

# Appendix 1: Species Accounts

Species Accounts for Best Management Practices for Amphibians and Reptiles in Urban and Rural Environments in British Columbia

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# Rough-skinned Newt

## *(Taricha granulosa)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	Not assessed	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>				<b>R</b>	<b>R</b>		

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Rough-skinned Newt occurs on Vancouver Island and along the entire length of the mainland coast. It is found throughout the Vancouver Island Region and in coastal areas of the Southern Mainland, Cariboo, and Skeena Regions. From British Columbia, the species' range extends south to northern California and north along the coast to southern Alaska.

## Life History and Habitat Requirements

In early spring newts migrate in large numbers to breeding sites in shallow ponds, bogs, swamps, and backwaters of streams and lakes. Aquatic habitats with abundant vegetation are preferred. Females attach their eggs singly on aquatic vegetation at depths of 0.5 – 2 m under water. The eggs hatch into larvae that transform into terrestrial forms usually within the same year; at high elevations metamorphosis may be delayed until the following summer. Transformed juveniles and non-breeding adults forage in densely or partially wooded upland habitats and can wander far from water. Juveniles remain in terrestrial environments for years, until they reach sexual maturity. Decaying downed logs, bark, and other cover-objects on the forest floor provide important refuges. At some sites a large proportion of adults, particularly males, remain in aquatic breeding habitats year-round.

On cloudy, mild, wet days these newts are often seen on the forest floor. Their toxic secretions protect them from predators. The skin and tissues of this species contain a potent toxin (tetrodotoxin) that is highly poisonous to vertebrates. Unless ingested (with fatal results), the newts pose no danger to humans, even if handled. The concentration of tetrodotoxin varies among

localities, and newts from Vancouver Island appear to lack this compound but have retained other toxins.

## Compatibility to Urban and Rural Development

The Rough-skinned Newt is moderately compatible with urbanization and can persist in low-density residential areas. Aquatic stages appear to tolerate some degree of organic pollution, as the species can breed in water bodies with an abundance of decomposing vegetation. However, these newts require extensive terrestrial foraging habitat and are susceptible to high mortality on roads during mass migrations to and from breeding sites in the spring and autumn. Providing abundant coarse woody debris enhances the value of terrestrial habitats for this species.

# Coastal (=Pacific) Giant Salamander

*(Dicamptodon tenebrosus)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Red-listed</b>	<b>Threatened</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
	<b>R</b>							

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, this species is restricted to the Chilliwack River Valley and adjacent small drainages within the Lower Mainland Region. The majority of its range is in the United States, where its distribution extends south through Washington and Oregon to northwestern California.

## Life History and Habitat Requirements

The Coastal Giant Salamander occupies cool, well-oxygenated, clear streams and moist, shaded riparian zones along such streams. Small, permanent headwater streams are preferred habitats, but the salamanders may also occur in lakes and rivers. Females lay their eggs in sheltered sites in shallow water and guard them until hatching. Larvae require several years before transformation into terrestrial forms. In large water bodies, especially at high elevations, larvae may forego metamorphosis and become sexually mature while retaining larval characteristics (a process termed neoteny).

Larvae confine their movements to small (often less than 10 m) sections of streams and typically shelter under rocks and boulders in small pools, which form prime habitat. Terrestrial adults are secretive and nocturnal and rarely encountered. They spend much of their time in underground burrows or under decaying downed wood within relatively narrow (about 50 m) riparian zones along streams. Longer, overland movements occasionally occur under wet and mild conditions. Both adults and larvae are voracious predators of a variety of invertebrate and small vertebrate prey.

## Compatibility to Urban and Rural Development

The Coastal Giant Salamander is occasionally encountered on lawns or while stranded in wells or drains in residential areas. Its compatibility is probably low for intensive urban developments and low to moderate for rural and low-density urban developments. Aquatic forms are sensitive to sedimentation, alteration of their clear, clean stream habitats, and the presence of predatory fish. Terrestrial adults are sensitive to human disturbance to riparian areas and loss of forest cover. Urban development is identified as a threat for this species, mainly through habitat loss. Where special measures to maintain habitat quality in both stream and adjacent riparian habitats are taken, these salamanders may be able to coexist with low-density developments.

# Northwestern Salamander

## *(Ambystoma gracile)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not at risk</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>	<b>F</b>			<b>R</b>	<b>R</b>		

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Northwestern Salamander occurs on Vancouver Island and all along the mainland coast, north to the Alaskan border. On the Lower Mainland the species' range extends east to Hope; an isolated record from Lake Okanagan probably represents an introduction. From British Columbia, the species' range extends north to southeast Alaska and south to northwest California.

## Life History and Habitat Requirements

These forest-dwelling salamanders breed in permanent or semi-permanent ponds, lakes, or pools in slow streams and migrate seasonally to and from these breeding sites. In early spring, females attach a firm globular clutch of 60 – 140 eggs around underwater plant stalks, sometimes near the bottom of the pool. The eggs often contain symbiotic green algae. The eggs develop slowly compared to other amphibians and may take several months to hatch. Larvae over-winter at the breeding sites and usually transform the following year. However, in some habitats, particularly at high elevations, they may reach sexual maturity while retaining larval characteristics (a process termed neoteny). Transformed juveniles require at least a year in the terrestrial habitat before returning to the water to breed. The skin of transformed salamanders contains glands that produce noxious secretions; concentrations of these glands are present on the sides of the head (parotoid glands) and along the tail. If disturbed, these salamanders exhibit special defensive postures and behaviours.

This species occurs in a variety of forested terrestrial habitats, but densities are typically higher in older forests than in young, managed forests. The

salamanders require abundant moist refuges on the forest floor and shelter in underground burrows or beneath decaying logs or other coarse woody debris.

## Compatibility to Urban and Rural Development

The compatibility of the Northwestern Salamander with urban and rural developments is moderate. These salamanders can breed in drainage ditches and occupy residential rural areas. However, aquatic stages are sensitive to the presence of predatory fish; although populations can persist in lakes with fish, densities are typically much reduced. Terrestrial phases require moist forest habitat with abundant refuges adjacent to breeding sites.

# Long-toed Salamander

## *(Ambystoma macrodactylum)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>R</b>	<b>W</b>	<b>F</b>

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

The Long-toed Salamander is widely distributed in British Columbia but is absent from much of the far northern part of the province. From British Columbia, its range extends north to southern Alaska, south to northern California, and east to the Rocky Mountains of western Alberta, Idaho, and western Montana.

## Life History and Habitat Requirements

These salamanders breed early in the spring in pools and ponds with abundant aquatic vegetation. Females lay their eggs singly or in small clusters and attach them to submerged plants in shallow water. At lower elevations and in the southern part of the province the larvae metamorphose the same year, whereas at high elevations and in the north larvae may not transform until the next year after overwintering in the breeding ponds.

These salamanders occupy a variety of habitats, including forest, grassland, and disturbed areas. They often occur in moist, forest edge habitats. Transformed juveniles and adults spend much of their time in refuges along pond edges and seldom wander far from water. These salamanders require abundant cover, such as coarse woody debris, abandoned rodent burrows, or rock piles.

## Compatibility to Urban and Rural Development

The compatibility of the Long-toed Salamander with urban and rural developments is moderate to high. They have been occasionally reported

from basements or cellars in residential areas. These salamanders are flexible in their habitat requirements and can use a variety of pools and ponds for breeding, including recently disturbed areas. Terrestrial phases appear to be relatively sedentary and confine their movements to small areas. Abundant emergent vegetation in breeding ponds and cover along pond edges facilitate the species' existence in disturbed areas.

# Tiger Salamander

## *(Ambystoma tigrinum)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Red-listed</b>	<b>Endangered</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
		<b>R</b>		<b>F</b>				

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Tiger Salamander is restricted to a small part of the arid, southern interior. This species is widespread in North America, and its distribution includes northern Mexico, central, mid-western, and eastern United States, and parts of southern Canada. Several subspecies are recognized within this wide range; one (*A. tigrinum melanostictum*) occurs in British Columbia. The range of the British Columbia population is contiguous with the range of populations in northeastern Washington, but is disjunct from other Canadian populations in southern Alberta, Saskatchewan, and Manitoba.

