
CHAPTER III COHO SALMON MANAGEMENT

OREGON PRODUCTION INDEX AREA COHO STOCKS

Oregon production index (OPI) area coho stocks include all Washington, Oregon, and California natural and hatchery stocks from streams south of Leadbetter Point, Washington. The largest naturally produced component of the OPI coho stock is Oregon coastal natural (OCN) coho. It is managed as a stock aggregate with four identified components that include coho produced from Oregon river and lake systems south of the Columbia River. National Marine Fisheries Service (NMFS) has identified three evolutionarily significant units (ESU) within the naturally produced OPI area coho stocks which are listed as threatened: central California coast (CCC) coho listed October 1996, southern Oregon/northern California (SONC) coho listed May 1997, and Oregon coast (OC) coho listed August 1998. The latter two ESUs encompass all the components of OCN coho.

Management Objectives

In establishing ocean salmon fisheries that impact OPI area coho stocks, the Council was guided by the reasonable and prudent alternatives of the 1999 NMFS Supplemental Biological Opinion and Incidental Take Statement for CCC, SONC, and OC coho which required:

1. No directed coho fisheries or retention of coho in all commercial and recreational fisheries off California to protect threatened CCC coho.
2. Marine fishery impacts on threatened CCC and SONC coho must be no more than 13% as indicated by projected impacts on Rogue/Klamath (RK) hatchery coho.
3. Marine and freshwater fishery impacts on OCN coho should not exceed 15%.

Regulations to Achieve Objectives

The OPI area coho stocks contribute primarily to ocean fisheries off Oregon and northern California, and to a lesser degree to ocean fisheries off Washington and British Columbia. The 2000 ocean salmon fisheries within the OPI area were severely limited to meet the NMFS jeopardy standards for ESA listed species as outlined above. The Council prohibited retention of coho in all fisheries off California and adopted seasons which the Salmon Technical Team (STT) projected would result in exploitation rates of 6.0% for RK coho in marine fisheries and an overall 8.2% for OCN coho in marine and freshwater fisheries combined. Under the adopted fisheries, the OCN spawner escapement index was projected to be 48,900 adults by stratified random sampling (SRS) accounting, better than double the parent spawner population.

Commercial Troll

Commercial troll fisheries have been closed to coho retention south of Cape Falcon since 1993. The first commercial troll selective fishery for marked hatchery coho occurred between August 4 and September 30 from Cape Falcon to the Queets River. Chinook fishery closures (primarily in July) and gear restrictions (4-spread requirement) were also used to reduce OCN impacts.

Recreational

Retention of coho has been extremely limited in the recreational fisheries south of Cape Falcon since 1993. All coho directed fisheries in the OPI area have been selective for marked hatchery coho since 1998. Additionally, gear restrictions and closed periods were used during some chinook directed fisheries to reduce coho impacts.

Inside Harvest

Inside harvest estimates of coho are not available for any river system in California.

The inside recreational harvest of coho in 2000 in Oregon coastal streams, as in recent years, was very restricted and limited to areas where surplus hatchery coho returns were expected. Selective fisheries for adipose fin-clipped hatchery coho occurred in nine freshwater areas. Estimates of the 2000 inriver recreational coho harvest are not available at this time. Historical estimates of the recreational harvest of adult coho in Oregon coastal estuaries and rivers, derived from Oregon Department of Fish and Wildlife (ODFW) salmon and steelhead angler catch record cards, are reported in Table III-1.

Coho harvest statistics for Columbia River commercial and recreational fisheries are presented in Appendix B, Table B-20. The 2000 Columbia River non-Indian commercial gillnet fishery harvested 176,800 adult coho, compared to 80,600 coho in 1999. Select Area fisheries in both Oregon and Washington accounted for 61,500 of the total 2000 Columbia River commercial coho catch. The treaty Indian mainstem commercial gillnet coho catch was 6,300 fish, compared to the 1999 catch of 1,700 coho.

The total mainstem and Buoy 10 recreational fisheries below Bonneville Dam harvested 22,800 coho compared to 10,200 adult coho in 1999. In 2000, Columbia River managers opened the Buoy 10 fishery August 1 through December 31 for both chinook and coho. The upriver boundary was moved from the Astoria-Megler Bridge upstream approximately 5 miles to a line from Tongue Point, Oregon to Rocky Point, Washington. Emergency regulations closing the Buoy 10 fishery to chinook salmon retention were implemented effective August 28-31 due to larger than anticipated chinook catches. Retention of coho was selective for fish with a healed adipose fin clip. Angler compliance with the adipose fin-clip requirement was 98%. The 2000 Buoy 10 harvest and effort totaled 21,500 coho and 72,500 angler trips (Table III-2). Historical Buoy 10 catch and effort data are provided in Appendix B, Table B-21.

Oregon and Washington conducted an on-the-water observation program for the Buoy 10 selective fishery. Preseason, the STT (using the coho Fishery Regulation Assessment Model [FRAM]) predicted the mark rate for the Buoy 10 fishery would be 87%. From on-the-water observations and dockside interviews, the mark rate for the Buoy 10 fishery was 83%.

