Sumas Mountain Environmental Management Study: Species at Risk

September 2012

Common Name (*Scientific Name*)	Species Summary[1]	BC Status[2]	BC Conservation Priority[3]	COSEWIC[4] Status, SARA Schedule[5]	Source, if confirmed present[6]
AMPHIBIANS:					
Northern Red-legged Frog (*Rana aurora*) 	The red-legged frog is distributed from Baja California to southwestern BC where it is found on Vancouver Island, the Gulf Islands, the lower Fraser Valley, and the mainland coast of the Strait of Georgia. The species typically breeds in quiet, cool, vegetated waters at least 50 cm deep, but is found in a wide variety of lowland aquatic habitats. Tadpoles forage on algae while adults eat a variety of invertebrates. Adults spend the majority of the growing season on land and are most abundant in mature deciduous riparian forests with abundant woody debris. Population size and trends are unknown, but severe declines have occurred in some Oregon and California populations. Habitat degradation, loss and fragmentation due to urbanization agricultural and logging are likely the major threats. A large fraction of valley bottom wetlands have been lost over much of the range in BC. Introduced predators (especially bullfrogs), roadkill, and toxic contamination are growing concerns.	Blue	1	Special Concern, Schedule 1	ENKON 2009 Madrone 200 Golder 2005
Oregon Spotted Frog (*Rana pretiosa*) 	This highly aquatic frog occurs from northeast California to BC, where it is currently known from just four sites in the Lower Fraser Valley. The frogs require warm-water marshes with emergent vegetation and stable water levels for breeding. Egg masses are laid communally in tight groupings in very shallow water. Adults seldom stray far from permanent quiet water with abundant aquatic vegetation. They overwinter in shallow water buried in mud at the base of dense vegetation and feed on a variety of insects. Tadpoles feed on algae and detritus. Habitat loss resulting from human activities and natural succession is the major threat to the species. The introduction of exotic predators, particularly bullfrogs (*R. catesbeiana*), is also a major concern.	Red	1	Endangered, Schedule 1	

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Pacific Giant Salamander (*Dicamptodon tenebrosus*) 	These large amphibians (to 30cm) are the only salamanders able to vocalize. They are found from northern California to BC. Here, they are found primarily in and around small, cool, well-oxygenated headwater streams. Nesting occurs under logs and rocks during spring and summer. Newly hatched young move into nearby creeks where they remain until 10-15 cm in length. Most then transform into adults and move into the adjacent forest, but some do not transform, retaining their external gills to remain in the stream for life. Population size and trends in BC remain unknown. Likely threats include logging, urbanization and predation by domestic cats.	Red	1	Threatened, Schedule 1	
Pacific Tailed Frog (*Ascaphus truei*) 	This species is found in coastal mountains from BC to California. It is among the most primitive and longest-lived frogs. The tadpole stage may last five years. The frog is found from sea level to tree line in clear, cold mountain streams (0.5-15 m width) bordered by mature or old-growth coniferous riparian forest. They are found in creeks with a variety of gradients, but require abundant herbaceous vegetation and woody debris for cover. Adults usually stay within 20 m of their natal stream, although recently metamorphosed juveniles disperse further. Tadpoles feed on algae attached to submerged rocks, while adults eat a variety of insects and snails. Tailed frogs are preyed upon by American dippers, garter snakes, trout and coastal giant salamanders. The major threat to the species appears to be habitat loss and degradation associated with logging. Tailed frogs frequently occur in fishless streams, which receive little protection under current forestry regulations. Adult mortality appears to be high in second growth forest. Limited dispersal ability and infrequent breeding increases the species' vulnerability.	Blue	1	Special Concern, Schedule 1	

