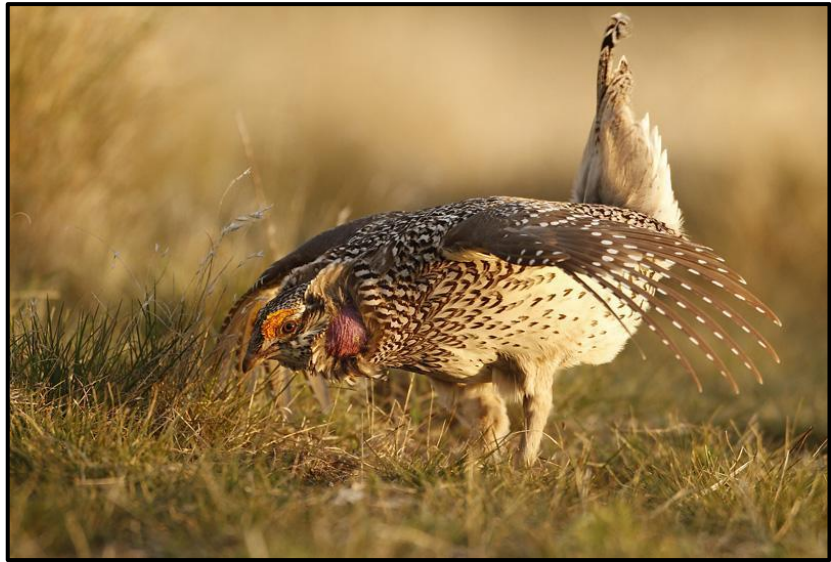


# Species-at-risk Recovery in BC

## An Audit of Federal and Provincial Actions



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## Foreword

Rare and at-risk species have always engendered empathy within our society. Perhaps it's because the suggestion of rarity implies value but, in a biological context, there is often an additional and far more insightful consideration. Many threatened and endangered wildlife species in Canada were, in fact, once quite common; the factors that have negatively influenced their previous abundance have often been brought about by a litany of human-wrought changes to the environment. In BC, many of these changes are relatively recent or still underway. Rare and at-risk species convey a message of a dysfunctional ecosystem that needs immediate attention to arrest or reverse species' declines; through their own demise these species are signaling that they need our help.

Within BC's borders commercial forestry, agriculture, mining, urban settlement, and road-development have all left a troubling legacy on the landscape. Before European influence, the BC coastline supported a rich temperate rainforest ecosystem: rivers teemed with salmon and in the upper headwaters of the rivers that carve their way through rugged coast mountains tailed frogs were once common in clear, cool fast-flowing streams. The ancient forests that once lined the valley slopes supported many ancient-growth forest inhabitants including marbled murrelets, spotted owls, coastal giant salamanders, and grizzly bears. As you moved inland, you would have encountered a rich grassland ecosystem, with tall prairie grasses swaying in the wind along the benches of the Thompson and Fraser Rivers. Further east, along the Okanagan and Similkameen valleys, pocket-desert ecosystems once supported pygmy short-horned lizard, burrowing owls, white-tailed jackrabbits, and greater sage grouse; today these species have all been extirpated from BC, their habitat plowed under for the sake of development — in many cases simply to grow grapes for our dining pleasure. Some species, such as the western rattlesnake, American badgers, white-headed woodpecker, and bighorn sheep still maintain a tenuous and diminishing presence in the Interior of BC as they bear witness to the loss of their habitat. Moving further inland, and northwards, you would have encountered mountains and valleys that supported grizzly bear, caribou, and wood bison; today these species all have much smaller ranges in North America, and their numbers continue to dwindle.

This report on recovery actions provides a review of policy and policy implementation by both the federal and BC provincial governments. Specifically, the content of this report focuses on recovery management and planning, and profiles some of the inherent challenges experienced by both levels of government in the implementation of actions that have been advanced in the interest of recovery of species-at-risk.

## Acknowledgements

First, Sierra Club BC and Wilderness Committee would like to acknowledge the species, for telling their story through their own declines as they struggle with the changes we have wreaked upon their habitats in B.C. We hope their message is heard.

We would also like to acknowledge Jared Hobbs (Director: J Hobbs Ecological Consulting Ltd.) for reviewing federal and provincial recovery policies and for analyzing and summarizing actions taken in the interest of species recovery in B.C. This report was commissioned, by Sierra Club BC and Wilderness Committee, for the purpose of improving understanding and awareness of the government's commitments to species-at-risk recovery in B.C. This audit is supported by a detailed analysis of implementation, in the spirit of improving conservation effectiveness in B.C, and is intended to provide constructive insight to inform future recovery objectives and actions.

Of equal importance, Wilderness Committee (WC) and Sierra Club BC (SCBC) would like to acknowledge the contribution and insights provided by Indigenous Peoples for sharing their perspectives, their knowledge, and their understanding of the many changes brought about to both species and the ecosystems these species depend upon. The anticipated current and ongoing contribution of Indigenous knowledge holders towards species-at-risk management will afford perspective, and hopefully inform a more holistic understanding of a pre-colonial context – this important perspective allows us to better understand our anthropogenic influence on biodiversity in British Columbia and to envision a more inclusive and forward-thinking approach. This will inform us, as we move forward, to ensure the message imparted by the declines evident for so many species-at-risk are not lost in our understanding of what we need to do.

*"For the animal shall not be measured by human-kind.  
In a world older and more complete than ours, they move finished and complete,  
gifted with extensions of the senses we have lost or never attained,  
living by voices we shall never hear."*

**Henry Beston**

Author (1888-1968)

"The Outermost House"

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## Introduction

This report was commissioned by Sierra Club BC and Western Canada Wilderness Committee to provide an assessment and effectiveness evaluation of legal protection afforded to species-at-risk in British Columbia (BC). In Canada, recovery of threatened, extirpated and endangered species falls under the purview of the federal *Species-at-risk Act* with responsibilities shared between governing bodies in each of Canada's provinces and territories.

The Canadian federal *Species-at-risk Act* (SARA) was proclaimed in June 2002 as one of a three-part strategy to protect wildlife species recognized to be 'at-risk' of becoming extinct or being extirpated within BC (i.e., extinct from a jurisdiction or region of their range). The enactment of SARA was motivated through the implementation of the Canadian Biodiversity Strategy, which was, in turn, motivated by the federal government's response to the United Nations Convention on Biological Diversity and the 1996 Accord for the Protection of Species-at-Risk. Under the Accord, it was recognized that intergovernmental cooperation is crucial during conservation and protection of species-at-risk. The federal government accepted a leadership role, and recognized that complementary legislation is required, in each province, to provide effective protection for species-at-risk and their habitats.

### Accord for the Protection of Species at Risk

The Accord outlines commitments by federal, provincial and territorial ministers to designate species at risk, protect their habitats, and develop recovery plans as well as complementary legislation, regulations, policies and programs, including stewardship.

Two decades have passed since SARA was assented. This report audits commitments, actions, and deficiencies (both legal and of stated intent) on the part of the provincial and federal governments. By adopting a standardized structure, developed by the International Union for the Conservation of Nature (IUCN), and embraced by the provincial and federal government during species and ecosystem recovery planning processes, this report systematically and transparently examines and exposes accomplishments and delinquencies, under both federal and provincial governance, that are relevant to the conservation of the biodiversity in BC.

This report also presents and summarizes issues associated with implementation of existing federal and provincial legislation for management and recovery of species-at-risk. By examining current recovery planning processes in BC, under SARA, this report illuminates issues associated with the application of effective legal protection, and issues associated with implementation of recovery planning policies and practices. Existing provincial and federal governance (acts, guidelines, and policies) are evaluated to describe and rationalize areas for possible improvement under each level of government jurisprudence. The report identifies actions deemed to be biologically required for more effective conservation and recovery planning afforded to those species that are listed in BC on Schedule 1 of SARA.

Specifically, this report intends to evaluate and clearly and concisely articulate federal and provincial government actions in relation to conservation planning and management of species-at-risk in BC

To accomplish this objective the report defines and explains biodiversity (in BC) and raises and addresses four fundamental questions to provide an understanding of conservation and management planning processes under existing federal and provincial legislation in BC (and Canada).

The intent of this report is to audit current accomplishments and challenges hindering recovery of species-at-risk in BC in hopes of better facilitating recognition of potential improvements that may be required, expected, or requested (from all levels of government) to ensure the goal and intent of the SARA are met. This review is not intended to be critical. It is instead intended to support, inform, and align conservation objectives and approaches between several levels of governance including provincial, municipal, federal and First Nation governments and is for the betterment of species-at-risk, and of all those that share an interest in conservation of biodiversity. The focus of the report is restricted to BC but the application, findings, and intent are often relevant across Canada. Throughout this document the language is intended to be non-technical; however, topical considerations are often complex and unwieldy. Some familiarity with species ecology, biodiversity and governance is likely required and is, thus, assumed.

This report points out several specific and systematic issues that limit the conservation and recovery of species-at-risk in British Columbia. This information is provided in the spirit of constructive criticism, not negative attacks on the individuals and groups working on the various recovery programs. We recognize that recovery programs are complicated, that optimal data is rarely available, and that recovery actions invariably involve significant socio-economic trade-offs, but this report also recognizes that integration of these considerations is defined and bound under SARA, and concessions afforded for socio-economic considerations need to be integrated appropriately and following due process.

This work was completed by J Hobbs Ecological Consulting Ltd. (“JHEC”) acting under contract to Sierra Club BC and Wilderness Committee (the “clients”). This Report has been prepared by JHEC for sole benefit and use by the clients. In performing this work, JHEC has relied in good faith on information provided by others, by technical reports, published primary literature and by relevant government material and has assumed that the information provided by these sources is both complete and accurate. The author of this report recognizes that recovery initiatives for species-at-risk are numerous and dynamic. It is also recognized that there are numerous ongoing initiatives where internal government plans, data analyses, and monitoring reports were not publicly available or were missed by the author of this report. As such, the findings presented herein should be considered within the context of the scope of work and project terms of reference; further, the findings are time sensitive and are considered valid only at the time the Report was produced. The information, analytical methods and recommendations presented in this Report are based upon the applicable guidelines, regulations, and legislation existing at the time the Report was produced; any changes in the regulatory regime may alter the conclusions and/or recommendations.

## **Understanding Biodiversity in British Columbia**

It seems appropriate to develop a foundational understanding of exactly what Canadians need to protect and conserve. Why is BC celebrated for its biodiversity, its natural beauty, and for the heritage and culture of Indigenous communities? What is it about our province that merits so much attention? And why should we work so hard to restore the balance between humans and wildlife? To achieve this, we need to understand the geo-physical processes that create biotic diversity (hereafter, biodiversity)

with the recognition that habitat diversity fosters the evolution of biodiversity in the species assemblages, or biota, that inhabit these ecosystems.

All BC residents benefit from a healthy, diverse, and rich natural environment. While the beauty of the province's topography is readily apparent, and is typically valued by most citizens, this mountainous topography also influences our climate and the abundance of natural resources and the distribution of animals and plants in BC. As moisture laden air rises over the Pacific Ocean it is driven, by prevailing winds, towards land. When this air meets the (BC) landmass along the west coast moisture within the clouds coalesces and is released as rain on the west, or rain ward, side of the Coast Mountain range.



As this air descends again on the east side of the Coast Mountains the air is warmed and quickly re-absorbs moisture creating a rain shadow effect that continues east until the air is forced to rise again over the Rocky Mountain range along BC's eastern border. These mountain ranges define the local climates creating vast tracts of lush wet temperate rainforests on the west side of the Coast Mountains, and drier continental climates in the interior.



At the extreme end of this rainshadow, in the low elevation valley bottom areas of the Okanagan valley, there are areas of 'pocket desert' that host species that are found nowhere else in BC<sup>1</sup>. These geographically limited habitats are increasingly imperiled by rapid (human) population growth we are currently experiencing. Continuing east, species diversity diminishes slightly, and development pressures are relatively less through the remainder of the southern interior, but still, within the Kootenay

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<sup>1</sup> The Okanagan valley contains a very restricted extension of the Great Basin Desert (one of only four desert ecosystems in North America)

Boundary region biodiversity is high, and development pressure and climate change pressure the species and ecosystems of this region.



Further north, in central and northern BC, species richness diminishes again (relative to the southern interior) but pressures from resource development activities (oil and gas, commercial forestry and hydro-elective development) continue to have a significant deleterious impact on biodiversity and species richness. These pressures are evident even in relatively unpopulated areas along BC's northern border; indeed, even boreal forest ecosystems in the far north are also not immune to, or isolated from, our pervasive and deleterious influence.

The landscape of BC is highly variable and harbors more biodiversity than any other province or territory in Canada. By crossing the mountain ranges that intersect the province in a north-south direction, and observing the local climates they create, we can recognize patterns in the distribution of species and ecosystems in BC. Biologists and geographers have categorized the variation of vegetation, soils, and climates experienced in different geographic areas and classified these different biotic communities into 16 different biogeoclimatic regions; these are commonly referred to as "BEC" zones (**Table 1**) (Pojar et al. 1987).

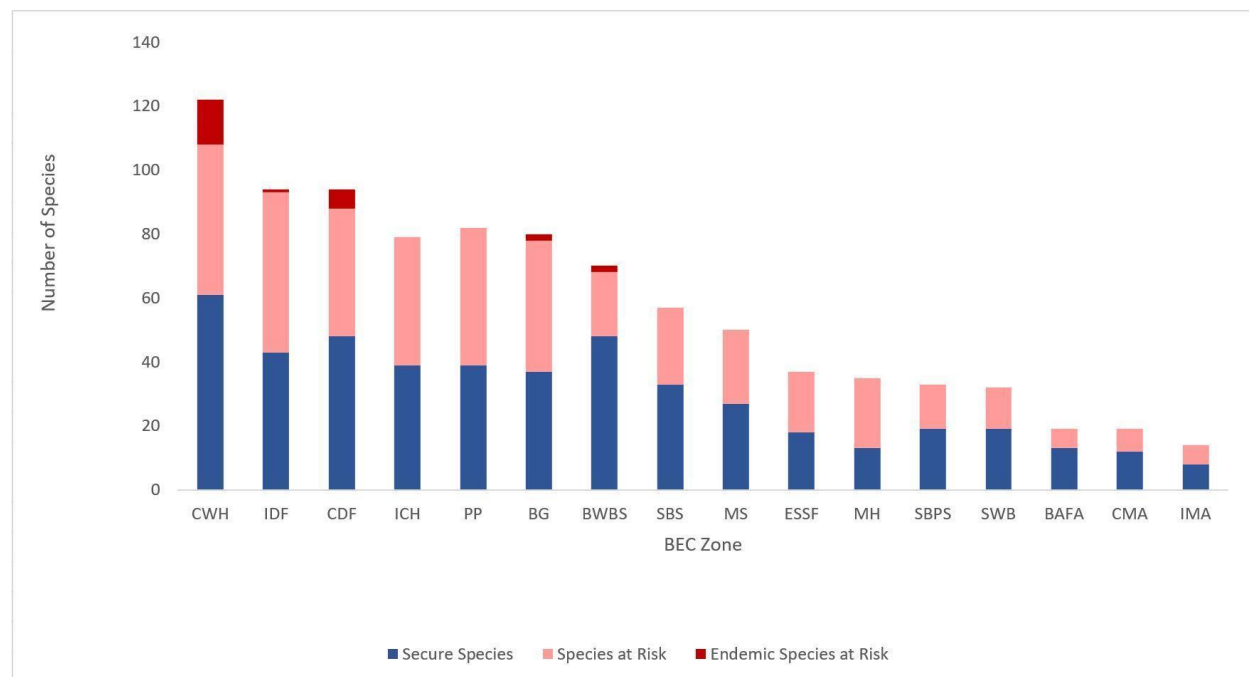
The biogeography and climate of each BEC zone also results in different environmental stressors. Within these BEC zones native species have evolved in habitats that existed prior to European contact, and in that era, they thrived, but many species are poorly able to contend with our relatively recent influences upon these ecosystems. Understanding, recognizing, and quantifying our anthropogenic influence is the first necessary step in mitigating, or arresting, the loss of biodiversity we continue to impose upon nature, shared natural resources and upon the resources depended upon, for millennia, by Indigenous communities.

**Table 1** and **Figure 1** (following page) recognize each BEC zone in BC and classifies species richness (within each BEC zone) by tallying the number of species that occur within, and are sometimes endemic to, each BEC zone. Although there is overlap, as many species may occur in multiple BEC zones, this classification affords a comprehensible and relatable perspective of the species diversity inherent to each BEC zone in BC.