## Life History and Habitat Requirements

The Tiger Salamander occupies bunchgrass and ponderosa pine habitats. In early spring these salamanders migrate to permanent or semi-permanent aquatic breeding sites. They can breed in a variety of water bodies, including lakes, farm ponds, and reservoirs, and are able to tolerate alkaline conditions that are unsuitable for most other amphibians. Females lay their eggs either singly or in small clusters and attach them on aquatic plants, stones, or debris in shallow water. Similar to other Mole salamanders (family *Ambytomatidae*), the length of the larval period is flexible and dependent on environmental conditions. The larvae may transform the same year but often delay metamorphosis until the following year. In permanent water bodies that lack predatory fish, larvae may attain sexual maturity without transformation (a process termed neoteny).

Terrestrial adults are secretive and largely fossorial and rarely seen. They spend much of their time sheltered in underground burrows but forage on

the surface during or after rains in the spring and autumn. These salamanders may live 20 or more years.

## Compatibility to Urban and Rural Development

The compatibility of the Tiger Salamander with urban and rural developments is low but may be moderate where breeding sites and shorelines can be adequately protected from human disturbance. Urban developments and road building in riparian zones are among factors that threaten the survival of this species. Because of their scattered distribution pattern and reliance on shoreline habitats within an otherwise hostile, dry environment, potential conflicts with human activities are intensified. Eggs and larvae are sensitive to the introduction of predatory fish, and transformed salamanders are sensitive to trampling of their burrows and other disturbance to riparian habitats.

# Wandering Salamander

## *(Aneides vagrans)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Apparently secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>								

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Wandering Salamander is confined to Vancouver Island and adjacent Gulf Islands. The global range of the species is disjunct: in addition to southern British Columbia, it occurs in northern California but is absent from Washington and Oregon. A very closely related species, the Clouded Salamander (*Aneides ferreus*), occurs in southern Oregon. Until recently, the two were regarded the same species.

## Life History and Habitat Requirements

The Wandering Salamander is one of four species of completely terrestrial Plethodontid salamanders that occur in British Columbia. All Plethodontid salamanders lack lungs and rely on their moist skin for the exchange of respiratory gases. Therefore, they are very susceptible to dehydration and require moist habitats. Females lay their eggs in moist, sheltered locations on land, typically within decaying wood, and attend them until they hatch. The young resemble miniature adults. The young take at least three years to reach sexual maturity.

The Wandering Salamander inhabits several forest types and ages. It requires abundant, moderately decayed coarse woody debris, and is commonly found under sloughing-off bark on down logs. It is partially arboreal, and in California nests has been found on moss-covered branches of redwood trees up to heights of 30 – 40 m.

## Compatibility to Urban and Rural Development

The Wandering Salamander is moderately compatible with urban development, provided that abundant, moist refuges are available. These salamanders sometimes get transported with firewood to urban areas, where they can persist and reproduce for many years. An apparently self-sustaining urban population of this species occurs in a residential area of Victoria. These salamanders also occupy forested parks within urban areas. Abundant coarse woody debris at appropriate stages of decay facilitates the species' persistence in developed areas. Large-diameter pieces of logs or woodpiles that remain moist and undisturbed may be necessary for nesting habitat.

# Western Red-backed Salamander

*(Plethodon vehiculum)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not at risk</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>							

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Western Red-backed Salamander occurs on Vancouver Island and the Lower Mainland from the Pacific coast east to Hope. The northern limits of its distribution along the coastal mainland are poorly known. From British Columbia, the species’ range extends southward to western Washington and Oregon.

## Life History and Habitat Requirements

Similar to other Plethodontid salamanders in western North America, this species is completely terrestrial and dependent on moist habitats. Females lay a small clutch of eggs in damp, secluded locations on land and probably attend them until hatching takes place several months later. The young resemble miniature adults. Females reproduce every second year or less often.

The Western Red-backed Salamander is an inhabitant of coniferous and mixed-wood forests. These salamanders require moist forest floor conditions and abundant cover. Coarse woody debris and a well-developed litter layer provide shelter and foraging sites. Individuals typically confine their activities to a small area of the forest floor. During the day they shelter under decaying wood or other cover-objects on the forest floor, but may be found active on the surface on calm, wet nights.

## Compatibility to Urban and Rural Development

These salamanders are moderately compatible with urbanization. Where sufficient moist forest habitat is available, populations can persist within urban parks and rural areas; however, these salamanders are unlikely to occupy small city parks. Moist forest floor conditions with abundant cover facilitate the species' persistence within populated areas.

# Coeur d'Alene Salamander

## *(Plethodon idahoensis)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Blue-listed</b>	<b>Special concern</b>	<b>Apparently secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
				<b>R</b>				

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Coeur d'Alene Salamander occurs within a restricted area in the southeastern part of the province. In the East Kootenay scattered populations are known from from 95 km north of Revelstoke to the Pend Oreille, near the Washington border in the south. From British Columbia, the species' range extends south to the Idaho panhandle and northern Montana, where the species also occurs at scattered sites. A closely related species, Van Dyke's Salamander (*Plethodon vandykei*) occurs in parts of western Washington. Until recently the two were considered the same species.

## Life History and Habitat Requirements

Like other species of Plethodontid salamanders in western North America, this species is completely terrestrial. Females lay a small clutch of eggs (about 6 eggs) in moist, secluded locations, probably in rock fissures; hatchlings resemble miniature adults. Although they do not breed in water, the Coeur d'Alene Salamander is among the most aquatic of western Plethodontid salamanders. It is restricted to very moist habitats by seepages, waterfall splash zones, and wet, riparian areas. Populations also occur in caves and mineshafts. These salamanders are petrophilic (affinity with rocks) and require discrete rocky microhabitats, in addition to a source of moisture. The salamanders shelter in rock crevices and cracks during dry periods in the summer and cold periods in the winter, when conditions are unfavourable for surface activity.

## Compatibility to Urban and Rural Development

The compatibility of this species with urban and rural developments is low. The rocky seepage areas and other similar habitats that the salamanders require are exceedingly fragile and vulnerable to human disturbance. Because suitable habitat patches are widely scattered within otherwise hostile, drier environment, habitat degradation can lead to the extirpation of local populations; displaced animals are likely to perish. Highway maintenance activities (such as road widening, rock scaling, and herbicide application) have been identified as a threat to populations in British Columbia. Additionally, any activities that modify ground water levels or rock formations within salamander habitats are potentially detrimental.

# Ensatina

## *(Ensatina eschscholtzii)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not at risk</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>				<b>F</b>	<b>F</b>		

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, this species occurs on Vancouver Island and Lower Mainland. Its distribution extends north along the Pacific coast to near Kitlope and east along the Fraser Valley to Boston Bar. Only a few isolated records exist from north of Toba Inlet on the Lower Mainland coast. From British Columbia, the species' range extends south along the coast through Washington, Oregon and California to Baja California, Mexico. Several distinct subspecies and colour variations occur in the United States.

## Life History and Habitat Requirements

Similar to other Plethodontid salamanders in western North America, this species is completely terrestrial and dependent on moist habitats. Females lay a small clutch of eggs in sheltered locations on the forest floor, such as within large, decaying logs. Females attend their eggs until hatching takes place several months later. The young resemble miniature adults.

The Ensatina occurs in a variety of forest habitats. These salamanders require moist retreats on the forest floor, such as provided by coarse woody debris in various stages of decay, rocks and rodent burrows. They are often associated with down logs and sloughed-off bark at the bases of snags and stumps. Like most other terrestrial salamanders, they are nocturnal, secretive, and seldom seen.

## Compatibility to Urban and Rural Development

The *Ensatina* is moderately compatible with urban development. It can tolerate somewhat drier conditions than other Plethodontid salamanders in the province, which might facilitate its persistence in forest edge habitats. In the United States, populations persist in forested parks within urban areas, and individuals and egg-masses are occasionally found in residential areas.

