



**TECHNICAL SUBCOMMITTEE
COMPONENT REPORT**

GLOBAL AND PROVINCIAL STATUS OF SPECIES IN BRITISH COLUMBIA

PREPARED BY: MARILYN ANIONS, NATURESERVE CANADA
FOR: THE BIODIVERSITY BC TECHNICAL SUBCOMMITTEE
FOR THE REPORT ON THE STATUS OF BIODIVERSITY IN BC

DECEMBER 2006
Updated November 2007

**Global and Provincial Conservation Status of Species in British
Columbia**

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**Prepared by Marilyn Anions
NatureServe Canada**

Revisions and data updates to November 2007 by Biodiversity BC

Prepared for Technical Subcommittee, Biodiversity BC

1. Species Covered By This Report

This report represents a compilation of global and provincial conservation status rankings for 3,808 species native to British Columbia. Thirteen groups of plants and animals for which relatively complete conservation status information was available were included in this analysis (Table 1). These better-known groups included all the vertebrates except marine fish and cetaceans, all vascular plants (ferns and fern allies, conifers, monocots, and dicots), and the better-known invertebrates (butterflies and skippers, dragonflies and damselflies, and non-marine molluscs). Analysis of other taxonomic groups such as additional invertebrates or inclusion of specific groups such as those from marine habitats will be possible as more information is collected from resource inventories or surveys.

SPECIES GROUP	Number of Species
VERTEBRATES	563
Amphibians	20
Birds	353
Freshwater Fishes	67
Mammals	109
Reptiles and Turtles	14
INVERTEBRATES	423
Butterflies and Skippers	180
Dragonflies and Damselflies	86
Non-Marine Molluscs	157
VASCULAR PLANTS	2,093
Ferns and Fern Allies	111
Conifers	26
Monocots	552
Dicots	1,404
NON-VASCULAR PLANTS	729
Mosses	729
TOTAL	3,808

The conservation status of taxa below the level of species (i.e., subspecies, variety, or population) was reviewed but not included as part of this report, even though this level of taxa contributes greatly to the diversity of wildlife within British Columbia. Many at this sublevel in British Columbia are recognized nationally with their listing by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC)¹ and the Species at Risk Act (SARA).² Exotic species, those that are not native to the province, also were not considered within this document, although the impact of this group on species of conservation concern is perceived by many as significant in British Columbia.

This analysis was similar to that conducted for the document – Our Home and Native Land: Canadian Species of Global Conservation Concern,³ however this report is specific to the conservation status of species occurring exclusively to British Columbia and is based on data updated to 2007 information accessed through NatureServe⁴ and British Columbia Conservation Data Centre⁵ databases.

1.1 NatureServe Canada: A Network Of Conservation Data Centres in Canada

Identifying, mapping, and understanding the biodiversity of the landscape is an extraordinary challenge and an essential one for protecting natural heritage. NatureServe strives to develop and provide this vital scientific knowledge to contribute to society and support the natural world. One of the world's foremost biodiversity experts, Edward O. Wilson, acknowledges that NatureServe combines its scientific resources, a commitment to working in partnerships with other institutions, and a strong vision for the future, to provide a foundation for conservation action.

NatureServe Canada provides scientific information about Canada's species and ecosystems to help guide effective conservation targets and natural resource management. A part of the international NatureServe network – an affiliation of 80 independent member programs in the Western Hemisphere (United States, Caribbean, Latin America, South America and Canada), the NatureServe Canada network of Conservation Data Centres is a leading source for reliable information and analysis on the distribution and status of Canada's plants, animals, and ecological communities. NatureServe Canada works in close partnership with key federal and provincial agencies, and international and multi-lateral initiatives concerned with the environment.

NatureServe Canada consists of eight independent Conservation Data Centres (CDCs) covering all ten provinces and the Yukon Territory. Plans are underway to form CDCs in the remaining territories to complete the Canadian network. Most CDCs are part of provincial wildlife agencies, while one (Atlantic Canada) is a private organization serving regional needs. The staff of CDCs include expert field biologists, ecologists, GIS specialists, and information managers. CDCs conduct biological inventories to find and document populations of species, study and classify ecological communities, analyze critical conservation issues, provide customized information products and conservation services, and make their data widely available to the public via the Internet. By using consistent standards and methods for biological inventory and information management, data from each CDC can be combined and analyzed at various scales.

