



## Direct Observation Survey Summary Report

### Scott River Watershed 2024

October 21, 2024

#### Project Overview

The Scott River Fisheries Monitoring Project is a collaborative effort between the Scott River Watershed Council (SRWC) and the Quartz Valley Indian Reservation (QVIR) to support and expand ongoing annual work to document both juvenile and adult Chinook Salmon (*Oncorhynchus tshawytscha*) and Coho Salmon (*Oncorhynchus kisutch*) within the Scott River and its tributaries. This work will integrate into other efforts throughout the basin to help inform fisheries and water management along with future restoration activities. Funding for this project was provided by the California Department of Fish and Wildlife's (CDFW) Climate Change Impacts on Wildlife (#Q2296027) fund. This project specifically provides resources to monitor Chinook and coho salmon, both juvenile distribution throughout the basin, and the number and spatial distribution of returning spawning adults. This work is covered by State 4(d) Rule for Research Program permit (#27661), issued by the National Oceanic and Atmospheric Administration (NOAA).

#### 2023-2024 Coho Salmon Spawning

Reviewing the previous adult spawning season provides important context for the results of these juvenile salmonid rearing surveys. Of the three coho salmon cohorts in the Scott watershed, the most robust group returned to spawn in the winter of 2023-2024 (Figure 1). There were 912 individuals observed passing through the video weir at the Scott River Fish Counting Facility (SRFCF) at river kilometer (RKM) 29.2, making it the fifth highest return since monitoring began in 2007 (Giudice 2024).

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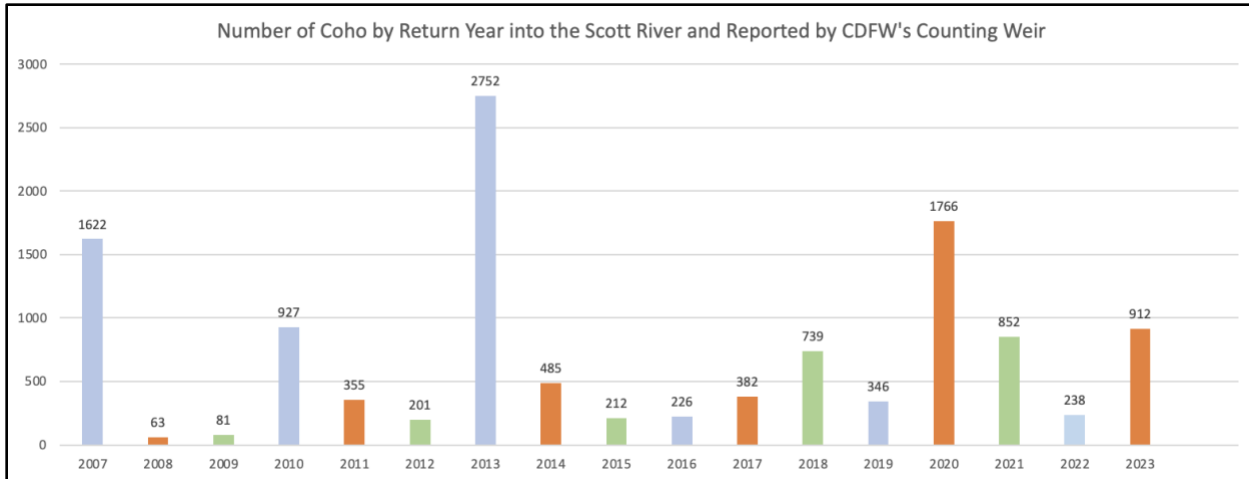


Figure 1. Annual coho salmon returns to the Scott River, 2007-2023. Data from Giudice 2024.

The relatively higher abundance of spawners, coupled with the favorable hydrologic conditions, helped facilitate the migration of these fish to their spawning ground. Compared to the previous winter, significantly higher discharge in the Scott River in November 2023 resulted in adult coho salmon passing the SRFCF almost a month earlier (Figure 2) (Giudice 2024; USGS 2024).

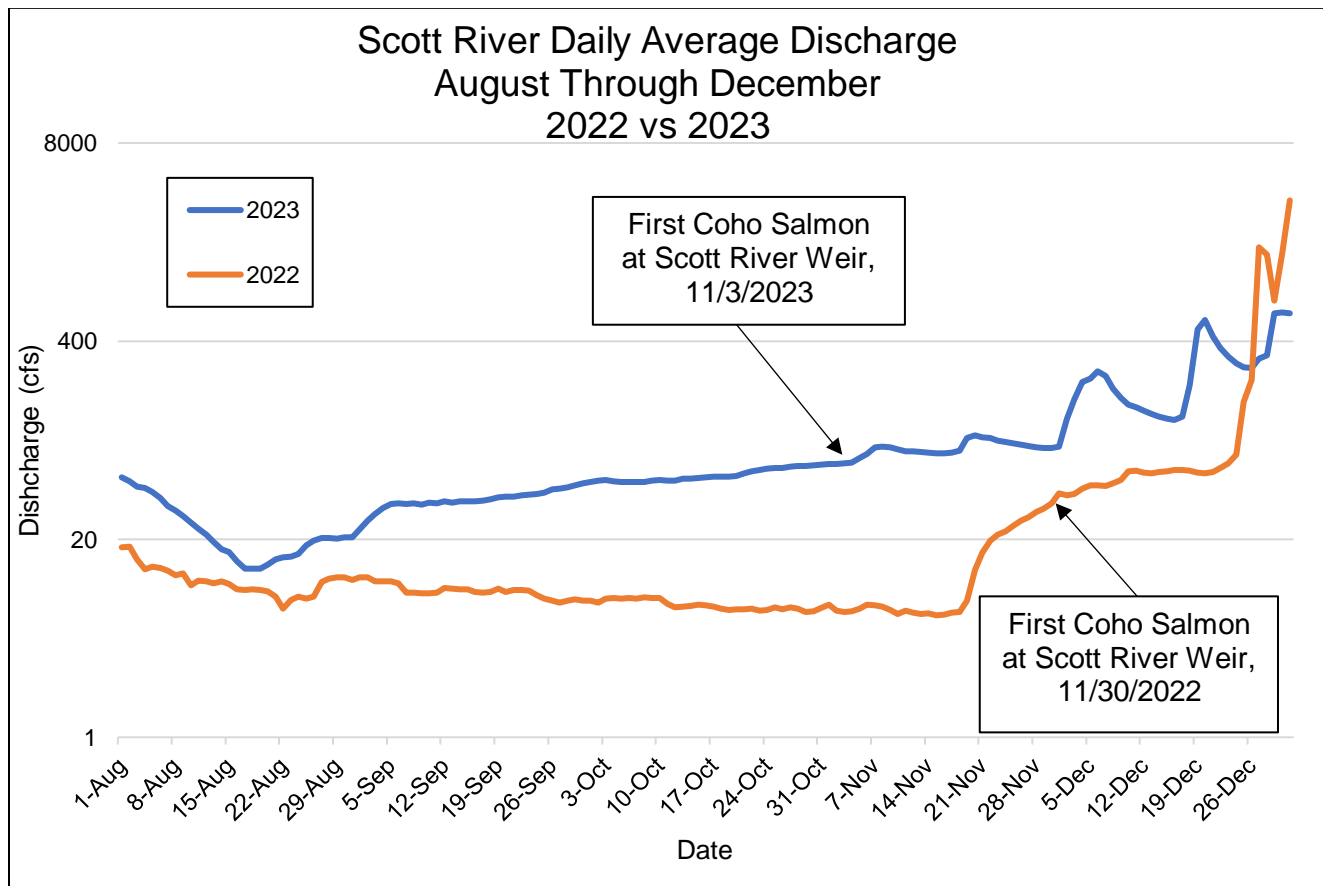
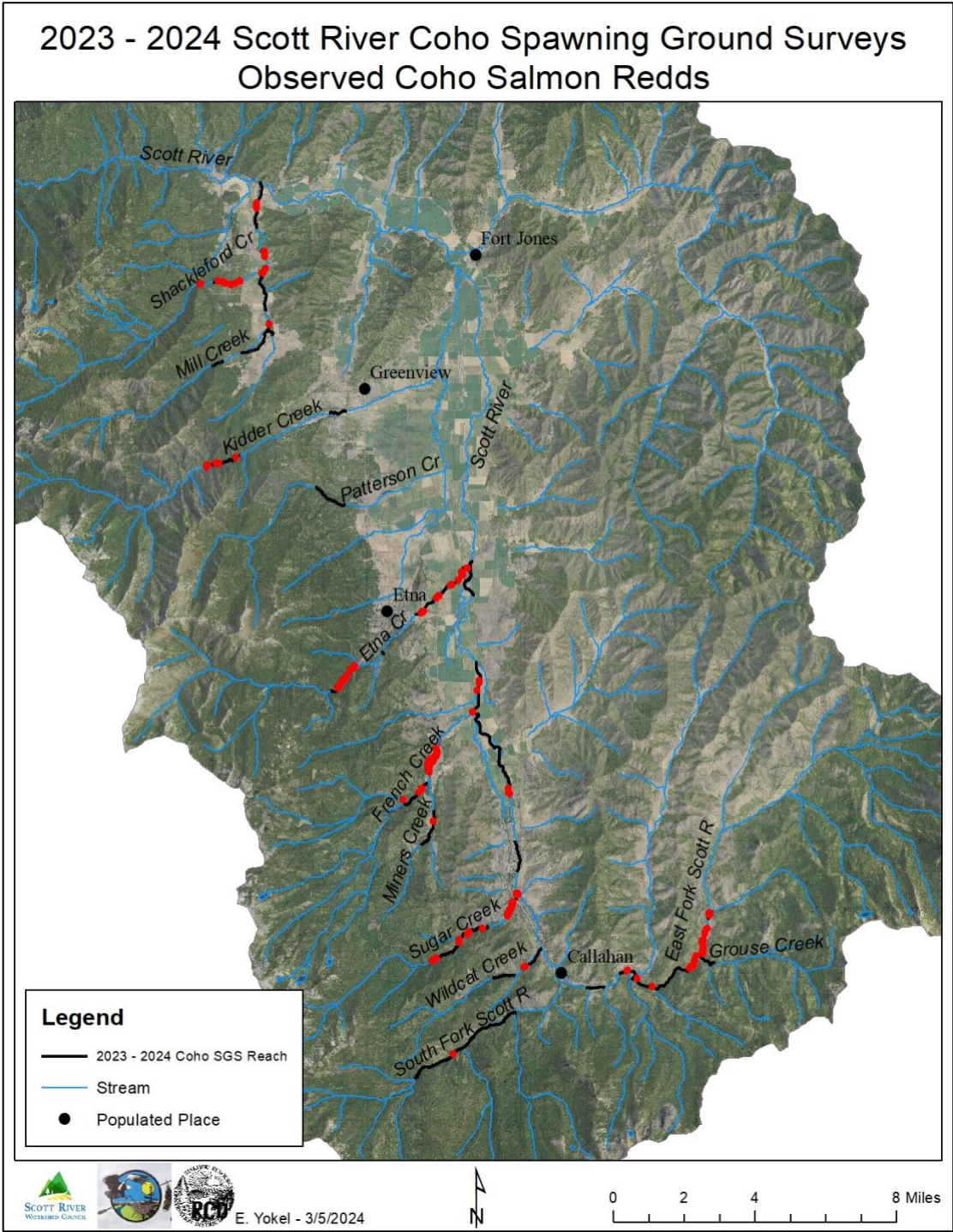


Figure 2. First coho salmon observation plotted on daily average discharge from the Scott River (USGS gage 11519500) between August 1st and December 31st. Comparing 2022 to 2023.

