resource management excels when it is enabled by effective public policy. Equally, stewardship is strengthened through collaborative investments that enhance community capacity.

This report provides examples of innovative incentive and funding mechanisms used to promote stewardship in other jurisdictions. This work is based on a review of stewardship programs and funding mechanisms in Canada’s provincial and territorial jurisdictions, as well as initiatives mandated by the government of Canada and other countries (UK, US, EU, and Australia). Each initiative features a brief description, and specific points about how it works and what is unique or innovative about it.

2.0 INCENTIVE MEASURES

2.1 No Surprises Policy — U.S. Fish and Wildlife Service

Under the No Surprises rule, the U.S. Fish and Wildlife Service (USFWS) assures the landowner that, if unforeseen circumstances arise, the Service will not require commitment of additional land, water, or financial resources beyond what is in the initial agreement – providing the permittee is meeting the terms and conditions of the agreement.

*How It Works*

- For the owner or manager of real property, the presence of a species at risk is a liability. The No Surprises rule gives the landowner a guarantee that allows secure planning of future use of the land and provides an incentive for landowners who may have substantial amounts (often millions) invested in the subject property.

- This policy is applied when a landowner enters into a Habitat Conservation Plan and is issued an Incidental Take Permit. At the start of the agreement, the Habitat Conservation Plan involves a baseline survey to document the status of the species.

- At the least, it is expected that the status of the species on that property will not decline. Typically, when combined with other incentives and support, the species’ presence increases.

- This is a federal policy applicable in all U.S. states.
Typically, the policy is applied with a Safe Harbor Agreement or Candidate Conservation Program Agreement (see Section 2.2 below).

**What is Unique or Innovative**

- The No Surprises rule deals clearly and effectively with a primary concern of property owners and managers: security of their long term investment.

### 2.2 Safe Harbor Program and Candidate Conservation Program Agreements — U.S. Fish and Wildlife Service

**How They Work**

- The U.S. Safe Harbor Program and Candidate Conservation Program agreements are individually customized in negotiation with landowners.

- In both plans, a baseline study identifies the status of the species and/or its habitat at the start of the agreement. Although the species’ numbers and its habitat area may increase during the term of the agreement, the landowner is provided with a permit that enables a return to the baseline conditions, without penalty, if he or she desires. In the case of a Candidate Conservation Plan, this “assurance” is unchanged even if the species is reclassified to a higher threat level (i.e., endangered). Staff have a guide to follow in developing these agreements, but the final details related to what the government will provide and the conditions that the landowner will implement are negotiated.

**What is Unique or Innovative**

- Both programs lead to establishment of customized, negotiated agreements between landowners and USFWS; the government contributes the best available combination of incentives along with professional resource management expertise to assist land management decisions.

- Both programs make use of the No Surprises rule (Section 3.1.1).

### 2.3 Ontario Species at Risk Stewardship Fund Program

Many of Ontario’s species at risk are found on private lands, and voluntary conservation efforts are therefore essential to species-at-risk recovery. This fund supports greater public involvement in protection and recovery activities and, over 4 years (2007–2010), has provided $18 million to eligible projects. The purpose of the fund is to inspire and encourage people to become involved in species at risk recovery, and to build on the good work already done by groups and individuals.
How It Works

- The fund has publicly advertised criteria and a requirement to discuss proposals with local Ministry of Natural Resources offices before submission.
- Proposals are screened locally and final approval is determined by a committee of government staff at the provincial level.
- Successful applicants sign an MOU that covers legal risks; additional agreements and permits are available.
- The fund and its capacity to establish agreements and permits are enabled under the Ontario *Endangered Species Act*.
- The program is community-based and engages landowners in stewardship. It involves a variety of biodiversity and resource management topics, including species at risk.
- An associated Farm Stewardship Fund increases acceptance of species-at-risk stewardship on farmland.
- Several complementary Ontario programs (Community Fisheries and Wildlife Involvement Program, Ontario Stewardship Program, Conservation Land Tax Incentive Program, the Managed Forest Land Tax Incentive Program, and this Species at Risk Stewardship Fund Program) all require transparent accountability and specific outcomes to be reported on. Species-at-risk–related components can be tracked, assisting in integration.