The British Columbia Conservation Data Centre (<http://www.env.gov.bc.ca/cdc/>) was established in 1991 as a joint project of the Ministry of Environment, the Nature Trust of British Columbia, the Nature Conservancy of Canada and The Nature Conservancy (US). Currently the CDC is housed within the Biodiversity Branch of the B.C. Ministry of Environment. As a member of the NatureServe network, it aims to preserve biodiversity by providing accurate information on species and ecological communities specifically of British Columbia. Access to data is provided by a customized data service or by accessing the BC Species and Ecosystems Explorer on the Internet (<http://www.env.gov.bc.ca/atrisk/toolintro.html>).

2. Assessing Conservation Status

Evaluation of the conservation needs of a species requires a system to assess the degree of risk for the species. NatureServe and its member programs have developed a consistent method for this assessment of conservation status.⁶ The process relies on accurate information gathered on species usually through field-related appraisals, as well as the knowledge and expertise of individuals linked across the network and other scientists working in museums, research institutions and government agencies. This level of consultation provides a local, regional, national, and international perspective to the process. The assessment leads to the designation of a *Conservation Status Rank*, which gives an estimate of extinction risk.⁷

NatureServe has developed a standard set of criteria (Table 2) for the development of a Conservation Status Rank. The criteria help assess the overall condition of each species by reviewing many significant factors such as the number of occurrences, biology, habitat, trends, and threats. Each factor contributes to a score from which the Conservation Status Rank is

derived. Since this process relies on accurate information, individuals knowledgeable about a species or with additional information are also consulted. In fact, the ranking process or review of a rank is often conducted at group sessions or workshops to enable the contribution of information and discussion. Modification to a Conservation Status Rank is based on new information resulting from the monitoring of populations, change to habitats, threats, or other changing conditions, usually as a result of research efforts.

Table 2. Criteria for Assessing Conservation Status	
1	Number of occurrences
2	Number of occurrences with good estimated viability
3	Population size
4	Range extent
5	Area of occupancy
6	Long-term population and/or habitat trend
7	Short-term population and/or habitat trend
8	Threats: scope, severity, and immediacy
9	Number of protected occurrences
10	Intrinsic vulnerability
11	Environmental specificity
12	Other considerations

Conservation Status Ranks can apply to species, subspecies, and varieties, as well as ecological communities. A scale from one to five is used to rate various levels of extinction risk (Table 3). Species are also ranked according to their absence, such as extinction/extirpation (X), or perceived absence such as species currently missing or historically present (H). The latter rank allows a time period of 50 years since the last observation of a species and where there is still an expectation that it may be rediscovered. Species of highest conservation concern are grouped as those ranked Extirpated (X), Historical (H), Critically Imperiled (1), Imperiled (2), and Vulnerable (3).

Table 3. Conservation Status Ranks of NatureServe		
X	Extinct or Presumed Extirpated	Not located despite intensive searches and no expectation of rediscovery.
H	Historical	Possibly extinct or extirpated; known only from historical occurrences but still hope of rediscovery.
1	Critically Imperiled	At very high risk of extinction due to extreme rarity (often 5 or fewer populations), steep declines or other factors, making the species especially susceptible to extirpation or extinction.
2	Imperiled	At high risk of extinction due to very restricted range, few populations (often 20 or fewer), steep declines, or other factors.
3	Vulnerable	At moderate risk of extinction due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors.
4	Apparently Secure	Uncommon but not rare, and usually widespread in the range. Some cause for long-term concern.
5	Secure	Common or very common, and widespread and abundant. Not susceptible to extirpation or extinction under current conditions.
NR	Not Yet Ranked	Rank is not yet assessed.
NA	Not Yet Assessed	Species whose pattern of occurrence in the province is not compatible with the assessment process.
U	Unrankable	Suitable information is not available for ranking.

Ranks can be applied at various geographic levels: Global or range-wide (G); National or country-wide (N); and Subnational or province/territory-wide (S). The Conservation Status Rank of a species is usually different at each level, although if a species is of global conservation concern it usually is also at the national and subnational levels. Combining the different levels of Conservation Status Ranks provides a useful geographic perspective as well as providing information to target conservation priorities. For example, the sharp-tailed snake (*Contia tenuis*) has a Global Conservation Status Rank of G5 indicating its secure status across its entire range; whereas it has a Subnational Conservation Status Rank of S1 to convey its very high risk of imperilment with its occurrence in British Columbia. Since the species only occurs in British Columbia, it also receives a National Conservation Status Rank of N1 similar to its subnational rank, although for many species in Canada this country-wide rank using NatureServe's assessment has not been completed. Conservation Status Ranks also apply at the infra-specific level involving subspecies, varieties and populations, and are given an equivalent 'T' ranking. This sublevel was not included in this report, which analyzed at the species level only.

