



**Summary of Monitoring Results from the 1999 Buoy 10 and Columbia  
River Area Ocean Selective Fisheries**

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Washington Department of Fish and Wildlife

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## **Introduction**

This summary is the result of joint monitoring efforts by Oregon Department of Fish and Wildlife (ODFW) and Washington Department of Fish and Wildlife (WDFW) for the 1999 recreational selective coho salmon fisheries in the Columbia River estuary (Buoy 10) and in the adjacent ocean area from Cape Falcon, Oregon to Leadbetter Point, Washington. A full report is underway which will incorporate the methodologies used in a monitoring report on the 1999 selective fishery on the central coast of Oregon ('DRAFT, 1999 Monitoring Program for Selective Ocean Coho Salmon Fisheries Off the Central Oregon Coast from Cape Falcon to Humbug Mountain', ODFW, 1999). The central Oregon coast report was recently reviewed by the Scientific and Statistical Committee of the Pacific Fishery Management Council (PFMC) and is currently being finalized by ODFW.

## **Fishery Descriptions**

The Columbia River area ocean recreational (ocean) fishery from Cape Falcon, Oregon to Leadbetter Point, Washington opened on July 19<sup>th</sup> and remained open through the scheduled closing date of September 30<sup>th</sup>. The coho quota of 55,000 was not attained. The fishery, originally open Sunday-Thursday, was opened seven days a week beginning September 3<sup>rd</sup> when it became clear that the quota would not be reached. The harvest guideline for chinook was 7,600. The bag limit was two salmon per day but only one chinook and no more than six salmon per calendar week with minimum size limits of 24" for chinook and 16" for coho. Selective fishery regulations required all retained coho to have a healed adipose finclip.

The estuary fishery (Buoy 10) in the Columbia River from the mouth upriver to the Astoria-Megler Bridge opened August 1<sup>st</sup> through December 31<sup>st</sup>. The bag limit was two salmon per day with minimum size limits of 24" chinook and 16" for coho. The Buoy 10 fishery was not quota managed but selective fishery regulations required all retained coho to have a healed adipose finclip. The Buoy 10 fishery outpaced the preseason expectation for chinook retention by the end of August and was closed to chinook retention August 30<sup>th</sup> to reduce overall impacts and preserve Columbia River chinook sharing agreements.

## **Methods**

The ODFW and WDFW hired full-time observers for at-sea observation of the ocean and Buoy 10 salmon fisheries. Charter operators from the ports of Ilwaco, Astoria, Warrenton, Hammond, and Garibaldi volunteered space on their vessels to accommodate ODFW and WDFW observers. Additionally, WDFW observed private fishing boats from an adjacent vessel.

Observers aboard charter boats collected information about fish encounters, areas fished and types of gear used. Data recorded included species hooked, presence or absence of

the adipose fin, size (legal or sublegal), and result of fish contacting the gear (fish retained, released, or dropped off) for every hookup the observer witnessed.

Observers aboard the adjacent vessel witnessed hookups by the private boat fleet. The observer vessel was positioned near a concentration of private fishing boats. When a hookup was observed on a private boat, the observer vessel provided a vantage point to record as much of the above information as could be witnessed.

Dockside port samplers collected catch information through interviews and catch inspections as fishing boats returned to the docks. Data collected per boat included catch by species, presence or absence of adipose fins on all retained salmon, number of anglers, and total number of salmon released by species. Landed salmon were sampled for species, fork length, scale collection, fin mark, and coded-wire tag. Due to the mass marking of hatchery coho, electronic detection equipment was used to indicate the presence or absence of coded-wire tags in all coho.

The ODFW dockside and onboard observers collected gear profile data including method (trolling or mooching), number of hooks, bait or lure, use of flasher, and type of weight.

Total effort data was collected through either exit or entrance counts of vessels passing through the entrance of the ports. Dockside sampling data was then expanded according to the observed effort profile to estimate total retained and released catch.

### **Catch and Effort**

Retained salmon catch and angler effort in the Columbia River area ocean selective fishery are shown in Table 1. Anglers retained 27,132 coho and 3,253 chinook on 28,100 angler trips. Although catch rates in the ocean fishery were approximately one salmon per angler trip, less than half of the 55,000 coho quota and the 7,600 chinook guideline was attained.

Retained salmon catch and angler effort in the Buoy 10 selective fishery are shown in Table 2. Anglers retained 8,960 coho and 9,850 chinook on 49,576 angler trips. Coho catch rates were less than anticipated partly due to a lower than forecast return of Columbia River hatchery coho and a shift of angler effort to chinook targeted fishery.