**Table 1. Number of secure and at-risk vertebrate species that occur in each BEC zone (species-at-risk include only those listed on Schedule 1 of SARA). Secure species include BC resident species not listed on Schedule 1 of SARA). Species that occur only within a single BEC Zone are noted as endemic to that zone.**

BEC Zone	Secure Species (not at risk)	Non-endemic SARA listed species	Endemic SARA listed species	TOTAL
CWH	61	47	14	122
IDF	43	50	1	94
CDF	48	40	6	94
ICH	39	40	0	79
PP	39	43	0	82
BG	37	41	2	80
BWBS	48	20	2	70
SBS	33	24	0	57
MS	27	23	0	50
ESSF	18	19	0	37
MH	13	22	0	35
SBPS	19	14	0	33
SWB	19	13	0	32
BAFA	13	6	0	19
CMA	12	7	0	19
IMA	8	6	0	14



**Figure 1. Number of secure (blue) and at-risk (pink) vertebrate species that occur in each BEC zone (species-at-risk include those listed on Schedule 1 of SARA; secure species include species not listed on Schedule 1 of SARA but many are still ranked by COSEWIC and the BC Conservation Data Centre (CDC) as ‘at-risk’). Species that occur only within a single BEC Zone are noted as *endemic* to that zone.**

British Columbians concerned about conservation of this amazing biodiversity may take comfort in the fact that BC is a big province, with a total land area of almost ninety-five million hectares (or 947,936 km<sup>2</sup>); and may naively think that conservation of biodiversity is ensured by our sheer size alone, but that perspective is grossly misleading.

These issues currently stem from policies governing resource extraction (primarily forestry, oil and gas and mining); this puts a lot of pressure on these precious ecosystems, and the species that inhabit them. These effects are realized in terms of direct effects to species (i.e., direct mortality), and indirect effects to habitat (i.e., habitat loss) but increased attention to climate change has revealed threats that are now becoming much more apparent as we witness precedent setting flood events and temperature extremes across BC.

The forest sector provides a poignant example and is recognized as the second largest source of greenhouse gas emissions with the first largest being the energy sector (oil and gas production and use).

This begs the question: is the long-term far-reaching cost of forestry in BC worth the short-term relatively small economic gain, especially in consideration of the massive footprint the forest sector has on the total land area of the province? This question is particularly prudent when the effects of forestry upon precious ecosystems are fully considered. A GIS analysis of the 'footprint' of this sector provides clear quantification that most of the habitat loss, and hence the largest impacts (and losses) to biodiversity in BC are a result of this single sector of resource extraction (Merkel and Gorely 2020). The cost to recover species is massive (and likely impossible in our lifetimes), and is not funded by the industry that causes the harm. A more considerate approach that affords full-cost valuation would better inform the merit of continued harvest of old-growth forested habitats in BC. It seems prudent and urgent to ask if an old-growth tree is worth more left in its environment, relative to the cost of cutting it down to send to a mill for international export and sale by non-Canadian owned companies.



Despite this single-sector example, some might still ask the question: is this really cause for concern? After all, BC purports implementation of sustainable forest resource management, including designation of protected areas that are immune from the rapacious impacts of commercial forestry. To a lesser extent these areas (i.e., provincial parks) are also immune to mining and energy development practices (although exceptions can be made). Provincial Park designations are enabled under the BC *Parks Act* and are purported, by the provincial government, to alleviate these conservation concerns. Indeed, BC is home to approximately 1,000 provincial parks and seven national parks; however, an area-based consideration allows a more informed audit of the conservation gains afforded by our parks and protected areas. In fact, the BC *Parks Act* affords protection to almost fourteen million hectares (or 135,537 km<sup>2</sup>); an area equal to 13.8% of the total land area in BC but a more astute metric would consider the representation of the BEC zones in BC, and the biodiversity managed within parks. **Table 2** provides a measure of the area of each BEC zone for the province and contrasts that with the area of each BEC zone protected within our Provincial Park system.

**Table 2: Measure of area within each BEC zone and area and percentage of each BEC zone protected by the *Parks Act*.**

BEC Zone	Total BEC Zone area within the province (ha)	Total province-wide protected area in this BEC Zone (ha)	Percentage of the total BEC Zone area within the province that is protected
Coastal Western Hemlock	10,375,670	2,006,579	19.3
Coastal Douglas Fir	245,313	9,800	4
Interior Douglas Fir	4,327,656	215,931	5
Bunchgrass	236,735	26,616	11.2
Interior Cedar-Hemlock	5,209,593	506,871	9.7
Ponderosa Pine	359,028	17,166	4.8
Boreal White and Black Spruce	15,324,658	924,939	6
Montane Spruce	2,803,266	246,452	8.8
Sub-boreal Spruce	9,641,489	580,753	6
Engelmann Spruce-Subalpine Fir	17,167,404	2,889,470	16.8
Mountain Hemlock	3,543,958	740,234	20.9
Sub-boreal Pine-Spruce	2,203,014	202,125	9.2
Spruce-Willow-Birch	7,891,282	1,634,583	20.7
Boreal Altai -fescue Alpine	7,544,252	1,751,373	23.2
Coastal Mountain Heather Alpine	4,360,315	1,074,247	24.6
Interior Mountain Heather Alpine	1,265,181	368,970	29.2
<b>TOTALS</b>	<b>92,498,814</b>	<b>13,196,109</b>	<b>14%</b>

Considering species richness (i.e., the number of species associated with each BEC zone) from **Table 1**, with the proportion of each BEC zone protected within Provincial Parks (**Table 2**), a disconcerting reality is revealed. The top 8 BEC zones (top half of **Figure 2**) include the highest biodiversity BEC zones in BC, yet they are proportionally under-represented in our Park system. **Figure 2 and 3** provide a visual representation of this combined dataset.

The analysis in **Figure 2** shows a measure of biodiversity, by BEC zone, and illustrates that each BEC zone differs dramatically in species richness, or diversity. Generally, the highest diversity BEC zones are located at lower elevations and are situated in the southern more populated areas of the province. Biodiversity, for each BEC zone, is represented by the red bars in **Figure 2**. Next, for each BEC zone, the percentage (by area) of the BEC zone that is protected by a provincial park designation is shown by the green bars (i.e., relative to the total land area of the BEC zone that exists in BC).

When both bars are considered relative to one another it is evident that the BEC zones with the highest biodiversity are the very areas least represented within BC's parks. The BEC zones on the top half of **Figure 2** are high elevation zones, or BEC zones situated in northern regions in BC (less populated) – these areas have relatively low biodiversity and yet these areas constitute a disproportionately large area of our parks. The top half of BEC zones containing the most biodiversity are collectively home to 73% of the species yet only contribute to 30% of the total BEC area protected in BC parks. Whereas the bottom half of BEC zones containing the least amount of biodiversity are collectively home to 27% of the species but make up 70% of the total BEC area protected in BC parks.

## Species Richness and Protection by BEC Zone

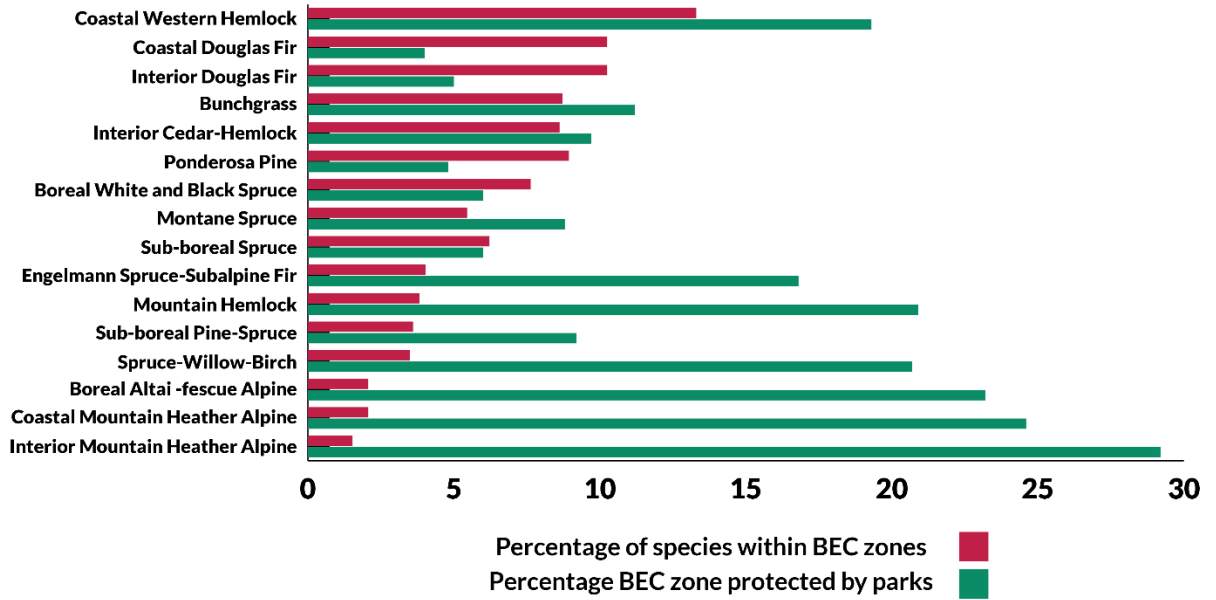
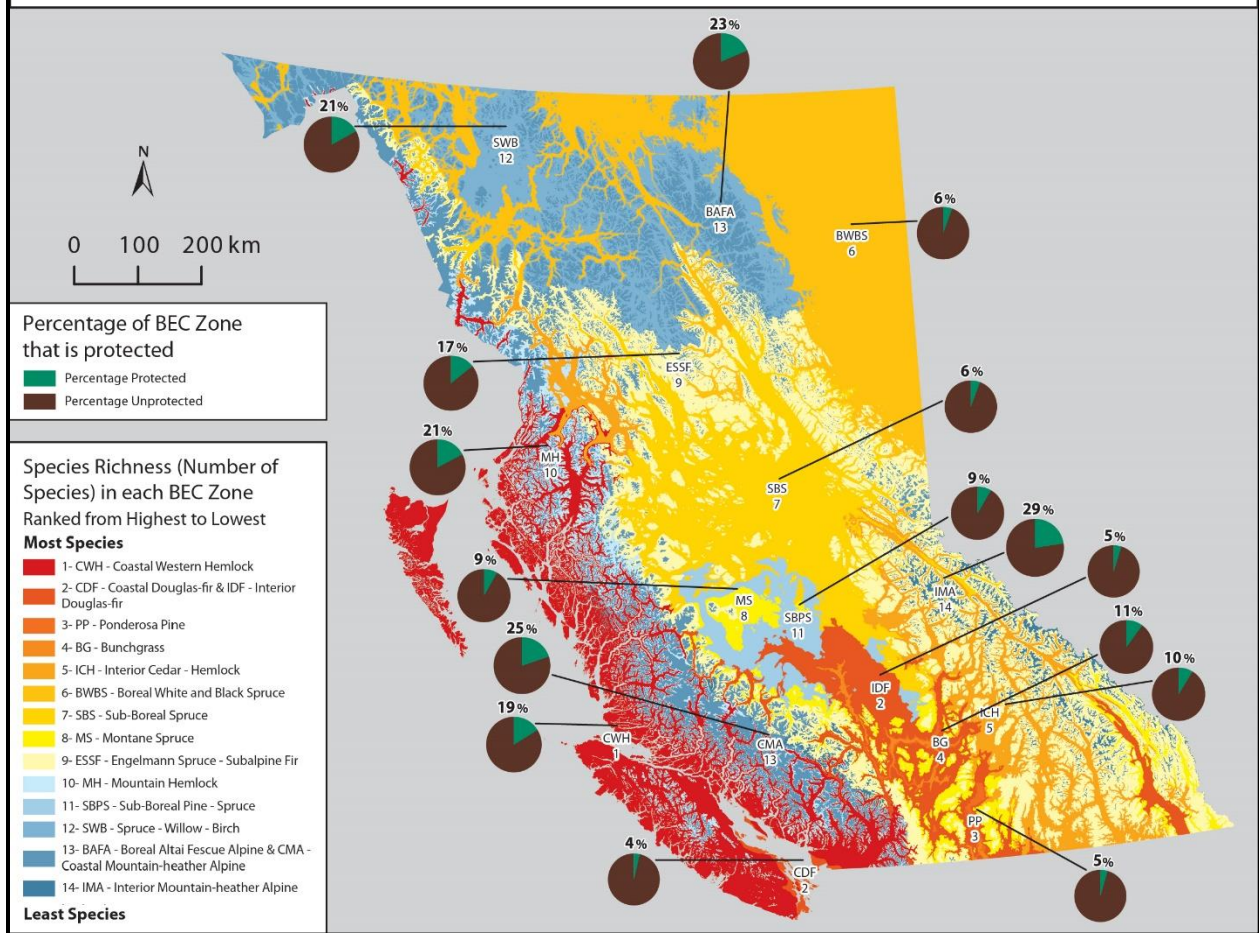


Figure 2: The red bars show species richness (i.e., the percent of biota in BC that occur in each BEC zone). The green bars show the percentage of each BEC zone that is protected by parks.

# Species Richness and Protection by BEC Zone Level



**Figure 3: A map of the BEC zones in BC displaying species richness (the number of species) and per cent of the zone protected. Red represents the highest species richness and dark blue represents the lowest. Each BEC zone has a corresponding pie chart displaying the percentage of area that's protected.**

This biased distribution, readily evident in the designation of provincial parks, suggests that additional legislated protection measures will be required to conserve this much-celebrated biodiversity if we are sincere about our shared conservation goals.

The federal government enacted SARA in response to, and as a component of, its implementation of the Canadian Biodiversity Strategy. Recognizing the limitation evident in the provincial governments implementation of the *Parks Act* it is prudent to understand if the federal *Species-at-risk Act*, and the provincial government's response to its obligations under SARA, can address these obvious deficiencies.

## Understanding the Federal Species-at-risk Act

In Canada, and within BC, SARA provides federal legislation to purportedly prevent wildlife species from becoming extinct, and to provide for their recovery. The *Species-at-risk Act* has been in force in Canada since June 2003 and is applicable, by law, to all lands under federal jurisdiction (i.e., federal parks, federally designated Wildlife Management Areas, and designated First Nations and military reserves). The federal *Species-at-risk Act* is also applicable, by intent, to all lands under provincial jurisdiction (including both publicly and privately owned lands in BC); however, responsibility was assigned to the government of each province and territory to develop and implement equivalent effective legal protection to that afforded by SARA on federal lands. The designation of this responsibility has arguably been the single biggest failing of the federal *Species-at-risk Act* as it encouraged many disparate approaches, between all Canadian provinces, and these diverse 'piece-meal' approaches have mired and confused the intent and implementation that should have legally been afforded to species-at-risk in BC. Our neighbours south of the international border passed more effective overarching protection to species-at-risk in 1973, with the passing of the *Endangered Species Act* (ESA); almost five decades have passed since President Nixon passed the ESA in the United States, and Canada is still failing in this responsibility despite an international perception of Canada as a "green" country.

The proclamation made under SARA addresses commitments under the 1995 Canadian Biodiversity Strategy and the National Accord for the Protection of Species-at-risk (1996), with the key objective to "prevent Canadian Indigenous species, subspecies, and distinct populations from becoming extirpated or extinct, to provide for the recovery of endangered or threatened species, and encourage the management of other species to prevent them from becoming at risk" (from: [Species-at-risk: the act, the accord and the funding programs - Canada.ca](#)). To achieve this, SARA depends on all levels of governance in Canada, and, as above, was applied immediately to all federal lands in Canada for all wildlife species listed on Schedule 1 of SARA. Simply put, the intent of the act is to prevent wildlife species (in Canada) from disappearing; and to facilitate recovery of extirpated, endangered, or threatened species<sup>2</sup>. To achieve this the provincial (and territorial) governments must fulfill their obligations. Achievement of this lofty goal requires provincial and federal government agencies to work in harmony to meet legal requirements set forth under SARA.

To accomplish recovery of listed species the application of SARA is predicated on the accurate identification of Critical Habitat (CH) where CH is defined under Section 2 of SARA as: "*the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species*" (from: [Critical Habitat of Species-at-risk](#)). Identifying habitats required for recovery is a first step. Affording protection to those habitats is the obvious critical next step, and monitoring effectiveness to inform adaptive management is the logical final consideration. So how has the law been implemented by the provincial and federal government bodies in BC?

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<sup>2</sup> SARA also affords management attention to species of special concern to prevent these species from becoming endangered or threatened.

To understand if currently mapped CH correctly defines the actual area that the species needs for recovery, and to determine if recovery is possible or probable, four key questions need to be addressed:

1. **Delayed identification of CH:** Has CH been mapped for each species listed under SARA Schedule 1?
2. **Challenges with the CH Mapping Process:** Has CH been reliably spatially defined or are there areas that are not included in the currently mapped CH that are needed to meet recovery objectives?
  - a. Is the current CH occupied (or could it potentially be occupied if other population-level constraints are addressed or alleviated)?
  - b. Is the current CH suitable and functioning relative to pre-European conditions?
3. **Species Recovery Planning and Management:** How does the listing and planning process work? And how is species recovery being achieved by mitigation of recognized threats? These include natural resource extraction sectors (e.g., forestry, energy development, oil and gas development, mining), agriculture, residential and commercial developments, effects from transportation infrastructure (i.e., roads, and associated road mortality), pollution, human intrusion, and disturbance (intentional and incidental), invasive species and foreign pathogens (e.g., white-nose syndrome, ranavirus, chytrid fungus) and climate change?
4. **Assessment of Effective Legal Protection:** Is provincial management of habitat values, within and beyond areas of mapped CH, effective at mitigating threats and achieving recovery goals? In essence, is there effective legal protection to prevent harm to species, and to the habitat deemed necessary for their survival and recovery?

