

DESCRIPTION OF RESIDENCE FOR THE EASTERN YELLOW-BELLIED RACER (*COLUBER CONSTRICTOR FLAVIVENTRIS*) IN CANADA

Section 33 of the *Species at Risk Act* (SARA) prohibits damaging or destroying the residence of a listed threatened, endangered, or extirpated species. SARA defines residence as: “a dwelling-place, such as a den, nest or other similar area or place, that is occupied or habitually occupied by one or more individuals during all or part of their life cycles, including breeding, rearing, staging, wintering, feeding or hibernating” [s.2(1)].

The prohibition comes into effect in different ways depending on the jurisdiction responsible for the species. Because the Eastern Yellow-bellied Racer is not protected under pre-existing federal jurisdiction such as the *Migratory Birds Convention Act* or the *Fisheries Act*, the residence prohibition is only automatically in effect on federal lands on which the species occurs. SARA also contains a provision to prohibit the damage or destruction of species’ residences on non-federal lands (provincial, territorial, and private lands) by way of an Order by the Governor in Council (GIC), if the Minister of Environment recommends it necessary to do so [s.34(2), 35(2)]. Unless such an Order is made, responsibility for protecting this species’ residences remains with provinces and territories in which the species occurs.

The following is a description of residence for the Eastern Yellow-bellied Racer (*Coluber constrictor flaviventris*), created for the purposes of increasing public awareness and aiding enforcement of the above prohibition.

Eastern Yellow-bellied Racers are known to have two types of residence— over-wintering sites (called hibernacula) and egg-laying sites (called nests).

Species Information: Adapted from COSEWIC* Assessment Summary – November 2004

Common Name – Eastern Yellow-bellied Racer

Scientific Name – *Coluber constrictor flaviventris*

Current COSEWIC Status – Threatened

Occurrence in Canada – Saskatchewan and Alberta

Rationale for Designation – Core populations of this snake are along the Frenchman River Valley in southwestern Saskatchewan. Additional, rare, sightings have also been confirmed in the area of Onefour in southeastern Alberta and the Big Muddy Valley in southcentral Saskatchewan. It is likely at risk because of habitat loss due to human activities, small population size, road mortality, human disturbance of hibernacula, extreme weather variability due to climate change and farm machinery fatalities. There may be a rescue effect from immigration from the United States, but this effect has not been observed.

Distribution and Population

The distribution of the Eastern Yellow-bellied Racer is widespread across North and Central America, from Maine to southern British Columbia, south to the Florida Keys and northern

* COSEWIC: Committee on the Status of Endangered Wildlife in Canada

Guatemala¹. Eastern Yellow-bellied Racers are common in the northern states including Montana, North Dakota, and Iowa south to Texas and Louisiana.

The Eastern Yellow-bellied Racer reaches the northern edge of its range in Canada and the Canadian population represents a very small proportion of the global abundance of this species (Figure 1). In Canada, Eastern Yellow-bellied Racer populations are confined to areas of extreme southcentral Saskatchewan in proximity to Grasslands National Park and the Agriculture and Agri-Food Canada Val Marie Community Pasture¹⁻³. In addition, there have been one probable and four confirmed Eastern Yellow-bellied Racer sightings in extreme southeastern Alberta near Onefour, and two confirmed sightings near the Big Muddy River Valley in Saskatchewan⁴⁻⁸. No empirical population estimates exist for Eastern Yellow-bellied Racers in Canada.

