Ptolemy (2017): Coho and Spawning Velocity

Downloaded on: 2026-10-16, From: https://mjbayly.com/stressor-response/ptolemy-2017-coho-and-spawning-velocity
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Species Information

Common Name: Coho Salmon
Genus: Oncorhynchus kisutch

Stressor Details

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

Life Stage & Context

Life Stages: Spawners
Geography: British Columbia (composite)
Activity: Spawning
Season: Fall

Descriptions

Overview

> The following HSI curves valid for B.C. were supplied by the B.C. Ministry of Environment and Climate Change Strategy (source: Ptolemy in 2017, unpublished) and then published in the Okanagan Nation Alliance (ONA). 2020 Environmental Flow Needs assessment.
>
> The supplied HSI curves were originally developed for Water Use Plans by a team of B.C. specialists. Informal validation of the curves was based on spawner enumerations in the context of meso-habitat conditions over several years of reach-level surveys in other B.C. watersheds. Review of the supplied HSI curves by the project team led to several adjustments of the curves for the Okanagan, discussed in greater detail below. The final HSI curves used in this project are provided in Appendix D. No further field validation of the HSI curves was possible due to the extensive field effort that would be required.
>
> These curves are recycled throughout various applications, but source data and methods remains unknown.

Function Derivation

> Empirical: fish density assessments coupled with stream transects (R. Ptolemy, unpublished data).

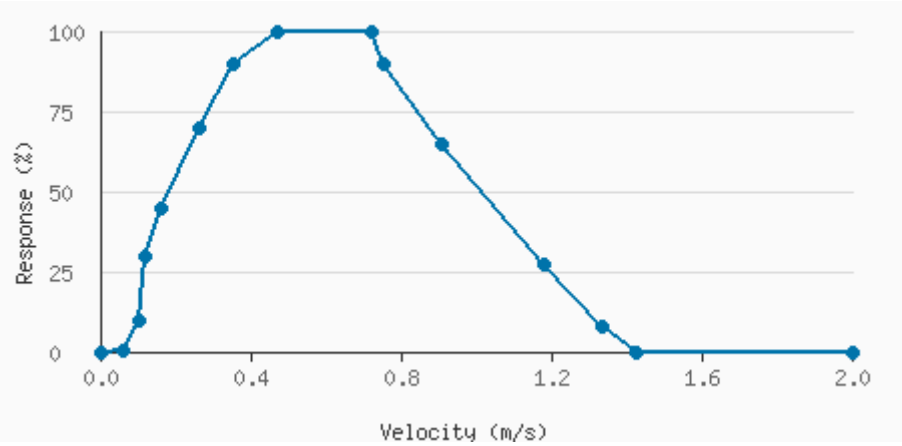
Transferability of Function

> Developed from BC streams across a range of sizes; underlying data unpublished. Details and context remain unknown and unvalidated.

Source of Stressor Data

> R. Ptolemy (BC Ministry of Environment), unpublished juvenile coho density and transect data from streams throughout British Columbia.

Stressor Response Data



Stressor (X)	Mean System Capacity (%)	SD	low.limit	up.limit
0	0	0	0	100
0.06	0.5	0	0	100
0.1	10	0	0	100
0.12	30	0	0	100
0.16	45	0	0	100
0.26	70	0	0	100
0.35	90	0	0	100
0.46	100	0	0	100
0.71	100	0	0	100
0.74	90	0	0	100
0.89	65	0	0	100
1.16	27	0	0	100
1.31	8	0	0	100
1.4	0	0	0	100
1.96	0	0	0	100

Citations

Okanagan Nation Alliance (ONA). 2020. Environmental Flow Needs assessment in the Okanagan Basin. Prepared for B.C. Ministry of Forests, Lands, Natural Resource Operations and Rural Development & the Okanagan Basin Water Board.

References

Main Report - https://www.obwb.ca/efndocs/EFN_report_2020.pdf

Appendix D curves - https://obwb.ca/efndocs/Appendix-D.pdf