

# THE OREGON PLAN for Salmon and Watersheds



**Western Oregon Adult Coho Salmon,  
2021 Spawning Survey Data Report**

**Report Number: OPSW-ODFW-2022-3**



The Oregon Department of Fish and Wildlife prohibits discrimination in all of its programs and services on the basis of race, color, national origin, age, sex or disability. If you believe that you have been discriminated against as described above in any program, activity, or facility, please contact the ADA Coordinator at 4034 Fairview Industrial Drive SE, Salem, OR 97302 or call 503-947-6000.

This material will be furnished in alternate format for people with disabilities if needed. Please call 503-947-6000 to request.

# **Western Oregon Adult Coho Salmon, 2021 Spawning Survey Data Report**

## **Oregon Plan for Salmon and Watersheds**

### **Monitoring Report No. OPSW-ODFW-2022-3 August 2022**

Briana Sounhein  
Eric Brown  
Matt Weeber

Oregon Adult Salmonid Inventory & Sampling Project  
Western Oregon Research and Monitoring Program  
Oregon Department of Fish and Wildlife  
28655 Highway 34  
Corvallis, OR 97333

Funds contributed in part by:

Sport Fish and Wildlife Restoration Program administered by the U.S. Fish and Wildlife Service; Pacific Salmon Treaty and Pacific Coast Salmon Recovery Fund administered by the National Marine Fisheries Service; and State of Oregon (General and Lottery Funds).

Citation: Sounhein, B., E. Brown and M. Weeber. 2022. Western Oregon adult Coho Salmon, 2021 spawning survey data report. Monitoring Program Report Number OPSW-ODFW-2022-3, Oregon Department of Fish and Wildlife, Salem, Oregon.

## SUMMARY

This report provides a summary of results from Coho Salmon spawning ground surveys conducted in Lower Columbia (Oregon side only) and Oregon Coast basins during the 2021 spawning season. For a discussion of the history, goals and methods of this long-term monitoring effort see prior reports (e.g. Sounhein et al. 2017). Results in this report are based on data from randomly selected spawning ground surveys as well as alternative methods in areas without random sampling. Results for Coho Salmon standard spawning ground surveys and spawning surveys for other species are covered in data summaries and reports posted on an Oregon Department of Fish and Wildlife (ODFW) web page

(see: <http://odfw.forestry.oregonstate.edu/spawn/index.htm>).

Long-term monitoring of Coho Salmon spawners in the Oregon portion of the Southern Oregon/Northern California Coast (SONCC) Coho Evolutionarily Significant Unit (ESU) currently relies on seining at Huntley Park in the lower Rogue River (river mile 8) and standard spawning ground surveys in other coastal basins. The ODFW monitoring in the SONCC Coho ESU is described in the Rogue–South Coast Multi-Species Conservation and Management Plan (RSP - ODFW 2021b), which was approved by the Oregon Fish and Wildlife Commission on December 17, 2021. In 2022, the 1996 to 2021 run year Rogue adult Coho Salmon estimates were recalculated to match the Coho Salmon abundance estimation methods as described in Appendix III of the RSP (ODFW 2021b). This method provides an estimate of adult Coho Salmon in the Rogue Basin at Huntley Park. In the past, the Huntley Park estimates (adjusted to account for harvest and hatchery operations above Huntley Park) were included in this report series. Beginning with the current run year (2021) these Coho Salmon abundance estimates will be reported under the RSP and posted on an ODFW web page

(see: [https://www.dfw.state.or.us/fish/CRP/rogue\\_south\\_coast\\_multi-species\\_conservation%20and%20Management\\_plan.asp](https://www.dfw.state.or.us/fish/CRP/rogue_south_coast_multi-species_conservation%20and%20Management_plan.asp)).

Wild adult Coho spawner abundance in 2021 was about twice the recent average, at 216% of the 19-year average in the Lower Columbia River (LCR) ESU, 195% of the 31-year average in the Oregon Coast (OC) Coho ESU. In the Oregon portion of the LCR Coho ESU insufficient surveys were conducted to meet the estimate precision goal at any spatial scale: ESU, strata, or population. In the OC Coho ESU sufficient surveys were conducted to meet the precision goal for the ESU, one of four strata, and zero of 10 populations where estimates were generated. No population scale estimates were produced in the North Coast or Mid-South Coast strata due to insufficient sample size issues.

## INTRODUCTION AND METHODS

Monitoring of Western Oregon adult Coho Salmon occurs at three hierarchical spatial scales: Evolutionary Significant Unit; stratum; and population. There are three Coho Salmon ESUs located entirely or partially within the State of Oregon: the Lower Columbia River Coho ESU, the Oregon Coast Coho ESU, and the Southern Oregon/Northern California Coast Coho ESU. Boundaries and population structures of the Oregon Coho Salmon ESUs are presented in

Figure 1. This report summarizes results for Coho Salmon populations in the portion of each ESU within Oregon.

A brief history of sampling designs is available in prior years ODFW status reports (e.g., Sounhein et al. 2017). Field methods for establishing and conducting salmon spawning ground surveys are described in ODFW procedures manuals (ODFW 2019, ODFW 2021a). The trapezoidal Area-Under-the-Curve (AUC) technique is used to estimate the number of adult Coho Salmon spawning in each stream segment throughout the spawning season (Jacobs et al. 2002). A more detailed description of how spawner estimates are derived, the criteria used for determining if sites are included in the estimate, methods for determining the proportion of hatchery origin spawners (pHOS) in naturally spawning populations, and the analysis methods for other metrics included in this report can be found in prior years ODFW status reports.

In areas where surveys are not conducted, other sources of monitoring data are used to document the number of adult Coho Salmon spawners. These include dam counts, mark-recapture estimates, and regressions of standard survey data to abundance estimates. Historically, there have been five such locations in the LCR Coho ESU including: one dam (River Mill on the Clackamas River), three hatchery weirs (Big Creek, Klaskanine, and Sandy hatcheries), and one life-cycle monitoring site (Bonnie Falls Trap on North Scappoose Creek). In these locations, counts of adult Coho Salmon passed up-stream are added to the estimated abundance of Coho Salmon spawners below the facilities. However, in 2019 operations at the Bonnie Falls trap were discontinued, and a regression analysis was used to estimate the 2019 Bonnie Falls count. Starting in 2020 the area above the Bonnie Falls trap location has been included in the regular spawning survey effort.

In the OC Coho ESU, random spawning ground surveys are conducted in most areas, except for the North Umpqua River above Winchester Dam and above the Alsea Hatchery weir. Winchester Dam counts and results of surveys below the dam, are used to document the number of adult Coho Salmon spawners in the North Umpqua population. The Winchester Dam count is adjusted for angler harvest of Coho Salmon in the North Umpqua River above Winchester Dam. Prior to 2020, when Rock Creek Hatchery was still in operation, the Winchester Dam count was also adjusted for Coho Salmon collected and retained at Rock Creek Hatchery. The count of Coho Salmon passed above the Alsea Hatchery weir is added to the spawning survey estimate for the Alsea population. Coho Salmon spawner abundances for the Lakes stratum are calculated using regressions of long-term standard surveys to historic mark-recapture studies and habitat measurements for those locations (Jacobs et al. 2002).

In addition to the surveys used in the abundance estimates, “calibration” surveys are conducted in the Mill Creek-Yaquina and Mill Creek-Siletz sub-basins to test the accuracy of survey-based AUC estimates. The purpose of these survey is to compare known passage or mark-recapture estimates, with survey-based AUC estimates using a Generalized Random Tessellation Stratified (GRTS) survey site selection methodology.

## RESULTS

Results include data from random spawning ground surveys and data from other sources where random surveys are not conducted. Results are presented in Bullets, Tables and Figures. Results are summarized by Coho Salmon ESU, in four categories: Survey Effort, Spawner Abundance, Distribution and Timing, and Hatchery Proportion. Spatially, results are reported by ESU, stratum, and constituent Coho Salmon populations. The individual components that comprise the results can be found in Appendices A, B, and C (by Coho Salmon ESU). Ancillary data is presented in Appendix D.

Stream flow levels in the LCR and OC Coho ESU's in the 2021 season started at below average in September, increased to near or above average from October through mid-January and then dropped sharply. In all areas there were flow peaks from late October to mid-November, and then consistent high flows from mid-December to early January. Temperatures were generally near normal over the course of the season, except for slightly above normal temperatures in November. Precipitation was generally above average for the season, but below average on the Oregon Coast in November and January. These weather patterns caused problems with surveying, especially in the mid-December to early January period, which coincided with peak coho spawning activity. In 2021, the unsuccessful survey rate was greater than the previous 10-year average rate (plus one standard deviation) for most of the OC Coho ESU, and in the Scappoose and Sandy populations in the LCR Coho ESU. Thus, relaxed inclusion criteria were used to determine which sites from these areas were used in abundance estimates. In some areas a high proportion of sites required application of relaxed criteria to provided adequate surveys for abundance estimates (Appendix Table D-4). In addition, issues with hiring and retention of surveyors in the North Coast and Mid-South Coast Strata forced reductions in the number of surveys to meet available staffing levels. Generally good adult coho carcass recoveries in 2021 resulted in adequate samples sizes for determining PHOS. Thus, standard criteria were used in 19 of 26 spatial scales (populations) at which surveys were selected (Appendix Table D-3).

### Survey Effort

#### Lower Columbia River Coho ESU

- Survey effort was similar to recent years (Table 1).
- Percent of sites successfully surveyed was similar to prior 7-year average (Table D-1).
- No surveys were selected in 2021 in two populations (Youngs Bay and Big Creek).
- Survey conditions were generally amenable to project protocols, and relatively few surveys had to be excluded from the abundance estimates (No AUC rate in Table D-5).

#### Oregon Coast Coho ESU

- Survey effort was reduced in two strata (North Coast and Mid-South Coast, Table 4) due to staffing shortages.
- Percent of sites successfully surveyed was lower than the 7-year average (Table D-2).
- No surveys were conducted in the Mid-South Coast stratum dependent populations.
- Survey conditions were generally challenging, and in some areas more than average surveys had to be excluded from the abundance estimates (No AUC rate in Table D-5).

### Southern Oregon/Northern California Coast Coho ESU

- Randomly selected spawning surveys targeting Coho Salmon were conducted across the ESU from the 1996 through 2008 spawning seasons. No random (GRTS) coho spawning ground surveys have been conducted since the 2008 season.

## **Spawner Abundance**

### Lower Columbia River Coho ESU

- Total wild adult coho spawner abundance in 2021 (16,298) was 216% of the previous 19-year average (7,531 wild adults, Table 3, and Figure 2).
- Wild adult coho spawner abundance in 2021 was above average in 4 of 5 populations. The remaining population (Clatskanie) was 58% of the prior 19-year average (Table 3).
- The 2021 wild adult Coho spawners abundance estimates set no new record lows or highs for the 20-year period of monitoring (2002 through 2021).

### Oregon Coast Coho ESU

- Total wild adult coho spawner abundance in 2021 (242,185) was 195% of the previous 31-year average (124,147 wild adults, Table 6 and Figure 5).
- Abundance in 2021 was above average in all five strata. Percent of average generally increased from South to North, 148% in Mid-South Coast stratum to 208% in the North Coast stratum (Table 6).
- No population scale estimates were generated in the North Coast or Mid-South Coast strata due to insufficient numbers of sample sites (Table 4 and Table 6).
- Wild adult coho spawner abundance in 2021 was above average in 12 of the 14 populations where population scale estimates were made (Table 6). The two populations with below average abundance in 2021 were Salmon River (98.4% of avg.) and Tahkenitch Lake (90.2% of avg.).

### Calibration Sites

- In 2021 the AUC estimates averaged 86% of the dam count or mark recapture abundance at the two calibration sites (Table 7), equal to the 7-year (2014-2020) average of 86%.

## **Distribution and Timing**

### Lower Columbia River Coho ESU

- Similar to recent years, there were no strong peaks in spawn timing in 2021. Spawning started fairly high in early October and slowly declining all season (Figure 4).
- The proportion of sites occupied by coho in 2021 was above the prior 7-year average in all populations, except the Clackamas population (Table 2).
- The proportion of sites occupied by wild coho in 2021 was above the prior 7-year average in all populations (Table 2). Wild occupancy for the ESU in 2021 was 154% of the prior 7-year average (Table 2).

### Oregon Coast Coho ESU

- Spawn timing in 2021 was similar to the long term average, but included a small first peak (Late November) in addition to the typical Mid-December peak (Figure 8).
- Total coho and wild coho site occupancy results were very similar (Table 5). Wild coho site occupancy in 2021 was above average for the ESU, all 4 strata and 7 of 10 populations. Occupancy was highest in the North Coast and Mid-Coast strata (Table 5).

## **Hatchery Proportion**

### Lower Columbia River Coho ESU

- Sample sizes for pHOS estimation at the population scale were sufficient in most areas.
- The 2021 proportion of hatchery coho on spawning grounds in the ESU was 11.1%, well below the 19-year average of 22.7% (Table 3). However, the 2021 results do not include two populations, Youngs Bay and Big Creek, which typically contribute a large portion of hatchery spawners to the ESU total.
- The Scappoose and Sandy populations both had the lowest pHOS in 2021 (0%), while the highest occurred in the Hood River (73.8%), see Table 3.
- In the LCR ESU, pHOS has generally been decreasing over time, and has consistently been below 12% since 2014 (Figure 2).