These four questions are the focus of this report. Although the content may, at times, be technical and complex, an understanding of these issues is fundamental to achieving the goals set forth by SARA.

## Question 1: Identification of Critical Habitat in BC

### ***Section Objective: Have recovery documents been developed in a timely fashion, and has Critical Habitat (CH) been mapped as required for each species listed under SARA Schedule 1?***

This section describes the status of recovery planning, and identification of Critical Habitat (CH), for each focal species listed on SARA, and summarizes accomplishments and delinquencies with respect to legally required commitments.

Under SARA, recovery planning is to be achieved through the development and release of a recovery strategy (see [Question 3](#) for more details on the procedural framework for implementation of SARA) where Recovery Strategies are planning documents that identify suggested or required actions to arrest or reverse the decline of each species listed on Schedule 1 of SARA. The recovery strategy must:

- ✧ describe the species and its needs,
- ✧ identify the threats to survival of the species,
- ✧ identify the species' critical habitat (unless it is not possible to do so),
- ✧ where critical habitat is identified, provide examples of activities that are likely to result in its destruction,
- ✧ set the goals, objectives, and approaches for the species recovery,
- ✧ identify information gaps that should be addressed; and,
- ✧ state when one or more action plans relating to the strategy will be completed.

(from: [Species-at-risk Act: recovery strategies - Canada.ca](#))

Section 41 (1)(c) of SARA requires that recovery strategies must be completed for all Schedule 1 species listed as endangered, extirpated, or threatened<sup>3</sup>. Recovery strategy documents must be completed within one year of listing, on SARA Schedule 1, for endangered species and within two years for species listed as threatened or extirpated.

Section 41 also stipulates that recovery strategies (or documents) must include identification of the species' Critical Habitat (CH); typically, CH is identified within spatially mapped polygons and must be made publicly available on the SARA public registry. Finally, recovery strategies must also detail activities that are likely to result in the destruction of CH for each species (and thus, must be avoided). This section audits each of these explicitly defined and scheduled legal commitments, for focal SARA listed species, in BC.

In response to this question, and to ensure an accurate understanding of the status of recovery planning in BC, only terrestrial and freshwater vertebrate species (i.e., focal taxa) were evaluated for [Question 1](#). This restricted scope was necessitated as analyzing all recognized species, including all vertebrates (n=1,333), invertebrates (n=12,909), plants (n=4,470 species), macro- fungi (n=3,188 species), and lichens (n=1,895 species) was too unwieldy for focused review. Furthermore, information available for many excluded species was insufficient to allow rigorous evaluation. To further restrict the scope of this

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<sup>3</sup> For species listed as special concern SARA does not require a recovery strategy; instead, a management plan is required, and CH is not a required component. Management plans must be prepared within five years for species of special concern.



question to a manageable objective, invertebrates were also excluded, along with marine vertebrate species (n=467) (i.e., marine fish, marine mammals and three marine birds<sup>4</sup>).

As such, the metrics presented herein are limited to listed vertebrate species found in both terrestrial *and* fresh-water aquatic habitats within BC's mainland borders (n=815 species).

Next, these 815 vertebrate species were reviewed to assess their status under SARA. A total of 104 (13%) of terrestrial vertebrate species (and subspecies) are currently listed under Schedule 1 of SARA<sup>5</sup> as Endangered (n=32), Threatened (n=28), Special Concern (n=40) or extirpated (n=4) (**Table 3**). **Appendix 1** contains the full SARA Schedule 1 list that was queried to generate this result.

**Table 3: SARA Schedule 1 listed species in BC (filtered to include only terrestrial vertebrates and freshwater fish).**

Common name	SARA Sch.1 Status	Year Listed	CH Mapping Delinquency (# Years late)
American Badger <i>jeffersonii</i>	Endangered	2003	17
Band-tailed Pigeon	Special Concern	2011	Not Required
Bank Swallow	Threatened	2017	2
Barn Owl	Threatened	2003	16
Barn Swallow	Threatened	2017	Still overdue
Black Swift	Endangered	2019	Still overdue
Bobolink	Threatened	2017	Still overdue
Buff-breasted Sandpiper	Special Concern	2017	Not Required
Bull Trout	Special Concern	2019	Not Required
Burrowing Owl	Endangered	2003	8
Canada Warbler	Threatened	2010	Still overdue
Mountain Caribou	Threatened	2003	9
Cassin's Auklet	Special Concern	2019	Not Required
Coastal Giant Salamander	Threatened	2003	12
Coastal Tailed Frog	Special Concern	2003	Not Required
Coastal Vesper Sparrow	Endangered	2007	6
Coastrange Sculpin	Threatened	2003	12
Coeur d'Alene Salamander	Special Concern	2003	Not Required
Collared Pika	Special Concern	2017	Not Required
Columbia Sculpin	Special Concern	2003	Not Required
Common Nighthawk	Threatened	2010	Still overdue
Desert Nightsnake	Endangered	2003	15
Enos Lake Benthic Threespine Stickleback	Endangered	2005	Still overdue

<sup>4</sup> Seventeen of BC's 394 marine fish species, 22 (of 35) marine mammals and two (of three) marine bird species are listed under SARA Schedule 1. As such, 41 SARA listed vertebrates were excluded from consideration in Table 3.

<sup>5</sup> Note: if sub-specific denominations are amalgamated to the species level there are 93 full species listed under SARA however, for this review, sub-species were maintained as different subspecies have different COSEWIC status and hence, different timelines for preparation of Recovery Strategy documents.

Common name	SARA Sch.1 Status	Year Listed	CH Mapping Delinquency (# Years late)
Enos Lake Lentic Threespine Stickleback	Endangered	2005	Still overdue
Ermine <i>haidarum</i>	Threatened	2003	Insufficient information
Evening Grosbeak	Special Concern	2019	Not Required
Flammulated Owl	Special Concern	2003	Not Required
Giant Threespine Stickleback	Special Concern	2019	Not Required
Great Basin Gophersnake	Threatened	2005	10
Great Basin Spadefoot	Threatened	2003	12
Great Blue Heron <i>fannini</i>	Special Concern	2010	Not Required
Greater Sage-Grouse phaios subspecies	Extirpated	2003	Recovery no longer feasible
Green Sturgeon	Special Concern	2006	Not Required
Grizzly Bear	Special Concern	2018	Not Required
Horned Grebe	Special Concern	2017	Not Required
Lewis's Woodpecker	Threatened	2003	12
Little Brown Myotis	Endangered	2014	0
Long-billed Curlew	Special Concern	2005	Not Required
marbled murrelet	Threatened	2003	9
Misty Lake Lentic Threespine Stickleback	Endangered	2010	5
Misty Lake Lotic Threespine Stickleback	Endangered	2010	5
Mountain Beaver	Special Concern	2003	Not Required
Mountain Sucker	Special Concern	2017	Not Required
Nooksack Dace	Endangered	2003	4
Northern Goshawk <i>laingi</i>	Threatened	2003	12
Northern Leopard Frog	Endangered	2003	12
Northern Myotis	Endangered	2014	0
Northern Red-legged Frog	Special Concern	2005	Not Required
Northern Rubber Boa	Special Concern	2005	Not Required
Northern Saw-whet Owl <i>brooksi</i>	Threatened	2007	4
Nuttall's Cottontail <i>nuttallii</i>	Special Concern	2007	Not Required
Olive-sided Flycatcher	Threatened	2010	Still overdue
Oregon Spotted Frog	Endangered	2003	11
Pacific Gophersnake	Extirpated	2005	Recovery no longer feasible
Pacific Pond Turtle	Extirpated	2005	Recovery no longer feasible
Pacific Water Shrew	Endangered	2003	10
Pallid Bat	Threatened	2003	12
Paxton Lake Benthic Threespine Stickleback	Endangered	2003	12
Paxton Lake Lentic Threespine Stickleback	Endangered	2003	12
Peregrine Falcon <i>anatum/tundrius</i>	Special Concern	2012	Not Required

Common name	SARA Sch.1 Status	Year Listed	CH Mapping Delinquency (# Years late)
Peregrine Falcon <i>pealei</i>	Special Concern	2003	Not Required
Pygmy Short-horned Lizard	Extirpated	2003	Recovery no longer feasible
Red Knot <i>roselaari</i>	Threatened	2010	5
Red-necked Phalarope	Special Concern	2019	Not Required
Rocky Mountain Sculpin	Special Concern	2017	Not Required
Rocky Mountain Tailed Frog	Threatened	2003	10
Rusty Blackbird	Special Concern	2009	Not Required
Sage Thrasher	Endangered	2003	10
Salish Sucker	Threatened	2005	5
Sharp-tailed Snake	Endangered	2003	13
Short-eared Owl	Special Concern	2012	Not Required
Shorthead Sculpin	Special Concern	2003	Not Required
Speckled Dace	Endangered	2009	6
Spotted Bat	Special Concern	2005	Not Required
Spotted Owl <i>caurina</i>	Endangered	2003	Still overdue
Streaked Horned Lark	Endangered	2005	Still overdue
Townsend's Mole	Endangered	2005	9
Unarmoured Threespine Stickleback	Special Concern	2019	Not Required
Vananda Cr. Benthic Threespine Stickleback	Endangered	2003	12
Vananda Cr. Lentic Threespine Stickleback	Endangered	2003	12
Vancouver Island Marmot	Endangered	2003	15
Vancouver Lamprey	Threatened	2003	13
Wandering Salamander	Special Concern	2018	Not Required
Western Brook Lamprey	Endangered	2003	13
Western Grebe	Special Concern	2017	Not Required
Western Harvest Mouse <i>megalotis</i>	Special Concern	2009	Not Required
Western Painted Turtle	Threatened	2007	9
Western Painted Turtle	Special Concern	2007	Not Required
western rattlesnake	Threatened	2005	10
Western Screech-owl <i>kennicottii</i>	Threatened	2005	Still overdue
Western Screech-owl <i>macfarlanei</i>	Threatened	2005	Still overdue
Western Skink	Special Concern	2005	Not Required
Western Tiger Salamander	Endangered	2003	13
Western Toad	Special Concern	2005	Not Required
Western Yellow-bellied Racer	Special Concern	2006	Not Required
Westslope Cutthroat Trout	Special Concern	2010	Not Required
White Sturgeon	Endangered	2006	6

Common name	SARA Sch.1 Status	Year Listed	CH Mapping Delinquency (# Years late)
White-headed Woodpecker	Endangered	2003	Still overdue
Williamson's Sapsucker	Endangered	2006	6
Wolverine	Special Concern	2018	Not Required
Wood Bison	Threatened	2003	Still overdue
Woodland Caribou	Threatened	2003	6
Yellow Rail	Special Concern	2003	Not Required
Yellow-breasted Chat	Endangered	2003	12

**Table 4: Summary of the number of SARA Schedule 1 focal taxa (i.e., terrestrial vertebrates and freshwater fish) by COSEWIC (and SARA) assignment.**

<b>SARA Status (Schedule 1): Focal taxa (this includes freshwater fish, terrestrial and semi-terrestrial vertebrates but does not include marine species, plants, invertebrates, fungi, lichens)</b>	
Endangered	32
Threatened	28
Extirpated	4
Special Concern	40
Extinct	0
<b>Total SARA Schedule 1 Listed Species</b>	<b>104</b>
% of BC terrestrial vertebrates (including freshwater fish) that are listed on SARA Sch1.	16%
<b>Total number of SARA Schedule 1 Listed Species that require completion of a Recovery Strategy and Action Plan (or a Recovery Plan) &amp; must have CH delineated and posted (i.e., SARA Schedule 1 Endangered, Threatened or Extirpated. (Recovery strategies and CH mapping is not required for SARA Schedule 1 species listed as Special Concern).</b>	<b>64</b>

Next, these 104 SARA Schedule 1 terrestrial vertebrate and freshwater fish species (i.e., the focal taxa) were filtered to exclude 40 species listed as Special Concern – this approach was used as species listed as Special Concern do not require preparation of a Recovery Strategy or mapping of CH.

This resulted in a total of 64 focal taxa, listed on Schedule 1 of SARA, that are legally required to have a Recovery Strategy (or a Recovery Plan) that must include a description of threats and MUST include either spatial delineation or a biophysical description of CH. To be compliant with SARA requirements recovery documents must be posted on the SARA public registry within one year of listing (by the Governor in Council (GIC)) for Endangered species and within two years of listing for Threatened and Extirpated species (See response to [Question 3](#) for a more fulsome explanation of the SARA recovery planning process).

Finally, each of these 64 focal taxa was assessed to audit compliance with respect to timelines for development of Recovery Strategy documents, and Action and Implementation Plan documents<sup>6</sup> AND each species was also assessed to determine if requirements for identification of Critical Habitat had been met. These dates were audited and summarized (in **Table 5** – following page) to determine if CH

<sup>6</sup> A Recovery Plan may occasionally be developed instead of, and as a combination of, a Recovery Strategy, Action Plan, and an Implementation Plan.

for each species has been mapped and posted on the SARA public registry as required under SARA s.39).

**Table 5** lists those species for which completed actions are either:

- 1) Compliant with SARA schedule requirements; or,
- 2) Recovery actions are *not* compliant with SARA Schedule requirements (i.e., delinquent).

**Figures 4 & 5** show the number of species categorized by the degree of delinquency under each of three categories:

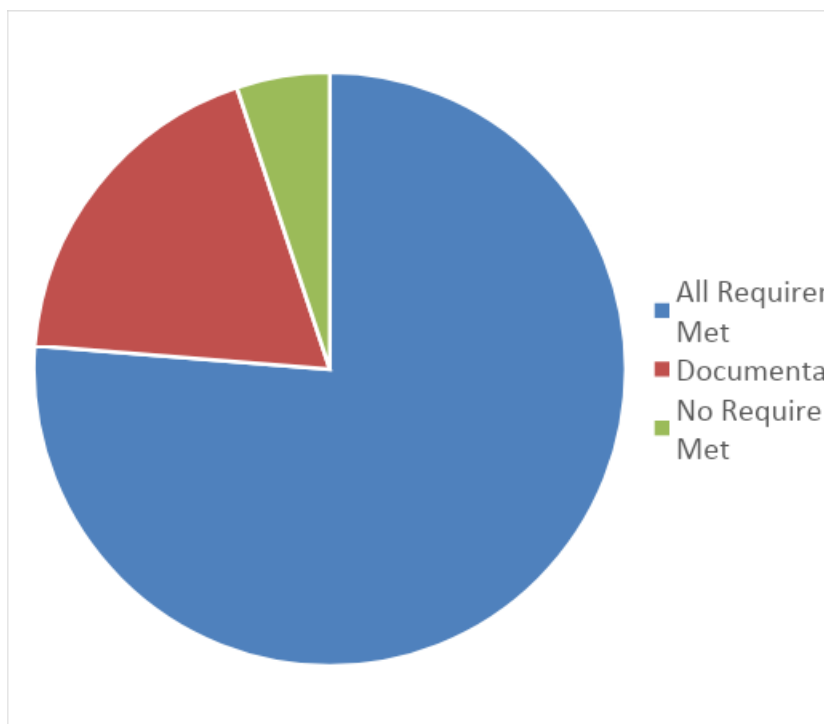
- 1) All requirements met,
- 2) Recovery documents met but CH not mapped (i.e., only partially met); or,
- 3) No requirements met.

