

Greater short-horned lizard (*Phrynosoma hernandesi*)

Science support document

Government of Alberta wildlife sensitivity feature layer

Background

Greater short-horned lizard (*Phrynosoma hernandesi*), previously called the eastern short-horned lizard (*Phrynosoma douglasii*), is designated as an Endangered species in Alberta (under the *Wildlife Act*) and Canada (under the federal *Species at Risk Act*). The short-horned lizard is Alberta's only species of lizard. They are flat and oval shaped with short legs and tail. They have scaly, prickly skin, "horns" on their head and body. A small lizard species, adult females may weigh around 18 grams and be about 70 millimetres long, excluding the tail. Adult males are smaller, at about 50 millimetres and 10 grams.

Short-horned lizards inhabit sparsely vegetated habitats with fine, friable soils. In Alberta lizards have been recorded along the South Saskatchewan River, Chin Coulee, Forty Mile Coulee, Milk River and its tributaries, Lost River, and in the Manyberries badlands (James 2003). Areas where short-horned lizards occur have been subject to significant agricultural and industrial activity that threatens the persistence of this species in Alberta. Several historical locations are considered to be extirpated or severely degraded due to human land use activities (ASRD 2004; James 2002, 2003).

Short-horned lizards are generally active, i.e., mating and foraging, between April and September (ASRD 2004). During the day they shuttle between sun and shade to thermoregulate (Powell and Russell 1985). They are sit-and-wait predators, darting out and capturing insect prey that ventures into reach (ASRD 2004). In the winter short-horned lizards dig a shallow (~10 centimetre) burrow to hibernate in (Powell and Russell 1994, 1996).

Desired outcomes

These guidelines serve three primary purposes:

1. Prevent human caused mortality of greater short-horned lizard.
2. Maintain greater short-horned lizard habitat.
3. Avoid establishing man-made/artificial perching opportunities for predators.

Digital layers available

A. Greater Short-horned Lizard Range

Methods

The Greater Short-horned Lizard Range dataset replaces the former Eastern Short-horned Lizard Range dataset and is based upon 40 years of observations, compiled from the Government of Alberta's Fisheries and Wildlife Management Information System (FWMIS) which includes data from provincial surveys conducted by regional wildlife biologists, MULTISAR, and independent researchers. A smoothed minimum convex polygon (MCP) was used to delineate range boundaries with additional considerations used to further filter range boundaries after

observation data were plotted. Historical/extirpated observations were removed; bio- and geophysical restrictions to species patterns (e.g., rivers, elevation, ecoregions), Resource Selection Functions, Habitat Suitability Indices and inclusion of the Greater Short-horned Lizard Habitat layer were used to refine ranges as appropriate. Species experts reviewed maps and provided additional insight.

B. Greater Short-horned Lizard Habitat

Methods

The Greater Short-horned Lizard Habitat layer includes areas where short-horned lizard observations occur as well as the contiguous suitable habitat based on the Habitat Suitability Index, Resource Selection Function, and Ortho imagery. Insufficient survey work has been conducted to know the precise extent of the populations, with that the quantity of habitat included is site-specific (i.e., there is not a fixed distance). Observations were compiled from the Government of Alberta's Fisheries and Wildlife Management Information System (FWMIS) which includes data from provincial surveys conducted by regional wildlife biologists, MULTISAR, and independent researchers.