For the analysis of NatureServe ranks in this report, species designated with a 'Range Rank' were rounded to the higher rank – e.g. S2S3 is rounded to S2; S2S4 is averaged to S3. Range ranks are given when not enough information is available to score a specific rank and are rounded to the higher rank to safeguard the species. Ranks followed by a question mark – e.g. S3? are also uncertain but are treated as certain for in analysis.

3. The Status of Species in British Columbia

The focus of this report was Global and Subnational Conservation Status Ranks specifically for species occurring in British Columbia. Ranks of 3808 plants and animals within 13 of the better-known taxonomic groups were analyzed (Table 1). The results show that 91% of species in British Columbia are secure (G5) or apparently secure (G4) globally, whereas 54% are secure (S5) or apparently secure (S4) provincially (Table 4). About three percent of the species considered have not been assessed (NA), are not yet ranked (NR) or are unrankable (U). The remainder of species occurring in British Columbia are of conservation concern – 6 % globally (231 species) and 43% provincially (1640 species). Within the taxonomic groups, mosses and dicots have the highest numbers of species both of global and provincial conservation concern (Table 5, Table 6). Following this, non-marine molluscs, monocots, ferns and fern allies have the largest number of species of global conservation concern whereas provincially the monocots, birds, ferns and fern allies have the greatest numbers. However proportionally, the taxonomic groups that have the highest percentage of species of global conservation concern are non-marine molluscs (22%), mosses (12%), ferns and fern allies (12%), reptiles and turtles (7%) and amphibians (5%) (Table 5, Figure 1). Provincially, the taxonomic groups that have the highest proportion of species of conservation concern are mosses (65%), reptiles and turtles (64%), ferns and fern allies (58%), dicots (46%), and amphibians (45%) (Table 6, Figure 2). Appendices listing all species of global and provincial conservation concern found in British Columbia are available at www.biodiversitybc.org.⁸

Table 4. Summary of native species of global and provincial conservation concern				
Conservation Status Rank	Global		Provincial	
	Total Species	Percent of Species	Number of Species	Percent of Species
Extinct or Extirpated (GX, SX)	1	<1%	14	<1%
Historical (GH, SH)	1	<1%	28	<1%
Critically Imperiled (G1, S1)	19	<1%	301	8%
Imperiled (G2, S2)	40	<1%	629	17%
Vulnerable (G3, S3)	172	5%	668	18%
Total species of conservation concern	233	6%	1,640	43%
Apparently secure or secure (G4, S4, G5, S5)	3,475	91%	2,055	54%
Not ranked, not assessed or unrankable (GNR,SNR, or GNA, SNA or GU,SU)	100	3%	100	3%
Total number of species assessed	3,808			

Table 5. Global conservation status of native species in British Columbia.¹

SPECIES GROUP	Total Number of Species Assessed	Global Conservation Status Rank								Total Number of Species of Conservation Concern G1-G3,GX,GH	Global Conservation Concern (% of total species assessed)
		Extinct or presumed extirpated GX	Historical GH	Critically imperiled G1	Imperiled G2	Vulnerable G3	Apparently secure G4	Secure G5	Not ranked, not assessed or unrankable GNR, GNA, or GU		
VERTEBRATES	563	1	0	4	2	12	56	488	0	19	3%
Amphibians	20	0	0	0	1	0	7	12	0	1	5%
Birds	353	1	0	2	0	7	29	314	0	10	3%
Freshwater Fishes	67	0	0	1	0	2	8	56	0	3	4%
Mammals	109	0	0	1	1	2	12	93	0	4	4%
Reptiles and Turtles	14	0	0	0	0	1	0	13	0	1	7%
INVERTEBRATES	423	0	1	4	8	28	45	335	2	41	10%
Butterflies and Skippers	180	0	0	0	1	5	14	159	1	6	3.3%
Dragonflies and Damselflies	86	0	0	0	0	1	8	77	0	1	1%
Non-marine Molluscs	157	0	1	4	7	22	23	99	1	34	22%
VASCULAR PLANTS	2,093	0	0	3	7	75	437	1,546	25	85	4%
Ferns and Fern Allies	111	0	0	2	3	8	24	72	2	13	12%
Conifers	26	0	0	0	0	0	4	21	1	0	0%
Monocots	552	0	0	0	0	14	106	424	8	14	3%
Dicots	1,404	0	0	1	4	53	303	1,029	14	58	4%
NON-VASCULAR PLANTS	729	0	0	8	23	57	279	289	73	88	12%
Mosses	729	0	0	8	23	57	279	289	73	88	12%
TOTAL	3,808	1	1	19	40	172	817	2,658	100	233	6%
% of Total Species		<1%	<1%	<1%	<1%	5%	21%	70%	3%	6%	

