

# Cramer 2001: Pool Habitat and Chinook Survivorship

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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

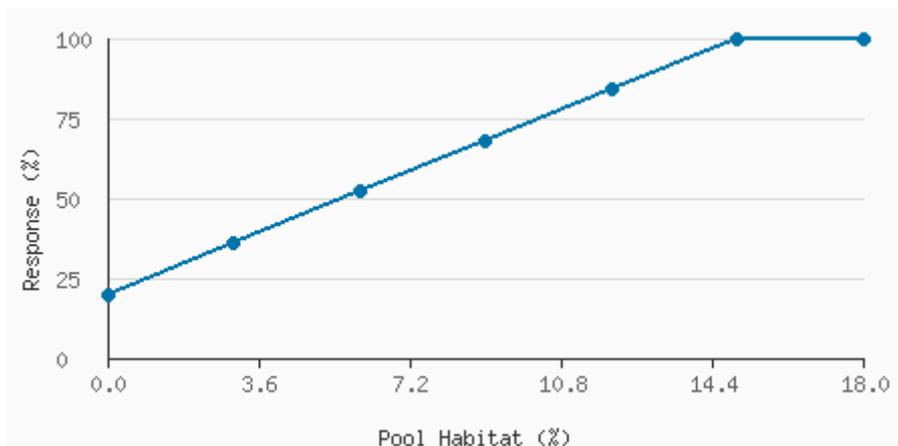
### Overview

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  $\geq 15$

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

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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

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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](https://www.researchgate.net/publication/268284627_The_Relationship_of_Stream_Habitat_Features_to_Potential_for_Production_of_Fo)