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This combination of biotic and abiotic factors during the 2023-2024 winter resulted in a wide distribution of spawning in the Scott River watershed. Coho redds were observed in 12 streams across the watershed (Map 1). In total, 251 redds were identified, with the greatest numbers being observed in French Creek, Sugar Creek, and the East Fork Scott River (Scott River Watershed Council et al 2024).



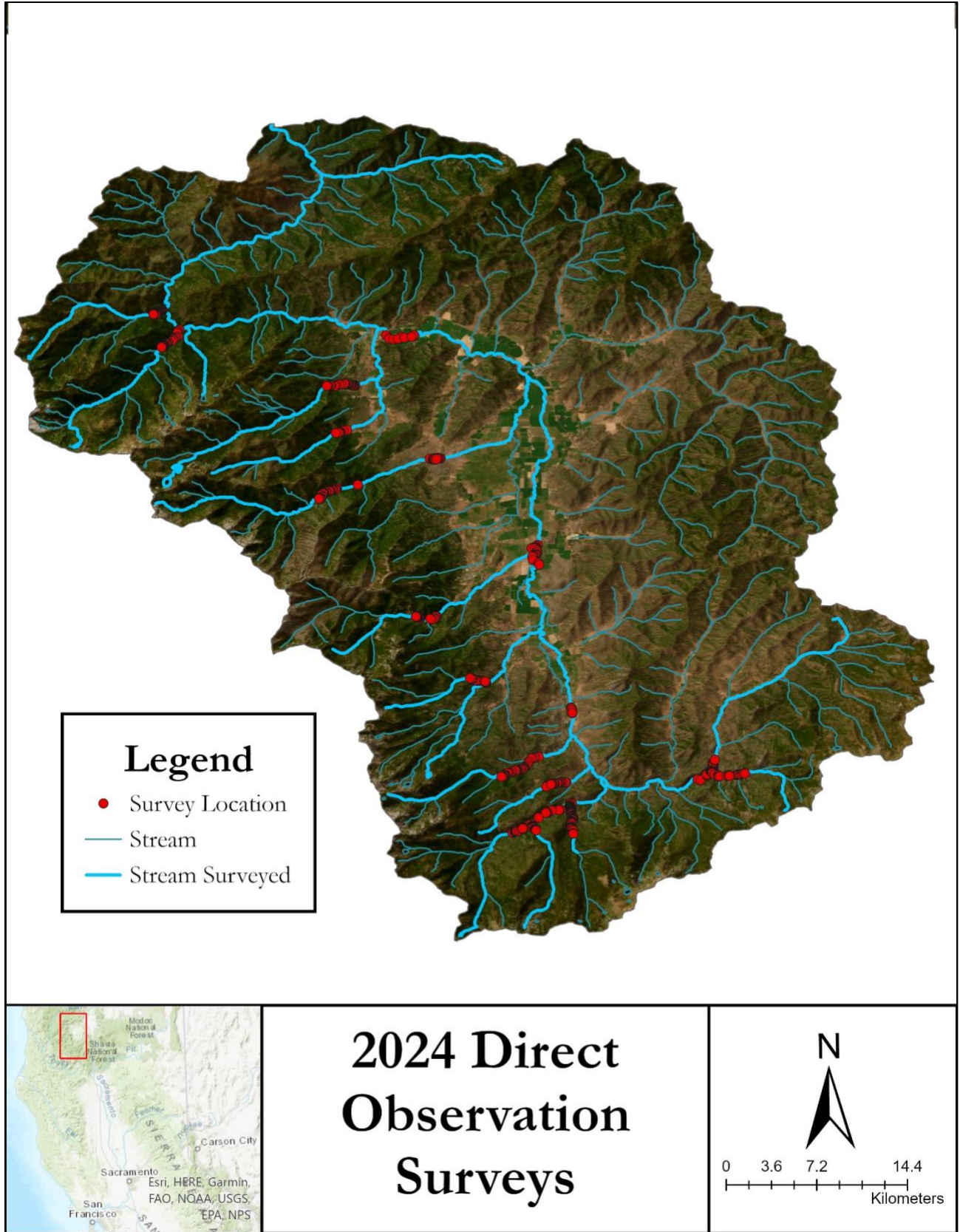
Map 1. Redds (shown as red circles) observed during the 2023-24 spawning ground survey effort.

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**Methodology for Juvenile Salmonid Direct Observations**

This report summarizes juvenile salmonid monitoring utilizing direct observation during the period of June 25 through September 10, 2024. Given the relatively high abundance and spatial distribution of coho salmon spawners during the 2023-2024 winter, the emphasis of this effort was placed on, where possible, delineating the upstream extent of habitat being used by rearing juvenile coho. As such, direct observation surveys in this season were often started further upstream in a tributary than in previous years and did not seek to encompass all accessible sections of stream. Crews worked upstream from their starting point, snorkeling slow-water habitats they encountered along the way. Where upstream movement was not limited by landowner access, crews continued surveying until they completed 10 consecutive pools without identifying juvenile coho. Crews documented the presence or absence of Chinook salmon, coho salmon and rainbow trout/steelhead (*Oncorhynchus mykiss*), with estimates of the number of juveniles in a given habitat. It is worth noting that various factors such as turbidity and salmonid predilection for habitats with lots of cover make it difficult to count and speciate all individuals in an area during a survey. The numbers reported in this field tech note are merely estimates and should not be considered anything else.

Additional data collected includes habitat types (e.g., pool, flat water, riffle, etc.) and basic characteristics of those habitats such as area, temperature, dissolved oxygen, and the dominant substrate. Also noted were other aquatic species observed during the dive. ESRI's ArcGIS Survey123 was used to spatially and temporally document the data collected. Most reaches were surveyed one time with a crew of two people for a total 16.3 miles surveyed (Map 2).



Map 2. Scott watershed view of direct observation surveys performed in the 2024 season.

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**Results**

Coho salmon were observed in all surveyed streams apart from Mill Creek. *O. mykiss* were observed in all streams surveyed, while Chinook salmon were only seen in the mainstem Scott River. Due to the survey protocol employed, this data is not an accurate representation of salmonid density in these reaches.

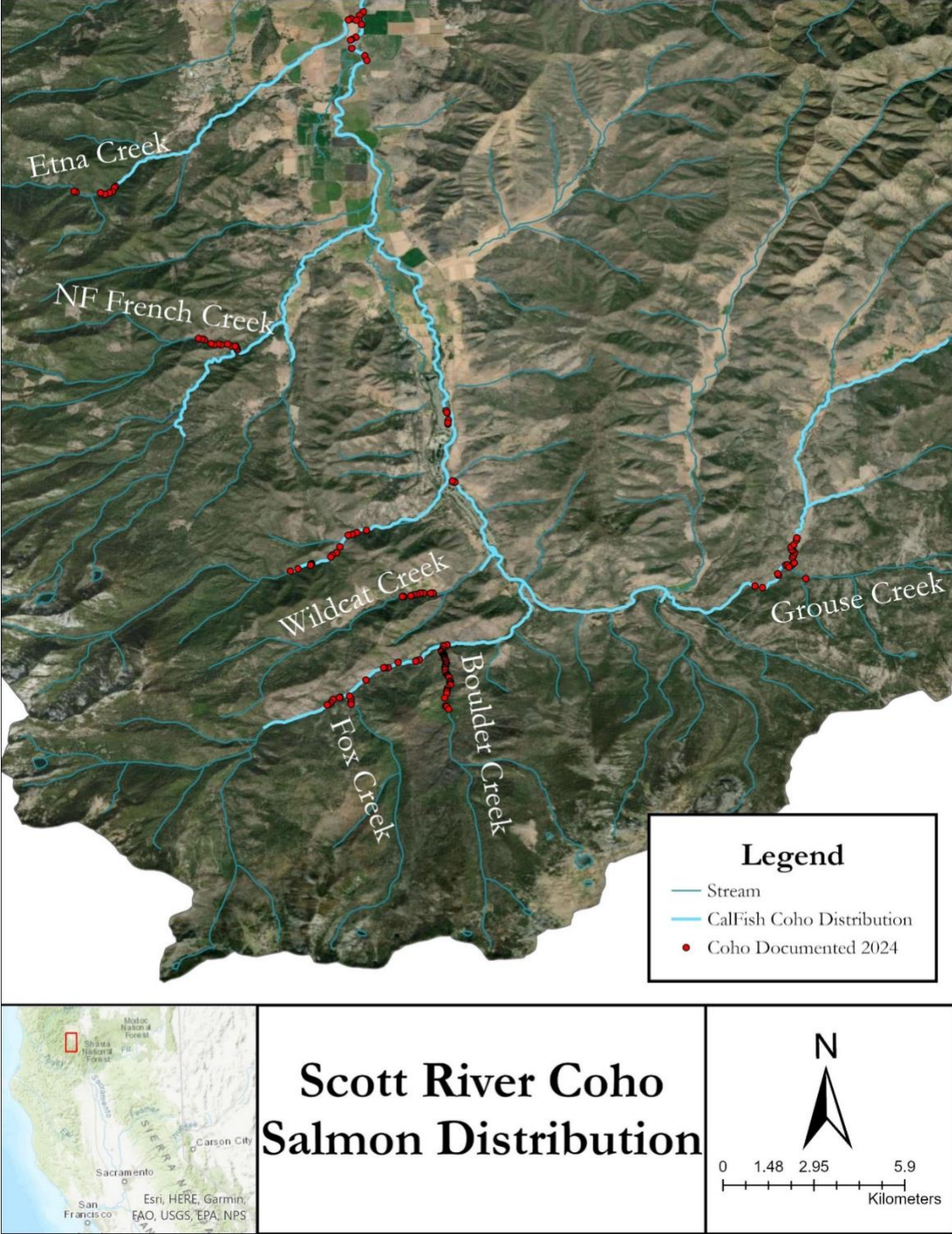
<b>Reach</b>	<b>Survey Distance (km)</b>	<b>Habitat Units Surveyed</b>	<b>Coho Count</b>	<b><i>O. mykiss</i> Count</b>	<b>Chinook Count</b>
Kelsey Creek	0.8	21	200	535	0
Canyon Creek	2.0	26	239	495	0
Shackleford Creek	1.9	25	1,083	366	0
Mill Creek	0.8	8	0	122	0
Scott River RKM 40.7-42.8*	2.1	9	80	108	3
Kidder Creek RKM 10.9-11.7	0.8	11	540	311	0
Kidder Creek RKM 18.6-20.2	1.6	21	194	812	0
Scott River RKM 68.6-70.6	2.0	14	560	307	14
Etna Creek RKM 0-0.4	0.4	4	750	67	0
Etna Creek RKM 9.1-10.7	1.0	19	416	471	0
North Fork French Creek	1.2	15	212	208	0
Scott River RKM 85.2-85.7*	0.3	7	200	167	0
Sugar Creek	3.0	33	162	280	0
Wildcat Creek	1.3	22	157	397	0
South Fork Scott River	4.5	27	357	579	0
Boulder Creek	2.6	47	204	276	0
Fox Creek	0.7	17	9	15	0
East Fork Scott River	2.2	20	804	700	0
Grouse Creek	2.3	22	4	301	0
<b>Totals</b>	<b>31.5</b>	<b>368</b>	<b>6,171</b>	<b>6,517</b>	<b>17</b>

Table 1. Summary table of 2024 direct observation survey efforts. \*Only includes data from first survey effort.

