

An underwater photograph showing a large number of Chinook salmon in a stream. The fish are swimming over a bed of smooth, light-colored rocks. The water is clear, and the scene is illuminated by natural light filtering through the water. The fish are in various stages of spawning, with some showing prominent dark stripes on their sides.

Upper Willamette Chinook Salmon Spawning Surveys on Quartzville Creek

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Background: South Santiam Watershed Above Green Peter Dam

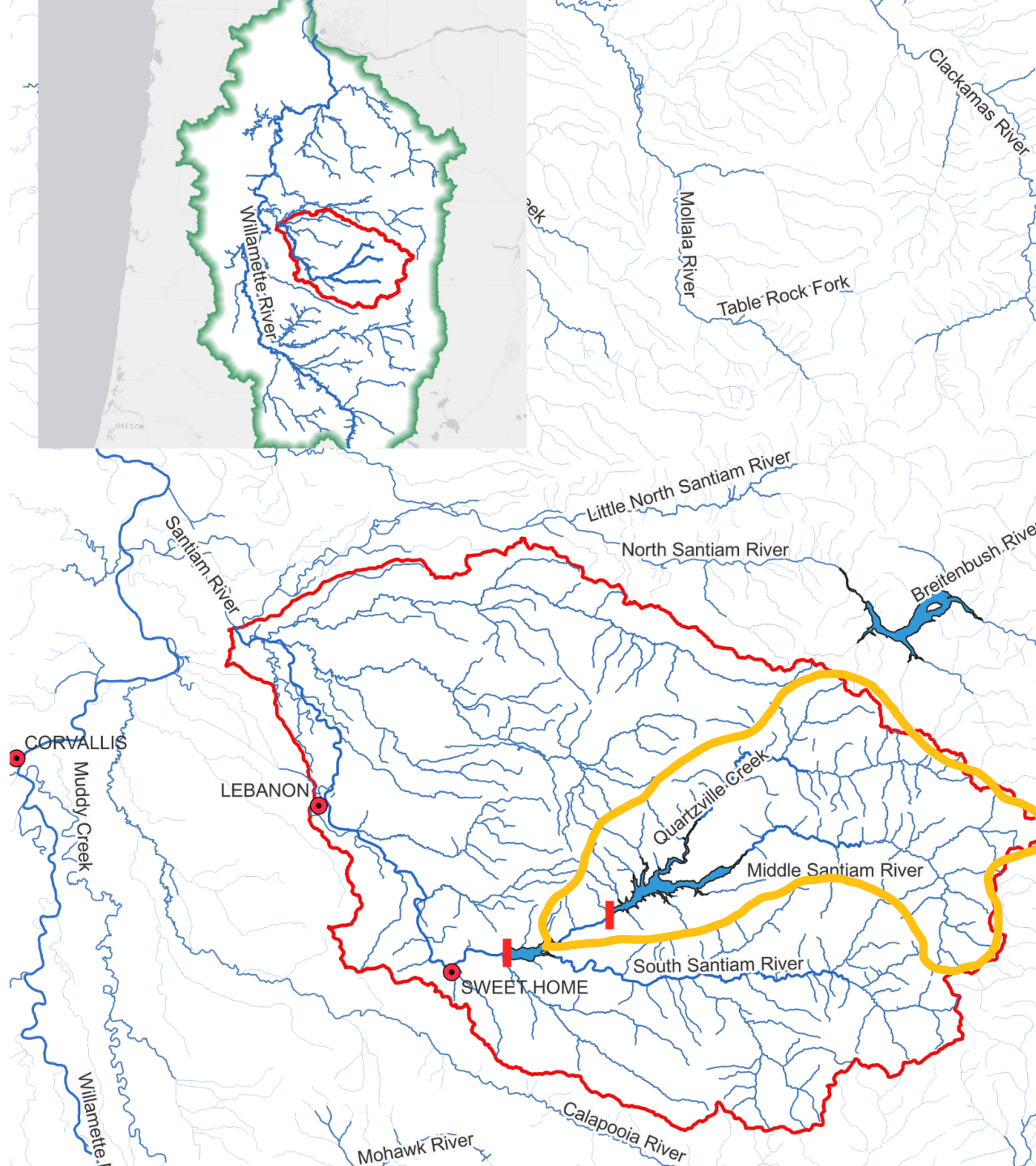
Utilized by UWR Chinook salmon for spawning and rearing prior to Foster and Green Peter in 1966.

Middle Santiam subbasin supported 51% of Chinook run in South Santiam Basin (Mattson 1948).

Majority of spawning habitat within the Middle Santiam (83%; Parkhurst et al. 1950).

Stocked with spring Chinook from 1968 – 1986; halted due to poor downstream passage at Green Peter.

Small adfluvial population (Romer 2014).



