

# Natural Heritage Ranking Form - Oregon State Rank

Oregon Ranking Form Cope's giant salamander (*Dicamptodon copei*)

Oregon Biodiversity Information Center

## SPECIES ASSESSED

Scientific Name *Dicamptodon copei*

ELCODE AAAAH01010

Common Name Cope's giant salamander

Element ID 6282

### 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 **S2?**

Rank Assignment Author

Rank Review Date

12/17/2003

Rank Factors Author Eleanor Gaines

Rank Factors Date

10/20/2022

Calculated Rank S2?

Rank Change Date

10/20/2022

Rank Methodology Used Rank calculation - Biotics v2

### Assigned Rank Reasons

This species has a limited distribution in Oregon, restricted to the extreme northwest corner of the state and to parts of the Columbia Gorge and around the east side of Mt. Hood. There are many occurrences, but populations are isolated and exhibit limited gene flow. They are threatened by multiple activities that increase stream temperatures, siltation, and alter stream flow patterns, as well as by the effects of climate change. The biggest threat facing this species is posed by increased stream temperatures and siltation resulting from logging (NatureServe 2004). It is found in headwaters with hard rock substrate and clear, cold water, and avoids areas that have been filled by sedimentation (Corkran and Thoms 1996).

## RANGE/DISTRIBUTION

### Range Extent

Rating 5000-20,000 square km (about 2000-8000 square miles)

Estimate 6147

Unit Used for Estimate

Square  
Kilomete  
rs

Comments This range extent includes lowland portions of the Willamette Valley that are not occupied. Known from Hood River, Wasco, Clackamas, Multnomah, Clatsop, Washington and Tillamook Counties in Oregon (Foster and Olson 2014). It is found from near sea level to about 1593 m (Foster et al. 2015). It has a limited distribution in Oregon, restricted to the extreme northwest corner of the state and to parts of the Columbia Gorge and around the east side of Mt. Hood.

### Area of Occupancy

Grid Cell Size 4 km<sup>2</sup> Grid Cells

Rating (as Number of 4 km<sup>2</sup> Grid Cells) E = 26-125

Comments Known records intersect with 92 4km<sup>2</sup> grid cells.

## ABUNDANCE AND CONDITION

### Number of Occurrences

Rating 21 - 80

Estimate 40

Comments

Approximately 40 element occurrences in OR.

### Population Size

Rating Unknown

**Comments**

Total adult population size is unknown.

**Good Viability/Ecological Integrity**

**Number of Occurrences with Good Viability/Ecological Integrity**

**Rating**      Few to some (4-40)

**Comments**

Unknown how many populations are well protected. Many occur on National Forest lands. Populations are fragmented and exhibit genetic isolation (Steel et al. 2009, Foster and Olson 2014).

<b>THREATS</b>
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<u>Threat Category</u>		<u>Calculated</u>		<u>Severity</u>	<u>Timing</u>	<u>Comments</u>
<u>Code</u>	<u>Threat Category</u>	<u>Impact</u>	<u>Scope</u>			
5	Biological resource use	BD = High - low	Large: Affects most (31-70%) of the total population or occurrences or extent	Serious - slight	High: Continuing	
5.3	Logging & wood harvesting	BD = High - low	Large: Affects most (31-70%) of the total population or occurrences or extent	Serious - slight	High: Continuing	
9	Pollution	D = Low	Restricted - small	Moderate: Likely to moderately degrade/reduce affected occurrences or habitat, or reduce population 11-30%	High: Continuing	
9.3	Agricultural & forestry effluents	D = Low	Restricted - small	Moderate: Likely to moderately degrade/reduce affected occurrences or habitat, or reduce population 11-30%	High: Continuing	
4	Transportation & service corridors	C = Medium	Restricted: Affects some (11-30%) of the total population or occurrences or extent	Serious: Likely to seriously degrade/reduce affected occurrences or habitat, or reduce population 31-70%	High: Continuing	
4.1	Roads & railroads	C = Medium	Restricted: Affects some (11-30%) of the total population or occurrences or extent	Serious: Likely to seriously degrade/reduce affected occurrences or habitat, or reduce population 31-70%	High: Continuing	
11	Climate change & severe weather	C = Medium	Pervasive: Affects all or most (71-100%) 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	
<b>Calculated Overall Threat Impact</b>		AB = Very high - high				
<b>Assigned Overall Threat Impact</b>		AB = Very high - high				
<b>Overall Threat Impact Comments</b>						

