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## CHAPTER III

# INSIDE COHO SALMON FISHERIES AND SPAWNING ESCAPEMENTS

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### CALIFORNIA STOCKS

Inside harvest of coho is not available for any river system in California. Spawning escapement estimates are available for Klamath River basin hatcheries, but not for spawning in natural areas. In 1991, coho returns to Iron Gate and Trinity hatcheries were 2,800 adults, compared to a combined goal of 2,300 adult coho.

### OREGON COASTAL STOCKS

OCN coho stocks are managed as one stock aggregate that includes coho produced from Oregon rivers south of the Columbia River. The OCN stock aggregate contributes primarily to ocean fisheries off Oregon and California, and to a lesser degree to ocean fisheries off Washington and British Columbia. As discussed in the FMP, ocean fisheries within the OPI area (Leadbetter Point to the U.S./Mexico border) are managed to achieve OCN coho spawning escapement goals.

#### **Inside Harvest**

Inside recreational harvest of coho occurs in most Oregon coastal estuaries and rivers. Complete estimates of the 1991 recreational coho harvest will not be available until the fall of 1992. Estimates of estuary coho harvests in Tillamook, Yaquina, Siuslaw, Umpqua and Coos bays from July 29 through September 2, occurring after the closure of the ocean salmon season, totaled approximately 32,600 coho adults. This harvest exceeds the level anticipated pre-season. The 1990 adult coho harvest in Oregon coastal estuaries and rivers is estimated at 9,500 fish (Table III-1).

Inside commercial coho harvest is limited to returns to private aquaculture operations. A total of 35,100 coho adults returned to Oregon private aquaculture facilities in 1991 (Table II-4 in Chapter 2).

#### **Escapement and Goal Assessment**

OCN coho were managed for a 1991 aggregate spawning escapement of 200,000 adults. Because of concern for overestimation of the OCN stock abundance, the Council, by emergency action, adopted a harvest rate target of 46 percent. This target harvest rate was designed to produce a spawning escapement of at least 135,000 adult coho. Spawning surveys are not complete for Oregon coastal river and lake systems. Therefore, a final analysis is not yet available. A preliminary assessment of 1991 OCN spawning escapement, adjusted for private and public hatchery strays in some systems, indicates about 109,000 adult spawners (Table III-1). This number of adults is similar to the 1990 escapement of 104,000 fish. Preliminary information based on standard index surveys suggests that the recent trend of disproportionate spawner distribution among coastal rivers was not a problem in 1991.

A preliminary estimate of total coho returns to Oregon coastal hatcheries is 38,700 adults. Hatchery egg-take goals were not met for the Tillamook, Nestucca, Umpqua, Eel Lake and Coquille systems.

TABLE III-1. Estimated escapements in thousands of Oregon coastal public hatchery and natural adult coho stocks. (Page 1 of 1)

Year	Total Returns to Facility	N. F. Umpqua Winchester Dam	Natural Spawning Escapement (OCN) <sup>a/</sup>			Total Coastal Freshwater Catch <sup>b/</sup>	Total Estimated Ocean Escapement to Oregon Coast <sup>c/</sup>
			Lakes	Rivers	Total OCN		
1971-1975	20.1	0.4	14.7	166.6	181.3	16.6	218.5
1971	29.1	0.4	30.8	293.2	324.0	24.1	377.6
1972	12.9	0.3	10.8	116.9	127.7	16.6	157.5
1973	18.4	0.4	18.8	143.5	162.3	15.4	196.5
1974	35.1	0.4	6.9	126.4	133.3	13.5	182.3
1975	4.9	0.5	6.1	153.0	159.1	13.5	178.0
1976	38.7	0.3	5.3	156.8	162.1	19.6	220.7
1977	6.5	0.4	6.8	61.0	67.8	13.5	88.2
1978	5.6	0.5	4.5	72.2	76.7	4.5	87.3
1979	22.2	0.4	6.8	167.0	173.8	1.5	197.9
1980	21.9	0.2	6.5	104.2	110.7	6.3	139.1
1981	21.2	0.1	6.5	70.5	77.0	9.9	108.2
1982	14.8	2.7	7.2	124.7	131.9	14.7	164.1
1983	9.5	1.2	4.3	55.5	59.8	6.8	77.3
1984	28.6	3.2	13.5	194.0	207.5	17.4	256.7
1985	15.8	4.0	7.8	183.4	191.2	15.7	226.7
1986	35.8	9.6	11.8	179.0	190.8	30.3	266.5
1987	12.2	2.2	4.2	78.3	82.5	7.7	104.6
1988	32.5	1.2	5.8	155.0	160.8	13.3	207.8
1989	37.3	3.0	4.8	139.7	144.5	15.1	199.9
1990	15.4	2.3	4.4	99.8	104.2	9.5	131.4
1991 <sup>d/</sup>	38.7	5.2	4.4	104.7	109.1	32.6	185.6

a/ Does not include estimates of private hatchery strays.

b/ Freshwater sport catch from ODFW salmon/steelhead punch card information and represents only those fish greater than 24 inches (i.e., adults).

c/ Does not include private hatchery returns.

d/ Preliminary.

