
Northern Leopard Frog Inventory in Waterton Lakes National Park, Alberta

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Extended Abstract: Major declines in northern leopard frog (*Rana pipiens*) populations were observed in Alberta during the 1970s and 1980s. Although Waterton Lakes National Park has very intact aquatic ecosystems, the northern leopard frog has not been documented in the park since 1980. The northern leopard frog is designated as a species of Special Concern by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2004), and as At Risk in Alberta (ASRD 2000). Northern leopard frog surveys were conducted in Waterton Lakes National Park in 1994–1996 and 2002, but no evidence of the species was found. Northern leopard frogs were observed on lands adjacent to the park in 1996 and 2000.

In 2003, an intense inventory for northern leopard frogs was initiated by Parks Canada in Waterton Lakes National Park. Literature and databases were searched for historical records. Habitat requirements were researched and air photos were used to identify potential sites. While known historical habitat locations were considered to be priority survey locations, numerous potential habitat locations were also surveyed. An inclusive protocol consisting of three survey methodologies (visual encounter surveys during spring and summer, evening call surveys during the breeding season, and D-netting surveys in mid-summer) were used to determine the presence and distribution of the species within the park. Visual encounter surveys were conducted at all historical and potential habitat locations. Evening call and D-netting surveys were conducted at historical locations only. Historical locations on land adjacent to Waterton Lakes National Park were surveyed in spring and summer in cooperation with Alberta Sustainable Resource Development. All amphibians detected during surveys were recorded on field data sheets, and those records were entered in a database.

In total, 120 sites were surveyed during this inventory, including the 34 known historical locations. No northern leopard frogs were observed in Waterton Lakes National Park during the survey, but one individual was observed north of the park near an historical location. All other amphibians known to exist in Waterton Lakes National Park were observed in appropriate habitat during the survey. The western toad (*Bufo boreas*), another species of Special Concern according to COSEWIC (COSEWIC 2004), was detected at 33% of the sites, but breeding

evidence (e.g., egg masses, tadpoles, or young of the year) was detected at only 9 sites and at only 10% of its known historical locations.

Potential causes for declines of the northern leopard frog population throughout its range include competition and predation from nonnative fish, chemical contamination (e.g., from weed control products, fertilizers, airborne chemicals), road mortality, genetic isolation, habitat loss due to drought, extremes in climatic conditions, disease, and changes in ultraviolet radiation. The overall mechanism(s) behind the declines in northern leopard frog populations in Waterton Lakes National Park remain unknown.

The northern leopard frog's apparent absence from Waterton Lakes National Park shows a similar pattern to its widespread decline in other parts of Alberta. Intense inventory effort is recommended for one more year before declaring the species extirpated from the park. Reintroduction should be investigated as a means of restoring native populations, and should include, but not be limited to analyses of water chemistry and presence/absence of nonnative fish populations. Similar investigations of declines in western toad populations need to be conducted, and should include studies of terrestrial habitat.

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