Lake Merwin and Swift Creek Reservoir Tributaries

Bull Trout

Limiting Factors Analysis

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Study Objectives – Answer Key ?'s

- Do other tributaries to Swift Creek Reservoir and Lake Merwin not known to support bull trout have suitable spawning, incubation, rearing habitat?
- Do bull trout currently inhabit these streams?
- If no suitable habitat, what are limiting factors?
- Could limiting factors be addressed by restoration to promote long-term spawning, incubation, and rearing?

Address Key Information Gaps Identified in the Draft Recovery Plan

- Identify other potential tributaries that could support a local population (Priority 1 Action)
- Increased inventory in each basin to establish current distribution
- Complete LFA for "other potential sites within the Lewis Core Area which have, or could support suitable habitat conditions if restored"

Study Approach

- Review existing information
- Initially rate streams as Optimal, Marginal, Poor, or Unknown for bull trout habitat, drop streams rated as Poor
- Collect field data to fill information gaps, rate streams as data is acquired
- Conduct Presence/Absence Survey of Optimal and Marginal streams
- Habitat survey Optimal and Marginal streams
- Perform Qualitative Habitat Assessment of Optimal and Marginal streams and identify limiting factors
- Recommend actions to address limiting factors

Study Area

- Lake Merwin Tributaries: Cape Horn, Jim, Indian George, Buncombe Hollow, M4, Brooks, M14, Marble, Rock, Canyon creeks
- Swift Creek Reservoir Tributaries: Swift, Range, S10, Drift, S15, and Diamond creeks

Initial Rating Criteria

Parameter	Optimal	Marginal	Poor	Unknown
Flow	Perennial	Perennial	Seasonal	Observations of late summer flow do not exist
Gradient	≤12%	<20%	≥20%	Unknown barrier presence
Maximum water temperature (summer rearing)	≤16°C	≤18°C	>18°C	Continuous water temperature data through the summer do not exist
Maximum Water temperature (spawning) by mid-November	≤10°	≤13°	>13°C	Continuous water temperature data through the fall do not exist

Initial Rating

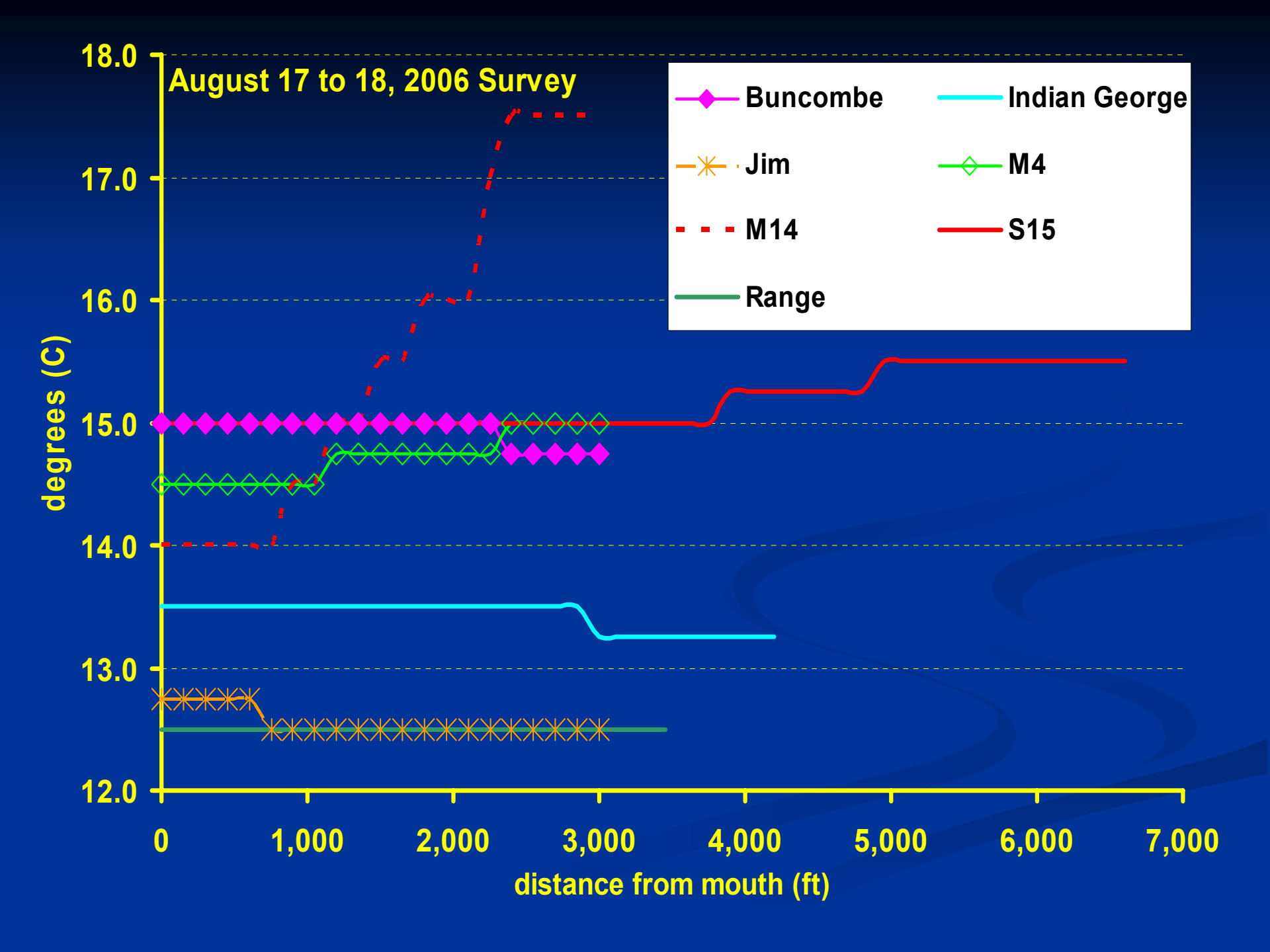
- Marble, Canyon, Rock, and Diamond rated Poor (high gradient, low flow, low elevation, barrier presence)
- The other 12 streams rated as Unknown for water temperature
- Water temperature data was collected to rate the 12 streams for spawning and rearing potential

