



One fish
Two fish

Red fish
Blue fish*

*Dr. Seuss, 1960

**Species
Ranking
in British
Columbia**

*... about more
than just numbers.*





Species Ranking in British Columbia

British Columbia has the highest diversity of native wildlife in Canada, including about 5250 species of plants, 1138 species of vertebrates, an estimated 60 000 species of invertebrates and 10 000 species of fungi. Through the United Nations *Convention on Biological Diversity* (1992), and under the *National Accord for the Protection of Species at Risk* (1996), British Columbia has pledged to conserve this diverse array of life. This brochure outlines the procedures followed in British Columbia to assess the degree of conservation risk for species.

What is ranking and why use it?

Ranking is the process of assigning a risk of extinction¹ “score” (i.e., rank) to each species. The purpose is to identify species most at risk, as well as to establish baseline ranks for each. Ranks allow risk to be monitored over time. Conservation programs use species’ ranks as one of a variety of criteria when they set conservation priorities.

How are species ranked?

Ranking and review are based on a standard set of criteria developed over the past 25 years by the international organization *NatureServe*². These ranks are scientifically based, but have no legal implications. Each species is assigned a global rank that applies across its entire range; a national rank for each nation in its range; and a sub-national rank

for each province or state in its range. *NatureServe* scientists assign the global and national ranks with guidance from various experts in North America. In British Columbia, the Conservation Data Centre (CDC), in the Ministry of Sustainable Resource Management, assigns the provincial rank, which is based solely on its status within British Columbia. Provincial ranks are updated at annual meetings of specialists. To date, biological groups assessed provincially include mammals, birds, amphibians, reptiles, freshwater fish, freshwater molluscs, butterflies, dragonflies, vascular plants and mosses.

The rank is based on an assessment of the following factors:

1. estimated number of existing occurrences³;
2. viability of these occurrences;

Table 1. CDC CONSERVATION STATUS RANKS (S = Provincial, N = National, G = Global)

X	Presumed Extirpated or Extinct	Not located despite intensive searches and no expectation that it will be rediscovered.
H	Historical	Not located in the last 50 years, but some expectation that it may be rediscovered.
1	Critically Imperiled	Because of extreme rarity or some factor(s) making it especially susceptible to extirpation or extinction. Typically 5 or fewer existing occurrences ³ or very few remaining individuals, e.g., fewer than 1000 Spotted Owl.
2	Imperiled	Because of rarity or some factor(s) making it very susceptible to extirpation or extinction. Typically 6 to 20 existing occurrences or few remaining individuals, e.g., 1000 to 3000 White Sturgeon.
3	Vulnerable	Because rare and local, found only in a restricted range (even if abundant at some locations), or because of some other factor(s) making it susceptible to extirpation or extinction. Typically 21 to 100 existing occurrences, e.g., Gopher Snake.
4	Apparently Secure	Because uncommon but not rare, and usually widespread in the province. Possible cause for long-term concern. Typically more than 100 existing occurrences, e.g., Olive-sided Flycatcher.
5	Secure	Because common to very common, typically widespread and abundant, and not susceptible to extirpation or extinction under present conditions, e.g., Red-osier Dogwood.
?	Unranked	Rank not yet assessed.
U	Unrankable	Due to current lack of available information.

¹ Extinction is used here to also include “extirpation,” which is extinction on a local scale, i.e., where a species is no longer found in a province or country, but still exists elsewhere.

² *NatureServe*, formerly known as Association for Biodiversity Information (ABI), grew out of the science division of The Nature Conservancy (U.S.).

³ Occurrence: a location representing a habitat which sustains or otherwise contributes to the survival of a population, e.g., a south-facing slope that provides winter range for ten elk would be considered a single occurrence, not ten.

Table 2. RANK MODIFIERS

E	Exotic – a species introduced by man to the province.
?	Inexact or uncertain due to limited information; qualifies the immediately preceding rank character.
Q	Taxonomic status is not clear or is in question.
T	Designates a rank associated with a subspecies or variety.
B	Designates a rank associated with breeding occurrences of mobile animals.
N	Designates a rank associated with non-breeding occurrences of mobile animals.

3. trend in population size, number of occurrences, or geographic distribution;
4. overall estimated population size;
5. geographic distribution (range);
6. number of occurrences adequately protected *and* managed;
7. actual or potential threats facing the species or its habitat.

Each factor is given a score of its own, based on standards set by *NatureServe*. The number of occurrences is key to the status of many species, since those with very few occurrences are vulnerable to both predictable and unpredictable influences. The score for number of occurrences usually determines an initial rank, which is then modified sequentially based on the scores for the other factors.

A species rank is designated by a number from 1 to 5 (Table 1, Table 2), preceded by G (for Global), N (for National), or S (for Sub-national). Subspecies or important populations

retain the global rank of the species, but may also be given a global subtaxon (T) rank that indicates the status of that portion of the species. For example, the coastal subspecies of Northern Goshawk, *Accipiter gentilis laingi*, is given a global rank of G5T2. Combined ranks are occasionally given for global or provincial ranks (e.g., G4G5, G5T4T5 or S3S4) when the exact rank is uncertain.

All credible sources of information regarding distribution, abundance, trends, and threats are considered in the ranking process, including formal inventories and research projects; status reports; Breeding Bird surveys, Christmas Bird Counts, and other volunteer-based surveys; recorded *ad hoc* sightings; museum specimen records; and personal communications with species experts, regional biologists and naturalists.