1) Hibernacula

Physical Appearance and Context

Suitable hibernacula for Eastern Yellow-bellied Racers occur within stable slump zones, mammal burrows, rock crevices or ledges, deep holes in soft hillside soil, and abandoned cisterns⁹⁻¹², within mixed-grass prairie and sagebrush thicket areas¹ (Figures 2, 3 and 4). Previous research indicates a preference for south facing slopes¹; however, recent observations suggest that there may be more variation in directionality, although north facing slopes seem to be avoided. Although hibernacula have not been characterized for Eastern Yellow-bellied Racers, they have been characterized for Western Yellow-bellied Racers (*Coluber constrictor mormon*) in British Columbia¹³. Considering the similarities between the two subspecies, information on the attributes of suitable hibernacula for Western Yellow-bellied Racers is likely applicable to Eastern Yellow-bellied Racers as well. These attributes include: fracturing (maintains constant temperature and prevents freezing), humidity (prevents snake desiccation during hibernation), thermal momentum (the hibernaculum's capacity to absorb and retain heat), and cover (defined as rocks, boulders, grass, forbs or brush that aids in thermoregulation during emergence)¹³. 'Cover' areas immediately adjacent to the entrance of the hibernacula are considered part of the residence.

Function

Hibernacula provide refuge from extreme cold during winter. The function of hibernacula during spring emergence from, and fall return to, hibernacula is regulation of body temperature.

