Beecher 2002: HSI Coho Juvenile Depth

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Species Information

Common Name: Coho Salmon
Genus: Oncorhynchus kisutch

Stressor Details

Stressor Name: Depth
Units: m
Metric: Water Depth (total depth)
Scale: linear
Function Type: continuous
Vital Rate/Process: Habitat Suitability Index

Life Stage & Context

Life Stages: Fry
Geography: Pacific Northwest
Activity: rearing
Season: Summer (low flow)

Descriptions

Overview

> Recommended juvenile (summer rearing) Coho Salmon depth preference curve from Beecher et al. (2002), adopted in the WDFW–Ecology instream flow guidelines. Suitability is 0 in very shallow water (?0.03 m), rises to 0.90 by ~0.47 m, is optimal between ~0.76 and 0.99 m, and drops to 0.27 beyond ~1.2 m. Depths converted from feet to metres; the 99 ft terminal value (0.27) is omitted, so the last value (0.27 at 1.22 m) should be held for deeper water. Companion to the Beecher 2002 juvenile velocity curve (Figure 5b).
>
> Stressor-response relationship data sourced from: FIGURE 5a. Coho Salmon Juvenile Depth Preference, Dungeness, Satsop Rivers and Kennedy Creek (4 studies, 451 fish) (Beecher et al. 2002) — Recommended depth preference curve (p. 45).

Function Derivation

> Empirical frequency-of-use (use/availability) data, smoothed into a recommended curve.

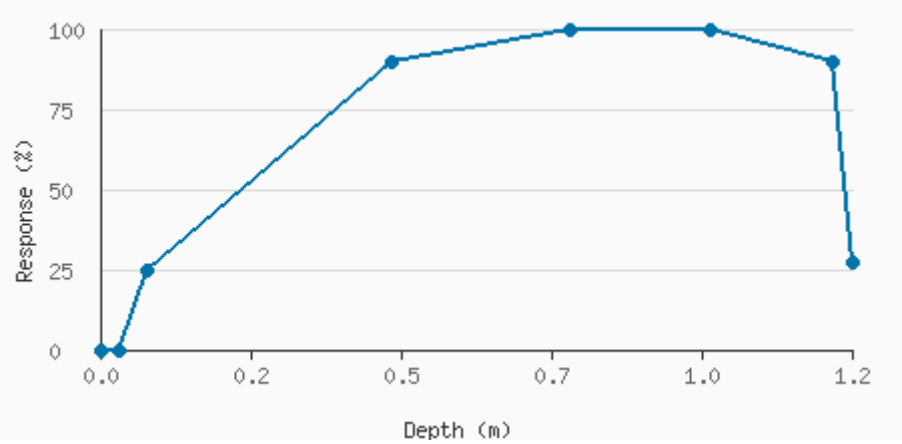
Transferability of Function

> Western Washington streams; frequency-based curves may not reflect habitat quality at high fish densities.

Source of Stressor Data

> Snorkel observations of juvenile coho microhabitat use (4 studies, 451 fish) relative to measured habitat availability.

Stressor Response Data



Raw Stressor Values	Scaled Response Values 0 to 100	SD	low.limit	up.limit
0	0	0	0	100
0.03	0	0	0	100
0.076	25	0	0	100
0.472	90	0	0	100
0.762	100	0	0	100
0.991	100	0	0	100
1.189	90	0	0	100
1.219	27	0	0	100

Citations

Beecher, H. A., Carleton, B. A., & Fricke, T. F. (2002). Evaluation of depth and velocity preferences of juvenile coho salmon in Washington streams. Northwest Science, 76(4), 314–325.

References

Beecher et al., 2002 - https://wdfw.wa.gov/sites/default/files/publications/00574/wdfw00574.pdf