# Coastal Tailed Frog

## *(Ascaphus truei)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
Blue-listed	Special concern	Apparently secure

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
R	R				R	R		

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, this species occurs along the Pacific Coast from the Fraser Valley as far north as Prince Rupert. Outside of British Columbia, this species' range extends along the coast from western Washington to northwestern California.

## Life History and Habitat Requirements

Tailed frogs live in and around cool, clear, fast-flowing, permanent mountain streams with stable rocky substrates such as cobbles and boulders. Tadpoles cling to rocks with specialized mouthparts located underneath the head, and feed on microscopic algae growing on rocks. All life stages are most active at night; during the day, tadpoles hide on the underside of rocks, and adults and juveniles seek refuge under large objects at or near the stream edge. At night adults and juveniles forage for insects along the stream and in the moist woods adjacent or, during rainy weather, some distance from the stream. Courtship and mating occur from late September to early October, and egg-laying occurs the following June and early July. Each female produces 50 – 60 eggs in a gelatinous string that is attached to the underside of a large rock in shallow water. Embryos hatch in late August, after approximately six weeks. Metamorphosis may occur after one or two years at low elevation, or three to four years at higher elevations. Juveniles reach sexual maturity after approximately 3 – 7 years. At high elevations and in the north, females breed in alternate years only. There is limited potential for recolonization after local extirpation because populations tend to be disjunct.

## Compatibility to Urban and Rural Development

The Coastal Tailed Frog's compatibility with urban and rural development is deemed from low to moderate. Habitat degradation and loss from logging and road building are known to reduce or eliminate this species, likely because it is sensitive to sediment loading, debris flows, and increased water temperatures; all life stages have a narrow temperature tolerance. Similar changes to streams and adjacent riparian habitat caused by urban and rural development would negatively impact populations of the Coastal Tailed Frog.

# Rocky Mountain Tailed Frog

## *(Ascaphus montanus)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Red-listed</b>	<b>Endangered</b>	<b>Apparently secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
				<b>R</b>				

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

This species was once considered a geographically separated population of the Coastal Tailed Frog. In British Columbia, this species' distribution is limited to the extreme southeastern portion of the province, where it is found in only two drainage systems. Its range extends from British Columbia south to Idaho and northwestern Montana.

## Life History and Habitat Requirements

There is limited information about the life history and habitat requirements of the Rocky Mountain Tailed Frog, and most of the following information is based on studies of the similar Coastal Tailed Frog. Tailed frogs live in and around cool, clear, fast-flowing permanent mountain streams with stable rocky substrates such as cobbles and boulders. Tadpoles cling to rocks with specialized mouthparts and feed on microscopic algae growing on rocks. At night, adults and juveniles forage for insects along the stream and in adjacent, moist riparian areas. During rainy weather they can sometimes be found away from the stream.

Courtship and mating occur from late September to early October, and egg-laying occurs the following June or early July. Each female produces 50 – 60 eggs in a gelatinous string that is attached to the underside of a large rock in a shallow stream. Metamorphosis may occur after one to two years at low elevations, or after three to four years at higher elevations. Juveniles reach sexual maturity after approximately 3 – 7 years. At high elevations, females breed only in alternate years. There is limited potential for recolonization after local extirpation because populations tend to be geographically

separated. Rocky Mountain Tailed Frogs occur at relatively low densities when compared to Coastal Tailed Frogs.

## Compatibility to Urban and Rural Development

The Rocky Mountain Tailed Frog's compatibility with urban and rural development is deemed to be low to moderate. Habitat degradation and loss from logging and road building are known to reduce or eliminate populations, likely because this species is sensitive to sediment loading, debris flows, and increased water temperatures; all life stages have a narrow temperature tolerance. Similar changes to streams and adjacent habitat caused by urban and rural development would negatively impact populations of the Rocky Mountain Tailed Frog.

# Great Basin Spadefoot

## *(Spea intermontana)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Blue-listed</b>	<b>Threatened</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
		<b>R</b>	<b>R</b>		<b>F</b>			

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

### Distribution

In British Columbia, this species is limited to the south-central part of the province from the Okanagan and Nicola Valleys in the south to 70 Mile House in the Cariboo region; the center of its distribution is in the southern Okanagan Valley. Over its entire range, this species inhabits the intermontane region between the Rocky Mountains and the coastal ranges from eastern California and northern Arizona to southern British Columbia.

### Life History and Habitat Requirements

The Great Basin Spadefoot inhabits dry grasslands, shrub lands, and open woodlands, preferably with sandy soil. Its typical breeding habitat is shallow ephemeral pools, as well as ponds, irrigation ditches, sloughs, and shores of small lakes. Great Basin Spadefoots escape drying by burrowing into the ground, using a single enlarged tubercle or “spade” on the sole of each hind foot. Great Basin Spadefoots may spend as many as 7 or 8 months of the year resting in a state of dormancy, either hibernating in winter or aestivating in summer. They are active on the surface mainly at night, especially after a rainstorm, when they feed on a variety of invertebrates. Breeding is stimulated by warm conditions in combination with rainfall (or the initiation of irrigation in agricultural areas). Mating and egg-laying are completed rapidly in any one location, usually within a week. Females lay up to 800 eggs in shallow water. The embryonic and larval development of this species are the most rapid of any North American frog or toad; embryos hatch after 2 or 3 days, and tadpoles may complete their growth in 3 to 8 weeks. Sometimes ponds dry up before metamorphosis is complete and a reproductive failure occurs. The young attain sexual maturity in 2 or more years. Reproduction is

very unpredictable and may take place only during years with intense spring rains.

## Compatibility to Urban and Rural Development

The Great Basin Spadefoot is moderately compatible with urban and rural development, especially where upland and breeding habitat are protected. Irrigation can sometimes create additional breeding sites. This species is sensitive to changes in hydrology, trampling of their shallow breeding ponds, disruption of dispersal routes and road-related mortality, and fish introductions at breeding sites with permanent water.

# Western Toad

## *(Bufo boreas)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Special concern</b>	<b>Apparently secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>R</b>

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

The Western Toad is found throughout British Columbia, except in the far northeast, and is the only amphibian native to the Queen Charlotte Islands. From British Columbia, its range extends east to central Alberta, north to southeast Alaska and south to California.

## Life History and Habitat Requirements

The Western Toad is most commonly found near wetlands but may wander great distances through fields, forests, meadows, or shrubby thickets. This species can use a variety of habitats but prefers damp conditions, seeking moist depressions during dry periods. Outside of the breeding season, Western Toads are nocturnal, spending the day buried in soil, concealed in rock crevices, under logs, or in burrows of other animals. When threatened they may secrete a mild, white poison from the parotoid glands on each side of the head and from larger “warts” on their back and sides. Garter snakes, coyotes, raccoons, and some birds (crows and ravens) prey on toads; in turn, toads consume a wide variety of invertebrates. Breeding occurs as early as late January to April at low elevations, but later at high elevations. Breeding aggregations may be large and “explosive” with breeding completed in as little as a week. The toads typically return to the same breeding sites each year. Each female deposits as many as 12,000 eggs in long strings. The eggs hatch in 3 to 10 days depending on water temperatures. Tadpoles are highly gregarious and commonly form large schools. Transformation occurs after about 6 to 8 weeks in mid-summer to early autumn, and at this time large concentrations of small newly transformed toadlets may be encountered at pond edges, roaming the forest floor, or crossing roads. The young reach sexual maturity in 2 to 5 years, with females often maturing later than males.

## Compatibility to Urban and Rural Development

The Western Toad's compatibility with urban and rural development is low to moderate. This species is sensitive to human developments and the loss of wetland breeding habitats. Toads often experience significant mortality while crossing roads during mass migrations in late summer and autumn. This species has declined significantly in recent years within southern portions of its range in the United States. Disease has been identified as a factor in the decline of some populations. Western Toads are vulnerable to mass mortality events during seasonal migrations.