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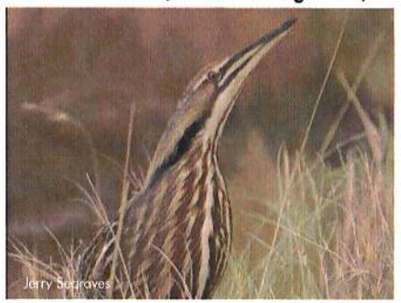
Western Toad (*Anaxyrus boreas*) 	This toad is found from southern Alaska to Baja California. Within BC it occurs from the Rockies to the Pacific Coast and from sea level to 3600 m elevation. Toads breed in a wide variety of warm, shallow aquatic habitats, from ditches to lakes margins. Females return to the same site but do not breed every year. Tadpoles feed on algae and detritus and transform into toadlets within eight weeks. Outside the early spring breeding season, toads inhabit a variety of habitats including forest, grassland, avalanche slopes and clear cuts. They prefer dense cover, often use small mammal burrows, and eat a variety of invertebrates. Population sizes are unknown but the species appears to be in decline on southern Vancouver Island and the Lower Mainland. Habitat degradation, loss, and fragmentation due to urban and agricultural development are the largest threats in settled areas. Stocking fish into naturally fishless streams or ponds, roadkill, pesticides and predation by introduced bullfrogs are also concerns.	Blue	2	Special Concern, Schedule 1	Golder 2005
BIRDS:					
American Bittern (*Botaurus lentiginosus*) 	This secretive wading bird is sparsely distributed over a large range. It breeds from south eastern Alaska and southern Mackenzie to Newfoundland and south to California, Arizona, Missouri and around the Gulf of Mexico. Most BC breeders winter in the southern United States or Mexico, although a few remain year round along the coast. They are found among dense stands of tall emergent vegetation or grasses in freshwater wetlands, sloughs and lake margins. Pairs build a secluded nest consisting of a platform of emergent vegetation on a hummock, floating in shallow water, or on grassy uplands. Eggs are usually laid in May or June and are incubated for about four weeks by the female. Outside the breeding season the birds are solitary, hunting by stealth in shallow marshes with dense emergent vegetation for fish, crayfish, amphibians, small mammals and large insects. Threats include wetland loss through drainage and degradation by nutrient loading, pesticide contamination or human disturbance.	Blue	2		BC CDC

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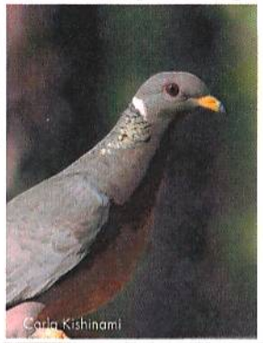
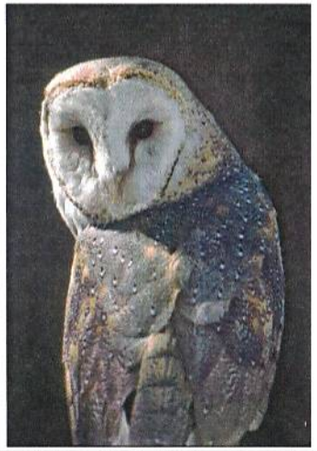
Band-tailed Pigeon (*Patagioenas fasciata*) 	This pigeon occurs from BC south through the western United States, Mexico and Central America to northern Argentina. It was previously a summer visitor on southern Vancouver Island and the lower mainland, but now breeds there and appears to be expanding its range to the north and east, even as its abundance declines. Most Pacific Northwest birds winter in California, although some remain year round in coastal areas. Band-tail pigeons form nomadic flocks that move in relation to availability of food. They occupy a variety of habitat types, including residential areas, but favour mature forest with a berry-rich shrub understory. They feed on fruits, buds, seeds and grain and may be found at bird feeders. Degradation and loss of habitat is considered the major threat now, although over hunting contributed to historical declines. The species is long-lived (to 22 years), late-maturing and produces few eggs, leaving populations vulnerable to losses of adults	Blue		Special Concern, Schedule 1	Golder 2005
Barn Owl (*Tyto alba*) 	Light colour and a heart-shaped face distinguish this owl. It has an extraordinarily broad distribution being found from southern Canada to southern South America, on the larger Caribbean Islands, the British Isles to southern Russia and south through Eurasia to Southern Africa and Australia. In BC, it is limited to southeast Vancouver Island, the Fraser Valley and the Okanagan Valley. Barn owls appear to have expanded into this range during the past century (first record 1909) with the spread of agriculture. They prey on small rodents, usually in pastures, and nest in cavities in trees, buildings or cliffs. The major threat is habitat loss to urbanization. Pesticides (especially rodent poison) can cause death or reproductive problems.	Blue	2	Threatened, Schedule 1	Golder 2005 UMA 2005