**Table 5: Species where Environment and Climate Change Canada (ECCC) are compliant with SARA requirements (including CH mapping status), and those species where ECCC is not in compliance with SARA requirements for preparation of recovery documents and identification of CH as required under SARA Section 41c. ECCC compliance is described as one of three categories (all requirements met, recovery documents met (but CH not mapped and posted); or, no requirements met)**

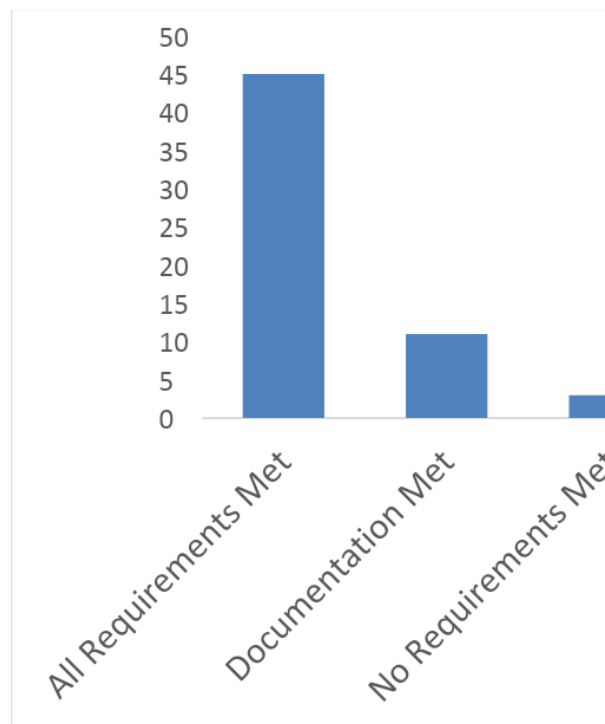
Recovery Progress (as measured against legal requirements)	Number of Endangered Species	Number of Threatened Species	Number of Extirpated Species	Total Number of Species	Recovery Planning Status
Recovery Strategy and Action Plan are posted on the SARA public registry and CH mapping requirements are met	9	4	0	13 (20%)	All Requirements Met
Recovery Plan or Recovery Strategy are posted on the SARA public registry and CH mapping requirements are met	7	7	0	14 (22%)	All Requirements Met
Recovery Strategy (only) is posted on the SARA public registry and CH mapping requirements are met	9	9	0	18 (28%)	All Requirements Met
Recovery Strategy only and CH mapping not feasible	0	1	4	5 (8%)	All Requirements Met
Recovery Strategy and Recovery plan are posted on SARA public registry, but CH is not mapped	0	1	0	1 (1.5%)	Only Documentation: CH not mapped.
Recovery Strategy (only) is posted on the SARA public registry, but CH is not mapped or described.	5	4	0	9 (14%)	Only Documentation: CH not mapped.
Only a Recovery Plan is posted on the SARA public registry, but CH is not mapped.	0	1	0	1 (1.5%)	Only Documentation: CH not mapped.
No Recovery Planning Documents have been prepared, and CH is not mapped.	1	2	0	3 (5%)	No Requirements Met
<b>Total</b>	<b>31</b>	<b>29</b>	<b>4</b>	<b>64</b>	

**Figure 4 and Figure 5:** The pie chart (**Figure 4**) and histogram (**Figure 5**) below illustrate ECCC progress, and delinquency, under each of three categories:

- 1) All requirements have been met,
- 2) Recovery documents posted, but CH has not been mapped or delineated in the Recovery Strategy; or,
- 3) None of the recovery planning documentation, or CH mapping/delineation requirements, have been met.



**Figure 4:** Pie chart illustrating progress and delinquency under each of three categories.



**Figure 5:** Bar-graph illustrating progress and old-growth delinquency under each of three categories.

## Question 1: Summary

On the surface SARA appears to afford reasonable attention to recovery of species-at-risk, but the reality of delays in implementation suggest otherwise. The appearance of protection, in the absence of timely implementation, is detrimental to the intended objectives. Martin et al. (2016) examined this issue, concluding that the protection of CH is the most essential step in the recovery process, but it is also the most contentious and protracted decisions faced by government agencies. Delays stem from uncertainty in what constitutes CH, and, to a (likely) greater degree, from the challenges associated with balancing competing societal objectives. Typically, the areas that provide CH for recovery of a listed species are also highly contested for resource extraction, development, and recreational activities<sup>7</sup> and, as a result, the process is mired for extended periods. Where threats to species' persistence are high, protection of CH must be implemented rapidly even when there is uncertainty based on best available knowledge (Martin et al. 2016).

On average, posting of recovery documentation (i.e., a Recovery Strategy (or equivalent)) and delineation of CH was 9.8 years behind scheduled requirements as stipulated and legally required under SARA. The range of delinquency for those species for which CH has been mapped was 0-17 years for 50 of 64 of Schedule 1 SARA listed terrestrial and freshwater vertebrate species in BC. Furthermore, within these focal taxa, CH mapping is still overdue for 14 of 64 currently listed species assessed herein. Only two of 64 species that legally require critical habitat mapping were completed on time.

Severe delays in CH identification have resulted in continued unabated habitat loss and consequent decline for many species. As a poignant example, when spotted owl (*Strix occidentalis caurina*) was initially listed under SARA in 2003 there were almost 20 active territories. In the interim almost two decades have past while the province continued to permit clearcut harvest of approximately 3,000 ha of critical old-growth forested habitat per year (~60,000 ha total since the species was listed under SARA). Despite legal petitions and repeated appeals to stop logging of old-growth forest, this threat has continued unabated. Sadly, as of 2021, there was only one pair of spotted owls remaining in Canada. Meanwhile the provincial and federal government continue to deliberate and delay on legal requirements to map CH for spotted owl; instead focusing on capturing and caging the last of the wild owls while CH remains un-mapped, and the province continues to log the last of their habitat. Indeed, delays, by ECCC, in the federal process for mapping CH is obviously a systemic issue that direly needs to be addressed.



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<sup>7</sup> ECCC's approach to critical habitat designation led to legal challenges for failing to designate and protect critical habitat (e.g., Greater Sage-grouse *Centrocercus urophasianus*, Alberta Wilderness Association, et al. v. Minister of Environment, 2009 FC 710; Nooksack Dace *Rhinichthys cataractae*, Environmental Defence Canada, et al. v. Minister of Fisheries and Oceans, 2009 FC 878; Killer Whale: David Suzuki Foundation v. Minister of Fisheries and Oceans, 2010 FC 1233).



## Question 2: Challenges with the Critical Habitat Mapping Process

**Section Objective: Has CH been reliably spatially defined or are there areas that are not included in the currently mapped CH that are needed to meet recovery objectives?**

SARA requires that CH be identified in a recovery strategy for all Schedule 1 species listed as endangered (within one year of listing) or as threatened or extirpated (within two years of listing). CH designation is necessary to support recovery objectives (as established in the recovery strategy) and is, to the extent possible, to be completed in cooperation with Indigenous organizations, federal, provincial, and territorial ministers and, where affected, with landowners, lessees, and municipal governments.

There are strong legislation and administrative structures, procedures, and policies in place to support development of recovery planning documents, and to support delineation of Critical Habitat and implementation of management measures. But, despite enabling legislation and conservation frameworks, designation of Critical Habitat is consistently delayed well beyond specified timelines (see [Question 1](#)). Despite these consistent extensive delays' emergency measures available, under SARA Section 80, to address the resultant consequences to species recovery (resulting from continued negligence of legal duty) these emergency orders are rarely implemented (despite several petitions to do so).

### What is an Emergency Order?

Each province has been assigned primary responsibility for wildlife management but where the province is negligent of this duty SARA S.80(2) creates an opportunity for the federal government to issue an "Emergency Order" to intervene. [Section 80\(2\) \(of SARA\)](#) states that the Canadian government may, *"on the recommendation of the competent minister, make an emergency order to provide for the protection of a listed wildlife species."*

Importantly, section 80 does not allow the federal Minister responsible for a species to single-handedly establish an emergency order. Instead, section 80(2) states that the federal minister *"must make the recommendation if he or she is of the opinion that the species faces imminent threats to its survival or recovery."*

Regardless, Section 80 provides legislative discretion for the federal Minister of the Environment, and most importantly, it articulates the responsibility of the Minister to protect species when necessary.

Despite declines documented in numerous species in BC, and despite obvious negligence to designated CH or to implement effective legal protection for many species, S.80 has never been implemented in BC despite a legal petition to do so (as was the case for the spotted owl). In fact, it has



only been implemented twice in Canada (for greater sage grouse and western chorus frog (2016)).

*“In many ways, the case of the western chorus frog encapsulates the SARA story...politics over science, missed statutory deadlines, and inadequate funding”* (Shaun Fluker, Associate Professor, University of Calgary).

Meanwhile, potential for recovery, for most species listed under SARA, are continually eroded; ironically, most of the detriment to species recovery in BC continues under provincially permitted activities, and these are primarily in the forestry sector as permitted by the BC Ministry of Forests Timber Sales program.

Delays in designation of Critical Habitat are attributable to two general causes (Martin et al. 2016):

1. Uncertainty regarding the areas of CH that may be required for species' recovery; and,
2. High socio-economic impacts associated with designation.

Recovery Strategies represent scientific advice to government. Available expertise and scientific guidance are almost always available to address the first cause (i.e., scientific uncertainty) for most, if not all, SARA Schedule 1 listed species in BC (i.e., the species ecology, distribution and habitat needs are well understood by scientific experts). Claims of inadequate information and delays excused by the purported need for additional study are typically not well-founded and spurious. The main challenge is resolution of the second clause: identification of CH is typically confounded by competing (government) objectives. The simple act of appropriate designation of CH would fetter competing government interests for development of natural resources, particularly in the forest sector within the BC Ministry of Forests (after all, commercial forestry is all-to-often the cause driving declines for many species in BC). There are several notable examples; these include conservation of old-growth forests which are essential for persistence and recovery of many SARA listed species in BC (including marbled murrelet (*Brachyramphus marmoratus*), caribou (*Rangifer tarandus*), northern spotted owl (*Strix occidentalis caurina*), western screech-owl (*Megascops kennicottii*) (both listed subspecies), northern goshawk (*Accipiter gentilis laingi*) (coastal subspecies), coastal giant salamander (*Dicamptodon tenebrosus*), Williamson's sapsucker (*Sphyrapicus thyroideus*), Oregon forestsnail (*Allogona townsendii*), etc.). Delayed and inaccurate designation of CH, coupled with provincial approval of ongoing activities deemed likely to destroy CH for each of these species, would result in substantial and permanent reductions in forested areas available for clear-cut harvest in BC. As such, the province continues to delay and defer its legal obligation to provide effective legal protection for old-growth forest dependent species in BC.

The most recent troubling example of delayed protection for species-at-risk was under the BC NDP government. In 2019, the (then) BC Minister of Environment was issued a mandate letter to introduce BC legislation to protect species-at-risk. This mandate was pushed back to 2020, and then in 2020 it was canceled without explanation by Premier John Horgan. BC is home to more at-risk species than any other province and yet we are amongst the last six provinces and territories to implement stand-alone legislation to protect endangered species (Kraus and Armitage, 2021).

These delays are evident, repeatedly, across all levels of provincial and federal government, and across multiple political terms and parties. Repeated failed attempts to align economic interests from resource-development sectors with science-based recovery recommendations is identified as a root cause (Buxton et al. 2022) Unfortunately, in addition to inappropriate socioeconomic fettering (designation of CH is supposed to be science based and should not be influenced by socioeconomic considerations) there are procedural challenges which further fetter the task. Meanwhile, non-time bound delays with suggestions for purportedly required additional study are repeatedly used to stall designation of CH. During these delays habitat needed for effective recovery is typically lost or degraded (permanently) thus increasing the species' probability of extinction. There is no easy solution but a more considerate balance is direly needed.



### Procedural Challenges with Spatial Delineation of Critical Habitat

CH mapping, including procedures used and activities completed, were analyzed to understand and describe key procedural challenges with the current process.

This section describes key systemic issues inherent to the mapping procedures prescribed for identification of CH in BC. At a high level CH is spatially delineated using either an occurrence-based approach or a predictive habitat modeling-based approach. Unfortunately, underlying assumptions and incomplete consideration of available data confound accuracy with both approaches.

Occurrence-based methods identify CH based on best-available inventory information (i.e., known occurrence locations) to define our understanding of the species' current distribution within the species' range in BC. Unfortunately, the accuracy of this approach is compromised by the currency of information used to support delineation of CH. If inventory is underfunded, as is almost always the case, the best-available information is thus limited or dated. In addition, species-at-risk often occur in low densities, have discontinuous distributions and are typically challenging to find due to secretive ecologies, or due to their predilection to persist in habitats that are relatively pristine or difficult for scientists to access. In addition, particularly for species in a state of population decline, not all currently suitable habitats will be occupied, particularly when habitat supply is not the limiting factor. As an artifact of these challenges our understanding of species occurrence, particularly for wide ranging or motile species, is all-too-often inaccurate to inform accurate CH designation.

By converse, model-based delineation of CH relies on GIS-based predictive (or remote-sensing) desktop-based methods to identify and delineate CH. Predictive models depend on geophysical data to describe and predict spatial occurrence of key biophysical attributes for a given species. One of the most often-used datasets is the Vegetation Resources Inventory data (VRI) (developed and maintained by the Ministry of Forests); this method is a photo-based, two-phased vegetation inventory with its design consisting of Phase I (photo interpretation), and Phase II (ground sampling). VRI data is generally accurate at characterizing attributes that are important, economically, to the forestry sector but less so, if at all, capable of defining habitat attributes that are not economically important to commercial harvest of forest resources. Other datasets<sup>8</sup> can be used but their availability is patchy, at too crude a scale for resolution of key biophysical attributes, dated, or does not capture relevant habitat characteristics to predictively model habitat for a given species. As such, delineation of CH using predictive models is fraught with assumptions, based on often inadequate or inaccurate data.

In summary, both approaches result in errors of exclusion or inclusion. Errors of exclusion (i.e., Type 2 error) occur when species are presumed absent, but they are, in fact, present. Errors of inclusion (i.e., Type 1 error) occur when species are presumed present, but they are, in fact, not.

The consequences of both errors are summarized as follows:

1. Errors of exclusion occur when areas of currently suitable habitat, including habitats that may not currently be occupied by the species, are excluded from consideration as CH. Suitable habitat should never be excluded from consideration during recovery planning processes when habitat is a limiting factor (ECCC (online) Accessed 2022). This includes areas where a species has been extirpated from an area due to reversible threats (or stressors). In all cases where a population of a species is in decline it is reasonable to assume that not all suitable habitats will be occupied, or, at the very least, not all areas of suitable habitat will support historical or detectable population densities. Areas of suitable unoccupied habitat within the species' former range will require management consideration to facilitate recovery and areas of suitable habitat need to be identified as CH within the legal requirements set forth by SARA.
2. Errors of inclusion (i.e., areas of non-capable habitat are included in recovery consideration): Identification of Critical Habitat for species with declining populations will require extrapolative prediction of species occurrence based on considerations that include current and previous habitat suitability, species ecology (e.g., elevation limits, dispersal, and motility capabilities, etc.). If assumptions are not met, mapped CH will include areas that were never capable, or are no longer capable, of supporting the focal species. This diverts or dilutes management and recovery actions by inappropriately focusing efforts on areas not critical to the species recovery<sup>9</sup> (**Figure 6**).

Both errors are frequently apparent in currently mapped Critical Habitat (for many species-at-risk).

In recognition of these inherent challenges ECCC caveats their mapping process by stipulating that within mapped Critical Habitat areas should only be considered to represent CH if and where specified key biophysical habitat attributes occur but there are two obvious challenges with this approach:

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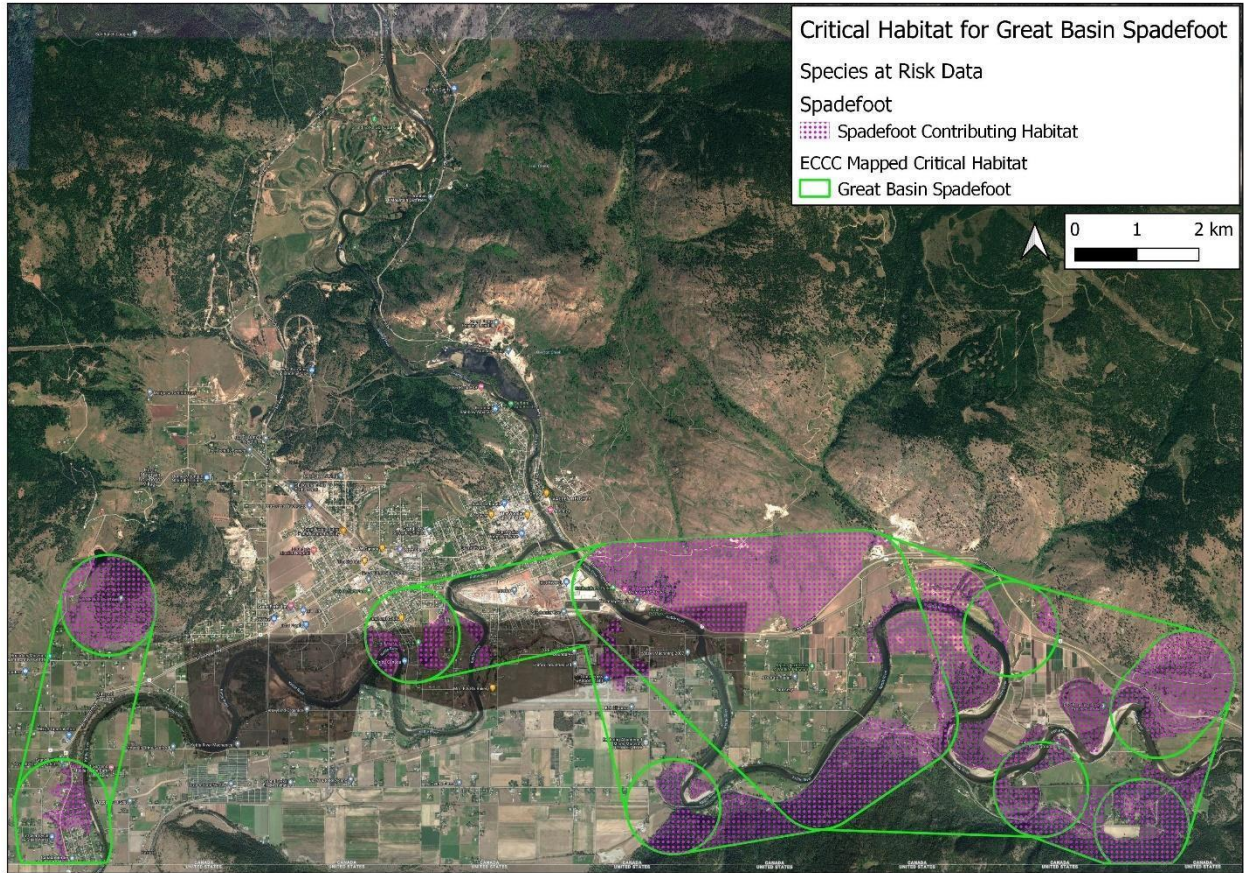
<sup>8</sup> Including Terrestrial Ecosystem Mapping (TEM), Predictive Ecosystem Mapping (PEM), Digital Elevation Modeling (DEM), ortho or satellite imagery, BEC mapping, Ecoregions, etc.