### Oregon Coast Coho ESU

- Sample sizes for pHOS estimation at the population scale were sufficient in most areas.
- The 2021 proportion of hatchery coho on spawning grounds in the ESU was 0.5%, well below the 31-year average of 9.2% (Table 6).
- At the population and strata scale, pHOS was below the 31-year average in all cases, except for the Mid Coast Dependent Population. Only two populations had a pHOS higher than 5% in 2021, the Mid Coast Dependent and North Umpqua (Table 6).
- In the OC ESU, pHOS has generally been decreasing over time, and has consistently been below 5% since 2008 (Figure 5).

## **REFERENCES**

- Jacobs, S., J. Firman, G. Susac, D. Stewart, and J. Weybright. 2002. Status of Oregon coastal stocks of anadromous salmonids, 2000-2001 and 2001-2002; Monitoring Program Report Number OPSW-ODFW-2002-3, Oregon Department of Fish and Wildlife, Salem, Oregon.
- ODFW. 2019. Site verification manual, Oregon Adult Salmonid Inventory and Sampling Project (OASIS) 2019. Oregon Department of Fish and Wildlife, Salem, Oregon.  
Available: <https://odfw.forestry.oregonstate.edu/spawn/reports.htm>



ODFW. 2021a. Salmon spawning surveys procedures manual 2021. Oregon Department of Fish and Wildlife, Salem, Oregon.

Available: <https://odfw.forestry.oregonstate.edu/spawn/reports.htm>

Oregon Department of Fish and Wildlife. 2021b. Rogue–South Coast Multi-Species Conservation and Management Plan. December 2021. Oregon Department of Fish and Wildlife, Salem, Oregon.

Sounhein, B., E. Brown, M. Lewis and M. Weeber. 2017. Status of Oregon stocks of Coho Salmon, 2016. Monitoring Program Report Number OPSW-ODFW-2017-3, Oregon Department of Fish and Wildlife, Salem, Oregon.

Table 1. Lower Columbia River Coho ESU, GRTS spawning survey goals and results for number of surveys and 95% C.I., 2021 run year. Target response sites are reaches within Coho Salmon spawning habitat which were successfully surveyed.

Stratum	Population	Goal	Target response				95% CI as percent of point estimate (goal is +/- 30%)			
			2021	2014 to 2020			2021	2014 to 2020		
				Avg.	Min.	Max.		Avg.	Min.	Max.
Coast	Youngs Bay	0	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Big Creek	0	0	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Clatskanie	18	26	20	12	23	31%	41%	21%	74%
	Scappoose	20	10	14	8	18	60%	68%	46%	103%
	<b>Total</b>	<b>38</b>	<b>36</b>	<b>34</b>	<b>27</b>	<b>40</b>	<b>32%</b>	<b>41%</b>	<b>24%</b>	<b>72%</b>
Cascade	Clackamas	30	23	24	15	30	56%	73%	33%	110%
	Sandy	30	32	27	8	35	51%	49%	37%	66%
	<b>Total</b>	<b>60</b>	<b>55</b>	<b>51</b>	<b>24</b>	<b>61</b>	<b>44%</b>	<b>38%</b>	<b>31%</b>	<b>43%</b>
Gorge	Lower Gorge	2	0	2	0	6	n.a.	81%	9%	119%
	Hood	2	5	2	0	5	108%	69%	0%	191%
	<b>Total</b>	<b>4</b>	<b>5</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>108%</b>	<b>58%</b>	<b>1%</b>	<b>88%</b>
<b>ESU Total</b>		<b>102</b>	<b>96</b>	<b>89</b>	<b>52</b>	<b>101</b>	<b>36%</b>	<b>28%</b>	<b>23%</b>	<b>34%</b>

n.a. = Not available (no surveys were selected in the population, less than 2 surveys stayed in rotation, or the abundance estimate was 0).

Table 2. Lower Columbia River Coho ESU adult Coho Salmon occupancy (total & wild) by population, stratum, and ESU for the 2021 run year and previous 7-year average (2014–20). Occupancy = a peak of 4 or more adult Coho Salmon per mile. Wild Occupied = occupied sites with at least one wild Coho Salmon. n.a = Not available, population was not monitored.

ESU, Stratum, and TRT Population	2021 No. sites surveyed	7 yr. avg. No. sites surveyed	Total Coho Salmon		Wild Coho Salmon	
			2021 % Occupied	7 yr. avg. % Occupied	2021 % Occupied	7 yr. avg. % Occupied
<b>Lower Columbia R. ESU</b>	<b>96</b>	<b>92</b>	<b>55%</b>	<b>43%</b>	<b>63%</b>	<b>41%</b>
<b>Coast Stratum</b>	<b>36</b>	<b>35</b>	<b>67%</b>	<b>48%</b>	<b>72%</b>	<b>45%</b>
Youngs Bay	0	0	n.a.	n.a.	n.a.	n.a.
Big Creek	0	0	n.a.	n.a.	n.a.	n.a.
Clatskanie River	26	21	69%	53%	73%	50%
Scappoose Creek	10	14	60%	40%	70%	39%
<b>Cascade Stratum</b>	<b>55</b>	<b>53</b>	<b>45%</b>	<b>36%</b>	<b>55%</b>	<b>35%</b>
Clackamas River	23	26	26%	29%	48%	29%
Sandy River	32	27	59%	42%	59%	41%
<b>Gorge Stratum</b>	<b>5</b>	<b>4</b>	<b>80%</b>	<b>77%</b>	<b>80%</b>	<b>70%</b>
Lower Gorge tribs.	n.a.	3	n.a.	83%	n.a.	70%
Hood River	5	3	80%	79%	80%	79%

Table 3. Lower Columbia River Coho ESU estimated abundance of adult Coho Salmon spawning naturally by ESU, stratum, and population in the 2021 run year compared to the previous 19 years.

Geographic scale ESU/Stratum/Population		Spawning year			
		2021	2002 to 2020		
			Avg.	Min.	Max.
<b>Lower Columbia River ESU (Oregon Only)</b>	<b>Wild</b>	<b>16,298 *</b>	<b>7,531</b>	<b>2,988</b>	<b>21,849</b>
	<b>Hatchery</b>	<b>2,027 *</b>	<b>2,491</b>	<b>285</b>	<b>12,230</b>
	<b>% Hat.</b>	<b>11.1% *</b>	<b>22.7%</b>	<b>2.4%</b>	<b>65.6%</b>
<b>Coast Stratum *</b>	<b>Wild</b>	<b>n.a.</b>	<b>1,836</b>	<b>1,140</b>	<b>3,993</b>
	<b>Hatchery</b>	<b>n.a.</b>	<b>838</b>	<b>89</b>	<b>3,420</b>
	<b>% Hat.</b>	<b>n.a.</b>	<b>27.8%</b>	<b>4.9%</b>	<b>74.4%</b>
Youngs Bay *	Wild	n.a.	119	21	411
	Hatchery	n.a.	510	14	2,506
	% Hat.	n.a.	67.7%	21.9%	92.1%
Big Creek *	Wild	n.a.	300	98	792
	Hatchery	n.a.	317	66	936
	% Hat.	n.a.	46.0%	15.5%	89.8%
Clatskanie	Wild	476	818	25	3,246
	Hatchery	413	51	0	151
	% Hat.	46.5%	11.3%	0.0%	67.9%
Scappoose	Wild	921	674	178	1,960
	Hatchery	0	10	0	67
	% Hat.	0.0%	1.5%	0.0%	9.9%
<b>Cascade Stratum</b>	<b>Wild</b>	<b>14,391</b>	<b>5,383</b>	<b>2,157</b>	<b>16,612</b>
	<b>Hatchery</b>	<b>180</b>	<b>1,484</b>	<b>139</b>	<b>10,871</b>
	<b>% Hat.</b>	<b>1.2%</b>	<b>18.8%</b>	<b>1.9%</b>	<b>71.2%</b>
Clackamas	Wild	10,572	3,878	1,301	10,670
	Hatchery	180	1,393	50	10,871
	% Hat.	1.7%	21.8%	1.5%	75.8%
Sandy	Wild	3,819	1,504	382	5,942
	Hatchery	0	95	0	515
	% Hat.	0.0%	7.8%	0.0%	57.4%
<b>Gorge Stratum</b>	<b>Wild</b>	<b>510</b>	<b>462</b>	<b>34</b>	<b>1,525</b>
	<b>Hatchery</b>	<b>1,434</b>	<b>613</b>	<b>25</b>	<b>2,555</b>
	<b>% Hat.</b>	<b>73.8%</b>	<b>46.6%</b>	<b>11.9%</b>	<b>72.9%</b>
Lower Gorge Tribs.	Wild	n.a.	268	16	920
	Hatchery	n.a.	244	8	1,512
	% Hat.	n.a.	38.3%	4.2%	85.2%
Hood River	Wild	510	226	4	1,262
	Hatchery	1,434	369	0	1,298
	% Hat.	73.8%	51.6%	0.0%	85.3%

\* = Does not include data for the Youngs Bay and Big Creek Populations. These populations were not sampled, 2013 through 2021 run years. Also, the Lower Gorge and Hood populations were not sampled in 2017 and 2020.

Table 4. Oregon Coast Coho ESU, GRTS spawning survey goals, responses, and estimate precision by population, 2021 run year. Target response sites are reaches within Coho Salmon spawning habitat which were successfully surveyed.

Stratum	Population	Goal	Target response				95% CI as percent of point estimate (goal is +/- 30%)			
			2021	2014 to 2020			2021	2014 to 2020		
				Avg.	Min.	Max.		Avg.	Min.	Max.
North Coast	Necanicum	13	6	15	8	18	<i>No Est</i>	37%	22%	50%
	Nehalem	20	5	18	13	24	<i>No Est</i>	42%	34%	49%
	Tillamook	20	8	19	12	25	<i>No Est</i>	50%	36%	56%
	Nestucca	20	7	15	9	23	<i>No Est</i>	57%	42%	91%
	NC Depend.	7	4	7	6	9	<i>No Est</i>	89%	71%	104%
	<b>Total</b>	<b>80</b>	<b>30</b>	<b>75</b>	<b>50</b>	<b>92</b>	<b>32%</b>	<b>27%</b>	<b>22%</b>	<b>31%</b>
Mid-Coast	Salmon	9	8	10	5	17	73%	72%	23%	126%
	Siletz	20	21	19	12	26	38%	41%	33%	48%
	Yaquina	20	20	17	10	22	33%	44%	35%	55%
	Beaver	3	4	4	3	5	76%	66%	24%	130%
	Alsea	20	18	18	11	24	45%	34%	26%	55%
	Siuslaw	20	19	17	12	23	42%	41%	28%	59%
	MC Depend.	8	5	8	6	11	132%	76%	43%	103%
	<b>Total</b>	<b>100</b>	<b>95</b>	<b>92</b>	<b>65</b>	<b>114</b>	<b>22%</b>	<b>20%</b>	<b>16%</b>	<b>27%</b>
Lakes	Siltcoos	0	0	0	0	0	n.a.	n.a.	n.a.	n.a.
	Tahkenitch	0	0	0	0	0	n.a.	n.a.	n.a.	n.a.
	Tenmile	0	0	0	0	0	n.a.	n.a.	n.a.	n.a.
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>
Umpqua	L. Umpqua	20	17	16	11	20	54%	48%	24%	78%
	M. Umpqua	20	12	12	6	15	85%	66%	50%	80%
	N. Umpqua	3	1	1	0	3	n.a.	n.a.	n.a.	n.a.
	S. Umpqua	20	16	15	9	20	65%	73%	37%	107%
	<b>Total</b>	<b>63</b>	<b>46</b>	<b>45</b>	<b>30</b>	<b>55</b>	<b>38%</b>	<b>38%</b>	<b>22%</b>	<b>62%</b>
Mid-South Coast	Coos	20	11	19	12	22	<i>No Est</i>	51%	29%	69%
	Coquille	20	11	19	15	24	<i>No Est</i>	45%	33%	57%
	Floras	17	4	10	1	22	<i>No Est</i>	52%	21%	72%
	Sixes	8	8	8	3	15	<i>No Est</i>	72%	40%	115%
	MS Depend	3	0	2	0	6	<i>No Est</i>	179%	163%	195%
	<b>Total</b>	<b>68</b>	<b>34</b>	<b>58</b>	<b>41</b>	<b>79</b>	<b>36%</b>	<b>32%</b>	<b>26%</b>	<b>37%</b>
<b>ESU Total</b>		<b>311</b>	<b>205</b>	<b>270</b>	<b>191</b>	<b>322</b>	<b>15%</b>	<b>15%</b>	<b>13%</b>	<b>18%</b>

n.a. = Not available (no surveys were selected in the population, less than 2 surveys stayed in rotation, or the abundance estimate was 0).

Table 5. Oregon Coast Coho ESU adult Coho Salmon occupancy (total & wild) by population, stratum, and ESU for the 2021 run year and previous 7-year average (2014–20). Occupancy = a peak of 4 or more adult Coho Salmon per mile. Wild Occupied = occupied sites with at least one wild Coho Salmon. n.a = not available.

