

SFU Conservation Group

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Dr. Bruce Fraser, Chair
Species At Risk Task Force
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 impacts¹; 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 services²
2. The management of BC biodiversity must benefit all, including current and future generations of, British Columbians.
3. Biodiversity protection requires healthy, resilient ecosystems³.
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 healthy³. 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 person². Internationally, The Stern Review on the Economics of Climate Change completed in 2006⁴ and The Economics of Ecosystems and Biodiversity (TEEB) review completed in October 2010⁵ 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,⁶ 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 accordance 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

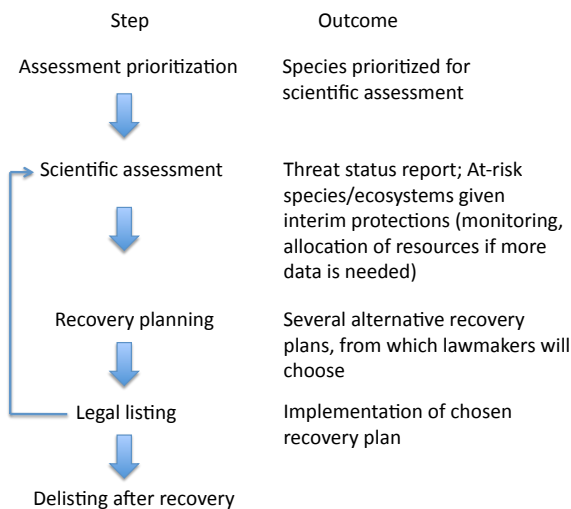
needed to complete a draft recovery plan. Hard deadlines following at risk assessments for a legal decision regarding the level of protection and/or recovery are also absolutely necessary.

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 descendants 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 component 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 multi-media 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,

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¹ Smith, A. D. M., Fulton, E. J., Hobday, A. J., Smith, D. C., and Shoulder, P. 2007. Scientific tools to support the practical implementation of ecosystem-based fisheries management. *ICES Journal of Marine Science* 64: 633–639.

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

³ Folke C., Carpenter S., Walker B., Scheffer M., Elmqvist T., Gunderson, L., and Holling, C. S. (2004) Regime shifts, resilience, and biodiversity in ecosystem management. *Annual Review of Ecology, Evolution and Systematics* 35: 557–581.

⁴ Stern, N.H. (2006). *The economics of climate change: The Stern review*. Cambridge University Press, Cambridge, UK

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

⁶ Thomas, C. D. (2010). Climate, climate change, and range boundaries. *Diversity and Distributions* 16: 488-495

⁷ The Nature Conservancy, www.nature.org.

⁸ Jenks, B., Vaughan, P. W., and Butler, P.J. 2010. The evolution of Rare Pride: Using evaluation to drive adaptive management in a biodiversity conservation organization. *Evaluation and Program Planning* 33: 186–190.

⁹ Harshaw, H. W. (2008). *British Columbia species at risk public opinion survey 2008: final technical report*. University of British Columbia Collaborative for Advanced Landscape Planning, Vancouver, British Columbia.