Background: Injunction Measure 11

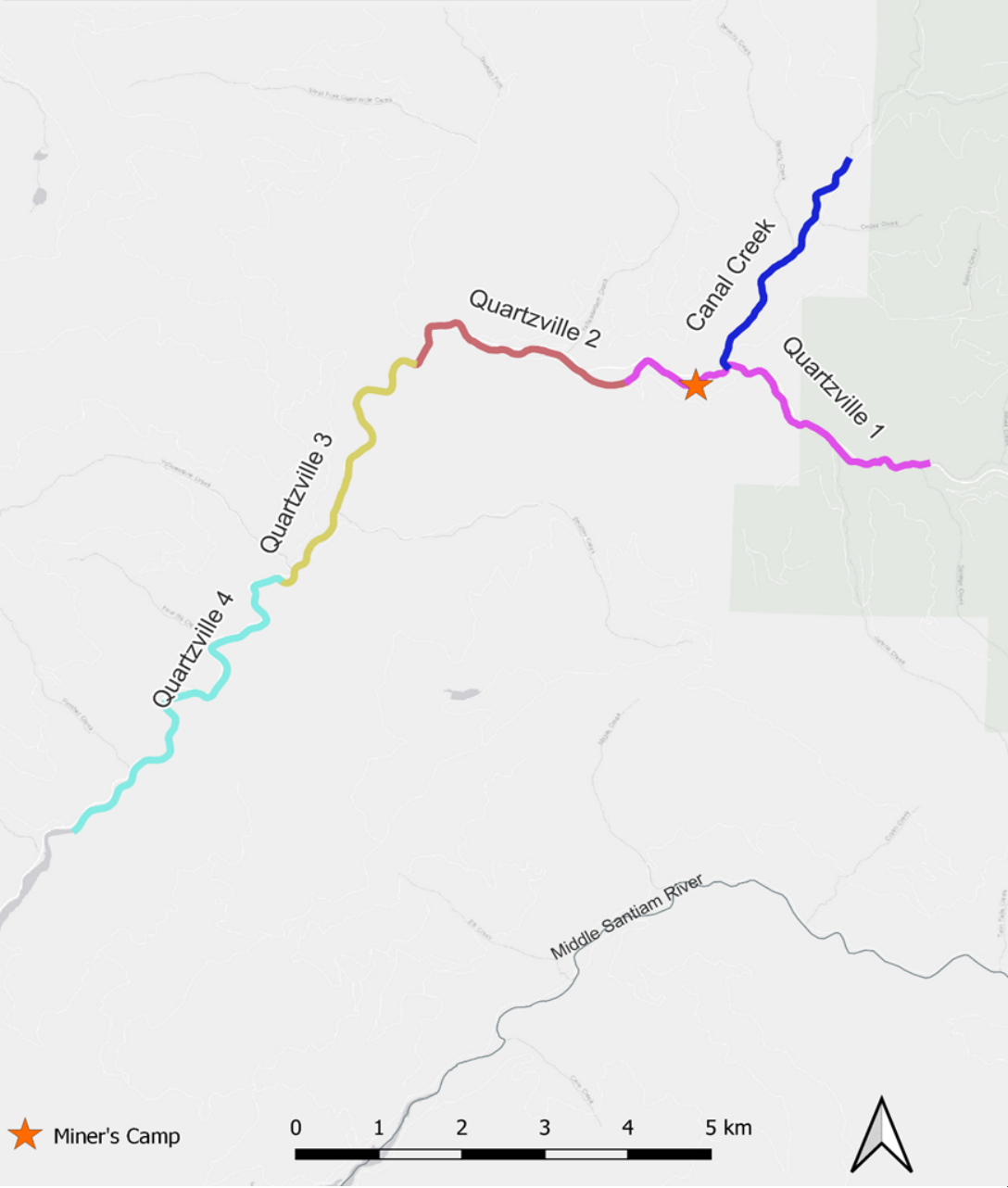
- **Objective:** Create outplanting plan to provide access above Green Peter Dam.
- **Goal:** Improve/recover South Santiam UWR Chinook salmon.
- **Implementation:** Release 800 adult CHS above Green Peter Dam; 600 Middle Santiam & 200 Quartzville Creek.
- **Monitoring and Evaluation:** Evaluate adult condition, prespawn mortality, distribution, spawning success, factors affecting success, & production.

Spawning Surveys

- **Adults** – Location, Count, Activity (migrating/holding/spawning)
- **Carcasses** – Location, Sex, Length, Egg Retention, Tag, adfluvial
- **Redds** – Location, Dimensions, Substrate
- No access to Middle Santiam River ☹️



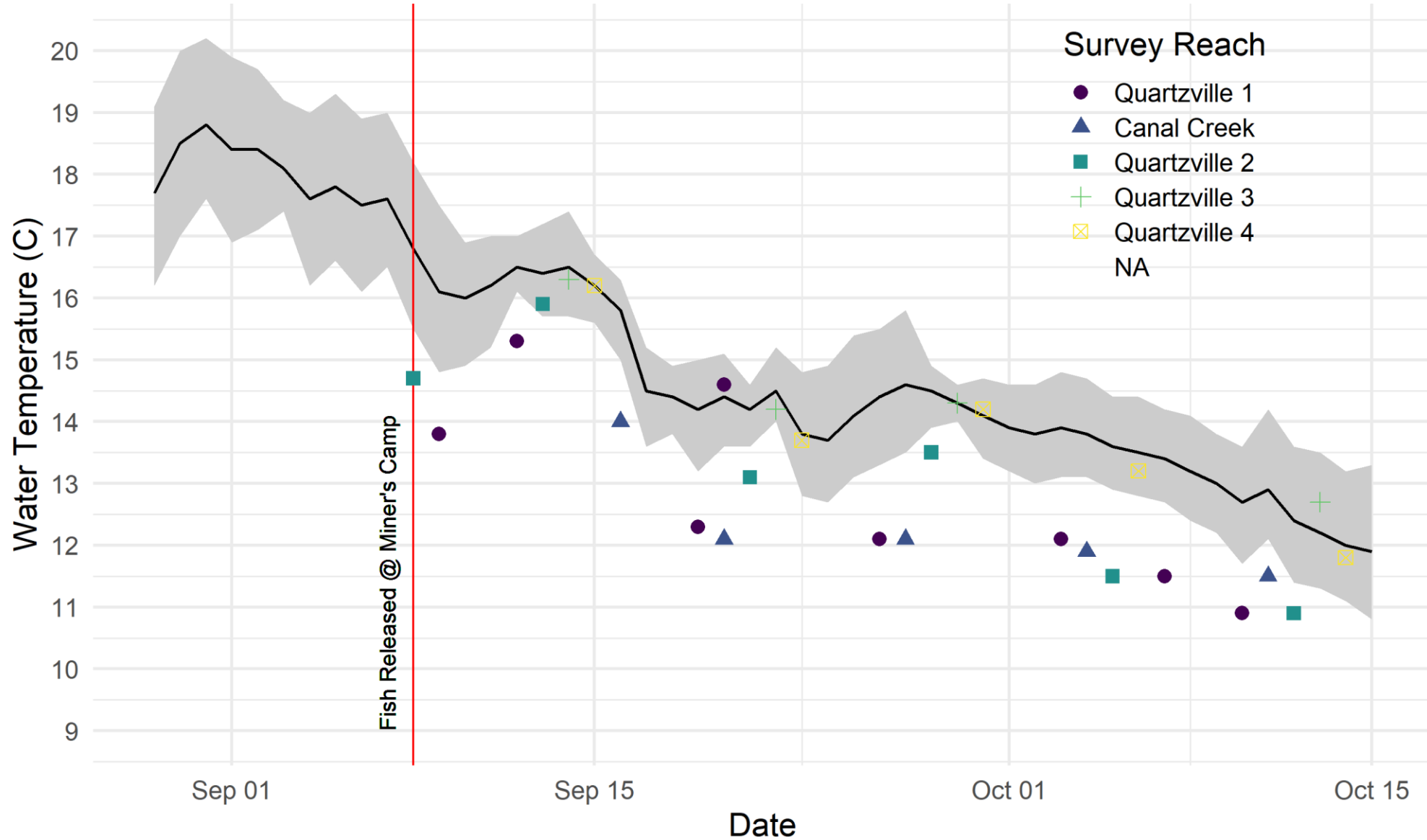
Quartzville Creek Spawning Survey Reaches