Escapement and Management Performance

Central California Coast and Northern California Coho

Spawner estimates are not available for CCC coho. Estimates are available for escapement to Klamath River Basin hatcheries, but not for coho spawning in natural areas. In 2000, coho returns to Iron Gate and Trinity River hatcheries totaled 4,160 adults (3,450 coho to Trinity River and 710 coho to Iron Gate), compared to a combined goal of 2,000 adult coho.

Oregon Coast Coho

Natural spawner escapement in 2000 to Oregon coastal river and lake systems from the Coquille River north is preliminarily estimated at 62,700 adult coho by SRS accounting. This compares to 51,270 adults in 1999. Historical spawner escapement estimates of naturally produced coho are reported in Table III-1 and have been adjusted to reflect SRS accounting.

Preliminary information based on SRS surveys indicate the best natural spawning population on the Oregon coast since 1996. The estimate of the natural spawning population in 2000 also ended a three year trend of the population not replacing itself as the population estimate was twice that of the 1997 parental spawning population (Table III-3, Figure III-1). The occurrence of hatchery strays on the spawning grounds was low and natural spawning populations were distributed well among coastal basins.

TABLE III-1. Estimated returns to Oregon coastal streams and lakes in thousands of adult coho (SRS spawner accounting).
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Year	Returns to Hatchery Facilities			Count at North Fork Umpqua Winchester Dam	Number of OCN Spawners ^{a/}			Inside Harvest Impacts ^{b/}	Ocean Escapement to Oregon Coast ^{a/}
	Private	Public	STEP ^{c/}		Lakes	Rivers	Total		
1970	-	36.2	-	0.2	20.5	51.2	71.7	39.8	147.9
1971	-	29.1	-	0.6	29.2	65.6	94.8	24.1	148.6
1972	-	12.9	-	0.3	10.0	24.1	34.1	16.6	63.9
1973	-	18.4	-	0.4	17.6	37.8	55.4	15.4	89.6
1974	-	35.1	-	0.4	6.4	28.1	34.5	13.5	83.5
1975	-	4.9	-	0.5	5.6	34.8	40.4	13.5	59.3
1976	-	38.7	-	0.3	1.5	39.2	40.7	19.6	99.3
1977	4.2	6.5	-	0.4	5.8	13.7	19.5	13.5	44.1
1978	12.3	5.6	-	0.5	1.6	18.2	19.8	4.5	42.7
1979	49.2	22.2	-	0.4	6.6	38.4	45.0	1.5	118.3
1980	38.7	21.9	-	0.2	4.7	25.6	30.3	6.3	97.4
1981	117.8	21.2	-	0.1	2.5	30.1	32.6	9.9	181.6
1982	184.7	14.8	-	2.7	7.9	68.3	76.2	14.7	293.1
1983	133.9	9.5	-	1.2	3.3	19.4	22.7	6.8	174.1
1984	115.4	28.6	-	3.2	14.7	59.7	74.4	17.4	239.0
1985	332.0	15.8	-	4.0	7.6	66.3	73.9	15.7	441.4
1986	453.7	35.8	2.5	9.6	11.8	58.2	70.0	30.3	601.9
1987	119.3	12.3	0.2	2.2	4.2	25.9	30.1	7.7	171.8
1988	116.1	33.7	1.2	1.2	5.8	51.0	56.8	13.3	222.3
1989	46.9	37.3	1.2	3.0	4.8	41.6	46.4	15.1	149.9
1990	35.6	15.4	1.6	2.3	4.4	16.5	20.9	9.5	85.3
1991	35.1	39.6	4.9	5.2	7.3	29.1	36.4	31.5	152.7
1992	-	23.3	0.6	6.0	2.0	37.7	39.7	18.7	88.3
1993	-	20.2	2.0	3.3	10.1	44.3	54.4	13.3	93.2
1994	-	23.4	1.8	2.8	5.8	37.9	43.7	2.4	74.1
1995	-	25.2	0.4	4.2	11.2	41.2	52.4	3.6	85.8
1996	-	23.8	1.0	6.2	13.5	59.5	73.0	4	108.0
1997	-	17.6	0.2	3.6	8.6	14.1	22.7	4.5	48.6
1998	-	15.2	0.2	5.3	11.1	19.8	30.9	3.1	54.7
1999	-	13.3	0.4	2.5	12.7	34.2	46.9	2.8	68.7
2000 ^{d/}	-	15.0	0.5	11.1	12.2	50.5	62.7	4.0	93.3

- a/ Does not include estimates for the southern OCN component (Rogue River). Spawner escapements to rivers have historically been estimated by a nonrandom standard index of streams north of the Rogue River. A total coastwide spawner escapement methodology based on SRS was initiated in 1990 and implemented concurrently with the standard index methodology. The SRS methodology indicated that actual escapements were less than estimated by the standard rivers index. The spawner index data for years prior to 1990 have been recalibrated in this table to be comparable with the SRS estimates.
- b/ Freshwater sport catch from ODFW salmon/steelhead angler tag information and represents only those fish greater than 24 inches. Includes estimated mortality from hook-and-release.
- c/ Oregon coastal Salmon Trout Enhancement Program (STEP) production from hatchery smolt rearing sites only.
- d/ Preliminary.