¹ Species of provincial conservation concern are listed in Appendix B.⁸

Table 6. Provincial conservation status of native species in British Columbia.²

SPECIES GROUP	Total Number of Species Assessed	Provincial Conservation Status Rank								Total Number of Species of Conservation Concern S1-S3,SX,SH	Provincial Conservation Concern (% of total species assessed)
		Extinct or presumed extirpated SX	Historical SH	Critically imperiled S1	Imperiled S2	Vulnerable S3	Apparently secure S4	Secure S5	Not ranked, not assessed or unrankable SNR, SNA or SU		
VERTEBRATES	563	5	1	35	39	60	159	202	62	140	25%
Amphibians	20	0	0	3	2	4	8	3	0	9	45%
Birds	353	3	0	14	19	34	107	120	56	70	20%
Freshwater Fishes	67	0	0	9	6	8	18	23	3	23	34%
Mammals	109	0	1	7	11	10	23	54	3	29	27%
Reptiles and Turtles	14	2	0	2	1	4	3	2	0	9	64%
INVERTEBRATES	423	2	10	15	33	55	66	220	22	115	27%
Butterflies and Skippers	180	1	0	6	16	23	25	105	4	46	26%
Dragonflies and Damselflies	86	0	0	4	5	12	17	47	1	21	24%
Non-marine Molluscs	157	1	10	5	12	20	24	68	17	48	31%
VASCULAR PLANTS	2,093	4	16	187	317	390	586	585	8	914	44%
Ferns and Fern Allies	111	0	1	14	17	32	36	11	0	64	58%
Conifers	26	0	0	0	1	2	5	18	0	3	12%
Monocots	552	0	4	34	88	70	195	159	2	196	36%
Dicots	1,404	4	11	139	211	286	350	397	6	651	46%
NON-VASCULAR PLANTS	729	3	1	64	240	163	237	0	21	471	65%
Mosses	729	3	1	64	240	163	237	0	21	471	65%
TOTAL	3,808	14	28	301	629	668	1,048	1,007	113	1,640	43%
% of Total Species		<1%	<1%	8%	17%	18%	28%	26%	3%	43%	