CDFW maintains a dataset and GIS layer delineating the range of coho salmon based on verified observations, which appears to have been last updated in 2012 (<https://www.calfish.org/ProgramsData/Species/AnadromousFishDistribution/Coho.aspx>). Several observations made during this effort would extend the range of coho salmon in the Scott River watershed. Juvenile coho were documented rearing above the previously identified upstream extent in Etna Creek and Wildcat Creek. Additionally, observations made this summer would extend the range into Boulder Creek, Fox Creek and North Fork French Creek (Map 3).

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Map 3. Comparison of coho salmon observations made in 2024 to the previously identified range.

**Reach Summaries**

What follows are more detailed looks at the observations made in each reach during the 2024 direct observation survey effort.

# Kelsey Creek

- There were 21 pool habitats surveyed in Kelsey Creek between September 9-10, 2024. Water temperatures ranged from 14.1-14.8 °C during the survey periods. 200 coho salmon were observed, and significant numbers were still being seen at the end of the survey, 0.74 RKM upstream of the confluence with the Scott River (Map 3).

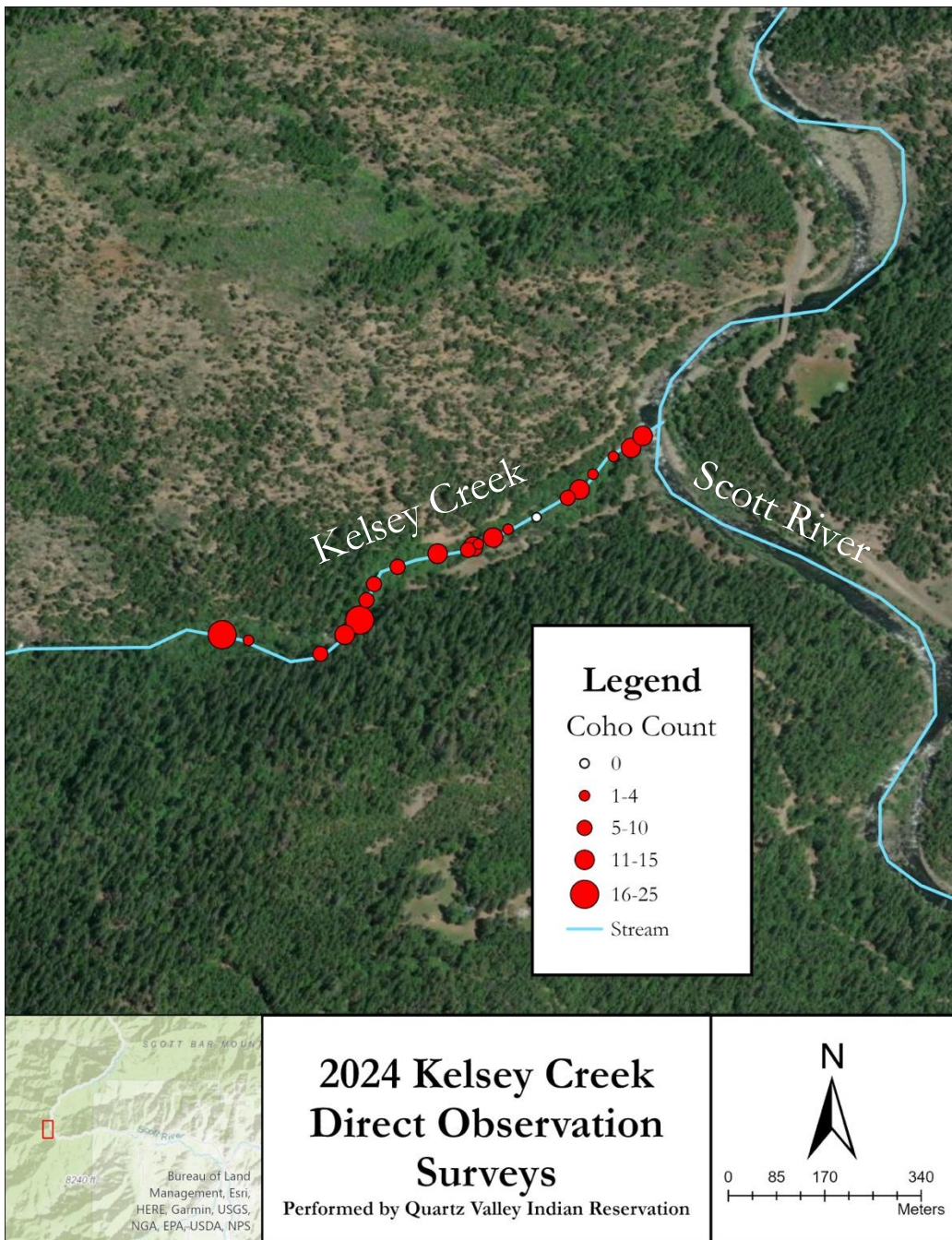


Photo 1. Kelsey Creek pool habitat surveyed on 9/10/2024.



# Canyon Creek

- There were 26 pool habitats surveyed in Canyon Creek between September 2-4, 2024. Water temperatures ranged from 12.5-14.3 °C during the survey periods. 239 coho salmon were observed, with the upstream extent of distribution appearing to be approximately 1.7 RKM upstream from the confluence with the Scott River (Map 4).



Photo 2. Coastal giant salamander (*Dicamptodon tenebrosus*) observed in Canyon Creek on 9/4/2024.

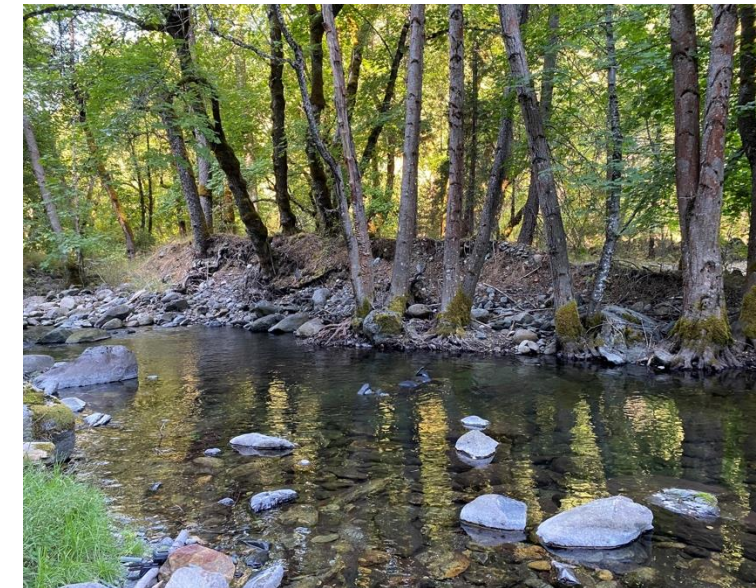
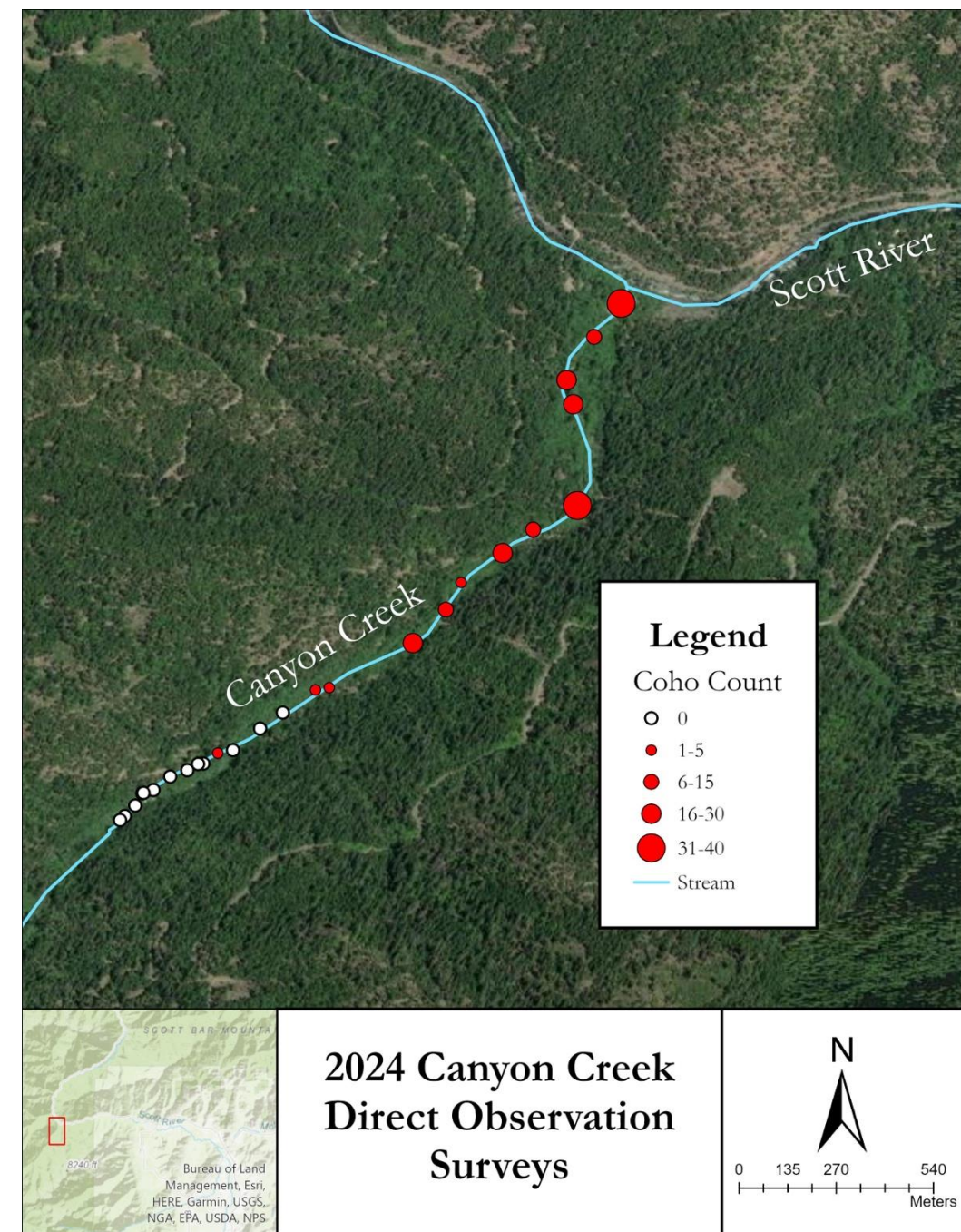
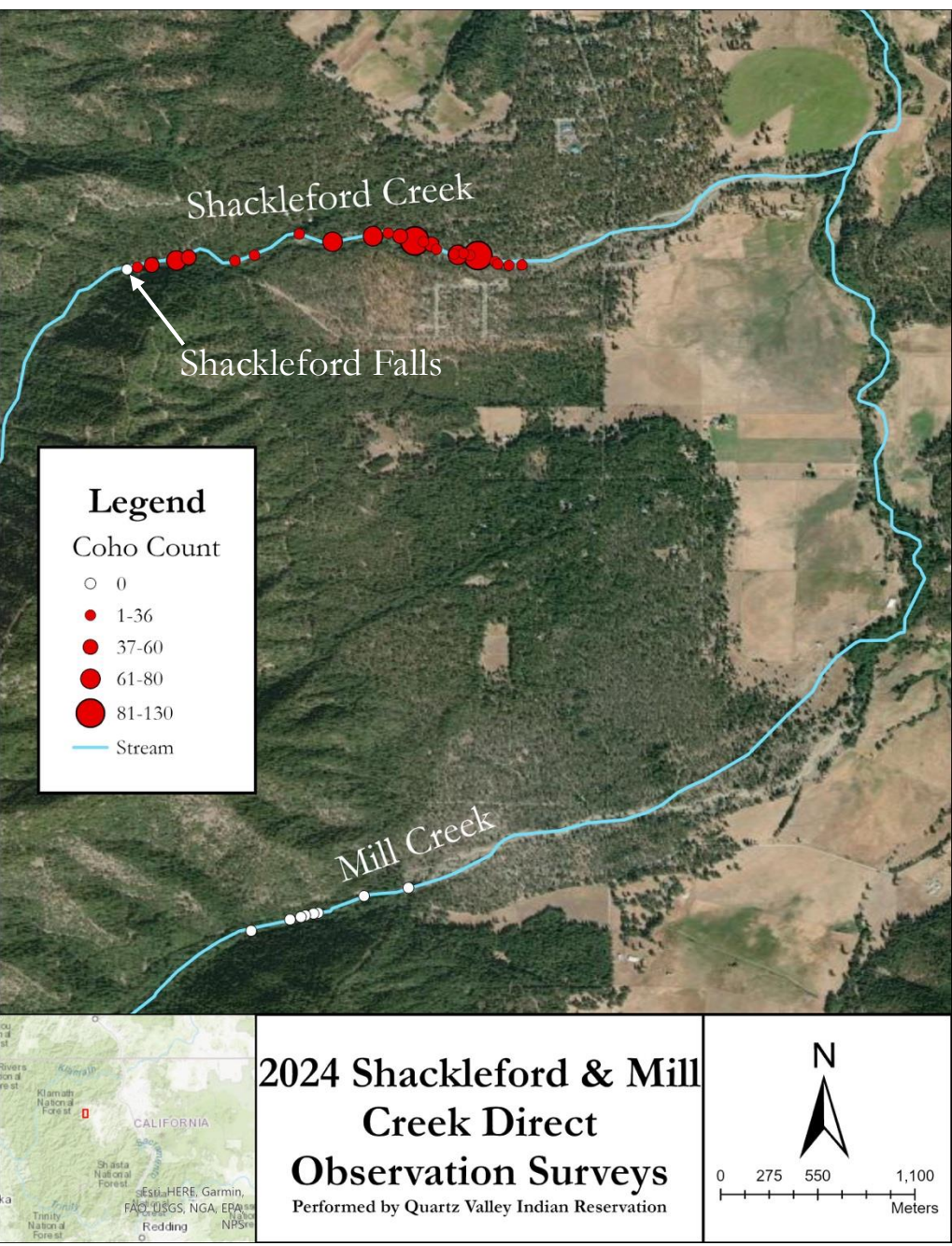


