

Habitat loss and Athabasca Rainbow Trout

Downloaded on: 2026-05-25, From: <https://mjbayly.com/stressor-response/habitat-loss-and-athabasca-rainbow-trout>
Function Updated by mjbayly on Thu, 04/24/2025 - 19:10.

Species Information

Common Name: Athabasca Rainbow Trout

Genus: *Oncorhynchus mykiss*

Stressor Details

Stressor Name: Habitat loss

Units: % of stream habitat lost

Metric: Stream habitat loss

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: All seasons

Descriptions

Overview

Habitat loss and degradation is often cited as a major impact and limiting factor for fish populations (e.g., native trout recovery plans). This stressor-response curve is exclusively meant to capture direct habitat loss. Direct habitat loss is defined as the removal of portions of a natural stream, or replacement of portions of a natural stream with a different landscape feature. For example, strip-mining for coal in parts of the native trout range has deleted some stream sections, or has resulted in the replacement of streams sections with open-pit lakes or with channeled stream analogs (i.e., a ditch) that do not provide trout habitat. The stressor-response curve for habitat loss is depicted by a linear relationship between the percentage of stream habitat lost and system capacity (Figure 1).

Function Derivation

Expert opinion; Unpublished

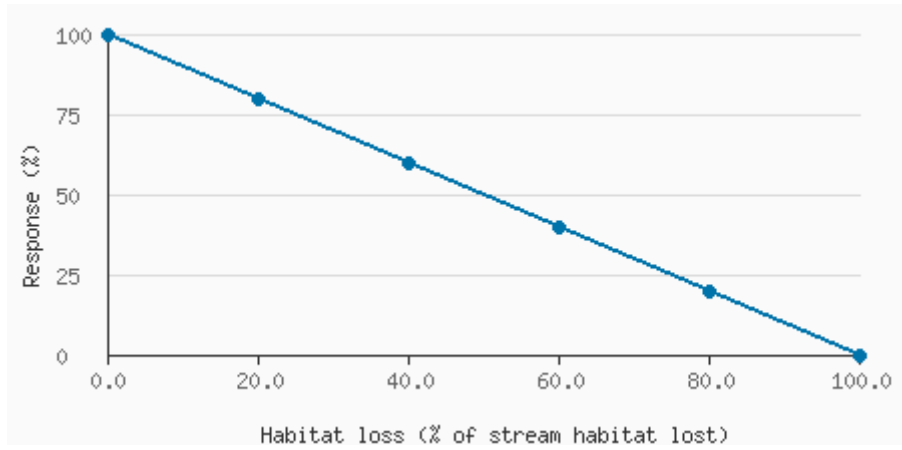
Transferability of Function

This function was developed and applied to Bull Trout, Athabasca Rainbow Trout, and Westslope Cutthroat Trout in Alberta foothills watersheds. The generality of this curve indicates that it could be safely applied to any species or system where proportion of direct habitat loss could be calculated.

Source of Stressor Data

GIS-derived estimates of stream habitat lost or converted to different landscape features in the spatial unit of interest.

Stressor Response Data



| Habitat Loss (%) | Mean System Capacity (%) | SD | low.limit | up.limit |
|------------------|--------------------------|----|-----------|----------|
| 0 | 100 | 0 | 0 | 100 |
| 20 | 80 | 0 | 0 | 100 |
| 40 | 60 | 0 | 0 | 100 |
| 60 | 40 | 0 | 0 | 100 |
| 80 | 20 | 0 | 0 | 100 |
| 100 | 0 | 0 | 0 | 100 |

Citations

Government of Alberta. 2024. Direct habitat loss stressor-response function for Athabasca Rainbow Trout, Westslope Cutthroat Trout, and Bull Trout. Environment and Protected Area Native Trout Cumulative Effects Model.