

Fishery Management of Lake Whatcom

Coastal Cutthroat Trout

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Background

February 2, 2023 – Petition to allow anglers in Lake Whatcom to (1) use two poles and (2) retain Cutthroat Trout.

April 7, 2023 – Staff recommended the Commission deny the petition because the WDFW lacks current information to assess whether the population can endure increased fishing related mortality.



Lake Whatcom

Surface Area: 2,030 hectares (5,000 acres)

Water depth: 15-334 feet

Watershed area: 56 square-miles

Drinking water source City of Bellingham

Residential development

Four primary spawning tributaries for Coastal Cutthroat and Kokanee

Game Fish Species

Brown Bullhead
Coastal Cutthroat Trout*
Kokanee*
Largemouth Bass
Pumpkinseed Sunfish
Rainbow Trout
Smallmouth Bass
Yellow Perch

Non-game Fish Species

Peamouth Chub*
Prickly Sculpin*
Salish Sucker*
Three-spined Stickleback*
Western Brook Lamprey*

* denotes native species



Lake Whatcom Coastal Cutthroat Trout

Lake Whatcom Coastal Cutthroat population

- wild, isolated from anadromy, adfluvial life history, exposed to anthropogenic perturbations

Isolated Coastal Cutthroat populations in western WA rare

- lack local analogous reference populations to inform potential responses to fishery impacts

Lake Whatcom Coastal Cutthroat (and Kokanee) are source populations for hatchery stocks



Lake Whatcom Coastal Cutthroat Trout



Abundances declined 1980s

- Timber harvest in watershed reduced spawning and juvenile rearing success in streams

Management actions

- Gradually increased fishery restrictions until 1999 when closed to retention
- Supplementation program of native origin stock to mitigate lost recruitment during habitat recovery – 1987 to 2001
- Assessed stream spawning six times from 1987 to 2006
- Lacked funding to continue



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Stream Spawning Assessments

1987, 1988, 1994, 1999: exploratory efforts to map the extent of spawning (small seasonal to larger year-round), and raw number of redds present

- not systematic, limited in frequency, often different streams from effort-to-effort

2002, 2006: formal survey methodology focused on estimating escapement

- weekly redd counts of four primary tributaries (largest, most numerous populations from past surveys)
- netting adjacent to tributaries was included in 2006



Key question

Can the population support increased fishery related mortality (i.e., retention)?

- Historic information limited in scope, out of date, and insufficient to assess population status or response (i.e., risk) to retention.

Population assessment is needed to recommend a change in management.

- Gather current information to develop robust model to estimate population status, predict responses to fishery options, and make recommendations.
- Establish long-term monitoring to assess population recovery and actual response to retention, if applicable.



Objectives

1. Build an understanding of current abundance, age structure, growth, recruitment, and survival.
2. Evaluate the potential impacts of fishing regulations.
3. Develop a long-term fishery management strategy and monitoring protocols.



Key Metrics for a Model

1. Abundance or Index of Abundance

- Total population size
- Population growth rate
- Annual variation in population size

2. Age Structure

- Age proportions
- Survival from one age to the next
- Long-term population growth rate

3. Length-at-Age

- Growth rates



Assessment & Monitoring Options

<p>Lake Capture & Hydroacoustic Counts</p>	<ul style="list-style-type: none"> • Three-person crew (existing FB3 and two ST2s) capture fish in near and offshore habitats once per month from June to November from year 1-3 <ul style="list-style-type: none"> – Use results to reduce sampling to the most representative time(s) • Annual hydroacoustic surveys are completed in years 2-4 <ul style="list-style-type: none"> – identify best acoustic sampling period using nets in year 1 • After year 4, use results to reduce assessment frequency • Estimated cost: \$113,200 annually
<p>Tributary Redd Counts & Tributary Capture</p>	<ul style="list-style-type: none"> • Three-person crew (existing FB3 and two ST2s) conducts stream redd counts and capture fish adjacent to tributary mouths twice per month from February to May • After year 4, use results to reduce assessment frequency • Estimated cost-\$102,700
<p>Tributary Redd Counts only</p>	<ul style="list-style-type: none"> • Two-person crew (existing FB3 and one ST2) conduct stream redd counts only weekly from February to May • Annual sampling continues for several years (10 or more?) • Estimated cost-\$50,500



Assessment and Monitoring Options

Description	Abundance	Age Structure	Length-at-Age	Population Segment	Risk Level
Lake Capture & Hydroacoustic Counts	X	X	X	Whole	Lowest
Tributary Redd Counts & Capture (2006)	X	X	X	Spawners	Medium
Tributary Redd Counts only (2002)	X			Spawners	Highest



Questions?