<sup>9</sup> In recognition of this CWS clearly states that mapped CH need only be considered as Critical Habitat if and where the required key biophysical attributes exist but that leaves an obvious challenge (see point #2 below).

1. Where these biophysical attributes have been temporarily compromised (typically because of human alteration by, for example forestry (relevant for all species that occur in forested habitats), or overgrazing (relevant for all species that occur in open-range habitats)) areas may be excluded from application of conservation and habitat recovery measures despite the fact that these areas are still *capable* of providing habitat for the species in future. In many cases the exclusion of capable (i.e., formerly suitable) habitat will deleteriously affect recovery potential. spotted owl management in BC provides a perfect example: previously clear cut forests will lack the required habitat attributes for several hundred years as logged areas take centuries to recover attributes typically found in (previously) old-growth forested areas. Unfortunately, this approach impedes recovery as a large percentage of the owl's former home range has already been logged. Recovery won't be feasible if these areas are not allowed to return to suitable condition. To the species' detriment, using this current approach, these areas are excluded from conservation consideration as these recently logged habitats will no longer support the key biophysical attributes deemed necessary, by ECCC, to be considered Critical Habitat (ironically, the provincial government's BCTS Program continues to log the last remnants of currently suitable spotted owl habitat within the species' range in BC).
2. Responsibility for assessment of key biophysical attributes is not defined or assigned yet this task clearly requires the expertise of a qualified environmental professional, and, of equal importance, evaluation should be impartial to the outcome (for the obvious need to exclude bias from assessors motivated by their desired outcome).

Neither of these two challenges are addressed by the current management regime. Capable habitat is regularly excluded from areas of mapped Critical Habitat. Of even greater concern, suitable habitat, within areas of mapped CH, is repeatedly altered or eliminated with no apparent consideration to the intent of SARA, or to commitments made by the provincial government (under the bilateral agreement) to afford effective legal protection to areas of mapped CH where they occur within lands governed under provincial jurisdiction. .

It must also be recognized that, in this review, CH mapping was found to be delinquent for the majority of the focal species (50 of 64 species) listed on Schedule 1 of SARA, and is still overdue (i.e., not completed) for the remaining 14 (of 64) focal species. These systemic process-related issues result in inaccurate mapping of CH for many SARA listed species in BC.



**Figure 6: The map below illustrates errors of inclusion within CH mapped for great basin spadefoot near Grand Forks, BC. The green outlined polygons are mapped CH; the purple shaded areas depict the remaining suitable habitat within mapped CH. As is evident, most of the mapped CH occurs in well developed urban areas (i.e., non-shaded areas) that lack the key biophysical attributes required by Great Basin Spadefoot. This provides an inaccurate metric of the value and quantity of CH identified for this species and illustrates an error of inclusion in the mapping process.**

## Question 2: Summary

At a conceptual level current approaches for CH delineations are reasonable but in practice they are repeatedly failing. These repeated failings continue to compromise the intent and stated objectives of the federal SARA. An analysis of this process in BC (see [Question 1](#)) clearly illustrates that identifying and delineating CH typically greatly exceeds scheduled requirements, during which the species that needed CH protection continue to decline. This is true for 62 (97%) of the 64 Schedule 1 listed species for which CH mapping, by ECCC, was (or still is) overdue by up to 17 years (see [Question 1](#) for additional detail).

The time required to identify CH without risking species extinction depends on the scope and severity of the threats it faces and the time it takes us to learn about, and identify, CH. Unfortunately, it is often tempting, to pro-industry stakeholders (i.e., government) to delay CH identification, suggesting that more information is required, but in any decision-making context additional information is only valuable when it leads to a positive change in affirmative action. In short, the benefit of additional information must outweigh the detriment associated with delayed protection (Martin et al.). This observation could not be truer for species like caribou and spotted owl.

The scenario outlined below (following page) for western rattlesnake provides yet another illustrative example.

Determining and reaching agreement on delineation of habitat required to enable species recovery often takes far longer than the timeframe available to protect the species before threats such as exploitation, predation, and habitat loss lead to irreversible declines (Martin et al. 2016).



ECCC, and the provincial government, need to engage external scientists more actively to avoid spurious delay (due to claims of a lack of available information) and to improve accuracy of CH delineation. Improved engagement, with experts within the scientific community, would greatly improve efficiency and accuracy during CH delineation. This would reduce erroneous inclusion of areas where key biophysical attributes have been permanently destroyed (see great basin spadefoot example) and eliminate inclusion of areas beyond the species distribution (see text box for western rattlesnake on following page for another example). This would also reduce exclusion of important areas that are currently not being recognized or included within CH delineation as a result of decisions that were based on historic data while more recent readily available data is ignored. Examples of both errors are numerous and frequent.

## Exclusion in CH Mapping Process for western rattlesnake

A review of CH mapping for this species illustrates key issues, including delinquency and delay, for this legally required component of recovery planning. There are a total of 435 confirmed rattlesnake den features documented in BC; each of these dens meet the described eligibility requirement to be classified as a residence under SARA, and thus the surrounding habitat should be mapped as CH according to ECCC's described criteria for CH mapping for the western rattlesnake in BC.

Western rattlesnake was listed as Threatened on SARA Schedule 1 in 2005. The Recovery Strategy was legally due by 2007 and CH mapping was a required component. Despite these legally binding commitments CH was not posted until 2019 (12 years AFTER it was due).

The secure CH layer was obtained for the purpose of analysis under a data licensing agreement with ECCC; this review confirmed large areas of currently occupied habitat have been excluded from CH identification. The mapped CH boundaries had been excised to exclude 67 known dens on an area of federal land in the south Okanagan. When this omission was questioned ECCC cited the need for additional study as the cause for this exclusion stating: *"This item relates in part to the third row of the Schedule of Studies (Table 2), i.e., "Work with applicable organizations to complete identification of critical habitat for the western rattlesnake..." and was included in context of meeting specific commitments and obligations under SARA s.39. This work is still ongoing."* (Email from ECCC dated March 29, 2022). This claim seems ironic, given that the western rattlesnake population within this area is the most well studied population in North America, with over five independent research projects already completed by masters students from Thompson Rivers University Master of Science program at this site. This area contains 15.4% of the known dens in BC and represents the most studied population of western rattlesnake in North America, yet CH mapping was deferred as, according to ECCC, more research was required. Meanwhile, since the species was listed on Schedule 1, the habitat within this area has been significantly altered and much of the snakes' habitat permanently destroyed. None of these developments would likely have been permissible within CH had it been mapped, as and when appropriate, on these federal lands.

The irony becomes more evident when the justification for CH mapping was examined for the rest of the species' range in BC. The documented occurrence of a den feature was deemed sufficient, throughout the rest of the province, for designation of CH but not within federal lands. To illustrate the point, CH Polygon 229 (north of Grand Forks) was mapped to include 2,463 ha of provincial Crown Land (where CH designation has no immediate legal protection) yet this designation is unsubstantiated by *any* scientific evidence. It was mapped, by ECCC, based on a single unconfirmed anecdotal historical observation from a member of the public. The habitat within this polygon is unsuitable for use by western rattlesnake, and the area is *outside* the known distribution of the species in BC. The only supportive evidence, used as rationale by ECCC during CH mapping, was that single anonymous historical record from a member of the public. Indeed, the rationale for deferring mapping of CH on federal lands near Osoyoos, that contain 67 well researched snake dens, seems unbalanced and poorly justified.

Unfortunately, the mapped CH polygons are deemed secure and thus a map cannot be shown here to illustrate this point. Spurious delays allow habitat loss to continue unabated within areas that, by any merit, should have been mapped as CH.



### Question 3: Species Recovery Planning and Management in BC

*Section Objective: How does the SARA listing and planning process work? And how is species recovery supposed to be accomplished with effective mitigation of recognized threats?*

Conservation and recovery planning for species-at-risk in BC (and Canada) demands a foundational understanding of the species' ecology, required key biophysical attributes, a spatial understanding of the species' distribution, and recognition of potential interactions with resource management and development activities (i.e., threats). This is required to understand, forecast, and mitigate direct and indirect effects to the species. The motivation for recovery planning is predicated by the addition of a species to Schedule 1 of SARA by the GIC.

Under SARA, the provincial government is required to demonstrate effective legal protection for Schedule 1 listed species (including designated CH) within all lands under provincial jurisdiction, including privately and publicly owned lands (i.e., provincial Crown land). This agreement is set forth in SARA and in the [Accord for the Protection of Species-at-risk in Canada](#) and in the [Canada-British Columbia Agreement on Species-at-risk](#) (hereafter may be referred to as the Bilateral Agreement) (**Appendix 2**). The intent of both the accord and the bilateral agreement are 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.

Once a species is listed under SARA Schedule 1 a cascading set of actions is triggered. Typically, provincial-federal recovery teams are created, and expert-based input and information is assembled, in a multi-year (and typically critically underfunded) process, to develop a recovery strategy for each threatened, endangered, or extirpated species<sup>10</sup>. Each recovery strategy must delineate (spatially) or identify (descriptively) the location, amount and attributes of CH required for species' recovery<sup>11</sup>. The recovery strategy is then submitted to the federal government where it is reviewed (within a time-bound period) and ultimately posted on the SARA public registry; first as proposed, and then as final, at which point CH is formally defined and (typically) geospatially mapped.

At a federal level, and on all federally owned lands (e.g., military lands, or First Nation Reserve Lands), the Canadian Wildlife Service (CWS) (within ECCC), Parks Canada and Fisheries and Oceans Canada (DFO) all share responsibility for species recovery and protection of CH. Thus, it is only after CH is mapped that legal action can be taken *IF* CH is not effectively protected on both federal land AND on provincial lands<sup>12</sup>. Unfortunately, BC is not well poised for the task; we are one of only six Canadian provinces and territories that still lacks any stand-alone legislation to protect habitat for SARA listed species. Instead, the BC government relies on a voluntary stewardship model, from private landowners, that requires that citizens police their own actions, and independently implement effective mitigation at their discretion and cost (and, in many cases, against their own development objectives). On publicly owned lands the situation is barely better, with piecemeal legislation, best management practices (i.e., non-legal recommendations and guidance) and policies. At best, these only partially address BC's commitment,

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<sup>10</sup> In some cases, the recovery strategy is replaced by a recovery or implementation plan.

<sup>11</sup> If a species is of special concern a management plan is prepared instead and CH identification is not required.

<sup>12</sup> Where provincial land is defined to include publicly owned (i.e., Crown) lands AND privately owned lands (i.e., lands owned by citizens).

under the Bilateral Agreement, to afford effective legal protection to SARA Schedule 1 listed species (and their habitat) in BC (see [Question 4](#)).

So how is recovery planning governed in BC? For over a decade the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (MFLNRORD) and the BC Ministry of Environment (MOE) have both been responsible for stewardship of natural resources on both privately and publicly owned lands (including recovery of species-at-risk). In 2022, the provincial government announced a realignment and restructuring of both ministries, forming the new Ministry of Land, Water, and Resource Stewardship, a restructured Ministry of Environment and Climate Change and a new iteration of the Ministry of Forests. As such, the Ministry of Land, Water and Resource Stewardship is now accountable for integrated land and natural resource management, including recovery of species-at-risk. Within that overarching mandate, the BC government continues to identify and purport conservation and management of Species-at-risk (SAR) as a core government responsibility<sup>13</sup>.

### Understanding Federal and Provincial Conservation Commitments

The adoption of SARA completed the National Strategy for the Protection of Species-at-risk. Under SARA, provincial and First Nations governments are obligated to cooperate to protect species-at-risk in their respective jurisdictions. Although SARA prohibitions are automatically imposed (effective 2002) on federal lands, including First Nations reserve lands, the *intent* of SARA also applies to publicly and privately owned lands in BC. As such, there is an expectation, under Section 41(2) of SARA, and under the BC-federal bilateral agreement (200), for application of effective legal protection of Schedule 1 SARA listed species by the province. Under section 41(1) of SARA it is the responsibility of the federal government to identify the species' critical habitat and develop management and recovery plans consistent with the requirements of SARA. SARA requires each province to develop recovery plans and to manage Schedule 1 listed species on non-federal lands.

SARA allows provincial governments first opportunity to effectively protect CH under their jurisdiction but, unfortunately, the temporal allowance for provincial action is not defined and is seldom, if ever, implemented in a timely fashion. As an example, the province has yet to define CH for spotted owl even though it has been an explicitly stated legal requirement, under SARA, since 2004. In addition, effective legal protection is typically only applied, by the province, on provincial Crown lands. Instead, the provincial government simply encourages shared stewardship of CH (as deemed essential for the recovery of SARA Schedule 1 listed species) on non-Crown lands, including all private lands and municipal government lands. This does not constitute effective legal protection and fails to meet explicitly stated commitments under the Bilateral Agreement.

In the interest of demonstrating at least partial compliance with stated intent (under the Bilateral Agreement), in 2020, MFLNRORD announced a strategy to improve wildlife stewardship<sup>14</sup> and habitat conservation in BC. This auspicious plan recognized and celebrated biodiversity in BC, and outlined a shared vision, whilst adopting principles of collaboration, in the interest of conservation of natural resources. The plan was named "Together for Wildlife" (T4W) and it purports to promote collaborative

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<sup>13</sup> Mandate letter to Minister Josie Osborne; accessed online March 31, 2022.

<sup>14</sup> In the strategy wildlife stewardship was defined as "*the responsible care of wildlife and habitat, including protection, conservation, restoration, recovery, regulation of human activities, administration, and enforcement*" (MFLNRD. 2020).

conservation of biodiversity with Indigenous Nations, rural communities, academic institutions, and a wide range of resource development industry stakeholders (including the forestry, energy and mining sectors, guide outfitters, hunters, trappers, etc.), tourism and recreation industry operators, and conservation organizations. The plan committed to five broad goals (with 24 actions) to achieve the stated vision. Of significance is the province's recognition of the underlying commitment that the provincial government is obligated to achieve; the (T4W) plan illustrates that provincial government agencies entrusted with management of the natural environment we all cherish are, at least in principle, accepting responsibility to achieve many publicly stated and legally required commitments established, in 2002, under the federal *Species-at-risk Act* (SARA) (S.C. 2002, c29).

The T4W plan identified conservation and recovery of species-at-risk under Goal Three (Stewardship Actions to achieve tangible benefits for wildlife and their habitats) and committed to the following six actions (under Goal 3):

- 1) Action 8: To establish clear measurable objectives for wildlife stewardship and to implement stewardship with provincial stewardship frameworks and regional stewardship plans. *This action has not been completed.*
- 2) Action 9: Invest in on-the-ground stewardship actions to meet objectives (as defined in Action 8). This investment, and commitment, is challenging to measure as it was not specific, measurable or time bound.
- 3) Action 10: Complete a comprehensive review of land action designations, by 2021, under the *Land Act*, *Wildlife Act*, *Oil and Gas Activities Act*, and the *Forest and Range Practices Act* (FRPA) to ensure intended habitats are conserved, and to identify gaps and opportunities to improve effectiveness. *This action has not been completed.*
- 4) Action 11: Invest in management of existing Conservation Lands, and in acquisition of new lands for wildlife stewardship starting in 2020. *This action has not been completed.*
- 5) Action 12: Review the Wildlife Act and develop recommendations to address priority issues in 2021. *This action has not been completed.*
- 6) Action 13: Commencing 2021 MFLNRORD committed to review existing and new funding models and make recommendations to ensure sufficient, dedicated, long-term funding for wildlife and habitat stewardship in BC. *This action has not been completed.*

So what has been achieved by the province to honor these commitments? To date, the BC provincial government agencies (and the Canadian federal government agency) tasked with management of biodiversity, have only partially fulfilled their explicitly stated commitments, as described within each level of governance set forth under the federal SARA.