²² Species of provincial conservation concern are listed in Appendix C.⁸

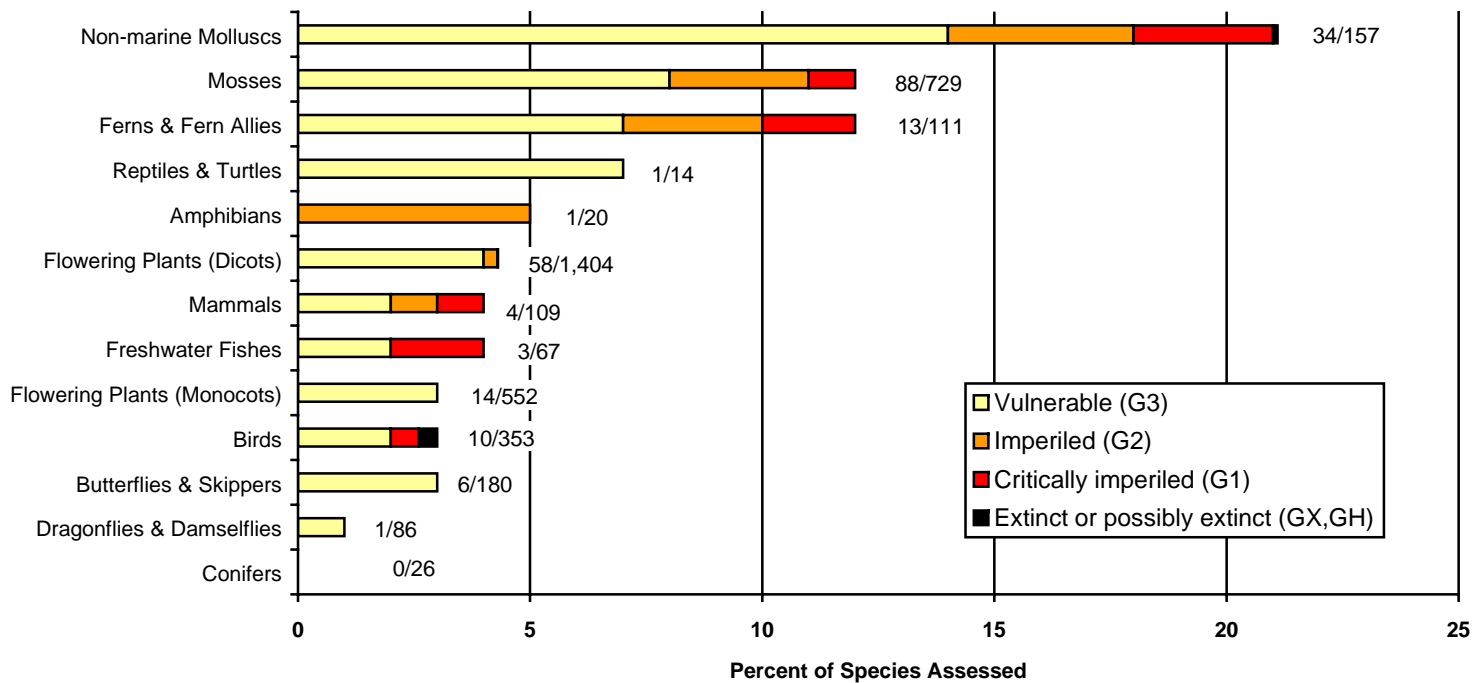


Figure 1. Species of global conservation concern as percent of species assessed for plant and animal groups in B.C.

* Total species assessed= 3,808. Proportion of species assessed as at risk in each species group are as follows: non-marine molluscs (34/157); mosses (88/729); ferns & fern allies (13/111); reptiles & turtles (1/14); amphibians (1/20); dicots (58/1,404); mammals (4/109); freshwater fishes (3/67); monocots (14/552); birds (10/353); butterflies & skippers (6/180); dragonflies & damselflies (1/86); conifers (0/26).