What is Unique or Innovative

- The program recognizes the need to couple stewardship with Ontario’s new legislation. Ontario’s *Endangered Species Act* (2007) has incorporated many positive features from programs elsewhere in the world.
- The public, particularly farmers, have consistently insisted on a “stewardship first” approach (rather than regulation) and they therefore support this measure because it clearly responds to that viewpoint.
- Initially, funding went primarily to stewardship organizations. A subsequent fund and sub-program were designed specifically for farmers, resulting in stronger engagement in that sector.

2.4 Ontario Tax Reduction Programs

Landowners voluntarily enter into an agreement to protect specific values on their properties in return for reduced taxes on that property.


**How They Work**

- Ontario has two examples of tax incentives: the Conservation Land Tax Incentive Program (CLTIP) and the Managed Forest Tax Incentive Program (MFTIP).
- CLTIP provides tax relief to owners that protect highly significant ecosystems in Ontario. Landowners apply annually to receive a 100% tax exemption on the eligible portion of their land, provided they agree not to carry out activities that will destroy or degrade the natural values of the site.
- MFTIP attempts to bring greater fairness to the property tax system by valuing forestland according to its current use. Landowners who voluntarily apply and qualify for the program have their property classified and assessed. The land is taxed at 25 percent of the municipal tax rate set for residential properties.
- Federally, the Ecological Gifts Program, led by Environment Canada in cooperation with the Ontario Ministry of Natural Resources, fosters donations of title or restrictive covenants and easements on ecologically sensitive land for conservation interests in return for reductions in both federal and provincial income tax.
- The conceptual basis of these three programs is that taxes are collected to provide the infrastructure to sustain the well-being of citizens. Thus, the assumption is that when some landowners provide the environmental infrastructure that supports the well-being of other citizens, those landowners deserve a reduction in taxes.
- To be seen to deserve the tax reductions, participants in these programs must have an approved plan for managing the valued resources.

**What is Unique or Innovative**

- Ontario’s legislation enabling the tax reduction and the administrative program is at the provincial level; the tax reduction is at the municipal level. In the case of the joint federal-provincial Ecological Gifts Program, the tax reduction occurs for individuals or for corporations on Ontario-filed federal income tax returns through the Canada Revenue Agency. Since 1995 through the Ecological Gifts Program, more than $500 million in tax-receipted gifts of land title or conservation easements, covenants, and servitudes have been completed, resulting in extensive protection of ecologically sensitive lands nationwide (with gifted properties in all provinces including B.C.).
- The tax saving to the landowner under the provincial benefits is often not large, but triggers positive action and engenders pride in that action. However, gifts under the Ecological Gifts Program of $1 million or more per property are not uncommon. Thousands of landowners are participating and continue to sign up each year for the two provincial programs. The programs require conscious resource-management planning on their part. The Ontario Ministry of Natural Resources considers the programs to be effective, with substantial tax-related benefits.
2.5 Australian Tax Incentives

Australia offers a range of tax benefits for many kinds of donations. For example, donors of more than AU$5,000 can claim tax deductions for 5 years, there are capital gains tax exemptions for land, tax reductions for conservation covenants, and registered environmental organizations can provide tax receipts for donations.

**How They Work**

- Accredited conservation organizations (NGOs or government agencies) associated with the National Trust can enter into covenants with landowners and offer tax receipts.

**What is Unique or Innovative**

- Australia has more tax incentives than other countries and they are integrated.
- The uptake by private landowners in Australia has been significant, but varies by state and territory. Much like Canada, Australia’s jurisdictions have a wide range of total relative percentage area under private land ownership.
- An independent review of their legislation and associated programs recommended that the covenant-related tax incentives should be integrated with the Biobanking scheme. Another review is underway and was to report in early 2010.
- BioBanking is an agreement entered into by landowners that generates biodiversity credits for committing to enhance and protect biodiversity values on their land. Credits can be sold, generating funds for managing the site, or can be used to offset impacts on biodiversity values resulting from development. Credits can also be sold to those seeking to invest in conservation outcomes, including philanthropic organizations and government.

2.6 Partenaires pour la nature (Partners for Nature) — Quebec

The Partenaires pour la Nature program focusses on public-private partnerships that support conservation initiatives to strengthen the network of protected areas on private land, and to educate and empower the public, and leverage funding.

