Racer

Coluber constrictor

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Disclaimer: The following document was compiled based on a review of information currently available for this species as of November 25, 2005. This document can be used to assist with the identification of this species and to support the development of management recommendations as they relate to forestry activities. For more information on this species, please refer to the reference section or consult with a Species at Risk specialist.

Description

Eleven subspecies of Racer occur in North America; however, only *Coluber constrictor mormon* is found in British Columbia. It is a slender, stream-lined snake with a large, long, flattened head and rounded snout. Generally, the back and sides are a slate-grey or olive green colour with a belly that is vivid to whitish yellow. The juveniles have a blotched pattern on their backs, which superficially resembles that of a young rattlesnake; however, this colouration disappears as they mature. Racers can grow to a length of approximately 120cm[1].

Photos courtesy of Gary Nafis

Distribution

The Racer is restricted to the dry grasslands of the Okanagan, Thompson, Nicola, Similkameen and the middle Fraser drainages north to at least Churn Creek[2].

Distribution of the Racer in British Columbia (from www.bcreptiles.ca)

Forest Districts[3, 4]

- Squamish Forest District (DSQ)
- Arrow Boundary Forest District (DAB)
- Central Cariboo Forest District (DCC)
- **Cascades Forest District (DCS)**
- **Kamloops Forest District (DKA)**
- **100 Mile House Forest District (DMH)**
- Okanagan Shuswap Forest District (DOS)

Ecoprovinces and ecosections[4]

- CEI: FRB
- SIM: SFH
- SOI: GUU, LPR, NIB, NOB, NOH, OKR, PAR, SCR, SHB, SOB, SOH, STU, THB, TRU

Biogeoclimatic Units[3,4]

- BG - Bunchgrass - xh, xw
- ICH - Interior Cedar -- Hemlock - dw, mk1, xw
- IDF - Interior Douglas-fir - dm, mw ww, xh, xm, xw
- PP - Ponderosa Pine - dh, xh

Broad ecosystem units[4]

- AB, BS, CF, CR, DF, DP, IH, LS, OV, PP, RO, SS

Elevation
Racers can occur up to 2550m[5] but are generally found at low to mid-elevations, up to almost 900 m in British Columbia[4].

Map of Known Locations
Racer occurrence data is considered sensitive by the Conservation Data Centre (CDC). Therefore, known locations for this species in the Cascades, Kamloops and 100 Mile House forest districts is not available to the public. Please contact the CDC to request this data at:

Phone: (250) 356-0928
Fax: (250) 387-2733

Biology
Racers hibernate throughout the winter between the months of November and March. Hibernacula are used by solitary or communal individuals and Racers occasionally hibernate with other species of snake. Racers do not linger outside den sites, so their apparent low numbers may be an artefact of their behaviour[6].

Reproduction
It has been speculated that female racers may only be able to reproduce in consecutive years if they have sufficient fat reserves. Mating occurs in May and approximately 3-7 eggs are laid in a communal nest from late June to early July[2,4]. The granular eggs are generally about 24-39mm in length[5]. Hatching occur in August[4] and the young snakes are about 205-305mm in length[6].

Foraging
Racers are foraging generalists, consuming mostly insects and small mammals[4]. Studies of the diet of have demonstrated that insects are important as prey. Grasshoppers and other Orthoptera are favoured. Other food items include mice, young rabbits, voles, rats, chipmunks, moles, weasels, birds, birds' eggs, frogs and snakes[6].

Habitat
Racers occur most frequently in the ponderosa pine and bunchgrass biogeoclimatic zones[6]. Despite their apparent heat-tolerance, Racers require habitat that has some moisture. In Osoyoos, Racers have been recorded in wet valley bottoms, sandy terraces on the side of the valley and on the rocky slopes of the valley walls[7].

Racers are suspected to use the same den throughout their lives. Repeated use of summer home ranges is also suspected. The same egg laying site may be used for several years. During the summer, daily movements are typically small (<100 m); however gravid females may make larger journeys (<500m) to reach egg-laying sites[4].

