2.3 Species at Risk

Introduction

The number of species at risk is a key indicator for the current health of an ecosystem, because species in trouble today are likely responding to changes that happened in the past. Tomorrow's species at risk will be those that are responding to today's impacts. Loss of species from an area is important because it lowers the resilience of the ecosystem to future change and can have unforeseen cascading consequences into the future.

Many different species have very specific life history requirements and can be affected by many subtle specific changes; however, loss of key habitat types is often the main cause of species decline. Habitats in the Cowichan Valley Regional District (CVRD) that have been particularly impacted include old forests, wetlands, Garry oak ecosystems and the associated meadows and grasslands, marsh and estuarine habitat, rocky bluffs, and shorelines. Many of the species at risk in this region inhabit these ecosystems.

Species at Risk in the Cowichan Valley Regional District

The diversity of ecosystems that occurs in the CVRD, ranging from some of the wettest to some of the driest in BC, provides habitat for a great diversity of species. Many species are largely unknown, and new species have been recently discovered here. For example, the number of known arthropods[58] found in the canopy of ancient trees on the West coast increases every time someone studies them. Some species are naturally rare – found only in certain habitat types, or at low levels across the landscape – and these species may or may not be at risk. Some species, however, are known to be "at risk" due to small population sizes or the specific impacts of human activities on their habitat.

58 Arthropod are invertebrates of the phylum Arthropoda (the largest phylum in the animal kingdom). Arthropods have jointed limbs, a segmented body, and an exoskeleton made of chitin. The group includes the crustaceans, insects, arachnids, and centipedes.

Measuring Species at Risk

The BC Conservation Data Centre systematically assigns "risk" ratings to different species and populations that may be of concern. A number of different systems are used, including global ratings and provincial conservation status rankings. This section reports on the "red" list – extirpated, endangered or threatened in BC – and the "blue" list – those of special concern in BC. Ideally, trends through time for species of concern could be tracked, in order to understand whether conditions are improving or worsening for individual species. However, in the absence of good trend population data for most species, this section's indicators focus on:

> Number of animals at risk, with a focus on Vancouver Island marmot and Roosevelt elk

> Number of plants at risk

> Number of ecological communities at risk

Animals at Risk

Indicator and Measure

The BC Conservation Data Centre compiles information and trends on species that may be at risk in BC, and classifies them based on global and provincial ranking systems.[59] The information provided is based on these rankings for species found or thought to be found within the Cowichan Valley Regional District.

Findings

The Conservation Data Centre identifies a total of 71 animal species that are known to be at risk in this region and are thought to be found within the CVRD (Table 2.7). In addition, there are other species highlighted as yellow-listed, which are under status review.

59 BC Conservation Data Centre: www.env.gov.bc.ca/cdc/

This section provides detailed findings about the Vancouver Island marmot and the Roosevelt elk.

TABLE 2.7: Number of red- and blue-listed animal species within the CVRD

Type	#Red	#Blue	Total
Amphibians		1	1
Birds	4	16	20
Gastropods	5	7	12
Insects	5	10	15
Lampreys	1		1
Mammals	4	4	8
Reptiles	2		2
Ray-finned fishes		2	2

Source: BC Conservation Data Centre.

Many of the individual species at risk are associated with estuarine or riverine habitats, and many are associated with the ecosystems of concern highlighted in Section 2.2. Of these, some are also of high global concern – including the Cowichan Lake Lamprey (G1 global ranking[60]) and Vancouver Island Marmot (G1 global ranking).

Of these animals, eight are found only on Vancouver Island and nowhere else in the world (endemics) – the northern pygmy owl, the white-tailed ptarmigan, an ermine, the Cowichan lake lamprey, the Vancouver Island marmot, the American water shrew, the "greenish blue" butterfly and the (now-thought-to-be-extinct) Vancouver Island wolverine.

60 Conservation status ranks are based on a one to five scale, ranging from critically imperiled (G1) to demonstrably secure (G5). Status is assessed and documented at three distinct geographic scales: global (G), national (N), and state/province (S).

Some are well-known species, such as Stellar sealions and the old-growth-forest-nesting marbled murrelet. Others are lesser known or understood, such as the broadwhorl tightcoil, the western thorn snail, and the warty jumping slug.

A full list of species at risk is available in Appendix A.