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Barn Swallow (*Hirundo rustica*) 	The aerial acrobatics of this passerine have delighted thousands. It breeds from southern Alaska across Canada to southern Newfoundland and south to Mexico. Birds winter from south Florida through South America to Tierra del Fuego, but typically return to the same North American site to breed each year. The species also breeds across Eurasia from Ireland to Siberia and south through China, Japan and Taiwan. It forages for insects over open areas, particularly water and, as its name suggests, is known for nesting in buildings, under bridges and on other human structures. The swallows aggregate into large flocks of up to 2000 birds during migration. Populations of this common and widespread bird have declined steadily in BC over the past 30 or 40 years, and particularly rapidly over the past decade. The causes remain unclear.	Blue	2	Threatened	BC CDC ENKON 2009
Double-crested Cormorant (*Phalacrocorax auritus*) 	These birds are most commonly seen roosting on wharves, log booms, or dead trees. Within BC, they occur primarily on the coast, but are occasionally sighted as far inland as the Peace River and Kootenay regions. Breeding colonies are found in Alaska, the Georgia Basin and in scattered localities south to Baja California, typically on flat islands or cliff tops. Other populations breed on the coasts of Lake Winnipeg, the Great Lakes, the Maritimes, Florida and Cuba. Breeding first occurs at age three, begins in April and extends through the summer. Wintering occurs along the entire Pacific Coast. Cormorants typically forage for fish and crustaceans in shallow waters (<15 m), within sight of land and within 20 km of the roost site, but are occasionally sighted farm offshore. Average life expectancy is slightly over 6 years. The breeding population in BC is in steep decline, even as eastern populations are increasing. A major threat appears to be egg loss to predators (typically gulls and crows), which is greatly increased when the birds are chased from their nests by humans or bald eagles. Other threats include entanglement in fishing gear, oil spills, and persecution by fishery and aquaculture workers.	Blue	2	NAR	
Great Blue Heron (*Ardea herodias fannini*) 	Reaching a metre in height, this is the largest heron in Canada. Only the Pacific subspecies, which is found near the coast and on large offshore islands, is listed. Its breeding population was estimated as 4000 birds in 1999, half of which were in the Georgia Basin. Heron colonies are usually found in mature forest within 8 km of foraging habitats such as rivers, wetlands, and eelgrass meadows. Almost half of the Georgia Basin population lives in four colonies. These are growing in size, but probably due to immigration from other colonies that have been abandoned due to disturbance. Frequently disturbed nests also produce fewer young, as predators eat eggs while the parents are absent. Although loss of sites for colonies is the major concern, industrial contaminants are known to affect reproduction in some areas.	Blue	1	Special Concern, Schedule 1	ENKON 2009 Madrone 200

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Marbled Murrelet (*Brachyramphus marmoratus*) 	This small seabird occurs along the Pacific coast from California to Alaska. It forages for small fish in estuaries, protected inshore marine waters, and lakes within 75 km of the coast. During the breeding season, murrelets commute daily to nests on large mossy branches high in the canopies of coastal old-growth forests. The primary threat to marbled murrelet populations is loss of this nesting habitat to logging, although oil spills and entanglement in fishing gear also pose significant threats. The species is long-lived (to 10 y) and has low reproductive rates making it especially vulnerable to increases in adult mortality.	Blue	1	Threatened, Schedule 1	Golder 2005
Peregrine Falcon (*Falco peregrinus anatum*) 	This crow-sized falcon is found from Alaska through central Mexico. It is a formidable hunter that usually takes other birds in flight. Peregrines nest on cliff ledges (or high rise buildings), often near wetlands. They defend a territory of approximately 1 km radius around the nest and occupy a non-defended hunting territory extending up to 27 km from the nest. Open habitats such as wetland, grassland, seacoasts and alpine meadows are preferred. Two subspecies occur in the Province. The *anatum* subspecies occurs across Canada. In BC, it is concentrated along the southern coast and Gulf Islands with a few scattered locations in the interior. It was nearly extirpated from BC when widespread use of DDT and other organochlorine toxins reduced its breeding success. This threat is no longer thought to be limiting, and the subspecies appears to be recovering well. It was downlisted from 'threatened' to 'special concern' in 2007.	Red	2	Special Concern, Schedule 1	Madrone 200 ENKON 2005 Golder 2005