**How It Works**

- Funding is provided to corporations, conservation NGOs, and individuals (who must provide matching resources equal to 50%).
- To protect high-value biodiversity (usually species at risk), the target is often private land located in Quebec’s more populated areas, but it enables corridor protection between public (Crown) land parcels and private lands.
- The initiative fosters partnerships and leveraging of investments.
- It includes funding for long-term management of acquired lands, a key element often missing in conservation grants.
What is Unique or Innovative

- The initiative engages business and municipalities as well as traditional conservation NGOs.
- The initiative has ambitions specific targets, including geographic areas, and monitors success relative to a set of sustainability indicators (which are still being developed).

3.0 FUNDING MECHANISMS

3.1 Program Delivery by an NGO, Natural England — UK

An NGO (Natural England) delivers England’s Environmental Stewardship Program (which includes species at risk in the context of biodiversity stewardship).

The Wildlife and Countryside Act (1981 with amendments) enabled creation of Natural England, facilitates transfer of funds to it, and empowers it to establish agreements and use the funds as it sees fit to address the priorities established in consultation with the Crown. The Rural Commission (created concurrently) ensures that people are treated fairly.

How It Works

- Using government investment funds, Natural England has created a spectrum of incentive programs and funds to support stewards. Examples include: Environmental Stewardship, Heritage Management Plan grants, Natural Assets, Wetland Vision, and the Countdown 2010 Biodiversity Action Fund.
- Natural England has established partnerships to enable joint funding of other programs, such as Energy Crops Schemes and the England Catchment Sensitive Farming Delivery.
- Natural England also receives funds from other sources such as lotteries (it is contracted by the Big Lottery Fund to deliver the Access to Nature Program and the Community Spaces Program), levies on resource-user industry (i.e., the Aggregates Levy Sustainability Fund – these aggregate extraction levies are collected by the Department of Environment and Rural Affairs). Natural England is contracted to deliver supporting projects.

What is Unique or Innovative

- There is a long-term commitment to use and trust an NGO to deliver a government-funded and government-guided stewardship initiative. BC has a strong network and partnerships with NGO’s in the province.
- This approach can reduce the need for government staff and infrastructure funding and resources.
• Flexibility in the government’s direction enables leveraging of funds and establishment of partnerships.
• It has similarities with the Ontario Stewardship Program (see Section 3.3).

3.2 Environmental Stewardship Delivered through Landowner Contracts under Natural England — UK

Through Natural England, the Environmental Stewardship Program provides a straightforward approach to supporting good stewardship of the countryside through simple and effective land management contracts. The primary objectives of Environmental Stewardship are to conserve wildlife (biodiversity), maintain and enhance landscape quality and character, protect the historic environment and natural resources, promote public access and understanding of the countryside, and protect natural resources. Secondary objectives are genetic conservation and flood management.

*How It Works*

• This initiative has three tiers of program engagement: “entry,” “organic,” and “higher level” incentives.
• Entry-level stewardship is open to all landowners and farmers. Organic entry-level stewardship targets organic farmers. Higher level stewardship involves more complex types of management and is tied to specific outcomes, where land managers need advice and support, and agreements are tailored to local circumstances.
• The initiative is compliant with other farm stewardship programs (e.g., Single Payment Scheme that allows payment for stewardship on “common” or Crown land; or the equivalent of Canada’s Environmental Farm Plan).
• Landowners and stewards who offer the most valued outcomes are contracted.
• Payment is on a per-hectare-of-land basis under agreements; rates are variable, but there is a prescribed schedule (e.g., higher rates are offered for land with species at risk, lower rates are offered for properties above the tree line at higher elevations and latitudes).
• Higher levels of agency investment are involved for providing advice for sites with high biodiversity values.

*What is Unique or Innovative*

• The initiative is delivered by an NGO (Natural England), has cross-compliance with many other stewardship initiatives, is based on payment per hectare, and is acceptable within the European trade context.
• This program is well integrated into the UK’s agricultural stewardship programs, which themselves have been folded into a Single Payment Scheme.
• Although this program uses the energy and efficiency of a non-government delivery agent, it maintains tight connections with government programs and priorities.
3.3 Government Staff Support Local Community Process — Ontario Stewardship Program

The focus of this program is the biodiversity- and ecosystem-scale of stewardship; species at risk are involved within that context.