### **Coho Handle**

The WDFW and ODFW staff observed anglers onboard charter and private boats throughout the ocean selective fishery season. They observed 1,404 (5.2%) of the 27,132 coho retained in the ocean fishery (Table 3). Observers recorded 402 unmarked coho handled for an overall mark rate of 78%.

Observation of the Buoy 10 selective fishery was conducted primarily by WDFW and was concentrated in the August and September timeframe when angler effort and coho catch are the greatest. Observers recorded 232 (2.6%) of the 8,960 coho retained in the

Buoy 10 fishery (Table 4). Observers recorded 61 unmarked coho handled for an overall mark rate of 79%.

### **Preseason vs. Postseason Estimates of Coho Mark Rates**

Table 5 compares preseason and postseason estimates of mark rate for the Buoy 10 and ocean selective fisheries. Preseason projections of 1999 coho mark rates were estimated using the coho Fishery Regulation and Assessment Model (FRAM). Postseason estimates were calculated from coho encounter data collected during onboard observations. Postseason estimates of mark rates in both fisheries were consistently greater than preseason estimates.

### **Dockside vs. Observer Data in Selective Fisheries**

Observation data on 1999 selective coho fisheries were collected in part to investigate potential bias in estimates of coho mark rates based on angler recognition of released coho. Mark rates calculated from data collected at the dock were generally consistent with those calculated from observer data (Tables 6 and 7).

The dockside sampling of the ocean area selective fishery showed a coho mark rate of 72% compared with 78% estimated from observation data. The dockside sampling of the Buoy 10 selective fishery showed a similarly lower coho mark rate of 76% compared to the 79% estimated from observation data. Although both fisheries exhibited a lower mark rate based on dockside sampling versus onboard observation, further analyses are necessary to determine if these differences are statistically significant.

### **Compliance**

Using combined information from dockside sampling and boat patrols conducted by Oregon State Police (OSP) and WDFW's Enforcement Program, estimates of compliance with selective regulations were assessed as a percentage of the retained coho catch with a healed adipose finclip (Tables 6 and 7). Oregon and Washington enforcement personnel contacted over 1,700 anglers in the Buoy 10 and the ocean fisheries combined. Compliance rates in these two selective fisheries were considerably less than the 2.5% rate assumed preseason.

Compliance with the selective fishery regulations in the ocean area fishery was very high for both private and charter vessels. Approximately 35% of the total retained coho in the ocean selective fishery were sampled at the dock and an estimated 1% did not have an adipose clip. This compliance rate of 99% was confirmed by random state enforcement boat patrols.

Compliance with the selective fishery regulation in the Buoy 10 fishery was also high. Approximately one-third of the total retained coho in the Buoy 10 selective fishery were sampled at the dock and an estimated 2% did not have an adipose finclip.

## **Estimated Mortality**

Estimates of total coho mortality in the Buoy 10 and ocean selective fisheries are shown in Table 8. This analysis uses observed coho mark rates from ODFW and WDFW at-sea sampling to estimate total coho retention and release. Estimates of incidental mortality are calculated using rates adopted by the PFMC for 1999 recreational fisheries (5% drop off mortality and 8% hooking mortality).

Incidental coho mortality in the ocean selective fishery is estimated at 2,301. When combined with the 27,132 retained coho, estimated total coho mortality in the ocean selective fishery is 29,433.

Incidental mortality in the Buoy 10 selective fishery is estimated at 762 coho. When combined with the 8,960 retained coho, estimated total coho mortality in the Buoy 10 selective fishery is 9,722.

## **Drop Off Rates**

Observers from ODFW and WDFW recorded information on fish which were hooked but lost before being brought to the boat, commonly referred to as drop offs. Current PFMC methodology for estimating mortality due to drop off uses a rate of 5% of the total number of fish handled (retention plus release). Estimates of drop off mortality rates from observation data collected during the ocean selective fisheries are displayed in Table 9. Rates for both chinook and coho were never estimated to be greater than 3%. Based on this analysis, the methodology for assessing drop off mortality adopted by the PFMC is conservatively high.

## **Gear Profile**

Preliminary results from the gear profile work in the Columbia River area ocean selective fishery suggests that 99% of the anglers are trolling rather than mooching. Additionally, 85% of anglers are using bait versus artificial lures and of the bait anglers over 80% used a tandem hook setup.

## **Conclusion**

Preliminary postseason results from the 1999 monitoring of the Buoy 10 and ocean selective fisheries indicate that preseason assumptions concerning mark rate, compliance, and drop off used in the modeling of these fisheries are adequately conservative when assessing these fisheries.