Photo 3. Canyon Creek pool habitat surveyed on 9/4/2024.



Map 4. 2024 Canyon Creek direct observation survey results.



# Shackleford Creek and Mill Creek

- There were 25 pool habitats surveyed in Shackleford Creek between August 20-21, 2024. Water temperatures ranged from 13.1-14.8 °C during the survey periods. 1,083 coho salmon were observed, with the upstream extent of distribution being just below Shackleford Falls (Map 5).
- Eight pool habitats were surveyed in Mill Creek on August 26, 2024. Water temperatures ranged from 11.4-11.9 °C during the survey period. Zero coho salmon were observed during this effort (Map 5).



Photo 4. Shackleford Falls, which acts as a barrier to upstream migration, on 9/4/2024.



Photo 5. Mill Creek pool habitat surveyed on 8/26/2024.

Map 5. 2024 Shackleford Creek and Mill Creek direct observation survey results.

# Scott River RKM 40.7-42.8

- Nine pools in this reach of the Scott River were surveyed on July 8 and again on September 6, 2024. On July 8, water temperatures ranged from 20.2-24.0 °C during the survey period. Temperatures ranged from 17.8-21.5 °C during the September 6 survey period. 80 coho salmon were observed in seven pools during the July survey. During the September survey, 19 coho were observed, and they were only present in the three furthest downstream pools (Map 6).
- Notably, during the July survey, juvenile Chinook salmon and an adult bluegill (*Lepomis macrochirus*) were observed in this reach.



Photo 6. Adult *O. mykiss*, speckled dace and juvenile coho salmon in a mainstem Scott River pool on 9/6/2024.

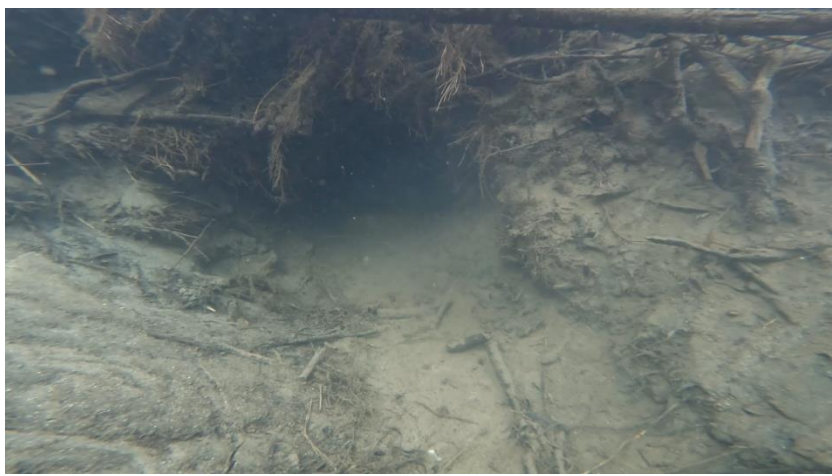
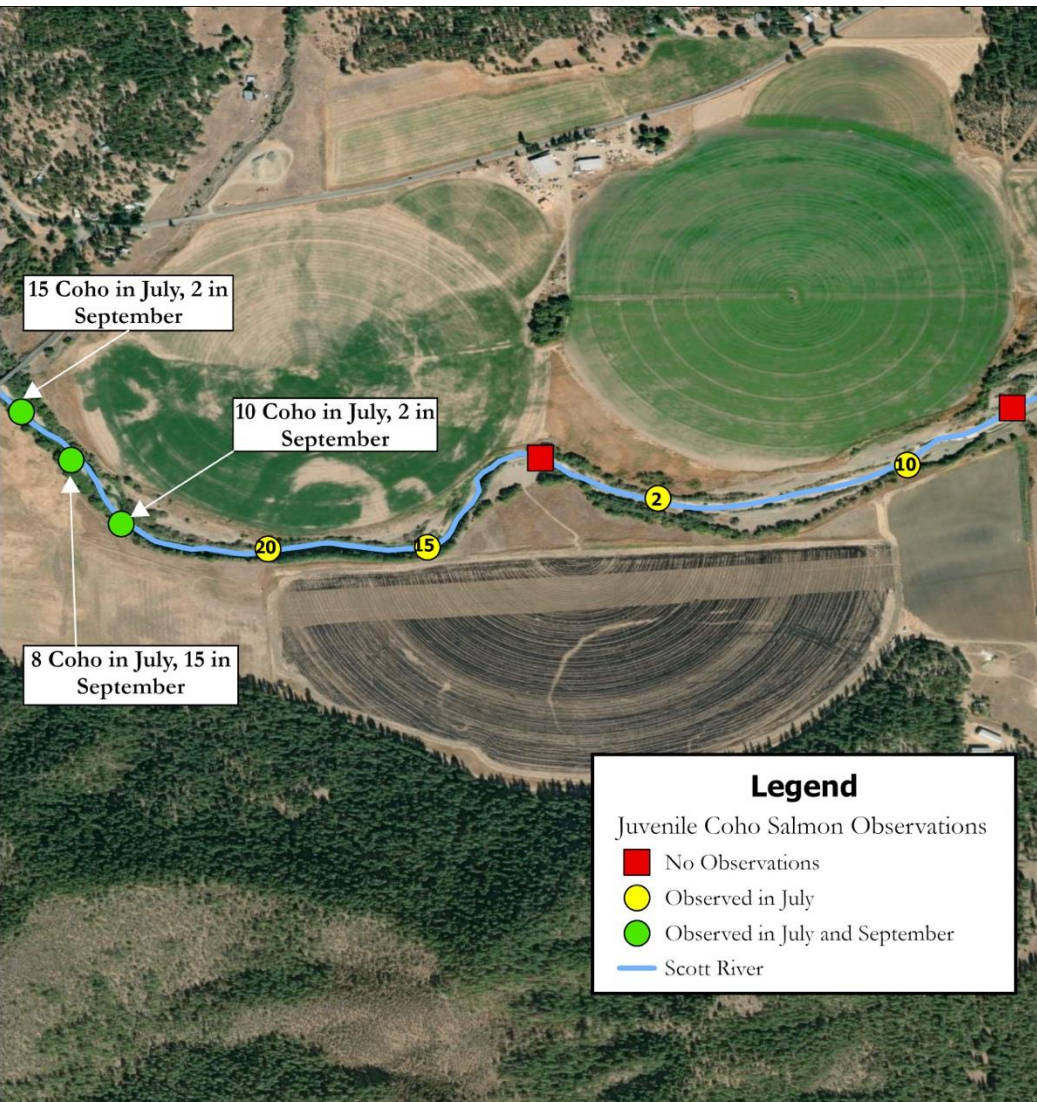


Photo 7. Beaver bank den observed in Scott River on 7/8/2024.

