Summary of field data collection efforts for fall-run Chinook Salmon in Spencer Creek, Oregon during the 2025 season

Oregon Department of Fish and Wildlife, Klamath Fisheries Reintroduction Project, Klamath Falls, Oregon January 16, 2026

Oregon Department of Fish and Wildlife staff installed and maintained a video weir at the mouth of Spencer Creek (approx. 70 meters upstream from confluence with Klamath River) for the purpose of counting upstream movements of fall-run Chinook Salmon. The weir consisted of ½" aluminum pipe panels and hurricane fencing to form an upstream and downstream fyke. The center of the fyke contained metal fish chute and camera box where fish were guided through a 12" X 12" channel (fig 6). The video camera in the box recorded any movement (change in pixels) in the chute 10 seconds prior to the movement and 2 minutes and 20 seconds after the movement was detected (2 minutes and 30 seconds total). The video weir was installed and operated on 09/03/2025 and was removed on 12/04/2025. Weekly foot-based spawning ground surveys for fall-run Chinook Salmon on Spencer Creek below the video weir began on 09/15/2025 and ended on 12/15/2025 following multiple weeks of zero new live fish or redds. Carcass surveys were also conducted on Spencer Creek above and below the weir. Data collected included counts of new redds below the weir, all new carcasses encountered were sampled for sex, length, fin clips, and scales were collected for aging if the preferred collection area on body was present. Heads were removed from all ad-clipped carcasses encountered for CWT recovery. The total run size of fall-run Chinook Salmon was calculated by combining the video weir counts and the estimate based on redd counts below the video weir.

Spencer Creek Video Weir Summary

Following the removal of the video weir ODFW staff reviewed the recorded videos to quantify the number of fall-run Chinook Salmon moving upstream of the weir. The net movement upstream was calculated by subtracting the number of fish moving downstream from those moving upstream. Towards the end of the season Chinook Salmon that appeared to be spawned out and moving downstream were not removed from the net upstream total, it was assumed those fish had spawned above the weir prior to moving downstream.

The first fall-run Chinook Salmon observed occurred on September 23rd and the last was observed on December 2nd. There were periods of time when the video camera did not operate due to low battery voltage due to lack of solar charge during cloudy days. On Oct 11th the camera did not operate for 6 hours and 36 minutes, an estimate was made for that period using the average upstream fish counts for 48 hours prior to the outage and 41.5 hours after. Twenty-three fish were estimated to pass within the 6 hours and 36-minute period. This estimate of 23 fish was then added to the 58 fish that were counted within 17 hours and 24 minutes of operating time on Oct 11th resulting in an estimated 81 fish passing through Spencer creek on Oct 11th. On Oct 18th and Oct 19th, the camera did not operate for 14 hours and 18 minutes, an estimate was made for that period using the average upstream fish counts for 42 hours prior and 39.75 hours after the outage. Sixty fish were estimated to pass in the 14 hour and 18-minute period, 24 on Oct 18th and

36 on Oct 19th. Adding the estimated 24 fish to the counted 101 fish on Oct 18th results in an estimated 125 fish. Adding the estimated 36 fish to the counted 93 fish on Oct 19th results in an estimated 129 fish on October 19th. Between Oct 26th and Nov 2nd, the camera did not record for 168 hours and 24 minutes, so a linear equation ($Y = -5.523x + 75.26$; $R^2 = .9238$, P value = 0.002) was used to estimate the amount of fish passage on each missing day using values from 3 days prior and 3 days after the outage. Over the 168 hours and 24-minute outage an estimated 272 fish passed through the weir.

The net upstream count of fall-run Chinook Salmon above the Spencer Creek video weir was 1,460. The estimated upstream count during time periods when camera was not operating was 355. The total counted and estimated number of fall-run Chinook Salmon above the video weir on Spencer Creek was 1,815 (Fig 1; Table 1).

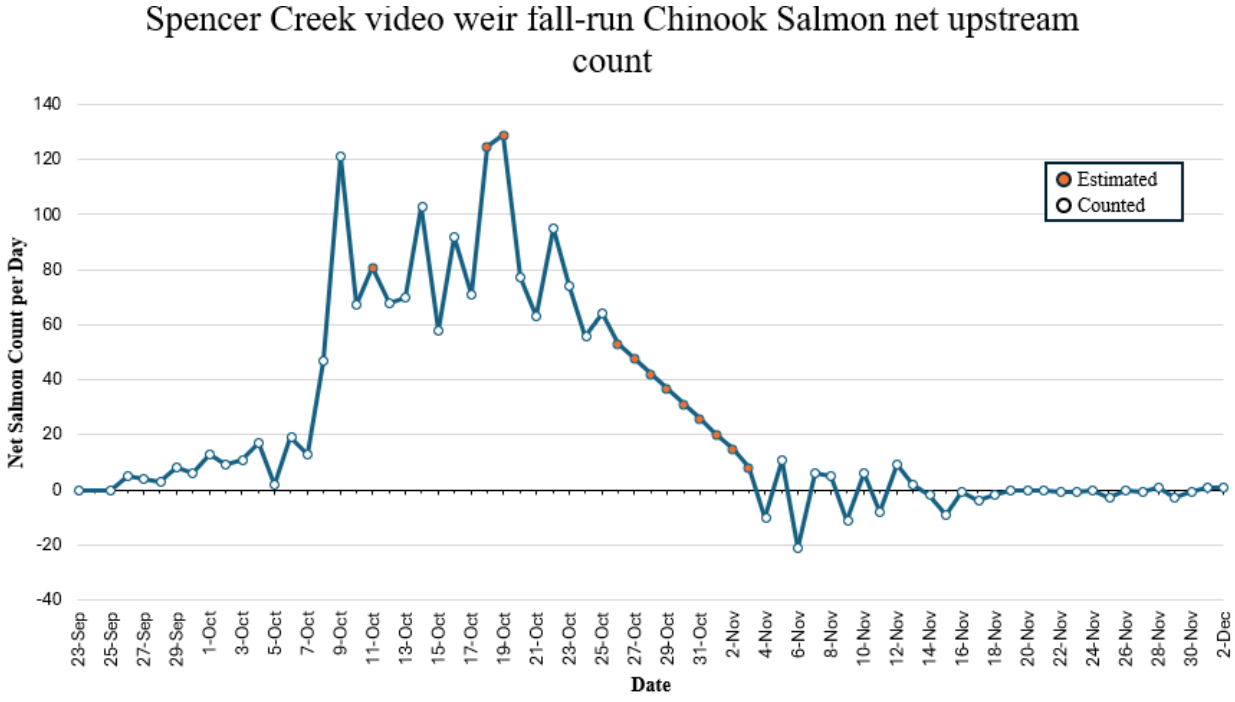


Figure 1. The net upstream daily video counts and estimated daily counts of fall-run Chinook Salmon above the video weir located in Spencer Creek, Oregon during the 2025 season. Estimates, displayed as orange dots, were calculated when the video camera was not operating due to loss of power. Estimates were calculated for periods during October 11th and October 19th using average upstream counts prior to and post outages. From October 26th to Nov 2nd an estimate was calculated using a linear equation using counts from 3 days prior to and post outages. Total fall-run Chinook Salmon counted and estimated above the Spencer Creek video counting system was 1,815.