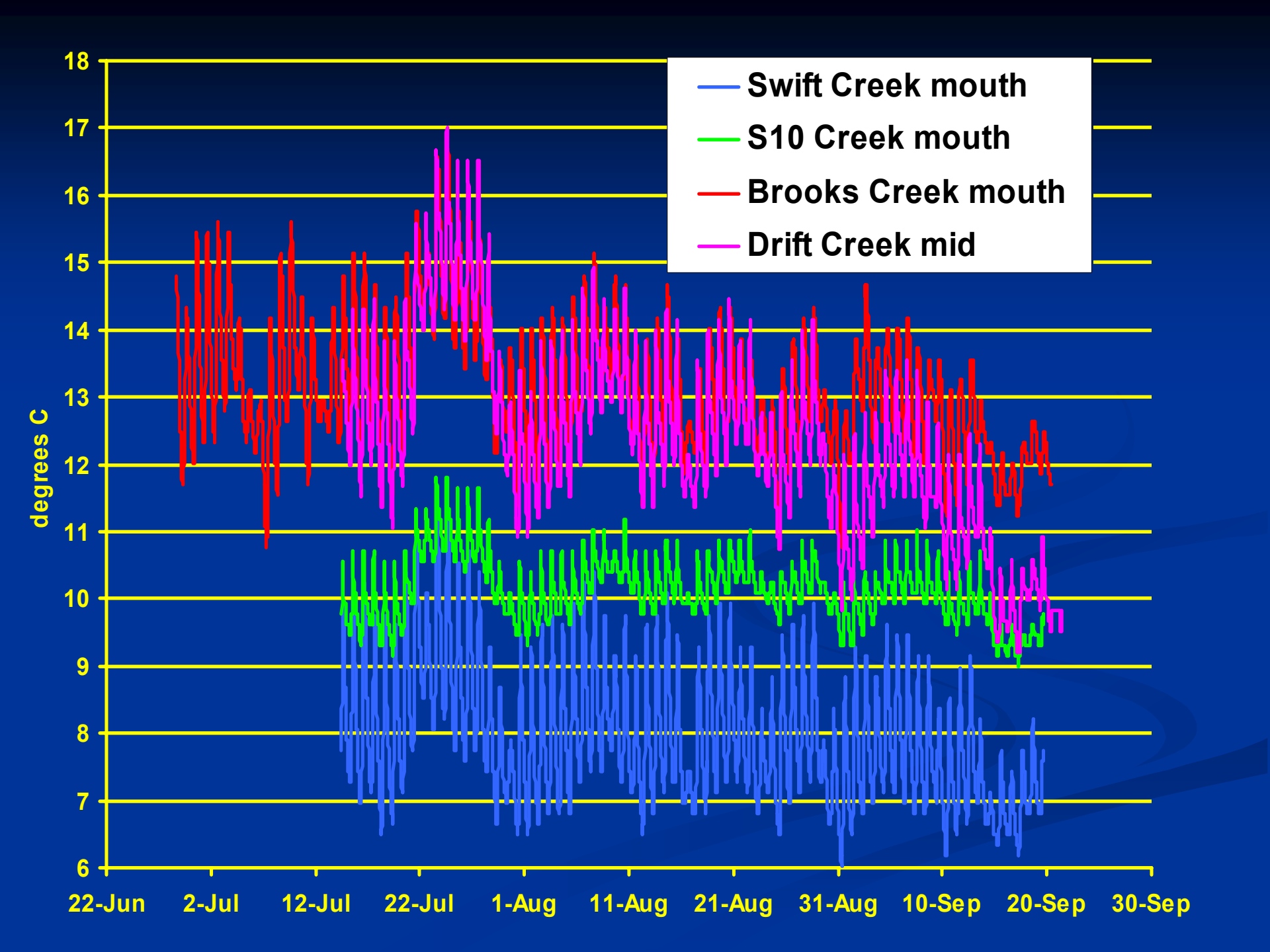
Water Temperature Methods

- Temperature logger at stream mouth for all 12 streams
- Second logger located in upper portion of accessible reach for streams with >1 mile of habitat
- Cold water refugia survey of all 12 streams (requested by USFWS)

Temperature Results

- 8 streams had max. temp. >18°C (Poor rearing)
- Drift and Brooks <18°C (Marginal rearing)
- Swift and S10 <12°C (Optimal rearing)
- No cold water refugia in streams rated as Poor
- By Sept. 1 Swift <10°C (Optimal spawning)
- By mid-Sept. S10 <10°C (Optimal spawning)
- By mid-Sept. Brooks <13°C, Drift <11.5°C (Marginal spawning)


August 17 to 18, 2006 Survey
Buncombe
Indian George
Jim
M4
M14
S15
Range
18.0
17.0
16.0
15.0
14.0
13.0
12.0
degrees (C)
0
1,000
2,000
3,000
4,000
5,000
6,000
7,000
distance from mouth (ft)


Swift Creek mouth
S10 Creek mouth
Brooks Creek mouth
Drift Creek mid
degrees C
18
17
16
15
14
13
12
11
10
9
8
7
6
22-Jun
2-Jul
12-Jul
22-Jul
1-Aug
11-Aug
21-Aug
31-Aug
10-Sep
20-Sep
30-Sep

Presence/Absence Survey

- Surveyed streams with Optimal/Marginal rearing temperatures (Swift, S10, Brooks, Drift)
- Also surveyed streams with max. temp. slightly >18°C to verify criteria (Range, Indian G., Jim)
- Found bull trout in Swift Creek (the only stream rated Optimal for spawning/rearing by Sept. 1)
- Low Flow limited access to S10, Brooks Creek
- One unidentified redd in Drift Creek (3 x 6 ft)

Swift Creek Bull Trout

- Observed 5 bull trout (400 – 600 mm) on August 31 up to 800 feet upstream of mouth
- Turbidity increased following rains during Sept. (week 1) limiting snorkel surveys there after
- Electrofished margin habitat in Sept., found only whitefish, sculpin, rainbow trout juveniles