Although Racers are probably the most active of the snakes in British Columbia and are able to travel great distances over short periods, they tend to have discrete summer home ranges. Home ranges are usually located within 1 km of the den but one record shows a movement of almost 2 km. Daily movements of approximately 200 m have been documented within their home ranges during the summer foraging period[4].

Important Habitats and Habitat Features
Racers are most common in non-forested ecosystems. Where they do occur in forested habitats, they seem to prefer openings. Structural stage does not appear to be important, providing the canopy is not closed[4].

Temperature is a critical element of the Racer's habitat, particularly in Canada where the species is at its northern limit. Little is known about the breeding dens of this species; one nesting site was described as a rodent burrow on a sandy hill with sparse vegetative cover and warm southern exposure. In the south Okanagan, egg-laying sites have been found near the crest of a sandy hill, with little surrounding vegetation[4].

Photo courtesy of Cherilyn Drew

Denning
Racer hibernacula need to be suitably deep to prevent freezing during winter. Hibernacula in British Columbia were usually in rocky outcrops, talus slopes, and small rock piles on steep south-facing slopes[4,8]. However, they may also be found in forested areas.

Four main attributes that are important for denning sites include fracturing, humidity, cover and thermal momentum. Fracturing is most common in basalt and gneiss rocks, and is important to ensure that the temperature remains above freezing and allows access to geothermal heat to help maintain a temperature between 4-9 °C[8].

Foraging
Racers are visual predators that forage during the day and are often found in sandy terrace/riparian margins, shrub-steppe and grasslands where there are optimal thermal conditions and high prey abundance[4,8].

Conservation and Management

Status[3]
Provincial Rank: S3S4 (Provincially Imperiled/Vulnerable)
BC List: Blue (Special Concern)
COSEWIC Status: SC (Nov 2004) (Special Concern)

Threats

Anthropogenic threats include habitat loss, direct destruction of denning sites, road mortality, contamination of food supply by pesticide application, mortality from farm machinery, and forest/grass fires. Although overwinter mortality is naturally high, the indirect effects of habitat loss can lead to higher overwinter mortality if suitable hibernacula are lost or if food supply is compromised. Additionally, Racers show a high degree of den site fidelity and may not be able to find a suitable replacement den for overwintering. Nesting sites are also vulnerable to disturbance[4,9].

Management Recommendations

- Identify locations where Racers occur: obtain occurrence data from the Conservation Data Centre (http://srmwww.gov.bc.ca/cdc/) and if necessary conduct surveys to confirm presence or absence of this species.

In areas where this species has been identified:

- Identify and protect den and nesting sites. Maintain a 1 km buffer zone around known den sites and critical habitats[1].
- Maintain and maximize connectivity between hibernacula and foraging habitats[4].
- If road building is necessary in Racer habitat, place roads as far as practicable from hibernacula and known snake travel corridors. Avoid construction between April and October when snakes are active[4].
- Wherever possible, rehabilitate temporary access roads in Racer habitat immediately after use[4].
- Where migration routes from denning locations to summer habitats have been transected by roadways, use methods such as drift fences, culverts or seasonal road restrictions, to allow the safe passage of snakes. Drift fences should be ≥75 cm high. Length will vary by site depending on the area used by snakes. Consult Ministry of Environment for more information.
- Minimize disturbance to riparian areas to maintain foraging opportunities.
- Maintain critical structural elements such as rock outcrops, talus slopes, friable soils, coarse woody debris, concentrations of boulders, or other unconsolidated materials and vegetative cover in potential snake habitat[1,4].
- Do not use pesticides.

References

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[6] Orchard, S.A. 1984. Amphibians and reptiles of B.C.: An ecological review. Ministry of Forests, Province of British Columbia. 268 pages.
[7] Shewchuk, C.H. and H.L. Waye 1995. Status of the Western Yellow-bellied Racer in British Columbia.
[8] Hobbs J. and M. Sarell 2002. An Assessment of Racer and Gopher Snake Habitat in the Williams Lake and 100-Mile Forest Districts.
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