

Temperature and Cutthroat Trout Growth Rate

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Species Information

Common Name: Cutthroat Trout
Genus: *Oncorhynchus clarkii*

Stressor Details

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

Life Stage & Context

Life Stages: Fry

Descriptions

Overview

Percent daily relative growth rate of juvenile westslope cutthroat trout in relation to temperature during a 60-d experiment. In this laboratory experiment, Westslope cutthroat trout used in experiments were either eggs or age-0 fish from a wild stock at Rogers Lake, Montana, or age-0 fish from wild stock maintained at the Westslope Trout Company, a private fish hatchery near Ronan, Montana. Both sources are derived from a mixture of pure populations of westslope cutthroat trout from Montana.

Growth formula is as follows:

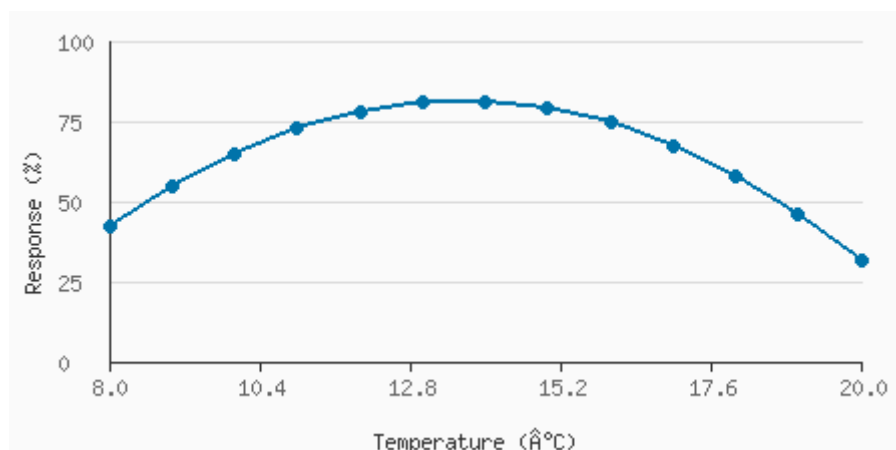
$$\text{Growth} = -4.1727 + 0.9496 * \text{temp} - 0.0348 * (\text{temp})^2$$

Scaled from the original curve so that the highest upper limit value equals to 100%.

Function Derivation

laboratory experiment

Stressor Response Data



Stressor (X)	Mean System Capacity (%)	SD	low.limit	up.limit
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8	42.1	0	22.5	62.3
9	54.8	5.6	35.9	73.6
10	64.9	9.9	45.4	86.3
11	72.6	7.7	53.5	90.8
12	77.9	8.1	58.5	97.2
13	80.7	7.4	62	99.6
14	81	7.4	62	100
15	78.9	7.7	60.9	97.9
16	74.4	4.6	56.7	93.3
17	67.4	6.3	49.3	85.9
18	57.9	5.6	39.8	78.9
19	46	4.9	26.8	66.2
20	31.7	0	12.3	52.5

Citations

Bear, E. A., McMahon, T. E., & Zale, A. V. (2007). Comparative thermal requirements of westslope cutthroat trout and rainbow trout: implications for species interactions and development of thermal protection standards. *Transactions of the American Fisheries Society*, 136(4), 1118.

References

Bear et al. - <https://afspubs.onlinelibrary.wiley.com/doi/10.1577/T06-072.1>