Redd Count Summary Below Video Weir and Total Run Size Estimate

During weekly surveys below the Spencer Creek video weir all new fall-run Chinook Salmon redds were enumerated and marked with flagging to prevent duplicate counting in subsequent surveys. A total of 40

redds were observed (fig 2). Mean daily discharge at Spencer Creek near the mouth fluctuated between 13 and 34 cfs during the survey period. Peaks of flow in late October and early November were observed, each after rain events. However, visibility was clear for the duration of surveys (fig 3).

Assuming each redd represents one adult female and one adult male fall-run Chinook Salmon, redd counts were multiplied by two to estimate adult escapement. An estimated 80 adult fall-run Chinook Salmon spawned in Spencer Creek below the video weir in 2025.

From examination of length frequency distributions of carcasses and known-age fall-run Chinook Salmon that were determined from CWT analysis, a preliminary jack fork length cut off of ≤60 cm was established for Spencer Creek. Based on this determination, **the estimate of fall-run Chinook Salmon run in Spencer Creek below Spencer Creek video weir based on redd counts was 83 (Table 2).**

The total estimated run size of fall-run Chinook Salmon in Spencer Creek was 1,898 based on the summation of the estimated upstream video counts and the estimated counts below the weir. The estimated number of jacks in Spencer Creek was 63 (3.3%) and number of adults was 1,835 (96.7%) (Table 3).

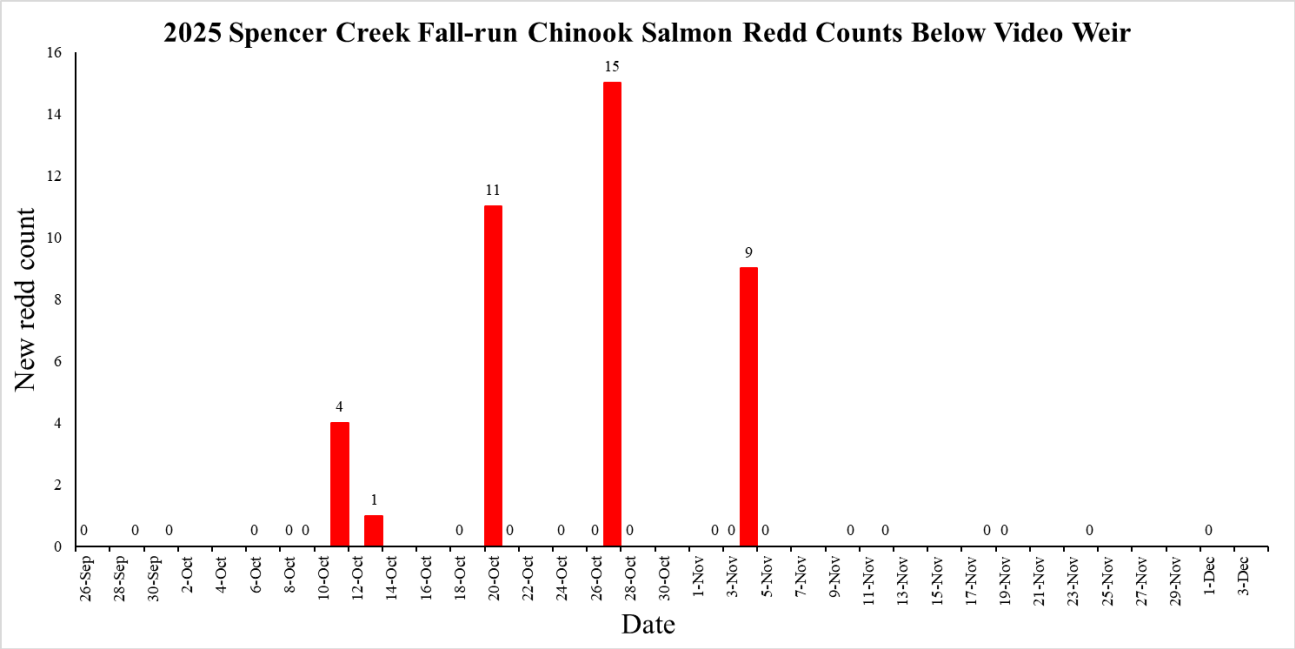


Figure 2. Counts of new fall-run Chinook Salmon redds in Spencer Creek, Oregon below the video weir during the 2025 survey. Zeros indicate a survey was conducted but no new redds were observed.