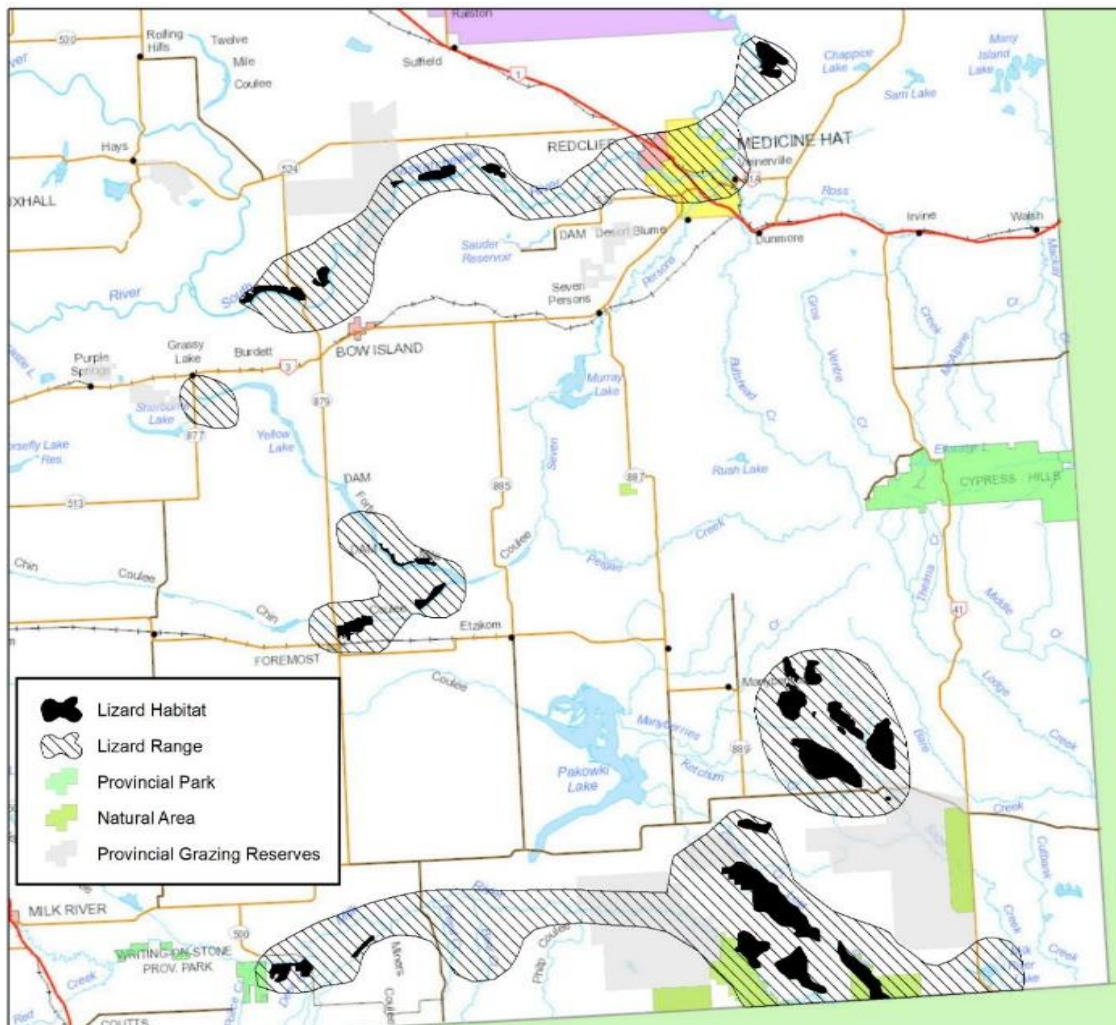


Figure 1: The greater short-horned lizard range and habitat areas in Alberta.

Rationale

The Greater Short-horned Lizard is an Endangered species in Alberta. Several occupied habitats have been identified in a portion of the species' range in south eastern Alberta. Under SARA, the federal government has also designated critical habitat that overlaps with a portion of the identified habitat.

In an effort to continue the recovery of the species, land use guidelines incorporate the sensitive nature of this species by stipulating restricted areas, timing and setback conditions. Land use activities have a high potential to result in the death of individuals and destruction of their habitat. This species is present year round and is incapable of dispersing long distances, or fleeing from equipment or machinery. Additionally, short-horned lizards are very difficult to find and surveys can be unreliable if no individuals are detected.

Short-horned lizards are susceptible to predation by avian species, particularly corvids (Powell and Russell 1996). Man-made structures promote and enhance corvid populations and predation (Kristan and Boarman 2003, Boarman et al. 2006). Artificial perching opportunities in short-horned lizard habitat have the potential to cause severe declines in the short-horned lizard population from predation.

Species specific conditions

Master schedule of standards and conditions

Conditions if within Greater Short-horned Lizard Range:

- A 200 metre buffer zone of undisturbed vegetation shall be maintained from the coulee or valley edge.
- Activities proposed within the 200 metre setback require a pre-construction wildlife survey as per the Sensitive Species Inventory Guidelines. If greater short-horned lizards are detected a 200 metre buffer shall be maintained from the coulee or valley edge.

Condition if within Greater Short-horned Lizard Habitat:

- No activities shall be conducted within the identified greater short-horned lizard habitats.

Relevant legislation/policy

Currently, under the Alberta *Wildlife Act*, short-horned lizards are afforded protection against the disruption or destruction of burrows in addition to protection from hunting. Therefore, the population in Alberta continues to be dependent on current management practices and protection of habitat. Short-horned lizard den protection is embedded in the following legislation and regulations:

- Alberta *Wildlife Act*, 1997: Section 36(1)
 - Wildlife Regulations: Section 96, Schedule 6 (Part 1, Sub-Part 1)

The above conditions align with the current Master Schedule of Standards and Conditions, which outlines standards for a 200 metre setback from coulee and valley edges in the Greater Short-horned Lizard Range.

Further, Canada's Greater short-horned lizard (*Phrynosoma hernandesi*) recovery strategy 2015 (<https://www.canada.ca/en/environment-climate-change/services/species-risk-public-registry.html>) as enacted

through the *Species At Risk Act*, outlines species-specific threats, recovery objectives, critical habitat and strategies necessary to recover the species and its habitat.

Frequency of maintenance, reviews and updates

Updates to this layer will be made based on the availability of new field observations. This Wildlife Sensitivity Layer will undergo a broader review and update every five years in alignment with short-horned lizard surveys. It is vital to maintain the habitat identified in this layer to prevent extirpation of short-horned lizards from Alberta. To support the full recovery of short-horned lizards, new habitats with confirmed observations will be added to this layer.

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