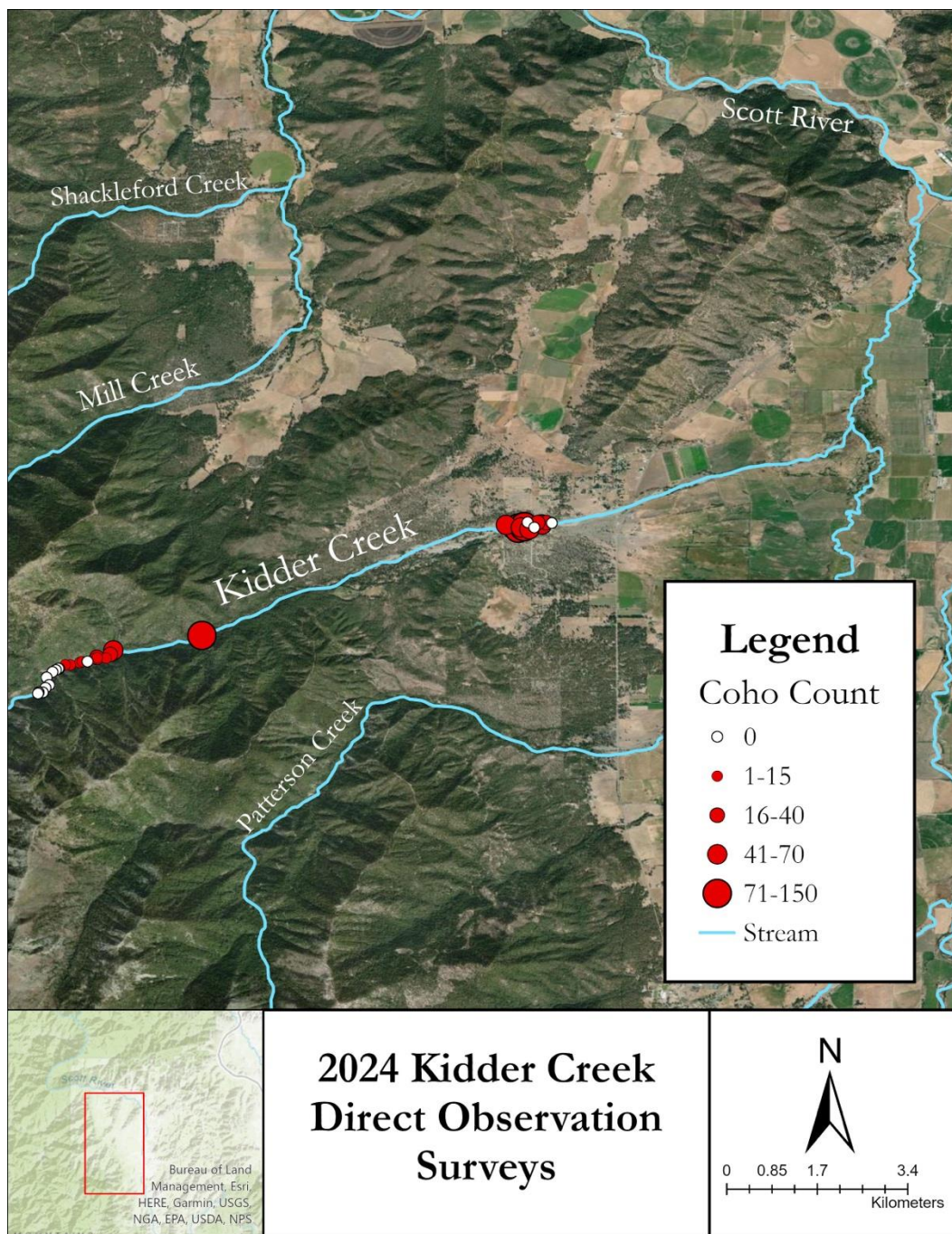


Bureau of Land Management, Esri, HERE, Garmin, NGA, USGS, NPS

**Scott River RKM  
40.7-42.8  
(Pastures of Heaven)  
Direct Observation  
Surveys 2024**

0 100 200 400  
Meters

Map 6. 2024 Scott River RKM 40.7-42.8 direct observation survey results.



# Kidder Creek

- On June 25, 2024, 11 pools were surveyed between Kidder Creek RKM 10.9-11.7. Water temperatures ranged from 16.2-17.9 °C during the survey period. 540 coho salmon were observed in this reach. Two additional pools were surveyed on this date: one at approximately RKM 17.0 and one at approximately RKM 19.0. 150 coho salmon were observed at the former, and two coho were observed at the latter (Map 7).
- On September 5, 21 pools were surveyed between approximately RKM 18.6-20.2. Water temperatures ranged from 14.7-17.1 °C during the survey period. 194 coho were observed, and the upstream extent appeared to be at approximately RKM 19.6 (Map 7).



Photo 8. Juvenile coho salmon in Kidder Creek on 6/25/2024.

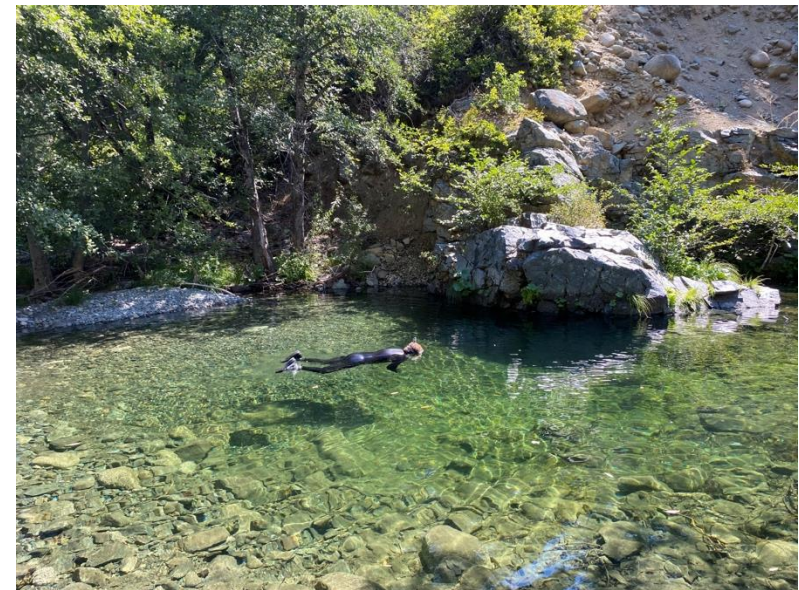


Photo 9. Kidder Creek pool habitat surveyed on 9/5/2024.

# Scott River RKM 68.6-70.6 & Etna Creek RKM 0-0.44

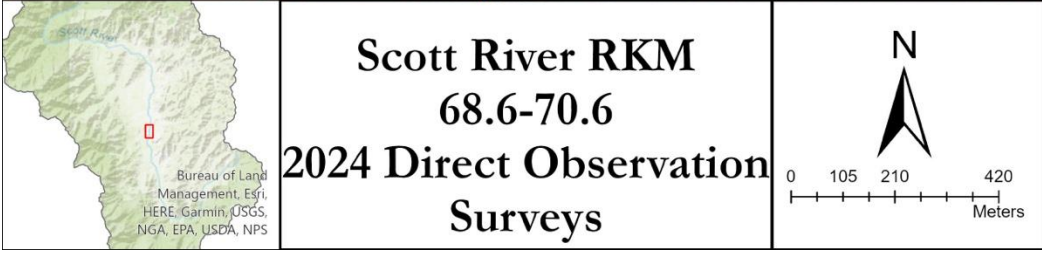
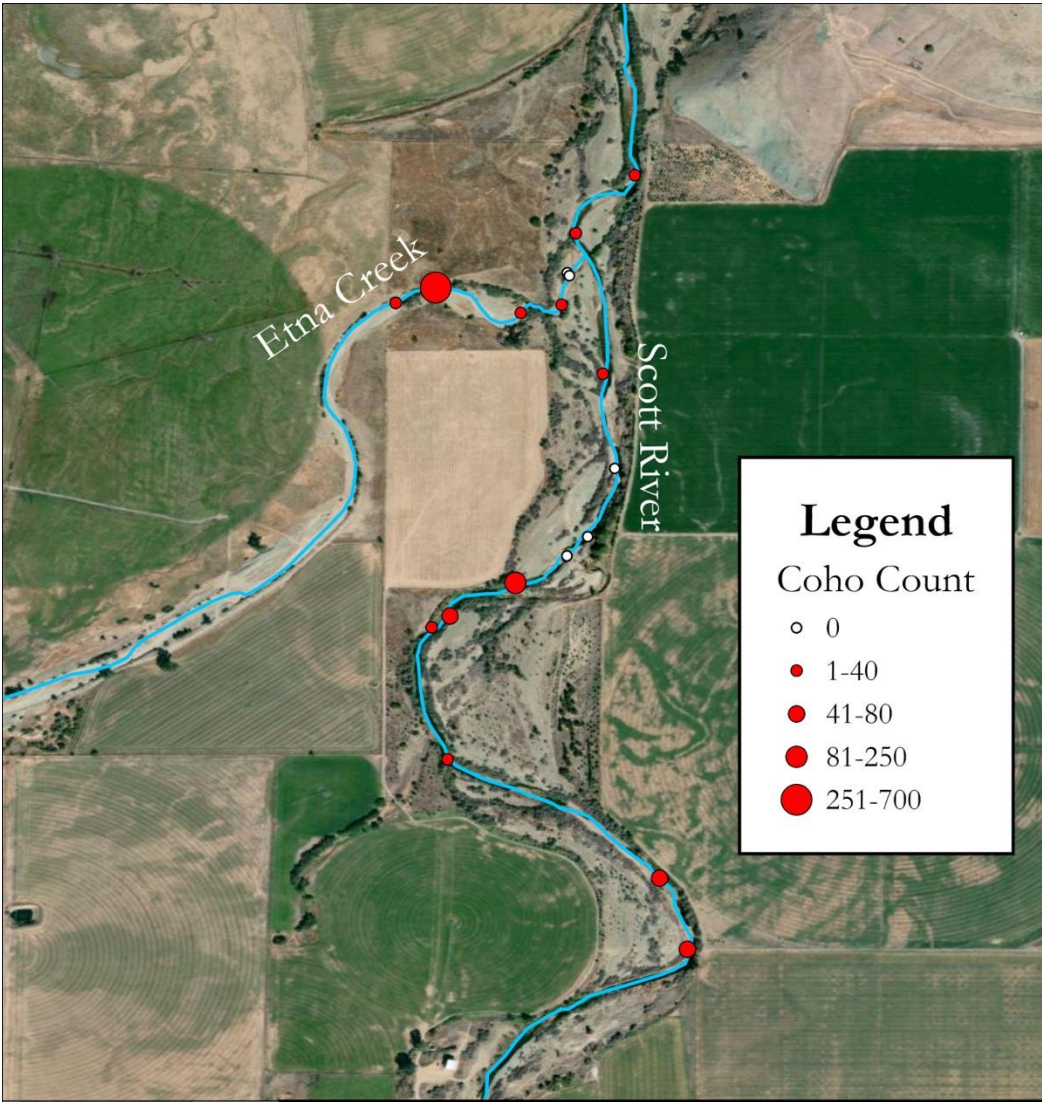
- On July 15 & 16, 2024, 14 pools were surveyed between Scott River RKM 68.6-70.6. Water temperatures ranged from 16.9-20.0 °C during the survey period. 560 coho salmon were observed in this reach. (Map 8).
- On July 16, four pools were surveyed between RKM 0-0.44 in Etna Creek. Water temperatures ranged from 12.9-18.4 °C during the survey period. 750 coho were observed in this reach, with the majority coming from one pool (Map 8).



Photo 10. Large school of juvenile coho salmon in Etna Creek on 7/16/2024.



Photo 11. Scott River habitat surveyed on 7/16/2024.



Map 8. 2024 Scott River RKM 68.6-70.6 direct observation survey results.

# Etna Creek

- On August 3, 2024, 19 pools were surveyed in Etna Creek, starting just below the City of Etna diversion dam (approximately RKM 9.1) and moving upstream. Water temperatures ranged from 16.1-16.8 °C during the survey period. 416 coho salmon were observed in this reach, and the upstream extent of distribution appeared to be at approximately RKM 10.3 (Map 9).