ESU, Stratum, and TRT Population	2021 No. sites surveyed	7 yr. avg. No. sites surveyed	Total Coho Salmon		Wild Coho Salmon	
			2021 % Occupied	7 yr. avg. % Occupied	2021 % Occupied	7 yr. avg. % Occupied
<b>Oregon Coast ESU</b>	<b>205</b>	<b>270</b>	<b>78.5%</b>	<b>65.7%</b>	<b>76.1%</b>	<b>64.1%</b>
<b>North Coast Stratum</b>	<b>30</b>	<b>75</b>	<b>86.7%</b>	<b>67.2%</b>	<b>86.7%</b>	<b>65.2%</b>
Necanicum River	6	15	n.a.	75.5%	n.a.	72.1%
Nehalem River	5	18	n.a.	68.6%	n.a.	68.6%
Tillamook Bay	8	19	n.a.	63.9%	n.a.	61.7%
Nestucca River	7	15	n.a.	71.8%	n.a.	68.8%
NC Dependents	4	7	n.a.	49.3%	n.a.	47.0%
<b>Mid-Coast Stratum</b>	<b>95</b>	<b>92</b>	<b>87.4%</b>	<b>73.1%</b>	<b>85.3%</b>	<b>71.9%</b>
Salmon River	8	10	37.5%	49.7%	25.0%	48.1%
Siletz River	21	19	100%	85.4%	100%	85.4%
Yaquina River	20	17	95.0%	81.4%	95.0%	80.6%
Beaver Creek	4	4	100%	95.2%	100%	90.5%
Alsea River	18	18	100%	81.5%	100%	81.5%
Siuslaw River	19	17	84.2%	69.7%	84.2%	68.0%
MC Dependents	5	8	40.0%	31.4%	20.0%	25.8%
<b>Lakes Stratum</b>	<b>0</b>	<b>0</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>
Siltcoos Lake	0	0	n.a.	n.a.	n.a.	n.a.
Tahkenitch Lake	0	0	n.a.	n.a.	n.a.	n.a.
Tenmile Lake	0	0	n.a.	n.a.	n.a.	n.a.
<b>Umpqua Stratum</b>	<b>46</b>	<b>45</b>	<b>63.0%</b>	<b>52.4%</b>	<b>58.7%</b>	<b>50.7%</b>
Lower Umpqua River	17	16	94.1%	73.3%	88.2%	70.5%
Mid. Umpqua River	12	12	50.0%	46.8%	41.7%	46.8%
North Umpqua River	1	1	n.a.	n.a.	n.a.	n.a.
South Umpqua River	16	15	43.8%	36.0%	43.8%	33.7%
<b>Mid-South Stratum</b>	<b>34</b>	<b>58</b>	<b>67.6%</b>	<b>61.7%</b>	<b>64.7%</b>	<b>60.0%</b>
Coos River	11	19	n.a.	73.4%	n.a.	71.9%
Coquille River	11	19	n.a.	68.4%	n.a.	67.7%
Floras Creek	4	10	n.a.	69.3%	n.a.	65.6%
Sixes River	8	8	n.a.	35.1%	n.a.	28.0%
MSC Dependents	0	2	n.a.	n.a.	n.a.	n.a.

Table 6. Oregon Coast Coho ESU estimated abundance of adult Coho Salmon spawning naturally by ESU, stratum, and population for the 2021 run year compared to the previous 31 years.

Geographic scale ESU/Stratum/Population	Coho salmon origin	Spawning year			
		2021	1990 to 2020		
			Avg.	Min.	Max.
<b>Oregon Coast Coho ESU</b>	<b>Wild</b>	<b>242,185</b>	<b>124,147</b>	<b>21,139</b>	<b>359,692</b>
	<b>Hatchery</b>	<b>1,169</b>	<b>8,032</b>	<b>386</b>	<b>26,128</b>
	<b>% Hat.</b>	<b>0.5%</b>	<b>9.2%</b>	<b>0.6%</b>	<b>31.4%</b>
<b>North Coast Stratum</b>	<b>Wild</b>	<b>42,811</b>	<b>20,599</b>	<b>1,524</b>	<b>67,370</b>
	<b>Hatchery</b>	<b>262</b>	<b>1,797</b>	<b>0</b>	<b>15,563</b>
	<b>% Hat.</b>	<b>0.6%</b>	<b>16.3%</b>	<b>0.0%</b>	<b>79.0%</b>
Necanicum River	Wild	No Est.	1,310	97	5,727
	Hatchery	No Est.	105	0	501
	% Hat.	No Est.	14.0%	0.0%	40.1%
Nehalem River	Wild	No Est.	10,737	527	32,517
	Hatchery	No Est.	1,366	0	14,014
	% Hat.	No Est.	18.0%	0.0%	87.7%
Tillamook Bay	Wild	No Est.	5,033	80	20,090
	Hatchery	No Est.	272	0	1,498
	% Hat.	No Est.	14.6%	0.0%	68.9%
Nestucca River	Wild	No Est.	2,907	160	16,698
	Hatchery	No Est.	46	0	274
	% Hat.	No Est.	5.0%	0.0%	15.3%
North Coast Dependents	Wild	No Est.	611	0	4,607
	Hatchery	No Est.	15	0	111
	% Hat.	No Est.	0.9%	0.0%	6.3%
<b>Mid-Coast Stratum</b>	<b>Wild</b>	<b>88,614</b>	<b>35,075</b>	<b>2,444</b>	<b>121,963</b>
	<b>Hatchery</b>	<b>570</b>	<b>1,772</b>	<b>0</b>	<b>9,633</b>
	<b>% Hat.</b>	<b>0.6%</b>	<b>11.7%</b>	<b>0.0%</b>	<b>50.1%</b>
Salmon River	Wild	571	580	5	3,680
	Hatchery	0	539	0	2,621
	% Hat.	0.0%	51.3%	0.0%	97.6%
Siletz River	Wild	15,428	6,197	207	33,094
	Hatchery	0	228	0	962
	% Hat.	0.0%	14.1%	0.0%	58.4%
Yaquina River	Wild	16,721	5,958	317	25,582
	Hatchery	0	154	0	1,526
	% Hat.	0.0%	6.2%	0.0%	25.0%
Beaver Creek	Wild	2,483	1,704	90	6,564
	Hatchery	0	43	0	405
	% Hat.	0.0%	3.2%	0.0%	23.8%
Alsea River	Wild	13,633	6,636	108	28,337
	Hatchery	85	282	0	2,214
	% Hat.	0.6%	13.7%	0.0%	93.8%
Siuslaw River	Wild	38,031	12,552	501	55,445
	Hatchery	388	514	0	4,136
	% Hat.	1.0%	9.0%	0.0%	37.6%
Mid Coast Dependents	Wild	1,747	1,449	51	8,179
	Hatchery	97	25	0	118
	% Hat.	5.3%	1.5%	0.0%	5.9%

Table 6. Continued

Geographic scale ESU/Stratum/Population	Coho salmon origin	Spawning year			
		2021	1990 to 2020		
			Avg.	Min.	Max.
<b>Lakes Stratum</b>	<b>Wild</b>	<b>19,664</b>	<b>13,398</b>	<b>1,302</b>	<b>38,744</b>
	<b>Hatchery</b>	<b>0</b>	<b>47</b>	<b>0</b>	<b>251</b>
	<b>% Hat.</b>	<b>0.0%</b>	<b>0.4%</b>	<b>0.0%</b>	<b>2.2%</b>
Siltcoos Lake	Wild	3,885	3,732	385	7,998
	Hatchery	0	22	0	124
	% Hat.	0.0%	0.9%	0.0%	8.7%
Tahkenitch Lake	Wild	2,398	2,659	269	10,681
	Hatchery	0	11	0	107
	% Hat.	0.0%	0.5%	0.0%	3.1%
Tenmile Lake	Wild	13,381	7,007	318	20,385
	Hatchery	0	13	0	123
	% Hat.	0.0%	0.2%	0.0%	3.4%
<b>Umpqua Stratum</b>	<b>Wild</b>	<b>49,266</b>	<b>26,809</b>	<b>3,334</b>	<b>94,655</b>
	<b>Hatchery</b>	<b>337</b>	<b>4,011</b>	<b>257</b>	<b>17,758</b>
	<b>% Hat.</b>	<b>0.7%</b>	<b>16.1%</b>	<b>1.1%</b>	<b>36.0%</b>
Lower Umpqua River	Wild	23,714	9,824	1,257	36,942
	Hatchery	0	236	0	1,484
	% Hat.	0.0%	2.9%	0.0%	15.7%
Middle Umpqua River	Wild	6,354	6,169	563	19,962
	Hatchery	0	197	0	1,259
	% Hat.	0.0%	3.9%	0.0%	20.6%
North Umpqua River	Wild	4,795	2,632	355	9,397
	Hatchery	337	2,809	50	14,094
	% Hat.	6.6%	43.9%	1.2%	84.3%
South Umpqua River	Wild	14,403	8,183	435	49,958
	Hatchery	0	769	0	7,040
	% Hat.	0.0%	12.7%	0.0%	57.2%
<b>Mid-South Coast Stratum</b>	<b>Wild</b>	<b>41,830</b>	<b>28,267</b>	<b>4,890</b>	<b>82,077</b>
	<b>Hatchery</b>	<b>0</b>	<b>405</b>	<b>0</b>	<b>2,766</b>
	<b>% Hat.</b>	<b>0.0%</b>	<b>2.0%</b>	<b>0.0%</b>	<b>23.8%</b>
Coos River	Wild	No Est.	13,066	1,112	38,880
	Hatchery	No Est.	185	0	1,387
	% Hat.	No Est.	2.0%	0.0%	36.4%
Coquille River	Wild	No Est.	12,920	2,033	55,667
	Hatchery	No Est.	155	0	1,832
	% Hat.	No Est.	1.6%	0.0%	15.4%
Floras Creek	Wild	No Est.	2,377	340	11,329
	Hatchery	No Est.	57	0	400
	% Hat.	No Est.	3.4%	0.0%	22.8%
Sixes River	Wild	No Est.	179	34	567
	Hatchery	No Est.	15	0	182
	% Hat.	No Est.	7.4%	0.0%	65.7%
Mid-South Coast Dependents	Wild	No Est.	83	0	484
	Hatchery	No Est.	1	0	9
	% Hat.	No Est.	0.9%	0.0%	4.6%

Table 7. Comparison of two independent coho abundance estimates at each of two life-cycle monitoring sites in the Oregon Coast Coho ESU. Estimate based on AUC protocol compared to a Mark–Recapture estimate (Mill Cr., Siletz R.) or a Dam Count (Mill Cr., Yaquina R.).

Spawning Year	Mill Creek (Siletz R.)			Mill Creek (Yaquina R.)		
	M-R Est.	AUC Est.	AUC/M-R	Dam Count	AUC Est.	AUC/Dam
2014	1,844	1,642	89%	1,471	1,677	114%
2015	316	196	62%	275	142	52%
2016	451	440	98%	760	607	80%
2017	518	471	91%	405	211	52%
2018	363	276	76%	382	298	78%
2019	674	611	91%	473	291	62%
2020	656	834	127%	<i>No comparison in 2020 (budget cuts)</i>		
2021	2,321	2,102	91%	1,223	993	81%
<b>Mean</b>	<b>893</b>	<b>822</b>	<b>90%</b>	<b>713</b>	<b>603</b>	<b>74%</b>