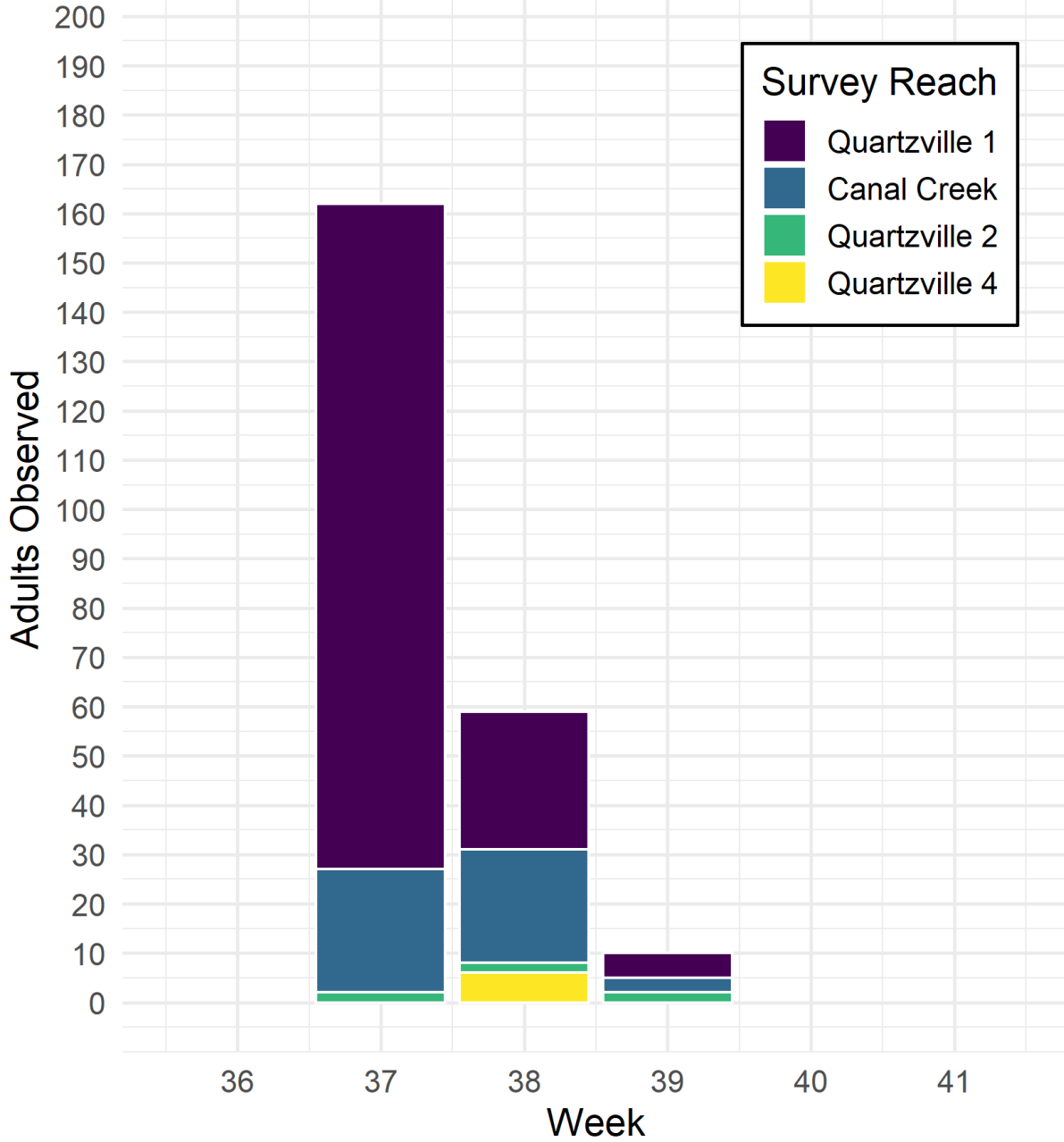
200 S. Santiam UWR adults released at Miner's Camp on September 8, 2022. Orange Floy tags.

Week	Date Range	Surveys Completed
36	Sep 5 - Sep 9	1
37	Sep 12 - Sep 16	5
38	Sep 19 - Sep 23	5
39	Sep 26 - Sep 30	5
40	Oct 03 - Oct 07	5
41	Oct 10 - Oct 14	5