How It Works

- Government provides a community-based council with an experienced natural resource manager, a token ($10,000) “leverage” fund, and broad guidelines for achievements in biodiversity conservation.
- Although this Ontario program started with a private lands focus, it is expanding successfully in northern Ontario on Crown lands with industry and Aboriginal partners.
- Three programs are integrated: the Ontario Stewardship Program, the Community Fisheries and Wildlife Involvement Program, and the Ontario Species at Risk Stewardship Fund Program.

What is Unique or Innovative

- Experienced government staff members work for a community group directly.
- The government provides staff support and grants with a broad direction, allowing local flexibility, and placing the emphasis on accountability for results not financial accounting.
- Government funding is leveraged at about 7:1 through this mechanism.

3.4 Contracted Stewardship Mechanisms — Australia

The government specifies what is needed for species stewardship, what the desired management practices are, and landowners are then invited (through an advertised tendering process) to submit a bid to carry out the work.

The program is used where many landowners are managing ecosystems of important biodiversity value (e.g., a threatened vegetation community).

How They Work

- The government contracts directly with the property owners and managers for delivery of the outcomes.
- Australia’s “Caring for Our Country” program notes that this is an effective and financially efficient mechanism for achieving protection of habitat and species at risk.
• The program’s first pilot project was in the State of Victoria, in a program called Bush Tender.

What is Unique or Innovative

• The design engages local landowners and provides benefit for their delivery of conservation. In BC, a tool like the Conservation Framework could provide a list of priority conservation activities that require delivery.
• Direct contracting reduces dependence on volunteers.
• This program is applicable to both Crown and private land.

3.5 Accountability, Targeting, and Progress Monitoring — Aligned Collaboration by the “Caring for Our Country” Program — Australia

Recognizing that urgent action was needed to protect Australia’s unique natural environment and improve sustainable management of natural resources, the Commonwealth government committed more than AUS$2 billion in funding over the first 5 years (2008–2013) for an ongoing program, “Caring for Our Country.”

“Caring for Our Country” has one clear goal: an environment that is healthy, better protected, well managed, resilient, and provides essential ecosystem services in a changing climate. These services include protected biodiversity and natural icons, clean water and air, healthy soils, and sustainable food and fibre industries.

The program focuses on six national priorities: national reserve system; biodiversity and natural icons, including weed and feral animal control, and threatened species; coastal environments and critical aquatic habitats; sustainable farm practices, including Landcare; natural resource management in remote and northern Australia; community skills, knowledge and engagement.

“Caring for Our Country” brings together delivery of four Commonwealth programs under a single banner: Natural Heritage Trust, National Landcare Program, Environmental Stewardship Program, and Working on Country Indigenous Land and Environmental Program.

How It Works

• “Caring for Our Country” is a nationally-funded initiative that exemplifies a highly decentralized management system, delivered in a coordinated manner, on-the-ground through designated regional organizations responsible for managing land and water resources in Australia’s 56 natural resource management regions.
• The program has some years of experience with stewardship targets being linked to a discrete set of national priorities.
• The program focuses on priority topics and areas, and is flexible but also accountable.
• It is directly responsible for many well-documented successes.
• Planning and accountability for this program, linking it to national priorities, have been undertaken through a very structured, government-wide process.
• The current review suggests that planning and accountability processes need to be even more streamlined, but the principles behind monitoring and assessment are valid.
• The program is globally the only conservation initiative that comes close to a national scale of biodiversity conservation. It is clever, but not by chance. It has a massive investment (AU$2.25 billion over 5 years), and has several excellent funding mechanisms within it.
• It has strong support on all fronts: societal, political, policy, legislative and budgetary. It is also supported by intergovernmental agreements established in the 1990s, enabling legislation in 1999, and an in-depth review with recommendations in 2009. A revised, intergovernmental National Biodiversity Strategy is currently under development.