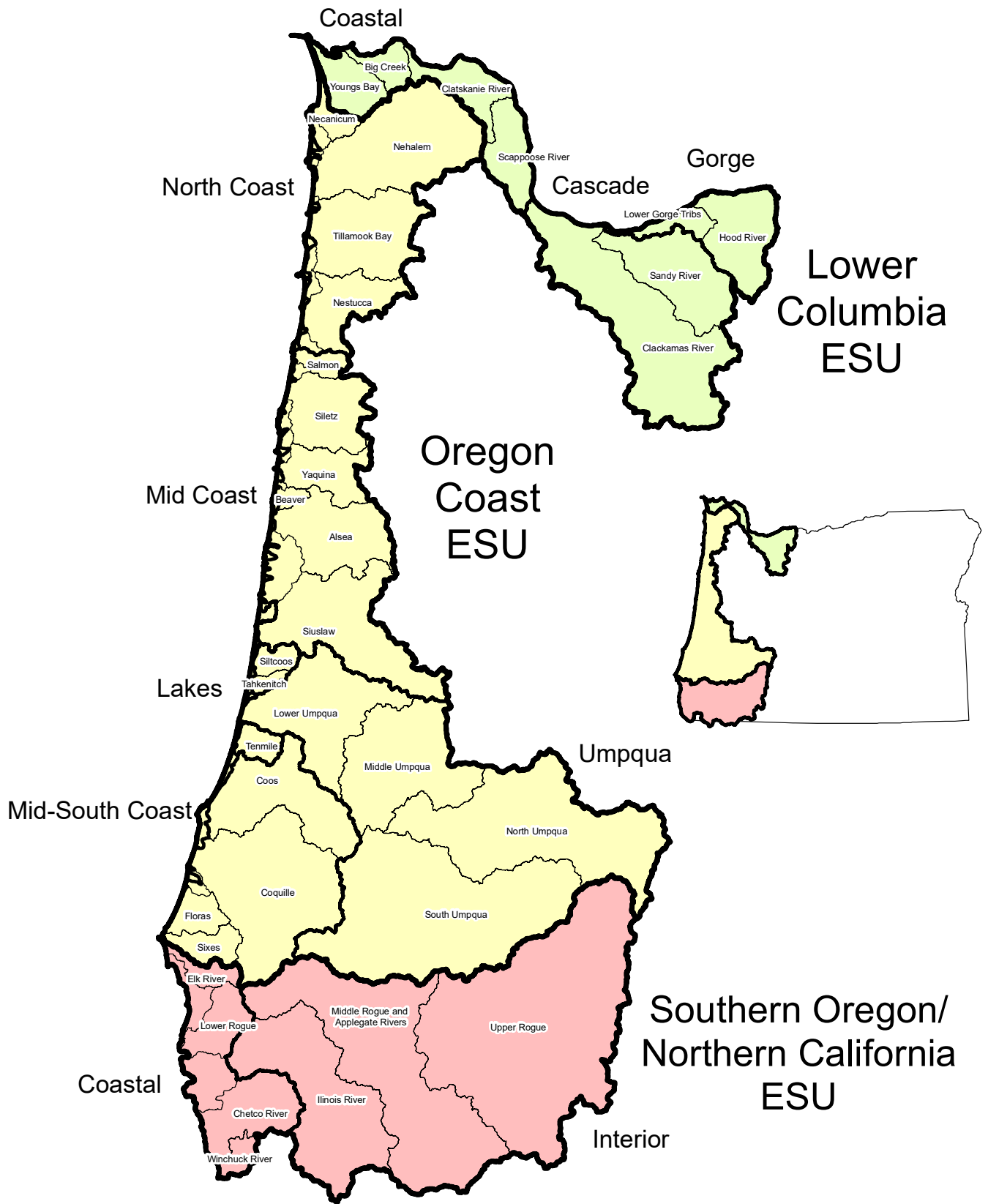
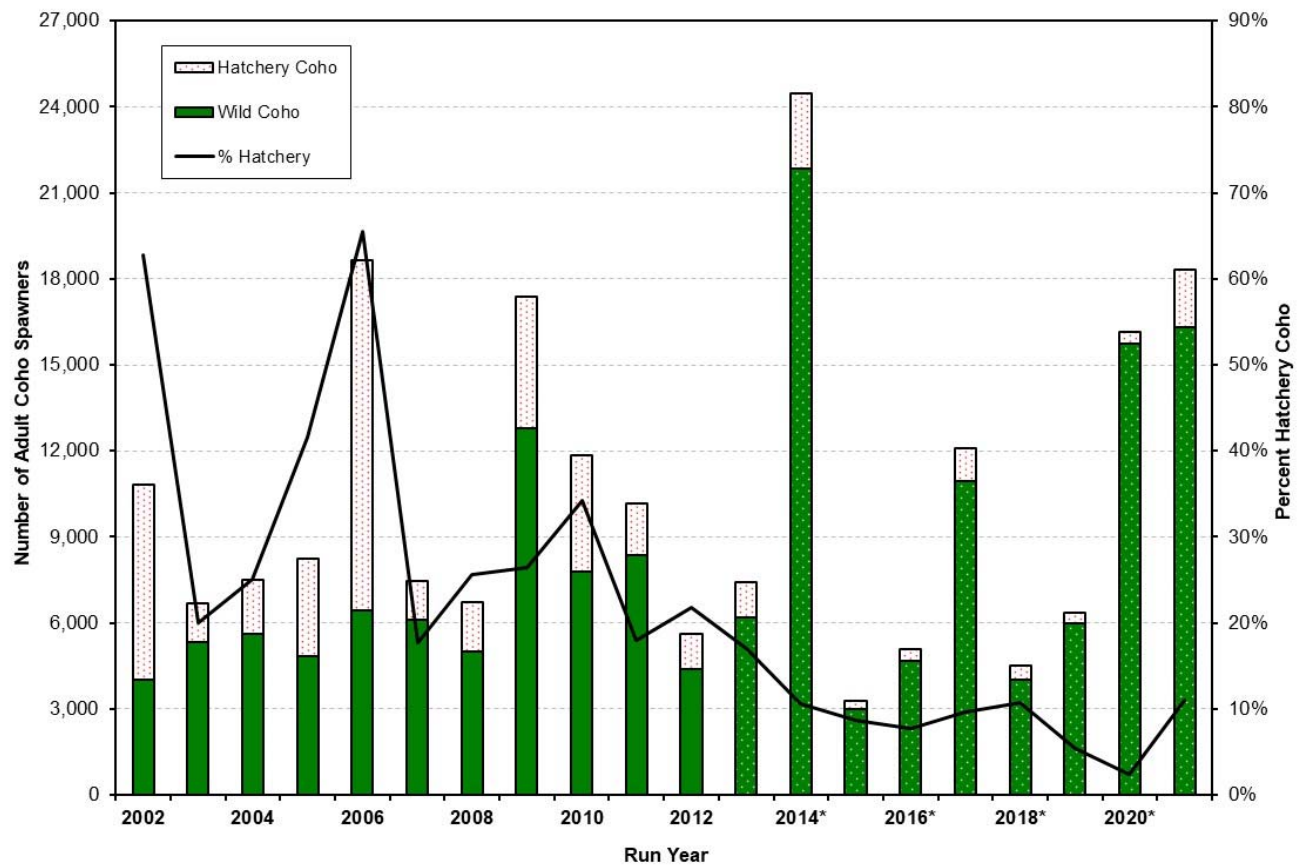


Figure 1. Coho salmon monitoring study area showing the populations, strata, and evolutionarily significant units.



\* Estimates for 2013 to 2021 do not include Big Creek and, Youngs Bay populations, and are therefore incomplete. These populations combined account for an average of 12% of the total estimate for the ESU (about 7% of the wild, and 27% of the hatchery components). Note: The Hood River and Lower Gorge populations were not sampled in 2017 (wild fires) and 2020 (budgets).

Figure 2. Lower Columbia River Coho ESU estimated abundance of adult Coho Salmon spawning naturally by rearing origin for the 2002 through 2021 run years.

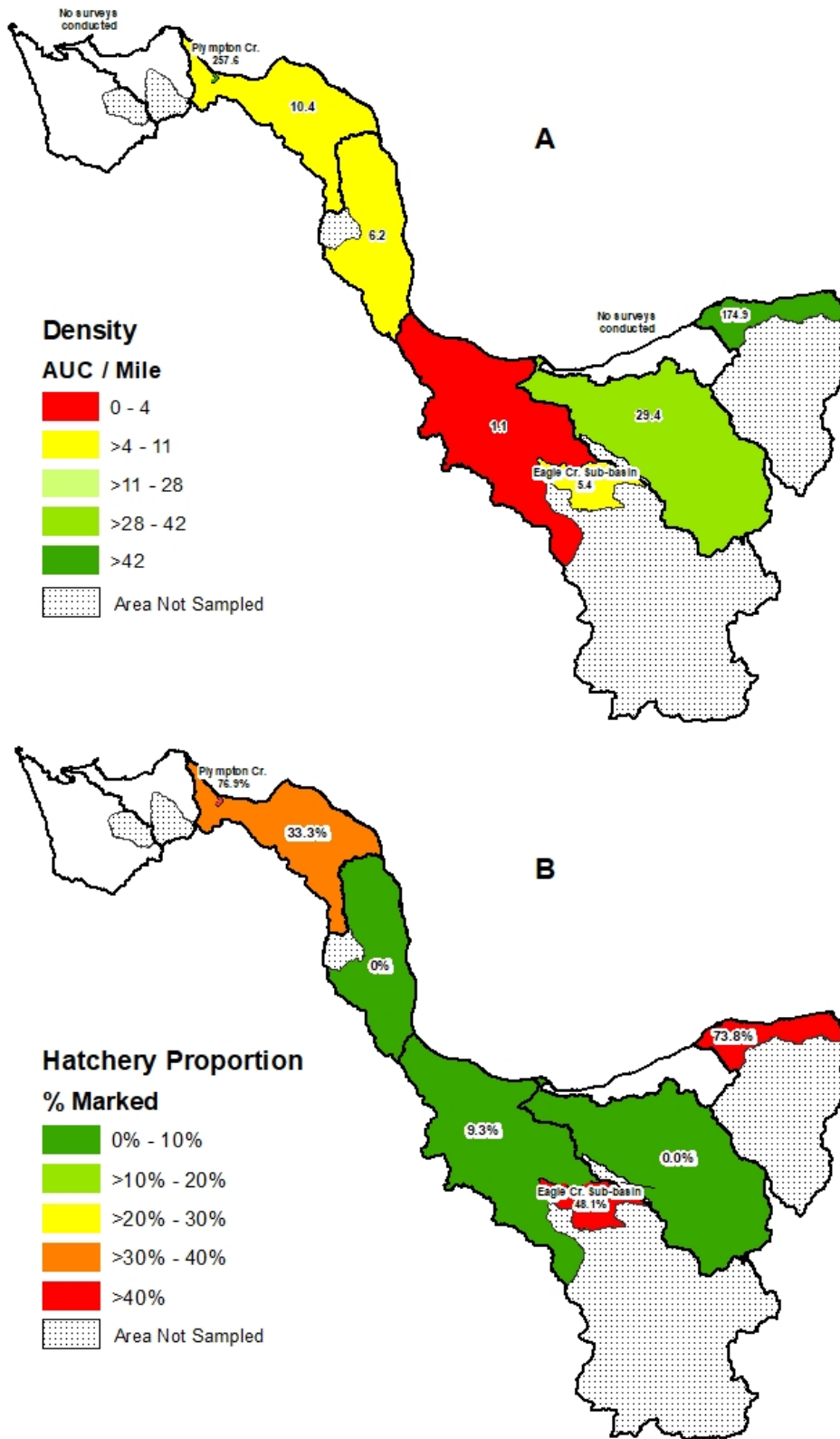


Figure 3. A) Coho salmon density (AUC/mile) in GRTS surveys by lower Columbia River TRT population, 2021. B) Percentage of marked adult coho salmon in GRTS surveys by lower Columbia River TRT population, 2021.

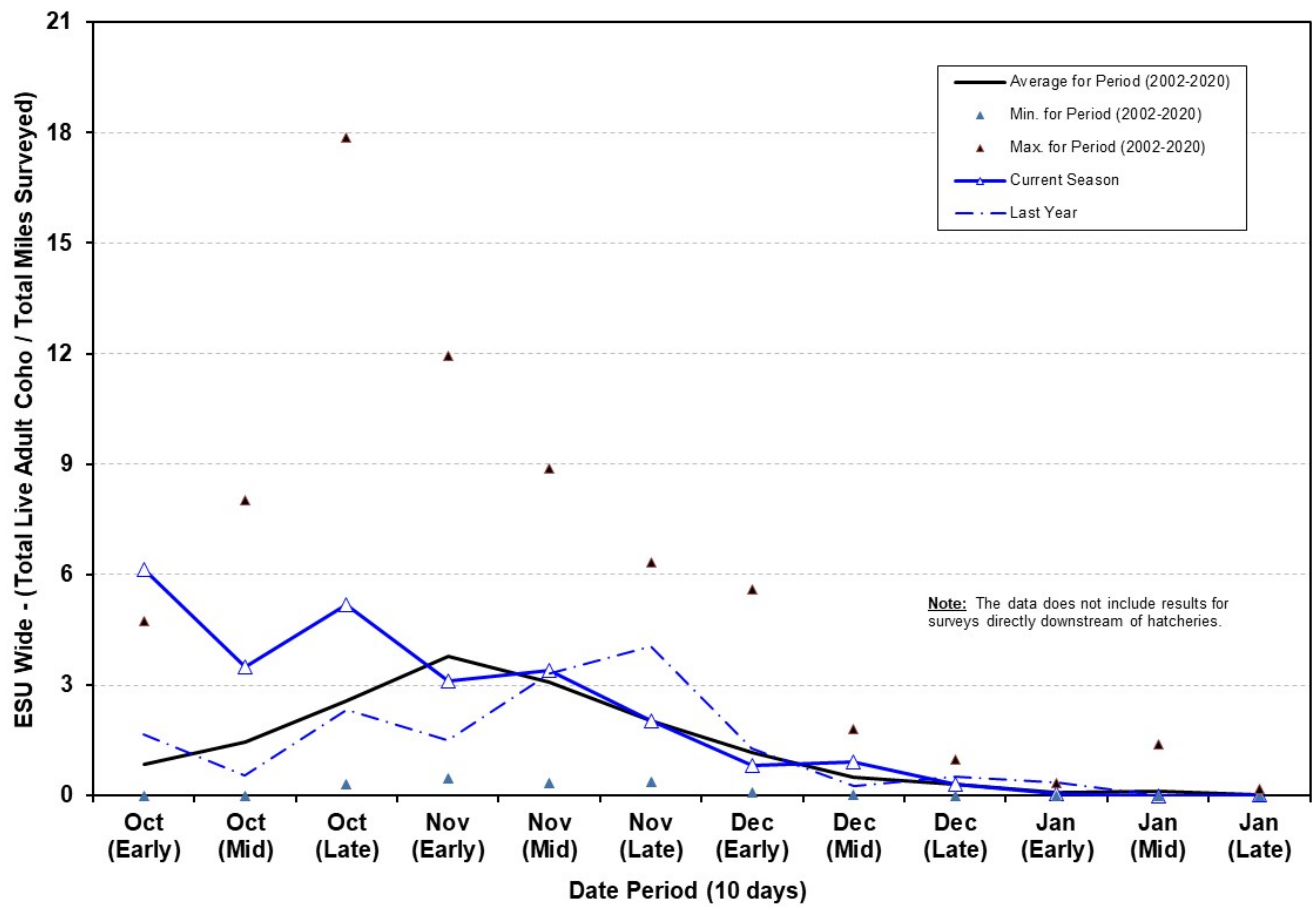


Figure 4. Spawn timing of live adult Coho Salmon in 2021 on GRTS spawning ground surveys in the Lower Columbia River Coho ESU.