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Short-eared Owl (*Asio flammeus*) 	This owl is found on every continent except Antarctica and Australia and breeds in every Canadian province and territory. It inhabits extensive areas of open habitats including marshlands, estuaries, and grasslands, but is absent from heavily forested areas. Habitat losses have resulted in a relatively steep, long-term decline in Canada (23 percent in past decade). Small numbers breed in the Fraser Valley and the south central interior. The owl nests on the ground under low shrubs, reeds or grasses, usually near water. When not breeding, short-eared owls are nomadic, roaming extensive ranges while hunting for small mammals and birds. Loss and fragmentation of habitat due to urban development and agricultural intensification are considered the primary threats. Competition with Northern harriers (*Circus cyaneus*) may also be contributing to the decline.	Blue	2	Special Concern, Schedule 1	
Spotted Owl (*Strix occidentalis*) 	The spotted owl is a permanent resident in old growth coniferous forests from south coastal BC to southern California and along the Rocky Mountains from Colorado to Mexico. Within BC it is limited to a roughly triangular area extending from Lillooet Lake in the north to Vancouver in the southwest and Manning Park in the southeast. They are nocturnal and feed on small mammals, especially flying squirrels. A pair of spotted owls requires 800 to 3200 ha of forest. Biologists estimate that over 1000 individuals lived in the Province historically. Estimates for 1993 and 2007 were 200 and 19 birds respectively. No young owls are being recruited to the breeding population (currently 5 pairs) and extirpation is expected within a decade if current trends continue. A captive breeding program is underway. Habitat loss and fragmentation due to commercial logging is clearly driving the owl's rapid decline. Other threats include predation by great horned owls, competition and hybridization with barred owls, and toxic pollution.	Red	2	Endangered, Schedule 1	

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Western Screech-Owl (*Megascops kennicottii kennicottii*)  Kameron Perensovich	This small grey-brown owl occurs from southern Alaska to central Mexico. Two subspecies of are found in British Columbia. This one occurs along the coast including Vancouver Island but not Haida Gwaii, while the other (*M. k. macfarlanei*) is limited to the southern interior. The coastal subspecies population is estimated at more than 3000 birds, but appears to be in decline in the south. The species occupies a variety of forest types, often close to open areas or waterways. It nests in cavities within large, old trees and is strongly associated with riparian areas. Screech owls are nocturnal, non-migratory, and feed on a variety of small mammals, birds, fish, and insects. Major threats include habitat loss to logging and human development and the rapid increase in barred owl numbers (a major predator) in its range.	Blue	1	Threatened, Schedule 1	ENKON 2009 UMA 2005
INVERTEBRATES:					
Blue Dasher (*Pachydiplax longipennis*)  Robert A Hamilton	These dragonflies are abundant across the southern half of North America, but are restricted to a small range within British Columbia. Here, they are known only from the north end of Osoyoos Lake in the interior, the lowlands of the southern coast, Vancouver Island, and the Gulf Islands, where they are most abundant. The species is locally common at ponds and lakes with abundant aquatic and riparian vegetation. Both sexes feed by darting out from defended perches to capture smaller insects. Like all dragonfly larvae, the nymphs are aquatic and predatory. The adult flying phase occurs between early June and mid-September. The major threats are likely the loss of wetland and riparian habitat to urban and agricultural development and predation by introduced fish species.	Blue	4		Gabauer 2009 BC's Wildlife Heritage 2008