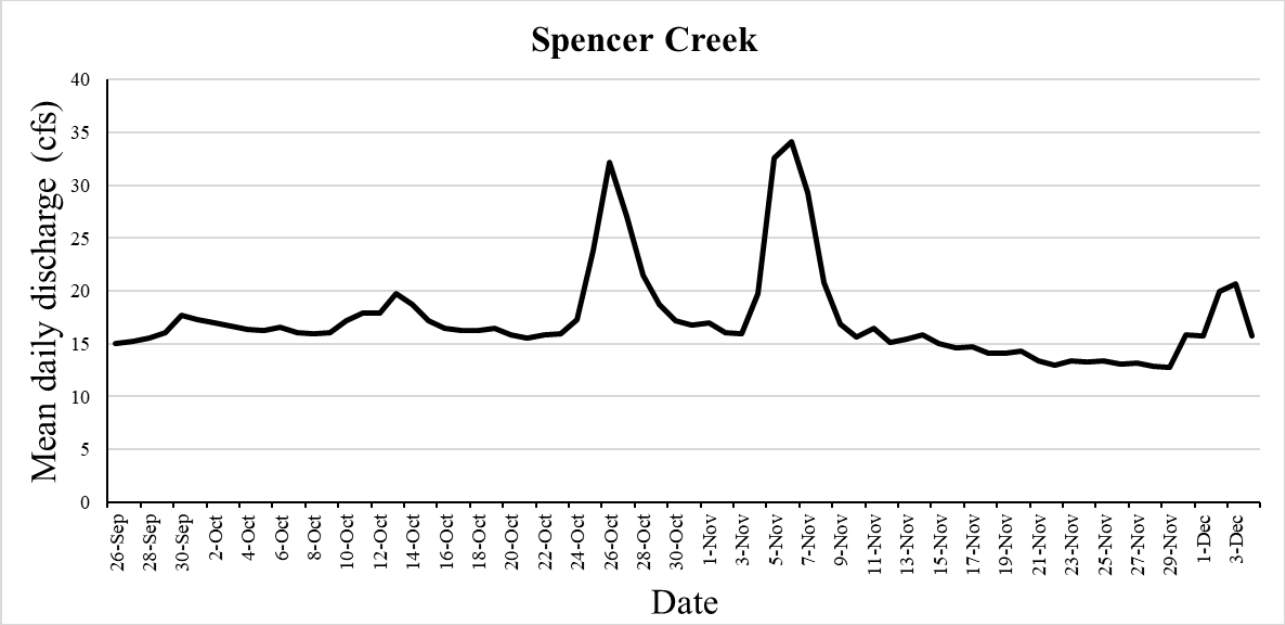


Figure 3. Daily mean discharge (cfs) in Spencer Creek, OR (Oregon Water Resources Department Gaging Station 11510000) during the 2025 fall-run Chinook Salmon redd surveys (https://apps.wrd.state.or.us; January 7, 2026).

Table 1. Estimated fall-run Chinook Salmon run size in 2025 in Spencer Creek above the video weir. Estimated from the net upstream count through the video weir. The estimated jack fraction was derived from carcasses sampled throughout Spencer Creek.

2025 Spencer Creek Video Weir counts						
Net upstream count	**Estimated count** (during video outages)	**Total estimated upstream count** (summation of net upstream count and estimated counts)	**Jacks** (≤60 FL cm)	**Estimated jack fraction (pjack)** (jack carcasses measured/total male carcasses measured)	**Estimated number of jacks** (Est. upstream of weir * pjack)	**Estimated number of adults** (Est. upstream count - Est. number of jacks)
1,460	355	1,815	12	0.033	60	1,755

Table 2. Estimated fall-run Chinook Salmon run size in 2025 in Spencer Creek below the video weir. Estimated from redd counts below the video weir. The estimated jack fraction was derived from carcasses sampled throughout Spencer Creek.

2025 Spencer Creek Below Video Weir Estimated fall-run Chinook Salmon based on redd counts						
Total redds counted	**Redd multiplier**	**Estimated adult run size** (total redds*multiplier)	**Jacks** (≤60 FL cm)	**Estimated jack fraction (pjack)** (jack carcasses measured/total male carcasses measured)	**Estimated total run size including jacks** (Est. adult run size/(1-Pjack))	**Estimated number of jacks** (Est. total run - Est. adult run)
40	2	80	12	0.033	83	3

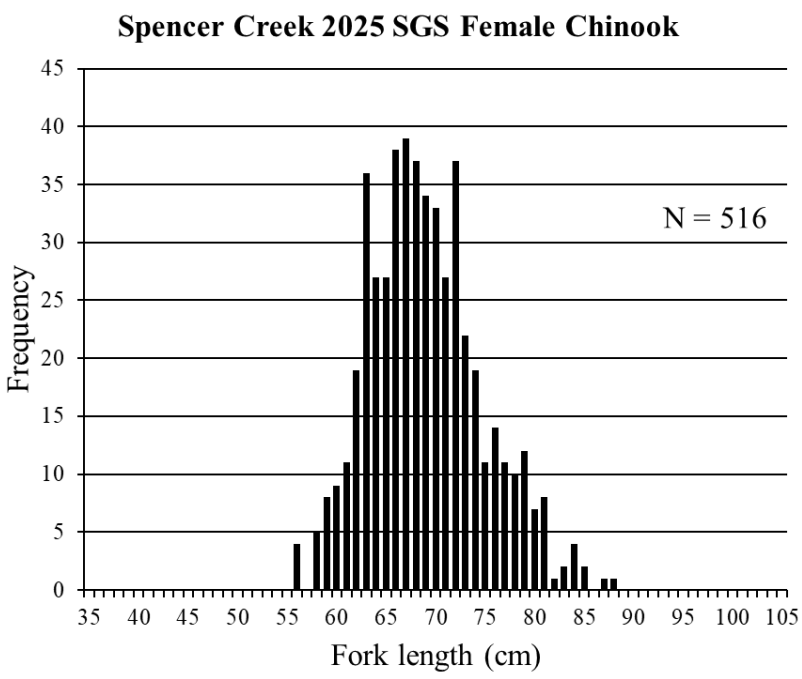
Table 3. Total estimated fall-run Chinook Salmon run size in 2025 in Spencer Creek, Oregon. Estimate is the summation of the estimate of the net upstream movement through the video weir and the estimate using redd counts below the video weir.

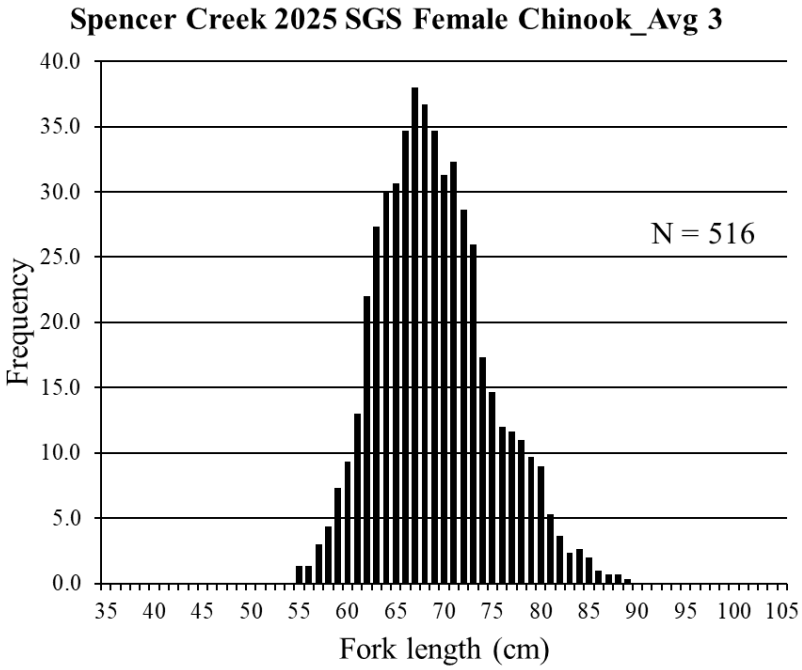
2025 Spencer Creek Estimated fall-run Chinook Salmon run size based on Video Counts and redd counts				
Est. total run size usptream of video weir	**Est. Total run size below video weir**	**Est. Total Run size**	**Estimated number of jacks**	**Estimated number of adults**
1,815	83	1,898	63	1,835

