Custom (Lewis and Ganshorn 2007): HSI Overwinter Coho & Velocity

Downloaded on: 2026-11-12, From: https://mjbayly.com/stressor-response/custom-lewis-and-ganshorn-2007-hsi-overwinter-coho-velocity
Function Updated by mbayly on Thu, 10/15/2026 - 17:50.

Species Information

Common Name: Coho Salmon
Genus: Oncorhynchus kisutch

Stressor Details

Stressor Name: Velocity
Units: m/s
Metric: Water Velocity
Scale: linear
Function Type: continuous
Vital Rate/Process: Habitat Suitability Index

Life Stage & Context

Life Stages: Parr, Smolt
Geography: British Columbia (composite)
Activity: winter rearing
Season: Overwintering

Descriptions

Overview

> Generalized relationship from criteria in Lewis and Ganshorn (2007):
>
> - Optimal (HSI = 1.0): 0.0 to 0.06 metres per second (m/s). The absolute peak preference sits at 0 cm/s (dead water). Juveniles utilize alcoves, side-channels, and complex root wads where they do not have to swim against a current.
> - Marginal (HSI = 0.1 to 0.4): 0.07 to 0.20 m/s. At these speeds, juveniles expend more energy foraging than they consume due to a lower winter metabolism.
> - Unsuitable (HSI = 0.0): Any velocities above 0.25 to 0.30 m/s are completely avoided. High winter currents can displace parr or smolts downstream, leading to high winter mortality rates.

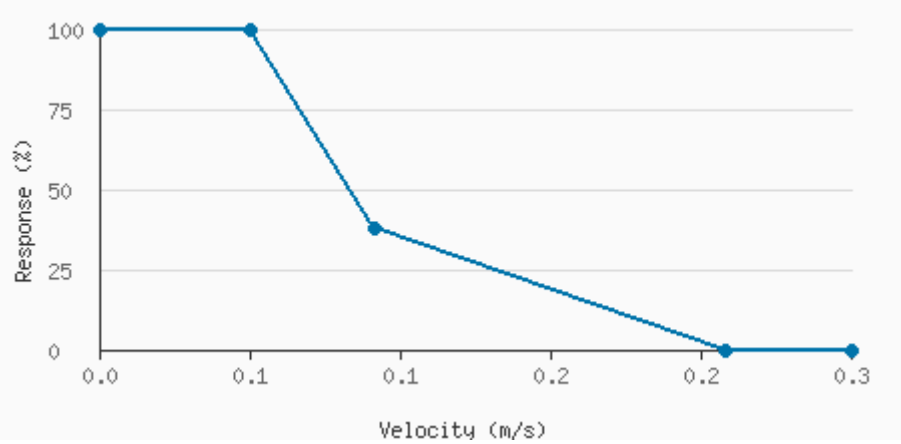
Function Derivation

> Custom rule-based and expert opinion

Transferability of Function

> Generalized assumptions

Stressor Response Data



Stressor (X)	Mean System Capacity (%)	SD	low.limit	up.limit
0	100	0	0	100
0.06	100	0	0	100
0.11	38	0	0	100
0.25	0	0	0	100
0.3	0	0	0	100

Citations

Lewis, A. and K. Ganshorn. 2007. Literature Review of Habitat Productivity Models for Pacific Salmon Species. Consultant's report prepared for the Department of Fisheries and Oceans, Habitat Management Division, Vancouver, B.C.

References

Lewis and Ganshorn 2007 - https://waves-vagues.dfo-mpo.gc.ca/library-bibliotheque/335931.pdf