

Packwood Anadromous Salmonid Habitat and Spawner Survey Report



Goals and Objectives

- Identify suitable spawning habitat and quantify the amount of spawning taking place
- Determine the presence of first upstream barrier to anadromous salmonid migration
- Identify any project related barriers to upstream migration
- Map concentrations of redds for each anadromous species observed

Study Area

- Lake Creek from the mouth to RM 1.95
- Tailrace Slough below the end of the lined tailrace to the confluence with the mainstem Cowlitz
- Hall Creek above Snyder Road to RM 3.70
- Snyder Creek from the confluence with Hall Creek to RM 0.36
- Cowlitz River near shore 2000 ft downstream from the mouth of Lake Creek
- Cowlitz River 2000 ft downstream from the confluence of the tailrace slough/Cowlitz side channel and then upstream along the mainstem to the upper end of the complex

Survey Dates and River Miles

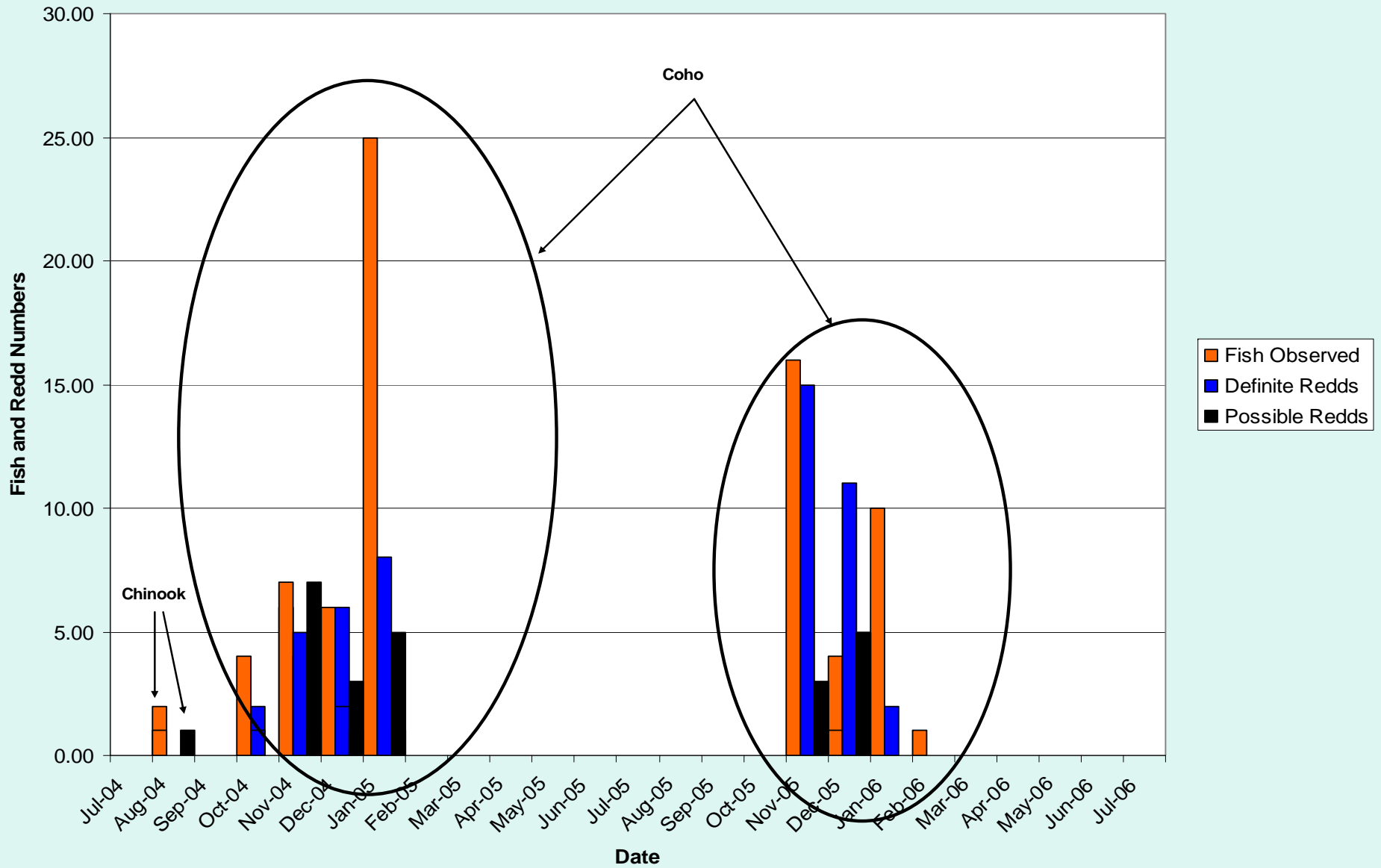
Anadromous Spawning Survey Dates and Corresponding River Miles