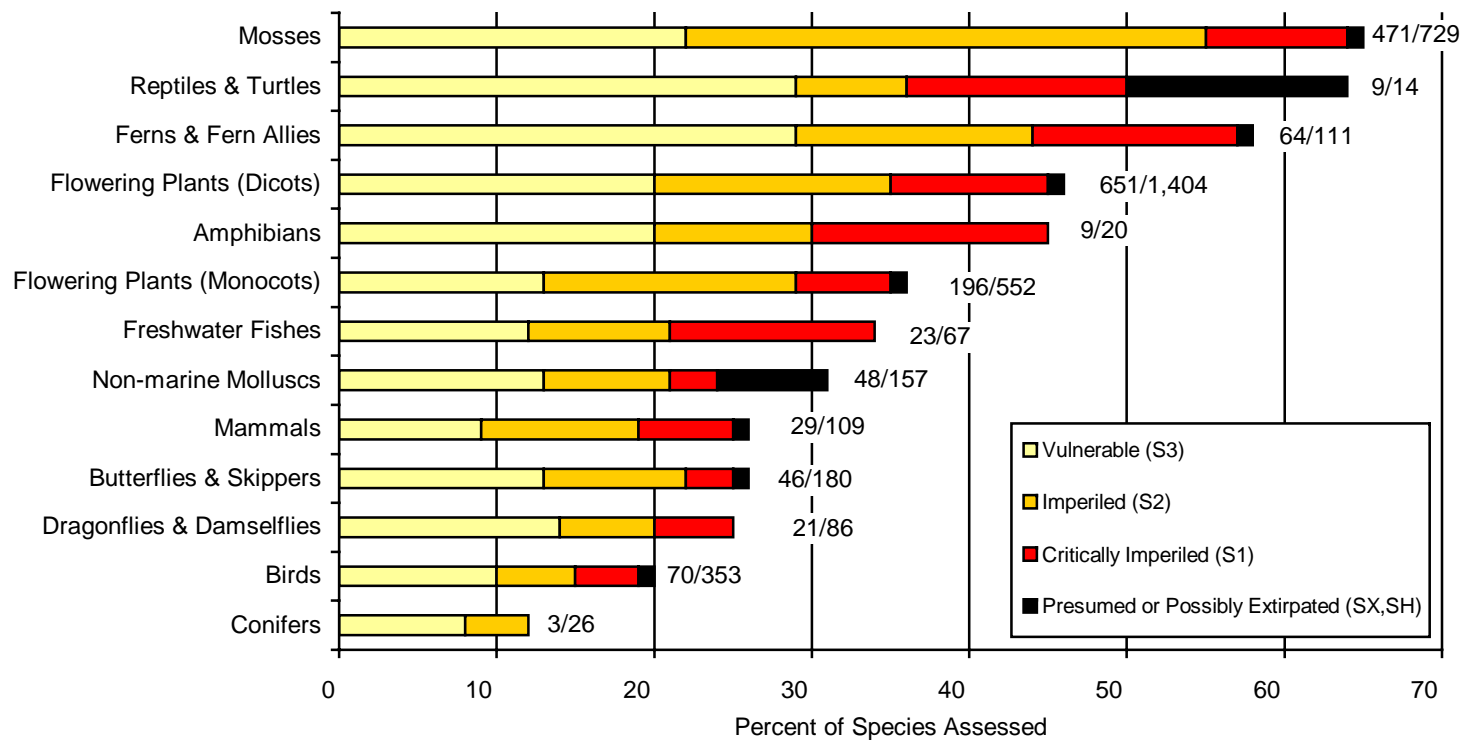


Figure 2. Species of provincial conservation concern as percent of total species assessed for plant and animal groups in B.C.

* Total species assessed=3,808. Proportion of species assessed as at risk in each species group are as follows: mosses (471/729); reptiles & turtles (9/14); ferns & fern allies (64/111); dicots (651/1,404); amphibians (9/20); monocots (196/552); freshwater fishes (23/67); non-marine molluscs (48/157); mammals (29/109); butterflies & skippers (46/180); dragonflies & damselflies (21/86); birds (70/353); conifers (3/26).

3.1 VERTEBRATES

Vertebrates of British Columbia included in this report are amphibians, birds, freshwater fishes, mammals, and reptiles and turtles. Overall 563 species were investigated for their conservation status. Globally, 19 species or 3% are of conservation concern, whereas provincially 140 species or 25% are of conservation concern (Tables 5 and 6). The groups with the highest proportion of species of global conservation concern are the reptiles and turtles (7%) and the amphibians (5%), while the group with the most species of global conservation concern are the birds.

Amphibians including salamanders, newts, toads and frogs comprise 20 species native to British Columbia (Table 1). Thirteen or 65% of these species have their Canadian distribution in British Columbia, whereas none exist solely in British Columbia for their North American distribution (Table 7).⁸ Oregon spotted frog (*Rana pretiosa*) is B.C.'s only amphibian of global conservation concern (Table 5; Appendix B). Nine amphibians are of provincial conservation concern (Table 6).

The majority of species (353 species) within vertebrates present in British Columbia belong to **birds** (Table 1). Ten species or 3% are of global conservation concern (Table 5; Appendix B), whereas 70 species (20%) are of provincial conservation concern (Tables 6; Appendix C). Seven of the eight birds of global conservation concern are marine birds that also require terrestrial or freshwater ecosystems for nesting (Appendix B and K). Forty-six species (13%) birds have their sole distribution in British Columbia, of which 14 (30%) are of provincial conservation concern (Table 7). Eight or 57% of those species of provincial conservation concern are terrestrial species. No species native to British Columbia has its exclusive North American distribution within the province. (Table 8).⁸ Three species of B.C. birds are no longer found in the province (presumed extirpated): passenger pigeon (*Ectopistes migratorius*) which is extinct in its global range, greater sage-grouse (*Centrocercus urophasianus*) and yellow-billed cuckoo (*Coccyzus americanus*) (Table 6; Appendix H).

Sixty-seven species of native **freshwater fishes** were reviewed for conservation status in British Columbia. Sixteen species or 24% are unique to B.C. for Canada, while 1 species, Vancouver lamprey (*Lampetra macrostoma*) occurs only in B.C. in the world (Table 8; Appendix D).⁸ Of the freshwater fishes assessed, 4% are of conservation concern in their global range (Table 5) and 34% are of conservation concern within the province (Table 6).

Mammals investigated for this report included 109 species, from both terrestrial and marine ecosystems with overlap with the terrestrial (e.g., exclusively marine mammals such as whales are not included). Four species or 4% are of global conservation concern, and 29 species or 27% are of provincial conservation concern (Tables 5 and 6). Twenty-nine species or 27% have their Canadian distribution only within British Columbia, of which 13 or 44% are of provincial conservation concern. Vancouver Island marmot (*Marmota vancouverensis*) which is of both global and provincial conservation concern is found only in B.C. in the world (endemic). (Table 7; Appendix D).⁸ While no species have been extirpated from province, the white-tailed jackrabbit (*Lepus townsendii*) is known only from historical records and may be extirpated (Table 5; Appendix H).

