

SPECIES ACCOUNT

Species Data

Common Name:	Northern Pacific Rattlesnake (formerly Western Rattlesnake)
Scientific Name:	<i>Crotalus oregonus</i> (formerly <i>C. viridis oregonus</i>)
Species Code:	R-CROR (formerly CRVI)
BC Status:	Blue (may be reassigned Red due to new taxonomy)
Identified Wildlife Status:	Volume III (proposed)
COSEWIC Status:	Status Report winter 2002/2003

Project Data

Project Name:	Central Okanagan Terrestrial Ecosystem & Wildlife Habitat Mapping Project
Project Type:	Terrestrial Ecosystem Mapping
Area:	Central Okanagan
Ecoprovince:	Southern Interior
Ecoregions:	Thompson-Okanagan Plateau
Ecosections:	Northern Okanagan Basin (NOB)
BGC Units:	IDF _{xh1} , PP _{xh1}
Map Scale:	1:20 000

Distribution

Provincial Range

The Northern Pacific Rattlesnake is restricted to the very dry interior of the province. It is known from the Similkameen, Okanagan, Kettle, Lower Nicola and South Thompson valleys (Hobbs and Sarell 2001). The range of the rattlesnake is more restricted than two other snakes (Racer and Gopher Snake) that inhabit very similar habitats and even share dens where they are sympatric. Rattlesnakes appear confined to the very hot and xeric variants of the Bunchgrass, Ponderosa Pine and Interior Douglas Fir Biogeoclimatic zones, within the Southern Interior ecoprovince.

Elevation Range

Rattlesnakes typically occur on valley bottoms and sidehills, usually not much higher than about 800m asl, although there they do occur up to 1200m, and claims of 1800m at one location have been made in BC.

Distribution in the Project Area

Rattlesnakes were probably much more common, and more widely distributed in the Central Okanagan than they are now. Populations are known from Westbank (Mt. Boucherie). They probably occur northwards on the west side of the valley to Fintry, through the center of the valley (via Knox Mtn.) to Oyama (Lake Country), and on the east side of the valley, at least to Black Mtn. They also occur to the south in Okanagan Mtn. Prov. Park and Summerland.

Ecology and Habitat Requirements

Rattlesnakes spend winters (about 180 days) in hibernacula that have been used for generations. Site fidelity to these sites is exceptionally strong. Hibernacula generally consist of very deep fissures in rock outcrops, usually on warm aspects. Sometimes talus slopes or very coarse glaciofluvial material are used for denning (Sarell 1993). The distribution of suitable hibernacula directly influences the distribution and viability of local populations.

Rattlesnakes emerge from dens in March through April. There is a considerable amount of time spent basking at den entrances prior to dispersal. Feeding does not usually commence until they have left the dens. The remainder of spring and the early part of summer is spent on warm aspects, due to thermoregulatory requirements. As the weather warms, rattlesnakes will move to dense vegetation, often in riparian areas, to avoid excessive heat. Individuals seek cover objects throughout the active season. Fall retreat to dens is rapid and is usually over by mid-October.

Females mate in late summer while still in summer foraging territories, increasing the likelihood of gaining genetic material from neighbouring populations. Fertilization is delayed until early the following spring. Females remain in the vicinity of their dens while usually about five embryos develop inside. They do not feed during this time. Young are born live in early September. It is essential for both mother and young to quickly secure food prior to entering hibernation. It is not uncommon to see very emaciated mothers emerge from dens in the spring. Survivorship of neonates ranges widely from 0 to 76 percent (Macartney 1985, Charland 1989). This means many of the young (24 to 100%) never emerge from dens. Females are so taxed by the fasting ordeal that they are capable of breeding only every three years.

The longevity of rattlesnakes has been poorly studied. Klauber (1972) estimated that it would not be uncommon for some individuals to live in excess of twenty years. This is probably very uncommon in the study area and elsewhere in BC where populations are rarely exempt from culling by many human activities. Road mortality and human-snake conflicts account for much of the direct impacts from humans, although significant mortalities occur from domestic animals including cats, dogs, pigs, poultry, and livestock. Dogs may become so obsessed with killing snakes that they no longer react to envenomation (J. Scheffler pers. comm.). Natural predators of rattlesnakes are Red-tailed Hawks, Golden Eagles, and Coyotes, and rarely, Badgers. Ungulates have been observed killing and abandoning the sheared carcasses of rattlesnakes, and even rodents have been observed killing rattlesnakes in captivity (Klauber 1972).

General Living – All Year

Security/Thermal Habitat

Thermal habitats in cool and cold seasons are very closely tied to rock. Rock often provides retreats from freezing weather through thermal characteristics that allow it to remain warmer than the surrounding environment and retain that heat well after other habitats have cooled down. If thermal cover is adequate, the area may also serve as hibernacula. Hibernacula must have very deep recesses to escape the penetrating cold of winter. Discreet thermal/security habitats are much more likely to be used if they occur near hibernacula. Security is achieved through the rocky cover provided by these habitats. These habitats are also used by gravid females throughout the growing season.