# Pacific Treefrog

*(Hyla [=Pseudacris] regilla)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>R</b>	<b>R</b>	<b>I</b>	<b>F</b>	

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, this species is found across the southern third of the province including Vancouver Island as far north as Quesnel in the Omineca region. It was introduced to the Queen Charlotte Islands and has become well established. It is not found elsewhere in the Skeena region. Outside British Columbia, this species ranges south to southern Arizona, Baja California and Mexico, and from the Pacific Coast east to western Montana, Idaho, and Nevada. Pacific Treefrogs are not found east of the Rocky Mountains.

## Life History and Habitat Requirements

Outside of the breeding season, Pacific Treefrogs live in a variety of habitats and may be found far from standing water. Suitable habitats include moist woodlands, meadows, pastures, and even urban areas. Sticky toe pads allow this species to climb low vegetation, such as grass and shrubs, in search of food; it preys on a variety of spiders and insects. Breeding occurs in a variety of shallow wetlands, including wet meadows, forested swamps, ditches, and marshes. Breeding sites typically contain abundant emergent and shoreline vegetation that provides shelter for the frogs from their many predators. These frogs often use seasonal wetlands that dry up before mid-summer. At low elevations, breeding begins in February and may last until June, while breeding may not begin until June or July higher in the mountains. The breeding period is prolonged and may last months. Loud choruses of males establishing territories mark the start of the breeding season. Females lay from 400 to 1,000 eggs in several small, loose clusters attached to vegetation or sticks in quiet bodies of shallow water; each egg cluster contains 10 to 70 eggs. Embryos develop rapidly and hatch in two weeks to one month.

Tadpoles transform into froglets after two to three months from June (at low elevations) to late August (at high elevations). Pacific Treefrogs reach sexual maturity in about a year, and generally use the same breeding site from year to year.

## Compatibility to Urban and Rural Development

The Pacific Treefrog is highly compatible with urban and rural development, and is common in many suburban/urban and rural settings. Threats to this species are disturbances to and loss of ephemeral breeding habitats and surrounding upland areas. This species can't coexist with introduced predators such as Bullfrogs and fish in permanent wetlands.

# Boreal (=Striped) Chorus Frog

*(Pseudacris maculate  
[=triseriata])*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
								<b>R</b>

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, this species is found only in the Peace River region. Boreal Chorus Frogs range from east of the continental divide in the Yukon Territory across to Hudson’s Bay, and southwest through Wisconsin down to New Mexico.

## Life History and Habitat Requirements

Boreal Chorus Frogs are active in spring and autumn, inhabiting damp grassy areas, meadows, or woods surrounding marshes. They are poor swimmers and climbers, and spend much of the summer underground. During the breeding season they are widespread and may be found almost anywhere where there is shallow, standing water. Adults feed on various terrestrial and aquatic invertebrates. Garter snakes are the predominant predator. Tadpoles are often found in shallow water with emergent vegetation. In British Columbia, the breeding season begins in May and may continue through June. Males may begin to call even before all the snow has melted, calling from ponds, ditches, or melt-water puddles that are still almost entirely ice-covered. Males usually call from among mats of dead grass and can be extremely difficult to see, though easily heard. Eggs are laid in small clumps (less than 25 mm across) that are attached to submerged plants. Tadpoles transform in about two months. Juveniles reach maturity the following year, and it is possible that individuals live no more than one or two years in the wild.

## Compatibility to Urban and Rural Development

The Boreal Chorus Frog is moderately compatible with urban and rural development. Much of this species' distribution in British Columbia is in remote areas, resulting in little human disturbance.

# Red-legged Frog

## *(Rana aurora)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Blue-listed</b>	<b>Special concern</b>	<b>Apparently secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>							

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Red-legged Frog occurs within the southwestern part of the province. It is found throughout Vancouver Island, on several of the Gulf Islands, and on the adjacent mainland east through the Fraser Valley to Hope. Recently, the species was documented from several localities on Graham Island, Queen Charlotte Islands (Haida Gwaii); whether these records represent recent introductions remains unconfirmed. From British Columbia, the species' range extends south through western Washington and Oregon to northern California.

## Life History and Habitat Requirements

The Red-legged Frog is a forest-dwelling species that breeds early in the spring in temporary or permanent wetlands or in pools within slow-moving streams. The breeding season is short (only a few weeks at any given site) and begins shortly after emergence from hibernation, as early as January or February. Males are highly vocal during the short breeding season but call under water and hence are seldom heard. The female lays a large number of eggs (750 – 1300) in large, loose, gelatinous masses that are typically weakly attached to emergent vegetation. The tadpoles metamorphose into terrestrial juveniles during the same year. The juveniles require several years to reach sexual maturity. Outside the breeding season, adults and juveniles are highly terrestrial and can sometimes be found far from water in forest habitats. Frogs may hibernate in water or on land.

## Compatibility to Urban and Rural Development

The compatibility of the Red-legged Frog with urban and rural developments ranges from low to moderate. In some low-density residential areas the species coexists with humans and uses backyard ponds. However, these frogs require extensive terrestrial, forest habitat for foraging, as well as suitable aquatic breeding sites. They are susceptible to road mortality during breeding migrations. They are also very sensitive to the presence of predatory fish and bullfrogs in their breeding habitat. This and other “true frogs” (family *Ranidae*) are vulnerable to diseases that have played a role in population declines of amphibians in many parts of the world. This species may be maintained within urban environments if wetland vegetation and water quality, as well as sufficient upland habitat, are maintained and introduced species are controlled.

# Green Frog

*(Rana clamitans)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Introduced</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>I</b>	<b>I</b>							

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

This introduced species has become established on southern Vancouver Island and in the Lower Mainland. The Green Frog is native to eastern North America east of the Great Plains from Ontario, Quebec and the Maritimes, and south through much of the eastern half of the United States to the Gulf of Mexico.

## Life History and Habitat Requirements

The Green Frog is highly aquatic and seldom strays from permanent standing water, although juveniles apparently disperse into adjacent woods and fields during rainy weather. Individuals are often found along banks of ditches and ponds during the day. In their native range this species lives in a variety of aquatic habitats including lakes, ponds, swamps, and stream margins. Adults feed primarily on aquatic insects and other invertebrates but will also prey on tadpoles and newly transformed frogs. In turn, this species is preyed upon by garter snakes and a variety of birds and mammals. Breeding takes place in permanent water, at the onset of warm weather in late spring or early summer, and the breeding season is prolonged. Each female lays 1,000 – 5,000 eggs in a large, loose mass floating among aquatic vegetation at the water’s surface. Embryonic development is rapid, and tadpoles may begin emerging from egg capsules in less than a week. Tadpoles transform in late summer or sometimes during the summer of the following year. Juveniles mature in two to three years

## Compatibility to Urban and Rural Development

This species is highly compatible with urban and rural development. It is unclear how much of a threat Green Frogs pose to native amphibians, but issues with Bullfrogs and other non-native aquatic species such as fish suggest that further introductions and the spread of this species should be prevented. Green Frogs have been implicated as a factor in the decline of Red-legged Frogs in British Columbia.

# Columbia Spotted Frog

## *(Rana luteiventris)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not at risk</b>	<b>Apparently secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
	<b>R</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>R</b>	<b>W</b>	<b>R</b>

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

### Distribution

This species occurs throughout much of British Columbia, except the northeastern section of the Peace River district, islands off of the coast (including the Queen Charlottes and Vancouver Island), and southwestern coastal areas. The range of this species extends between the Rocky Mountains and the Coast Mountains from the Alaskan panhandle south to northwestern Wyoming, with some small disjunct populations further south. This species was distinguished from *Rana pretiosa* in 1997.