Creek	Beginning Date	Ending Date	Terminus Location (RM)
Lower Lake Creek (Including Cowlitz River)	7/26/04	7/26/06	1.95
Snyder Creek	5/10/05	7/26/06	0.36
Hall Creek	4/10/05	7/26/06	3.70
Tailrace Slough (Including Cowlitz River)	7/26/04	7/26/06	N/A

Lake Creek

- 86 fish and 56 definite redds were observed below RM 1.03
 - 83 coho and 3 Chinook
 - 3 Chinook were documented in mid-August 2004 along with a potential redd
- 90% of spawning activity took place between November 1st and January 31st

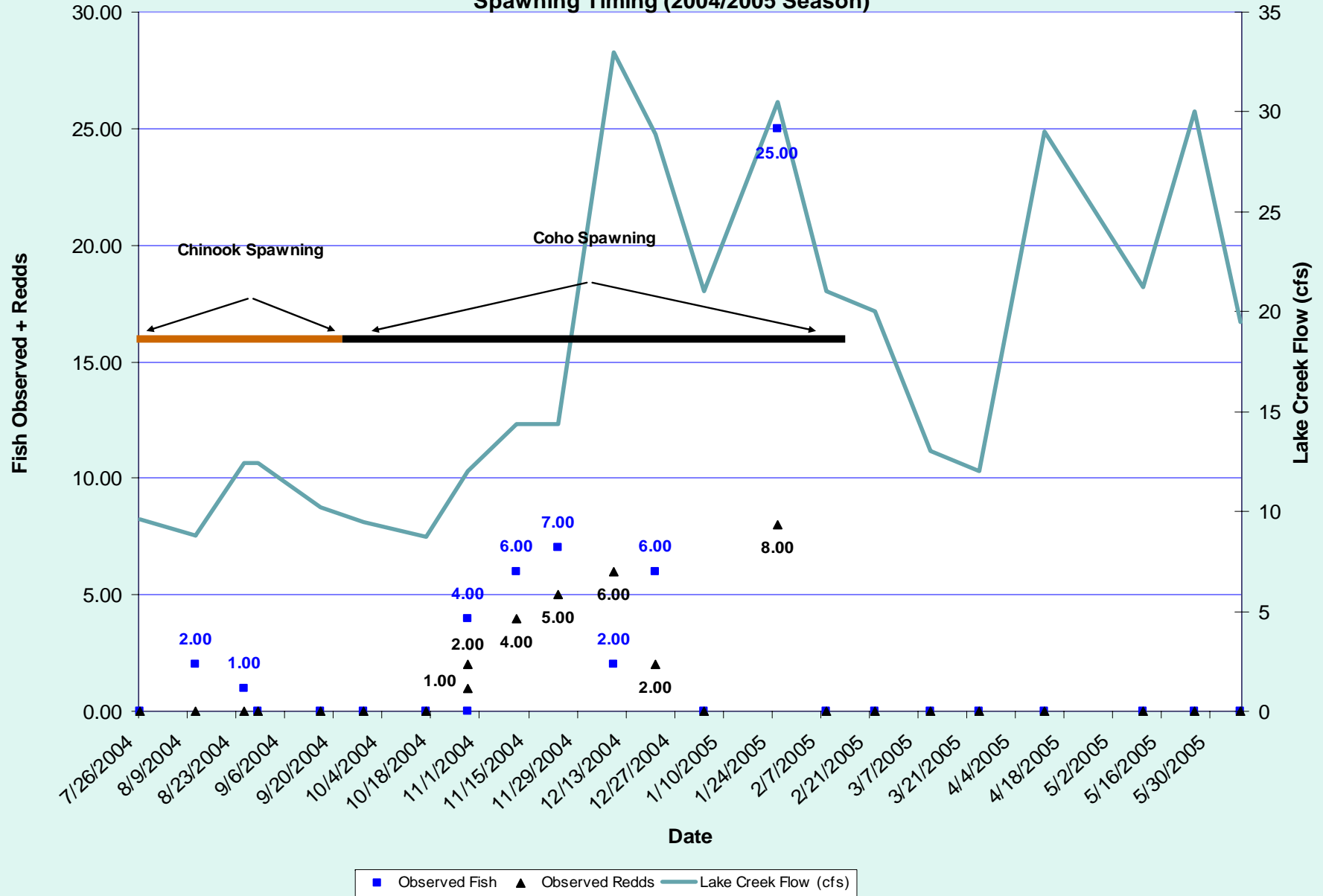
Lake Creek Anadromous Spawning Surveys (2004-2006)