Carcass Survey Summary

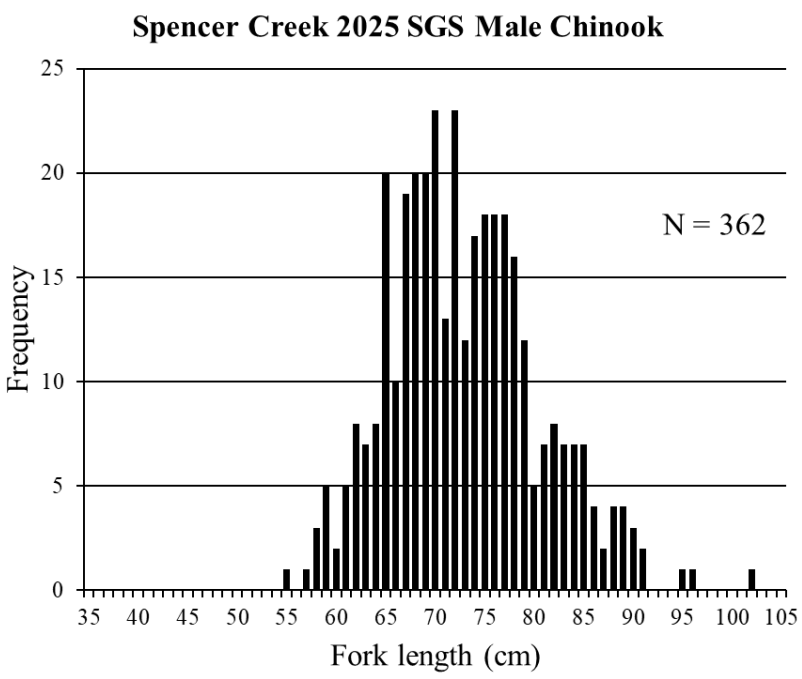
Due to access on private lands and time constraints, not all survey reaches were surveyed geographically or temporally, but the majority of the spawning reaches were sampled during the majority of the spawning period. During weekly surveys of Spencer Creek all carcasses encountered were counted and sampled. Depending on the condition of the carcass, length, sex, and fin clips were recorded. If they could be obtained, scales were collected from carcasses. Heads were collected from ad-clipped fish for detection of CWTs. **A total of 894 carcasses were counted in all sampled reaches of Spencer Creek during the spawning ground survey.** Of the carcasses that were able to be identified by sex and could be measured (FL, cm) 362 were male (41.20%) and 516 were female (58.80%) (fig 4). Sixteen carcasses of the total counted could not be identified by sex, usually due to scavenging from wildlife prior to encountering them. Scales were collected from 863 fall-run Chinook Salmon carcasses.

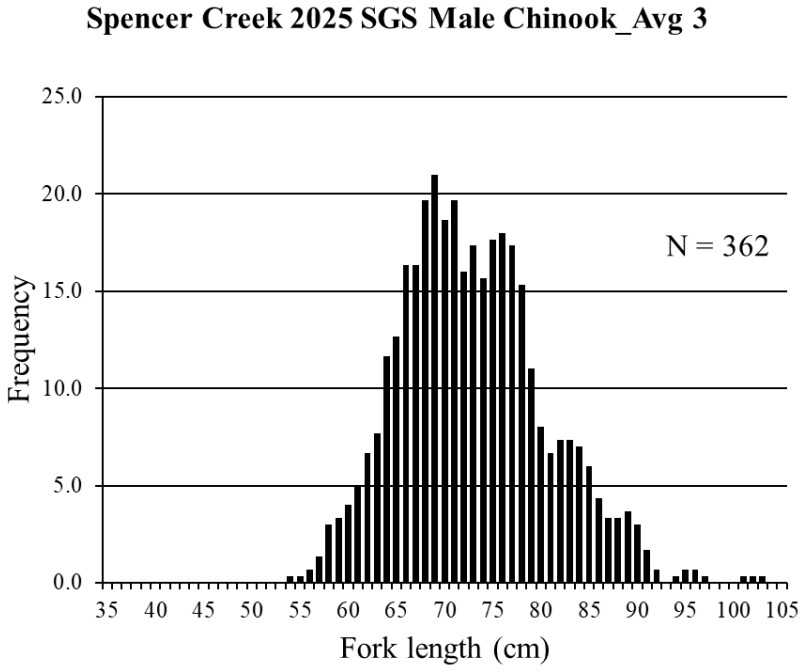
Positive CWT codes were obtained from the 86 heads collected from ad-clipped carcasses. Known age fish along with their lengths are summarized in figure 5. The total estimate of Chinook Salmon in Spencer Creek was 1,853 and the number of carcasses sampled was 894 resulting in a sample expansion of 2.0727, which was applied to the production estimate derived from the sample number of CWT's recovered and the production multiplier (estimated at the time of juvenile release, obtained from hatchery records). **The estimated number of hatchery fall-run Chinook Salmon in Spencer Creek was 513 fish (27.7% of total estimated run; table 4).**