Jumping Slugs. Five different species of jumping slugs exist and are endemic to western North America. The warty jumping slug is known to exist in Canada only on 14 different sites on Vancouver Island, south of Nanaimo. It lives in moist riparian low-lying areas and requires decaying logs and litter as shelter. All five species display a "jumping" or twisting behaviour that is thought to be a defence against predators. Habitat loss and fragmentation are thought to be the greatest threats to the population. Only three or four of the known locations are within protected areas – the others are subject to development or private forest land management.[61]

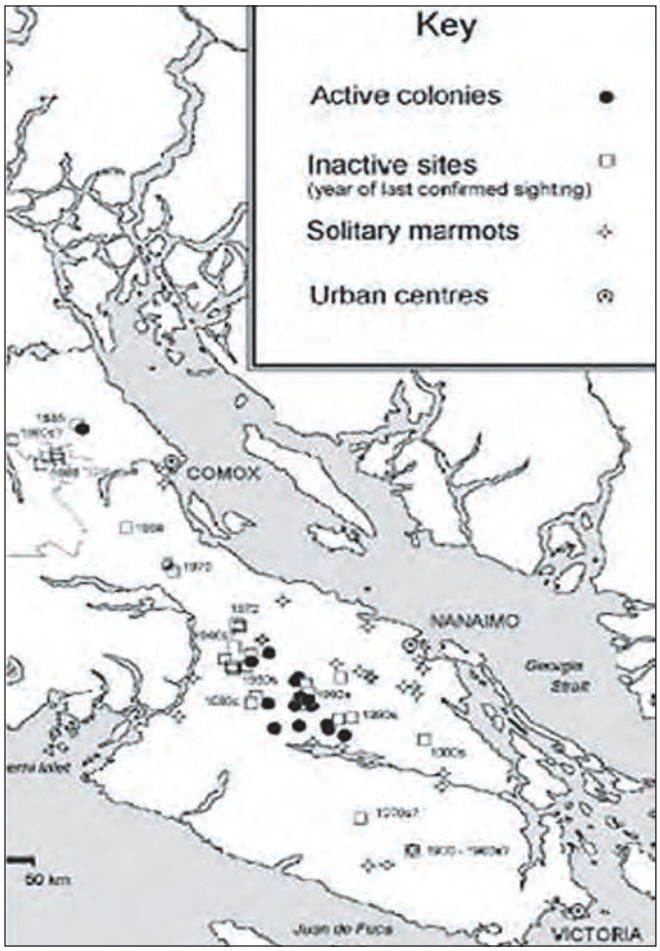
Vancouver Island Marmot

The Cowichan Valley Regional District is home to a significant proportion of the remaining wild population of the Vancouver Island marmot, a globally rare subspecies (Figure 2.16). It is red-listed in BC, and endemic to Vancouver Island. Unusually, compared to many of the other species of concern within the regional district, the marmot is a high-elevation species, historically living in the alpine and treeline areas, and – more recently – primarily inhabiting recently logged habitats where they are thought to be more vulnerable to predation. With the exception of Mount Washington, all known active colonies are located within five adjacent watersheds – the Nanaimo, Cowichan, Chemainus, Nitinat and Cameron River drainages – with 90% of the estimated population in the year 2000 found within this 150 km2. The CVRD obviously plays a key role in the recovery of this species (Figure 2.17).

FIGURE 2.16: The at-risk marmot is one of Canada's most significant species

61 COSEWIC, 2003.

FIGURE 2.17: Marmot population centres



Note: Most southern locations are located within the CVRD.