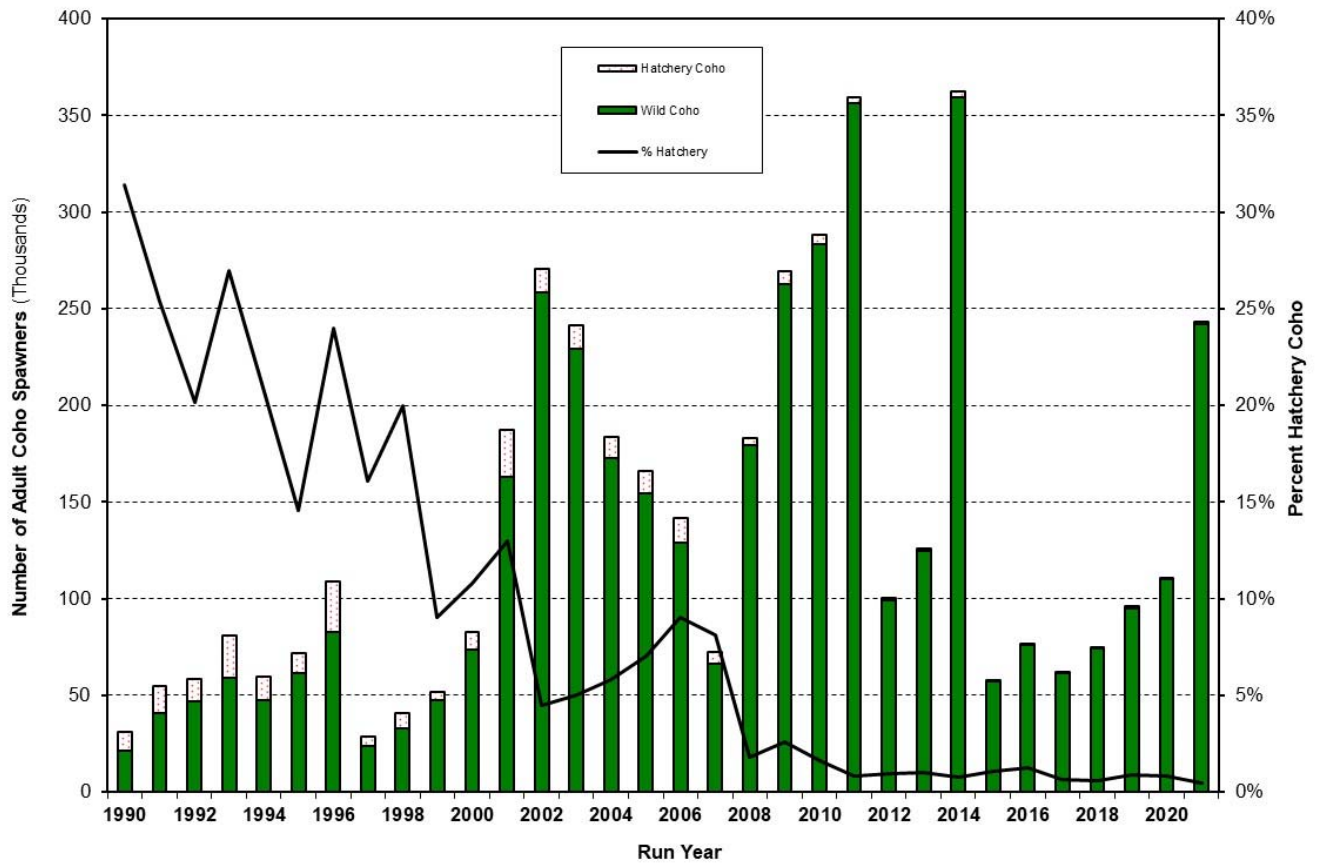


Figure 5. Oregon Coast Coho ESU estimated abundance of adult Coho Salmon spawning naturally by rearing origin for the 1990 through 2021 run years.

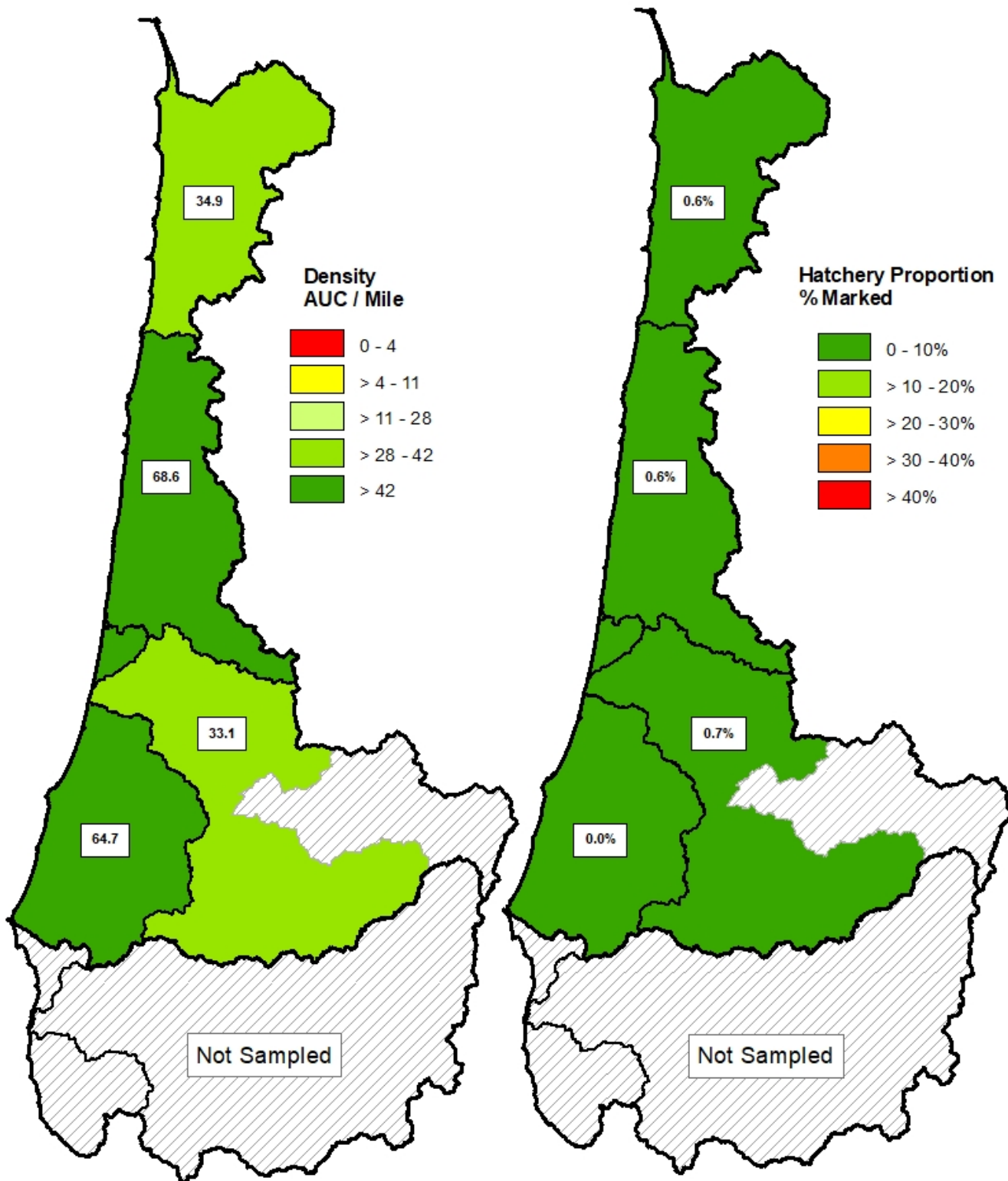


Figure 6. Coho salmon density (AUC/mile) in GRTS surveys by strata in the Oregon Coast Coho ESU, 2021.

Figure 7. Percentage of marked adult coho salmon in GRTS surveys by strata in the Oregon Coast Coho ESU, 2021.

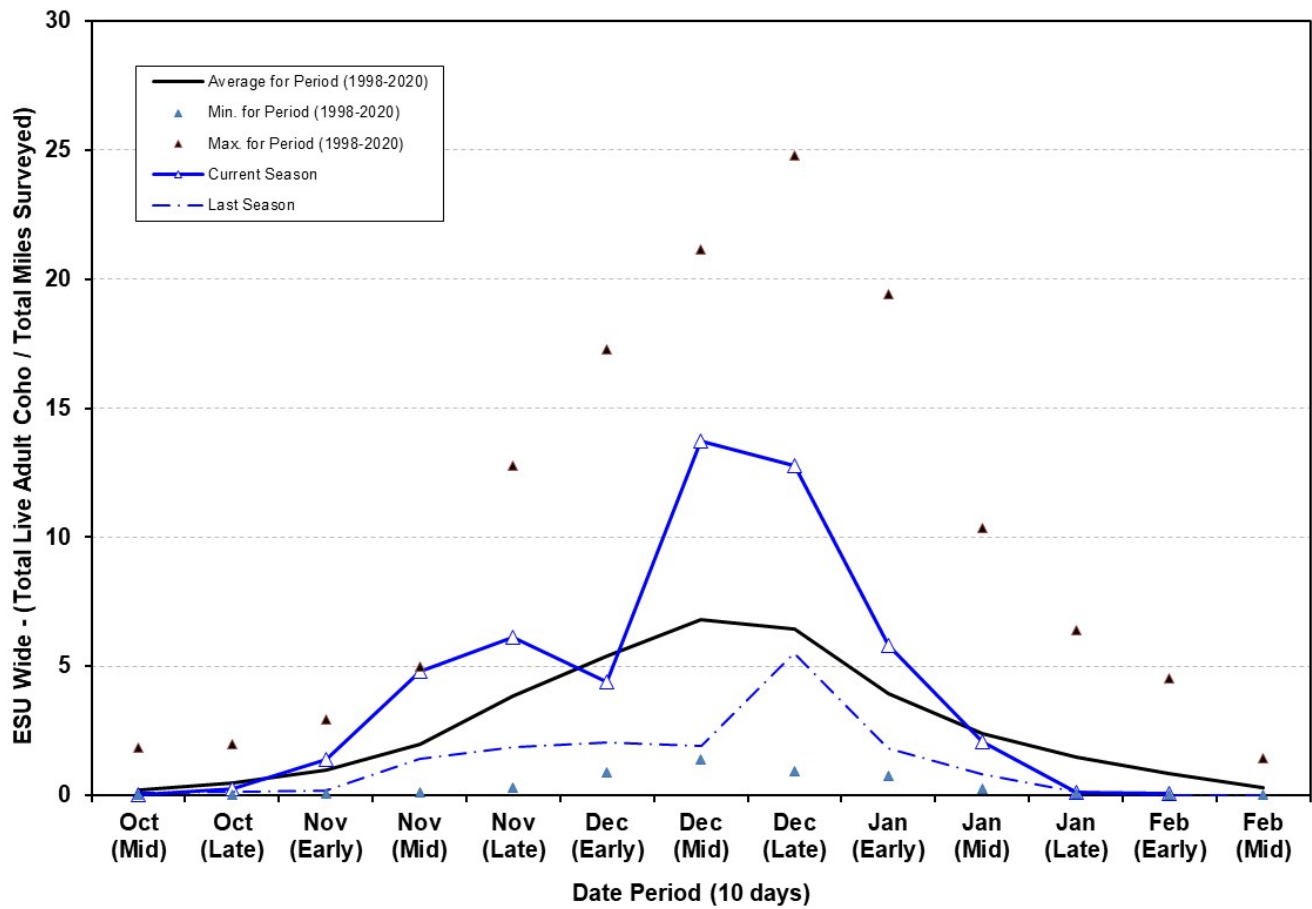


Figure 8. Spawn timing of live adult Coho Salmon in 2021 on GRTS spawning ground surveys in the Oregon Coast Coho ESU.

## APPENDIX A (LCR COHO ESU)

Table A-1. Results of randomly selected spawning ground surveys for Coho Salmon in the Oregon portion of the LCR Coho ESU, run year 2021. Estimates derived using GRTS protocol. Estimates of wild spawners derived through application of fin-mark observations. Missing values for populations indicate inadequate samples for determining total and/or wild abundance.