### Life History and Habitat Requirements

This highly aquatic species is nearly always found in or near a permanent water body such as a spring, pond, marsh, lake, or sluggish river or stream, and is most often associated with non-woody wetland plant communities (sedges, rushes and grasses). Columbia Spotted Frogs are tolerant of relatively low water temperatures and occur at high elevations, up to the tree line. These frogs occasionally leave water bodies to forage in meadows or damp woods during rainy periods; usually they feed in or at the edge of the water, primarily during the day, and eat a variety of insects and other invertebrates. Garter snakes and birds prey on these frogs, while aquatic invertebrates, fish, larval salamanders, Garter snakes, and several birds and mammals prey on tadpoles. Breeding occurs early in the spring, usually before the ice has fully disappeared from the surface of breeding ponds. The breeding period is short, lasting only a couple of weeks. Males are not territorial, and females usually lay their partially submerged eggs in communal egg masses in the same locations each year. The clutch size is from 700 to 1,500 eggs. Breeding, and subsequent development of tadpoles, take place in shallow water at vegetated edges of wetlands and lakes, often in areas subject

to seasonal flooding. Tadpoles usually transform sometime during their first summer of development but may overwinter as tadpoles in the north. Highly oxygenated water that does not freeze to the bottom is necessary for survival in winter. These frogs reach maturity in two or three years, or possibly later.

## Compatibility to Urban and Rural Development

This species is moderately compatible with urban and rural development. Threats include changes to hydrology, water quality and wetland condition, and non-native species such as Bullfrogs and introduced fish. Beavers may be important in creating breeding habitat for this species, thus beaver removal may be detrimental.

# Oregon Spotted Frog

## *(Rana pretiosa)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Red-listed</b>	<b>Endangered</b>	<b>Imperilled</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
	<b>F</b>							

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, this species is limited to the extreme southwestern corner of the mainland in the Fraser River Lowlands. It is currently known from only three wetland sites that are isolated from one another. The Oregon Spotted Frog was identified as a separate species from the more widely distributed Columbia Spotted Frog in 1997, and it was thought that it had been extirpated from British Columbia. Three populations are known from Washington State, and a disjunct population also occurs in central Oregon and northeastern California. Globally, populations of this species have been lost in over 90% of its historic range.

## Life History and Habitat Requirements

The life history and habitat requirements of this species are similar to that of the Columbia Spotted Frog. Oregon Spotted Frogs are highly aquatic. Populations in British Columbia occupy floodplain wetlands and a slough with emergent vegetation, bordered by upland forest. This species appears to require large marshlands (>4 ha) that warm up in the summer. Adults feed on a variety of terrestrial and aquatic insects. Predators include Garter snakes, Bullfrogs, and various birds and mammals. Tadpoles and eggs are also eaten by fish, aquatic invertebrates, Rough-skinned Newts and larval Northwestern Salamanders. This species breeds in shallow, quiet, sparsely vegetated areas of permanent wetlands in early spring (February – March), and breeding lasts less than one month. Females lay one clutch of about 600 – 1,000 eggs annually in exposed, often temporary shallows. Egg masses are deposited communally and typically in the same location each year. Eggs hatch in 18 – 30 days, and tadpoles transform after 13 – 16 weeks. Tadpoles and adults live in well-vegetated areas, usually with rushes and sedges and mucky substrates

that provide escape cover. Maturity is reached in 2-3+ years. During the winter months adults become inactive, burying themselves in silty substrates or clumps of vegetation.

## Compatibility to Urban and Rural Development

The compatibility of the Oregon Spotted Frog with urban and rural development is low. The draining and filling of shallow wetland areas are thought to be a major cause of population declines. Introduced Bullfrog and predatory fish are also major threats. Habitat fragmentation resulting in population isolation, invasion of breeding habitats by the perennial reed canarygrass (*Phalaris arundinacea*), and pollution are also factors; Oregon Spotted Frogs are particularly sensitive to nitrates.

# Northern Leopard Frog

## *(Rana pipiens)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Red-listed</b>	<b>Endangered</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>I</b>	<b>F</b>							

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

This species was historically common in southeastern British Columbia, but is now reduced to one known native population in the Creston Valley Wildlife Management Area. There is one record from an introduced individual at Hamilton Swamp on Vancouver Island. Outside of British Columbia, the Northern Leopard Frog has one of the broadest distributions of any North American frog, occurring throughout most of southern Canada and the United States. However, the range of this species has contracted significantly in Alberta, and declines have been observed in Washington, Saskatchewan and Manitoba. British Columbia populations are disjunct from prairie populations.

## Life History and Habitat Requirements

This species lives in and around wet meadows, potholes and riparian areas where there is abundant vegetation to provide cover. Breeding habitat is highly variable, although open areas and shallow, permanent water with abundant littoral vegetation are favoured. If breeding occurs in a temporary wetland, frogs will migrate to more permanent waters. In summer and autumn, adults may venture far from water, especially on damp days. Northern Leopard Frogs hibernate on the substrate in shallow depressions of ponds and sluggish streams. This species is most active during the day, feeding on land and in water; prey includes various invertebrates, fish, other amphibians, small snakes, and birds. Predators include Bullfrogs, fish, Garter snakes, raccoons, herons and shrikes. Breeding begins in early spring, often before ice has fully melted. Eggs are deposited in flattened, round clusters about 115 mm in diameter and are usually attached to emergent vegetation or sticks well below the surface of the water. Females can lay up to 7000 eggs,

and egg masses are often laid close together. Tadpoles tend to be found amongst littoral vegetation. Tadpoles transform in mid-summer, and juveniles take two to three years to reach sexual maturity.

## Compatibility to Urban and Rural Development

The compatibility of this species with urban and rural development is low to moderate. The causes of observed declines in this species are unknown, but potentially include the drainage of wetlands, modification of habitat, habitat fragmentation and disruption of dispersal corridors, introduction of game fish and Bullfrogs, disruption of wetlands by livestock, pesticides, disease, eutrophication of wetlands, and increases in UV radiation. In other parts of North America, populations have been significantly reduced by collection for biological supply houses.

# Wood Frog

*(Rana sylvatica)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
				<b>R</b>	<b>R</b>	<b>R</b>	<b>W</b>	<b>W</b>

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

This species is found across northern British Columbia to the east of the Coast Mountains, south through the interior of the Cariboo region, and along the Rocky Mountains to the eastern edge of the Kootenay region. It is widespread in Canada and occurs from the Maritime provinces across Quebec, Ontario, and the prairies to Yukon. It is also widespread in United States, including Alaska.

## Life History and Habitat Requirements

The Wood Frog occupies a wide variety of habitats. Adults and juveniles are relatively terrestrial and common in forest, wet meadows, riparian areas, open fields, brushy areas, and muskeg. These frogs wander widely in the terrestrial habitat and can be found far from water. They hibernate on land, underneath the forest litter and humus in root channels or burrows made by other animals. They are cold tolerant (sometimes called the freezing frogs) and can withstand freezing down to -6°C. This mainly diurnal frog eats insects and other invertebrates. Breeding occurs in water bodies that vary considerably in size, substrate and plant associations, ranging from seasonal pools, shallow ponds, marshy lake edges, to flooded meadows and quiet stretches of streams. Breeding begins early in the spring, usually well before all ice has melted. The breeding period is very short, from a few weeks in the southern parts of its range to only a few days in the north. Once the eggs have been laid, adults quickly disappear into the surrounding forest. The globular egg masses are attached to submerged sticks and plants, or are floating. Each clutch may contain as many as 2000 – 3 000 eggs. Eggs can hatch in 4 – 7 days. Tadpoles usually live in the shallowest, warmest parts of wetlands. They grow quickly even at comparatively low temperatures and are able to

transform in 45 to 80 days after eggs are laid, usually by mid-summer. Males mature one year after metamorphosis, while females attain maturity in about 2 years. Wood Frogs seldom live more than three or four years.

## Compatibility to Urban and Rural Development

The compatibility of this species with urban and rural development is low to moderate. Wood Frogs are vulnerable to land development projects that reduce the quality and quantity of wetland habitats and their surrounding upland habitat, which includes large tracts of forest for their extensive foraging forays. A study in Connecticut found that Wood Frog were absent from areas with < 30% forest cover across the landscape.