General Living - Summer

Food, Security and Thermal Habitat

Northern Pacific Rattlesnakes enjoy a diet consisting mostly of small mammals, although birds, and rarely amphibians and other reptiles, are eaten. Mammal prey consists of shrews, mice, chipmunks, squirrels, pocket gophers, and the young of cottontails, jackrabbits, marmots, muskrats, and ground squirrels (Klauber 1972). One road-killed snake in the Okanagan had recently come down from its hibernacula and had just consumed a shrew, deer mouse, and a meadow vole (Sarell pers. obs.). Smaller prey, including young mice, shrews, and lizards may be very important prey items of young rattlesnakes.

Summer thermal requirements are met by seeking cool habitats, usually associated with water or dense vegetation. Security cover usually consists of coarse woody debris and the bases of shrubs. Rodent burrows are also used for both security and thermal requirements.

Ratings

This model employs a 4-class rating scheme because there is insufficient knowledge of habitat requirements to use a 6-Class scheme yet there is sufficient knowledge to go beyond a 2-class rating scheme. This complies with the recommended rating scheme in the RIC manual (1999).

Provincial Benchmark

Ecosection	SOB (historic)
Biogeoclimatic Zones	BGxh1/PPxh1
Habitats	Rugged open habitats with riparian and meadow habitats nearby

Map Themes

Life Requisite	Habitat Use	Season	Rating Code	Ecosystem Attributes
General Living	Security/ Thermal	All Year	STLIA *	<ul style="list-style-type: none"> Warm aspects with a significant amount of rock as outcroppings, colluvium, or coarse textured seams of glaciofluvial material
General Living	Security, Thermal, Food	Summer	LIS	<ul style="list-style-type: none"> Moist depressions, stream and pond edges, riparian areas, and gullies

* equivalent to STLIFP on field forms

Ratings Assumptions

General Living, All Year – Security/Thermal	
Site Series	<ul style="list-style-type: none"> Rocky habitats on warm aspects rated up to High.
Aspect	<ul style="list-style-type: none"> Usually warm, but easterly aspects are also used.
Slope	<ul style="list-style-type: none"> Usually steep, but moderate and gentle sometimes used.
General Living, Summer – Security, Thermal, Food	
Site Series	<ul style="list-style-type: none"> Riparian gullies and floodplains, pond edges, brushy thickets rated up to High.
Structural Stage	<ul style="list-style-type: none"> No effect.
Shrub Density	<ul style="list-style-type: none"> No effect.
Range Condition	<ul style="list-style-type: none"> Range maintaining cover of bunchgrasses and shrubs preferred.
Aspect	<ul style="list-style-type: none"> No effect.
Slope	<ul style="list-style-type: none"> No effect.
Soil Texture	<ul style="list-style-type: none"> No effect.
Soil Depth	<ul style="list-style-type: none"> No effect.

Map Interpretation

Two habitat uses will be modelled to depict the critical areas used by Northern Pacific Rattlesnakes. Security/thermal habitats (STLIA), used primarily between fall and spring by all rattlesnakes, and through the summer by gravid females, are essential areas that should not be disturbed. Hibernacula are most often located within these areas. Summer foraging areas (LIS) will also be depicted. The closer these are to the security/thermal winter habitats, the higher the expected use. Only foraging habitats within 750m of high or moderate suitability security/thermal habitats will be portrayed. Most human-snake conflicts occur in these summer foraging areas.

The theme for all year security/thermal habitats will display the maximum value, as these habitats often occur within a complex of other habitats. Summer foraging habitats will be displayed as a maximum value as well, as these habitats are often narrow corridors within a complex of habitats.

Management Recommendations

Management of Low, Moderate and High potential denning (Security/Thermal) habitats should include a no-development zone, unless an inventory has demonstrated that the depicted habitat(s) are not used. Recreational corridors should avoid these areas to minimize human-snake conflicts, including mortality from mountain bikes and vehicles. Summer foraging areas should be carefully assessed to see whether any development is appropriate, and if so, what mitigation measures are required. Although corridors to allow snake movement from winter security/thermal habitats to summer foraging habitats have not been mapped, they should be interpreted and applied to project planning. Roads should not intersect any of these areas unless appropriate mitigation measures are employed to avoid mortalities.

Literature Cited

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- Hobbs, J. and M. Sarell. 2001. Range of the Western Rattlesnake (*Crotalus viridis*) in British Columbia.
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- Sarell, M.J. 1993. Snake hibernacula of the South Okanagan. Prepared for BC Environment, Penticton, BC and the BC Habitat Conservation Trust Fund, Victoria, BC.

Northern Pacific Rattlesnake Suitability Map