What is Unique or Innovative

• This program ensures that stewardship investments are directed to high-priority needs and that the return on investment is not only monitored and reported, but that lessons are incorporated into the path forward.
• Money flows toward effective investment models.
• “Caring for Our Country” uses a political and societal integrated approach to ecosystem conservation, with species at risk firmly established as its centre piece.
• The program’s strong past commitments to planning, targeted outcomes, and monitoring is now seen as a bit overambitious. This may be instructive for B.C.
• British Columbia and Australia both have unique biodiversity, strong respect for Aboriginal rights and considerations, and higher than-average societal commitment to conservation.
• The B.C. Conservation Framework spells out specific goals, priorities, and actions for species at risk and ecosystem conservation. The Framework has a similar objective in terms of targeting conservation investment where it is needed most, and tracking progress forward.

3.6 Project Auctions by Natura 2000 — European Union

The host organization (Natura 2000) brings together a set of proposals for biodiversity conservation projects that are unfunded or underfunded, promotes their values, and then invites bidders to attend an auction.
**How It Works**

- The first global auction was held in May 2008 and several auctions have occurred subsequently (through a group, based in Arnhem, The Netherlands, called the Knowledge Centre — EEE International Landscape Auctions [EEE = economy, ecology, and experience]).
- There is some similar experience in Ontario, but not to the same scale.

**What is Unique or Innovative**

- The initiative has successfully attracted large non-traditional funding sources.
- This initiative uses the intrinsic public interest in species at risk at the basis for attracting sponsors.
- British Columbia has funding challenges, but there is high provincial, national, and global awareness of its unique and attractive biodiversity. Project auctions could help to bridge the huge gap between current funding levels and the scale of investment that is needed.
- This type of initiative could be linked to the British Columbia Conservation Framework which already identifies key priority actions necessary to conserve the province’s species and ecosystems.

### 3.7 Species at Risk Strategy and MULTISAR Program — Alberta

MULTISAR (multiple species at risk) is a large multi-species, multi-partner conservation and stewardship program. The program strives to conserve habitat for species at risk in the Grassland Natural Region and to improve awareness of them on the landscape.

**How It Works**

- MULTISAR helps landholders interested in conserving species at risk by performing free habitat assessment and wildlife inventories of their land and working with them to maintain or create habitat. MULTISAR partners recognize the balance between keeping these unique areas and maintaining the economic viability of ranching and mixed farming.
- Currently the program focuses on grassland systems, where about 75% of Alberta’s species at risk reside. As more endangered and threatened species are identified in other natural regions of Alberta, such as the boreal forest, additional multi-species conservation and stewardship projects are being developed for those areas.
- It is well integrated through government departments and provides focus for collaboration among NGOs.
What is Unique or Innovative

- Stewardship in Alberta allows for a strong role for volunteers, public education, incentives, and technical support. This has good linkages to multi-species stewardship that is preventing the decline of threatened species and recovery of communities of several species at risk.
- Partnership with an NGO (Alberta Conservation Association) is a key component of the MULTISAR program.
- This Alberta program (like the Ontario Species at Risk program) is a good model of blending federal support into the provincial context.

3.8 Regional Forest Agreements — Australia

Regional Forest Agreements consist of a network of protected areas that allows continued resource extraction while protecting high-valued biodiversity. The agreements help direct special stewardship efforts to Crown and other forms of public land, as well as establish incentives that bring private land into the network, under forest management agreements.

How It Works

- Agreement areas include both Crown and private forestland with high value biodiversity. This initiative enables control of forestry with the use of restrictive covenants on private land, generating tax benefits to private and corporate landowners. It looks good in theory, but an October 2009 legislative review indicated that major improvements are still needed.

What is Unique or Innovative

- Each agreement requires a rigorous biodiversity assessment, which helps to identify “hotspots,” or priority areas, and leads to threat lists, recovery plans, stewardship advisories, and so on. Such agreements encourage recognition of the need for the protected forest areas network.
- The agreements have good policy support, funding mechanisms (for both Crown and private land), and incentives. However, they may not yet work well enough. An excellent, independent review recently identified shortcomings and made recommendations for improvements.
- This model may be useful for protecting high-value biodiversity across B.C.’s diverse ecosystems, but the province should carefully consider Australia’s 20-year experience as summarized in the 2009 independent review.