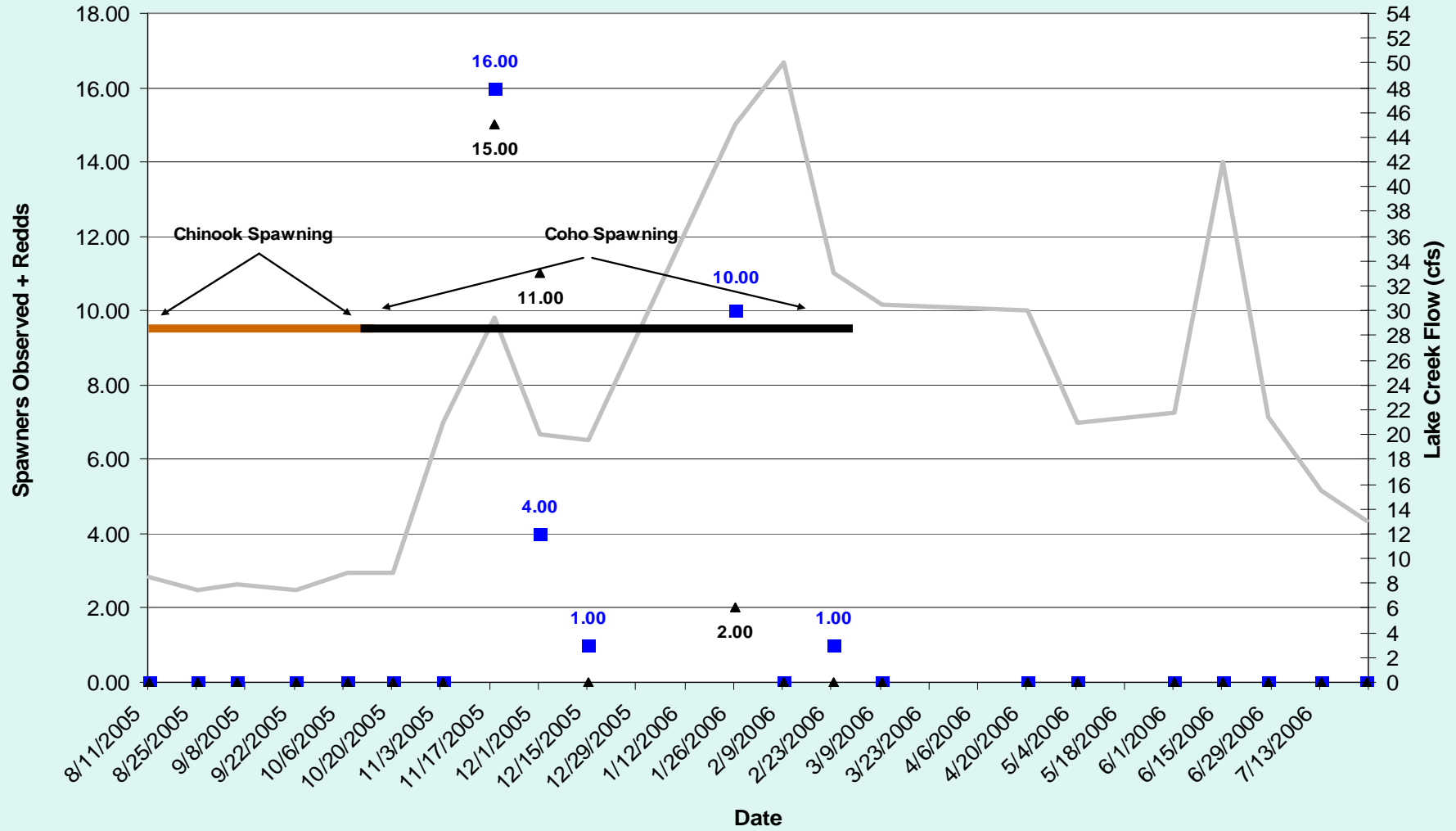
Lake Creek Flow vs. Spawn Timing

- A permanent staff gage was established in early 2004 prior to the commencement of the Anadromous Spawning surveys
- Discharge measurements have been ongoing over the last two years to establish a stage discharge relationship
- Preliminary flow vs. spawn timing is displayed here

