

Calcite and Westslope Cutthroat Trout Spawning Suitability

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Species Information

Common Name: Westslope Cutthroat Trout
Genus: *Oncorhynchus clarkii lewisi*

Stressor Details

Stressor Name: Calcite
Units: Calcite concretion
Scale: linear
Function Type: continuous
Vital Rate/Process: Capacity

Life Stage & Context

Life Stages: Spawners
Geography: Elk River, BC
Activity: Spawning
Season: Spawning Season

Descriptions

Overview

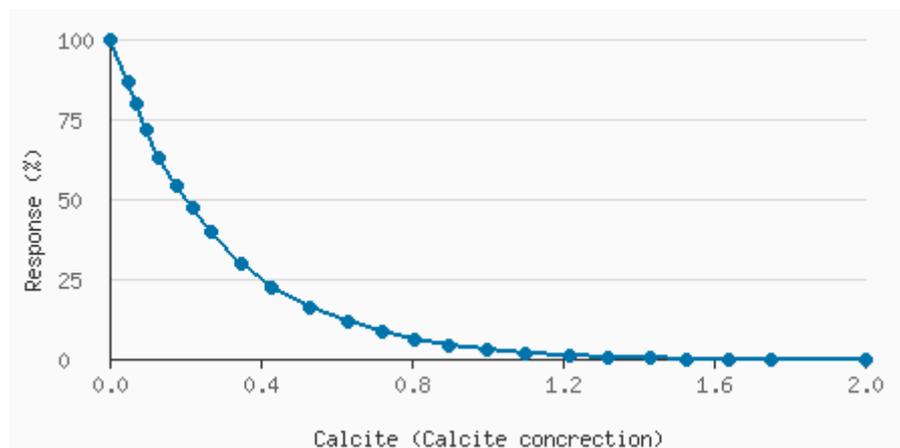
Draft WCT spawning suitability response curves for calcite concretion based on data collected in 2018 and 2019 from 17 tributary streams of the Elk River, B.C. Curves are model-averaged predictions of the effects of calcite concretion on redd presence and redd counts.

The influence of calcite concretion on the response variables was negative, and the suitability model for WCT decreases exponentially with increasing levels of calcite concretion.

Function Derivation

expert opinion

Stressor Response Data



Stressor (X)	Mean System Capacity (%)	SD	low.limit	up.limit
0.00	100.00	0.00	100.00	100.00

0.05	86.52	0.00	86.52	86.52
0.07	80.00	0.00	80.00	80.00
0.10	71.30	0.00	71.30	71.30
0.13	63.04	0.00	63.04	63.04
0.18	54.35	0.00	54.35	54.35
0.22	46.96	0.00	46.96	46.96
0.27	39.57	0.00	39.57	39.57
0.35	30.00	0.00	30.00	30.00
0.43	22.17	0.00	22.17	22.17
0.53	15.65	0.00	15.65	15.65
0.63	11.30	0.00	11.30	11.30
0.72	8.26	0.00	8.26	8.26
0.81	5.65	0.00	5.65	5.65
0.90	4.35	0.00	4.35	4.35
1.00	2.61	0.00	2.61	2.61
1.10	1.74	0.00	1.74	1.74
1.22	0.87	0.00	0.87	0.87
1.32	0.43	0.00	0.43	0.43
1.43	0.43	0.00	0.43	0.43
1.53	0.00	0.00	0.00	0.00
1.64	0.00	0.00	0.00	0.00
1.75	0.00	0.00	0.00	0.00
2.00	0.00	0.00	0.00	0.00

Citations

Hocking, M., Tamminga, A., Arnett, T., Robinson, M., Larratt, H., & Hatfield, T. (2021). Subject Matter Expert Report: Calcite. Evaluation of Cause–Decline in Upper Fording River Westslope Cutthroat Trout Population. Report prepared for Teck Coal Ltd. by Ecofish Research Ltd., Lotic Environmental Ltd., and Larratt Aquatic Consulting Ltd.

References

Hocking et al. - <https://www.teck.com/media/Calcite-SME-Stressor-Report-UFR-Evaluation-of-Cause.pdf>