# Bullfrog

*(Rana catesbeiana)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Introduced</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>I</b>	<b>I</b>	<b>I</b>		<b>I</b>				

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

This introduced frog has become established at several locations in southeastern British Columbia, including the southern Okanagan Valley, southeastern Vancouver Island, some of the Gulf Islands, and the Lower Mainland. The Bullfrog is native to eastern and the midwestern United States and Canada but is now well-established west of the Rockies in many locations.

## Life History and Habitat Requirements

Bullfrogs are highly aquatic and seldom venture far from the vegetated banks of permanent water bodies. They inhabit low-altitude, permanent wetlands of variable depth, with population densities greatest in shallow, quiet water bodies with abundant shoreline and emergent vegetation. Although they prefer weedy, heavily vegetated ponds and lakes, they are also found in smaller, muddy-bottomed ponds and ditches. Bullfrogs are active day and night. Adults venture away from water only during warm, rainy periods. Bullfrogs are voracious and feed on insects, fish, and amphibians. They may also take reptiles, small mammals, and small birds. This species is known for the deep resonating breeding call that males produce during the late spring and summer. Breeding takes place in warm water over much of the summer. Females deposit eggs in a film that at first floats at the surface but later sinks to underlying vegetation. Tadpoles overwinter in the breeding ponds and transform toward the end of their second or third summer. They reach maturity in three or four years.

## Compatibility to Urban and Rural Development

Bullfrogs are highly compatible with urban and rural development. This species has been implicated in the declines and local extinctions of native frogs and turtles, including the Oregon Spotted Frog, Red-legged Frog, and Northern Leopard Frog and the Western Pond Turtle. Urban and rural development needs to be managed in such a way that further introductions and spread of Bullfrogs are avoided. Maintenance and creation of wetlands that favour native amphibian species over Bullfrogs should be encouraged (i.e. more temporary wetlands rather than permanent ones). By moving or releasing tadpoles of frogs, people have contributed to the spread of bullfrogs to the detriment of native frogs. Eradication measures for Bullfrogs are limited, so prevention of introductions and further spread are the only effective means of controlling this species.

# Painted Turtle

## *(Chrysemys picta)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Blue-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W(I?)</b>	<b>W(I?)</b>	<b>W</b>	<b>W</b>			<b>F,I</b>		

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

### Distribution

In British Columbia, the Painted Turtle occurs along the Columbian River valley in the east as far north as Golden, and west to the Okanagan Lake basin up to Kamloops. Populations on Vancouver Island and Lower Mainland may have been established from introductions but might be native. An observation from Vanderhoof is most likely an escaped pet.

### Life History and Habitat Requirements

Mating usually occurs in the spring, and females lay up to 20 eggs in early summer. They lay their eggs in pits that they excavate in soil that is exposed to the sun. They can move up to 150 m from water to deposit eggs. Nests have been found on beaches, flood plains, shrubby fields, road sides, gravel, and pastures. Hatching generally takes place in the autumn, but in British Columbia eggs and hatchlings often over-winter in the nest. Some seasonal movements may take place between summer and winter hibernation ponds. Adult Painted Turtles over-winter in the mud at the bottom of ponds and have a strong homing instinct.

The Painted Turtle is highly aquatic and inhabits marshy ponds, sloughs, small lakes, slow flowing streams, and back-waters of rivers. It prefers shallow ponds with a muddy bottom and lush emergent vegetation and spends much time basking on floating logs, tree branches, mud banks, Cattail mats, or islets. If basking sites are not present, the turtles will float near the surface.

## Compatibility to Urban and Rural Development

Painted Turtles are moderately compatible with urban development if they have undisturbed ponds and adjacent riparian areas where they can nest, bask, and hibernate. This species is found in urban ponds and shallow lakes throughout its range. The migration to nest sites poses one of the greatest hazards for the turtle, if it has to cross roads and trails. Other threats in rural and urban areas include disturbance to nesting sites adjacent to wetlands and ponds, disturbance to basking and nesting turtles, trampling of nests by humans, cattle, dirt bikes, or all-terrain vehicles, illegal capture for pets, and release of alien turtle species that can introduce diseases and compete for resources.

# Northern Alligator Lizard

## *(Elgaria coerulea)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>R</b>	<b>R?</b>			

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Northern Alligator Lizard occurs in the southern portion of the province as far north as 100 Mile House. An isolated record exists from the Bella Coola area. South of British Columbia, this species occurs along the coast to central California in the west, and along the Rocky Mountains south to northwestern Montana in the east.

## Life History and Habitat Requirements

The Northern Alligator Lizard is more tolerant of cold, damp conditions than most lizards. This species typically inhabits open rocky areas near woods or forest openings. These lizards are known to use abandoned buildings for cover and roadsides for basking. They may be seen basking in the sun but will quickly retreat into refuges if disturbed. They are most easily found under the cover of rocks or logs. Northern Alligator Lizards tend to be most gregarious in the spring and autumn around hibernation sites, but are dispersed in the summer. Males actively court females, who give birth to approximately 7 young in late summer. Like many other reptiles in northern climates, this species does not lay eggs but gives birth to live young. The diet of the Northern Alligator Lizard consists mainly of insects and spiders. These lizards can break their tail if seized by a predator or if handled.

## Compatibility to Urban and Rural Development

Northern Alligator Lizards are moderately to highly compatible with urban and rural areas provided that suitable cover, such as bark, rocks and downed

logs, are available. This lizard is found in rural and residential areas throughout its range and can also be found in urban parks. Threats in the urban environment include mowing of tall grass and predation by cats. Alien lizards, such as the Common Wall Lizard in and around Victoria, might also threaten this species by introducing diseases and competing for refuges, basking sites, or food. The introduced Cinnabar Moth (*Tyria jacobaeae* L.) was released to control Ragwort Vancouver Island and has proven to be poisonous to Northern Alligator Lizards, and may pose a threat. The Northern Alligator Lizard is the main host of young stages of the tick *Ixodes pacificus*, which at high densities can cause anemia and general irritation in wild animals and livestock.

# Western Skink

*(Eumeces skiltonianus skiltonianus)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Special concern</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>I</b>		<b>W</b>	<b>R</b>	<b>R</b>				

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Western Skink occurs throughout the Okanagan to Salmon arm in the north and Creston in the east. There is one reported record from Vancouver Island northwest of Courtenay, which is most likely an escapee. The southern boundary of the species' range is in Baja California, Mexico.

## Life History and Habitat Requirements

The Western Skink typically has a very small home range. It is often found under rocks or decaying wood, and sometimes burrowed into soft soil. It will construct burrows up to 50 cm in length. Females lay 2 – 5 eggs in burrows, often under or adjacent to rocks or other cover. If the nest burrow is damaged, the adults will repair it. Females frequently remain with the eggs until they hatch in mid-August, and sometimes until the hatchlings have dispersed. The diet of this lizard consists mainly of insects and spiders. It is also known to eat earthworms and be cannibalistic. The Western Skink moves about with rapid, jerky motion. It avoids predators by quickly burrowing into leaf litter or soil, or retreating to a refuge. The tail (which is bright blue, especially in juveniles) breaks off easily if the skink is seized by a predator.

The Western Skink generally prefers habitats that are moist and less open than other lizards; it is especially common along riverbanks. It is most often found in areas where there are abundant logs, rocks, leaf litter, and

vegetation. It is active during the day but very secretive and is rarely seen basking in the sun.

### Compatibility to Urban and Rural Development

The Western Skink is moderately compatible with urban development provided that shelter is available, and the area is in close proximity to wooded hillsides with downed logs and rocks. For example, around Nelson, the Western Skink is found in rural residential areas. It is important to maintain areas with soft soil for egg-laying and to ensure that there availability of sufficient cover. The main threat to this species is loss of cover. Cats and other pets might also threaten the species in urban areas.

# Rubber Boa

*(Charina bottae)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
	<b>R</b>	<b>W</b>	<b>W</b>	<b>R</b>				

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Rubber Boa is found across the southern part of the province, as far north as Quesnel. This species occurs as far south as California and east to western Utah.