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Dun Skipper (*Euphyes vestris*)  Vicki DeLoach	This small, purplish butterfly is found from central California to BC, where it occurs on the Sunshine Coast, in the Fraser Valley and Canyon north to Lillooet and on Vancouver Island south of Courtenay. The species is widespread east of the Rocky Mountains. It is found in moist, open areas containing sedges, which are the larval food plant. Although numerous species of sedge (*Carex* sp.) are used across the range, only one or two are used at each site, a phenomenon found in a number of other butterfly species. Dun skippers live for one year with the adult, flying stage occurring from June to August. Population size remains unknown, but a general decrease in number of sightings suggests that they are in decline. The major threats are believed to be habitat degradation, loss and fragmentation to land development, drainage activities and introduced plant species, especially scotch broom.	Blue	1	Threatened, Schedule 1	
Oregon Forestsnail (*Allogona townsendiana*)  Ryan Durand	This snail occurs from western Oregon north to southwestern BC where it is restricted to the Fraser Valley and southern Vancouver Island. It occupies a wide variety of habitats, but is most commonly found in broadleaf forests dominated by big-leaf maple and red alder, with stinging nettle and sword fern in the understory. Other requirements are abundant leaf litter and large woody debris, which provide protection from extreme temperatures and drying during winter hibernation. Population sizes and trends are unknown, but their location amidst some of the province's most developed and modified landscapes has resulted in high rates of habitat loss and fragmentation. Given the species' poor dispersal ability, habitat patches are unlikely to be recolonized following local extirpations. Major threats include urbanization, agriculture, and logging. Brush burning, trampling and pesticide use are also concerns.	Red	1	Endangered, Schedule 1	ENKON 2009 Madrone 2007 BC CDC

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Pacific Sideband (*Monadenia fidelis*) 	This land snail occurs from California to Alaska, and to the west of the Coast and Cascade Mountains within BC. It is found in a variety of forest types, woodland and grassy areas. It is most often encountered in late spring crawling on the ground or climbing the trunks of trees and shrubs. The primary threat is habitat loss and fragmentation due to commercial forest harvest and urban and agricultural development.	Blue	2		ENKON 2009 Gabauer 2009 BC CDC
MAMMALS:					
Keen's Myotis (*Myotis keenii*) 	This long-eared, insect-eating bat is found along the Pacific northwest coast from Washington to Alaska. In BC it is known on Vancouver Island, Haida Gwaii and the mainland coast. It requires mature low elevation coastal forests and riparian areas for foraging, humid caves for winter hibernation and tree cavities, rock faces and crevices for roosting and breeding. They are sometimes associated with hotsprings or geothermally heated rocks crevices. Threats to habitat from forest harvesting and mineral extraction and disturbance during hibernation due to recreational activities are the major concerns for this bat.	Red		Data Deficient, Schedule 3	

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Mountain Beaver (*Aplodontia rufa rufa*) 	This unusual animal is the most primitive living rodent and requires very moist environments because of their primitive kidneys, a poor ability to regulate body temperature, and limited tolerance to drought. It is found from northern California to southwestern BC. Mountain beavers construct burrows in the deep soils of a variety of cool, moist forest habitats from near sea level to timberline. They forage on a wide variety of herbaceous and woody plants and are preyed upon by bobcats, coyotes, cougars and eagles. Home ranges of adults are very small (less than 0.2 ha). Logging practices that disturb soils threaten them in their current range. At lower elevations, habitat loss to agriculture and urbanization are probably the main limiting factors. A total of 1,600 adults are believed to occur in BC.	Blue	2	Special Concern, Schedule 1	Madrone 200 Golder 2005 BC CDC
Pacific Water Shrew (*Sorex bendirii*) 	This large shrew is found along the Pacific Coast from northern California to southern BC, where it is limited to lowland riparian forests and marshes in the Lower Mainland. Most individuals are found within 25 m of streams in mature coniferous or mixed forests. They eat a variety of terrestrial and aquatic invertebrates, and sometimes cache food. The major threats to this species are habitat loss and fragmentation through urban and agricultural development. Predation by domestic cats and water quality degradation that affects food supplies are probably also contributing to the species' decline. Riparian buffer strips prescribed under forestry and development regulations are generally too narrow to protect Pacific water shrew, which are believed to require 100 m.	Red	1	Endangered, Schedule 1	Golder 2005 Seacology 19 BC CDC