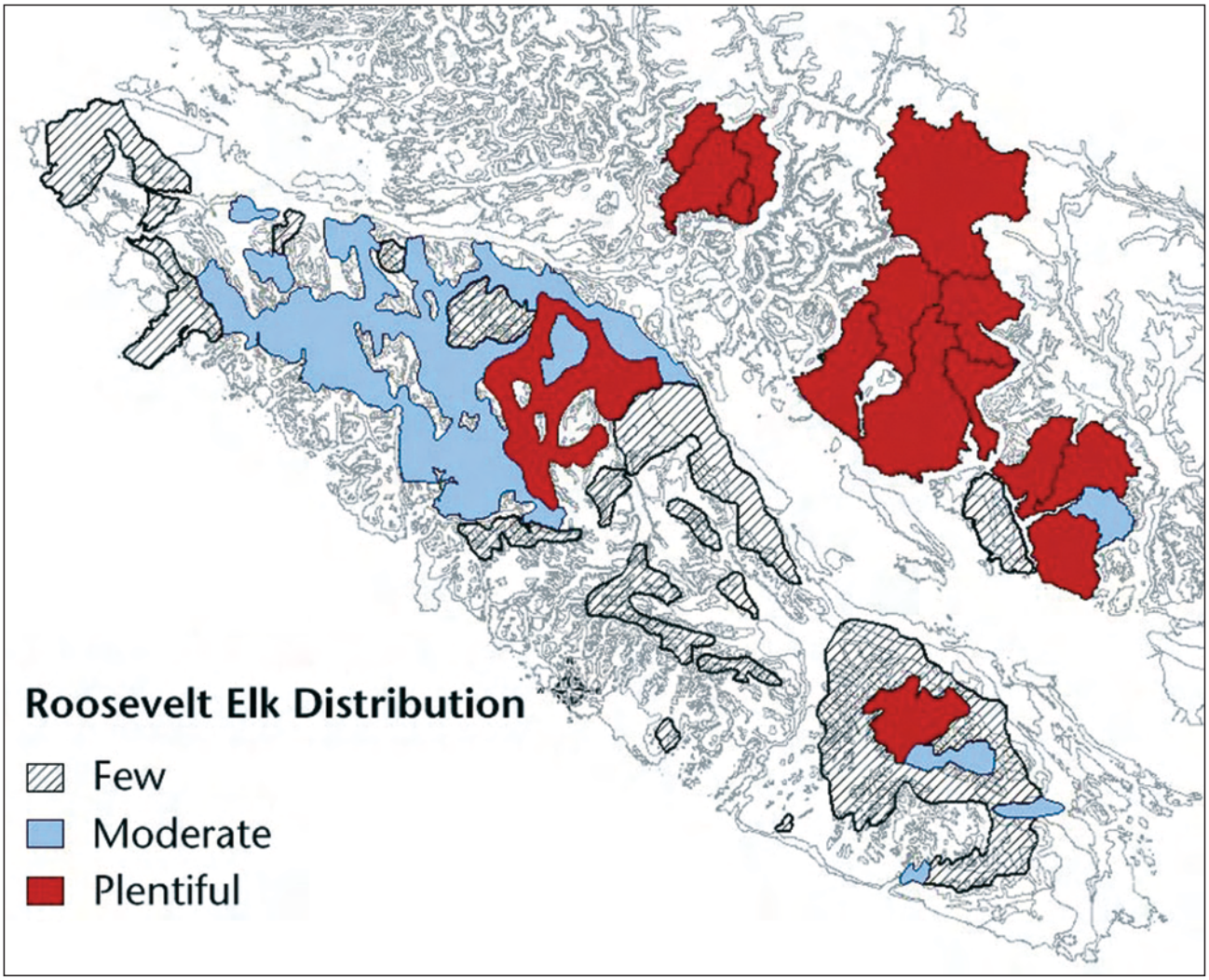
Source: Vancouver Island Marmot Recovery Team, 2000.

Roosevelt Elk

Roosevelt elk are a blue-listed species with high cultural and social values within the Cowichan Valley Regional District. There are around 5,000 Roosevelt elk in BC, of which about 4,000 are on Vancouver Island. Most are found in the northern regions of the Island, but there are relatively isolated sub-populations in the south, and in the CVRD (Figure 2.18). There are areas of local decline, but the populations are increasing overall.

Loss of habitat from human development and over-hunting has extirpated local populations in some areas of southern Vancouver Island. Sub-populations of elk on Vancouver Island have been categorized as to whether they are increasing, stable, or declining. Within the south Island meta-population, most of which are part of, or border, the CVRD, there is a tendency for sub-populations to be small (80% of the local populations have less than 25 animals). Of this total of 560 animals, around 30% are thought to be in stable-to-declining sub-populations, 30% are stable, 30% are increasing and 10% have unknown population trends. On the rest of the Island, populations tend to be bigger and more stable (data from 2000). Historically, elk lived in old forests, which provided food and cover – particularly in riparian areas. Fragmentation of this habitat by forestry and urban expansion, combined with predation pressures, mortality on highways, and hunting and poaching has resulted in declines in populations from historic levels.

FIGURE 2.18: Roosevelt elk distribution on Vancouver Island



Source: Henigman et al., 2003.

For the CVRD, recent population estimates (June 2009) for the sub-units identified in Table 2.8 are shown in Figure 2.19. The largest sub-unit within the regional district is area 4-10 (the Shaw sub-unit) which contains an estimated population of 175 animals. Many of the other sub-units have small estimated numbers of elk.