ESU, Stratum, and TRT Population	Survey effort number of		Adult Coho Salmon spawner abundance			
	Surveys	Miles	Total		Wild	
			Estimate	95% CI	Estimate	95% CI
<b>Lower Columbia River ESU</b>	<b>96</b>	<b>86.9</b>	<b>7,524</b>	<b>2,728</b>	<b>5,497</b>	<b>1,824</b>
<b>Coast Stratum</b>	<b>36</b>	<b>31.9</b>	<b>1,810</b>	<b>582</b>	<b>1,398</b>	<b>564</b>
Youngs Bay	0					
Big Creek	0					
Clatskanie River (ex. Plympton)	24	22.3	623	190	415	127
Plympton Cr. (Clatskanie R.)	2	2.1	266	0	61	0
Scappoose River	10	7.5	921	550	921	550
<b>Cascade Stratum</b>	<b>55</b>	<b>51.4</b>	<b>3,769</b>	<b>1,653</b>	<b>3,589</b>	<b>1,646</b>
Clackamas River (ex. Eagle Cr.)	14	14.2	219	141	199	128
Eagle Creek (Clackamas R.)	9	9.9	332	165	172	86
Sandy River	32	27.4	3,218	1,638	3,218	1,638
<b>Gorge Stratum</b>	<b>5</b>	<b>3.7</b>	<b>1,944</b>	<b>2,091</b>	<b>510</b>	<b>549</b>
Lower Gorge	0					
Hood River	5	3.7	1,944	2,091	510	549

Table A-2. Number of unmarked adult Coho Salmon passed upstream of counting stations into areas without GRTS spawning surveys. Oregon portion of the LCR Coho ESU, run year 2021.

ESU, Stratum, and TRT Population	Counting station	Spawning year			
		2002 to 2020			
		2021	Avg.	Min.	Max.
<b>Lower Columbia River ESU</b>					
<b>Coast Stratum</b>					
Youngs Bay	Klaskanine Hatchery	36	21	2	68
Big Creek	Big Creek Hatchery	460	247	46	606
Scappoose River	Bonnie Falls Trap	n.a. <sup>a</sup>	47	2	136
<b>Cascade Stratum</b>					
Clackamas River	N Fk Clackamas Dam	10,201	3,102	835	9,012
Sandy River	Sandy Hatchery <sup>a</sup>	601	201	36	601
	Marmot Dam	n.a.	809	310	1,173
<b>Gorge Stratum</b>					
Hood River	Powerdale Dam	n.a.	52	27	126

*a = Not Applicable. Trap count discontinued after 2018 season, and area above trap included in GRTS sampling starting in 2020.*

*b = Sandy Hatchery count through 2009 is number released above Marmot Dam, which was removed in 2006. Beginning in 2010, Sandy Hatchery switched the release site for these fish to above the hatchery weir on Cedar Creek.*

*n.a. = Not Applicable. Marmot dam was removed in 2006 and Powerdale Dam was removed in 2010, so there are no longer any dam counts.*



Table A-3. Annual abundance estimates of naturally spawning wild adult Coho Salmon in the Oregon portion of the LCR Coho ESU, run years 2002 through 2021. n.a. = not available.

Return Year	Youngs Bay	Big Creek	Clatskanie*	Scappoose	Clackamas*	Sandy	Lower Gorge	Hood River
2002	411	98	167	500	1,985	382	338	147
2003	113	435	563	336	2,495	1,348	n.a.	41
2004	149	111	398	755	2,733	1,213	n.a.	126
2005	79	219	494	348	1,301	856	263	1,262
2006	74	225	421	719	3,464	923	226	373
2007	25	212	927	375	3,438	687	126	170
2008	82	360	995	294	1,800	1,277	223	69
2009	28	792	1,195	778	8,642	1,493	468	65
2010	68	279	1,686	1,960	4,009	901	920	223
2011	161	160	1,546	297	2,253	3,494	216	232
2012	129	409	619	210	1,663	1,165	96	169
2013	n.a.	n.a.	611	979	4,012	667	151	561
2014	n.a.	n.a.	3,246	1,587	10,672	5,942	362	42
2015	n.a.	n.a.	240	487	1,784	443	30	4
2016	n.a.	n.a.	464	1,200	1,628	939	395	57
2017	n.a.	n.a.	566	387	7,598	2,384	n.a.	n.a.
2018	n.a.	n.a.	25	178	3,159	537	16	107
2019	n.a.	n.a.	146	384	4,044	1,052	184	193
2020	n.a.	n.a.	1,233	n.a.	n.a.	n.a.	n.a.	n.a.
2021	n.a.	n.a.	476	921	10,572	3,819	n.a.	510

\* = Stratified abundance estimation. Plympton Creek estimated separately from the rest of the Clatskanie population and Eagle Creek estimated separately from the rest of the Clackamas population.

## APPENDIX B (OC COHO ESU)

Table B-1. Results of randomly selected spawning ground surveys for Coho Salmon in the OC Coho ESU, run year 2021. Estimates derived using GRTS protocol. Estimates of wild spawners derived through application of fin-mark observations. Missing values for populations indicate inadequate samples for determining total and/or wild abundance.

ESU, Stratum, and TRT Population	Survey effort number of		Adult Coho Salmon spawner abundance			
	Surveys	Miles	Total		Wild	
			Estimate	95% CI	Estimate	95% CI
<b>Oregon Coast ESU</b>	<b>205</b>	<b>151.7</b>	<b>218,083</b>	<b>32,517</b>	<b>217,196</b>	<b>32,352</b>
<b>North Coast Stratum</b>	<b>30</b>	<b>24.0</b>	<b>43,073</b>	<b>13,629</b>	<b>42,811</b>	<b>13,464</b>
Necanicum River	6	4.8	<i>No Est.</i>			
Nehalem River	5	3.9	<i>No Est.</i>			
Tillamook Bay	8	6.2	<i>No Est.</i>			
Nestucca River	7	6.5	<i>No Est.</i>			
NC Dependents	4	2.6	<i>No Est.</i>			
<b>Mid-Coast Stratum</b>	<b>95</b>	<b>67.3</b>	<b>88,709</b>	<b>19,153</b>	<b>88,139</b>	<b>18,990</b>
Salmon River	8	7.8	571	418	571	418
Siletz River	21	15.0	15,428	5,808	15,428	5,808
Yaquina River	20	10.8	16,721	5,469	16,721	5,469
Beaver Creek	4	2.2	2,483	1,888	2,483	1,888
Alsea River	18	14.2	13,243	5,903	13,158	5,865
Siuslaw River	19	12.6	38,419	16,085	38,031	15,922
MC Dependents	5	4.8	1,844	2,430	1,747	2,303
<b>Umpqua Stratum</b>	<b>46</b>	<b>34.5</b>	<b>44,471</b>	<b>16,693</b>	<b>44,471</b>	<b>16,693</b>
Lower Umpqua River	17	12.6	23,714	12,769	23,714	12,769
Middle Umpqua River	12	9.6	6,354	5,395	6,354	5,395
North Umpqua River	1	0.7				
South Umpqua River	16	11.6	14,403	9,302	14,403	9,302
<b>Mid-South Coast Stratum</b>	<b>34</b>	<b>25.9</b>	<b>41,830</b>	<b>15,037</b>	<b>41,775</b>	<b>15,037</b>
Coos River	11	10.6	<i>No Est.</i>			
Coquille River	11	8.6	<i>No Est.</i>			
Floras Creek	4	2.1	<i>No Est.</i>			
Sixes River	8	4.5	<i>No Est.</i>			
MSC Dependents	0		<i>No Est.</i>			

Table B-2. Coho Salmon spawners in the Oregon Coastal Lakes populations based on calibrated standard surveys, 2021.

ESU, Stratum, & TRT Population	Survey goal	Survey effort number of		Adult Coho Salmon spawner abundance			
				Total		Wild	
		Surveys	Miles	Estimate	95% CI	Estimate	95% CI
<b>Standard Surveys</b>							
<b>Lakes Strata</b>	<b>14</b>	<b>9</b>	<b>8.7</b>	<b>19,664</b>		<b>19,664</b>	
Siltcoos	5	2	2.5	3,885		3,885	
Tahkenitch	2	2	1.6	2,398		2,398	
Tenmile	7	5	4.6	13,381		13,381	

Table B-3. Coho passage above the Alsea Hatchery into an area without GRTS surveys (Alsea Population) and estimates of adult Coho Salmon run size in the North Umpqua Population derived through adjustment of Winchester Dam count. Dam count adjusted for adult Coho Salmon retained by hatchery operations and harvest above Winchester Dam, 2021 compared to the previous 7 years.

Data component	Coho salmon origin	Spawning year			
		2021	2014 to 2020		
			Avg.	Min.	Max.
<b>Alsea Population</b> Passed above Alsea Hatchery	<b>Wild</b>	475	60	9	122
<b>North Umpqua Population</b>	<b>Wild</b>	<b>4,795</b>	<b>2,739</b>	<b>1,148</b>	<b>3,979</b>
	<b>Hatchery</b>	<b>337</b>	<b>173</b>	<b>50</b>	<b>407</b>
	<b>% Hat.</b>	<b>6.6%</b>	<b>6.3%</b>	<b>1.2%</b>	<b>11.0%</b>
GRTS Estimate below Winchester Dam <sup>1</sup>	Total	0	43	0	298
	Wild	0	43	0	298
	Hatchery	0	0	0	0
Winchester Dam <sup>2</sup>	Total	5,149	2,891	1,252	3,786
	Wild	4,798	2,694	1,148	3,681
	Hatchery	351	197	104	407
Freshwater Catch <sup>3</sup> Above Winchester Dam	Total	17	23	3	60
	Wild	3	0	0	3
	Hatchery	14	22	3	60
Rock Creek Hatchery <sup>4</sup>	Total	0	1	0	10
	Wild	0	0	0	0
	Hatchery	0	1	0	10

1 = Estimate of adult Coho Salmon observed in GRTS surveys below Winchester Dam (i.e., Sutherlin Creek and tributaries).

2 = Counts of adult Coho Salmon by mark type (marked = hatchery, unmarked = wild) at Winchester Dam on the North Umpqua River.

3 = Estimated freshwater harvest of Coho Salmon in the North Umpqua basin above Winchester Dam based on Angler Harvest Cards (see: <http://www.dfw.state.or.us/resources/fishing/sportcatch.asp>). Selective harvest of mark Coho Salmon began in 2004.

4 = Number of adult Coho Salmon collected from the North Umpqua population (at Rock Creek and at Winchester Dam) and retained at Rock Creek Hatchery. These numbers do not include Coho Salmon collected and released alive back into the wild.

Table B-4. Annual abundance estimates of naturally spawning wild adult Coho Salmon in the Oregon Coast Coho ESU, run years 1990 through 2021 n.a. = not available. *Numbers in italics are partial estimates of spawners in dependent populations.*

Stratum and Population	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
<b>North Coast</b>											
Necanicum River	126	752	133	512	269	181	416	97	575	351	359
Nehalem River	1,158	6,837	1,392	3,049	2,844	1,700	527	1,187	1,206	3,555	14,462
Tillamook Bay	80	1,577	176	571	1,105	341	733	437	358	1,831	2,178
Nestucca River	160	618	604	340	266	1,537	440	230	202	2,357	1,219
NC Dependents	0	444	24	41	77	108	275	61	0	47	0
<b>Mid-Coast</b>											
Salmon River	19	5	11	13	91	105	82	16	86	14	179
Siletz River	228	410	2,386	207	621	314	395	298	316	1,209	3,387
Yaquina River	318	317	528	458	2,040	4,723	4,578	419	510	2,563	637
Beaver Creek	90	484	618	275	675	308	1,296	497	401	1,511	1,464
Alsea River	775	1,011	6,273	694	828	441	1,060	601	108	1,341	3,363
Siuslaw River	2,269	2,808	3,554	4,600	3,159	6,161	7,234	501	1,020	2,980	6,532
MC Dependents	487	51	1,037	467	317	348	1,364	112	173	150	91
<b>Umpqua</b>											
Lower Umpqua River	1,678	3,123	1,797	7,877	2,762	10,854	7,985	1,257	4,552	2,623	5,781
Middle Umpqua River	1,222	4,546	5,275	2,947	2,162	3,250	5,086	563	1,257	1,748	4,555
North Umpqua River	355	1,301	1,579	906	899	1,293	1,069	577	765	1,194	1,677
South Umpqua River	2,934	2,233	435	3,723	1,081	4,715	7,040	937	3,177	3,011	2,581
<b>Lakes</b>											
Siltcoos	1,578	2,868	385	3,569	1,302	4,415	4,707	2,653	3,122	2,756	3,835
Tahkenitch	1,085	1,215	317	954	1,056	1,577	1,627	1,842	2,817	3,664	634
Tenmile	1,687	3,033	1,271	5,544	3,354	5,092	7,092	4,092	5,169	6,123	8,278
<b>Mid-South Coast</b>											
Coos River	2,243	2,426	16,722	14,932	14,500	10,302	12,128	1,112	2,985	4,818	4,704
Coquille River	2,589	4,782	2,033	7,291	5,119	2,034	15,814	5,720	2,412	2,667	6,253
Floras Creek	n.a.	n.a.	n.a.	n.a.	2,653	1,351	1,519	482	879	670	1,477
Sixes River	58	35	92	253	238	77	194	143	558	56	136
MSC Dependents	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Table B-4. Continued.