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Snowshoe Hare (*Lepus americanus washingtonii*) 	Snowshoe hares occur across Canada, including most of mainland BC, and throughout New England and most of the western United States. This subspecies is limited to Washington, Oregon and BC's Fraser Valley. Unlike other subspecies, it does not produce a white winter coat, but remains brown year round. Hares prefer dense coniferous and mixed forests for cover, but also forage in more open habitats. They feed on twigs, buds and bark in winter and herbaceous vegetation in summer, usually in twilight or darkness, and are eaten by a range of carnivorous mammals and birds. They occupy small home ranges (5 - 15 ha) and may produce up to four litters annually. Maximum life span is five years, but few live more than two in the wild. Museum specimens indicate that the subspecies was common across the Fraser Valley prior to urbanization, but only a handful of confirmed sightings have been made in recent decades. Loss and fragmentation of forest and woodland habitat to urban and agricultural development is considered the primary threat, although predation by domestic pets and competition with introduced cottontails have also likely contributed to the decline.	Red	1		Enkon 2009 Golder 2005, EBB 2004, Seacology 19 BC CDC
Townsend's Big-eared Bat (*Corynorhinus townsendii*) 	This species is found from southern BC through the western United States to central Mexico. Within the Province, it is found on southern Vancouver Island, in the Fraser Valley and in southern interior valleys. It typically forages within 3 km of the daytime roosting site, which must be extremely dark. Caves, tree cavities and buildings are all used. The bats move between a number of roosts to access foraging areas 10-65 km from the hibernation site, usually a cave or mine or building. They hibernate in early fall, mate in late fall, and begin foraging again in early spring after the young are born. They are nimble flyers and forage for insects, especially moths, around the forest canopy, avoiding open grasslands even while commuting between foraging areas. Loss or disturbance of daytime roosting sites and loss of forest cover are considered the primary threats.	Blue	2		Gabauer 200 IRC 2008, Golder 2005

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Townsend's Mole (*Scapanus townsendii*) 	This mole, the largest in North America, is found from northern California to southwestern BC, where it is limited to 13 square km of low-lying agricultural land adjacent to the United States border in the Fraser Valley and select sites on Sumas Mountain. The population is estimated at less than 700 animals. The mole eats earthworms and other soil invertebrates and prefers silt-loam soils. It has a keen sense of touch but its eyes can only detect light intensity and it has poor senses of smell and hearing. Elsewhere, it is found in meadows, pastures, fir-forest and grassland with deep rich soils. Weasels, snakes, owls, hawks and coyotes are its primary natural predators. Habitat loss and fragmentation due to urban and agricultural development have reduced habitat availability. Flooding and livestock trampling of nests along with human persecution are the major threats.	Red	1	Endangered, Schedule 1	Enkon 2009, SCCF 2009, IRC 2008, Madrone 200
Trowbridge's Shrew (*Sorex trowbridgii*)	This shrew is found from California north to BC's Fraser Valley. It is found in a wide variety of forest habitats, but favours mature or old coniferous stands with a deep organic layer for burrowing, and abundant logs and woody debris for cover. High water tables are avoided. Like most shrews, it feeds voraciously and opportunistically on a wide variety of invertebrates, but also takes seeds and mushrooms. The shrews breed in spring and litters of up to six are born in May or June. They remain active year round, but rarely live for more than 18 months. Owls are likely the major predators. Urbanization in the Fraser Valley has eliminated and fragmented much formerly suitable habitat, and remains the major threat, although predation by domestic cats is also likely an issue.	Blue	2		Golder 2005, BC CDC MPSA
REPTILES:					
Western Painted Turtle (*Chrysemys picta pop. 1*) 	This small (25 cm) turtle is found across southern Canada and the United States except Florida and some southwestern states. Two populations of one subspecies occur in BC. The Pacific Coast population is found on Vancouver Island and the Lower Mainland from Campbell River and Powell River south, while the Intermountain - Rocky Mountain population occurs east of the Coast Mountains. The turtles are found in mud-bottomed lakes, ponds and lowland streams with basking sites and aquatic vegetation. Adults are omnivores, feeding on aquatic plants, carrion, and live prey, while juveniles feed exclusively on small invertebrates. Females dig nests on south facing slopes close to the water in May or June. The young hatch in late summer, but often overwinter in the nest. Adults overwinter underwater, buried in mud sediments. Painted turtles are believed to reach 50 years of age. Significant population declines have occurred on southern Vancouver Island, and in the Fraser, Okanagan, and Similkameen Valleys. The main threats are habitat loss and fragmentation due to agricultural and urban development, road kill, increased nest predation, and injuries from angling gear.	Red	2	Endangered, Schedule 1	ENKON 2009