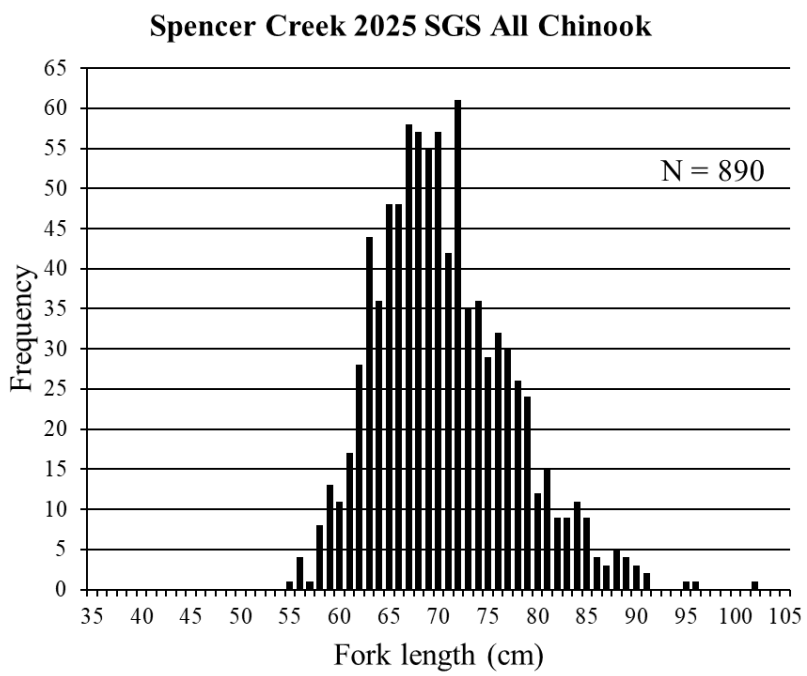


2025 Spencer Creek SGS Female Chinook				
Length	Frequency	Avg 3	% at FL	%≤FL
35	0	0.0000	0.0000	0.0000
36	0	0.0000	0.0000	0.0000
37	0	0.0000	0.0000	0.0000
38	0	0.0000	0.0000	0.0000
39	0	0.0000	0.0000	0.0000
40	0	0.0000	0.0000	0.0000
41	0	0.0000	0.0000	0.0000
42	0	0.0000	0.0000	0.0000
43	0	0.0000	0.0000	0.0000
44	0	0.0000	0.0000	0.0000
45	0	0.0000	0.0000	0.0000
46	0	0.0000	0.0000	0.0000
47	0	0.0000	0.0000	0.0000
48	0	0.0000	0.0000	0.0000
49	0	0.0000	0.0000	0.0000
50	0	0.0000	0.0000	0.0000
51	0	0.0000	0.0000	0.0000
52	0	0.0000	0.0000	0.0000
53	0	0.0000	0.0000	0.0000
54	0	0.0000	0.0000	0.0000
55	0	1.3333	0.0000	0.0000
56	4	1.3333	0.0078	0.0078
57	0	3.0000	0.0000	0.0078
58	5	4.3333	0.0097	0.0174
59	8	7.3333	0.0155	0.0329
60	9	9.3333	0.0174	0.0504
61	11	13.0000	0.0213	0.0717
62	19	22.0000	0.0368	0.1085
63	36	27.3333	0.0698	0.1783
64	27	30.0000	0.0523	0.2306
65	27	30.6667	0.0523	0.2829
66	38	34.6667	0.0736	0.3566
67	39	38.0000	0.0756	0.4322
68	37	36.6667	0.0717	0.5039
69	34	34.6667	0.0659	0.5698
70	33	31.3333	0.0640	0.6337
71	27	32.3333	0.0523	0.6860
72	37	28.6667	0.0717	0.7578
73	22	26.0000	0.0426	0.8004
74	19	17.3333	0.0368	0.8372
75	11	14.6667	0.0213	0.8585
76	14	12.0000	0.0271	0.8857
77	11	11.6667	0.0213	0.9070
78	10	11.0000	0.0194	0.9264
79	12	9.6667	0.0233	0.9496
80	7	9.0000	0.0136	0.9632
81	8	5.3333	0.0155	0.9787
82	1	3.6667	0.0019	0.9806
83	2	2.3333	0.0039	0.9845
84	4	2.6667	0.0078	0.9922
85	2	2.0000	0.0039	0.9961
86	0	1.0000	0.0000	0.9961
87	1	0.6667	0.0019	0.9981
88	1	0.6667	0.0019	1.0000
89	0	0.3333	0.0000	1.0000
90	0	0.0000	0.0000	1.0000
91	0	0.0000	0.0000	1.0000
92	0	0.0000	0.0000	1.0000
93	0	0.0000	0.0000	1.0000
94	0	0.0000	0.0000	1.0000
95	0	0.0000	0.0000	1.0000
96	0	0.0000	0.0000	1.0000
97	0	0.0000	0.0000	1.0000
98	0	0.0000	0.0000	1.0000
99	0	0.0000	0.0000	1.0000
100	0	0.0000	0.0000	1.0000
101	0	0.0000	0.0000	1.0000
102	0	0.0000	0.0000	1.0000
103	0	0.0000	0.0000	1.0000
104	0	0.0000	0.0000	1.0000
105	0	0.0000	0.0000	1.0000
N	516			
Avg FL	68.81			
%f	58.80			