## **Acknowledgments**

The selective fishery monitoring of these fisheries is a joint effort of WDFW and ODFW and their respective enforcement divisions. The ODFW and WDFW would like to thank the charter operators who voluntarily provided space on their boats for observers. Special

recognition is due all samplers and observers who spent a great deal of time collecting the data presented in this summary.

Table 1. Salmon retention and angler effort in the 1999 Columbia River area ocean selective fishery.

	Date	Charter			Private			Bank			Total		
		Angler Trips	Coho	Chinook	Angler Trips	Coho	Chinook	Angler Trips	Coho	Chinook	Angler Trips	Coho	Chinook
<b>Oregon</b>	July	393	544	53	1,712	1,925	167	0	0	0	2,105	2,469	220
	August	824	971	200	2,829	2,388	421	0	0	0	3,653	3,359	621
	September	513	804	36	1,153	917	58	0	0	0	1,666	1,721	94
	Total	1,730	2,319	289	5,694	5,230	646	0	0	0	7,424	7,549	935
<b>Washington</b>	July	1,267	1,868	197	2,999	3,303	298	182	0	0	4,448	5,171	495
	August	2,672	3,587	582	6,251	5,815	925	2,210	84	0	11,133	9,486	1,507
	September	1,531	2,574	133	2,535	2,266	183	1,029	86	0	5,095	4,926	316
	Total	5,470	8,029	912	11,785	11,384	1,406	3,421	170	0	20,676	19,583	2,318
<b>Subtotals</b>	July	1,660	2,412	250	4,711	5,228	465	182	0	0	6,553	7,640	715
	August	3,496	4,558	782	9,080	8,203	1,346	2,210	84	0	14,786	12,845	2,128
	September	2,044	3,378	169	3,688	3,183	241	1,029	86	0	6,761	6,647	410
<b>Grand Total</b>		7,200	10,348	1,201	17,479	16,614	2,052	3,421	170	0	28,100	27,132	3,253

Table 2. Salmon retention and angler effort in the 1999 Buoy 10 selective fishery.

	Date	Charter			Private			Bank			Total		
		Angler Trips	Coho	Chinook	Angler Trips	Coho	Chinook	Angler Trips	Coho	Chinook	Angler Trips	Coho	Chinook
<b>Oregon</b>	August	442	115	125	14,853	1,738	3,819	671	45	9	15,966	1,898	3,953
	September	12	2	0	4,172	1,619	15	699	101	0	4,883	1,722	15
	Total	454	117	125	19,025	3,357	3,834	1,370	146	9	20,849	3,620	3,968
<b>Washington</b>	August	721	92	185	21,394	2,861	5,690	0	0	0	22,115	2,953	5,875
	September	334	83	0	6,278	2,304	7	0	0	0	6,612	2,387	7
	Total	1,055	175	185	27,672	5,165	5,697	0	0	0	28,727	5,340	5,882
<b>Subtotals</b>	August	1,163	207	310	36,247	4,599	9,509	671	45	9	38,081	4,851	9,828
	September	346	85	0	10,450	3,923	22	699	101	0	11,495	4,109	22
		1,509	292	310	46,697	8,522	9,531	1,370	146	9	49,576	8,960	9,850
<b>Grand Total</b>		1,509	292	310	46,697	8,522	9,531	1,370	146	9	49,576	8,960	9,850

**Table 3. Observation data from the Columbia River area ocean selective fishery.**

	Coho			
	Unmarked Handle	Marked Handle	Total Handle	Mark Rate
<b>Washington</b>				
July	56	261	317	82%
August	103	361	464	78%
September	36	136	172	79%
<b>Oregon</b>				
July	38	134	172	78%
August	148	438	586	75%
September	21	74	95	78%
<b>Subtotals</b>				
July	94	395	489	81%
August	251	799	1,050	76%
September	57	210	267	79%
<b>Total</b>	402	1,404	1,806	78%

**Table 4. Observation data from the Buoy 10 selective fishery.**

	Coho			
	Unmarked Handle	Marked Handle	Total Handle	Mark Rate
<b>Washington</b>				
August	14	42	56	75%
September	47	190	237	80%
<b>Oregon</b>				
August	0	1	1	100%
September	0	0	0	0%
<b>Subtotals</b>				
August	14	42	56	75%
September	47	190	237	80%
<b>Total</b>	61	232	293	79%

**Table 5. Projected and observed coho mark rates in Buoy 10 and Columbia River area ocean fisheries.**

<u>Ocean Catch Area</u>	Marked Handle	Total Handle	Observed Mark Rate	FRAM Projected Mark Rate
<b>Columbia River</b>				
July	395	489	81%	67%
August	799	1,050	76%	71%
September	210	267	79%	70%
<b>Buoy 10</b>				
August	42	56	75%	73%
September	190	237	80%	74%



