Cramer 2001: Pool Habitat and Chinook Survivorship

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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

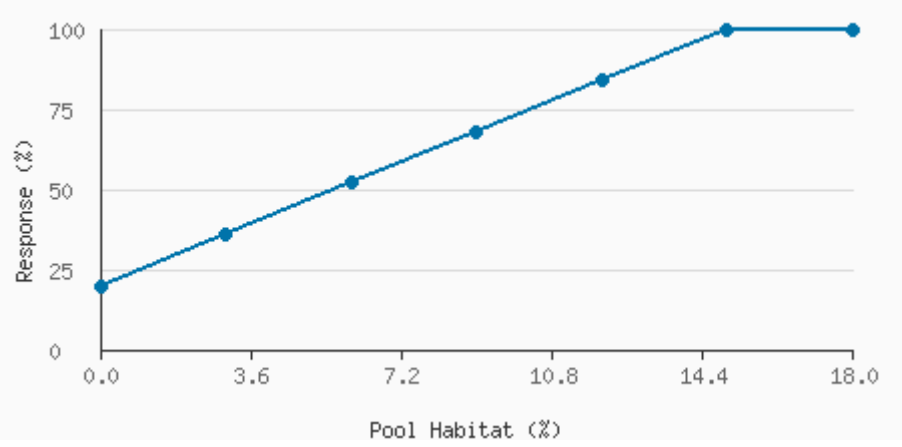
Life Stages: Fry
Season: Winter

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