Because the ranking system used by the *NatureServe* and the CDC is objective and transparent, the standardized assessments allow scientists and other experts to discuss the facts that

contribute to a species' rank, rather than subjective assessments. Because it is used across North America (except in the Northwest Territories and Nunavut), the standardized ranking procedure also provides consistency when comparing conservation concerns in different parts of a species' range.

What is Listing?

Listing sorts species into groups with similar conservation risks. In order to simplify interpretation of species ranks in British Columbia, three lists are created: Red, Blue, and Yellow. This provides biologists, managers, and interested public with an easily understood framework dealing with the complexity of conservation needs of all species. Listing can also provide the foundation for establishing legal protection for endangered or threatened species.

What are the Red, Blue and Yellow lists?

The Red list includes species that have been legally designated as Endangered or Threatened under the *Wildlife Act* (see below), are extirpated, or are candidates for such designation. The Blue List includes species not immediately threatened, but of concern because of characteristics that make them particularly sensitive to human activities or natural events.

The Yellow List includes uncommon, common, declining and increasing

RED LIST	BLUE LIST	YELLOW LIST
Species with S ranks of 1, 2, 1-2, 1-3, H or X ⁴	Species with S ranks of 2-3, 3, or 3-4 (animals only)	Species with S ranks of 4, 5, 4-5, or 3-4 (plants only)
<i>Examples</i> S1 Nooksack Dace S2 white-top aster S1S2 Preble's Shrew S1S3 Keen's Long-eared Myotis SH shy gilia SX Greater Sage-Grouse	<i>Examples</i> S2S3 Great Basin Pocket Mouse S3 yellow sand-verbena S3S4 Philadelphia Vireo	<i>Examples</i> S4 salt marsh dodder S5 Black Bear S4S5 Northern Alligator Lizard S3S4 yellow lady's-slipper

⁴ Extinct species are excluded from the Red List.

species – all species not included on the Red or Blue lists. Those species ranked S4, however, are considered to be of conservation concern because they have a small range or low abundance in the province, because they have shown provincial declines, or there are perceived long-term threats. Thus the list of S4 species is a “Watch List” of species to be actively monitored and otherwise studied.

How are species legally protected in British Columbia?

British Columbia has no stand-alone endangered species act. The provincial *Wildlife Act* protects virtually all vertebrate animals from direct harm, except as allowed by regulation (e.g., hunting or trapping). Legal designation may confer special protection for selected red- and blue-listed species, their residences, or their critical habitat. Legal designation as Endangered or Threatened under the Act increases the penalties for harming a species, and also enables the protection of habitat in a Critical Wildlife Management Area. At present, four species are legally designated: the Vancouver Island Marmot (*Marmota vancouverensis*), American White Pelican (*Pelecanus erythrorhynchos*), and Burrowing Owl (*Athene cunicularia*) as Endangered, and the Sea Otter (*Enhydra lutris*) as Threatened.

The *Forest Practices Code Act of British Columbia* may designate red-listed (and sometimes blue-listed) species negatively affected by forest or grazing practices as Identified Wildlife. This affords special management attention by providing for the protection of critical habitat in the form of special management guidelines and reserve areas called Wildlife Habitat Areas.

Other Canadian systems for ranking and listing

Under the *National Accord for the Protection of Species at Risk* (1996), the federal and provincial governments agreed to provide periodic general status assessment summaries for Canadian flora and fauna. The first such publication, *Wild Species 2000: The General Status of Species in Canada*, was released in 2000. The goal of these published summaries is to monitor, assess and report on the status of all species in a broad, straightforward manner. Status ranks include “At risk”, “May be at risk”, “Sensitive”, or “Secure”. The ranks can identify species in trouble, species for which more information is needed, or species for which a formal status assessment or further management action is needed. For the most part, these ranks are simplified versions of CDC ranks, however, the rarer or more threatened species are considered “At risk” or

“May be at risk” based on whether or not a formal status report has been written.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) creates a national listing of species at risk that have been assessed through a formal status report review process. COSEWIC was formed in 1977, and arose from the need for a single, scientifically sound national species-at-risk listing at arm’s length from government. COSEWIC is made up of scientists, government managers and non-governmental specialists, who have demonstrated expertise in relevant scientific fields. The international ranking system used by COSEWIC is adapted from that of the World Conservation Union (IUCN) in Switzerland, has been in development for more than thirty years, and is regularly refined. The listing of a species by COSEWIC has no legal consequences; it is solely meant to draw official attention to species at risk across the country. At present, the major short-coming of the COSEWIC list is the large number of species potentially at risk that have not yet been assessed. For example, *Wild Species 2000* identifies 33 vertebrate species that are “May be at risk” (lacking formal assessment). This number would be much larger if fish, plants, and invertebrates were considered. ❖

For more information, visit these Web sites:

BC Species at Risk – Endangered Species and Ecosystems in British Columbia	http://srmwww.gov.bc.ca/atrisk/index.htm
British Columbia Conservation Data Centre (BC CDC)	http://srmwww.gov.bc.ca/cdc/
Biodiversity & Wildlife	http://wlapwww.gov.bc.ca/wld/
Identified Wildlife (IWMS)	http://wlapwww.gov.bc.ca/wld/identified/index.html
COSEWIC	http://www.cosewic.gc.ca/index.htm
NatureServe	http://www.natureserve.org/

FOR MORE INFORMATION ON SPECIES RANKING IN B.C., CONTACT:

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