Lake Creek Anadromous Spawning Surveys Flow (cfs) vs. Spawning Timing (2004/2005 Season)



Lake Creek Anadromous Spawning Surveys Flow (cfs) vs. Spawning Timing (2005/2006 Season)

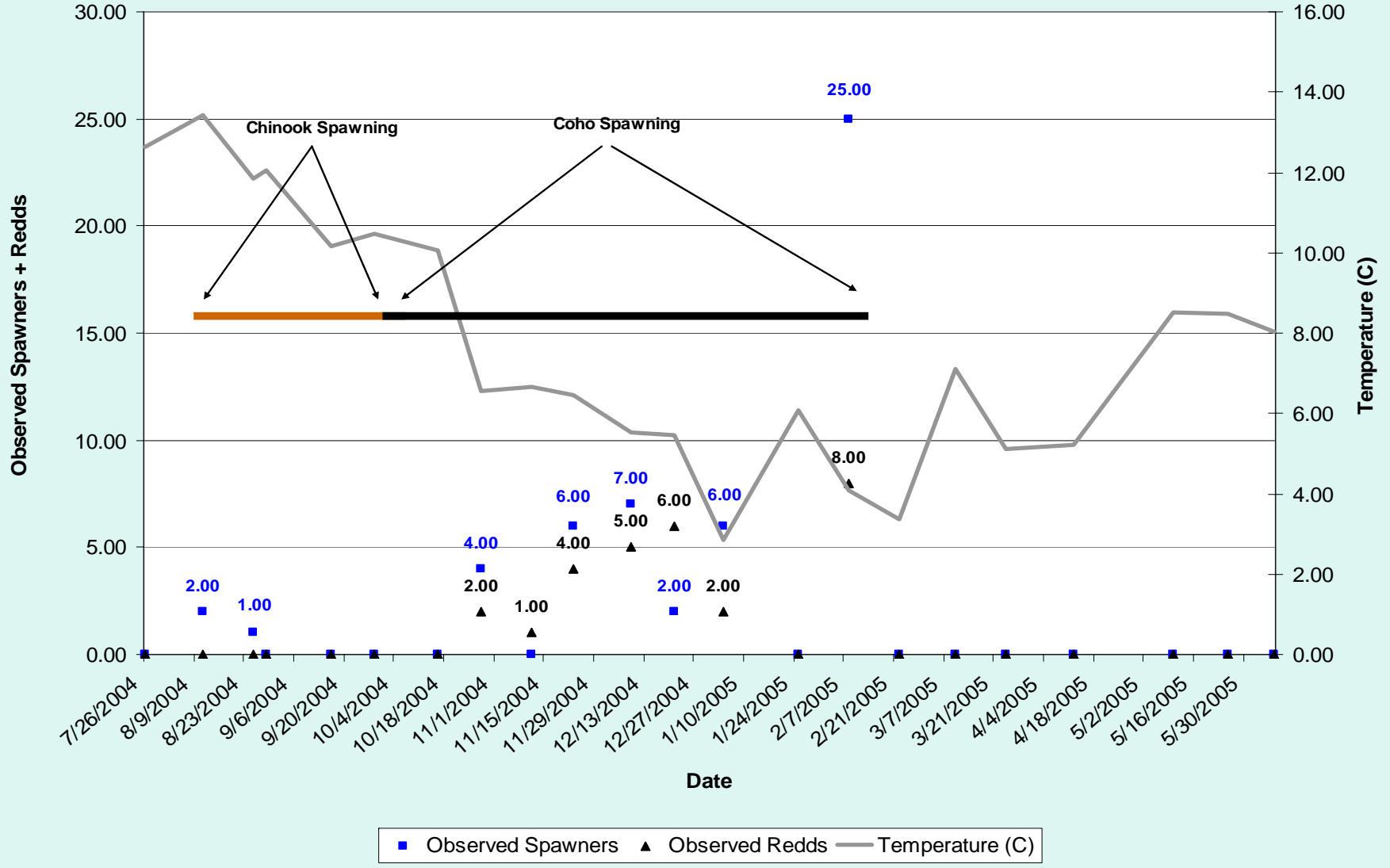


■ Observed Fish
 ▲ Observed Redds
 — Gage Height

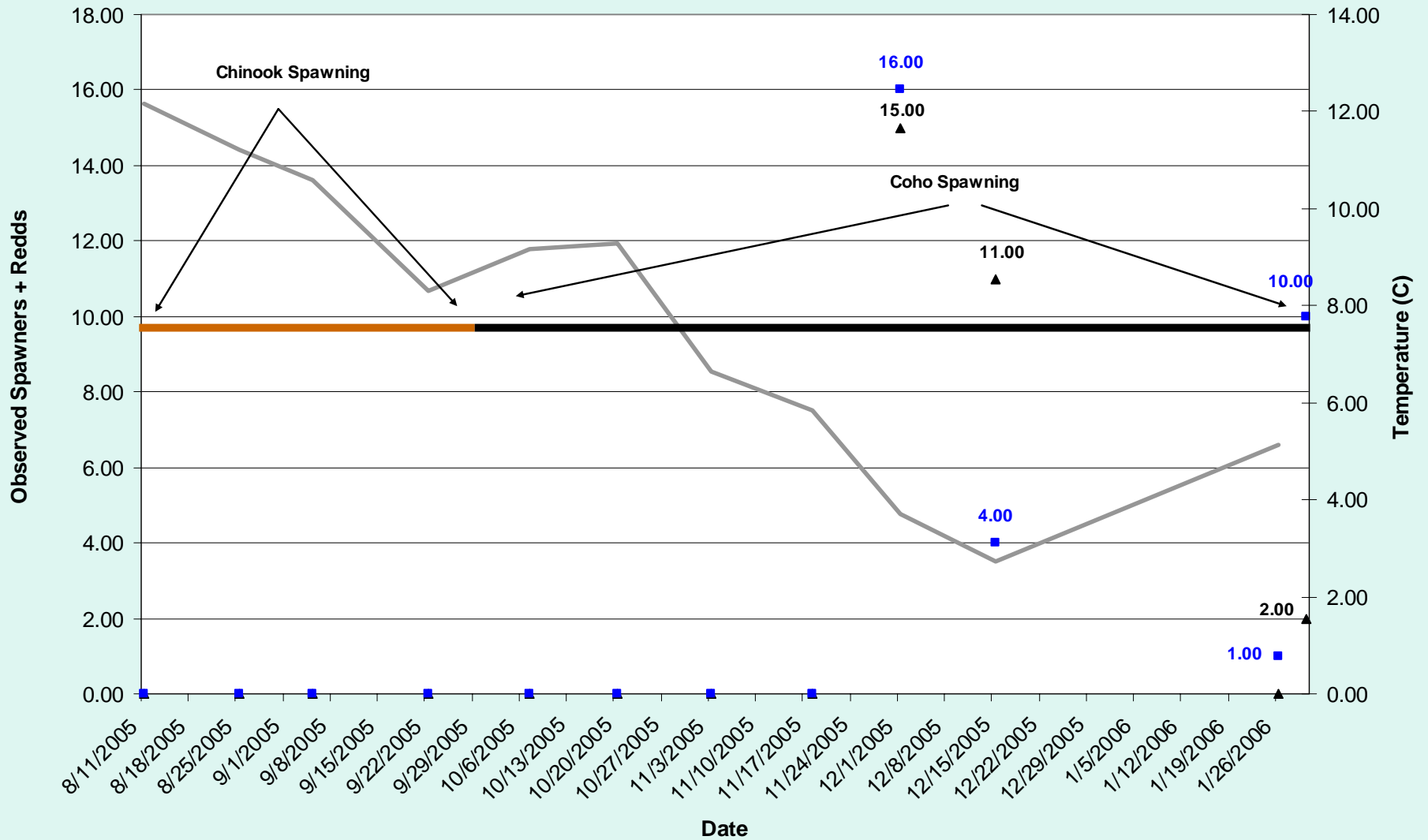
Water Temperature Relationships

- A thermo-logger was installed in the spawning reach prior to beginning the Anadromous Surveys
- Temperature data has been collected and will be analyzed to correlate with spawn timing

Lake Creek Spawners + Redds vs. Average Daily Water Temperature (2004/2005)