Stratum and Population	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
<b>North Coast</b>											
Necanicum River	4,832	2,047	2,377	2,198	1,218	750	431	1,055	3,827	4,445	2,120
Nehalem River	21,928	17,164	32,517	18,736	10,451	11,614	14,033	17,205	21,753	32,215	15,322
Tillamook Bay	1,944	13,334	13,008	2,532	1,995	8,774	2,295	4,828	16,251	14,890	19,250
Nestucca River	4,164	16,698	10,194	4,695	686	1,876	394	1,844	4,252	1,947	7,857
NC Dependents	71	16	0	661	2,116	1,121	376	639	2,052	1,473	1,341
<b>Mid-Coast</b>											
Salmon River	225	543	42	1,642	79	513	59	652	753	1,382	3,636
Siletz River	1,595	2,129	8,038	8,179	14,567	5,205	2,197	20,634	24,070	6,283	33,094
Yaquina River	3,589	23,800	16,484	5,539	3,441	4,247	3,158	10,913	11,182	8,589	19,074
Beaver Creek	1,832	3,217	5,552	4,569	2,264	1,950	611	1,218	3,575	2,072	2,389
Alsea River	3,228	9,073	10,281	5,233	13,907	1,972	2,146	13,320	14,638	9,688	28,337
Siuslaw River	10,606	55,445	29,003	8,729	16,907	5,869	3,552	17,491	30,607	25,983	28,082
MC Dependents	816	5,308	1,852	8,179	246	1,468	546	3,910	1,610	2,548	4,487
<b>Umpqua</b>											
Lower Umpqua River	11,639	18,881	16,494	8,989	18,591	7,994	4,237	9,023	19,245	17,516	18,715
Middle Umpqua River	8,940	10,738	11,090	6,375	7,608	4,852	1,587	4,472	15,075	18,123	19,962
North Umpqua River	2,634	3,368	2,862	3,559	1,969	3,000	1,410	3,438	7,720	9,397	6,020
South Umpqua River	11,871	10,517	4,337	10,997	14,364	2,246	4,549	20,935	15,944	24,983	49,958
<b>Lakes</b>											
Siltcoos	5,104	4,636	6,628	7,998	4,364	5,452	1,447	3,873	5,197	7,678	6,354
Tahkenitch	3,510	3,480	3,188	3,496	1,897	3,611	3,551	2,604	2,977	10,681	6,644
Tenmile	10,990	13,861	6,260	7,148	8,464	15,064	3,957	17,131	9,175	20,385	7,284
<b>Mid-South Coast</b>											
Coos River	33,595	33,120	25,761	23,337	17,048	11,266	1,329	14,881	26,979	27,658	10,999
Coquille River	13,833	7,676	22,403	22,138	11,806	28,577	13,968	8,791	22,286	23,564	55,667
Floras Creek	5,664	3,272	952	7,446	506	1,104	340	786	3,203	11,329	9,217
Sixes River	95	95	86	403	105	294	97	43	176	92	334
MSC Dependents	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0	188	484	100

Table B-4. Concluded.

Stratum and Population	2012	2013	2014	2015	2016	2017	2018	2019	2020 <sup>a</sup>	2021
<b>North Coast</b>										
Necanicum River	902	798	5,727	847	936	529	393	698	n.a.	n.a.
Nehalem River	2,963	4,539	30,577	3,079	7,549	5,486	4,190	12,383	n.a.	n.a.
Tillamook Bay	1,686	4,402	20,090	1,345	7,102	2,927	2,035	3,961	n.a.	n.a.
Nestucca River	1,751	946	6,369	1,029	2,412	4,495	1,072	4,602	n.a.	n.a.
NC Dependents	218	271	4,607	440	699	206	262	616	n.a.	n.a.
<b>Mid-Coast</b>										
Salmon River	297	1,165	3,680	332	1,054	450	103	215	n.a.	571
Siletz River	4,495	7,660	19,496	2,216	3,015	5,202	4,064	4,509	n.a.	15,428
Yaquina River	6,268	3,553	25,582	2,400	3,730	2,491	4,672	3,452	n.a.	16,721
Beaver Creek	1,878	2,015	6,564	332	1,709	1,553	494	814	n.a.	2,483
Alsea River	8,470	9,283	25,855	6,185	7,375	4,377	5,112	4,915	n.a.	13,633
Siuslaw River	11,946	14,118	38,896	10,352	9,141	7,129	6,635	5,881	n.a.	38,031
MC Dependents	492	1,929	1,890	856	464	1,646	958	289	n.a.	1,747
<b>Umpqua</b>										
Lower Umpqua River	3,731	7,792	36,942	3,725	4,422	10,848	14,080	9,152	n.a.	23,714
Middle Umpqua River	2,447	4,272	13,939	2,245	1,159	1,788	3,888	3,104	n.a.	6,354
North Umpqua River	3,134	2,774	3,979	3,012	1,148	1,772	2,481	3,302	3,003	4,795
South Umpqua River	11,636	12,178	11,412	5,878	765	1,084	3,125	3,600	n.a.	14,403
<b>Lakes</b>										
Siltcoos	3,945	3,797	7,178	1,558	2,421	715	2,256	1,065	2,832	3,885
Tahkenitch	5,675	3,413	3,691	1,085	1,249	269	1,678	1,405	1,526	2,398
Tenmile	9,302	6,449	11,141	2,086	4,374	318	2,770	4,963	5,364	13,381
<b>Mid-South Coast</b>										
Coos River	9,414	6,884	38,880	3,030	4,624	2,689	7,292	13,289	n.a.	n.a.
Coquille River	5,911	23,637	41,660	3,357	9,494	4,641	5,688	11,841	n.a.	n.a.
Floras Creek	2,502	1,936	1,022	1,585	942	693	628	904	n.a.	n.a.
Sixes River	34	567	410	168	120	69	174	155	n.a.	n.a.
MSC Dependents	48	32	105	0	0	0	10	23	n.a.	n.a.

n.a. = Survey effort was reduced (COVID19 budget cut) to a point so far below goal that no estimate was made in 2020.

## APPENDIX D

Table D-1. Site status of 2021 GRTS samples in the Lower Columbia River Coho ESU by TRT population. Target sites fell within Coho Salmon spawning habitat; response sites were successfully surveyed, and non-response sites were not surveyed because of issues such as lack of landowner permission, site inaccessibility, or gaps in survey effort usually from stream turbidity. Non-target sites are outside of Coho Salmon spawning habitat. Average is for 2014 to 2020.

Stratum	Population	Target response				Target non-response				Non-target			
		2021	Avg.	Min	Max	2021	Avg.	Min	Max	2021	Avg.	Min	Max
Coast	Youngs Bay	0	0	0	0	0	0	0	0	0	0	0	0
	Big Creek	0	0	0	0	0	0	0	0	0	0	0	0
	Clatskanie	24	19	11	22	2	7	0	16	1	1	0	3
	<i>Plympton</i>	2	1	1	2	0	0	0	0	0	0	0	0
	Scappoose	10	14	8	18	27	19	10	28	0	1	0	2
	<b>Total</b>	<b>36</b>	<b>34</b>	<b>27</b>	<b>40</b>	<b>29</b>	<b>26</b>	<b>15</b>	<b>39</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>3</b>
Cascade	Clackamas	14	20	12	30	29	18	11	28	0	0	0	1
	<i>Eagle Cr</i>	9	7	3	9	2	4	0	12	0	0	0	0
	Sandy	32	27	8	35	22	20	14	46	0	1	0	2
	<b>Total</b>	<b>55</b>	<b>53</b>	<b>24</b>	<b>64</b>	<b>53</b>	<b>42</b>	<b>27</b>	<b>83</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>
Gorge	Lower Gorge	0	2	0	6	3	4	2	6	0	0	0	1
	Hood	5	2	0	5	1	3	0	6	0	1	0	2
	<b>Total</b>	<b>5</b>	<b>4</b>	<b>0</b>	<b>8</b>	<b>4</b>	<b>7</b>	<b>2</b>	<b>12</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>
<b>ESU Total</b>		<b>96</b>	<b>91</b>	<b>52</b>	<b>105</b>	<b>86</b>	<b>75</b>	<b>46</b>	<b>129</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>8</b>

Table D-2. Site status of 2021 GRTS samples in the Oregon Coast Coho ESU by TRT population. Target sites fell within Coho Salmon spawning habitat; response sites were successfully surveyed, and non-response sites were not surveyed because of issues such as lack of landowner permission, site inaccessibility, or gaps in survey effort usually from stream turbidity. Non-target sites are outside of Coho Salmon spawning habitat. Average is for 2014 to 2020.

Stratum	Population	Target response				Target non-response				Non-target			
		2021	Avg.	Min	Max	2021	Avg.	Min	Max	2021	Avg.	Min	Max
North Coast	Necanicum	6	15	8	18	14	5	1	11	2	1	0	2
	Nehalem	5	18	13	24	24	6	1	10	2	4	2	8
	Tillamook	8	19	12	25	16	6	3	10	3	2	0	5
	Nestucca	7	15	9	23	19	10	4	18	4	5	3	9
	NC Depend.	4	7	6	9	4	1	1	2	3	3	3	4
	<b>Total</b>	<b>30</b>	<b>75</b>	<b>50</b>	<b>92</b>	<b>77</b>	<b>28</b>	<b>20</b>	<b>49</b>	<b>14</b>	<b>15</b>	<b>11</b>	<b>24</b>
Mid-Coast	Salmon	8	10	5	17	17	11	8	14	1	0	0	1
	Siletz	21	19	12	26	6	5	1	12	5	6	3	9
	Yaquina	20	17	10	22	9	6	3	9	1	4	1	6
	Beaver	4	4	3	5	0	1	0	3	0	1	0	1
	Alsea	18	18	11	24	10	7	3	10	2	1	1	2
	Siuslaw	19	17	12	23	10	7	3	14	1	2	1	4
	MC Depend.	5	8	6	11	4	3	2	6	1	0	0	1
	<b>Total</b>	<b>95</b>	<b>92</b>	<b>65</b>	<b>114</b>	<b>56</b>	<b>39</b>	<b>26</b>	<b>54</b>	<b>11</b>	<b>14</b>	<b>7</b>	<b>20</b>
Lakes	Siltcoos	0	--	--	--	0	--	--	--	0	--	--	--
	Tahkenitch	0	--	--	--	0	--	--	--	0	--	--	--
	Tenmile	0	--	--	--	0	--	--	--	0	--	--	--
	<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Umpqua	L. Umpqua	17	16	11	20	12	9	7	12	2	1	0	3
	M. Umpqua	12	12	6	15	17	15	11	22	2	2	1	4
	N. Umpqua	1	1	0	3	4	6	4	9	0	1	0	1
	S. Umpqua	16	15	9	20	16	13	8	17	0	2	0	5
	<b>Total</b>	<b>46</b>	<b>45</b>	<b>30</b>	<b>55</b>	<b>49</b>	<b>43</b>	<b>33</b>	<b>54</b>	<b>4</b>	<b>6</b>	<b>3</b>	<b>12</b>
Mid-South Coast	Coos	11	19	12	22	13	5	2	7	4	2	1	4
	Coquille	11	19	15	24	21	14	9	20	4	2	0	3
	Floras	4	10	1	22	22	19	8	27	6	3	1	5
	Sixes	8	8	3	15	13	8	2	16	0	0	0	1
	MS Depend.	0	2	0	6	18	10	4	18	4	4	2	7
	<b>Total</b>	<b>34</b>	<b>58</b>	<b>41</b>	<b>79</b>	<b>87</b>	<b>56</b>	<b>44</b>	<b>69</b>	<b>18</b>	<b>11</b>	<b>5</b>	<b>18</b>
<b>ESU Total</b>		<b>205</b>	<b>270</b>	<b>191</b>	<b>322</b>	<b>269</b>	<b>166</b>	<b>132</b>	<b>221</b>	<b>47</b>	<b>46</b>	<b>32</b>	<b>63</b>



Table D-3. Adult Coho Salmon counts, density (AUC/mile), and marked proportion information for valid GRTS surveys by population in the Lower Columbia River and Oregon Coast Coho ESUs during the 2021 spawning year. Averages in *italics* do not include data for all years.