Table 7. Species by Taxon Group Unique to British Columbia in Canada and North America.						
SPECIES GROUP	Total Number of Species		Species of Conservation Concern			
			Globally		Provincially	
	Canada	North America	Canada	North America	Canada	North America
VERTEBRATES	113	2	14	2	47	2
Amphibians	13	0	1	0	7	0
Birds	46	0	8	0	14	0
Freshwater Fishes	16	1	1	1	7	1
Mammals	29	1	3	1	13	1
Reptiles and Turtles	9	0	1	0	6	0
INVERTEBRATES	85	4	23	2	40	2
Butterflies and Skippers	24	1	2	0	10	0
Dragonflies and Damselflies	11	0	0	0	6	0
Non-marine Molluscs	50	3	21	2	24	2
VASCULAR PLANTS	523	6	41	5	303	5
Ferns and Fern Allies	23	1	4	1	18	1
Conifers	5	0	0	0	0	0
Monocots	95	0	11	0	54	0
Dicots	400	5	26	4	231	4
NON-VASCULAR PLANTS	77	66	21	18	56	54
Mosses	77	66	21	18	56	54
TOTAL	798	78	99	27	446	63

Reptiles and turtles consist of 14 species native to British Columbia. One species, western pond turtle (*Actinemys marmorata*) which has been extirpated from the province, is also of global conservation concern (Table 5; Appendix H). Pigmy short-horned lizard, has also been extirpated from B.C. but is secure in its global range.⁸ In total, nine reptiles and turtles (64%) are of provincial conservation concern (Table 6).

Nine species occur exclusively within British Columbia in Canada, whereas none are restricted to B.C. for their North American distribution (Table 7).⁸ Six species limited to B.C. in Canada are of provincial conservation concern, and along with the two extirpated species mentioned above include sharp-tailed snake (*Contia tenuis*), nightsnake (*Hypsiglena torquata*); western skink (*Eumeces skiltonianus*); and western rattlesnake (*Crotalus oreganus*).

3.2 INVERTEBRATES

Invertebrates are an amazingly diverse animal group of which many are poorly known. Only a few selected groups of invertebrates had sufficient information for analysis and were included in this report. Although these groups were selected based on the amount of information available, all of these groups require additional research to provide the same level of information as acquired for vertebrates and vascular plants. Overall three groups of invertebrates with 423 species occurring in British Columbia were reviewed for their conservation status. Forty-one invertebrates (10%) are of global conservation concern (Table 5), whereas 115 species (27%) are of provincial conservation concern (Table 6). Of the invertebrates studied, the majority appear secure but those of highest conservation concern are non-marine molluscs (48 species

or 31%, provincially and 34 species or 22% globally); butterflies and skippers (6 species or 3 % globally, and 46 species or 26% provincially); and dragonflies and damselflies (1 species or 1 % globally, and 21 species or 24% provincially) (Tables 5 & 6).

Butterflies and skippers, comprising 180 native species in British Columbia, were the only groups selected for this report out of numerous groups within the butterfly order 'Lepidoptera'. Twenty-four species or 13% have their Canadian distribution only in British Columbia, and 10 of these are of provincial conservation concern. One species, western spring azure (*Celastrina echo*) may occur only in British Columbia for its North American distribution (Table 7; Appendix F).⁸

Dragonflies and damselflies belong to the order 'Odonata', which has been the focus of many inventories in recent years. Eighty-six species of dragonflies and damselflies currently known as native to British Columbia were reviewed for conservation status. Eleven species or 13% occur exclusively in British Columbia for their Canadian distribution, whereas no species occurs only in B.C. for its North American distribution.⁸ Of the 11 species found only in B.C., six species (55%) are of provincial conservation concern (Table 7).

One hundred and fifty-seven species of **non-marine molluscs** occur in British Columbia and 22% (34) species are of global conservation concern, while 31% (48 species) are of provincial conservation concern (Tables 5 and 6). Fifty species occur only in B.C. for their Canadian distribution, and of the 3 species exclusive to B.C. for their North American distribution, hotwater physa (*Physella wrighti*) and caribou rams-horn (*Planorbella columbiensis*) are endemic and of both global and provincial conservation concern (see Table 7: Appendices D, E, F).⁸ Puget oregonian (*Cryptomastix devia*) is no longer found in B.C. (presumed extirpated) and is vulnerable in its global range (Table 6; Appendix H). An additional 10 non-marine molluscs are known only from historical records and are possibly extirpated.