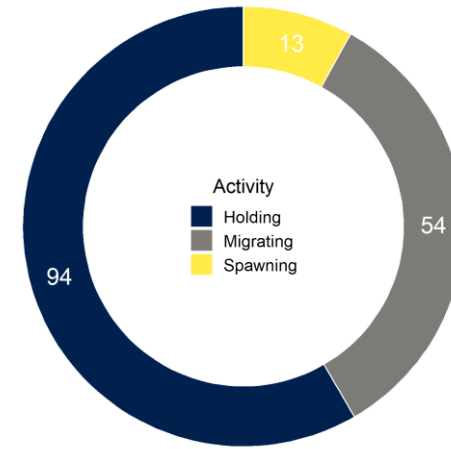
Water Quality: Temperature



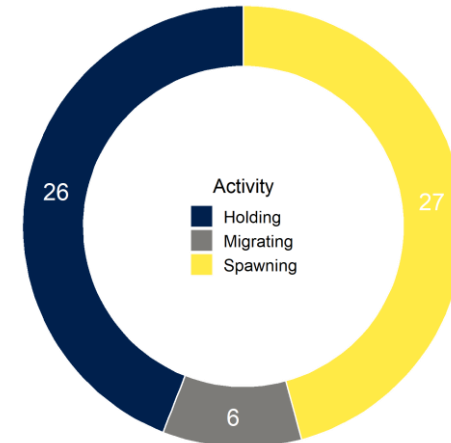
Adult Observations



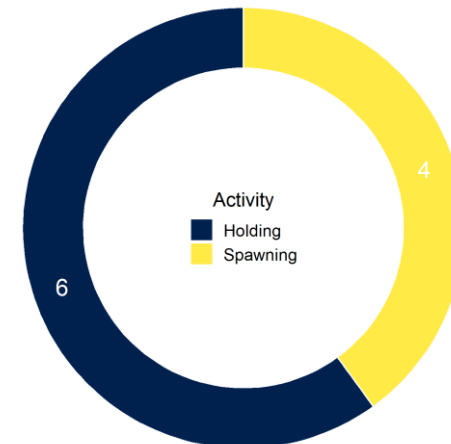
