

# Hampton 1988: HSI Coho Fry 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:** Fry  
**Geography:** Trinity River California  
**Activity:** rearing  
**Season:** Summer (rearing)

## Descriptions

### Overview

Trinity River coho salmon velocity habitat suitability curve (Hampton 1988) as used by Rosenfeld & Ptolemy (2012) in PHABSIM modelling of Husdon Creek, BC. It is the most extreme of the three curves compared, with optimal suitability at 0 m/s, a near-vertical drop to ~0.13 by 0.03 m/s and a long tail approaching 0. The depth optimum of the companion curve (~0.34–0.39 m, i.e. 1.1–1.3 ft) matches Hampton's coho fry criteria. Values were extracted from the vector line work of the published figure (dotted/solid lines traced point-by-point and simplified), so they approximate the original curves to within ~0.01 m and ~1 suitability unit. Note the figure's axis labels read  $\text{cm} \cdot \text{s}^{-1}$  and cm, but the scales (0–1.5) are clearly m/s and m.

Stressor-response relationship data sourced from: Rosenfeld & Ptolemy (2012) Fig. 2a - Velocity habitat suitability curve for coho salmon, Trinity River (dotted line) (p. 1923).

Likely to have low transferability.

### Function Derivation

Empirical frequency-of-use (use/availability) preference curve from snorkel observations, smoothed and normalized to 0-1.

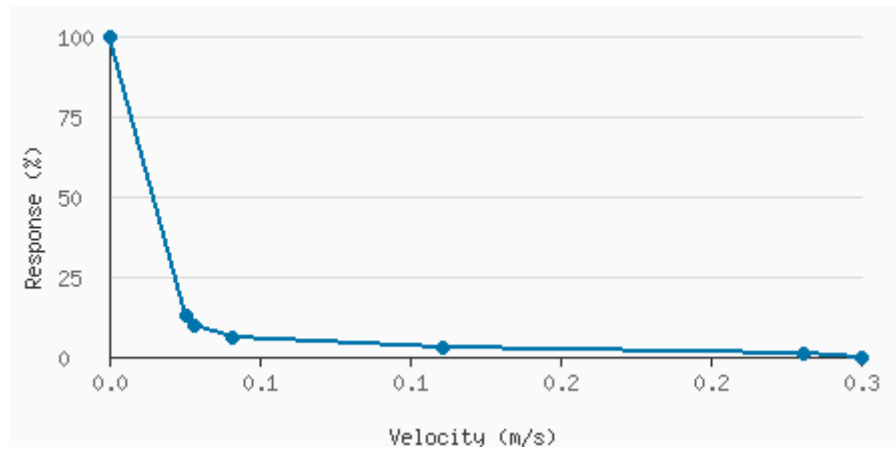
### Transferability of Function

LOW: Developed for a large regulated California river; the extreme preference for zero velocity is likely site-specific.

### Source of Stressor Data

Hampton (1988): snorkel observations of coho fry (?50 mm FL; 130 observations, 913 fish) vs. IFG4-modelled habitat availability, 1985–1987.

## Stressor Response Data



| Raw Stressor Values | Scaled Response Values 0 to 100 | SD | low.limit | up.limit |
|---------------------|---------------------------------|----|-----------|----------|
| 0                   | 100                             | 0  | 0         | 100      |
| 0.031               | 13                              | 0  | 0         | 100      |
| 0.034               | 10                              | 0  | 0         | 100      |
| 0.049               | 6                               | 0  | 0         | 100      |
| 0.133               | 3                               | 0  | 0         | 100      |
| 0.277               | 1                               | 0  | 0         | 100      |
| 0.3                 | 0                               | 0  | 0         | 100      |

## Citations

Rosenfeld, J. S., & Ptolemy, R. (2012). Modelling available habitat versus available energy flux: Do PHABSIM applications that neglect prey abundance underestimate optimal flows for juvenile salmonids? *Canadian Journal of Fisheries and Aquatic Sciences*, 69(12), 1920–1934. <https://doi.org/10.1139/f2012-115>.

Hampton, H. (1988). Development of habitat preference criteria for anadromous salmonids of the Trinity River. U.S. Department of the Interior, Fish and Wildlife Service, Division of Ecological Services, Sacramento, California.

## References

Rosenfeld and Ptolemy 2012 - <https://doi.org/10.1139/f2012-115>