SPECIES ACCOUNT

Species Data

Common Name:	Northern Pacific Rattlesnake
Scientific Name:	*Crotalus oreganos* formerly *C. viridis oreganus*
Species Code:	R-CROR (formerly CRVI)
BC Status:	Blue (may be reassigned Red due to new taxonomy)
Identified Wildlife Status:	Volume IV (proposed)
COSEWIC Status:	Status Report due fall 2002

Project Data

Project Name:	Bella Vista / Goose Range Sensitive Ecosystems Inventory
Project Type:	Terrestrial Ecosystem Mapping
Area:	North Okanagan
Ecoprovince:	Southern Interior
Ecoregions:	Thompson-Okanagan Plateau
Ecosections:	Northern Okanagan Basin (NOB)
BGC Units:	IDFxh1
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 are claims of rattlesnakes as high as 1200m.

Distribution in the Project Area

There have been no snake inventories in the study area but they have been regularly observed in the Bella Vista range and near Adventure Bay. They have not been documented in the Goose Lake Range. Rattlesnakes are well documented from the nearby Kalamalka Lake area (Macartney 1985, Charland 1989).

Ecology and Habitat Requirements

Rattlesnakes spend winters (about 150 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 (e.g. cobble) 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 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. This increases the likelihood of gaining genetic material from neighbouring populations, and delayed implantation allows for fertilization early the following spring. Females remain in the vicinity of their dens while usually about five embros 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 (1956) estimated that it would not be uncommon for some individuals to achieve ages 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 conflict 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 from 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 1957).

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 heat above 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, or winter den sites. Hibernacula must have very deep recesses to escape the penetrating cold of winter. The proximity of hibernacula strongly influences the use of discreet thermal/security habitats. Security is achieved through the rocky cover provided by these habitats. Coarse woody debris becomes more important for security as the weather warms.

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 1957). One roadkilled 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 RISC manual (1999).

Provincial Benchmark

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

Map Themes

Habitat Use	Life Requisite	Season	Rating Code	Ecosystem Attributes
General Living	Security/ Thermal	All year	LIA	• 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	• meadows, stream and pond sides, riparian gullies

Ratings Assumptions

General Living, All year – Security/Thermal (LIA)	
Site Series	• Rocky habitats on warm aspects rated up to High
General Living, Summer – Security, Thermal, Food (LIS)	
Site Series	• Riparian gullies, ravines, and floodplains, pond edges, brushy thickets rated up to High
Structural Stage	• No effect on rating
Shrub Density	• No effect on rating
Range Condition	• Range maintaining cover of bunchgrasses and shrubs preferred
Aspect	• No effect on rating
Slope	• No effect on rating
Soil Texture	• No effect on rating
Soil Depth	• No effect on rating

Map Interpretation

Two map themes are generated by the Northern Pacific Rattlesnake model: general living all year (LIA), which includes potential denning, basking and birthing habitats; and general living during summer (LIS), which consists mainly of foraging areas. The denning theme overlays foraging on the map.

Both themes are rated using the highest value method, which portrays the rating for the highest suitability habitat occurring in the polygon.

Literature Cited

Charland, B. 1989. Size and winter survivorship in neonatal western rattlesnakes (*Crotalus viridis*). Can. J. Zool. 67:1620-1625.

Klauber, L.M. 1956. Rattlesnakes: their Habits, Life Histories, and Influence on Mankind. Vols. 1 & 2. University of California Press, Los Angeles, Ca.

Hobbs, J. and M. Sarell. 2001. Range of the Western Rattlesnake (Crotalus viridis) in British Columbia.

Macartney M. 1985. The ecology of the Northern Pacific Rattlesnake, Crotalus viridis oreganos, in British Columbia. M.Sc. Thesis, Univ. Victoria, Victoria, BC. 289pp.

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