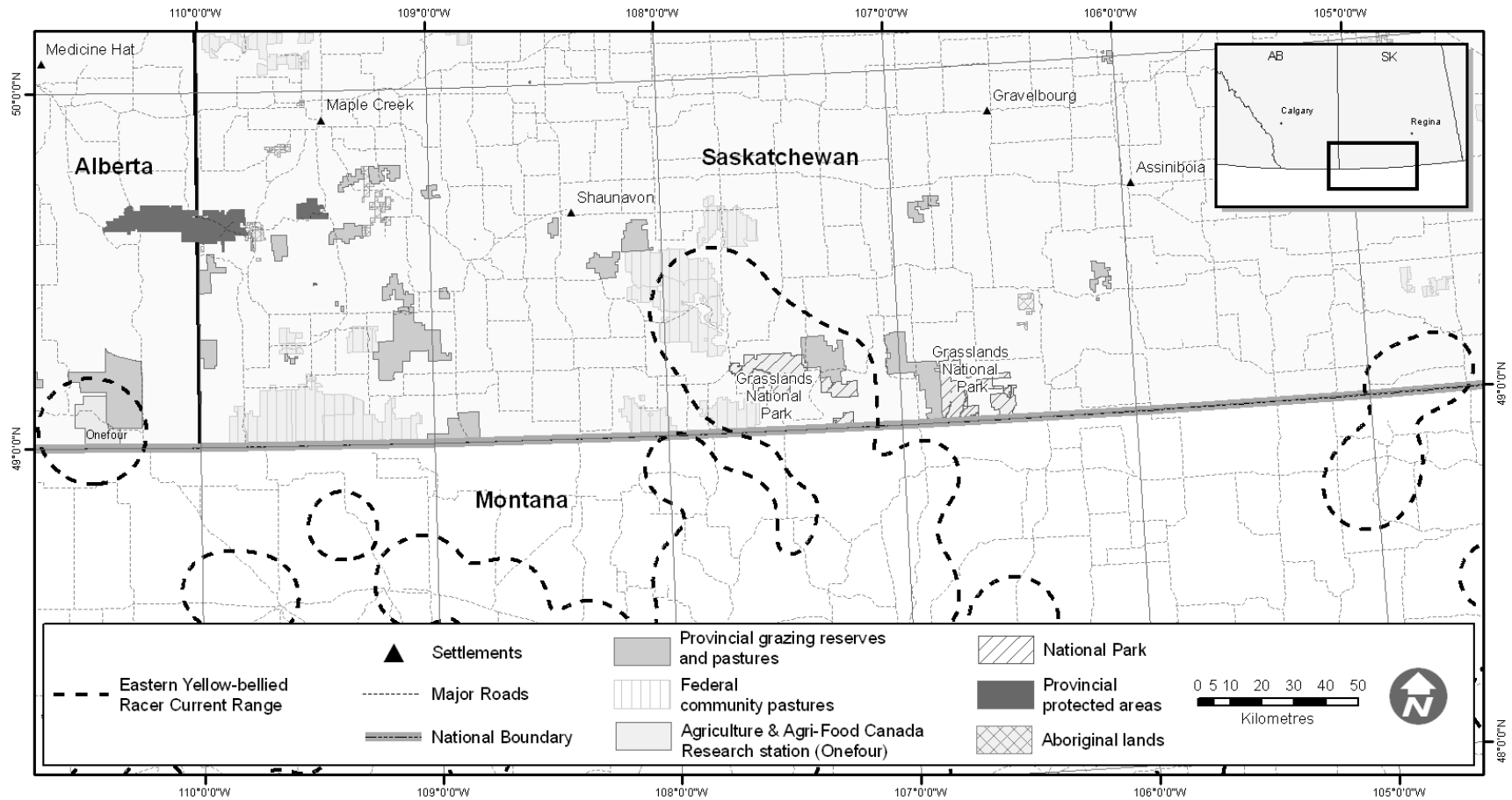


Figure 1. Range of the Eastern Yellow-bellied Racer in Alberta and Saskatchewan (Canada) and potential range in northern Montana (United States).