Week 37
N = 162



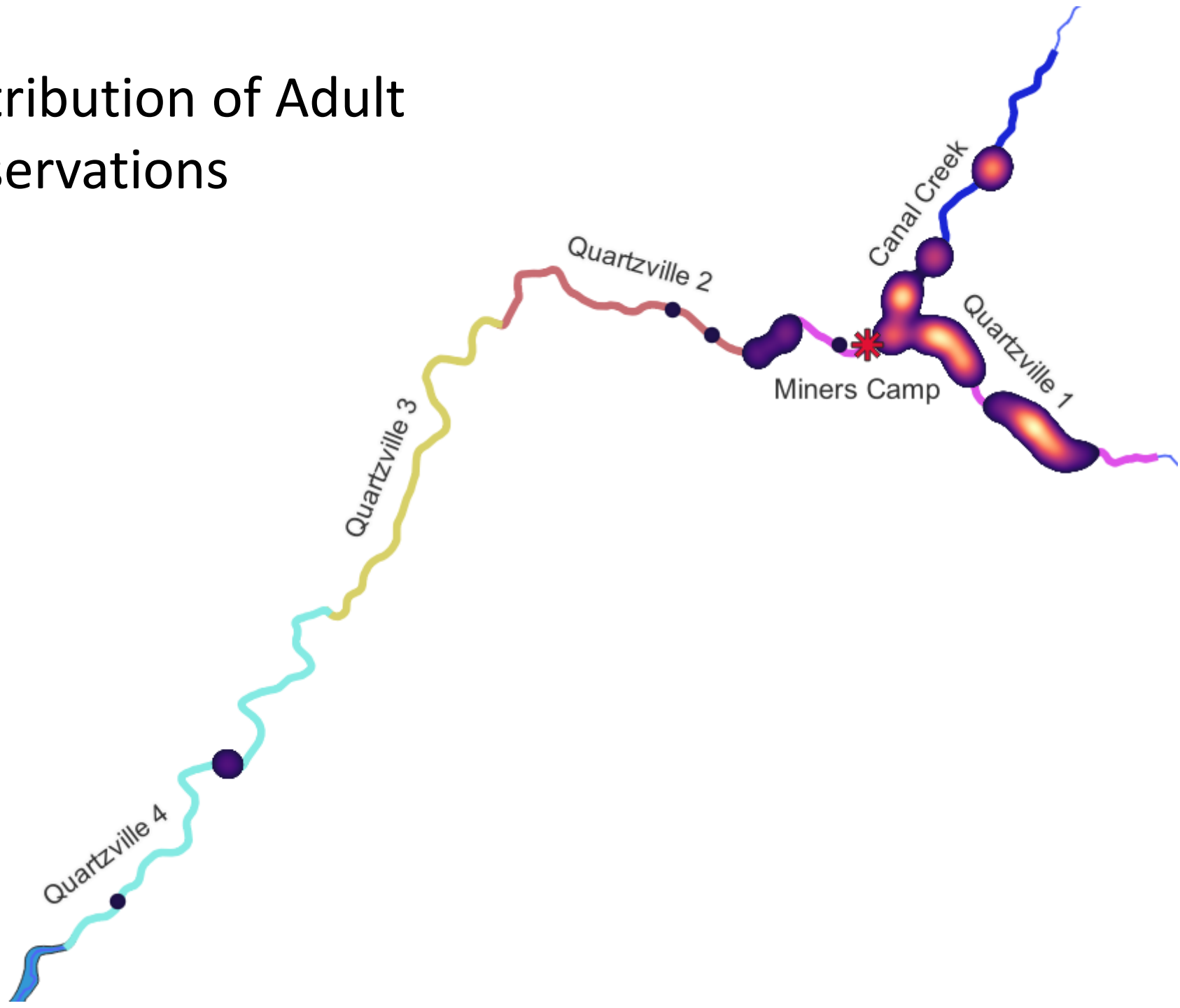
Week 38
N = 59



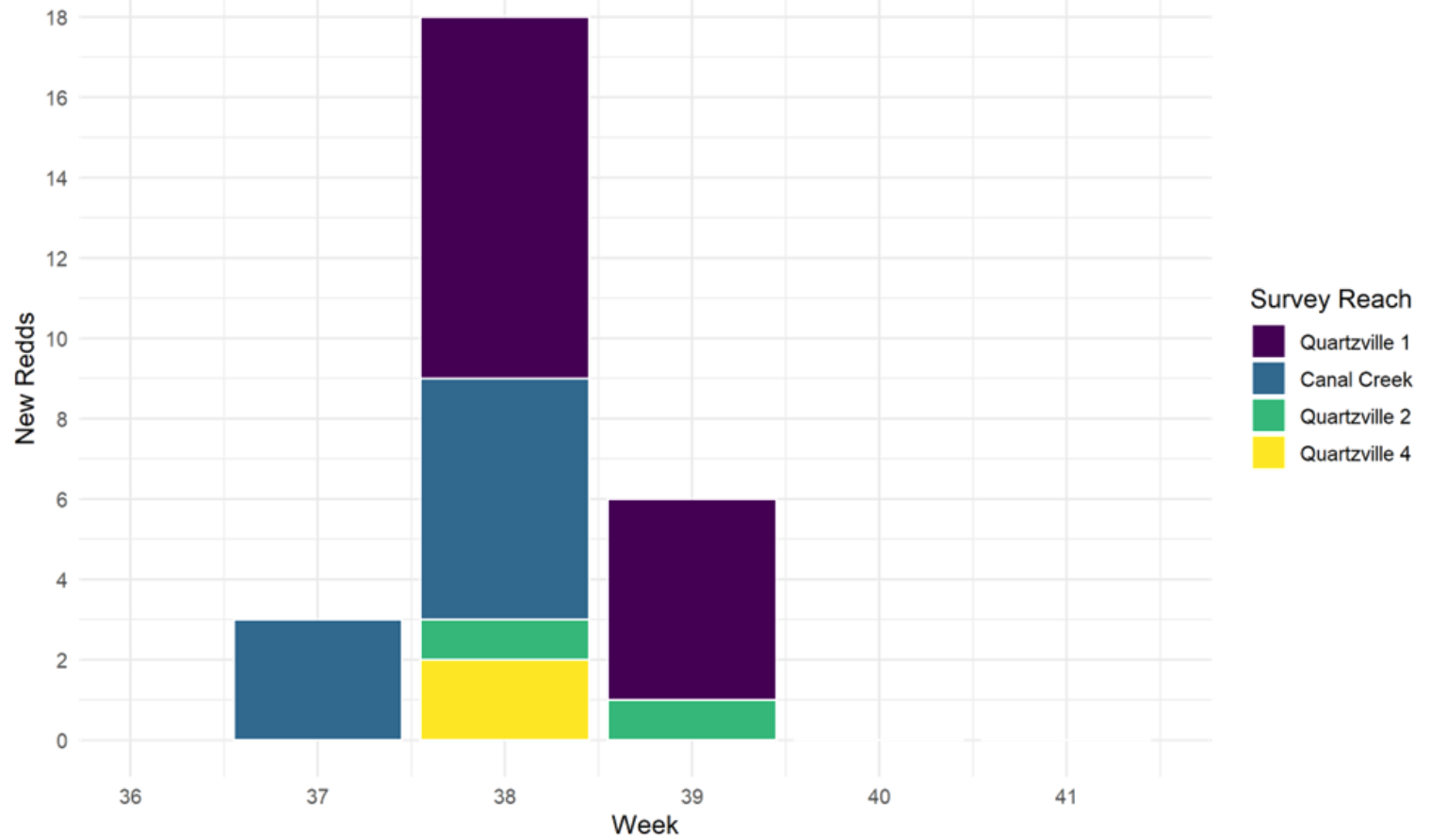
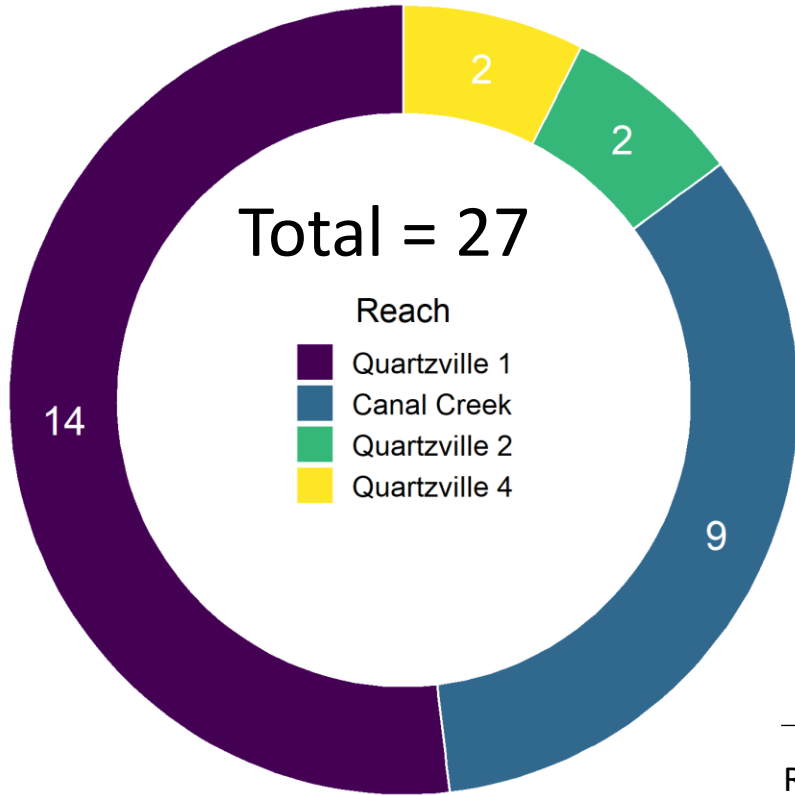
Week 39
N = 10