Location ESU / <i>Stratum</i> / Population	Total Surveys	Survey Miles	Sample of marks * dead (live)	2021 Density	2014-20 Avg. Density	2021 % Marked	2014-20 Avg. % Marked
<b>Lower Columbia River ESU</b>							
<i>Coastal Stratum</i>							
Youngs Bay	0	--	--	--	--	--	--
Big Creek	0	--	--	--	--	--	--
Clatskanie River <sup>a</sup>	24	22.3	18	10.4	14.5	33.3%	14.9%
Plympton Creek	2	2.1	52	257.6	48.6	76.9%	77.5%
Scappoose Creek	10	7.5	2 (40)	6.2	9.4	0.0%	0.8%
<i>Cascade Stratum</i>							
Clackamas River <sup>a</sup>	14	14.2	9 (16)	1.1	5.2	9.3%	14.3%
Eagle Creek	9	9.9	49	5.4	15.4	48.1%	67.5%
Sandy River	32	27.4	128	29.4	17.8	0.0%	3.1%
<i>Gorge Stratum</i>							
Lower Gorge					<i>61.5</i>		<i>18.7%</i>
Hood River	5	3.7	146	174.9	43.2	76.2%	50.1%
<b>Oregon Coast ESU</b>							
<i>North Coast Stratum</i>							
Necanicum River	6	4.8	9 (52)	<i>No Est.</i>	25.8	<i>No Est.</i>	1.1%
Nehalem River	5	3.9	24	<i>No Est.</i>	24.0	<i>No Est.</i>	0.8%
Tillamook Bay	8	6.2	17	<i>No Est.</i>	27.9	<i>No Est.</i>	0.5%
Nestucca River	7	6.5	30	<i>No Est.</i>	27.0	<i>No Est.</i>	0.0%
NC Dependents	4	2.6	5 (84)	<i>No Est.</i>	27.0	<i>No Est.</i>	0.7%
<i>Mid-Coast Stratum</i>							
Salmon River	8	7.8	8 (55)	8.9	20.2	0.0%	2.4%
Siletz River	21	15.0	121	99.7	42.6	0.0%	0.1%
Yaquina River	20	10.8	173	115.6	46.9	0.0%	0.5%
Beaver Creek	4	2.1	22	191.5	142.0	0.0%	0.1%
Alsea River	18	14.2	156	51.5	33.1	0.6%	0.0%
Siuslaw River	19	12.6	99	48.4	20.3	1.0%	0.0%
MC Dependents	5	4.8	19	12.0	5.7	5.3%	1.3%
<i>Lakes Stratum</i>							
Siltcoos Lake	0	--	--	--	--	--	--
Tahkenitch Lake	0	--	--	--	--	--	--
Tenmile Lake	0	--	--	--	--	--	--
<i>Mid-South Coast Str.</i>							
Coos Bay	11	10.6	206	<i>No Est.</i>	45.2	<i>No Est.</i>	0.2%
Coquille River	11	8.6	6 (178)	<i>No Est.</i>	41.0	<i>No Est.</i>	0.0%
Floras Creek	4	2.1	17	<i>No Est.</i>	12.7	<i>No Est.</i>	0.0%
Sixes River	8	4.5	2 (2)	<i>No Est.</i>	5.6	<i>No Est.</i>	0.0%
MS Dependents	0			<i>No Est.</i>	0.7	<i>No Est.</i>	0.6%
<i>Umpqua Stratum</i>							
Lower Umpqua	17	12.6	29	58.5	37.5	0.0%	0.4%
Middle Umpqua	12	9.6	32	11.9	15.1	0.0%	0.2%
North Umpqua	1	0.7	0 (0)	0.0	2.3		4.5%
South Umpqua	16	11.6	15	24.9	7.4	0.0%	11.5%

a = Stratified sampling. Results for population excluding the sub-area listed below.

\* = Used carcass (i.e. dead) sample only if greater than 10, otherwise use both live and dead sample.

Table D-4. Percent of selected GRTS sites classified “Target Response” that were included in abundance estimates based on non-standard criteria (i.e., some level of relaxed criteria). Average, Minimum and Maximum are for 2014 to 2020. n.a. = not available.

Stratum	Population	Percent by Relaxed Criteria			
		2021	Avg.	Min	Max
Coast	Youngs Bay	n.a.	n.a.	n.a.	n.a.
	Big Creek	n.a.	n.a.	n.a.	n.a.
	Clatskanie	0.0%	0.0%	0.0%	0.0%
	Scappoose	30.0%	0.0%	0.0%	0.0%
	<b>Total</b>	<b>8.3%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
Cascade	Clackamas	7.1%	0.0%	0.0%	0.0%
	Sandy	25.0%	6.8%	0.0%	47.6%
	<b>Total</b>	<b>16.4%</b>	<b>2.5%</b>	<b>0.0%</b>	<b>17.2%</b>
Gorge	Lower Gorge	n.a.	0.0%	0.0%	0.0%
	Hood	n.a.	0.0%	0.0%	0.0%
	<b>Total</b>	<b>n.a.</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>
<b>ESU Total</b>		<b>12.5%</b>	<b>1.4%</b>	<b>0.0%</b>	<b>10.0%</b>
North Coast	Necanicum	66.7%	1.6%	0.0%	11.1%
	Nehalem	80.0%	5.7%	0.0%	40.0%
	Tillamook	37.5%	9.1%	0.0%	63.6%
	Nestucca	57.1%	6.0%	0.0%	41.7%
	NC Depend.	0.0%	0.0%	0.0%	0.0%
	<b>Total</b>	<b>50.0%</b>	<b>5.3%</b>	<b>0.0%</b>	<b>37.0%</b>
Mid-Coast	Salmon	12.5%	28.6%	0.0%	100.0%
	Siletz	47.6%	7.1%	0.0%	50.0%
	Yaquina	5.0%	5.4%	0.0%	31.6%
	Beaver	0.0%	15.2%	0.0%	40.0%
	Alsea	11.1%	4.0%	0.0%	27.8%
	Siuslaw	15.8%	4.9%	0.0%	27.3%
	MC Depend.	0.0%	9.7%	0.0%	42.9%
	<b>Total</b>	<b>17.9%</b>	<b>8.6%</b>	<b>0.0%</b>	<b>20.2%</b>
Lakes	Siltoos	n.a.	n.a.	n.a.	n.a.
	Tahkenitch	n.a.	n.a.	n.a.	n.a.
	Tenmile	n.a.	n.a.	n.a.	n.a.
	<b>Total</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>	<b>n.a.</b>
Umpqua	L. Umpqua	29.4%	8.7%	0.0%	33.3%
	M. Umpqua	75.0%	26.0%	0.0%	75.0%
	N. Umpqua	100.0%	33.3%	0.0%	100.0%
	S. Umpqua	18.8%	13.7%	0.0%	68.4%
	<b>Total</b>	<b>39.1%</b>	<b>16.0%</b>	<b>0.0%</b>	<b>58.2%</b>
Mid-South Coast	Coos	18.2%	9.5%	0.0%	66.7%
	Coquille	18.2%	27.4%	0.0%	100.0%
	Floras	25.0%	12.3%	0.0%	86.4%
	Sixes	87.5%	14.3%	0.0%	100.0%
	MS Depend.	n.a.	30.0%	0.0%	100.0%
	<b>Total</b>	<b>35.3%</b>	<b>19.1%</b>	<b>0.0%</b>	<b>77.8%</b>
<b>ESU Total</b>		<b>30.2%</b>	<b>11.7%</b>	<b>0.0%</b>	<b>15.5%</b>

Table D-5. Percent of selected GRTS sites classified “Target Non-Response” in three main categories. No AUC - Site surveyed but didn’t meet inclusion criteria for estimates. Denied - Sites not surveyed, lacked access permission. Inaccessible - Sites not surveyed, safety concerns or time required (greater than 3 hours). Average, minimum and maximum are for the period 2008 through 2020.

ESU	Strata	Population	No AUC				Denied				Inaccessible			
			2021	Avg.	Min.	Max.	2021	Avg.	Min.	Max.	2021	Avg.	Min.	Max.
LCR	Coastal	Youngs Bay	n.a.	8.2%	0.0%	24.1%	n.a.	3.2%	0.0%	8.7%	n.a.	1.7%	0.0%	8.7%
LCR	Coastal	Big Creek	n.a.	22.0%	0.0%	37.5%	n.a.	3.3%	0.0%	8.3%	n.a.	0.0%	0.0%	0.0%
LCR	Coastal	Clatskanie River	0.0%	14.2%	0.0%	42.3%	6.9%	7.6%	0.0%	23.1%	0.0%	1.2%	0.0%	4.5%
LCR	Coastal	Scappoose Creek	2.7%	8.0%	0.0%	13.8%	27.0%	26.0%	10.3%	52.8%	5.4%	1.1%	0.0%	5.7%
LCR	Cascade	Clackamas River	9.3%	19.5%	4.5%	37.8%	13.0%	11.6%	2.9%	25.6%	0.0%	1.2%	0.0%	7.5%
LCR	Cascade	Sandy River	9.3%	7.3%	0.0%	28.2%	9.3%	3.3%	0.0%	11.5%	16.7%	10.9%	4.8%	21.4%
LCR	Gorge	Lower Gorge	0.0%	2.8%	0.0%	33.3%	0.0%	0.0%	0.0%	0.0%	0.0%	9.7%	0.0%	100.0%
LCR	Gorge	Hood River	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	0.0%	16.7%	0.0%	12.3%	0.0%	100.0%
OC	N Coast	Necanicum River	9.1%	5.2%	0.0%	25.8%	4.5%	4.2%	0.0%	12.0%	0.0%	8.0%	0.0%	19.2%
OC	N Coast	Nehalem River	12.9%	18.2%	0.0%	66.7%	6.5%	2.0%	0.0%	9.5%	6.5%	3.9%	0.0%	9.5%
OC	N Coast	Tillamook Bay	11.1%	11.0%	0.0%	47.7%	7.4%	6.3%	2.0%	13.3%	3.7%	5.6%	0.0%	15.6%
OC	N Coast	Nestucca River	6.7%	17.9%	2.9%	41.9%	16.7%	6.8%	2.1%	12.5%	10.0%	6.2%	0.0%	17.1%
OC	N Coast	NC Dependents	0.0%	3.1%	0.0%	15.4%	9.1%	7.2%	2.6%	13.3%	0.0%	0.7%	0.0%	3.2%
OC	Mid-Coast	Salmon River	15.4%	21.6%	0.0%	47.6%	11.5%	6.1%	0.0%	11.5%	23.1%	17.4%	0.0%	31.0%
OC	Mid-Coast	Siletz River	12.5%	10.7%	0.0%	36.6%	0.0%	0.9%	0.0%	4.9%	6.3%	4.3%	0.0%	9.1%
OC	Mid-Coast	Yaquina River	3.3%	10.6%	0.0%	26.8%	13.3%	10.2%	6.3%	18.0%	13.3%	2.6%	0.0%	10.5%
OC	Mid-Coast	Beaver Creek	0.0%	11.6%	0.0%	35.7%	0.0%	4.2%	0.0%	16.7%	0.0%	0.0%	0.0%	0.0%
OC	Mid-Coast	Alsea River	3.3%	6.2%	0.0%	15.0%	13.3%	15.1%	8.5%	25.0%	6.7%	1.3%	0.0%	6.9%
OC	Mid-Coast	Siuslaw River	0.0%	14.2%	0.0%	51.3%	3.3%	6.7%	2.4%	13.3%	16.7%	5.7%	3.2%	9.5%
OC	Mid-Coast	MC Dependents	20.0%	10.0%	0.0%	21.8%	20.0%	13.7%	3.6%	22.2%	0.0%	1.8%	0.0%	6.1%
OC	Lakes	Siltoos Lake	n.a.	3.8%	0.0%	20.0%	n.a.	19.2%	11.1%	36.4%	n.a.	6.5%	3.0%	11.1%
OC	Lakes	Tahkenitch Lake	n.a.	6.3%	0.0%	30.8%	n.a.	5.5%	0.0%	15.4%	n.a.	0.0%	0.0%	0.0%
OC	Lakes	Tenmile Lake	n.a.	3.3%	0.0%	13.3%	n.a.	28.9%	18.2%	43.3%	n.a.	7.7%	2.6%	15.2%
OC	Mid-S Coast	Coos Bay	21.4%	11.7%	0.0%	62.2%	7.1%	9.9%	4.7%	16.1%	0.0%	1.9%	0.0%	6.7%
OC	Mid-S Coast	Coquille River	2.8%	9.1%	0.0%	36.7%	16.7%	21.8%	14.8%	28.3%	8.3%	8.3%	1.9%	15.0%
OC	Mid-S Coast	Floras Creek	18.8%	22.5%	0.0%	51.9%	18.8%	24.5%	9.7%	31.3%	6.3%	5.9%	2.9%	11.8%
OC	Mid-S Coast	Sixes River	9.5%	24.2%	0.0%	63.2%	28.6%	15.7%	5.0%	26.3%	4.8%	7.2%	0.0%	11.8%
OC	Mid-S Coast	MS Dependents	0.0%	3.8%	0.0%	13.0%	63.6%	55.0%	35.0%	78.3%	0.0%	0.7%	0.0%	4.5%
OC	Umpqua	Lower Umpqua	3.2%	13.4%	3.3%	40.5%	19.4%	8.0%	2.4%	14.3%	12.9%	10.7%	7.1%	14.8%
OC	Umpqua	Middle Umpqua	25.8%	21.7%	7.7%	41.4%	25.8%	18.3%	7.7%	26.5%	3.2%	3.1%	0.0%	11.8%
OC	Umpqua	North Umpqua	40.0%	29.0%	0.0%	80.0%	20.0%	17.4%	0.0%	40.0%	0.0%	2.4%	0.0%	12.2%
OC	Umpqua	South Umpqua	9.4%	13.0%	0.0%	39.3%	21.9%	16.8%	8.5%	25.8%	3.1%	5.3%	0.0%	9.1%