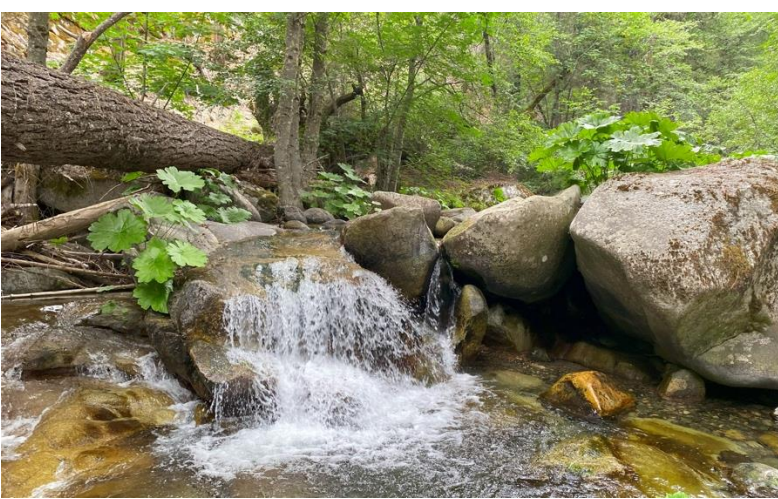
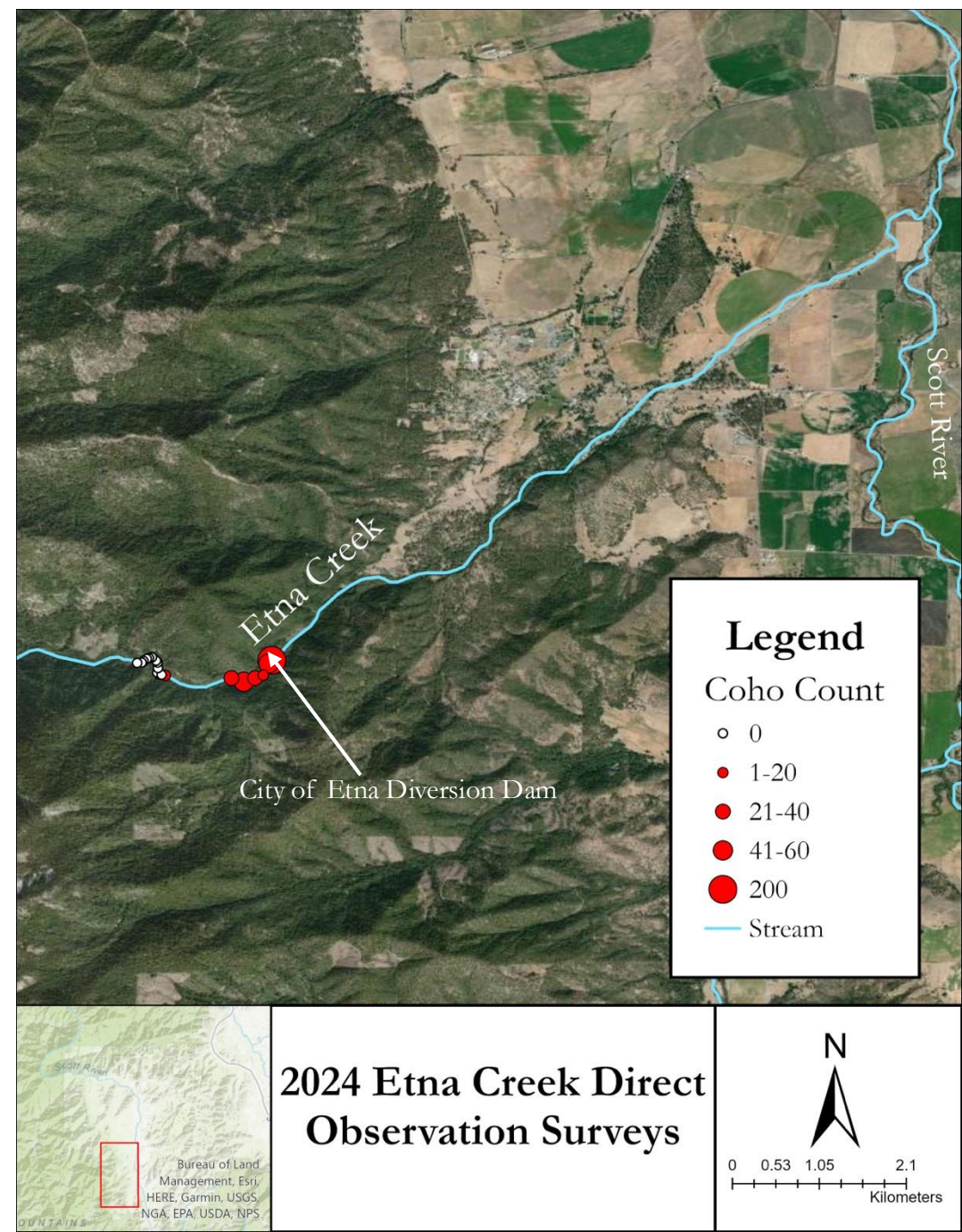


Photo 12. Possible passage barrier at Etna Creek RKM 10.3 on 8/3/2024.



Photo 13. Marbled sculpin (*Cottus klamathensis*) observed during Etna Creek survey on 8/3/2024.



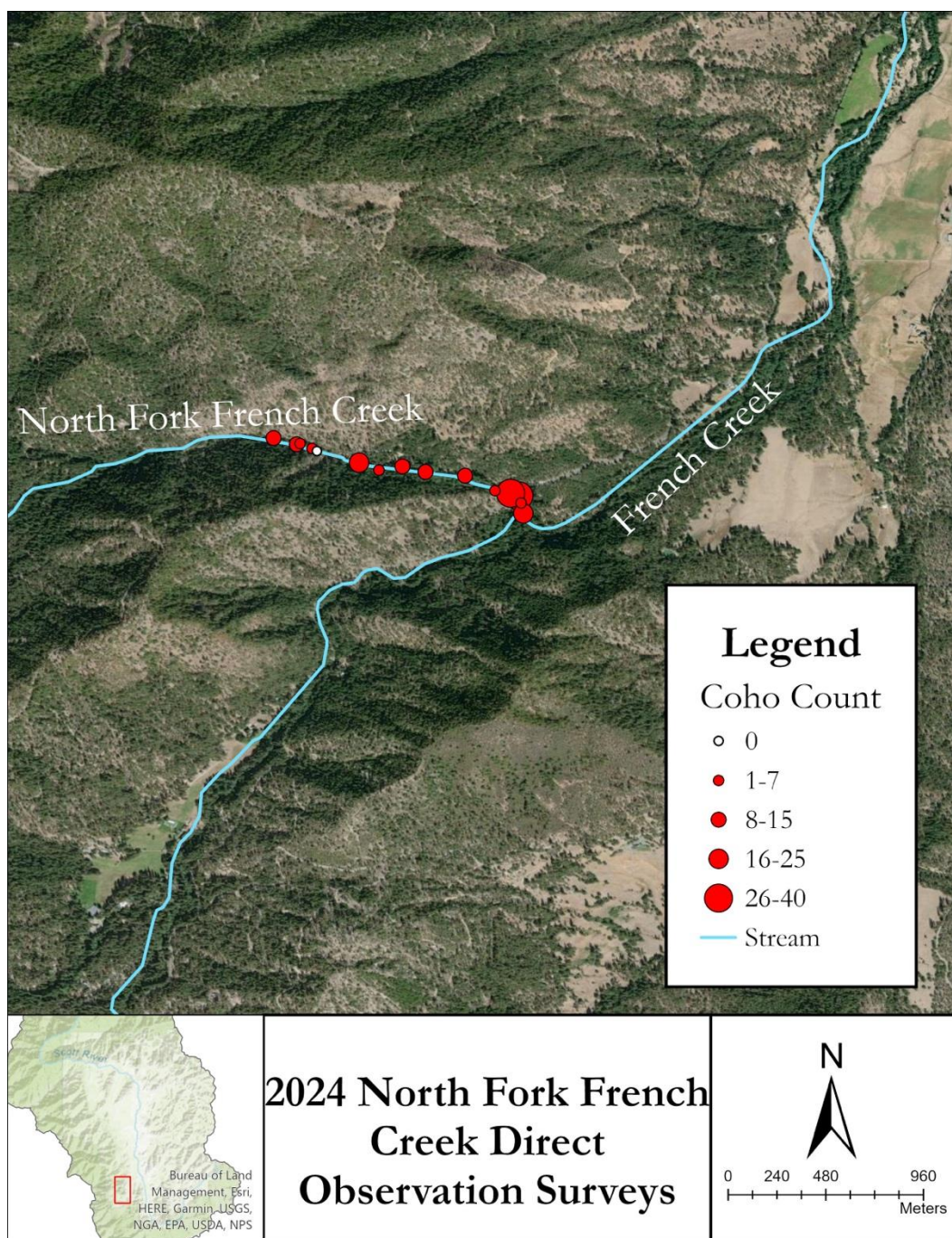
Map 9. 2024 Etna Creek direct observation survey results.

# North Fork French Creek

- On September 3, 2024, 15 pools were surveyed in North Fork French Creek, starting at the confluence and moving upward. Water temperatures ranged from 12.3-14.3 °C during the survey period. 212 coho salmon were observed in this reach (Map 10). Upstream extent of distribution was not able to be estimated in this tributary due to limited access.



Photo 14. Pool habitat surveyed in North Fork French Creek on 9/3/2024.



Map 10. 2024 North Fork French Creek direct observation survey results.

# Scott River RKM 85.2-85.7

- On July 9, 2024, seven pools were surveyed in the mainstem Scott River between RKM 85.2-85.7. Water temperatures ranged from 17.8-20.6 °C during the survey period. 200 coho salmon were observed in this survey, although this reach eventually dried completely (Map 11).