2025 Spencer Creek SGS Male Chinook				
Length	Frequency	Avg 3	% at FL	% ≤FL
35	0	0.0000	0.0000	0.0000
36	0	0.0000	0.0000	0.0000
37	0	0.0000	0.0000	0.0000
38	0	0.0000	0.0000	0.0000
39	0	0.0000	0.0000	0.0000
40	0	0.0000	0.0000	0.0000
41	0	0.0000	0.0000	0.0000
42	0	0.0000	0.0000	0.0000
43	0	0.0000	0.0000	0.0000
44	0	0.0000	0.0000	0.0000
45	0	0.0000	0.0000	0.0000
46	0	0.0000	0.0000	0.0000
47	0	0.0000	0.0000	0.0000
48	0	0.0000	0.0000	0.0000
49	0	0.0000	0.0000	0.0000
50	0	0.0000	0.0000	0.0000
51	0	0.0000	0.0000	0.0000
52	0	0.0000	0.0000	0.0000
53	0	0.0000	0.0000	0.0000
54	0	0.3333	0.0000	0.0000
55	1	0.3333	0.0028	0.0028
56	0	0.6667	0.0000	0.0028
57	1	1.3333	0.0028	0.0055
58	3	3.0000	0.0083	0.0138
59	5	3.3333	0.0138	0.0276
60	2	4.0000	0.0055	0.0331
61	5	5.0000	0.0138	0.0470
62	8	6.6667	0.0221	0.0691
63	7	7.6667	0.0193	0.0884
64	8	11.6667	0.0221	0.1105
65	20	12.6667	0.0552	0.1657
66	10	16.3333	0.0276	0.1934
67	19	16.3333	0.0525	0.2459
68	20	19.6667	0.0552	0.3011
69	20	21.0000	0.0552	0.3564
70	23	18.6667	0.0635	0.4199
71	13	19.6667	0.0359	0.4558
72	23	16.0000	0.0635	0.5193
73	12	17.3333	0.0331	0.5525
74	17	15.6667	0.0470	0.5994
75	18	17.6667	0.0497	0.6492
76	18	18.0000	0.0497	0.6989
77	18	17.3333	0.0497	0.7486
78	16	15.3333	0.0442	0.7928
79	12	11.0000	0.0331	0.8260
80	5	8.0000	0.0138	0.8398
81	7	6.6667	0.0193	0.8591
82	8	7.3333	0.0221	0.8812
83	7	7.3333	0.0193	0.9006
84	7	7.0000	0.0193	0.9199
85	7	6.0000	0.0193	0.9392
86	4	4.3333	0.0110	0.9503
87	2	3.3333	0.0055	0.9558
88	4	3.3333	0.0110	0.9669
89	4	3.6667	0.0110	0.9779
90	3	3.0000	0.0083	0.9862
91	2	1.6667	0.0055	0.9917
92	0	0.6667	0.0000	0.9917
93	0	0.0000	0.0000	0.9917
94	0	0.3333	0.0000	0.9917
95	1	0.6667	0.0028	0.9945
96	1	0.6667	0.0028	0.9972
97	0	0.3333	0.0000	0.9972
98	0	0.0000	0.0000	0.9972
99	0	0.0000	0.0000	0.9972
100	0	0.0000	0.0000	0.9972
101	0	0.3333	0.0000	0.9972
102	1	0.3333	0.0028	1.0000
103	0	0.3333	0.0000	1.0000
104	0	0.0000	0.0000	1.0000
105	0	0.0000	0.0000	1.0000
N	362			
Avg FL	72.95			
%m	41.20			



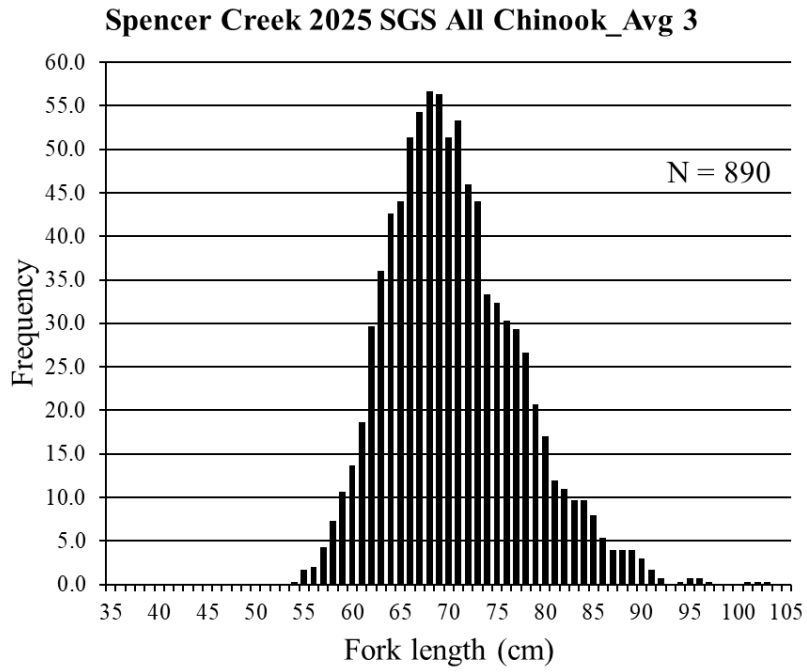


Figure 4. Fork length (cm) histograms and moving average of 3 (Avg 3) histograms of fall-run Chinook Salmon carcasses sampled in Spencer Creek, Oregon during spawning ground surveys (SGS) in 2025.

2025 Spencer Creek SGS All Chinook				
Length	Frequency	Avg 3	% at FL	% ≤FL
35	0	0.0000	0.0000	0.0000
36	0	0.0000	0.0000	0.0000
37	0	0.0000	0.0000	0.0000
38	0	0.0000	0.0000	0.0000
39	0	0.0000	0.0000	0.0000
40	0	0.0000	0.0000	0.0000
41	0	0.0000	0.0000	0.0000
42	0	0.0000	0.0000	0.0000
43	0	0.0000	0.0000	0.0000
44	0	0.0000	0.0000	0.0000
45	0	0.0000	0.0000	0.0000
46	0	0.0000	0.0000	0.0000
47	0	0.0000	0.0000	0.0000
48	0	0.0000	0.0000	0.0000
49	0	0.0000	0.0000	0.0000
50	0	0.0000	0.0000	0.0000
51	0	0.0000	0.0000	0.0000
52	0	0.0000	0.0000	0.0000
53	0	0.0000	0.0000	0.0000
54	0	0.3333	0.0000	0.0000
55	1	1.6667	0.0011	0.0011
56	4	2.0000	0.0045	0.0056
57	1	4.3333	0.0011	0.0067
58	8	7.3333	0.0090	0.0157
59	13	10.6667	0.0146	0.0303
60	11	13.6667	0.0124	0.0427
61	17	18.6667	0.0191	0.0618
62	28	29.6667	0.0315	0.0933
63	44	36.0000	0.0494	0.1427
64	36	42.6667	0.0404	0.1831
65	48	44.0000	0.0539	0.2371
66	48	51.3333	0.0539	0.2910
67	58	54.3333	0.0652	0.3562
68	57	56.6667	0.0640	0.4202
69	55	56.3333	0.0618	0.4820
70	57	51.3333	0.0640	0.5461
71	42	53.3333	0.0472	0.5933
72	61	46.0000	0.0685	0.6618
73	35	44.0000	0.0393	0.7011
74	36	33.3333	0.0404	0.7416
75	29	32.3333	0.0326	0.7742
76	32	30.3333	0.0360	0.8101
77	30	29.3333	0.0337	0.8438
78	26	26.6667	0.0292	0.8730
79	24	20.6667	0.0270	0.9000
80	12	17.0000	0.0135	0.9135
81	15	12.0000	0.0169	0.9303
82	9	11.0000	0.0101	0.9404
83	9	9.6667	0.0101	0.9506
84	11	9.6667	0.0124	0.9629
85	9	8.0000	0.0101	0.9730
86	4	5.3333	0.0045	0.9775
87	3	4.0000	0.0034	0.9809
88	5	4.0000	0.0056	0.9865
89	4	4.0000	0.0045	0.9910
90	3	3.0000	0.0034	0.9944
91	2	1.6667	0.0022	0.9966
92	0	0.6667	0.0000	0.9966
93	0	0.0000	0.0000	0.9966
94	0	0.3333	0.0000	0.9966
95	1	0.6667	0.0011	0.9978
96	1	0.6667	0.0011	0.9989
97	0	0.3333	0.0000	0.9989
98	0	0.0000	0.0000	0.9989
99	0	0.0000	0.0000	0.9989
100	0	0.0000	0.0000	0.9989
101	0	0.3333	0.0000	0.9989
102	1	0.3333	0.0011	1.0000
103	0	0.3333	0.0000	1.0000
104	0	0.0000	0.0000	1.0000
105	0	0.0000	0.0000	1.0000
N	890			
Avg FL	70.61			

