

Sugar Creek Refugia Field Note: Spawning Ground Surveys for 2024/2025

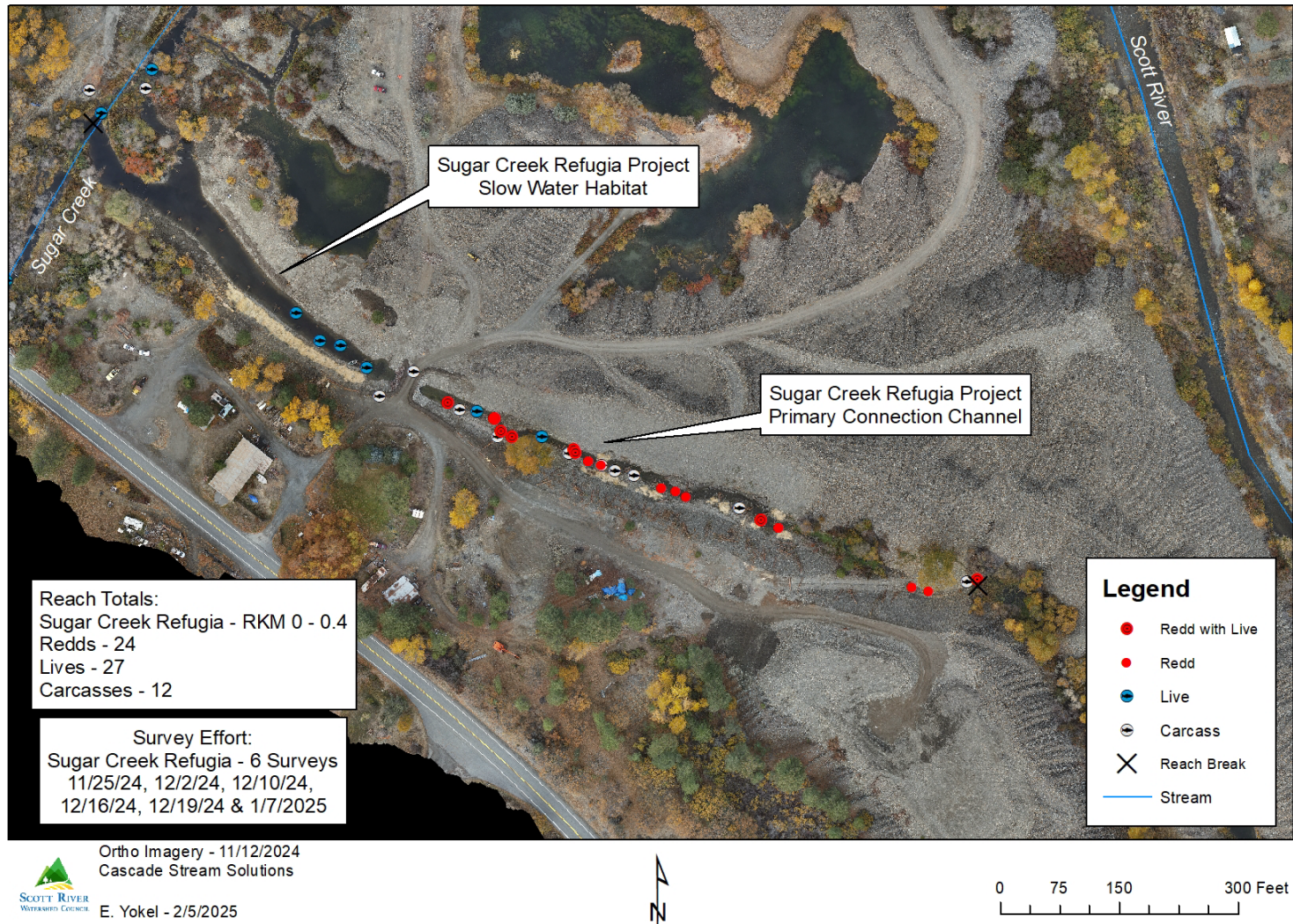


Photo 1. Photo of coho salmon carcass in the Sugar Creek Refugia. November 25, 2024

This field note summarizes results from the 2024-2025 Spawning Grounds Survey, specifically focusing on the Sugar Creek Refugia Project. After the completion of the newly constructed side channel in Fall 2024, our survey crews observed a significant amount of spawning activity in the new habitat.

Throughout the spawning season, we documented 24 coho salmon redds, 27 live fish, and 12 carcasses within the 0.3-mile channel (Map 1). This newly created habitat had the highest density of redds recorded in the Scott River Watershed during our surveys, with an impressive 95.6 redds per surveyed mile.

2024 - 2025 Coho Spawning Ground Surveys Sugar Creek Refugia Project



Map 1. 2024-2025 Coho Spawning Ground Survey Sugar Creek Refugia Project. All observations are marked, see legend for reference.