**Lake Creek Spawners + Redds
vs.
Average Daily Water Temperature (2005/2006)**

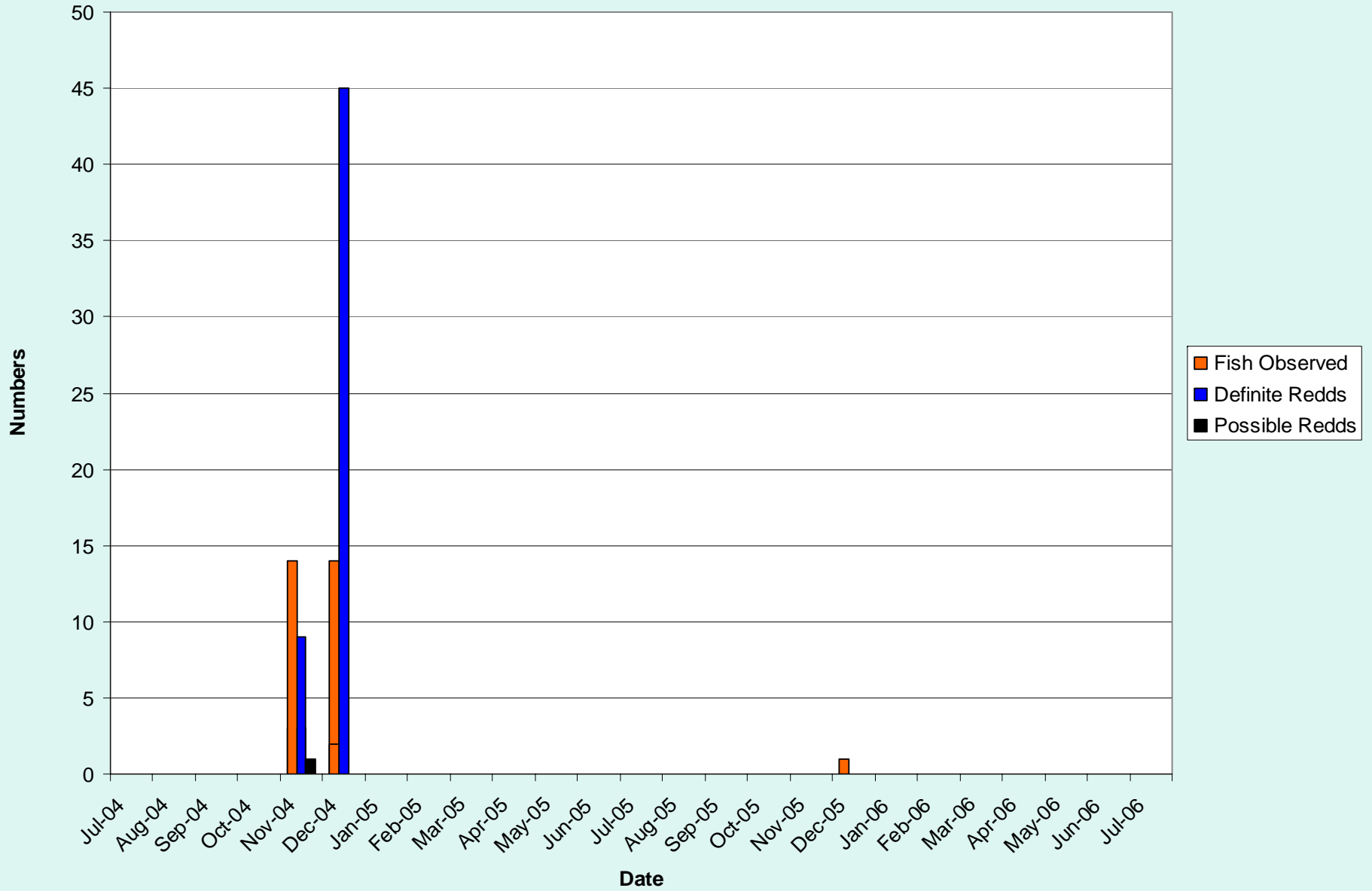


▲ Observed Redds ■ Observed Fish — Water Temperature (C)

Tailrace Slough/Cowlitz River Side Channel

- 34 coho and 57 definite redds were documented in the tailrace slough
 - Every redd and all but one coho were documented during the 2004/2005 run
- Water was abnormally high and turbid for much of the 2005/2006 season, making locating fish and redds very difficult
- No Chinook salmon or steelhead trout were observed during any of the surveys