3.3 VASCULAR PLANTS

Vascular plants include ferns and fern allies, conifers, and flowering plants – the latter composed of monocots such as grasses and orchids, and dicots such as mustards or roses. Overall, 2,093 native vascular plant species occurring in British Columbia were examined for their conservation status. Globally, 85 species (4%) are of conservation concern, whereas provincially 914 species (44%) are of conservation concern. The plant groups of highest conservation concern, both globally and provincially, are the ferns and fern allies (13 species or 12% globally, and 64 species or 58% provincially); followed by dicots (58 species or 4% globally, and 651 species or 46% provincially) (Tables 5 and 6; Figures 1 and 2).

B.C. has 111 species of **ferns and fern allies**, about 91% of the species in this group native to Canada. The largest number of species (29) occur within the wood fern family, Dryopteridaceae; followed by 17 species in the moonwort or grapefern family, Ophioglossaceae; 12 species in the clubmoss family, Lycopodiaceae; and 12 species in the maidenhair fern family, Pteridaceae. Proportionally, the group containing the most species of conservation concern are the moonworts, which are often diminutive in size and indisputably rare. Twenty-three species of ferns and fern allies occur only in British Columbia for their Canadian distribution of which 18 species or 78% are of provincial conservation concern. One species, corrupt spleenwort (*Asplenium adulterinum*), is the one species of this group that is endemic to B.C. (Table 7; Appendix D).⁸

Conifers include the majestic coastal trees, which are viewed by many as a signature feature of British Columbia's landscape. Of the 26 conifer species in three plant families reviewed for this report, none are of global conservation concern, although three, jack pine (*Pinus banksiana*); Rocky Mountain juniper (*uniperus scopulorum*); and limber pine (*Pinus flexilis*) are of provincial conservation concern.⁸ Five species only grow in British Columbia for

their Canadian distribution (Table 7), however none of these are of conservation concern at the time of this review.

Five hundred and fifty-two species of **monocotyledon flowering plants (monocots)** in 21 plant families were reviewed for their conservation status. A significant proportion of the monocots present in British Columbia involves the grass-like plants or graminoids (409 species or 75%).⁹ The greatest number of these (188) belongs to the sedge family (Cyperaceae); followed by 169 species of the grass family (Poaceae); and 52 species of the rush family (Juncaceae). Other important families of monocots in British Columbia are the lily (Liliaceae), orchid (Orchidaceae), and pondweeds (Potamogetonaceae). Three percent of monocots are of global conservation concern and 36% are of provincial conservation concern. Ninety-five species of monocots occur only in British Columbia for their Canadian distribution (Table 7) of which 55 (57%) are of provincial conservation concern.⁸ No plant within the monocot group has its exclusive occurrence in British Columbia for its North American range (Table 7)..

One thousand four hundred and four species of **dicotyledon flowering plants (dicots)** in 88 plant families were reviewed for their conservation status. Large plant families with many species present in British Columbia include the aster (Asteraceae), pea (Fabaceae), mustard (Brassicaceae), rose (Rosaceae), snapdragon (Scrophulariaceae), buttercup (Ranunculaceae), saxifrage (Saxifragaceae), pink (Caryophyllaceae), willow (Salicaceae), and carrot (Apiaceae) families. Together these groups contain 877 species and comprises 62% of the flora. In contrast, due to the high floral diversity in British Columbia, many plant families are represented by only one or a few species. About 4% of dicots are of global conservation concern (Table 5) and 46% are of provincial conservation concern (Table 6). Four hundred and three species of dicots occur only in British Columbia for their Canadian distribution of which 234 (58%) are of provincial conservation concern.⁸ Seven species have their exclusive occurrence in British Columbia for their North American range, of which six are of provincial conservation concern. (Table 7). Five species are endemic to the province (Appendix D). Four dicots are no longer found in B.C. (presumed extirpated) and another eleven are known only from historical records and are possibly extirpated (Table 6; Appendix H).

3.4 Non-vascular Plants

Non-vascular plants includes the bryophytes: mosses, liverworts and lungworts. Only the mosses were assessed for conservation concern owing to a lack of status information for the other two groups. The list for mosses for B.C. is currently under review by the B.C. Conservation Data Centre.

Seven hundred and twenty-nine mosses native to B.C. have been assessed for conservation status, of which 88 species are of conservation concern in their global range (Table 5) and 471 are of provincial conservation concern (Table 6). Seventy-seven mosses are found only in B.C. for their Canadian distribution (Table 7), 56 which are of provincial conservation concern.⁸ Five species are endemic to B.C. (Appendix D). Four species of moss are presumed (SX) or possibly (SH) extirpated in B.C. (Table 6; Appendix H).

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