## COLUMBIA RIVER STOCKS

### Columbia River Coho

#### Inside Harvest

Coho harvest statistics for Columbia River commercial and recreational fisheries are presented in Appendix B, Table B-20. The 1991 Columbia River non-Indian gillnet fishery harvest was 403,100 adult coho. This compares to the 1990 catch of 66,000 fish and the 1971-1975 average catch of 199,400 coho. The treaty Indian main stem commercial gillnet coho catch was 7,200 fish. This compares to the 1990 catch of 1,000 fish and the 1971-1975 average catch of 9,100 coho.

The main stem and tributary recreational adult coho catch below Bonneville Dam was 234,400 fish. In 1991, inriver managers authorized a special fishery in the area from the Astoria/Megler Bridge downstream to Light 26 at Chinook/Hammond during the period August 1 through August 8. The August 1 opening for this special fishery was consistent with the opening for the main stem recreational fishery above the Astoria/Megler Bridge. Catches during this special fishery totaled 39 chinook and 1,151 coho. The regular Buoy 10 area fishery opened on August 9 with a 2 fish bag limit through September 2, and a season total catch expectation of 100,000 coho. The bag limit was increased to three fish after September 2. Fishing effort remained strong through September and even into October because of good catch rates (Table III-2). The total coho harvest by the Buoy 10 fishery in 1991 was 208,700 fish, a record high. Historical Buoy 10 catches and effort data are provided in Appendix B, Table B-21.

#### Escapement and Goal Assessment

The Columbia River ocean escapement of adult early and late coho stocks was 915,600 fish, up significantly from the 1990 return of 196,800 adults and the second highest since 1971 (Appendix B, Table B-20). Ocean escapement for both early and late stock components of Columbia River coho was sufficient to meet all hatchery production goals and provided for substantial inside recreational and commercial fishery opportunities.

## WASHINGTON COASTAL STOCKS

### Willapa Bay Coho

#### Inside Harvest

Run size, harvest and escapement data for Willapa Bay coho are presented in Appendix B, Table B-23.

The total gillnet catch of coho in Willapa Bay was 93,600 fish, the second highest catch since 1976. This is nearly twice the catch of 47,800 coho in 1990. Recreational catch estimates are not yet available.

TABLE III-2. Estimated weekly effort (in angler trips) and catches of chinook and coho in the 1991 Chinook/Hammond and Buoy 10 recreational fisheries.<sup>a/</sup>  
(Page 1 of 1)

Week Number	Ending Date or Period	Angler Trips	Catch		Catch Per Trip
			Chinook	Coho	
31	Aug. 4	1,347	20	569	0.44
32	Aug. 8	<u>1,412</u>	<u>19</u>	<u>582</u>	<u>0.43</u>
Chinook/Hammond Fishery Subtotal		2,759	39	1,151	0.43
32	Aug. 11	9,936	328	12,149	1.26
33	Aug. 18	22,825	3,027	10,490	0.59
34	Aug. 25	36,925	5,666	56,647	1.69
35	Sept. 1	23,757	1,361	31,521	1.38
36	Sept. 8	31,340	922	49,786	1.62
37	Sept. 15	16,192	172	20,576	1.28
38	Sept. 22	11,802	33	13,282	1.13
39	Sept. 29	4,979	26	6,198	1.25
40-43	Oct. 27	<u>11,165</u>	<u>14</u>	<u>6,878</u>	<u>0.62</u>
Buoy 10 Fishery Subtotal <sup>b/</sup>		168,921	11,549	207,527	1.30
Grand Total		171,680	11,588	208,678	1.28

a/ Includes boat-based and shore-based fisheries at Clatsop Spit and the north jetty of the Columbia River.

b/ Does not include catch and effort data for the Chinook/Hammond fishery occurring during weeks 31 and 32.

### Escapement and Goal Assessment

Willapa Bay coho are managed for hatchery production. Escapement to Willapa Bay hatcheries in 1991 was approximately 62,300 fish, well above the program requirements. No estimates of natural spawning escapement are made.