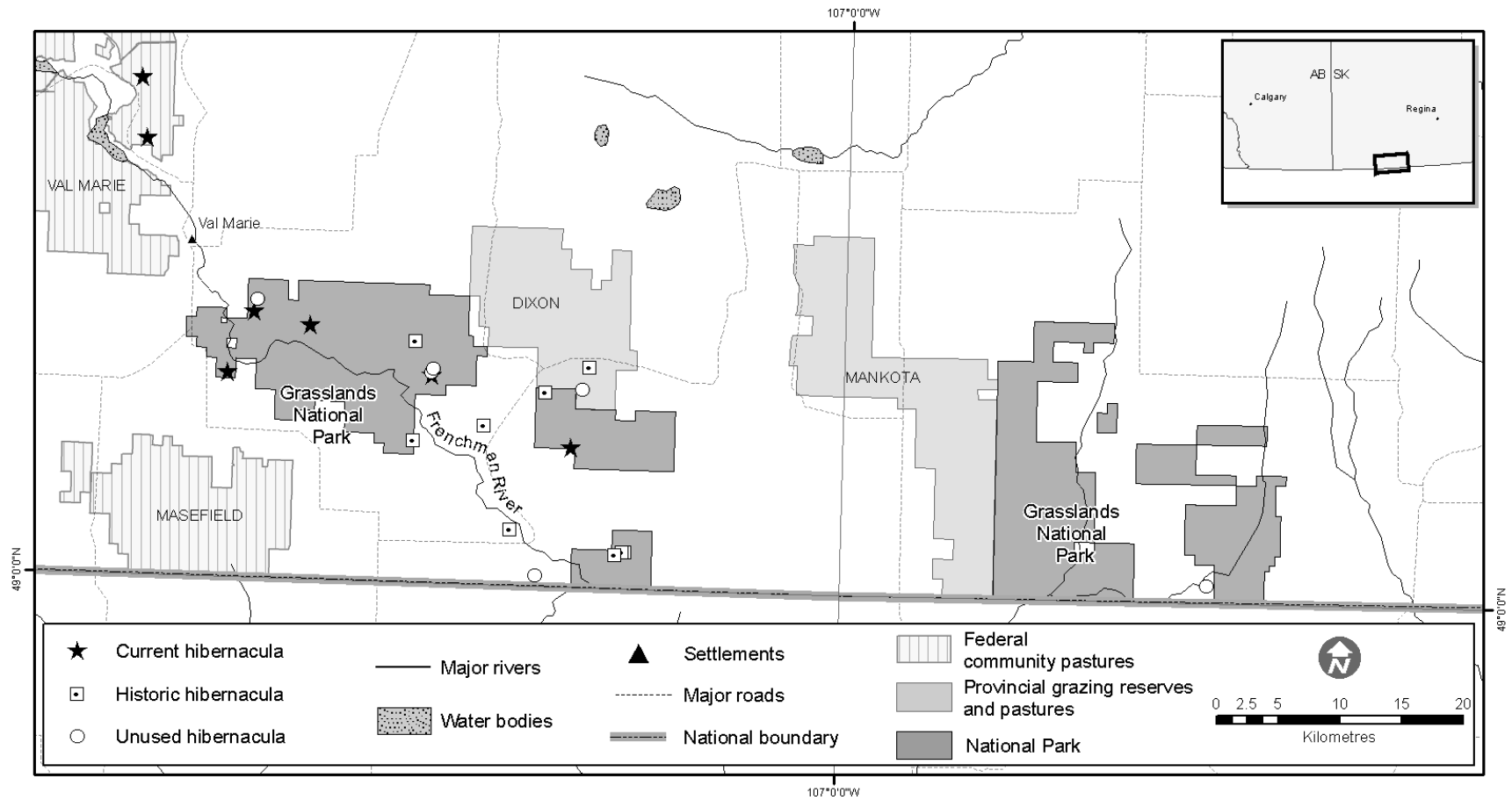


Figure 2. Known current (evidence of use by individual Eastern Yellow-bellied Racers during spring 2009 emergence), historic (no evidence of current use by the species, but evidence of historic use) and unused (no evidence of current or historic use by the species, but potentially appropriate) hibernacula in Canada.



Figure 3. Three hibernacula entrances used by Eastern Yellow-bellied Racers in Grasslands National Park (arrows point to entrances)



Figure 4. Close-up of hibernacula entrance used by Eastern Yellow-bellied Racers in Grasslands National Park. Rattlesnake (*Crotalus viridis*) visible to left of entrance

Damage and Destruction of Residence

Examples of activities that are likely to result in the damage or destruction of hibernacula include, but are not limited to, the following:

Activity likely to damage or destroy hibernacula	Potential effect of the activity on hibernacula
<ul style="list-style-type: none">• Filling-in, burning or flooding of hibernacula	<ul style="list-style-type: none">• Collapse of hibernacula• Impeded entrance to hibernacula• Changes to thermal momentum of hibernacula (slope, aspect, position and surface albedo)
<ul style="list-style-type: none">• Trampling or substantial foot traffic	<ul style="list-style-type: none">• Collapse of hibernacula• Changes to rock fracturing• Changes to thermal momentum of hibernacula (slope, aspect, position and surface albedo)• Soil compaction
<ul style="list-style-type: none">• Unsustainable grazing practices or other substantial removal of vegetation	<ul style="list-style-type: none">• Reduction in soil stability• Reduction of cover
<ul style="list-style-type: none">• Industrial, infrastructure and other anthropogenic development (e.g., roads, buildings, oil & gas development)	<ul style="list-style-type: none">• Collapse of hibernacula• Changes to rock fracturing• Changes to thermal momentum of hibernacula (slope, aspect, position and surface albedo)• Soil compaction• Reduction in soil stability• Reduction of cover

If damage or destruction to a hibernaculum occurs when it is occupied by an individual of the species, the SARA prohibition against the killing, harming and harassment of individuals [s.32(1)] may be applicable in place of, or in addition to, the prohibition against the damage or destruction of a species' residence [s.33].

Period and Frequency of Occupancy

Hibernacula are permanently occupied by multiple individuals from September/October to May/June. Eastern Yellow-bellied Racers live for at least 7-8 years¹⁰, and the species exhibits hibernacula site fidelity, often using the same hibernaculum over multiple, consecutive years¹⁵. Most of these hibernacula are also occupied by other species of snakes¹⁶.

