

Stream Temperature and Steelhead Survival

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Species Information

Common Name: Steelhead Trout
Genus: *Oncorhynchus mykiss*

Stressor Details

Stressor Name: Temperature
Units: °C
Metric: Stream Temperature
Scale: linear
Function Type: continuous
Vital Rate/Process: Survivorship

Life Stage & Context

Life Stages: Parr

Descriptions

Overview

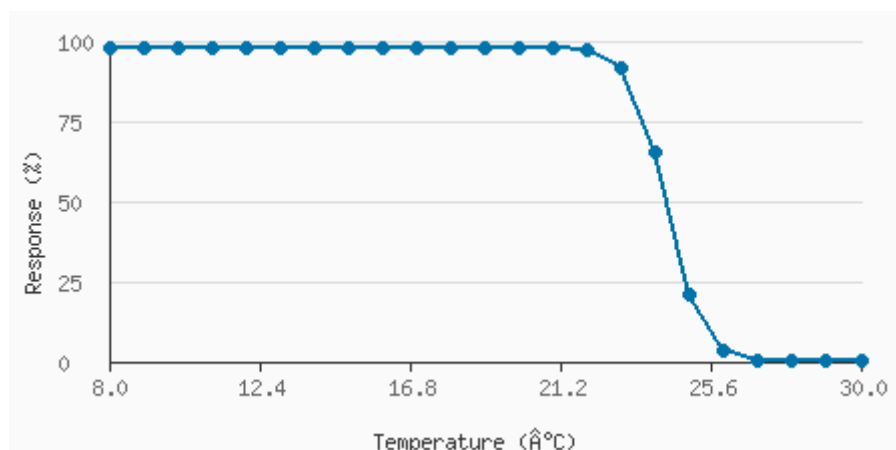
Functional relationship between steelhead survival and stream temperature from laboratory experiments (orange dots, Bear et al. 2007). Points are results of experiments in Bear et al. (2007); blue line is the functional relationship for the productivity multiplier used in the steelhead life-cycle model.

Note: the equation in the Beechie et al. paper has an error in the equation, it is $1+e$, not $1-e$.

Function Derivation

expert opinion

Stressor Response Data



Stressor (X)	Mean System Capacity (%)	SD	low.limit	up.limit
8	97.88	0	0	0
9	97.88	0	0	0
10	97.88	0	0	0
11	97.88	0	0	0

12	97.88	0	0	0
13	97.88	0	0	0
14	97.8799999	0	0	0
15	97.8799992	0	0	0
16	97.8799939	0	0	0
17	97.8799557	0	0	0
18	97.8796768	0	0	0
19	97.8776433	0	0	0
20	97.8628157	0	0	0
21	97.754817	0	0	0
22	96.9743551	0	0	0
23	91.6387164	0	0	0
24	65.397476	0	0	0
25	21.1756729	0	0	0
26	3.5701031	0	0	0
27	0.5054464	0	0	0
28	0.0696179	0	0	0
29	9.55E-03	0	0	0
30	1.31E-03	0	0	0

Citations

Beechie, T. J., C. Nicol, C. Fogel, J. Jorgensen, J. Thompson, G. Seixas, J. Chamberlin, J. Hall, B. Timpane-Padgham, P. Kiffney, S. Kubo, and J. Keaton. 2021. Modeling Effects of Habitat Change and Restoration Alternatives on Salmon in the Chehalis River Basin Using a Salmonid Life-Cycle Model. U.S. Department of Commerce, NOAA Contract Report NMFS-NWFSC-CR-2021-01.

References

<https://repository.library.noaa.gov/view/noaa/29486> - <https://repository.library.noaa.gov/view/noaa/29486>