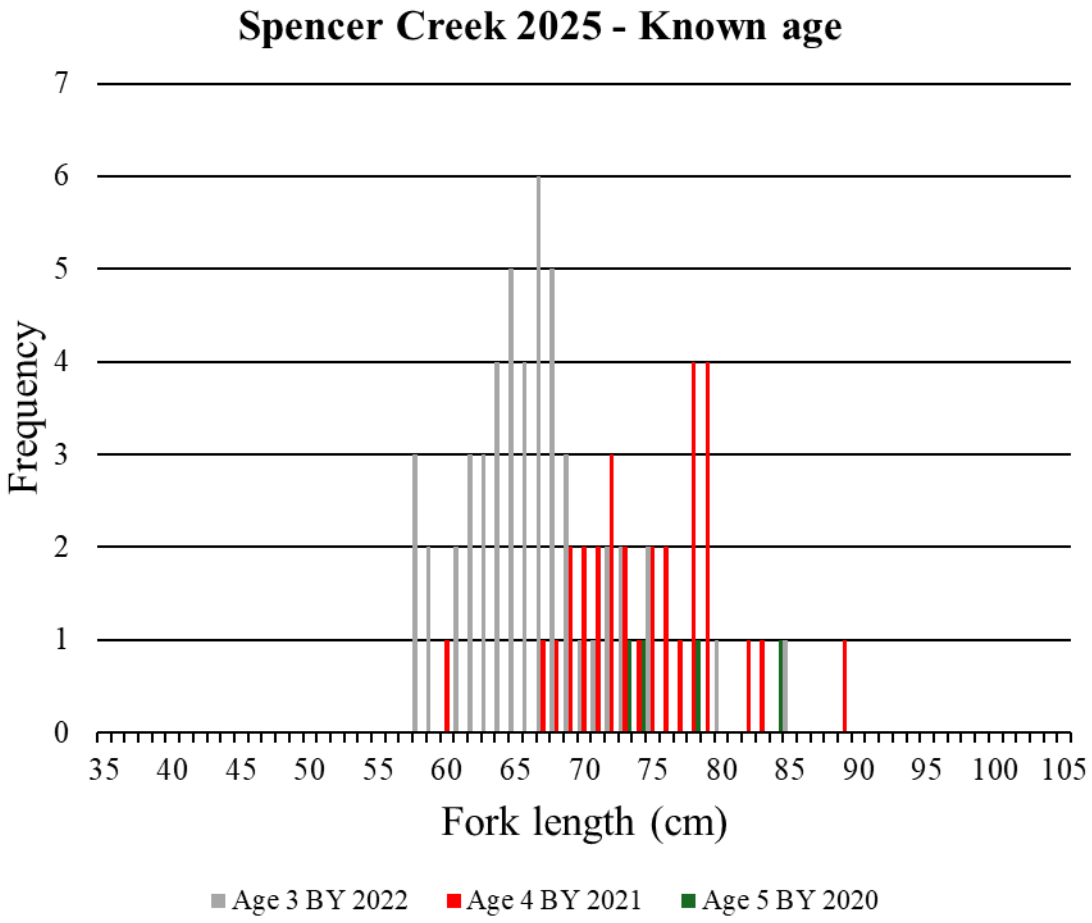


Figure 5. Fork length (cm) histogram of known age and brood year (BY) fall-run Chinook Salmon carcasses with coded-wire-tags (CWT) sampled in Spencer Creek, OR during spawning ground surveys in 2025.

Table 4. Summary of Spencer Creek, Oregon fall-run Chinook Salmon hatchery contribution derived from CWT recovered during carcass surveys in 2025.

2025 Spencer Creek Survey CWT and Hatchery Contribution								
CWT	Location	Release type a/	Brood year	Sample number	Production multiplier b/	Production estimate c/	Sample expansion d/	Expanded estimate e/
60032	IGH	AF	2022	34	4.0363	137.2355	2.0727	284.4479
60033	IGH	F	2022	4	4.1157	16.4627	2.0727	34.1223
60034	IGH	F	2022	2	4.0199	8.0398	2.0727	16.6641
60035	IGH	F	2022	4	4.0286	16.1144	2.0727	33.4003
60478	IGH	AF	2021	1	1.0101	1.0101	2.0727	2.0936
60788	IGH	AF	2021	2	1.0157	2.0315	2.0727	4.2107
61545	IGH	F	2021	5	1.0002	5.0010	2.0727	10.3656
61546	IGH	F	2021	6	1.0146	6.0877	2.0727	12.6179
61551	IGH	F	2021	4	1.0067	4.0269	2.0727	8.3465
61582	IGH	Y	2020	1	1.0112	1.0112	2.0727	2.0959
61608	IGH	AF	2020	2	4.0075	8.0150	2.0727	16.6127
61869	IGH	Y	2021	1	1.0635	1.0635	2.0727	2.2043
61977	IGH	AF	2020	1	1.0044	1.0044	2.0727	2.0818
62014	IGH	F	2022	1	4.1021	4.1021	2.0727	8.5024
62079	IGH	AF	2021	1	1.0181	1.0181	2.0727	2.1103
62269	IGH	F	2021	2	1.0056	2.0112	2.0727	4.1686
62270	IGH	F	2021	3	1.0079	3.0236	2.0727	6.2670
62271	IGH	AF	2021	3	1.0187	3.0562	2.0727	6.3347
62386	IGH	AF	2021	1	1.0193	1.0193	2.0727	2.1126
62388	IGH	AF	2021	2	1.0186	2.0373	2.0727	4.2227
62875	IGH	AF	2022	6	4.0591	24.3545	2.0727	50.4796
CWT sample subtotal =				**86**				
Hatchery contribution of carcasses sampled subtotal =						**248**		
Total of estimated hatchery contributions =								**513**