## Life History and Habitat Requirements

While it appears to be among our most cold tolerant reptiles, a certain amount of warmth is required for embryonic development. The Rubber Boa nests in loose, well-aerated soil under or within decaying logs and other cover objects. Like many other reptiles with a northern distribution, the embryos are retained within the female’s body and are born live. In late summer the female gives birth to 2 – 8 young. These snakes are very secretive and active mainly at dusk and at night, although they will emerge during daylight hours on warm, cloudy days. They are active from mid-March to early November. At higher elevations, Rubber Boas migrate short distances to and from suitable hibernacula. These snakes prey mainly on small mammals, birds, and lizards, but may sometimes take other snakes and salamanders. The Rubber Boa is slow-moving and very timid, and will not attempt to defend itself by biting; it will coil itself into a ball, hiding its head and displaying its tail, so diverting attention away from its more vulnerable body parts.

The Rubber Boa occurs mainly in moist, heavily forested mountainous regions but survives successfully in many types of habitats, such as drier open woods, foothills with sparse vegetation, and abandoned buildings, usually in the vicinity of streams or wet meadows. It seeks cover within or under moist decaying logs, pieces of bark, boards, rocks, and other surface debris and will occasionally climb trees.

## Compatibility to Urban and Rural Development

Rubber Boas are moderately compatible with urbanization provided that grassy hunting grounds are available. Habitat fragmentation, recreational mountain biking, and off-trail hiking are the main threats to local populations; local populations of this snake in some areas in California threatened by urban development. Because this snake has been found basking along roadsides, and cars pose a threat as well. Removal of coarse woody debris, collection for the pet trade, and intentional killings by people who are afraid of snakes are also threats.

# Sharp-tailed Snake

## *(Contia tenuis)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Red-listed</b>	<b>Endangered</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>R</b>								

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

### Distribution

The distribution of the Sharp-tailed Snake in British Columbia is limited to less than 10 sites on southern parts of Vancouver Island and the Gulf Islands. One spurious record exists from near Chase. South of the border, the snake can be found along the coast down to California.

### Life History and Habitat Requirements

The diet of Sharp-tailed Snakes consists mainly of slugs, but other invertebrates are likely taken as well. This small, secretive species is an egg-layer, which might explain why it is not found farther north; most reptiles that occur farther north, such as the Rubber Boa and Garter snakes, are live-bearers. Little is known about the breeding behaviour and life history of the Sharp-tailed Snake. These snakes tend to be active in early spring before other snakes, and again in late autumn. Their daily activity appears to be restricted to evenings and nights.

The Sharp-tailed Snake requires small forest openings with south-facing rocky slopes for nesting sites, and cover objects such as rocks or decaying wood for shelter. There is no evidence that these snakes undertake longer, seasonal migratory movements between egg-laying, hibernation, and foraging sites.

### Compatibility to Urban and Rural Development

The Sharp-tailed Snake is moderately to highly compatible with urban development provided that they have access to forested areas. This species is

found in urbanized areas throughout its range, and most of the sites in British Columbia are situated in rural areas. The main threat is habitat destruction by development. Other threats include mowing of tall grass, invasive vines that shade thermoregulation sites, introduced predators, and road mortality.

# Racer

*(Coluber constrictor)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Blue-listed</b>	<b>Not at risk</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
		<b>W</b>	<b>W</b>					

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Racer occurs mainly in the Okanagan Valley, from the United States border north to Shuswap Lake and west to Lillooet. It is a widespread species in the United States.

## Life History and Habitat Requirements

The Racer’s diet is extremely varied and includes frogs, lizards, other snakes, small mammals, birds and insects. Racers lay 3 to 6 eggs, usually in early July, below the surface on stable talus slopes or in abandoned mammal burrows. The eggs hatch in the summer. The Racer emerges from dens in late April and returns to the same den in October. Their summer home range is typically relatively small (< 1 ha), but they have been found to travel up to 1.8 km from den sites.

The common name of the Racer reflects the speed and agility of this large, active predator. It is usually abundant where found, but often difficult to catch. It is probably the most heat-tolerant snake in British Columbia, preferring exposed sunny environments, and is active largely during daylight hours. Its usual habitat is open, sparsely treed country, but it can also be found in meadows, sagebrush flats, forest edges, and fence rows. It is absent from dense forests and high mountain habitats. The Racer may spend the winter in forested areas, sharing hibernacula with rattlesnakes, Gopher Snakes, and Garter snakes. Adept climbers, Racers are sometimes found in bushes. They commonly move with their head up and off the ground when hunting.

## Compatibility to Urban and Rural Development

The Racer is not compatible with urban development because of the threat of persecution; the blotchy patterns on juvenile snakes superficially resemble colouration of young rattlesnakes. The fact that individuals may be aggressive and strike readily, sometimes vibrating their tail, might also perpetuate the fear many people have of snakes. Habitat loss to urban development is the main threat to the species. The concentration of the species around winter dens makes it vulnerable to disturbances. Disturbance of nest sites is also a threat. Because of high mobility of the snake, road mortality is also a threat.

# Night Snake

*(Hypsiglena torquata)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Red-listed</b>	<b>Endangered</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
		<b>R</b>						

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Night Snake is found at a few sites in the southern Okanagan and Similkameen Valleys only. Farther south, the species is found throughout the western United States and in Mexico.

## Life History and Habitat Requirements

The Night Snake is a rear-fanged, slightly venomous snake that uses its venom to paralyse its prey that consists of small lizards and frogs. It is active from late April to late October. Limited available data suggest that females lay 3 – 9 eggs, which hatch in late summer. When threatened, the snake coils itself with its head on top, striking at the intruder from this position, although it rarely bites.

The Night Snake is very secretive, being most active at night and possibly at dusk. It is occasionally seen on roads in the middle of the night. During the day it may be found under rocks or other cover objects, or in abandoned mammal burrows. The Night Snake is associated with arid and semi-arid regions, especially sandy and rocky habitats.

## Compatibility to Urban and Rural Development

The Night Snake is not compatible with urban and rural areas because it superficially resembles rattlesnake. The species is slightly venomous but is not harmful to humans. Threats include fragmentation of habitat by urban development, persecution by humans, road mortality, habitat degradation through overgrazing of rangeland, clearing and burning of shrubs.

# Gopher Snake

*(Pituophis catenifer deserticola)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Blue-listed</b>	<b>Threatened</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
		<b>W</b>	<b>W</b>	<b>R</b>				

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

Of the ten subspecies, two are known in British Columbia; the subspecies *Pituophis catenifer deserticola* is restricted to the dry interior and is found from Pentiction to Trail in the south and to Lillooet in the north. The *Pituophis catenifer catenifer* was found in the lower Mainland and the Gulf Islands but is considered extirpated. The Gopher Snake is widely distributed over much of the western United States.

## Life History and Habitat Requirements

The Gopher Snake is a good climber. Its prey is primarily rodents but sometimes may take rabbits or birds and their eggs. It hibernates with rattlesnakes and other snakes, spending much of the year (179 – 250 days) in dens. It emerges in late April to late May. Females lay a clutch of 3 – 9 eggs in cavities such as abandoned mammal burrows in stable talus. The eggs hatch in the late summer. Nests are frequently communal with other Gopher Snakes and other snake species.

The Gopher Snake occurs in a wide variety of arid to semi-arid habitats, from open sagebrush to woodland areas. It is also commonly encountered on the margins of farmlands, around barns and out buildings. It is absent from dense forests and high mountains. In the spring, the Gopher Snake is active during the day. As the days become hotter, it restricts its activity to dusk and dawn; on the hottest summer days it is most active at night.

## Compatibility to Urban and Rural Development

Although harmless, the Gopher Snake is not compatible with urban development because it may be mistaken for rattlesnakes and be persecuted. Its display behaviour, involving hissing and tail shaking, perpetuates this misconception. The Gopher Snake is known from residential areas, vegetated roadsides, and farm yards.