### **Grays Harbor Coho**

#### Inside Harvest

Run size, harvest and escapement data for Grays Harbor coho are presented in Appendix B, Table B-25.

In recent years, Grays Harbor fisheries have been limited by low returns of naturally spawning Chehalis River coho. However, strong 1988 escapements of natural and hatchery stocks to Grays Harbor systems and an expected good ocean survival combined to produce the largest return of coho seen in recent years. With this expectation, terminal mixed-species fisheries were designed to maximize available coho catches within the constraints of allocation and escapement needs. The total Grays Harbor gillnet catch was 122,700 coho. This included 45,600 coho in the non-Indian gillnet fishery, 68,800 by the Quinault treaty Indian fishery, and 8,300 by the Chehalis Tribe. The total gillnet catch was 2.7 times greater than the 1990 catch of 45,000 coho. Recreational catch estimates are not yet available. Significant marine recreational catches targeting coho released from net pens and in the Buoy 13 fishery, which developed off Westport in 1991, combined with increased inriver catches, should produce recreational catches much higher than those observed in recent years.

### Escapement and Goal Assessment

Grays Harbor coho are managed for natural production. Natural spawning escapement estimates are not yet available, but returns are expected to be well above the goal of 35,400 fish.

Final escapements to Grays Harbor hatcheries are not yet available, but are expected to be well above program needs.

### **Quinault River Coho**

#### Inside Harvest

Historical terminal run size, harvest and escapement for Quinault River coho are presented in Appendix B, Table B-27

Quinault River coho are managed for hatchery production. The treaty Indian gillnet fishery targeted on hatchery coho from early September through mid-November. The total gillnet harvest of 21,500 coho was about 2.5 times the 1990 level.

### Escapement and Goal Assessment

Preliminary data indicate that hatchery and natural escapements of the Quinault River coho in 1991 were 4,800 and 10,400 fish, respectively. Hatchery escapement goals were achieved for Quinault River coho.

### **Queets River Coho**

#### Inside Harvest

Historical terminal run size, harvest and escapement for Queets River coho are presented in Appendix B, Table B-30.

Queets River fisheries were established by preseason agreement and based on preseason abundance estimates and planned Council ocean fisheries. The treaty Indian gillnet fishery was structured to target on returning hatchery coho during September and early October, followed by a reduced level of fishing to update natural coho and chinook run sizes through mid-October. The inseason updates indicated that the natural coho run was near the preseason forecast. The total harvest of fall coho by the net fishery was 10,300 fish, approximately 20 percent larger than in 1990. A relatively small river recreational fishery operated through November.

#### Escapement and Goal Assessment

Analysis of spawning escapement survey data for Queets River coho has not yet been completed. Based on the inseason run size and inriver catch estimates, the spawning escapement is estimated at 6,400 adults, above the lower end of the escapement range (5,800).

### **Hoh River Coho**

#### Inside Harvest

Historical terminal run size, harvest and escapement for Hoh River coho are presented in Appendix B, Table B-33.

Management of fall coho was based on a preseason agreement. The tribal fall fishery on the Hoh River had been planned to take coho at a harvest rate of approximately 30 percent of the preseason forecasted terminal run, which was expected to return at a level of 3,400 fish. A chinook-directed fishery was conducted for two to three days per week during September and one day per week through mid-October. The coho terminal run size was estimated through data collected from a two-day fishery during the week of October 23 when flow conditions and coho catch patterns indicated that coho entry would peak. Coho-directed fishing was curtailed when inseason data indicated the run size was not significantly larger than 1990. For the remainder of the season, fishing was limited to a 20-hour, large mesh, chinook-directed fishery during the first week of November and steelhead-directed fisheries beginning the first week in December. The tribal fishery caught approximately 1,100 coho, compared to 3,100 fish in 1990. The inriver recreational fishery was expected to catch 100 adult coho from this stock.

### Escapement and Goal Assessment

Natural escapement, based on the inseason update and catches, is estimated preliminarily at 2,300 adults, within the management range established for this stock (2,000 to 5,000). Final terminal run size and spawning escapement estimates are expected to be higher than estimated preseason.

### **Quillayute River Coho**

#### Inside Harvest

Historical terminal run size, harvest and escapement for Quillayute River summer and fall run coho are presented in Appendix B, Table B-36.

The summer coho run in the Quillayute River was managed primarily for its hatchery component. The treaty Indian gillnet fishery targeted on this run from mid-August through mid-September, harvesting 2,700 fish.

