# Cramer 2001: Pool Habitat and Chinook Survivorship


Function Updated by stobias on Sun, 12/22/2024 - 16:32.

## Species Information

**Common Name:** Chinook Salmon
**Genus:** Oncorhynchus tshawytscha

## Stressor Details

**Stressor Name:** Pool Habitat
**Units:** %
**Metric:** Pool area covered by cobbles and boulders
**Scale:** linear
**Function Type:** continuous
**Vital Rate/Process:** Survivorship

## Life Stage & Context

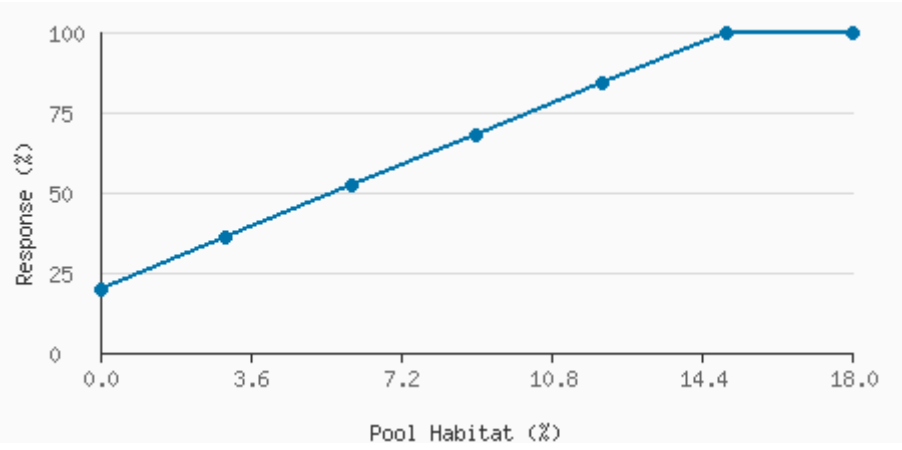
**Life Stages:** Fry
**Season:** Winter

## Descriptions

### Overview

> Structures in pools have a strong influence on survivorship through the overwintering stage (Hillman, Chapman & Griffith, 1989a,b). This function was developed by Cramer (2001) based on work by Raleigh, Miller & Nelson (1986) to model the influence of structure:
>
> Surv = (20+80*(%structure/15)/100 if %structure is < 15
> Surv = 1 if %structure is ?15
>
> Where %structure is the percent of pool area covered by cobbles and boulders.

## Stressor Response Data




| Stressor (X) | Mean System Capacity (%) | SD | low.limit | up.limit |
|---|---|---|---|---|
| 0 | 20 | 0 | 0 | 100 |
| 3 | 36 | 0 | 0 | 100 |
| 6 | 52 | 0 | 0 | 100 |
| 9 | 68 | 0 | 0 | 100 |

| | | | | |
|---|---|---|---|---|
| 12 | 84 | 0 | 0 | 100 |
| 15 | 100 | 0 | 0 | 100 |
| 18 | 100 | 0 | 0 | 100 |

## Citations


Cramer, S. P. (2001). The relationship of stream habitat features to potential for production of four salmonid species. SP Cramer and Associates, Gresham, Oregon.

Honea, J. M., Jorgensen, J. C., McCLURE, M. M., Cooney, T. D., Engie, K., Holzer, D. M., & Hilborn, R. (2009). Evaluating habitat effects on population status: influence of habitat restoration on spring?run Chinook salmon. Freshwater Biology, 54(7), 1576-1592.

Raleigh, R. F., Miller, W. J., & Nelson, P. C. (1986). Habitat suitability index models and instream flow suitability curves: chinook salmon (Vol. 82). National Ecology Center, Division of Wildlife and Contaminant Research, Fish and Wildlife Service, US Department of the Interior.


## References


Honea et al. (2009) - https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-2427.2009.02208.x

Cramer (2001) - https://www.researchgate.net/publication/268284627_The_Relationship_of_Stream_Habitat_Features_to_Potential_for_Production_of_Fo