Spatial Distribution of Adult Observations



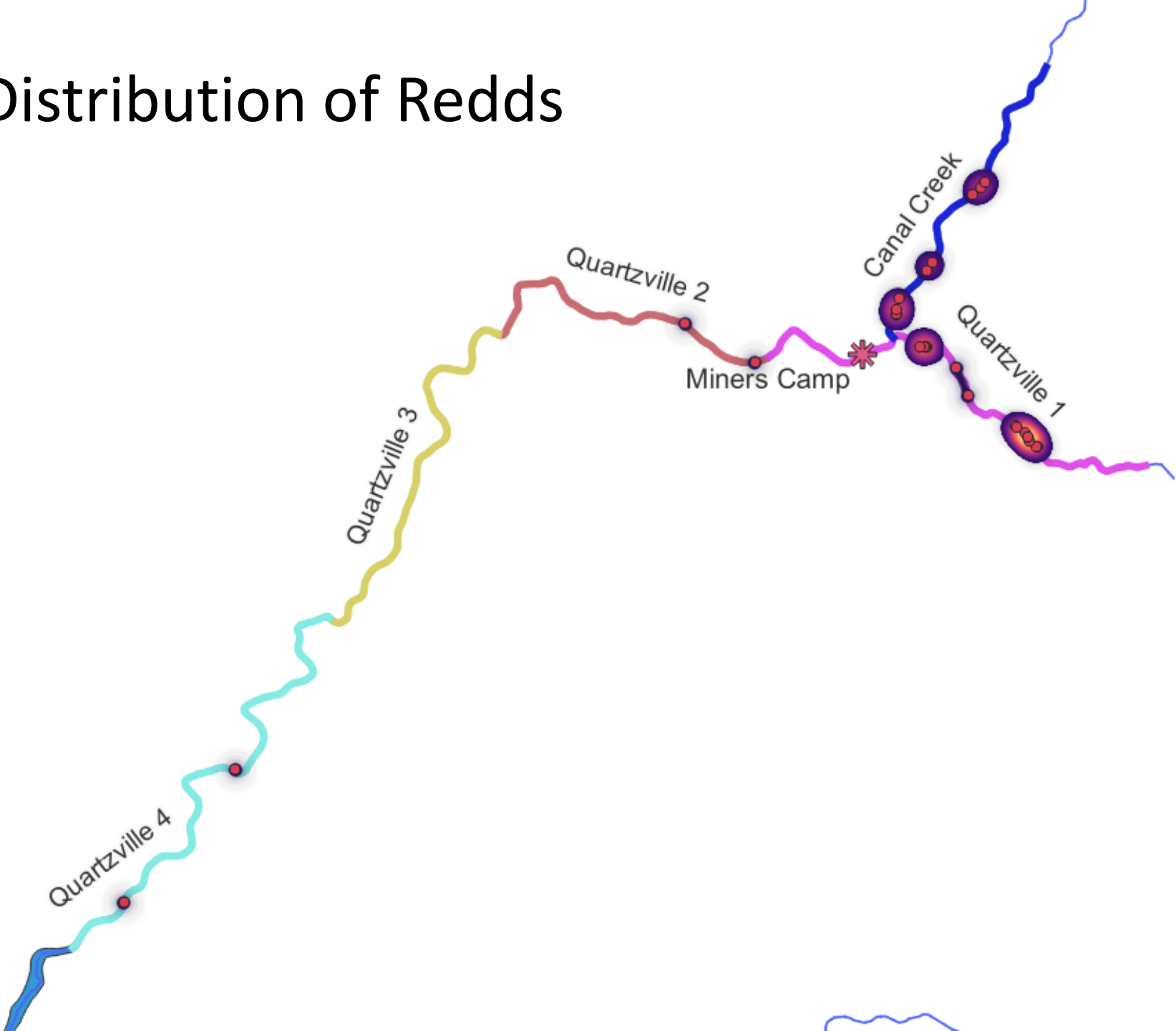
Redds



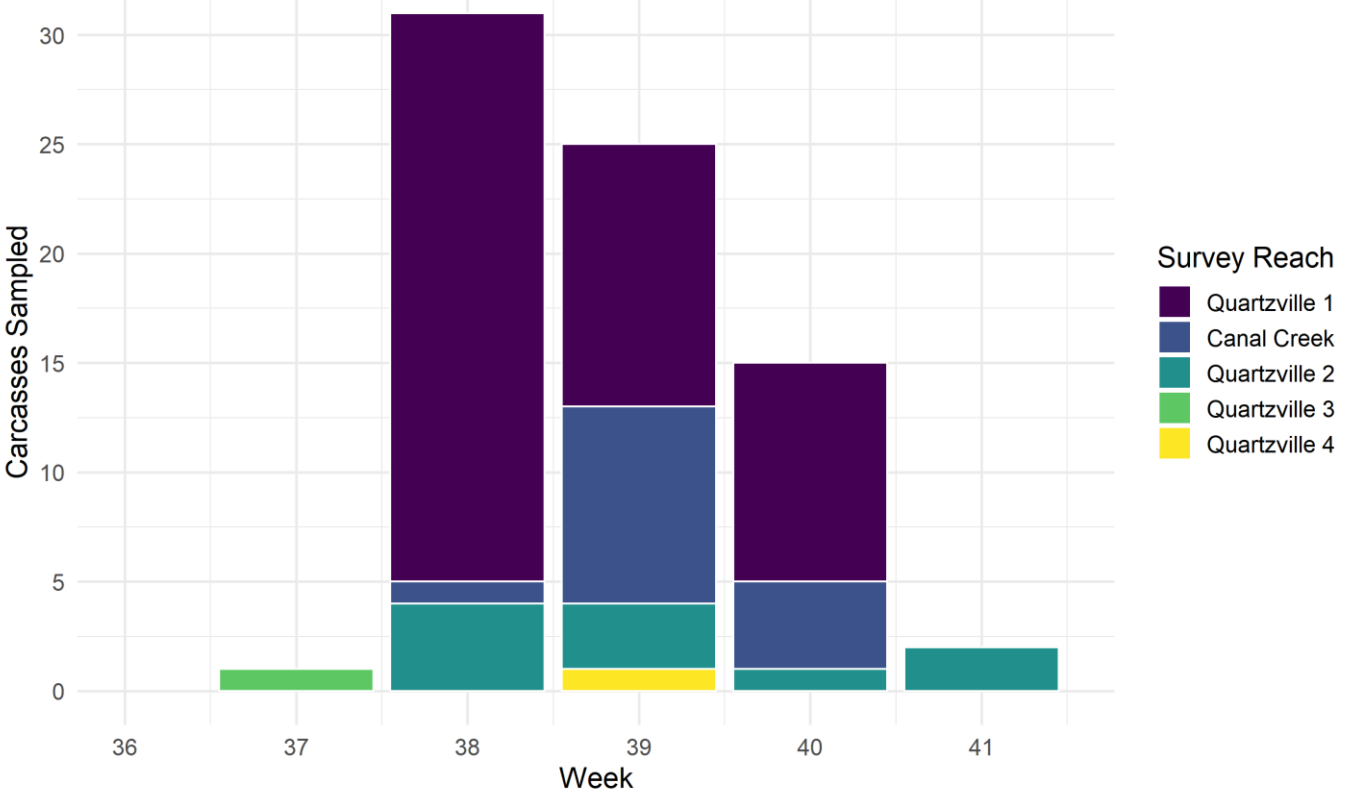
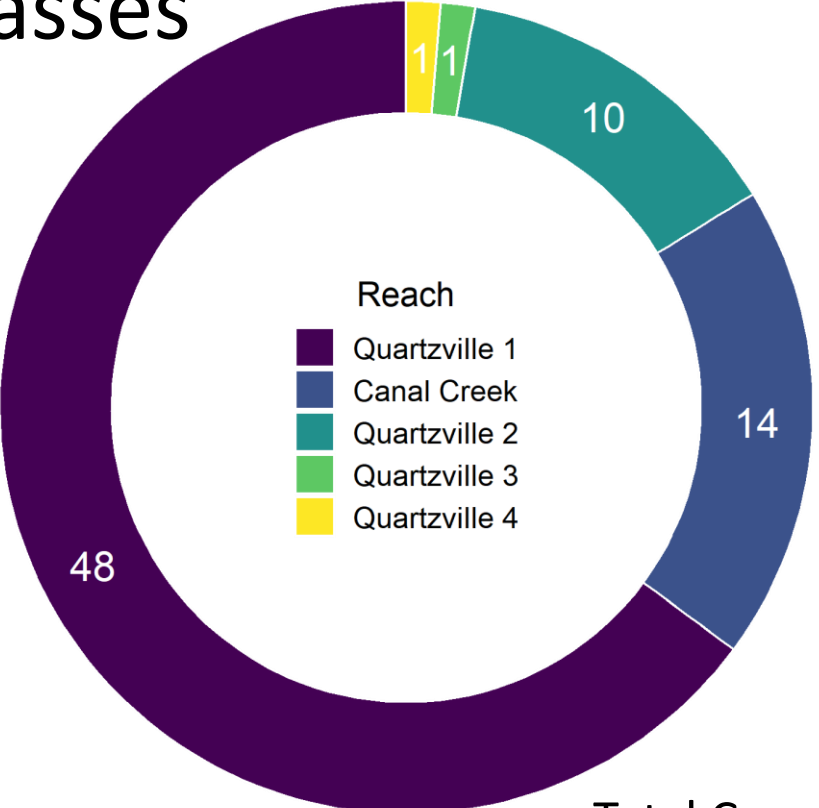
Reach	Redds (n)	Water Depth (m)	Pit Depth (m)	Redd Area (m ²)	Dominant Substrate Size (mm)
Quartzville 1	14	0.24	0.05	0.77	152
Canal Creek	9	0.18	0.13	0.78	180
Quartzville 2	2	0.3	0.1	0.84	175
Quartzville 4	2	0.31	0.13	2.19	80