## Recovery Planning Process

To set the foundation, recovery is defined by the province as “*the process by which the decline of a species or ecosystem at risk is arrested or reversed, and threats are removed or reduced to improve the likelihood of persistence in the wild*” (MOE 2010a). During recovery planning a logical, science-based foundation is theoretically used to guide decision-making to identify, define, and facilitate coordinated implementation of priority actions to enable recovery or inform management (MOE 2010a). The call-out box below describes the listing process currently in place under SARA.

After the GIC adds a species to SARA Schedule 1 one of two approaches are followed; the specific requirement of each approach differs, during the recovery planning process, depending on the COSEWIC status. **Figure 7** (following page) provides a conceptual flow-chart and details the sequential actions in the recovery planning process.

### The Listing Process...and the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

At the national level COSEWIC conducts regular assessments and recommends species that should be listed and protected under SARA. In this process COSEWIC assessments summarize the best available information on species biology, population size, distribution, trends, and major threats (MOE 2010a) to assign a COSEWIC status designations or ranks. The Canadian framework’s six status include four risk categories (in increasing order of severity: Special Concern, Threatened, Endangered and Extirpated from Canada. COSEWIC assessments consider a combination of criteria, including the species’ population and habitat status, trends, and threats. COSEWIC assessments focus only on ecological and biological scientific criteria, intentionally and appropriately excluding considerations related to human socio-economic concerns.

Once reviewed by the GIC (see **Figure 7**) the recovery planning process requires species experts to consult and incorporate science-based knowledge to identify measures and activities required to maintain or increase population size (MOE, 2010b). The lead agency (ECCC, DFO, or Parks Canada Agency) with jurisdiction for the species is responsible for identifying a planning team, defining the scope of the recovery plan (e.g., species, population, ecosystem), and ensuring provincial guidelines for content requirements are met. Upon completion, the recovery planning documents are made available for public review and comment for 90 days. Finalized documents are then posted on the SARA public registry, where they are (supposed) to be reviewed every five years.

This work takes time, and that delays implementation of conservation actions. Kraus et al. (2021) assessed at-risk ratings from NatureServe to quantify the delays: Canada has 1,616 imperiled species, only 688 (42%) of these imperiled species were listed under SARA. Conservation for the remaining 58% of imperiled species in Canada is delayed under the current listing process.

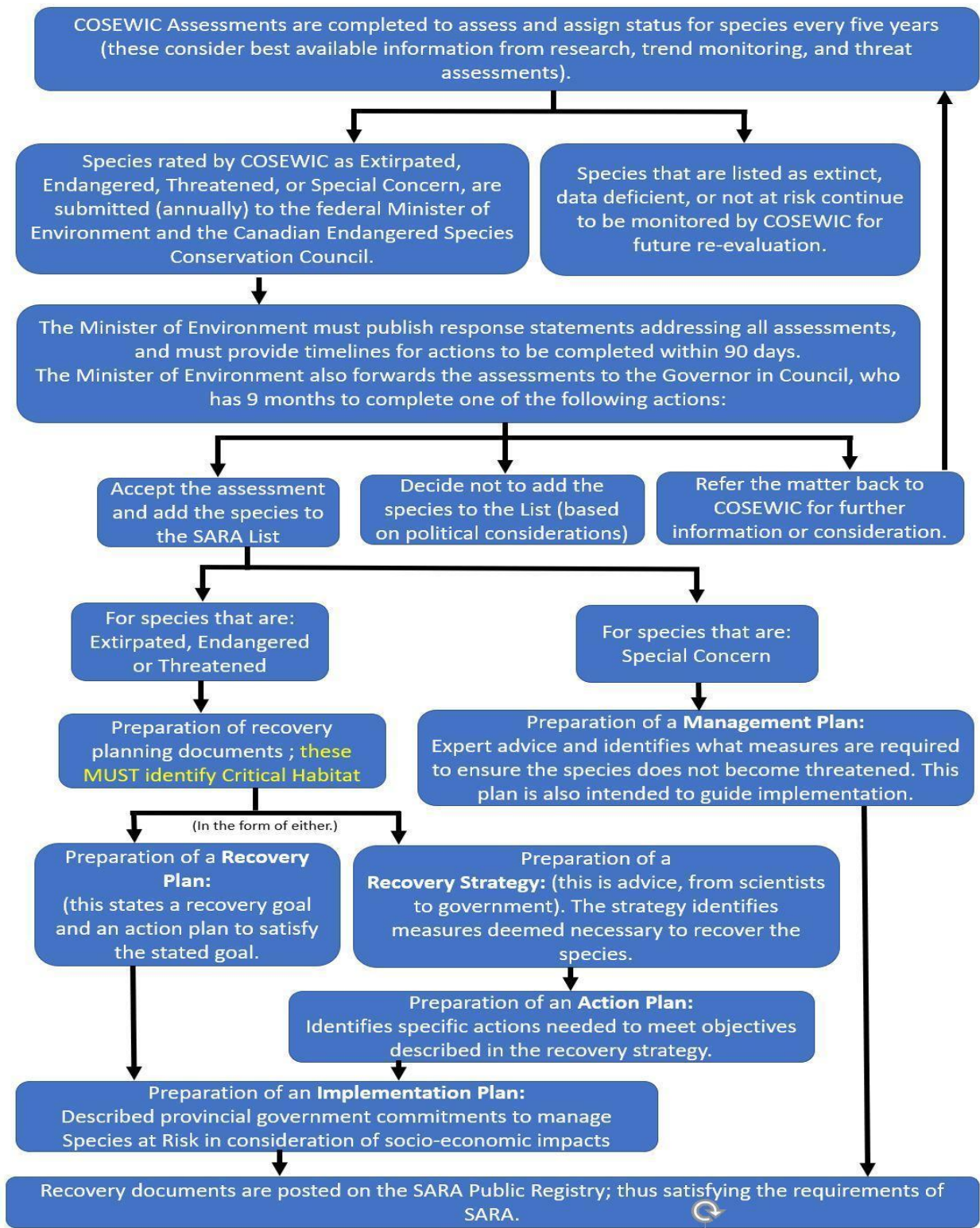


Figure 7: Flow chart illustrating process requirements and steps, as required under SARA, to inform and support species recovery.

Recovery planning is described by MOE (2010a) as “*the process used to identify, define, and facilitate coordinated implementation of priority actions that enable the recovery or management of a species or ecosystem of conservation concern.*” This process is intended to provide a logical, science-based method to guide decision-making. This process entails development of several recovery planning documents as follows:

#### Recovery Strategies

These documents summarize the best available science-based knowledge to facilitate identification of a recovery goal, recovery objectives, and strategic approaches to provide a well-defined, logical, and coordinated framework for species recovery (MOE 2010a). A recovery strategy is viewed as scientific (expert-based) ADVICE to government on required measures to achieve recovery. No legal compliance requirements are inferred or imposed by a recovery strategy.

Recovery strategies *must* contain designation or spatial delineation of CH for the focal species, as recommended by scientists, and need not (and indeed must not) consider socio-economic considerations as CH mapping must be biologically driven to meet recovery objectives. Unfortunately, CH designations were omitted from most recovery strategy documents by explicit direction from the provincial Liberal government party (under Gordon Campbell and Christy Clark); this negligence of duty has left a legacy of deficiency in most recovery strategy documents that is still being addressed and corrected today.

#### Action Plans

Action plans are generally produced in response to guidance in the recovery strategy. This is a key document as it defines and guides actions, during implementation, to achieve recovery goals and objectives set forth in the recovery strategy (MOE 2010a). Actions are typically prioritized, scheduled and assigned to responsible stakeholders. There may be one or more action plans written for a given species if division of responsibilities is required to respect jurisdictions or to separate actions by issue or need.

#### Implementation Plans

Implementation plans outline the provincial government’s response to the need to manage species-at-risk. The need for an Implementation Plan is not universal, but is instead arbitrarily mandated by the provincial government for those species where recovery may have significant socio-economic implications (e.g., caribou, marbled murrelet or spotted owl)(MOE 2010b).

Stalling tactics, resulting in delays of up to 17 years, were and still are typical in this process (e.g., spotted owl). Not surprisingly, this is the point where competing objectives mire the process, with excuse for the need for additional study being all-to-common (see earlier example for western rattlesnake). It seems the larger the socio-economic consequence of threat abatement, the longer the delay (Martin et al.).

#### Management Plans

Management plans are required, in place of a recovery strategy, for (only) those species listed by COSEWIC as Special Concern. The adoption of these species onto SARA Schedule 1 by the GIC mandates development of a management plan to halt or arrest the species decline to prevent them from becoming threatened or endangered. Management plans identify a coordinated set of conservation

activities and land use measures that are deemed necessary based on best-available scientific advice from species experts.

Management plans set goals and objectives (similar to recovery strategies) to define the desired conservation outcomes and recommend specific approaches or actions appropriate for recovery of the focal species.

### Question 3: Summary

In summary, each of the described recovery planning documents are intended to ensure effective organization, coordination, implementation, and evaluation of species recovery and management planning processes in BC. Unfortunately, the execution of this cumbersome and often fettered process has been typified by extensive delays and incomplete and arguably economically biased approaches (see [Question 1](#)). These delays have, without exception, compromised recovery for all species-at-risk in BC.

SARA is implemented by three primary agencies: (i) Environment and Climate Change Canada (ECCC) is responsible for management of SAR and migratory birds (ii) Fisheries and Oceans Canada (DFO) is responsible for aquatic SAR, and (iii) Parks Canada is responsible for all SAR occurring in national parks and historic sites. The federal (and provincial) government identify the lead agencies responsible for development of recovery strategy documents for the following taxonomic clades, as follows:

- ✧ Marine Species - Fisheries and Oceans Canada (DFO),
- ✧ Freshwater Fish – DFO and BC Ministry of Environment and Climate Change Strategy,
- ✧ Terrestrial Species - BC Ministry of Environment and Climate Change Strategy and Environment and Climate Change Canada (ECCC) (specifically the Canadian Wildlife Service (CWS) within ECCC,
- ✧ Species whose occurrence is limited to national parks, historic sites and marine conservation areas – Parks Canada Agency (PCA); and,
- ✧ Migratory Birds – ECCC (CWS).

The province recognizes the responsibility of the lead agency “to determine the appropriate approach to implement a planning process in consultation with species experts, existing teams, and other participating jurisdictions.” (MOE 2016).

With recognition of these assignments, the province's T4W plan has prioritized conservation and recovery of species-at-risk, and yet the committed actions expressed in T4W seem to be, at best, only partially completed despite time-bound commitments. Specific key (important) outstanding actions include; [Action 8](#) (establish and implement clear measurable objectives for wildlife stewardship), [Action 12](#) (review the Wildlife Act and develop recommendations to address priority issues in 2021), and [Action 13](#) (to review existing and new funding models and make recommendations to ensure sufficient, dedicated, long-term funding for wildlife and habitat stewardship in BC (partially implemented; access to conservation funding is unclear and challenging).

Clearly more attention (and resourcing) is need to ensure long-overdue commitments made by the provincial and federal government, as set forth in SARA, in the [Accord for the Protection of Species-at-risk in Canada](#) and in the [Canada-British Columbia Agreement on Species-at-risk](#), are met.

## Question 4: Assessment of Effective Legal Protection

*Section Objective: Is provincial management of habitat values, within and beyond areas of mapped CH, effective at mitigating threats and achieving recovery goals? In essence, is there effective legal protection to prevent harm to species, and to the habitat deemed necessary for their survival and recovery?*

Agreements for protection of species-at-risk in BC are set forth the [Accord for the Protection of Species-at-risk in Canada](#) and in the [Canada-British Columbia Agreement on Species-at-risk](#) (also available in **Appendix 2**).

- ✧ The stated purpose of the accord is 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.
- ✧ The stated purpose of the agreement is to ensure provincial actions are aligned with, and create parity with, the federal *Species-at-risk Act*.

This section assesses progress and identifies areas of improvement that are suggested for provincial and federal government compliance with explicitly stated objectives under SARA, the BC-Federal Bilateral Agreement and under the National Accord for Species-at-risk. To assess opportunities for promotion of conservation of key biophysical attributes for SARA listed species in BC 71 conservation tools were considered (See **Appendix 3**). This information included 38 Acts and available guidelines and BMP documents, Official Community Plans (OCPs), many relevant resource conservation programs and information and guidance from conservation organizations. Additional information (summaries) of key relevant acts is provided in **Appendix 4 & Appendix 5**.

Based on desktop-based assessment of IUCN threats (Evaluation Methods section), and informed by review of general (i.e., principle-based) recovery requirements for threatened and endangered species, a review and analysis of available conservation mechanisms was completed for all described 11 IUCN threat categories.

The general severity and interaction of each IUCN threat, for all species-at-risk (i.e., province wide) is summarily described in **Table 6**. It is recognized that the specific interaction will vary by species. **Table 6** also summarizes the degree of available effective legal protection for each IUCN threat in the table below.



**Table 6: Summary level characterization of IUCN threat interaction, and severity and summary level assessment of effective legal protection currently in place.**

<b>IUCN Threat Category</b>	<b>General Interaction and Severity</b>	<b>Effective Legal Protection</b>
<b>1. Residential &amp; commercial development</b>	Generally results in complete loss of habitat, particularly for sensitive at-risk species with specialized habitat needs.	Municipal planning processes (Official Community Plans, or OCPs) are in place to mitigate harmful developments. In addition, non-legal guidance is readily available to concerned citizens with intent to benefit conservation of sensitive species and habitats. The Riparian Areas Protection Act affords protection to fish bearing streams but does NOT afford protection to most at-risk amphibian species as it only applies to fish bearing streams. In addition, this threat only occurs on privately owned lands so the province relies on non-legal voluntary consideration from landowners that are, all-to-often, naive or inconsiderate to species' needs.
<b>2. Agriculture &amp; aquaculture</b>	When land is converted for intensive agricultural purposes this generally results in complete loss of habitat. For range use (grazing cattle) poor practices generally result in degradation (often reversible with practice amendments)	The Riparian Areas Protection Act affords protection to fish bearing streams but does NOT afford protection to most at-risk amphibian species. Agricultural development on privately owned lands does not consider habitat attributes needed for species-at-risk; instead the province relies on non-legal voluntary consideration from landowners that are, all-to-often, naive or inconsiderate to species' needs. Threats to marine species from aquaculture are not in-scope.
<b>3. Energy production &amp; mining</b>	Generally results in complete loss of habitat, particularly for sensitive at-risk species with specialized habitat needs. Some notable exceptions occur when proponents engage in management and mitigation mandated under the permitting process, as generally these activities trigger a thorough federal or provincial environmental assessment process.	Attempts to minimize habitat loss is achieved with either avoidance, mitigation or compensation under the environmental assessment process. Although impacts are still prevalent with this threat category the permitting process generally ensures due consideration by proponents.