Habitat fragmentation by urban development in valley bottoms is the main threat to this species; other threats are road kill, persecution, and farming machinery, which damage the gopher burrows where Gopher Snakes often lay their eggs. Because the Gopher Snake eats mainly mammals such as rats, small rabbits, mice and voles, it is beneficial to humans.

# Common Garter Snake

## *(Thamnophis sirtalis)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>R</b>	<b>R</b>	<b>R</b>	<b>R</b>

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

The Common Garter Snake is the most widespread snake in North America, with three subspecies occurring in British Columbia; *Thamnophis sirtalis pickeringi* is restricted to Vancouver Island and immediately adjacent mainland coast, *Thamnophis sirtalis fitchi* occupies the bulk of the province from about 200 km north of Prince Rupert south to the border, while *Thamnophis sirtalis arietalis* occurs along the eastern side of the province from the Peace River District south.

## Life History and Habitat Requirements

Common Garter Snake’s habitat selection seems to relate to the distribution of its major prey, such as amphibians and earthworms. Other prey items include intertidal and fresh-water fishes, leeches, other reptiles, and small birds. The Common Garter Snake is primarily active during the day and is sometimes seen basking in the sun. They may be found under a variety of cover objects, such as logs, barks, rocks and boards. When alarmed they will retreat under surface objects or into water to find refuge. They sometimes travel considerable distances from foraging areas to hibernation sites on south-facing, rocky slopes. Communal over-wintering of large numbers of individuals is well documented for this species, especially in northern parts of its range. Like other Garter snakes, the eggs are retained within the female’s body until hatching. Females give birth to 10 – 15 young in mid- to late summer.

The Common Garter Snake can tolerate colder climates than most other snakes and is sometimes found in relatively cool habitats. It most often forages in wetlands and riparian habitats, but can also occur in forests. In

moister climates, in particular, it will stray far from water. It is also found in open meadows and urban areas. The active period for the Common Garter Snake varies in correspondence with the local growing season. In milder regions, males may emerge on warm winter days.

## Compatibility to Urban and Rural Development

The Common Garter Snake is moderately to highly compatible with urban development provided that forested or shrubby habitats with moist meadows or wetlands are available. This species is less commonly found in manicured gardens in rural areas and in densely populated suburbs. Its variable diet of birds, reptiles, amphibians, fish and earthworms allows it to feed in most rural gardens. Threats to local populations in urban and rural areas include loss of moist foraging areas, grass mowing, and road kill.

# Northwestern Garter Snake

## *(Thamnophis ordinoides)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>				<b>R</b>			

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

### Distribution

The Northwestern Garter Snake occurs along the coast of southwestern British Columbia, including the Gulf Islands, Vancouver Island and the southern mainland east to Manning Park. The range of this species extends south through western Washington and Oregon to extreme northwestern California.

### Life History and Habitat Requirements

The Northwestern Garter Snake is relatively sedentary and has a small home range. Its diet consists primarily of slugs, but it will also eat earthworms, snails, small salamanders, and frogs. It is generally active from mid-March to late October but is occasionally seen during mild winters on the coast. In colder areas, these snakes hibernate in talus banks or in cracks in fissured rock. Females give birth to 2 – 19 live young from mid-July to late August. Mating has been observed in both the autumn and spring.

Within its range in British Columbia, the Northwestern Garter Snake is often the most common snake in urban and rural areas. It is a highly terrestrial and particularly abundant in open areas such as meadows and along forest edges. It can also be found in estuaries and on beaches, although it rarely enters water. It is known to use abandoned buildings, vacant lots, and weedy sections of backyards.

## Compatibility to Urban and Rural Development

The Northwestern Garter Snake is highly compatible with urban development, and can be found in many suburban areas in the Lower Mainland and on Vancouver Island. It needs sufficient cover for refuge, foraging, and hibernation. Its affinity to hedges and meadows most likely explains its abundance in urban and rural settings. The Northwestern Garter Snake is beneficial, as its diet consists mainly of slugs, including garden pests. Threats include road kill, grass mowing, and high-density developments.

# Western Terrestrial Garter Snake

*(Thamnophis elegans)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Yellow-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>W</b>	<b>R</b>		<b>R</b>

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the Western Terrestrial Garter Snake is found from Vancouver Island across the southern mainland east to the Alberta border and north to the Peace River district. Outside the province, its range extends east to Saskatchewan, south to central California and New Mexico.

## Life History and Habitat Requirements

The Western Terrestrial Garter Snake is found in a wide variety of habitats. Despite its common name, this snake is rarely found far from water, either fresh or marine. On the coast it is often seen foraging in the intertidal zone. When alarmed, these snakes will often escape into water, diving to the bottom to hide under submerged rocks and other refuges. This species prefers open areas such as grassy meadows and estuaries, and is rarely found in dense forests, although it occurs in more open coniferous forests.

Given the wide range of habitats it uses, it is not surprising that the Western Terrestrial Garter Snake has one of the most varied diets of any of our native snakes. It feeds mainly on slugs, snails, small mammals, and fish (both freshwater and marine). Quite frequently it also eats amphibians, leeches, birds, and other snake species.

The Western Terrestrial Garter Snake migrates from its rocky, south-facing winter hibernation sites to its summer aquatic habitat, which is sometimes a considerable distance away. They will hibernate with other snake species, including the Western Rattlesnake. In milder climates, it hibernates solitary in

suitable places, such as logs and rocky outcrops. Females give birth to up to 19 live young in late summer.

## Compatibility to Urban and Rural Development

The Western Terrestrial Garter Snake is moderately to highly compatible with urban and rural areas provided that shrubby areas that provide cover and wet foraging areas are available. It is commonly found in residential and recreational areas. Its large size and ornery nature may be a deterrent for some gardeners, but the snake is harmless to humans. Threats to the species include road kill and loss of habitat in high-density urban developments.

# Western Rattlesnake

## *(Crotalus viridis)*

Provincial status (CDC):	Federal status (COSEWIC):	Global status (NatureServe):
<b>Blue-listed</b>	<b>Not assessed</b>	<b>Secure</b>

Vancouver Island (1)	Lower Mainland (2)	Okanagan (8)	Thompson (3)	Kootenay (4)	Cariboo (5)	Skeena (6)	Omineca (7)	Peace (9)
		<b>W</b>	<b>W</b>					

W – widespread, R – restricted to one part of region, F – few records, I – introduced/escaped

## Distribution

In British Columbia, the species is restricted to the interior Dry Belt. Its range extends east to the Cascade Mountains, west to Lytton, and north to the vicinity of Cache Creek. The species is widespread in western United States.

## Life History and Habitat Requirements

Western Rattlesnake feed mainly on small mammals but will occasionally take birds. Rock outcrops and deep crevices on exposed south-facing talus slopes function as dens, where the snakes may hibernate in groups of a hundred or more. They share dens with other species of snakes. The Western Rattlesnake is most often seen when congregated near dens in the spring and autumn. During the summer, they have been found many kilometres from hibernacula. The hibernation period begins in late September and extends to early April. These snakes mate in the late summer and early autumn. Females reproduce every other year and give birth to 4 – 8 live young at or near overwintering dens, usually in September.

The Western Rattlesnake is largely restricted to dry habitats, where there is some shelter available in the summer. It is most often found on talus slopes in sagebrush or in sparsely forested areas. The Western Rattlesnake is mainly active at dawn and dusk, but may be encountered at any time. In cool weather, it is more likely seen during the day.

## Compatibility to Urban and Rural Development

The Western Rattlesnake is not compatible with urban development. This snake is venomous and often persecuted. Many people fear this snake because of its venom and misconstrued aggressiveness. However, the Western Rattlesnake is beneficial because it preys on rats and other rodents that tend to congregate near human habitations. Habitat loss associated with the urbanization of valley bottoms in the Okanagan is a major threat to this species. Other threats include road kill, destruction of winter dens, and collection for the pet trade. More and more dogs are becoming immune to the venom, and some are encouraged to kill snakes; this could be a threat to local populations.