Mean redd area: 3.3 m² (Burner 1951)
 Preferred depth \geq 0.24m (Thompson 1972)
 Preferred substrate: 13 – 102 mm
 (Thompson 1972)

Spatial Distribution of Redds



Carcasses



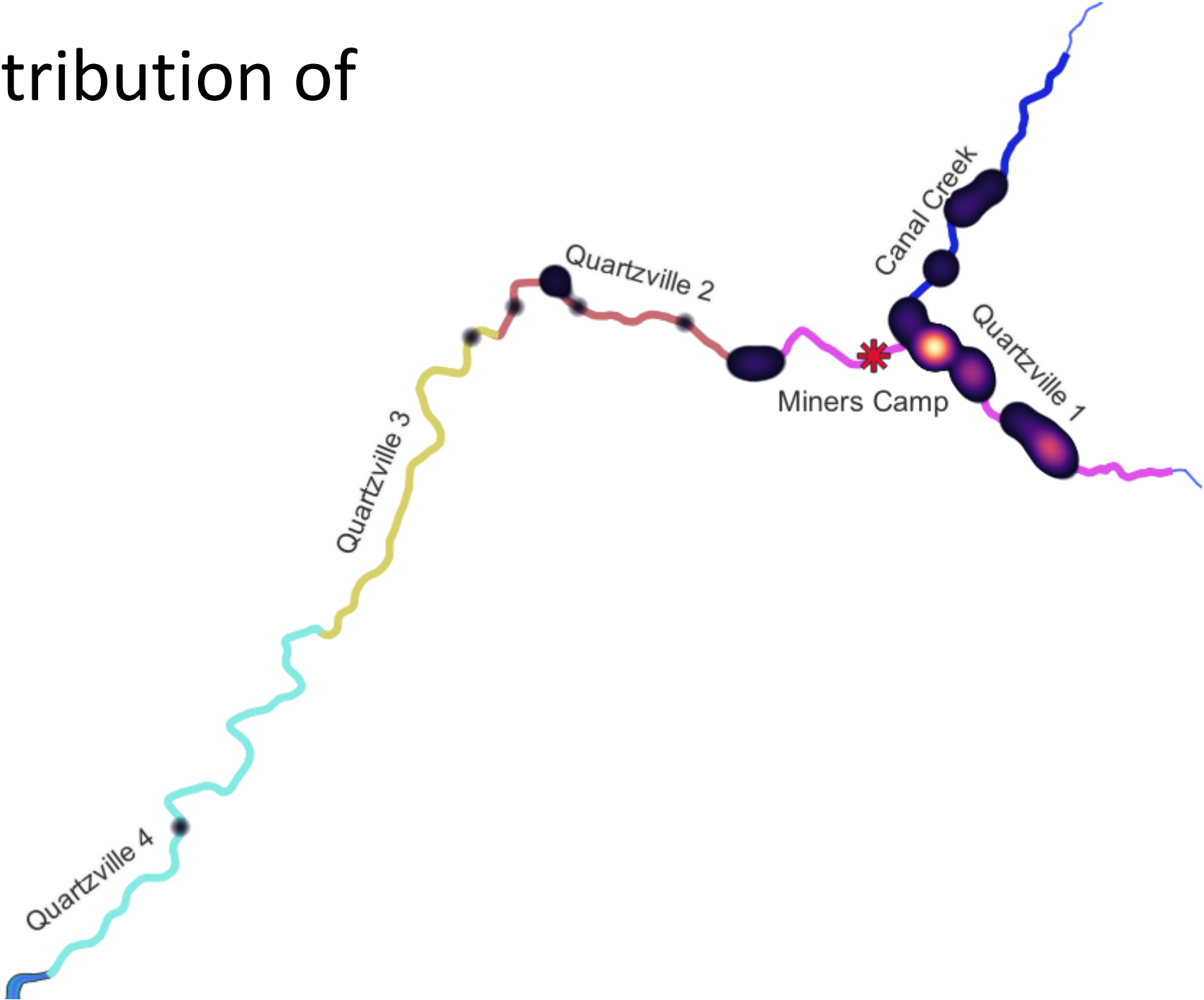
Total Carcasses Recovered = 74

Carcass Sex		Total
Female		36
Male		33
Unknown		5

Egg Retention	Pre-spawn mortality	
%	Yes	No
> 50	4	32



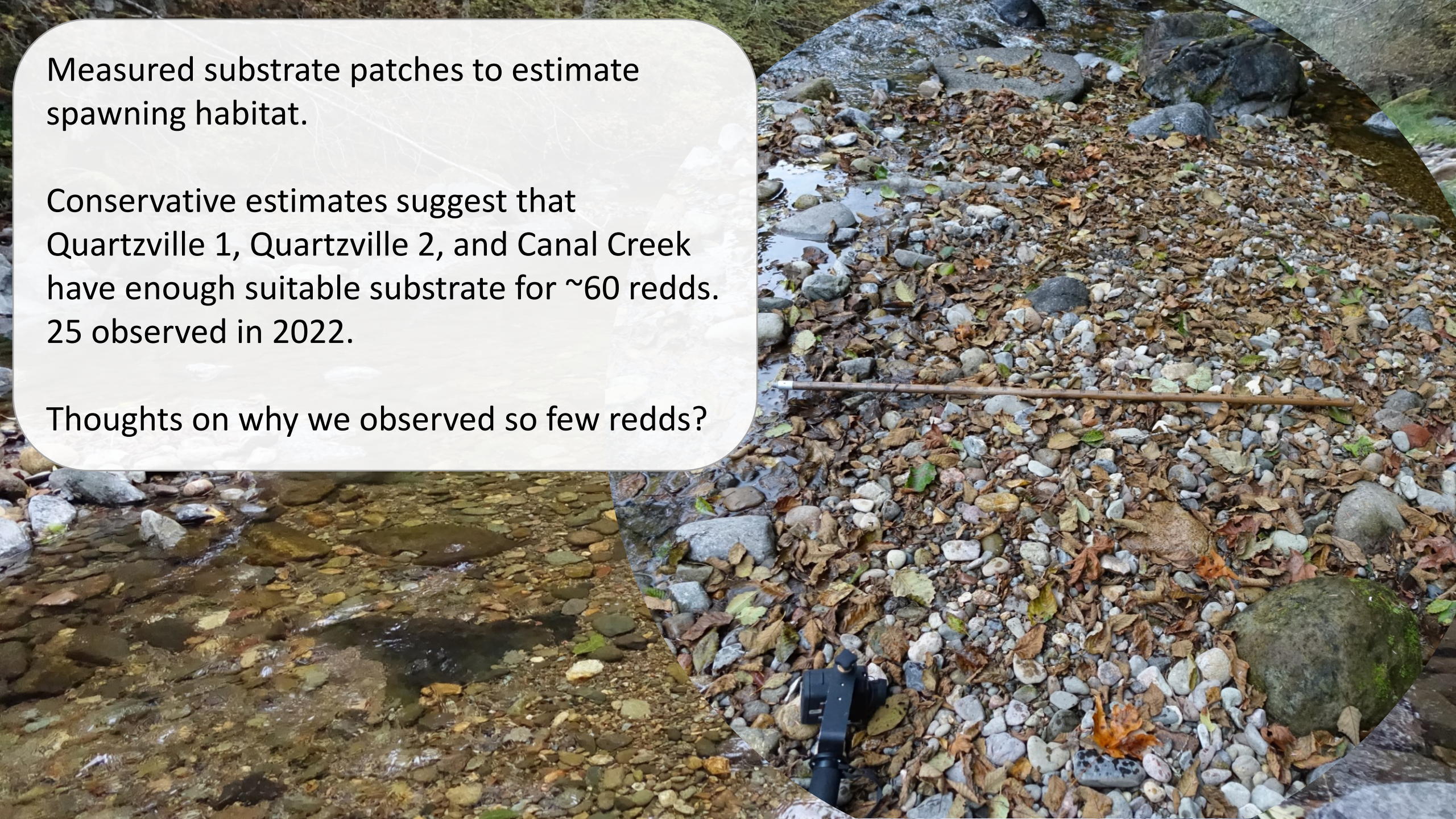
Spatial Distribution of Carcasses



Measured substrate patches to estimate spawning habitat.