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Rubber Boa (*Charina bottae*) 	This small snake (75 cm) is the only boa native to Canada and is easily identified by its rubbery appearance and broad, blunt tail. It is patchily distributed from the southern third of British Columbia south to California. The snakes occupy a variety of habitats including grassland, montane forest, riparian zones, and even vacant city lots. They require rocky outcrops or abundant wood debris for cover and basking and often use abandoned rodent burrows. They feed primarily on small rodents and eggs. Rubber boas are long lived (to 30 yrs) and do not reproduce every year, which makes them very vulnerable to increases in adult mortality rates. Population size and trends are unknown, but available evidence suggests that the snakes are not abundant. Habitat loss and fragmentation to forestry, agriculture and urban development activities are believed to be the major threat, although road kill and human persecution are also concerns.	Yellow		Special Concern, Schedule 1	Madrone 200 UMA (Golder 2005)
PLANTS:					
False-pimpernel (*Lindernia dubia var. anagallidea*) 	This low annual herb reaches 20 cm in height. It is found in southern BC and southern Ontario, through most of the continental United States, Mexico and into South America. It grows on wet, sandy or muddy soils around wetlands and lakes and in wet meadows from low to mid elevations. Loss of riparian and wetland habitats to shoreline, urban and agricultural development are likely the main threats.	Blue	2		

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Pacific Waterleaf (*Hydrophyllum tenuipes*) 	This small perennial herb has very distinctive leaves and is known from California to BC, where it is limited to a few sites in the Fraser Valley and southern Vancouver Island. It grows on moist sites, often along stream banks, in mature to old mixed or deciduous forest at low elevations. The major threat is habitat loss and degradation to urban and agricultural development.	Red	2		ENKON 2009 Madrone 200 Golder 2005, BC CDC
Phantom Orchid (*Cephalanthera austiniae*) 	This unusual plant is leafless, almost completely white, and obtains nutrients from a partnership with a fungus and a tree species rather than from photosynthesis. It occurs in California, Oregon, Idaho, Washington and BC, where it is restricted to southeastern Vancouver Island, Saltspring Island, and the Chilliwack area of the Fraser Valley. It usually grows in mature or old growth mixed or deciduous forests with little or no groundcover, but can persist in denser vegetation. Plants exhibit dormancy under suitable conditions. The species may be overlooked in years when fewer flowering stems are produced. Habitat loss due to urban or agricultural development is a major threat to the species.	Red	2	Threatened, Schedule 1	ENKON 2009 Madrone 200 Golder 2005

Common Name (*Scientific Name*)	Species Summary[1]	BC Status[2]	BC Conservation Priority[3]	COSEWIC[4] Status, SARA Schedule[5]	Source, if confirmed present[6]
Silver Hair Moss (*Fabronia pusilla*) 	This small creeping moss is found in Mediterranean climates of western North America, Western Europe and Northern Africa. It is known from two sites in Canada, Sumas Mountain in the Fraser Valley, and near Lower Arrow Lake in the Kootenays. The Arrow Lake population was extirpated when a reservoir was filled. The Fraser Valley population has not been found in recent surveys, although the species' small size and habit of intermingling with other mosses make it very difficult to detect. It grows in cliff crevasses or on tree bark in seasonally dry habitats. There are no obvious threats to the Sumas Mountain population (if it still exists), but its small size and isolation render it very vulnerable to chance events.	Red	3	Endangered, Schedule 1	Golder 2005, BC CDC UMA 2005
Vancouver Island Beggarticks (*Bidens amplissima*) 	This tall, multi-branched annual herb occurs in Washington and BC, where it is found in the lower Fraser Valley, and on southern Vancouver Island. It is typically found in shallow shoreline areas of ponds, lake margins, bogs and in intertidal zones. Some populations fluctuate widely, and are dependent on high winter water levels and summer drawdown that exposes suitable soils for germination. The major threat to the species is habitat loss and fragmentation from urban development and agricultural activities. Trampling in publicly accessible areas is also a problem.	Blue	1	Special Concern, Schedule 1	
PLANT COMMUNITIES:					
Douglas-fir / sword fern (*Pseudotsuga menziesii / Polystichum munitum*)		Red			Madrone 2007
Western redcedar / sword fern (*Thuja plicata / Polystichum munitum*)		Blue			Madrone 2007
Western redcedar - Sitka spruce / skunk cabbage(*Thuja plicata - Picea sitchensis / Lysichiton americanus*)		Blue			Gabauer 2009 Madrone 2007

