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Oregon State Rank Assessment for Cascades Frog (*Rana cascadae*)

Eleanor P. Gaines

Portland State University, egaines@pdx.edu

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Natural Heritage Ranking Form - Oregon State Rank

Oregon Ranking Form Cascades frog (*Rana cascadae*)

Oregon Biodiversity Information Center

SPECIES ASSESSED

Scientific Name *Rana cascadae* ELCODE AAABH01060
Common Name Cascades frog Element ID 6296

Species Concept Reference Citation

Frost, D. R. 1985. Amphibian species of the world. A taxonomic and geographical reference. Allen Press, Inc., and The Association of Systematics Collections, Lawrence, Kansas. v + 732 pp.

CONSERVATION STATUS RANK

Assigned Rank **S3**

Rank Assignment Author	Eleanor Gaines	Rank Review Date	11/01/2022
Rank Factors Author	Eleanor Gaines	Rank Factors Date	11/01/2022
Calculated Rank	S3	Rank Change Date	11/01/2022
Rank Methodology Used	Rank calculation - Biotics v2		

Assigned Rank Reasons

Range continues to be relatively large, with many populations. Some populations may be small. May be sensitive to climate change, especially in southern OR.

RANGE/DISTRIBUTION

Range Extent

Rating	20,000-200,000 square km (about 8000-80,000 square miles)		
Estimate	22036	Unit Used for Estimate	Square Kilometers
Comments	Range extent: 22,036 sq km based on point observation data, element occurrences, and records from USFS and BLM.		

Area of Occupancy

Grid Cell Size	4 km ² Grid Cells		
Rating (as Number of 4 km ² Grid Cells)	F = 126-500		
Comments	Approximately 448 4 km ² grid cells based on current element occurrences and records from BLM and USFS. Some of these records are likely no longer extant.		

ABUNDANCE AND CONDITION

Number of Occurrences

Rating	81 - 300		
Estimate	116		
Comments	116 EOs; additional records exist that are not in database, some within 25 years.		

Population Size

Rating	Unknown		
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Good Viability/Ecological Integrity

Number of Occurrences with Good Viability/Ecological Integrity

Rating	Few to some (4-40)		
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Comments

Most occurrences are of a few individuals. There are fewer than 10 records that report large populations.

THREATS

<u>Threat Category Code</u>	<u>Threat Category</u>	<u>Calculated Impact</u>	<u>Scope</u>	<u>Severity</u>	<u>Timing</u>	<u>Comments</u>
2.3.2	Small-holder grazing, ranching or farming	Unknown	Large: Affects most (31-70%) of the total population or occurrences or extent	Unknown	High: Continuing	
2	Agriculture & aquaculture	Unknown	Large: Affects most (31-70%) of the total population or occurrences or extent	Unknown	High: Continuing	
2.3	Livestock farming & ranching	Unknown	Large: Affects most (31-70%) of the total population or occurrences or extent	Unknown	High: Continuing	
6	Human intrusions & disturbance	D = Low	Restricted: Affects some (11-30%) of the total population or occurrences or extent	Moderate: Likely to moderately degrade/reduce affected occurrences or habitat, or reduce population 11-30%	High: Continuing	
6.1	Recreational activities	D = Low	Restricted: Affects some (11-30%) of the total population or occurrences or extent	Moderate: Likely to moderately degrade/reduce affected occurrences or habitat, or reduce population 11-30%	High: Continuing	
7	Natural system modifications	D = Low	Restricted: Affects some (11-30%) of the total population or occurrences or extent	Slight: Likely to only slightly degrade/reduce affected occurrences or habitat, or reduce population 1-10%	High: Continuing	
7.1	Fire & fire suppression	D = Low	Restricted: Affects some (11-30%) of the total population or occurrences or extent	Slight: Likely to only slightly degrade/reduce affected occurrences or habitat, or reduce population 1-10%	High: Continuing	
8	Invasive & other problematic species, genes & diseases	C = Medium	Large: Affects most (31-70%) of the total population or occurrences or extent	Moderate: Likely to moderately degrade/reduce affected occurrences or habitat, or reduce population 11-30%	High: Continuing	

8.1	Invasive non-native/alien species/diseases	C = Medium	Large: Affects most (31-70%) of the total population or occurrences or extent	Moderate: Likely to moderately degrade/reduce affected occurrences or habitat, or reduce population 11-30%	High: Continuing
9	Pollution	Unknown	Large: Affects most (31-70%) of the total population or occurrences or extent	Unknown	High: Continuing
9.5	Air-borne pollutants	Unknown	Large: Affects most (31-70%) of the total population or occurrences or extent	Unknown	High: Continuing
11	Climate change & severe weather	BC = High - medium	Pervasive: Affects all or most (71-100%) of the total population or occurrences or extent	Serious - moderate	High: Continuing
9.5.3	Ozone	Unknown	Large: Affects most (31-70%) of the total population or occurrences or extent	Unknown	High: Continuing

Calculated Overall Threat Impact B = High

Assigned Overall Threat Impact B = High

Overall Threat Impact Comments

Threats from climate change, drying of ephemeral ponds. Southern part of range more vulnerable to changes in climate than northern Cascades. Pearl et al. (2009) found *R. cascadae* at 66% of historic breeding sites. Populations were more likely to be relocated further north in OR. Introduced predatory fish, habitat loss and degradation (from fire suppression and/or grazing), disease, UV-B radiation, air borne pollutants, and climate change are the greatest threats to this species (Fellers and Drost 1993, Pope et al. 2014, Cole et al. 2016, Evelyn and Sweet 2018, Duarte et al. 2021, Cook et al. 2022). Grazing can degrade habitat by increasing sedimentation (Oregon Department of Fish and Wildlife 2016).