**Table 6. Dockside sampling data from the 1999 Columbia River area ocean selective fishery. a/**

	<b>Coho</b>				
	Legal-Sized Unmarked Releases	Legal-Sized Marked Retention	Unmarked Retention	Mark Rate	Compliance Rate /b
<b>Washington</b>					
July	2,114	5,160	11	71%	99.8%
August	3,425	9,440	46	73%	99.5%
September	2,183	4,922	4	69%	99.9%
<b>Oregon</b>					
July	762	2,452	17	76%	99.3%
August	1,145	3,335	24	74%	99.3%
September	631	1,709	12	73%	99.3%
<b>Subtotals</b>					
July	2,876	7,612	28	72%	99.6%
August	4,569	12,775	70	73%	99.5%
September	2,814	6,631	16	70%	99.8%
<b>Total</b>	<b>10,259</b>	<b>27,018</b>	<b>114</b>	<b>72%</b>	<b>99.6%</b>

a/ Expanded for sampling.

b/ Compliance based on dockside sampling by WDFW, ODFW and State Police.

**Table 7. Dockside sampling results from the 1999 Buoy 10 selective fishery. a/**

	<b>Coho</b>				
	Legal-Sized Unmarked Releases	Legal-Sized Marked Retention	Unmarked Retention	Mark Rate	Compliance Rate /b
<b>Washington</b>					
August	1,059	2,912	41	73%	98.6%
September	784	2,385	2	75%	99.9%
<b>Oregon</b>					
August	341	1,856	42	83%	97.8%
September	493	1,684	38	76%	97.8%
<b>Subtotals</b>					
August	1,400	4,768	83	76%	98.3%
September	1,277	4,069	40	76%	99.9%
<b>Total</b>	<b>2,677</b>	<b>8,837</b>	<b>123</b>	<b>76%</b>	<b>99%</b>

a/ Expanded for sampling.

b/ Compliance based on dockside sampling by WDFW, ODFW and State Police.

**Table 8. Estimated coho mortality in the Buoy 10 Columbia River area ocean selective fisheries.**

	Total Retention	Marked Retention	Unmarked Retention a/	Unmarked Releases	Total Handle b/	Observed Mark Rate	Drop Off Mortality c/	Release Mortality d/	Incidental Mortality e/	Total Mortality f/
<b>Ocean</b>										
July	7,640	7,564	76	1,698	9,338	81.0%	467	136	603	8,243
August	12,845	12,717	128	3,887	16,732	76.0%	837	311	1,148	13,993
September	6,647	6,581	66	1,683	8,330	79.0%	416	135	551	7,198
<b>Total</b>	<b>27,132</b>	<b>26,861</b>	<b>271</b>	<b>7,268</b>	<b>34,400</b>		<b>1,720</b>	<b>581</b>	<b>2,301</b>	<b>29,433</b>
<b>Buoy 10</b>										
August	4,851	4,802	49	1,552	6,403	75.0%	320	124	444	5,295
September	4,109	4,068	41	976	5,085	80.0%	254	78	332	4,441
<b>Total</b>	<b>8,960</b>	<b>8,870</b>	<b>90</b>	<b>2,528</b>	<b>11,488</b>		<b>574</b>	<b>202</b>	<b>777</b>	<b>9,737</b>

a/ Based on compliance rates of 99%.

b/ Marked retention/observed mark rate.

c/ 5% of total handle.

d/ 8% of unmarked releases.

e/ Drop off + release mortality.

f/ Total retention + incidental mortality.

**Table 9. Estimated drop off mortality in the Columbia River area ocean selective fishery. a/**

	Coho			Chinook			
	Observed Drop Offs	Estimated Drop Off Mortality b/		Observed Drop Offs	Estimated Drop Off Mortality b/		
		Total Handle	Est. Drop Off Mort. / Tot. Handle c/		Total Handle	Est. Drop Off Mort. / Tot. Handle c/	
July	137	11	489	12	1	124	0.8%
August	238	19	1,050	44	4	225	1.6%
September	38	3	267	1	0	28	0.4%
<b>Total</b>	<b>413</b>	<b>33</b>	<b>1,806</b>	<b>57</b>	<b>5</b>	<b>377</b>	<b>1.2%</b>

a/ Observed drop off of chinook and coho estimated from the ratio of chinook to coho in the retained catch.

b/ Assumes fish which drop off will die at the same rate (8%) as fish brought to the boat and released.

c/ 5% assumed pre-season.