<p><b>4. Transportation &amp; service corridors</b></p>	<p>Siting and design of infrastructure for transportation (highways and roads) and service corridors (utilities) are challenged by development during a less considerate (historic) era. Productive valley bottom habitats have been disproportionately impacted. Road mortality and atmospheric pollution (noise and light) are predominant stressors.</p>	<p>Unfortunately the <i>Highways Act</i> does not mention environmental values within its legislation. The Ministry of Transportation and Infrastructure is responsible for planning and management of the province's entire public road network but there are no specific provisions for management of impacts to wildlife. For herptiles this has had, and continues to have, a disastrous impact on survivorship with many examples of localized extirpations for all at risk herptile species.</p>
<p><b>5. Biological resource use &amp; harm</b></p>	<p>Commercial forestry (i.e., logging) has a disproportionate and overwhelming deleterious impact to at-risk species productivity, survival and recovery throughout the province. There is arguably no other more harmful activity under any of the IUCN threats, including a litany of direct and indirect effects. The remaining old growth in BC comprises 21% of the forested land base with only 45-50% remaining relative to pre-European contact with a disproportionate effect realized to the highest biodiversity areas and ecosystems.</p>	<p>The lack of effective legal protection under FRPAC, and the failure to comply with existing legislation (e.g., SARA and the Wildlife Act) is inexplicable with a repeated complete failure, on the part of industry and government, to conduct full-cost valuation when considering approvals for logging permits. Economic incentives are often presented in support of logging, but with one-sided and biased determination of benefits that ignores the detriment to common resources, including species-at-risk values. In addition, responsibility and costs associated with ecosystem damage and recovery are often displaced and not borne by the industry that causes so much harm to so many species (e.g., spotted owl, marbled murrelet, caribou, Williamson's sapsucker).</p> <p>When logging companies are planning cutblocks there's no requirement to survey for evidence of species at risk (nests/dens/individuals). If the corporation voluntarily does do this, they have no requirement to report their findings to the province. The result is that habitat where species at risk are residing is often cut down.</p>

<p><b>6. Human intrusions &amp; disturbance</b></p>	<p>Logically, most species-at-risk are highly sensitive to anthropogenic influences. Persistence is typically associated with wilderness areas, or peri-urban areas, that occur on publicly owned lands or federal reserves. Persecution is unusual but persists for some species (e.g., snakes and bats) where humans are ignorant and intolerant of their needs.</p>	<p>The BC <i>Wildlife Act</i> makes it an offense to possess, take, injure, molest or destroy species as defined in the Act as "wildlife" but still emphasizes game species and regulation of game harvest. The <i>Wildlife Act</i> is a law of general application that applies throughout British Columbia, but the applicability is not absolute. The application of the Wildlife Act on federal land, including reserve land, should be answered on a case-by-case basis.</p> <p>Only four species are legally listed and protected under the <i>Wildlife Act</i> out of the 1909 listed under the CDC. In 1980 the four species were designated as Endangered under the Wildlife Act of British Columbia: the Vancouver Island marmot, sea otter, American white pelican and burrowing owl. No animals have since been added to the list.</p>
<p><b>7. Natural system modifications</b></p>	<p>Typically results in degradation (e.g., removal of wildlife (aka danger) trees in parks) or destruction (e.g., Site C dam) of habitat.</p>	<p>Federal and provincial environmental assessment processes are required for 'large' projects (based on exceedance of parameters for disturbance and scale). For smaller projects municipal governments have requirements in the OCP, and zoning restrictions.</p>
<p><b>8. Invasive &amp; other problematic species &amp; genes.</b></p>	<p>Invasive plants (e.g., cheatgrass, Scotch broom, gorse, knapweed) have significant impacts on plant communities which, in turn, affects not only rare plants and plant communities but also other sensitive species that live in infected ecosystems. Introduced pathogens are prevalent (e.g., ranavirus), with often dire effects and poorly understood distributions. Another innocuous but prevalent threat is influence by domestic pets, often resulting in direct mortality of small native species (e.g., birds and herptiles). Threat level is challenging to quantify but is thought to be severe in peri-urban environments. Domestic pets (including feral cats) are likely the largest stressor</p>	<p>The Weed Control Act and the Wildlife Act each have bearing, with varying degrees of understanding, adoption and compliance depending. The Wildlife Act is nuanced, and frequently mis-interpreted, and resourcing for compliance and enforcement is notoriously challenging. Regardless, it is fortunate that these Acts exist but education and awareness, by municipal governments, would benefit compliance. Even though some municipalities restrict irresponsible pet ownership (i.e., outdoor cats) these are in the minority, and where restrictions exist there is little to no compliance or enforcement. The <i>Wildlife Act</i> places the burden of cost to remediate damage on owners but to date this has never been exercised in BC.</p>

	within this IUCN threat category, particularly for birds, bats and herptiles (i.e., small animals).	
<b>9. Pollution</b>	Atmospheric (noise and light) pollution frequently displaces sensitive species from their habitat through direct disturbance or effects to habitat quality. Toxins, when used in the environment (e.g., pesticides and herbicides) may also cause mortality both directly and through bioaccumulation.	The <i>Waste Management Act</i> prohibits individuals to allow waste to be introduced to the environment (unless a permit is awarded). The Riparian Areas Protection Regulation ensures protection of riparian zone natural features that support the life processes of protected fish from any harmful alterations, including pollution in surface runoff. This regulation; however, does not afford any protection to amphibians and non-fish bearing riparian systems (e.g., ephemeral ponds). The <i>Integrated Pest Management Act</i> and regulations continues to permit the use of harmful pesticides including neonicotinoid pesticides.
<b>10. Geological events</b>	For most species this thought is thought to be negligible, with the exception of caribou as there are documented instances of mortality from snow avalanches. Otherwise, for most species, this threat is beyond any available mitigation.	No legal or non-legal tools exist for protecting most species from geological events. Where applicable conservation mechanisms are in place (i.e., in areas of avalanche control identifying use, by caribou, is the current practice).
<b>11. Climate change &amp; severe weather</b>	This threat is challenging to assess but it is undoubtable that rapid change to environmental conditions (i.e., temperature extremes, or variation in seasonal precipitation rates) will influence many or most species in BC. In that context it is challenging to predict the severity and direction of influence. Extreme (summer) temperatures may alter foraging behavior, reducing foraging opportunity. Hot dry summers will also exacerbate instances of catastrophic stand replacing fires in summer (forested) habitats within the interior Douglas-fir and ponderosa pine BEC zones, with concomitant negative affects upon wildlife populations.	There are several Acts that strive to reduce emissions to slow climate change (e.g., Greenhouse Gas Reduction Act, Zero-Emission Vehicles Act, Clean Energy Act). More recently, the federal government is beginning to include allocations, during the CH designation process, to accommodate potential loss of habitat to wildfires.

It is impossible to accurately distill the mechanisms of interaction, and to detail existing effective legal protection, for all species and situations.

## Providing Effective Legal Protection of Critical Habitat

The objective of this report was to provide a constructive analysis of deficiencies to inform improvements to species-at-risk recovery initiatives, and to recognize achievements where those have been made. Indeed, auditing provincial and federal actions towards recovery responsibilities (for species-at-risk) is not unprecedented. In 2021, J. C. Ray (et al) published a technical review entitled The Biodiversity crisis in Canada: failures and challenges of federal and sub-national strategic and legal frameworks. In their analysis the authors reviewed and evaluated biodiversity related strategies and plans from over 200 federal, provincial, and territorial laws. Key findings suggest that while most jurisdictions claim to have afforded attention to biodiversity there was little evidence of an integrated approach between provinces, territories and across the nation at a federal level. Disparate approaches to biodiversity conservation, led by provincial governments, underscored the need for more fulsome valuation of species and ecosystem services to ensure socio economic considerations are unbiased (Ray et al. 2021). Continued economic emphasis on extraction of natural resources was recognized as a confounding influence on recovery processes (Ray et al. 2021).

In that context it is readily apparent, with repeated examples, that neither the federal nor the provincial government are providing effective legal protection as mandated under SARA and the British Columbia-Federal Species-at-risk Agreement. Where CH is mapped, activities recognized to damage or destroy CH (e.g., logging, utility corridors, oil and gas exploration) are repeatedly permitted. Where CH is not mapped the province has repeatedly stalled designation of CH on publicly owned land (which includes private land) with often-spurious arguments insisting more study is required. As the schedule of studies is not a time-bound process, under SARA, the 'need' for additional study is often used as a 'delay' tactic (e.g., western rattlesnake, spotted owl). A study by Martin et al. (2016) posited that *"the protection of critical habitat is one of the most contentious and protracted decisions faced by environmental agencies"* (Hagen and Hodges 2006 as cited by Martin et al. 2016). The authors conclude that *"uncertainty about what constitutes critical habitat, and the challenges of balancing competing societal objectives and of protecting critical habitat once identified are stalling the recovery process."* When CH mapping is 'stalled' or delayed by the province (e.g., spotted owl) there is little legal avenue to pursue an Order under SARA s.61(4)<sup>15</sup>; hence this option is attractive to parties motivated to defer or deflect conservation and management of SARA Schedule 1 listed species. Unfortunately, the timing of protection of CH matters; delays, due to lack of political will, foreclose opportunities for recovery - this has been witnessed repeatedly in BC (and in Canada) (Martin et al. 2016)

Ray et al. (2021) suggests that law reform is necessary, in concert with a biocentric mindset, innovative governance (integrating leadership from Indigenous cultures to ensure a more inclusive perspective), federal leadership and appropriate federal and provincial financial investment.

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<sup>15</sup> Under SARA, Subsection 61(4) requires that *"if the Minister forms the opinion that any portion of critical habitat is not effectively protected by the laws of the province or territory, and there are no measures in or provisions under SARA (such as a section 11 conservation agreement) or any other Act of Parliament that protect the particular portion of the critical habitat, the Minister must recommend that the Governor in Council make an order that extends the prohibition against the destruction of critical habitat to that portion."* If this action is taken it precipitates a cascade of requirements including consultation with the appropriate provincial or territorial minister(s). At which point the GIC decides whether to establish an order to protect the (parts and/or portions of) critical habitat that are not protected (on non-federal lands) but this process is politically influenced.

## Meeting National and International Commitments

Globally, there are over 40,000 species formally recognized as threatened with extinction (IUCN 2022). Alarmingly, the current rate of extinction is 1,000 times greater than any previously experienced levels (Pimm et al. 2014; Ceballos et al. 2015). Preventing continued biodiversity loss is a crisis that should logically be a major societal focus.

National and international commitments have been made to conserve biodiversity and prevent species extinction. At the 1992 Earth Summit in Rio de Janeiro Canada signed the United Nations Convention on the Conservation of Biological Diversity. This convention then motivated development of the Canadian Biodiversity Strategy in 1995, and the National Accord for the Protection of Species at Risk. In 1996, BC signed the National Accord for the Protection of Species at Risk, indicating its commitments to the goals of the accord (to prevent species from becoming extinct because of human activity).

SARA was assented in 2002 in partial fulfillment of the National Accord. In response, in 2005, the provincial government signed the Canada – British Columbia Agreement on Species at Risk. This bilateral agreement confirmed acceptance, by the province, of the commitments made under the accord. This begs the question; what has been done, in Canada and in BC, since 2002?

While effective conservation is stalled by process requirements, under-resourced and under-staffed government agencies, and delays for additional study, biodiversity in BC continues to decline. Meanwhile options are lost as habitat degradation and loss continues. In 2016, Martin et al. analyzed the metrics; there were (at the time) 521 species listed under SARA, 373 required CH mapping (species listed as special concern do not) yet this critical action had only been completed for 12.8% of the species that met the requirement for identification of CH. In 2021, Kraus et al. (2020) re-examined these metrics; in the intervening time the number of SARA Schedule 1 listed species had increased to 688 but requirements to complete legally compliant Recovery Strategy documentation (i.e., CH is identified for mapped) are still long-overdue for many species including spotted owl, wood bison (*Bison bison athabascae*), western screech-owl (*Megascops kennicottii*) and white-headed woodpecker (*Picoides albolarvatus*).



#### Question 4: Summary

Under SARA, and in accordance with commitments made under the BC-Federal bilateral agreement (**Appendix 2**), the province has yet to implement effective legal protection for most activities identified as threats under the IUCN threat classification system. Inherent competing objectives (resource extraction vs. habitat protection), coupled with strong political influences over recovery actions, fetters conservation. Martin et al. (2016) recognized that CH had only been identified for 12.8% of listed species in Canada, versus, 44.9% of listed species in the US where the CH designation process is more science-based and less politically influenced. Martin et al. (2016) conclude that *“in the often-contentious environment of endangered species decision making, parties who benefit from delay in taking action often lobby strategically for more information, not because they are concerned for the efficacy of protective actions but because their interests are best served by delaying protection as long as possible.”*

These delays and stalling tactics have been challenged in court on several occasions, but the legal process is prolonged and expensive, in both immediate costs and opportunity costs for conservation. Clearly BC needs a more efficient legal approach. Ensuring timely protection is critical, and unfortunately time is the one resource we cannot buy. As a profound example, the designation of CH for spotted owl is now 19 years overdue, despite repeated commitments to do so, and the process is currently being delayed by the province to allow more study; meanwhile the species has declined to extirpation since SARA was enacted in 2002.

***“The federal act rarely helps at-risk species because provinces wield control over land-use decisions.”***

– Dr. Andrea Olive, Associate Professor, University of Toronto.

***“We have documented cases from around the world that when you delay decisions to protect species you lose the opportunity to act”*** Dr. Martin,  
professor - conservation decision science in UBC’s forestry faculty.



**Greater Sage Grouse, now  
extirpated from BC.**



**Pygmy short-horned lizard, now  
extirpated from BC.**

## Recommendations: The Path Forward

Many authors, from multiple analyses, have converged on some common themes (as outlined above), and have advanced, in unison, suggestions for reform to increase accountability and efficiency. The following suggestions are presented in a non-hierarchical order, each of these suggestions are likely essential to more effective implementation of recovery efforts:

1. The current provincial legal framework seems to be failing. Effective legal protection is the stated shared goal under SARA, but examples of continued loss of important habitats (including mapped CH) are numerous and ongoing. Moola et al. (2011) highlighted the need for broad overarching legislation to ensure recovery habitat is effectively protected for species-at-risk. These long-standing recommendations are still equally relevant, pertinent and pressing today. The authors suggest that the province must implement legislation to protect habitat for species-at-risk (Moola et al. 2011). More effective legal protection should be applied across all resource sectors, and require the government to develop and implement recovery plans. The Union of BC Indian Chiefs have also called on the current BC NDP government to enact an endangered species law, stating that the law must be aligned with the UN Declaration on the Rights of Indigenous Peoples as confirmed by the Declaration on the Rights of Indigenous Peoples Act.
2. The province needs to prioritize implementation of all forms of existing legal protection (in particular, under FRPA) to address the most egregious detrimental resource development activities in BC. WHAs should be designated as applicable, and future inventory to identify additional conservation opportunities should be better funded, supported, and resourced.
3. The federal government needs to set firm thresholds that trigger the safety net (or emergency order) provisions within SARA, and these need to be triggered without debate or influence from biased political and socio-economic considerations. This needs to be extended to all provincial and territorial lands (Turcotte et al. 2021). Turcotte et al. (2021) point out that “*while COSEWIC applies a consistent and arms-length framework for status assessment by independent experts, no counterpart exists at the recovery strategy or action planning stage.*”. As a result, the best available science is often not followed (e.g., spotted owl recovery in BC). When science is ignored, courts are petitioned to arbitrate when nongovernmental organizations identify issues; this has been the case for several species including Nooksack dace (*Rhinichthys cataractae*), greater sage-grouse (*Centrocercus urophasianus*), and southern resident killer whale (*Orcinus orca*).
4. Identification of CH must follow existing (or improved) well-defined procedures and challenges with identification should not be used to delay protections. A precautionary approach, in favour of habitat conservation, should be adopted (It is feasible to lessen protections if they are excessive; by converse it is impossible to replace limiting habitat once it has been destroyed). Identification of CH should not be a prerequisite to trigger protections and data-deficiency resulting in uncertainty cannot be used to promote delays in conservation (Turcotte et al. 2021, Buxton et al. 2022).
5. The province should release long-promised amendments to the outdated BC Wildlife Act to enable effective legal protection to species-at-risk, including their residences and Critical Habitat.
6. The province should prioritize development of effective legal protection to mitigate impacts from deleterious activities, particularly where there is high potential for conservation gain (e.g.,



re-evaluating policy and management of commercial forestry in BC) and where mitigation is attainable.

7. Canada needs to embrace a science-based and non-politically influenced automatic listing process to avoid bias (Turcotte et al. 2021). Almost 30% of COSEWIC-recommended species have not been listed for protection (Turcotte et al. 2021) (COSEWIC has assigned 810 species to at-risk categories; only 688 species are listed under SARA (Kraus et al. 2021)).
8. Federal, provincial, and municipal governments need to seek Indigenous cooperation in the species protection process (Turcotte et al. 2021, Markel and Gorley. 2020).
9. Endemic and globally threatened species should be afforded higher priority for implementation of their action plans (Turcotte et al. 2021).
10. Discretionary language and ambiguous terminology and definitions (in SARA, and the current BC *Wildlife Act*) need to be replaced with clear and measurable wording and outcomes.
11. The federal process used to map CH is often poorly informed, based on old or incomplete data and inadequately engages species experts. As such, errors of both inclusion and exclusion are frequent and need to be addressed.

The duration of persistence, and the likelihood of recovery, is an interplay between a species' population growth rate and its mortality rate — this relationship is influenced by the stressors described for each IUCN threat category profiled in this report. Present management under current governance is unlikely to effectively enable recovery for most SARA (Schedule 1) listed species. This statement is supported by observation of continued declines as documented (by WWF) in over half of 903 monitored species, world-wide between 1970 and 2014 (Ray 2021). This pattern is likely to continue with little means of abatement as effective and legally required mitigation is still not in place for most stressors currently affecting species-at-risk in BC. This is particularly poignant when non-legal approaches (i.e., result-based management (e.g., professional reliance models enacted without compliance and enforcement), long-legal guidance and practices, and voluntary implementation of Best Management Practices) are relied upon to achieve species recovery. These methods do not constitute effective legal protection despite their continued implementation, and despite claims and pretenses regarding their efficacy (by the provincial government). Continued declines, as documented for so many species-at-risk experiencing threats on private and publicly owned lands, provide evidence that all of these non-legal approaches are not sufficient to alter or stop harmful resource and land development practices, particularly in the forestry sector in BC.

The author recognizes that this report, including implementation of all recommendations made in it, are ultimately the responsibility of elected government officials and their staff. Authority for development of specific solutions currently lies within the jurisprudence of the elected government(s). What is, however, clearly recognized is that the federal-provincial agreement, and the federal SARA (by intent), obligate both the provincial and federal government to immediately enact long-overdue effective legal protection for species-at-risk in BC, and in Canada. It is also clear that the constituents, communities, and residents of BC care about these long-overdue commitments.

