

Columbia spotted frog

Rana luteiventris

Class: Amphibia

Order: Anura

Conservation Status

NatureServe: Agency:

G Rank: G4

BLM:

IUCN: Least Concern

Audubon AK:

S Rank: S2

USFWS:

ADF&G:

Final Rank		
Conservation category: V. Orange		
V = unknown status and either high biological vulnerability or high action need		
<u>Category</u>	<u>Range</u>	<u>Score</u>
Status:	-20 to 20	0
Biological:	-50 to 50	-19
Action:	-40 to 40	24
Higher numerical scores denote greater concern		

Status - variables measure the trend in a taxon's population status or distribution. Higher status scores denote taxa with known declining trends. Status scores range from -20 (increasing) to 20 (decreasing).

	Score
<i>Population Trend (-10 to 10)</i>	0
Statewide trend is unknown. May be declining on the northern end of Mitkof Island (Ream 2016).	
<i>Distribution Trend (-10 to 10)</i>	0
Unknown.	
Status Total:	0

Biological - variables measure aspects of a taxon's distribution, abundance and life history. Higher biological scores suggest greater vulnerability to extirpation. Biological scores range from -50 (least vulnerable) to 50 (most vulnerable).

	Score
<i>Population Size (-10 to 10)</i>	-6
In southeast Alaska, described as "fairly common along mainland river valleys" by Carstensen et al. (2003). Field surveys in the Stikine River area, which covered only a small portion of its statewide range, detected nearly 500 individuals (Ream 2016). J. Ream (UAF, pers. comm.) estimates that there >10,000 individuals in the state. We rank this question as E- Population unknown, but suspected large.	
<i>Range Size (-10 to 10)</i>	-2
Patchily distributed on the mainland of southeast Alaska from the Taku River south to British Columbia (Waters 1992; Lindell and Grossman 1998; MacDonald 2010; Ream 2016). Also found on islands near the Stikine River including Mitkof, Vank, and Wrangell Islands (Lindell and Grossman 1998; Ream 2013; Ream 2016). Estimated range size is between 10,000 and 100,000 sq. km.	
<i>Population Concentration (-10 to 10)</i>	0
Concentrates during breeding season, but number of sites is unknown.	
<i>Reproductive Potential</i>	
<u>Age of First Reproduction (-5 to 5)</u>	-1
Unknown for Alaska. Age at first breeding ranges from 2 to 6 years in the western United States and British	

Columbia, depending on elevation (Licht 1975b; James 1998; Bull 2005; MacDonald 2010). We therefore rank this question as $0.5 * B + 0.5 * C$.		
<u>Number of Young (-5 to 5)</u>		0
Unknown in Alaska. Females lay eggs in masses; in the western U.S., number of eggs ranges from 400 to 2400 (James 1998; Thomas 2001). However, survivorship is likely much lower than that (M. Spangler, UAF, pers. comm.; see pages 34-35 in Patla et al. 2005). We therefore rank this question as 0- Unknown. Populations at lower elevations breed every year, whereas populations at higher elevations may breed every two to three years (James 1998; Thomas 2001).		
<i>Ecological Specialization</i>		
<u>Dietary (-5 to 5)</u>		-5
Unknown for Alaska. In Oregon and British Columbia, they are described as generalist feeders that consume a variety of aquatic and terrestrial invertebrates such as insects, arachnids, and mollusks (Licht 1986; Thomas 2001; Bull 2005).		
<u>Habitat (-5 to 5)</u>		-5
In Alaska, they have been found in and near a variety of freshwater habitats including rivers, streams, banks, muskeg, beaver ponds, sloughs, and lakes (Waters 1992; Lindell and Grossman 1998; Carstensen et al. 2003; MacDonald 2010; Ream 2013; 2016). It has been found in both still and swift-flowing water, and in waterbodies both with and without fish (Lindell and Grossman 1998).		
Biological Total:		-19
Action	- variables measure current state of knowledge or extent of conservation efforts directed toward a given taxon. Higher action scores denote greater information needs due of lack of knowledge or conservation action. Action scores range from -40 (lower needs) to 40 (greater needs).	Score
<hr/>		
<i>Management Plans and Regulations (-10 to 10)</i>		10
Not managed or protected in the state of Alaska. A permit is required to collect specimens for scientific or educational purposes (ADFG 2004).		
<i>Knowledge of Distribution and Habitat (-10 to 10)</i>		2
Habitat associations and distribution are somewhat known, although the northern limit of their range is not well understood (Ream 2013). This species is regularly found during the several amphibian surveys that have been conducted on the mainland and islands of southeast Alaska (Waters 1992; Lindell and Grossman 1998; Carstensen et al. 2003; Ream 2016 and references therein), and habitat associations have been documented during these surveys.		
<i>Knowledge of Population Trends (-10 to 10)</i>		2
Locally monitored in the Stikine River area through the Alaska Herpetological Society's Stikine Long-term Amphibian Monitoring Program (SLAMP), but data on statewide population trends are currently unavailable.		
<i>Knowledge of Factors Limiting Populations (-10 to 10)</i>		10
Little is known about the ecology of this species and the factors that limit populations in Alaska. Surveys in 2005 and 2006 in Southeast Alaska did not detect chytrid fungus on Columbia spotted frogs, though sample size was very low (Adams et al. 2007). Chytrid fungus was detected on western toads and wood frogs, and the fungus has been detected on the Columbia Spotted Frog elsewhere in its range (Ross et al. 2014). This species is declining in some parts of its range (e.g. Utah, Nevada), potentially as a result of habitat loss and degradation from cattle grazing and agriculture (Adams et al. 2009; Pilliod and Scherer 2015).		
Action Total:		24

Supplemental Information - variables do not receive numerical scores. Instead, they that are used to sort taxa to answer specific biological or management questions.