Activities that alter microhabitats or create barriers to dispersal are likely to negatively impact this species. Forest management and stream-road culverts are the greatest threats, primarily due to habitat alterations that impede dispersal, increase stream siltation from erosion, and increase in-stream temperatures after canopy removal (Foster and Olson 2014, Foster et al. 2015). Timber harvest could disturb stream channel habitat, increase stream temperatures to unsuitably high levels, and result in siltation, which may detrimentally affect food resources. However the effect of timber harvest appears to vary by location and methods used (Corn and Bury 1989, Steele et al. 2002, Foster and Olson 2014). Culverts and road construction and maintenance can increase stream sedimentation and present barriers to dispersal and gene flow (Foster and Olson 2014). Cope's giant salamanders have been identified as having moderate-to-high vulnerability to climate change due to reduced summer stream flow and elevated water temperature (Washington Department of Fish and Wildlife 2022). Warmer or more variable stream temperatures will affect life history characteristics and may make streams uninhabitable, altering distribution, particularly in the southern portion of the species' range (Trumbo et al. 2013, Foster and Olson 2014, Washington Department of Fish and Wildlife 2022). Increasingly frequent high flow events may adversely affect Cope's giant salamanders (Foster and Olson 2014). Large stand replacing fires may increase under climate change, resulting in increased stream temperatures, sediment inputs, and debris flows (Foster and Olson 2014, Washington Department of Fish and Wildlife 2022). Chemical use for vegetation management, fire retardants, and pest control can directly affect Cope's giant salamander, and this threat is of particular concern on state and private lands (Foster and Olson 2014).

### TRENDS

#### Short-Term Trend

**Rating**            G = Relatively Stable (<=10% change)

#### Comments

Most occurrences are still considered viable (ORBIC 2022).

#### Long-Term Trend

**Rating**            U = Unknown

#### Comments

Long term population trends are unknown.

### OTHER FACTORS

**Intrinsic Vulnerability Rating**    Moderately vulnerable

#### Comments

This species has limited dispersal ability because of its primarily aquatic life cycle (Steele et al. 2009, Foster et al. 2015), making it vulnerable to habitat fragmentation and effects of climate change (Trumbo et al. 2013, Foster et al. 2015).

**Environmental Specificity Rating**    Narrow. Specialist or community with key requirements common.

#### Comments

This species requires cool, perennial streams with coarse substrates, often occurring in small streams with high gradients in coniferous forests (Foster and Olson 2014).

### ADDITIONAL SPECIES INFORMATION

#### Oregon Habitat Comments

Most often found in clear, cold streams and seeps in moist coniferous forests with streambeds of large gravel, small boulders and some large logs. Avoids areas that have been filled by sedimentation. Larvae found on cliff faces beside a waterfall in the Columbia River Gorge.

### RANKING REFERENCES

Short Citation Author    Year    Full Citation

Corkran and Thoms    1996    Corkran, C. C., and C. Thoms. 1996. Amphibians of Oregon, Washington and British Columbia. Lone Pine Publishing, Edmonton, Alberta. 175 pp.

### 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-assign>

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

<b>ASSESSMENT CITATION</b>
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Oregon Biodiversity Information Center. 2003. Oregon state rank assessment for Cope's giant salamander (Dicamptodon copei). Institute for Natural Resources, Portland State University, Portland, OR.