- Three additional bull trout (400 – 600 mm) observed on subsequent survey attempts

Swift Creek
below 5-ft falls

Swift Creek upstream of 5-ft falls

Low Flow mid-Sept.

Brooks Creek

S10 Creek

Habitat Surveys

- Initially scheduled for late-September to early-October for Optimal and Marginal streams

- Due to low flow and lack of bull trout observations in September, postponed habitat surveys until 1st week in November (potential latter part of spawning period) when flows might be higher to allow passage upstream

November Flood

- Occurred during 1st week of November when habitat surveys were scheduled to begin
- Caused major habitat alterations in many tributaries
- Boulders >4 ft in diameter moved in Range Cr., massive bank scour and >100 trees fell into S10, ≈8 – 10 ft of bedload deposited at Swift Creek logger site
- Lost most thermographs

Brooks Creek early-December

S10 Creek
early-December

S10 Creek

New barrier formed by massive scour ≈ 350 ft downstream of previous barrier

Habitat Survey Re-Schedule

- Flows dropped in early-December
- Completed habitat survey of S10 and Brooks Cr.
- Since then, high flow or low reservoir levels (precluding a boat launch) have postponed habitat surveys for Swift and Drift Cr.
- Swift and Drift will be surveyed as soon as conditions permit

Future Work

- Complete habitat survey of Swift and Drift Cr.
- Conduct QHA habitat rating meeting with agencies (USFWS, WDFW)
- Conduct assessment of limiting factors and potential habitat restoration alternatives
- Finalize draft report
- Submit final draft report for ACC review

Participants

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