TABLE 2.8: Number of elk estimated for each sub-unit

Area	Sub Population	Name	Area (km2)	Estimated #elk	Percent local population	Percent total population
4	1	Koksilah	317	10	2	0.6
4	2	South Cowichan	118	15	3	0.9
4	3	North Cowichan	198	50	12	2.9
4	4	Robertson	158	10	2	0.6
4	5	Sutton	110	5	1	0.3
4	6	Meade	88	20	5	1.2
4	7	Cottonwood	50	40	9	2.3
4	8	McKay	44	60	14	3.5
4	9	Nixon	76	5	1	0.3
4	10	Shaw	92	175	41	10.2
4	11	Nitinat	326	30	7	1.7
4	12	Little Nitinat	139	10	2	0.6
4		TOTAL	1716	430	100	25.1

Note: The size of the sub-units varies significantly. The location of each sub-unit is identified by the numbers on Figure 2.19.

FIGURE 2.19: Location of population sub-units for Roosevelt elk, relevant to the CVRD

Source: Kim Brunt, Ministry of Environment.

Plants and Ecological Communities at Risk

Indicators and Measures

The BC Conservation Data Centre compiles information and trends on species that may be at risk in BC, and classifies them based on global and provincial ranking systems.[62] The information provided is based on these rankings for plants and ecological communities at risk that are found or thought to be found within the Cowichan Valley Regional District.

Findings

The Conservation Data Centre lists a total of 63 plant species that are either red- or blue-listed, and are found or are likely to be found within the CVRD (Table 2.9). Of these, one – Macoun's meadowfoam – is endemic to Vancouver Island (Figure 2.20).

62 BC Conservation Data Centre: www.env.gov.bc.ca/cdc/

FIGURE 2.20: Macoun's meadowfoam

Source: www.ubcbotanicalgarden.org

TABLE 2.9: Number of plant species at risk in the CVRD

Name	Class	Blue	Red	Total
Non-vascular plants		14	3	17
Vascular plants	Conifers	1		1
	Dicotyledons	25	25	50
	Ferns	1		1
	Monocotyledons	5	5	10
	Quillworts	1		1
Totals		47	33	80

Source: BC Conservation Data Centre.

Many of the plants of concern are associated with the "at risk" or sensitive ecosystems (Section 2.2) such as Garry oak communities and shoreline systems.

Ecological Communities

In addition to the individual plants and animals at risk, 84 ecological communities are also identified as at risk: 35 are blue-listed, and 49 are red-listed. Many of these are associated with the Coastal Douglas- fir (CDF) ecosystem (see Section 2.2). For example, 36 of the 84 are primarily associated with dry CDF ecosystems, with eight blue-listed and 28 red-listed ecological communities, including the Garry oak- and arbutus-dominated systems. The conversion of native ecosystems to urban or rural developments and agricultural land (again, as outlined in Section 2.2), combined with the high level of private land in the CDF ecosystem, result in this high density of at-risk communities found in the CVRD.

Communities at risk within the CVRD also include a variety of riparian ecosystems. For example, the Sitka spruce/false lily-of-the-valley ecosystem on the outer west coast occurs on infrequently flooded riparian benches which are highly productive and grow some of the tallest spruce trees in the world. This impressive ecosystem is now red-listed across its range as a result of harvesting.

Summary

The CVRD has a high density of animals, plants and ecological communities at risk, compared to many other areas of the province. This results from the natural diversity of the region – some of the wettest and some of the driest ecosystems in the province occur in the CVRD – combined with its long history of development.

The identification of a plant, animal or ecological community as "at risk" in BC does not necessarily confer any special protection for that species. In order for federal "endangered species" legislation to apply, a long and specific process has to be undertaken. Many local, provincial and even globally rare species and ecosystems are not captured under this federal legislation. No provincial "endangered species" legislation exists in BC, though some species are protected to some degree under other more general legislation. Ecological communities, such as the massive riparian Sitka-spruce forests, are not protected from harvesting provincially, even if they are identified as red- or blue-listed, unless the decision is made to do so voluntarily.

Missing Information

For many species within the CVRD, the specific locations and habitat requirements of endangered species are unknown. This makes protection difficult, even when there is the will to do so. For other species, the lack of regulations makes identification and maintenance of habitat difficult as development or harvesting continues.

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