Conservative estimates suggest that Quartzville 1, Quartzville 2, and Canal Creek have enough suitable substrate for ~60 redds. 25 observed in 2022.

Thoughts on why we observed so few redds?





Habitat Quality





Predation

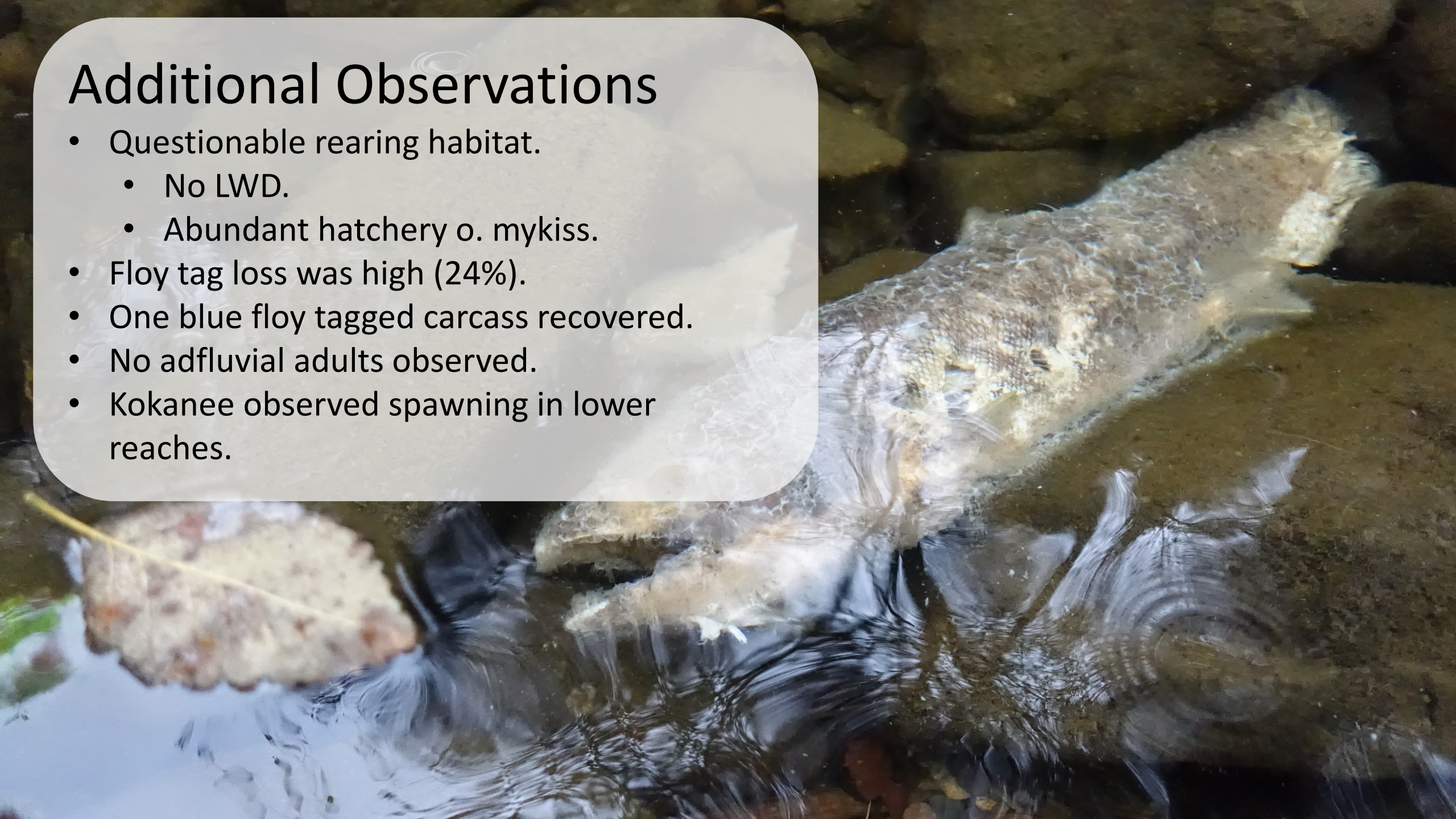




Anthropogenic Pressure

Additional Observations

- Questionable rearing habitat.
 - No LWD.
 - Abundant hatchery o. mykiss.
- Floy tag loss was high (24%).
- One blue floy tagged carcass recovered.
- No adfluvial adults observed.
- Kokanee observed spawning in lower reaches.



Questions or comments?