Any place used as a hibernaculum by Eastern Yellow-bellied Racers is considered a residence year-round. Considering the life span of the species and evidence of re-use of hibernacula over multiple, consecutive years, *locations identified as Eastern Yellow-bellied Racer hibernacula are considered residences until they are known not to have been used by Eastern Yellow-bellied Racers for eight consecutive seasons (September – June).*

Suitable evidence for use of a hibernaculum includes observation of one or more individuals in cover areas just after emerging from or prior to entering the hibernacula in the spring or fall, respectively.

2) Nests

Physical Appearance and Context

Nests have not been detected for Eastern Yellow-bellied Racers in Canada, but it is believed that eggs are laid in loose soil, mammal burrows or under large rocks^{1, 10}. In southcentral Saskatchewan, young of the year have been observed 200 – 500 metres from hibernacula², therefore it is expected that nests are likely present near those areas.

Function

Nests are the locations where eggs are laid, and then develop and hatch. Data on Western Yellow-bellied Racers suggest that the species does not incubate their eggs themselves, but instead use nests that are suitable for the passive incubation of the eggs¹⁷, which may explain why, in US study sites, females prefer warm, south-facing, slopes as nest sites¹⁸.

Damage and Destruction of Residence

Examples of activities that are likely to result in the damage or destruction of nests, but are not limited to, the following:

Activity likely to damage or destroy nests	Potential effect of the activity on nests
<ul style="list-style-type: none">• Trampling or substantial foot traffic	<ul style="list-style-type: none">• Damage or impeded access to the nest• Reduction of cover• Soil compaction
<ul style="list-style-type: none">• Unsustainable grazing practices or other substantial removal of vegetation	<ul style="list-style-type: none">• Reduction of cover• Soil compaction• Reduction of soil stability
<ul style="list-style-type: none">• Industrial, infrastructure and other anthropogenic development (e.g., roads, buildings)	<ul style="list-style-type: none">• Damage or impeded access to the nest• Reduction of cover• Reduction of soil stability

If damage or destruction to a nest occurs when it is occupied by an individual of the species (e.g., nesting female, egg, hatchling), the SARA prohibition against the killing, harming and harassment of individuals [s.32(1)] may be applicable in place of, or in addition to, the prohibition against the damage or destruction of a species' residence [s.33].

Period and Frequency of Occupancy

Although no Eastern Yellow-bellied Racer nests have been found in Canada, in other parts of their range¹⁰, nests are occupied soon after emergence from the hibernacula in the spring (May/June). Data from Western Yellow-bellied Racers^{18, 19}, suggest that incubation lasts up to 2 months after eggs are laid. It is not known how long young of the year may use nests after hatching. Until additional information becomes available, nests are considered occupied from May/June until September/October.

Female Eastern Yellow-bellied Racers likely mature at two to three years and live to seven or eight years of age¹⁰, meaning that females are capable of reproduction for approximately four years. Some mature Eastern Yellow-bellied Racers, however, may not reproduce yearly¹⁰, therefore nests may not be occupied annually. However, as with other egg-laying species of snakes, it is possible that nests are used by multiple individuals. Eastern Yellow-bellied Racers may also display nest site fidelity, laying eggs in the same nests for several years, as evidenced in Western Yellow-bellied Racers²⁰.

Any place used as a nest by Eastern Yellow-bellied Racers is considered a residence year-round. Considering the likely mature period for females and the use of nests over multiple years, ***locations identified as Eastern Yellow-bellied Racer nests are considered residences until they are known not to have been used by Eastern Yellow-bellied Racers for four consecutive seasons (May – October)***. The description of this residence type should be reviewed amended as more information becomes available.

Suitable evidence for use of a nest includes observation of one or more individuals at a suspected nest site during the active season and/or reptilian eggs or egg shells that are suspected with reasonable certainty to be Eastern Yellow-bellied Racers.

Additional Information

For more information on the Eastern Yellow-bellied Racer, go to:
http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=280

For more information on SARA, go to: <http://www.sararegistry.gc.ca/>

Recommended Citation

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