Depth of Reach and Salish Sucker

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Species Information

Common Name: Salish Sucker
Genus: Catostomus sp.

Stressor Details

Stressor Name: Water depth
Units: cm
Metric: Mean depth of the reach
Scale: linear
Function Type: step
Vital Rate/Process: CPUE

Life Stage & Context

Life Stages: Adults, Juvenile
Geography: Lower Fraser Valley (British Columbia)
Activity: All activities
Season: All seasons

Descriptions

Overview

> We inferred a stepwise function with a threshold value of 70 cm based on the inference made in Pearson (2004) and Fisheries and Oceans Canada (2019). This is based on the inference from Fig 3.3 from Pearson (2004) pasted below (Figure 1) that Adult Salish sucker are generally most likely to be caught in habitats where the depth is greater than 70cm for at lest 50 contiguous meters (this is also the definition of critical habitat for Salish sucker. Edwards (1983) describes the relationship for lacustrine Longnose Dace (depth is in meters) and therefore, not applicable to Salish Sucker (Figure 2). However, it shows a sharp decline in habitat suitability at the threshold value and therefore, partly supports the shape of the final function.

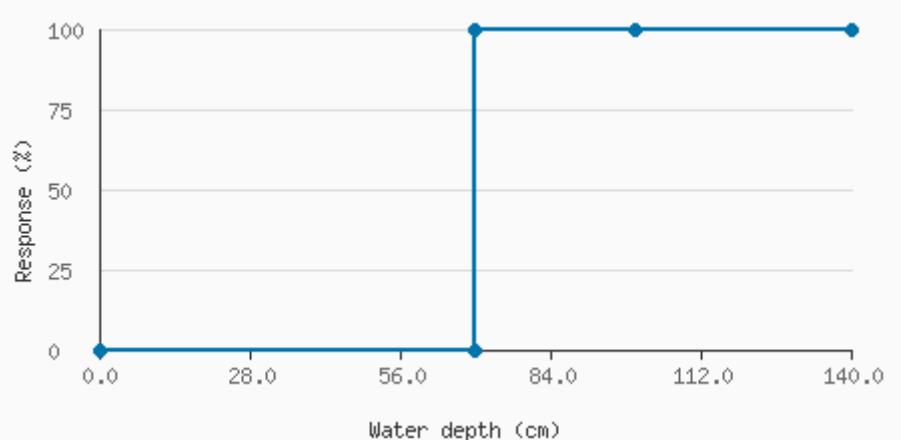
Transferability of Function

> As local adaptations are likely minimal among different Salish Sucker populations, we would not expect much variation in true tolerance among populations. This function should therefore be broadly applicable to all populations of the species, with the caveat that it is partly based on data from other related species.

Source of Stressor Data

> Data on length of reaches greater than 70cm deep is available for most (but not all) reaches in Bertrand, Pepin, Fishtrap Creeks, and the Salmon River, collected as part of Pearson (2004) and subsequent field work to define critical habitat for Salish sucker.
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> Note that this SR function will likely not be directly used to calculated cumulative effects in CEMPRA. Rather, the length or proportion of deep pool habitat meeting this criteria (i.e. the quantity of this specific critical habitat) will be treated as an input variable in the stressor magnitude table (see the matching SR function for proportion of deep pool habitat).

Stressor Response Data



Mean Depth (cm)	Mean System Capacity (%)	SD	low.limit	up.limit
0.00	0	0	0	100
69.90	0	0	0	100
70.00	100	0	0	100
100.00	100	0	0	100
140.00	100	0	0	100

Citations

Usoof, A.M. and Rosenfeld, J.S. 2024. Relationship between system capacity and mean water depth for Salish Sucker.

Edwards, E. A. 1983. Habitat Suitability Index Models: Longnose Sucker. U.S. Dept. Int., FishWildl. Serv. FWS/OBS-82/10.35.

Fisheries and Oceans Canada. 2019. Recovery strategy for the Salish Sucker (Catostomus sp .) in Canada [Proposed]. 1st amendment. Species at Risk Act Recovery Strategy Series. Fisheries and Oceans Canada, Ottawa.

Pearson, M. P. 2004. The ecology, status and recovery prospects of Noonsack Dace (Rhinichthys Cataractae ssp.) and Salish Sucker (Catostomus sp.) in Canada. University of British Columbia.

Rosenfeld, J., M. P. Pearson, J. Miners, and K. Zinn. 2021. Effects of landscape-scale hypoxia on Salish sucker and salmonid habitat associations?: implications for endangered 1233:1219–1233.