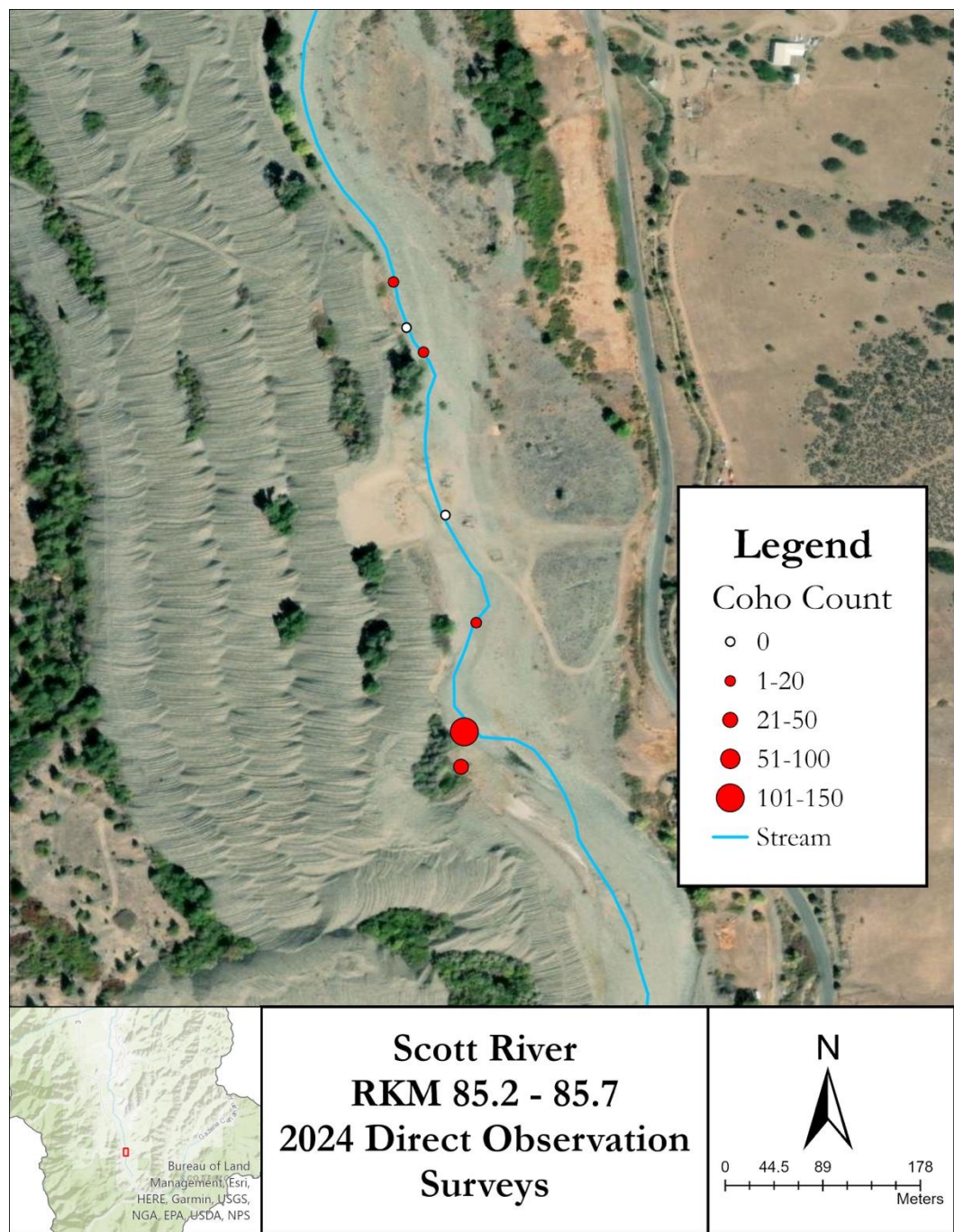
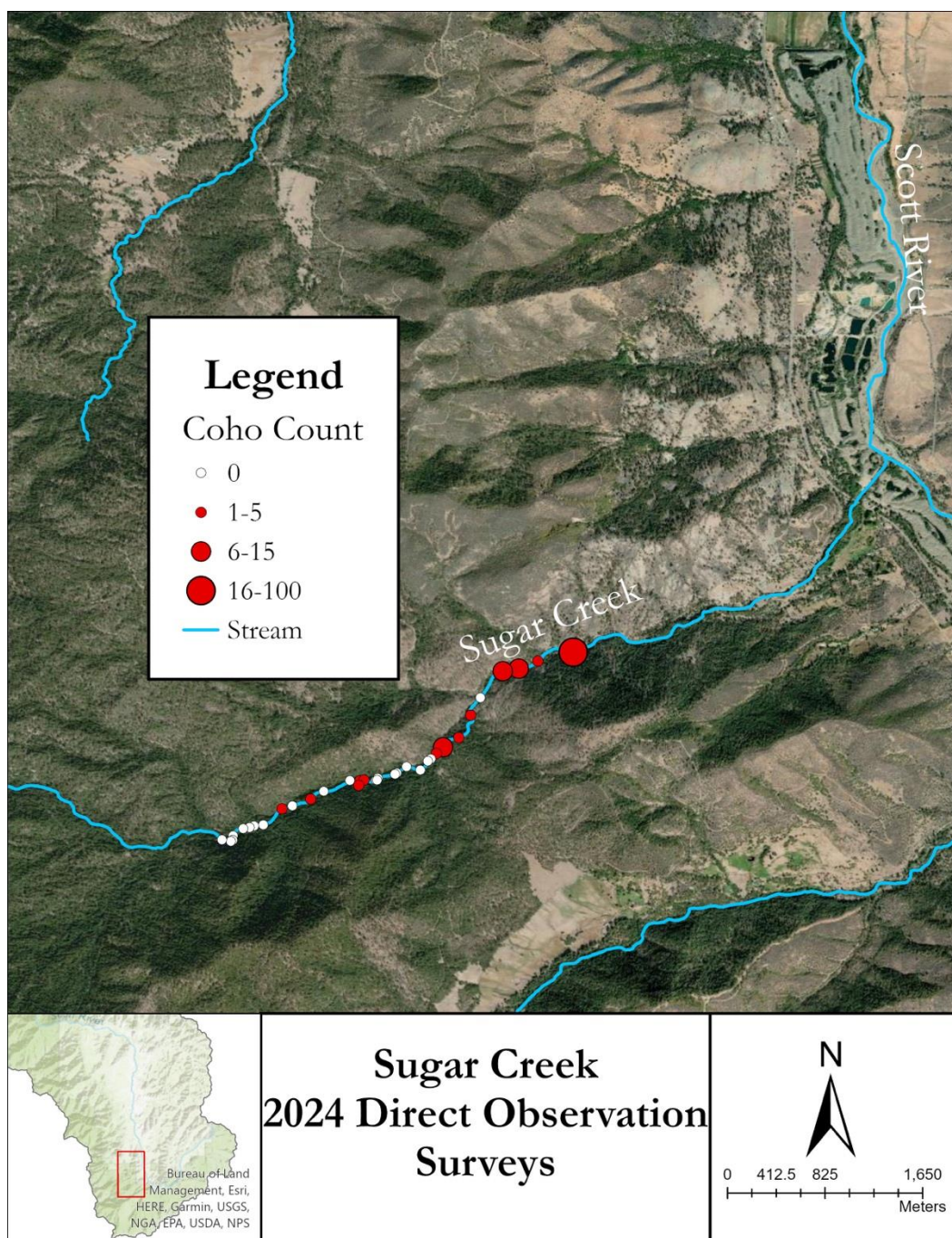


Photo 15. Scott River habitat surveyed on 7/9/2024.





## Sugar Creek

- Between August 28-30, 2024, 33 pools were surveyed in Sugar Creek, starting at approximately RKM 2.9 and moving upstream. Water temperatures ranged from 12.2-13.4 °C during the survey periods. 162 coho salmon were observed in this reach, and the upstream extent of distribution appeared to be at approximately RKM 5.5 (Map 12).

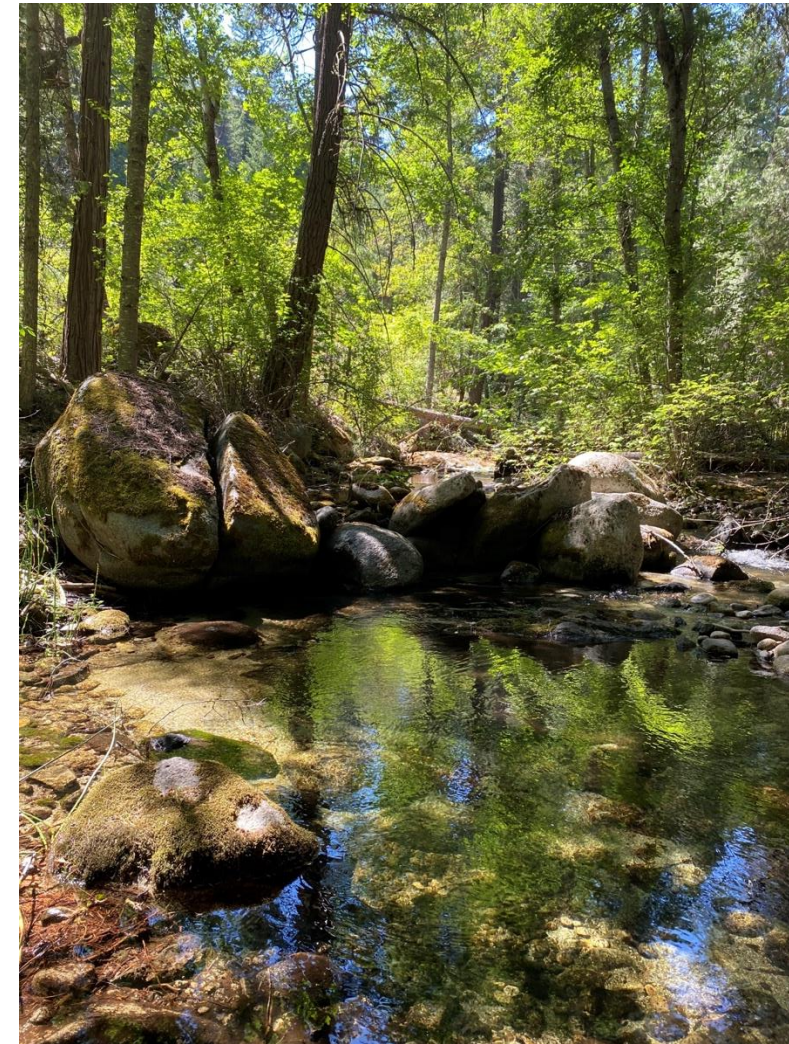


Photo 16. Sugar Creek pool habitat surveyed on 8/28/2024.

# Wildcat Creek

- On August 9, 2024, 22 pools were surveyed in Wildcat Creek, starting at approximately RKM 2.1 and moving upstream. Water temperatures ranged from 15.7-17.7 °C during the survey periods. 157 coho salmon were observed in this reach, and the upstream extent of distribution appeared to be at approximately RKM 2.9 (Map 13).

