

Summer Temperature and Athabasca Rainbow Trout

Downloaded on: 2026-04-29, From: <https://mjbayly.com/stressor-response/summer-temperature-and-athabasca-rainbow-trout>
Function Updated by mjbayly on Thu, 04/24/2025 - 19:09.

Species Information

Common Name: Athabasca Rainbow Trout

Genus: *Oncorhynchus mykiss*

Stressor Details

Stressor Name: Temperature

Units: °C

Metric: Summer Stream Temperature

Scale: linear

Function Type: continuous

Vital Rate/Process: System Capacity

Life Stage & Context

Life Stages: Adults

Geography: Alberta foothills watersheds, excluding National Parks

Activity: All activities

Season: Summer (August and September)

Descriptions

Function Derivation

Landscape correlation; Published/Peer-reviewed data; Published/Non-peer-reviewed; Empirical data;

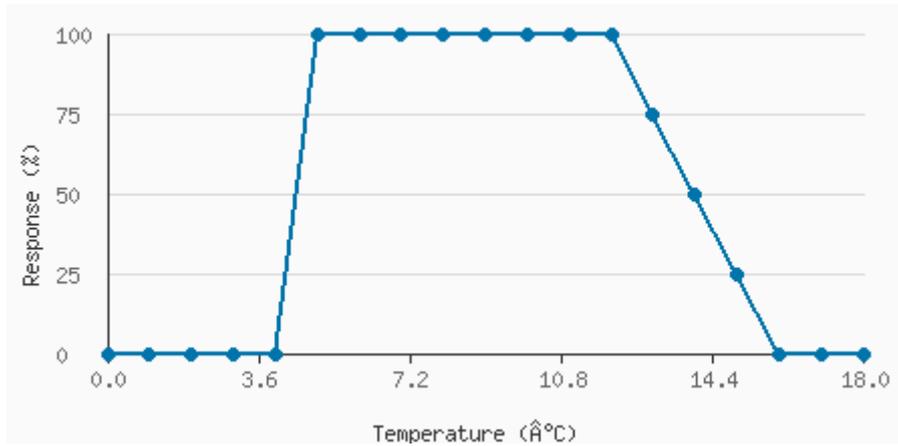
Transferability of Function

This function was developed and applied to Athabasca Rainbow Trout in Alberta foothills watersheds. The data comes from landscape correlation with Alberta native Rainbow Trout streams and is supported by values in the published literature. The function is species and range specific but could potentially be applied to other Athabasca Rainbow Trout populations with caution. It should not be applied to other populations or subspecies of Rainbow Trout, as the thermal preference of Athabasca Rainbow Trout is reported to be lower.

Source of Stressor Data

Athabasca Rainbow Trout and Westslope Cutthroat Trout inputs were derived from modelled mean summer stream temperature (°C) provided by ALCES Online© within the spatial unit of interest (e.g., HUC 10 watershed).

Stressor Response Data



Temperature (oC)	Mean System Capacity (%)	SD	low.limit	up.limit
0	0	0	0	100
1	0	0	0	100
2	0	0	0	100
3	0	0	0	100
4	0	0	0	100
5	100	0	0	100
6	100	0	0	100
7	100	0	0	100
8	100	0	0	100
9	100	0	0	100
10	100	0	0	100
11	100	0	0	100
12	100	0	0	100
13	75	0	0	100
14	50	0	0	100
15	25	0	0	100
16	0	0	0	100
17	0	0	0	100
18	0	0	0	100

Citations

Government of Alberta. 2024. Temperature stressor-response function for Athabasca Rainbow Trout. Environment and Protected Area Native Trout Cumulative Effects Model.

AARTRT - Alberta Athabasca Rainbow Trout Recovery Team. 2014. Alberta Athabasca Rainbow Trout Recovery Plan, 2014-2019. Alberta Environment and Sustainable Resources Development, Alberta Species at Risk Recovery Plan No. 36. Edmonton, AB. 111 pp.

AWCTRT - Alberta Westslope Cutthroat Trout Recovery Team. 2013. Alberta Westslope Cutthroat Trout Recovery Plan: 2012-2017. Alberta Environment and Sustainable Resources Development, Alberta Species at Risk Recovery Plan No. 28. Edmonton, AB. 77 pp.

Government of Alberta (GOA). 2023. Alberta Bull Trout Recovery Plan. Alberta Species at Risk Recovery Plan No. 46. Edmonton, AB. 64 pp.

Kwain, W. 1975. Embryonic development, early growth, and meristic variation in rainbow trout (*Salmo gairdneri*) exposed to combinations of light intensity and temperature. *Journal Fisheries Research Board of Canada* 32: 397-402.

Raleigh, R.F., T. Hickman, R.C. Solomon and P.C. Nelson. 1984. Habitat suitability information: rainbow trout. U.S. Fish and Wildl. Service. Biol. Serv. Prog., FWS/OBS;82/10.60. 64 p.

Rasmussen, J.B. and E.B. Taylor. 2009. Status of the Athabasca Rainbow Trout (*Oncorhynchus mykiss*) in Alberta. Fish and Wildlife Division, Species at Risk. Alberta Wildlife Status Report No. 66. 46 pp.

Scott, W.B. and E.J. Crossman. 1998. Freshwater fishes of Canada, Galt House Publishing, Oakville, Canada. 966 pp.