Common Name (*Scientific Name*)	Species Summary[1]	BC Status[2]	BC Conservation Priority[3]	COSEWIC[4] Status, SARA Schedule[5]	Source, if confirmed present[6]
Western redcedar / three-leaved foamflower (*Thuja plicata / Tiarella trifoliata*)		Blue			Madrone 200

[1]**Species Summaries from:** Pearson, Mike and Healey, M.C.2012. Species at Risk and Local Government: a Primer for BC. Stewardship Centre of British Columbia, Courtenay BC.
[2]**BC Status:** the BC government's Conservation Data Centre designates a conservation status for species and ecosystems in BC.

- **Red:** Any indigenous species or subspecies that have, or are candidates for, Extirpated, Endangered, or Threatened status in BC.
- **Blue:** Any indigenous species or subspecies of Special Concern (formerly Vulnerable) in BC and have characteristics that make them particularly sensitive or vulnerable to human activities or natural vents.

[3]**BC Highest Conservation Priority:** this is a tool developed by the provincial government to help prioritize species and ecosystems for conservation (1 is the highest priority and 6 is the lowes priority) and determine the most appropriate and effective management actions. Criteria for priority ranking includes: global risk status, provincial risk status, trend, threat, feasibility, and stewardship responsibility. For more information see: http://www.env.gov.bc.ca/conservationframework/documents/CF_Primer.pdf

[4]**COSEWIC:** Committee on the Status of Endangered Wildlife in Canada, which is responsible for assessing the conservation status of native species in Canada. Its list is the basis for the legal list of species protected under the Species at Risk Act (SARA).

- **Endangered (E):** A species facing imminent extirpation or extinction
- **Threatened (T):** A species that is likely to become endangered if limiting factors are not reversed
- **Special Concern (SC):** A species of special concern because of characteristics that make it

[5]**SARA**: Species At Risk Act, a federal law that confers legal species at risk status

- **SARA Schedule 1**: is the official list of wildlife species at risk in Canada. It includes species that are extirpated (extinct in Canada), endangered, threatened, and of special concern. Once a species is listed on Schedule 1, protection and recovery measures are developed and implemented.
- **SARA Schedules 2 and 3:** Species that were designated at risk by COSEWIC (the Committee on the Status of Endangered Wildlife in Canada) before the creation of the *Species at Ri Act* must be reassessed according to the new criteria of the Act before they can be added to Schedule 1. These species are listed on Schedule 2 (endangered and threatened) and Schedule 3 (special concern), and are not yet officially protected under SARA.

[6]**Sources:**

- BC CDC (BC Conservation Data Centre): http://www.env.gov.bc.ca/cdc/
- BC's Wild Heritage. 2008. Butterfly, Dragonfly, and Rare Plant Survey – Whatcom Road Connector, Abbotsford, BC.
- Enkon Environmental Ltd. 2009. Wildlife Habitat Assessment Vicarro Ranch Planning Area, Abbotsford, BC.
- Gebauer & Associates Ltd. 2009.Environmental Assessment Document: Whatcom Road Connector Project, Abbotsford, BC

- Golder Associates Ltd. 2005a. Overview-Level Biophysical Inventory and Candidate Environmentally Sensitive Area Identification for McKee Peak Study Area, Abbotsford, BC. Prepared by Golder Associates Ltd. and submitted to UMA Engineering Ltd.
- Madrone Environmental Services Ltd. (Madrone). 2007. Rare Element Survey and Habitat Rating – McKee Peak, Abbotsford, BC. Prepared for the City of Abbotsford.
- Seacology. 1995. Survey of Upper Reaches and Ponds of McKee Creek: a part of the Environment Impact Assessment for the Vicarro Ranch development.
- UMA Engineering Ltd. 2005. City of Abbotsford, McKee Peak Planning Study. Burnaby, BC

More information on species at risk is available from the **Species at Risk & Local Government: A Primer for BC**, the **BC Ministry of Environment - Species and Ecosystems at Risk** and **Government of Canada Species at Risk Public Registry**.