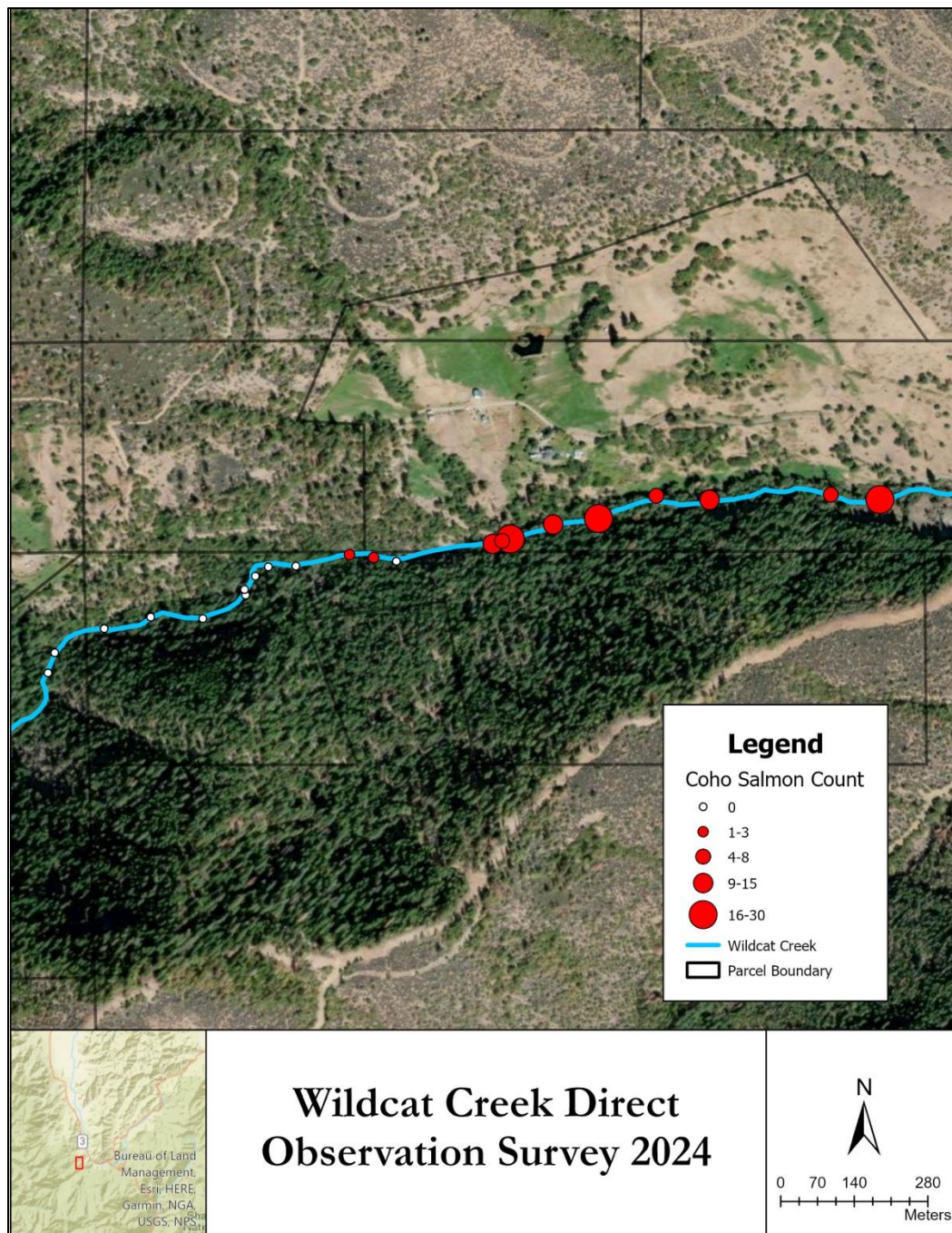
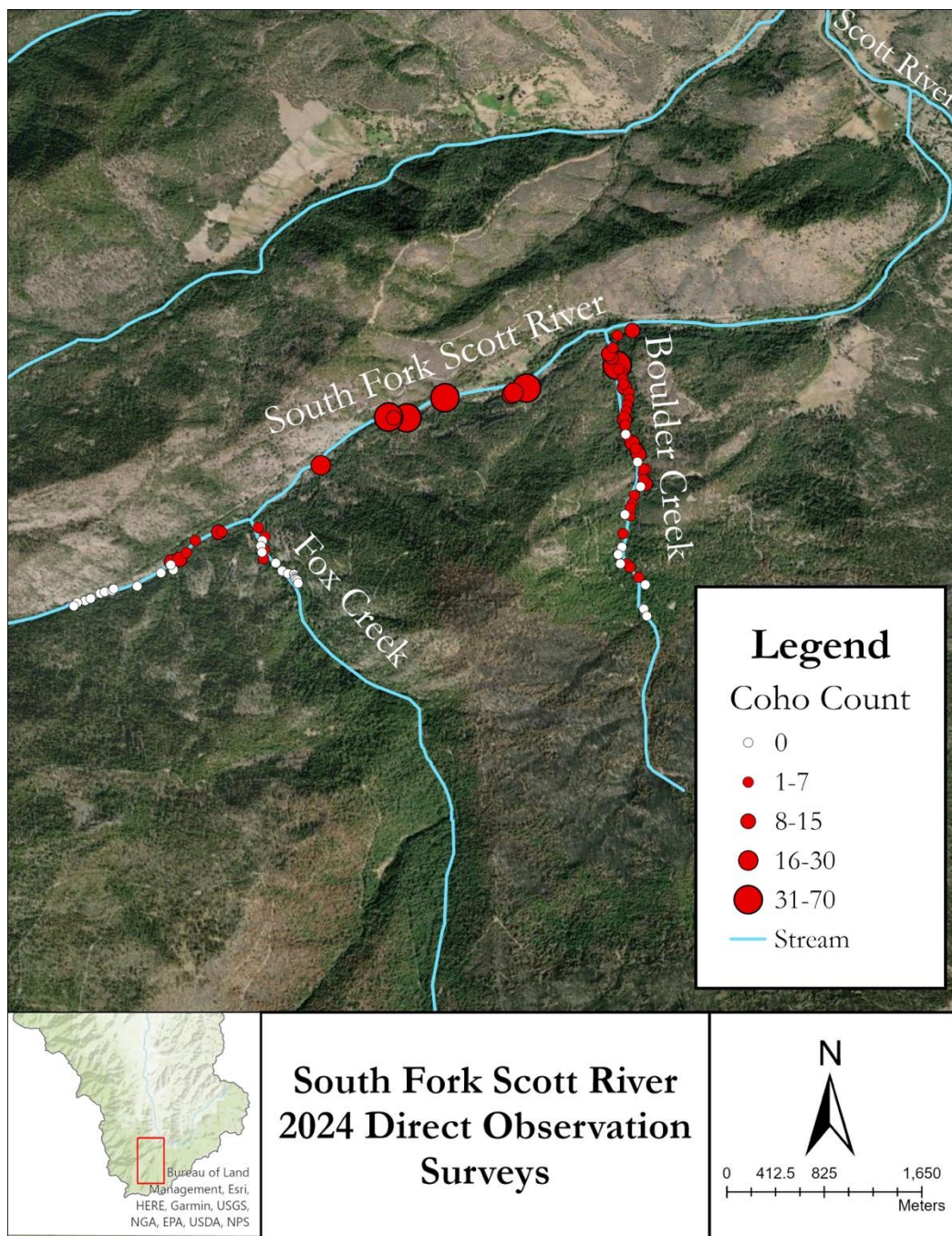


Photo 17. Wildcat Creek pool habitat surveyed on 8/9/2024.



## South Fork Scott River, Boulder Creek and Fox Creek

- On July 18, July 30 and August 1-2, 2024, 27 pools were surveyed in the South Fork Scott River, starting at approximately RKM 3.7 and moving upstream. Water temperatures ranged from 13.8-16.8 °C during the survey periods. 357 coho salmon were observed in this reach, and the upstream extent of distribution appeared to be at approximately RKM 7.6 (Map 14).
- On July 18 and July 29-August 2, 2024, 47 pools were surveyed in Boulder Creek. Water temperatures ranged from 13.3-18.0 °C during the survey periods. 204 coho salmon were observed in this reach, and the upstream extent of distribution was not able to be estimated due to limited access (Map 14).
- On August 1 and 2, 2024, 17 pools were surveyed in Fox Creek. Water temperatures ranged from 13.3-14.0 °C during the survey periods. Nine coho salmon were observed, and the upstream extent of distribution appeared to be at approximately RKM 0.34 (Map 14).

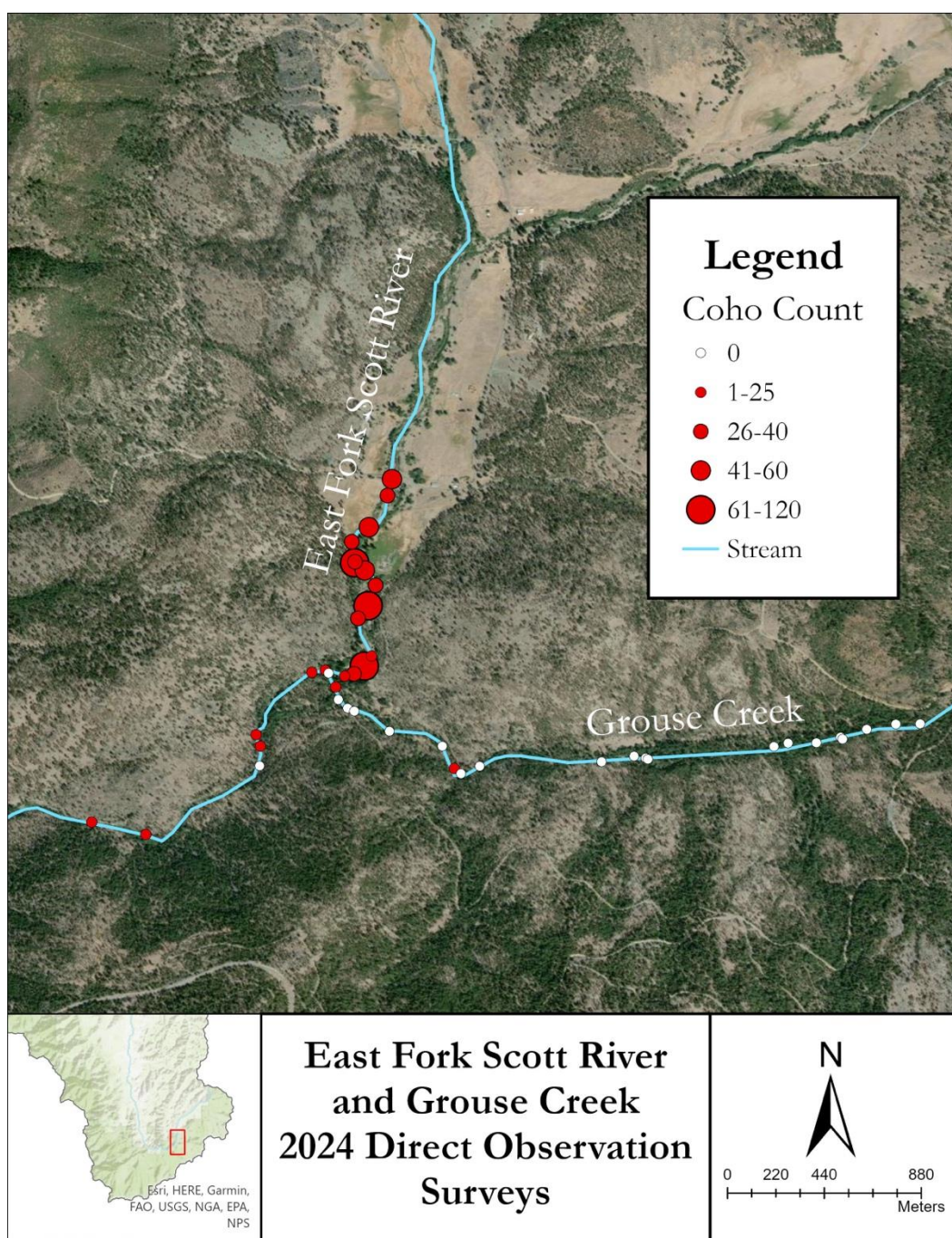


Photo 18. Juvenile coho salmon observed in the South Fork Scott River on 7/18/2024.



Photo 19. Coastal giant salamander observed in Fox Creek on 8/2/2024.

## East Fork Scott River and Grouse Creek



- On July 19 and July 22, 2024, 20 pools were surveyed in the East Fork Scott River, starting at approximately RKM 7.6 and moving upstream. Water temperatures ranged from 17.8-23.7 °C during the survey periods. 804 coho salmon were observed in this reach, and the upstream extent of distribution was not able to be estimated due to limited access (Map 15).

- On July 3 and August 8, 2024, 22 pools were surveyed in Grouse Creek. Water temperatures ranged from 14.2-16.5 °C during the July survey and 17.4-21.2 °C during the August survey. 4 coho salmon were observed in this reach, and the upstream extent of distribution appeared to be at approximately RKM 0.68 (Map 15).



Photo 20. East Fork Scott River habitat surveyed on 7/19/2024.

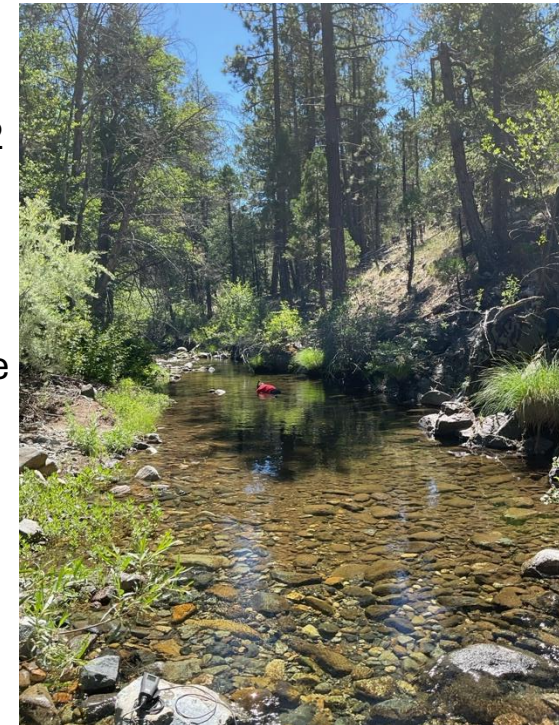


Photo 21. Grouse Creek habitat surveyed on 7/3/2024.

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