Harvest:	None or Prohibited
Seasonal Occurrence:	Year-round
Taxonomic Significance:	Monotypic species
% Global Range in Alaska:	<10%
% Global Population in Alaska:	<25%
Peripheral:	Yes

References

- Adams, M. J., S. Galvan, D. Reinitz, R. A. Cole, S. Pyare, M. Hahr, and P. Govindarajulu. 2007. Incidence of the fungus *Batrachochytrium dendrobatidis* in amphibian populations along the northwest coast of North America. *Herpetological Review* 38(4):430–431
- Adams, M., C. Pearl, B. McCreary, S. Galvan, S. Wessell, ..., and A. Kuehl. 2009. Short-term effect of cattle exclosures on Columbia spotted frog (*Rana luteiventris*) populations and habitat in northeastern Oregon. *Journal of Herpetology* 43(1):132-138. DOI
- Alaska Department of Fish and Game (ADFG). 2004. Policy and requirements for fish resource permits. Juneau, AK, USA.
- Bull, E. L. 2005. Ecology of the Columbia spotted frog in Northeastern Oregon. General Technical Report PNW-GTR-640, U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station, Portland, OR, USA.
- Carstensen, R., M. Willson, and R. Armstrong. 2003. Habitat use of amphibians in northern southeast Alaska. Report to the Alaska Department of Fish and Game by Discovery Southeast, Juneau, AK, USA.
- James, J. D. 1998. Status of the Columbia spotted frog (*Rana luteiventris*) in Alberta. Wildlife Status Report No. 17. Alberta Environmental Protection, Fisheries and Wildlife Management Division, and Alberta Conservation Association, Edmonton, AB, CAN.
- Licht, L. E. 1975b. Comparative life history features of the western spotted frog, *Rana pretiosa*, from low- and high-elevation populations. *Canadian Journal of Zoology* 53(9):1254-1257. DOI: 10.1139/z75-150
- Licht, L. E. 1986. Food and feeding behavior of sympatric red-legged frogs, *Rana aurora*, and spotted frogs, *Rana pretiosa*, in southwestern British Columbia. *Canadian Field-Naturalist* 100(1):22-31.
- Lindell, J. R., and E. M. Grossman. 1998. Columbia spotted frog (*Rana luteiventris*) distribution and local abundance in southeast Alaska. U.S. Fish and Wildlife Service, Southeast Alaska Ecological Services, Juneau, AK, USA.
- MacDonald, S. O. 2010. The amphibians and reptiles of Alaska: A field handbook. Version 2.0, May 2010. Alaska Natural Heritage Program, University of Alaska Anchorage, AK, USA.
- Patla, D. A., D. A. Keinath, M. McGee, and D. S. Pilliod. 2005. Species assessment for Columbia spotted frog (*Rana luteiventris*) in Wyoming. Prepared for U.S. Bureau of Land Management, Wyoming State Office, Cheyenne, WY, USA.
- Pilliod, D. S., and R. D. Scherer. 2015. Managing habitat to slow or reverse population declines of the Columbia spotted frog in the Northern Great Basin. *Journal of Wildlife Management* 79(4):579–590. DOI: 10.1002/jwmg.868
- Ream, J. T. 2013. Herpetology in the North: A review of past, present and future herpetofaunal research and management in Alaska. Unpublished report, University of Alaska Fairbanks, AK, USA.
- Ream, J. T. 2016. Local herpetological knowledge in the north. PhD thesis, University of Alaska Fairbanks, AK, USA.
- Ross, L., M. Wright, K. Wiskirchen, J. Grace, C. Lennon, J. Mantoath, ..., and C. E. Mongtgomery. 2014. Prevalence of *Batrachochytrium dendrobatidis* in three frog species of the Bighorn National Forest, Wyoming, USA. *Herpetological Review* 45(4):615-616.
- Thomas, A. W. 2001. Amphibians of the eleven contiguous western states and Alaska. Idaho Department of Fish and Game, Boise, ID, USA.

Waters, N. D. L. 1992. Habitat associations, phenology, and biogeography of amphibians in the Stikine River basin and southeast Alaska. Report of the 1991 pilot project. U.S. Fish and Wildlife Service, California Cooperative Fishery Research Unit, and Hum

Review status: Peer-reviewed

Version date: 08 May 2018

Alaska Center for Conservation Science
Alaska Natural Heritage Program
University of Alaska Anchorage
Anchorage, AK