The Quillayute River fall coho harvest was based on a preseason management agreement. The inseason update indicated lower hatchery and natural run sizes than predicted preseason. The treaty Indian fall coho fishery commenced in mid-September, catching 2,100 fish. The inriver recreational fishery was expected to harvest 400 fish. The inriver recreational and tribal fisheries were closed November 6 over concerns of reaching the escapement floor of 6,300 fish.

### Escapement and Goal Assessment

The preseason agreement provided for a spawning escapement within the established range for Quillayute River coho. The preliminary postseason escapement estimate for the fall coho run was 10,900 fish, a substantial increase over the 1990 escapement of 5,500 fish, and within the management range (6,300 to 15,800). The escapement goals for summer and fall coho hatchery stocks were all exceeded. The natural summer run coho escapement estimate is not yet available.

## PUGET SOUND STOCKS

### **Puget Sound Coho**

#### Inside Harvest

Commercial inside fishery harvest of Puget Sound coho is managed on the basis of six regional management stock units: Strait of Juan de Fuca, Nooksack-Samish, Skagit, Stillaguamish-Snohomish, South Puget Sound and Hood Canal. Harvest of coho for each management unit is regulated according to the natural spawning escapement or hatchery program escapement goal for that unit. Commercial net and troll harvest (treaty Indian and non-Indian) for all coho stocks combined is presented in Appendix B, Table B-37. The 1991 total Puget Sound commercial catch of coho was 586,300 fish, a 45 percent decrease from the 1990 catch of 1,067,900 coho. This reflects the general decline of Puget Sound coho stocks in 1991 relative to 1990. Non-Indian harvest was 193,800 coho, a decrease of 51 percent from the 392,200 caught in 1990. Treaty Indian net and troll fisheries harvested 392,500 coho, a 42 percent decrease from the 675,700 caught in 1990. A total of

4,600 coho were caught in the Strait of Juan de Fuca (Washington Areas 5 and 6C) by the treaty Indian troll fishery in 1991. No non-Indian trolling was conducted in Puget Sound waters.

Recreational coho harvest data for Puget Sound for the period of 1989-1991 are unavailable at this time, pending review of recent data in the WDF/Tribal Sport Emphasis Study. Historic coho recreational catches for the years from 1976-1988 are listed in Appendix B, Table B-38.

#### Escapement and Goal Assessment

Estimates of 1991 natural spawning escapements are unavailable at this time. Historic hatchery and natural run component escapements and net catches for each Puget Sound region of origin are presented in Appendix B, Table B-40.

The Hood Canal stock unit is managed for a natural run escapement goal of 19,100 adult spawners. Anticipated low abundance of the Hood Canal natural stock in 1991 and harvests impacting this stock throughout its range were expected to result in a spawning escapement below the goal for this stock in 1991. Similarly, the Skagit River stock was not expected to meet its natural escapement goal of 30,000 adult coho.

Puget Sound hatchery coho escapement and egg-take goals were generally met, with the following exceptions. The Skagit and Dungeness hatcheries operated by WDF, and the tribal facilities operated by the Lower Elwha and Lummi tribes, did not achieve their egg-take goals for coho in 1991.

#### COASTWIDE GOAL ASSESSMENT SUMMARY

A summary of 1991 performance for coho salmon by management system and stock in relation to escapement goals is presented in Table III-3.

TABLE III-3. Summary of 1991 performance for coho salmon by management system and stock in relation to escapement goals (1991 data preliminary). (Page 1 of 1)

System and Stock	1991 Escapement Goal	Escapement Goal Assessment
Columbia River and Oregon Coastal Coho (OPI)	OCN spawning escapement of 200,000 adults.	Preliminary OCN escapement is 110,000, 55 percent of the goal. Hatchery egg-take goals not achieved in 5 hatcheries.
Washington Coastal Coho	Natural spawning escapements within 1983 court-ordered range for Quillayute, Queets and Hoh rivers. Grays Harbor natural escapement of 35,400; meet hatchery egg-take goals; meet treaty Indian obligations.	Queets, Quillayute and Hoh rivers natural escapements within goal range. Grays Harbor natural escapement estimate unavailable, but expected to exceed goal. Hatchery egg-take goals achieved. No information available on catch allocation.
Puget Sound Coho	Meet escapement objectives for natural and hatchery stocks. Hood Canal natural escapement expected to be below 19,100 goal. Skagit River natural escapement expected to be below 30,000 goal. Meet treaty Indian allocation requirements, and inside non-Indian fishery needs for 6 management units.	Data not available for natural spawning escapement. Hatchery egg-take goals generally met. For exceptions, see Chapter III text. No information available on catch allocation.