It is apparent, as rationalized by the facts and metrics compiled and presented in this report, that both levels of government are clearly failing their legal and non-legal long-standing and explicitly promised commitments to provide effective legal protection to species-at-risk in BC. It is also sadly so blatantly apparent that the environment, and the species (including humans) that depend on properly functioning

ecosystems are suffering from this neglect. There is a continuing litany of loss, as evidenced by trends in abundance and persistence of so many species. The time for change is long overdue; please abide by your commitments and afford long-overdue effective legal protection to the many species-at-risk, and the ecosystems they inhabit, before we lose any more species to poorly regulated resource development activities in BC.

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## Appendices

### **Appendix 1: BC Species - Analytics**

The full list of species in BC that was queried to derive the list of focal taxa for question 1 was submitted separately to Wilderness Committee and Sierra Club and is available upon request.

Analytical data to review COSEWIC CH mapping delinquencies and biodiversity by BEC zone.

The list of SARA listed species used to calculate delays in completion of Recovery Strategy requirements was also submitted separately and is available upon request.

### **Appendix 2: Federal-Provincial Agreement on Species-at-risk**

Available at: [Canada-British Columbia agreement on species-at-risk \(sararegistry.gc.ca\)](http://sararegistry.gc.ca)

### **Appendix 3: Legislative Review**

Current conditions, and available (legal and non-legal) conservation options are summarized in this section.

**Table 7: Acts, guidelines, BMPs and regulations reviewed to identify conservation options.**

Tool	Legal (Y/N)	Authority
A Compendium of Wildlife Guidelines for Industrial Development Projects in the North Area, British Columbia	N	BC Government
Atlin Placer Mining Best Management Practices Guidebook	N	Atlin Placer Mining's Association
B.C. Energy Step Code	N	BC Government
BC Wildlife Act	Y	BC Government
BEC Zone Mapping	N	UBC Forestry Department
Best Management Practices for Bats in British Columbia	N	BC Government (EIRS Biodiversity)
Best Management Practices for Land Development	N	BC Government
Best Management Practices for Making Changes in and about a Stream in BC	N	BC Government
Best Management Practices for Recreational Activities on Grasslands in the Thompson and Okanagan Basins	N	BC Government
Best Management Practices for Timber Harvesting, Roads, and Silviculture for WISA: Kootenays	N	BC Government
Best Management Practices for Timber Harvesting, Roads, and Silviculture for WISA: Okanagan-Boundary Area	N	BC Government
Best Management Practices for Timber Harvesting, Roads, and Silviculture for WISA: Western Area	N	BC Government
Best Management Practices for tree topping, limbing and removal in riparian areas	N	BC Government
BMP - Amphibian and Reptile Conservation during Road Building/Management	N	BC Government
BMP - Amphibian and Reptile Conservation during Urban/Rural Land Development	N	BC Government
BMP - Raptor Conservation during Urban and Rural Land Development	N	BC Government
BMP for Whitebark Pine	N	Whitebark Pine Ecosystem Foundation of Canada
Boundary Invasive Species Society	N	Boundary Invasive Species Society
Building Act General Regulation	Y	BC Government
Carbon Neutral Government Program	N	BC Government
Central Kootenay Invasive Species Society	N	Central Kootenay Invasive Species Society
Clean BC Roadmap to 2030	N	BC Government
Clean Drain Dry Program	N	Invasive Species Council of BC

Clean Energy Act	Y	BC Government
Climate Change Accountability Act	Y	BC Government
Coal Act	Y	BC Government
Commercial Recreation Policy	N	BC Government
Controlled Alien Species Regulation	Y	BC Government
Controlling Ungulate Conflicts	N	BC Government
Develop with Care	N	BC Government
Develop with Care: Additional Material on Air Quality	N	BC Government
Ecological Reserve Act	Y	BC Government
Environmental Management Act		Regional District of Kootenay Boundary
Environmental Objectives and Best Management Practices for Aggregate Extraction	N	BC Government
Forest Act	Y	BC Government
Greenhouse Gas Industrial Reporting and Control Act	Y	BC Government
Greenhouse Gas Reduction Act	Y	BC Government
Guidelines for the collection and analysis of fish and fish habitat data for the purpose of assessing impacts from small hydropower projects in British Columbia	N	BC Government
Habitat Management Guidelines for Amphibians and Reptiles of the Northwestern United States and Western Canada	N	Partners in Amphibian and Reptile Conservation
Highway Act	Y	BC Government
Industrial Roads Act	Y	BC Government
Integrated Pest Management Act: Ministerial Order M305	Y	BC Government
IWMS	Y	BC Government
Land Use Operational Policy - Adventure Tourism	Y	BC Government
Land Use Operational Policy - Aggregate and Quarry Materials	Y	BC Government
Landfill Criteria for Municipal Solid Waste	N	BC Government
Local Government (Green Communities) Act	Y	BC Government
Management of Motorized Access in High Elevation Mountain Caribou Habitat	N	BC Government
Mineral Tenure Act	Y	BC Government
Mining Right of Way Act	Y	BC Government
Official Community Plan Bylaw No. 1555 (Rural Grand Forks)	Y	Regional District of Kootenay Boundary
Oil and Gas Activities Act	Y	BC Government

Omineca Regional Wildlife Tree Patch (WTP) Retention Guideline	N	BC Government
Park Act	Y	BC Government
Petroleum and Natural Gas Act	Y	BC Government
Plant Wise Program	N	Invasive Species Council of BC
Protected Areas of British Columbia Act	Y	BC Government
Range Act		Regional District of Kootenay Boundary
SARA	Y	Federal Government
Snowmobiling and Caribou	N	BC Government
Stewardship Centre of BC	N	Stewardship Centre of BC
Thompson Okanagan Guidance for Instream Work during a Flood Emergency	N	BC Government
Utilities Commission Amendment Act	Y	BC Government
Waste Management Act	Y	BC Government
Water Sustainability Regulation	Y	BC Government
Weed Control Act	Y	BC Government
Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in B.C.	N	Wetland Stewardship Partnership
Wildfire Act	Y	BC Government
Wildlife Guidelines for Backcountry Tourism/Commercial Recreation in B.C.	N	BC Government
Zero Net Deforestation Act	N	BC Government
Zero-Emission Vehicles Act	Y	BC Government



## Appendix 4: Supplementary information on Relevant Federal Acts

### Species-at-risk Act

The *Species-at-risk Act* (SARA) was implemented in 2002. The intent of the act is to prevent wildlife species in Canada from disappearing, and to facilitate recovery of extirpated, endangered, or threatened species. SARA also affords management to species of special concern to prevent these species from becoming endangered or threatened. The adoption of the *Species-at-risk Act* completed the National Strategy for the Protection of Species-at-risk. SARA encourages the provincial and first nations governments in Canada to cooperate to protect wildlife. Although SARA prohibitions are automatically imposed on federal lands, including First Nations lands, the *intent* of SARA also applies to provincial crown and private lands in BC – there is an expectation, under the National Accord for Species-at-risk, for effective legal protection of Schedule 1 SARA listed species by the Province. More detailed information, including the *Act*, is available on the [SARA public registry](#).

### Migratory Birds Convention Act

The *Migratory Birds Convention Act* (MBCA) was passed in 1994 (S.C. 1994, c. 22). The Act, and its complementary Regulations, are intended to promote and ensure conservation of migratory bird populations through regulation of potentially harmful human activities. Regulations prohibit activities that are harmful to migratory birds, their eggs or their nests; however, some activities, may be practiced with the appropriate permit. More detailed information, including the *Act*, is available on the Government of Canada [website](#).

## Appendix 5: Supplementary information on Relevant Provincial Acts

### BC Wildlife Act

The BC *Wildlife Act* was derived from legislation that originated in 1859 with the last substantial amendments in 1982. The Act was primarily drafted to manage individual wildlife species by regulating hunting and trapping. The current version of the British Columbia *Wildlife Act* (BCWA) was passed in 1996. This Act defines wildlife as raptors, threatened species, endangered species, game, other species of vertebrates prescribed by regulation, and some fish; this definition does not include plants, plant communities, fungus and lichens or invertebrates.

Over a hundred wildlife species and sub-species are still considered candidates for endangered, threatened, or vulnerable status (n=152); however, to date, only three of these are legally designated (by the provincial government) as endangered in BC. The three species designated as endangered by the BCWA include burrowing owl (*Athene cunicularia*), American White Pelican (*Pelecanus erythrorhynchos*) and Vancouver Island Marmot (*Marmota vancouverensis*). The Sea Otter (*Enhydra lutris*) is designated as Threatened. This list is dated and the need for expanded consideration under a revised Wildlife Act has long been recognized by the BC Ministry of Environment. More detailed information, including the BCWA, is available on Ministry of Environment [website](#).

## Riparian Areas Protection Act

Protecting riparian areas, while facilitating urban development that embraces high standards of environmental stewardship, is a priority for the Government of British Columbia. Good quality streamside habitat is essential for ensuring healthy fish populations.

The Riparian Areas Protection Regulation (RAPR) was enacted under Section 12 of the Fish Protection Act in July 2004. The Fish Protection Act was subsequently re-titled the Riparian Areas Protection Act in February 2016. The RAPR calls on local governments to protect riparian areas during residential, commercial, and industrial development by ensuring that a Qualified Environmental Professional (QEP) conducts a science-based assessment of proposed activities.

## Private Managed Forest Land Act

*“Further, the Private Managed Forest Land Act does not require operators to consider important provincial biodiversity objectives, including objectives for wildlife and species-at-risk. While the BC government can, in theory, establish Critical Wildlife Habitats (CWHs) to protect species-at-risk on PMF Lands if there is insufficient suitable habitat on Crown lands, CWHs cannot exceed 1% of PMF Lands or the area required for the mere survival (rather than recovery) of a species.<sup>44</sup> At any rate, as of 2019, the BC government had not yet designated any CWHs for MAMU or for any other species,<sup>45</sup> and we have not heard of any CWHs being established since then.” Ecojustice 2021.*

Managed Forest Council, *“Private Managed Forest Land Act”* (April 12, 2014; accessed 2021-02-12), online

## BC Forest and Range Practices Act

The *Forest and Range Practices Act* (FRPA) and its regulations govern forest and range regulated activities **where they occur on Provincial Crown land**. The vision of FRPA was one of stewardship predicated on a balance between a forest or range tenure holder’s economic interests, the sustainability of the province’s timber supply and the protection of non-timber values. The *Government Actions Regulation* (GAR) enables the establishment of localized land designations and features that require special management for the stewardship of wildlife, fish, water, biodiversity, visual quality, cultural heritage resources, recreation resources, and resource features. The role of the GAR is crucial with respect to the effectiveness of FRPA as legislation that protects the environment (Reader, 2006).

Through the GAR, the Minister responsible for the *Wildlife Act* or delegate<sup>16</sup> has authority to establish:

- ✓ Categories of:
  - Species-at-risk (SAR)
  - Regionally Important Wildlife (RIW)
  - Ungulate Species
- ✓ Wildlife Habitat Areas (WHAs) and objectives as described in the Identified Wildlife Management Strategy (IWMS)
- ✓ Ungulate Winter Ranges (UWRs) and objectives
- ✓ General Wildlife Measures (GWMs)

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<sup>16</sup>The authority to establish categories of species currently rests with the Minister responsible for the *Wildlife Act*; the authority to designate areas, wildlife habitat features, and general wildlife measures was delegated to the Deputy Minister of Environment.

- ✓ Wildlife Habitat Features (WHFs)
- ✓ Fisheries Sensitive Watersheds (FSWs) and objectives
- ✓ Temperature Sensitive Streams (TSS)
- ✓ Objectives for wildlife through notices made under section 7 of the *Forest Planning and Practices Regulation* (FPPR) and section 9 of the *Woodlot Licence Planning and Practices Regulation* (WLPPR).

Under FRPA the Minister responsible for the *Wildlife Act* (the Minister of Environment), is authorized to establish and amend three categories (i.e., lists) of wildlife to afford species-specific management attention for aspects of a species' ecology that may be impacted by forest and range activities where they occur on Crown land. These three categories of wildlife include; the [Category of Species-at-risk](#) the [Category of Regionally Important Wildlife](#), and the [Category of Ungulates](#).

- The [Species-at-risk](#) category includes endangered, threatened, or vulnerable species of vertebrates and invertebrates, and endangered or threatened plants and plant communities that are negatively affected by forest or range management on Crown land AND are not adequately protected by other mechanisms.
- The [Regionally Important Wildlife](#) category includes species that are considered important to a region of British Columbia, rely on habitats that are not otherwise protected under the FRPA, and may be adversely impacted by forest or range practices.

Collectively these two categories of wildlife —Species-at-risk and Regionally Important Wildlife—are referred to as Identified Wildlife under the IWMS.

Category of Species-at-risk – Current Status: Under FRPA, inclusion on the category of species-at-risk is required by order made under section 11(1) of the Government Actions Regulation (BC Reg. 17/04). The Category of Species-at-risk must include those species that may be affected by forest or range management. This requires that the Category of Species-at-risk should include species that are either known or anticipated to occur on Crown land. The GAR also stipulated that included species are listed by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) but was silent regarding eligible status; as such, status of threatened or endangered was considered eligible.

The last update to the Category of Species-at-risk (SAR) (often referred to as the list of Identified Wildlife) was completed in 2006. In the intervening 18 years many additional Schedule 1 listed species are still not included on the current Category of Species-at-risk despite the need for listing under FRPA (i.e., impacted by forest and range activities in BC).

Category of Regionally Important Wildlife – Current Status: Under section 13 of the *Government Actions Regulation* the Minister responsible for the *Wildlife Act* may establish a category (or list) identifying certain species of wildlife as regionally important wildlife (RIW) within BC. The establishment of a list of RIW would enable provisions under the *Forest and Range Practices Act* to be used to manage these wildlife species. To date, RIW designations have only been piloted in the Kootenay Boundary Region. Work is described on the BC MOE website (accessed 2022) as “currently ongoing.”

Category of Ungulates: Under FRPA the Minister responsible for the *Wildlife Act* (the Minister of Environment) is authorized to establish and amend a [Category of Ungulates](#) (i.e., list of ungulates) to afford species-specific management attention to identified ungulate species where they occur on Provincial Crown land. Spatial designation of Important winter range habitats for ungulates listed on the Category of Ungulates can be established to afford species-specific habitat management to preserve key habitat attributes within designated areas.

The last update to the Category of Ungulates was in July 2011. Wood bison (*Bos bison athabascaae*) was under consideration for addition to the Category of Ungulates but this amendment has not been implemented. This species was proposed for review at the same time as the 2006 SAR list and was to be included in the review and comment period if deemed appropriate.

## Relevant Components of GAR Authorities - Spatial Designations

### Wildlife Habitat Areas (WHAs)

The Identified Wildlife Management Strategy (IWMS) was actioned by the Ministry of Environment, in partnership with the Ministry of Forests and Range, in 1999. [The Identified Wildlife Management Strategy \(IWMS\) Version 2004](#) was subsequently released in May 2004 and replaces IWMS Volume 1. IWMS Version 2004 contained an updated list of identified wildlife, updated species accounts and updated procedures for implementing the IWMS. The IWMS is currently implemented in consultation with other resource ministries, stakeholders and the public. Statutory authority is enabled under provisions of the FRPA (previously the Forest Practices Code).

The IWMS provides policy direction, procedures (or measures) to guide management of Identified Wildlife (including SAR as included, or defined, on the Category of Species-at-risk). IWMS goals are to minimize the effects of forest and range practices (on Identified Wildlife) where listed species are confirmed to occur on Crown land with the objective of maintaining limiting habitat attributes, or features, throughout the current range of each species. In many cases features identified for conservation are aligned with features identified as federal Critical Habitat, or with habitat features that meet the definition as 'residence' under SARA.

Identified Wildlife are, in principle, managed or protected from deleterious influence by practices governed by FRPA, and are applicable (only) on Crown land. Protection afforded to these features, within spatially designated areas, is achieved through the establishment of WHAs<sup>17</sup>. Within each WHA implementation of general wildlife measures (GWMs) is prescribed to meet WHA objectives. The authority to establish WHAs and associated GWMs and WHA objectives is enabled through sections 9 and 10 of the *Government Actions Regulation*. This authority has been delegated by the Minister of Environment to the Deputy Minister of Environment. There is a 1% provincial impact re-assessment checkpoint (not a cap, or limit, as is commonly assumed) on the area of mature Timber Harvesting Land Base (THLB) allocated for inclusion within WHA designations in BC. The 1% re-assessment checkpoint has not yet been reached in BC.

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<sup>17</sup> GWMs may also be applied to a specified area if the Minister, or delegate, is satisfied that the special management is needed for protection and conservation of a SAR, RIW, or ungulate. However, application of GWMs to specified areas has been restricted and inconsistent.