TRENDS

Short-Term Trend

Rating FG = Decline of <30% to relatively stable

Comments

In the Oregon Cascades, although the number of sites occupied declined slightly, Duarte et al. (2021) could not detect a significant decline (greater than 20%) between 2004 and 2019.

Long-Term Trend

Rating FG = Decline of <30% to relatively stable

Comments

In Oregon, population declines have been referenced, but data to support these claims are not available (Nussbaum et al. 1983, Pearl et al. 2009). Significant population declines (greater than 20%) were not detected between historical records and 2004 (Pearl et al. 2009), and the species remains broadly distributed across the Oregon Cascades (ORBIC 2022). However, historically the species was reported from lower elevations (as low as 400m), and it currently occurs above 600m (Hallock and McAllister 2009, Pope et al. 2014).

ADDITIONAL SPECIES INFORMATION

Oregon Habitat Comments

Lakes, ponds, bogs and small streams in moist montane meadows and forests. At times encountered along forest trails some distance from bodies of water.

RANKING REFERENCES

<u>Short Citation</u>	<u>Author</u>	<u>Year</u>	<u>Full Citation</u>
Bury			Bury, Bruce R. Biologist with USGS. He has provided <i>Rana</i> sp. sighting data for NRIS fauna database.
Cole et al.		2016	Cole, E.M., Hartman, R. and North, M.P., 2016. Hydroperiod and cattle use associated with lower recruitment in an r-selected amphibian with a declining population trend in the Klamath Mountains, California. <i>Journal of Herpetology</i> , 50(1), pp.37-43.
Cook et al.		2022	Cook, K., Pope, K., Cummings, A. and Piovia-Scott, J., 2022. In situ treatment of juvenile frogs for disease can reverse population declines. <i>Conservation Science and Practice</i> , 4(9), p.e12762.
Duarte		2021	Duarte, Adam; Pearl, Christopher A.; McCreary, Brome; Rowe, Jennifer C.; Adams, Michael J. 2021. An updated assessment of status and trend in the distribution of the Cascades frog (<i>Rana cascadae</i>) in Oregon, USA. <i>Herpetological Conservation and Biology</i> . 16(2):361-373.
Evelyn		2018	Evelyn, Christopher; Sweet, Samuel. 2018. Cascades frog (<i>Rana cascadae</i>) species account for US Forest Service region 5, pre-public review draft, August 2018. University of California Santa Barbara. Page 16.
Fellers		1993	Fellers, G.M. and C.A. Drost. 1993. Disappearance of the Cascades frog <i>RANA CASCADAE</i> at the southern end of its range, California, USA. <i>Biological Conservation</i> 65:177-181.
Nussbaum et al.		1983	Nussbaum, R. A., E. D. Brodie, Jr. and R. M. Storm. 1983. Amphibians and reptiles of the Pacific Northwest. University Press of Idaho, Moscow, Idaho. 332 pp.
ORBIC		2019	Oregon Biodiversity Information Center. 2019. Oregon Biotics Rare Species Database. Maintained by ORBIC at Portland State University, Portland, OR.
Pearl et al.		2009	Pearl, C. A., M.J. Adams, R.B. Bury, W. H. Wente, and B. McCreary. 2009. Evaluating Amphibian Declines with Site Revisits and Occupancy Models: Status of Montane Anurans in the Pacific Northwest USA. <i>Diversity</i> 2009, 1, 166-181; doi:10.3390/d1020166.
Pope		2014	Pope, Karen; Brown, Catherine; Hayes, Marc; Green, Gregory; Macfarlane, Diane. 2014. Cascades frog conservation assessment. U.S. Department of Agriculture, Forest Service, Pacific Southwest Research Station. Page PSW-GTR-244.

RESOURCES

Oregon Biodiversity Information Center, Institute for Natural Resources
Portland State University, Mail Stop: INR, PO Box 751, Portland, OR 97207-0751 Phone: 503-725-9950

Additional ORBIC species ranking forms posted at
<https://inr.oregonstate.edu/orbic/rare-species/ranking-documentation>

Information on Natural Heritage ranking methodology is available at
<http://www.natureserve.org/biodiversity-science/publications/natureserve-conservation-status-assessments-methodology-assigning>

The Conservation Rank Calculator is developed and maintained by NatureServe and is available from
<http://www.natureserve.org/conservation-tools/conservation-rank-calculator>

ASSESSMENT CITATION

Eleanor Gaines. 2022. Oregon state rank assessment for Cascades frog (*Rana cascadae*). Oregon Biodiversity Information Center. Institute for Natural Resources, Portland State University, Portland, OR.