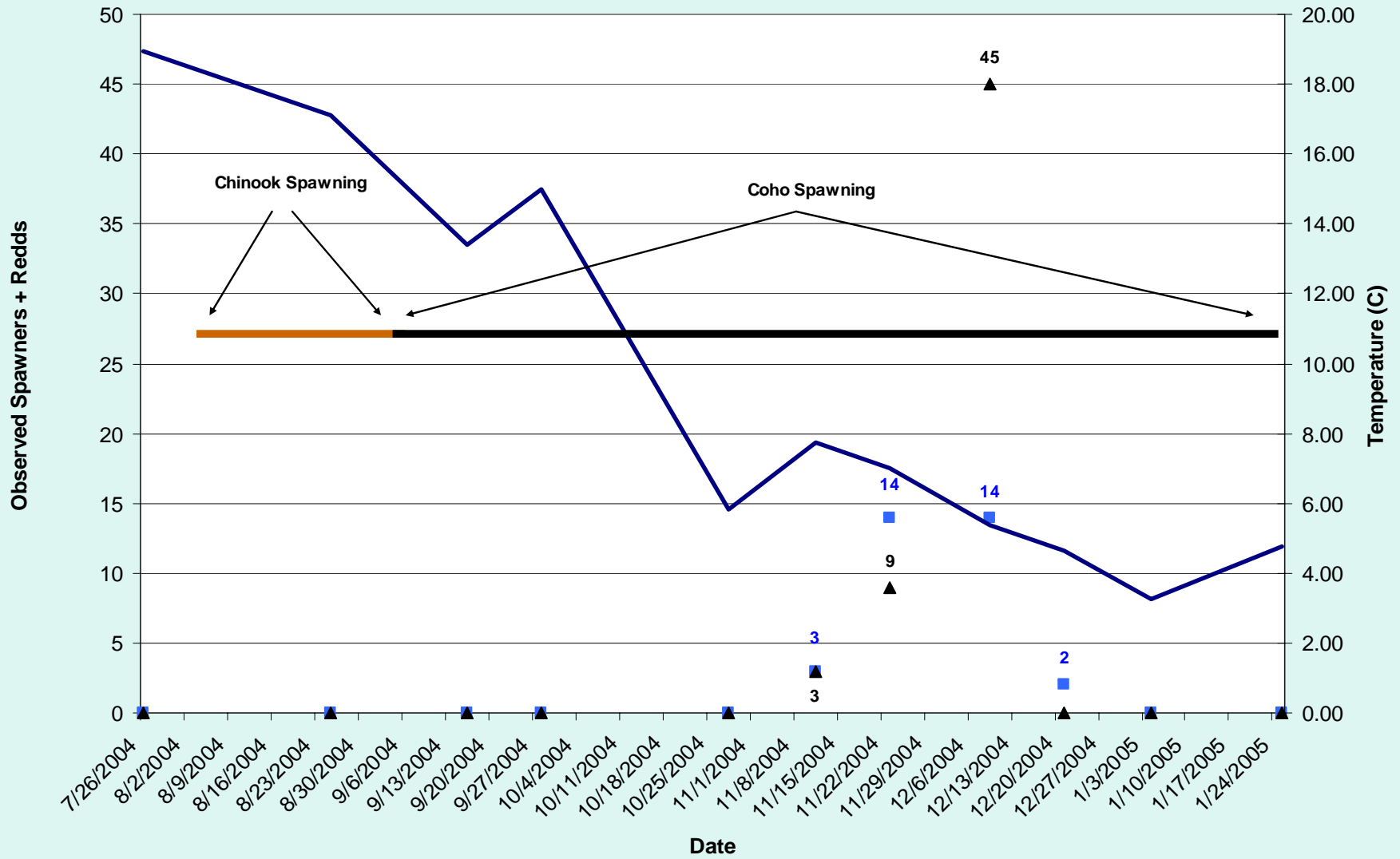
Packwood Tailrace Anadromous Spawning Surveys (2004-2006)



2004/2005 Packwood Tailrace Slough Spawning Data

Date	Fish Observed	Redds Observed	Mean Daily Water Temp. (C)
11/11/04	3	3	7.73
11/24/04	14	9	7.00
12/9/04	14	45	5.38
12/21/04	2	0	4.63

**Tailrace Slough Spawners + Redds
vs.
Average Daily Water Temperature (2004/2005)**



■ Observed Fish ▲ Observed Redds — Temperature (C)

Hall Creek

- The entire reach from Snyder Road upstream to RM 3.70 was surveyed
- 34 coho and 10 definite redds were observed
- All fish and redds were observed between 12/29/05 and 1/26/06
- No Chinook or steelhead were observed