a/	Release type; F=fingerling, Y=yearling, AF=advanced fingerling
b/	Production multiplier is the ratio of # of fish released/fish marked
c/	Production estimate is the sample number multiplied by the production multiplier
d/	Sample expansion is the ratio of the estimated total run size and the number of carcasses sampled
e/	Expanded estimate is the production estimate multiplied by the sample expansion

Age composition and age-specific run-size from scale analysis

Scales were collected from every carcass encountered during the survey and analyzed by the Yurok Tribe Fisheries Department. This data is incorporated in the Klamath River Technical Team (KRTT) estimate for age-specific escapement of fall-run Chinook Salmon for the entire Klamath River Basin. The age proportions for Spencer Creek are shown in Table 5. **The ages from the scale analysis were used to estimate an age-specific run-size from redd count data resulting in an age-specific run size of 1,895 fall-run Chinook Salmon** (table 5).

Table 5. Age composition and age-specific run size estimated from scales collected from fall-run Chinook Salmon carcasses sampled in Spencer Creek, Oregon in 2025.

Spencer Creek, Oregon fall-run Chinook Salmon scale-based age analysis					
	Age				
	2	3	4	5	Total
Proportion	0.0000	0.8243	0.1720	0.0037	1.0000
Age-specific run Est.	0	1,562	326	7	1,895

Acknowledgement

Oregon Department of Fish and Wildlife thanks Green Diamond Resource Company, Pacific Power, Klamath River Renewal Corporation, and other private landowners for allowing access to conduct surveys. The Klamath Falls office of Trout Unlimited assisted with some carcass surveys.

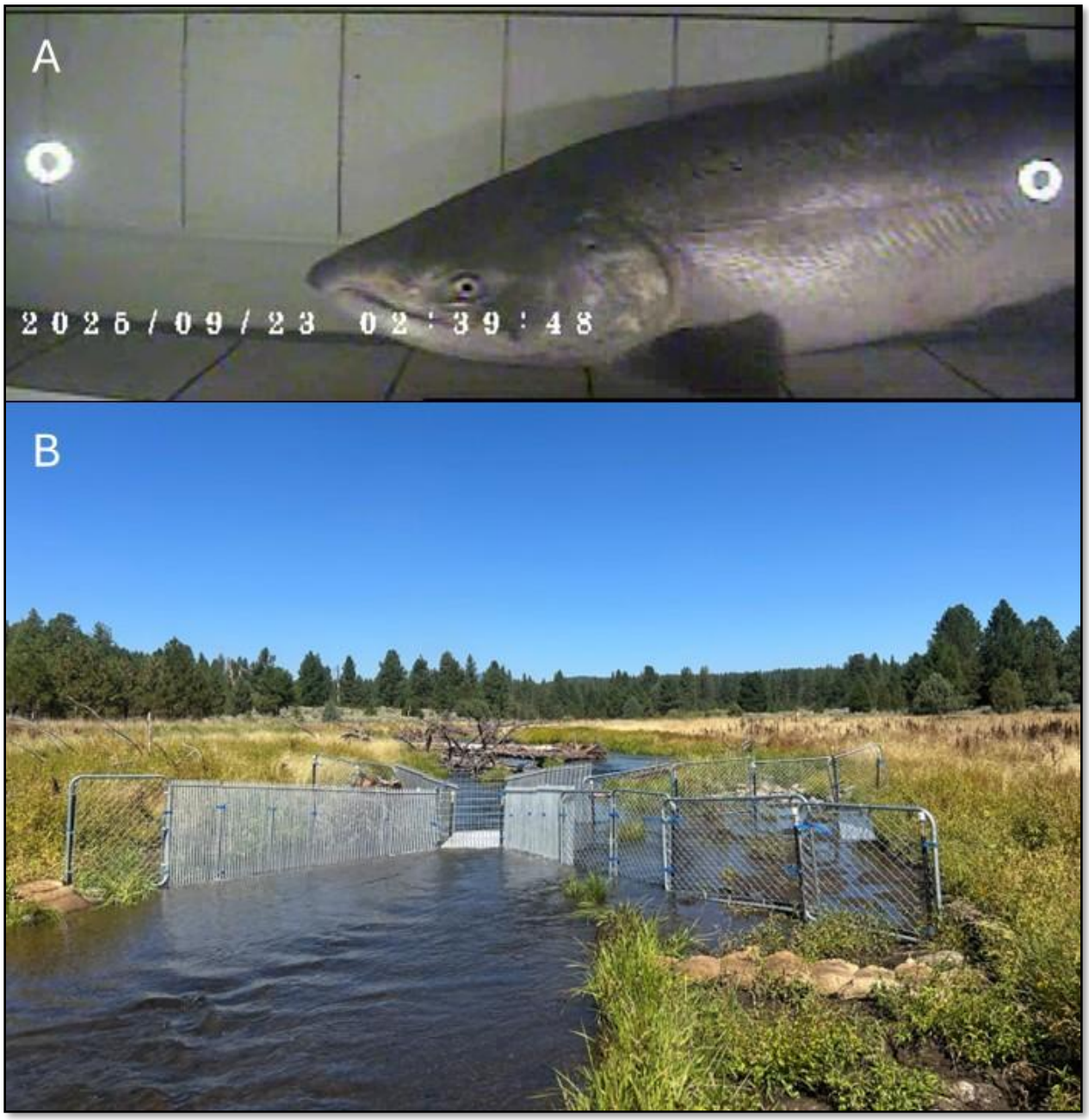


Figure 6. Photo of a fall-run Chinook Salmon in the fish chute at Spencer Creek Video Weir (A). And photo of Spencer Creek video weir (B).