The first fish were observed on November 25, 2024, with peak spawning activity occurring on December 10, 2024. After January 7, 2025, no additional spawning activity was detected in the refugia (Table 1).

Table 1. A table showing the dates when the Sugar Creek Refugia project was monitored and the field observations of Coho salmon redds, live fish and carcasses per survey.

Sugar Creek Refugia

Date:	Coho Redds:	Live Fish:	Number of Carcasses:
11/25/24	3	5	1
12/2/24	3	6	0
12/10/24	8	7	0
12/16/2024	3	8	0
12/19/2024	5	1	1
1/7/2024	3	0	10

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Table 2. 2024 – 2025 Coho Spawning Ground Surveys - Redds observed per surveyed reach.

Stream	Reach Description	Redds per Mile	Number of Redds	Miles
Sugar Refugia Channel	Sugar Refugia Project	95.6	24	0.3
Scott River - Sugar Confluence	Sugar Creek Confluence	54.0	10	0.2
Sugar Creek	Lower - Upstream HWY3	35.8	16	0.4
Sugar Creek	Lower - Downstream HWY3	10.9	3	0.3
French Creek	Middle	10.0	16	1.6
Etna Creek	Upper - Upstream Diversion	8.7	3	0.3
Noyes Valley Creek	Lower	8.3	12	1.5
Patterson Creek	Upper	4.9	6	1.2
Miners Creek	Middle	4.8	6	1.2
East Fork Scott River	Middle - Grouse Creek	2.8	5	1.8
Etna Creek	Upper - Downstream Diversion	2.5	2	0.8
Kidder Creek	Middle	1.8	1	0.5
Scott River	Reach 13 Partial	1.6	2	1.3
Wildcat Creek	Lower	1.2	1	0.8
Scott River	Tailings	1.0	1	1.0
Kidder Creek	Upper	0.8	1	1.3
Mill Creek	Middle	0.7	1	1.5
East Fork Scott River	Middle - Big Mill	0.4	1	2.2
South Fork Scott River	Middle	0.4	1	2.4
Shackleford Creek	Upper - Falls	0	0	0.2
Shackleford Creek	Upper	0	0	0.9
Emigrant Creek	Lower	0	0	0.3
Wildcat Creek	Upper	0	0	0.4
Sugar Creek	Upper	0	0	2.3
Etna Creek	Middle	0	0	0.1
Etna Creek	Lower Confluence	0	0	0.3
Grouse Creek	Lower	0	0	0.6
French Creek	Upper	0	0	1.0
Mill Creek - Shackleford	Upper	0	0	0.4
East Fork Scott River	Lower	0	0	0.5
Big Mill Creek - East Fork	Lower	0	0	0.2
Shackleford Creek	Lower	0	0	0.8

Coho salmon are known to take advantage of newly available habitats, a behavior that has evolved over time in response to shifting landscapes caused by glacial retreat and other natural changes (Anderson et al. 2007). The construction of a new habitat in Sugar Creek appears to mimic this process, providing spawning opportunities for coho salmon.

Research supports the effectiveness of habitat construction for spawning fish. A systematic review by Taylor et al. (2019) found that the addition or alteration of rock material can

significantly increase the abundance of substrate-spawning fish compared to control conditions. Additionally, Coho salmon typically select smaller tributaries for spawning (Sandercock 1991), making this newly constructed side channel an appealing site.

Moving forward, it will be valuable to monitor whether this site continues to support spawning in future seasons. Long-term success will depend on juvenile survival, which, according to Taylor et al. (2019), can have mixed outcomes in constructed channels. Continued monitoring and assessment will help determine the effectiveness of this habitat enhancement for coho salmon recruitment in Sugar Creek.



Photo 2. A photo of a pair of coho salmon building a redd in the Sugar Creek Refugia Project. November 25, 2024



Photo 3. A photo of technician Yifang Zhang holding two coho salmon carcasses that have just had their otoliths extracted. January 7, 2025.

Literature Cited:

- Anderson, J. H., & Quinn, T. P. (2007). Movements of adult coho salmon (*Oncorhynchus kisutch*) during colonization of newly accessible habitat. *Canadian Journal of Fisheries and Aquatic Sciences*, 64(8), 1143-1154.
- Sandercock, F. K. (1991). Life history of coho salmon (*Oncorhynchus kisutch*). *Pacific salmon life histories*, 395-445.
- Taylor, J. J., Rytwinski, T., Bennett, J. R., Smokorowski, K. E., Lapointe, N. W., Janusz, R., & Cooke, S. J. (2019). The effectiveness of spawning habitat creation or enhancement for substrate-spawning temperate fish: a systematic review. *Environmental Evidence*, 8, 1-31.