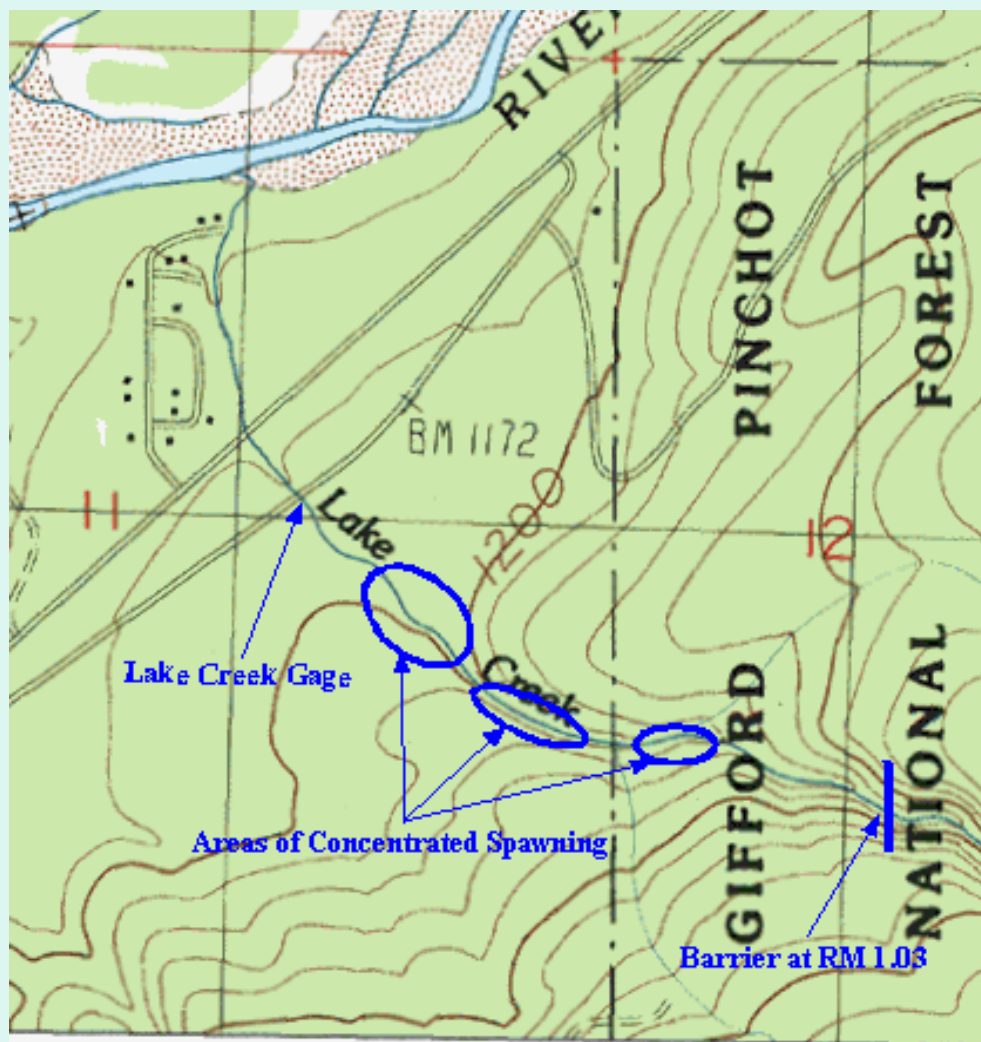
Hall Creek 2005/2006 Coho Spawning Data

Date	Spawners Observed	Definite Redds Observed
10/6/05	0	0
10/19/05	0	0
11/2/05	0	0
11/18/05	0	0
12/15/05	0	0
12/29/05	19	8
1/11/06	10	0
1/26/06	5	2
2/9/06	0	0

Snyder Creek and Cowlitz River

- Snyder Creek was surveyed from its confluence with Hall Creek to the end of the anadromous zone at RM 0.36
 - No adult anadromous spawners were observed
- The Cowlitz River was surveyed below the mouth of Lake Creek and on the mainstem around the tailrace slough complex
 - No adult anadromous spawners were observed

Lake Creek and Associated Cowlitz River Concentrated Spawning Areas



Hall Creek, Snyder Creek, Tailrace and Associated Cowlitz River Areas Suveyed for Anadromous Salmonid Spawning