TABLE III-2. Estimated weekly effort (in angler trips) and catches of chinook and coho in the 2000 Buoy 10 recreational fisheries (all data are preliminary).^{a/} (Page 1 of 1)

Week Number	Ending Date of Period	Angler Trips	Catch		Catch Per Trip
			Chinook	Coho	
32	Aug-6	5,211	211	1,769	0.38
33	Aug-13	8,978	1,100	925	0.23
34	Aug-20	17,454	1,950	4,128	0.35
35	Aug-27	20,042	2,596	6,616	0.46
36	Sep 3	9,836	71	4,371	0.45
37	Sep-10	5,885	117	2,311	0.40
38	Sep-17	3,787	40	1,128	0.32
39	Sep 24	997	-	115	0.12
40-44	Oct 29	328	-	26	0.11
Total		72,518	6,085	21,478	0.38

a/ Includes boat-based and shore-based fisheries from the new upstream boundary at the Tongue Point-Rocky Point line downstream to the Buoy 10 line including Clatsop Spit, the South Jetty of the Columbia River and the North Jetty of the Columbia River after the ocean closed. Fishery was open August 1-December 31 for all species except nonfin-clipped coho and steelhead with a four-day closure to chinook retention August 28-31.

TABLE III-3. OCN adult coho salmon conservation objective, fishery impacts, and spawner escapement, based on SRS. (Page 1 of 1)

Year	Fishery Impact		Adjusted SRS Adult Coho Spawner Population Estimates in Thousands of Spawners by Stock Component ^{a/}						Adult Coho Spawners Per Spawner Habitat Mile				
	Conservation Objective ^{b/}	Preseason Projection	Postseason Estimate ^{c/}	Northern ^{d/}	North Central ^{e/}	South Central ^{f/}	Southern ^{g/}	Coastwide	Northern ^{d/}	North Central ^{e/}	South Central ^{f/}	Southern ^{g/}	Coastwide Average
1990	-	-	-	2.2	5.6	13.1	3.1	24.0	2	5	8	8	6
1991	-	0.460	0.454	9.3	6.7	20.3	1.0	37.3	10	6	13	2	9
1992	-	0.420	0.511	2.4	15.4	21.9	2.2 ^{h/}	41.9	3	13	14	5 ^{h/}	10
1993	-	0.260	0.423	4.5	7.8	42.1	0.4 ^{h/}	54.8	5	7	26	1 ^{h/}	14
1994	≤0.20	0.111	0.068	4.1	9.7	29.9	5.4	49.1	5	8	18	13	12
1995	≤0.20	0.118	0.124	4.0	13.6	34.8	3.8	56.2	4	12	21	9	14
1996	≤0.20	0.125	0.083	3.3	18.1	51.5	4.6	77.5	4	16	32	11	19
1997	≤0.20	0.110	0.124	2.1	2.8	17.7	8.3	30.9	2	3	16	20	8
1998	≤0.13	0.119	0.078	2.6	3.3	25.2	3.3	34.4	3	2	14	8	9
1999	≤0.15	0.087	0.087	8.8	11.4	27.1	2.0	49.3	10	10	17	5	12
2000 ^{i/}	≤0.15	0.082	NA	17.6	11.6	33.5	11.9	74.6	20	10	21	29	19

a/ A spawner escapement methodology study based on SRS has been in effect since 1990 in which coho salmon population estimates have been made for Oregon coastal river systems from the Coquille River and north. Spawner population estimates include an adjustment for observation error.

b/ Prior to 1994, the conservation objective was expressed in terms of the total escapement of OCN spawners in index numbers rather than as an exploitation rate. The index escapement objectives from 1981 through 1993 are provided in Table III-2 of the *Review of 1998 Ocean Salmon Fisheries* and Table 1 of Amendment 11. From 1994 through 1997, Amendment 11 specified that at low stock sizes, only incidental harvest of OCN coho could occur and that impacts could not exceed 20%. Beginning in 1998, the OCN conservation objective has been as specified in Amendment 13 which is also the basis for the NMFS jeopardy standards under the Endangered Species Act listing.

c/ From the coho FRAM, except the estimates prior to 1994 represent the OPI composite exploitation rate for hatchery and natural stocks.

d/ Estimate based on 899 miles of spawner habitat within Nehalem, Tillamook, and Nestucca Rivers and other direct ocean tributaries from Necanicum River through Neskowin Creek.

e/ Estimate based on 1,163 miles of spawner habitat within Siletz, Yaquina, Alsea, and Siuslaw Rivers and other direct ocean tributaries from the Salmon through Siuslaw Rivers.

f/ Estimate based on 1,622 miles of spawner habitat within Umpqua, Coos, and Coquille Rivers. Also includes spawners using tributaries to Siltcoos, Tankenitch, and Tenmile Lakes.

g/ Estimate based on a mark-recapture methodology and 410 miles of spawner habitat within the Rogue River.

h/ Unreliable estimate.

i/ Preliminary.

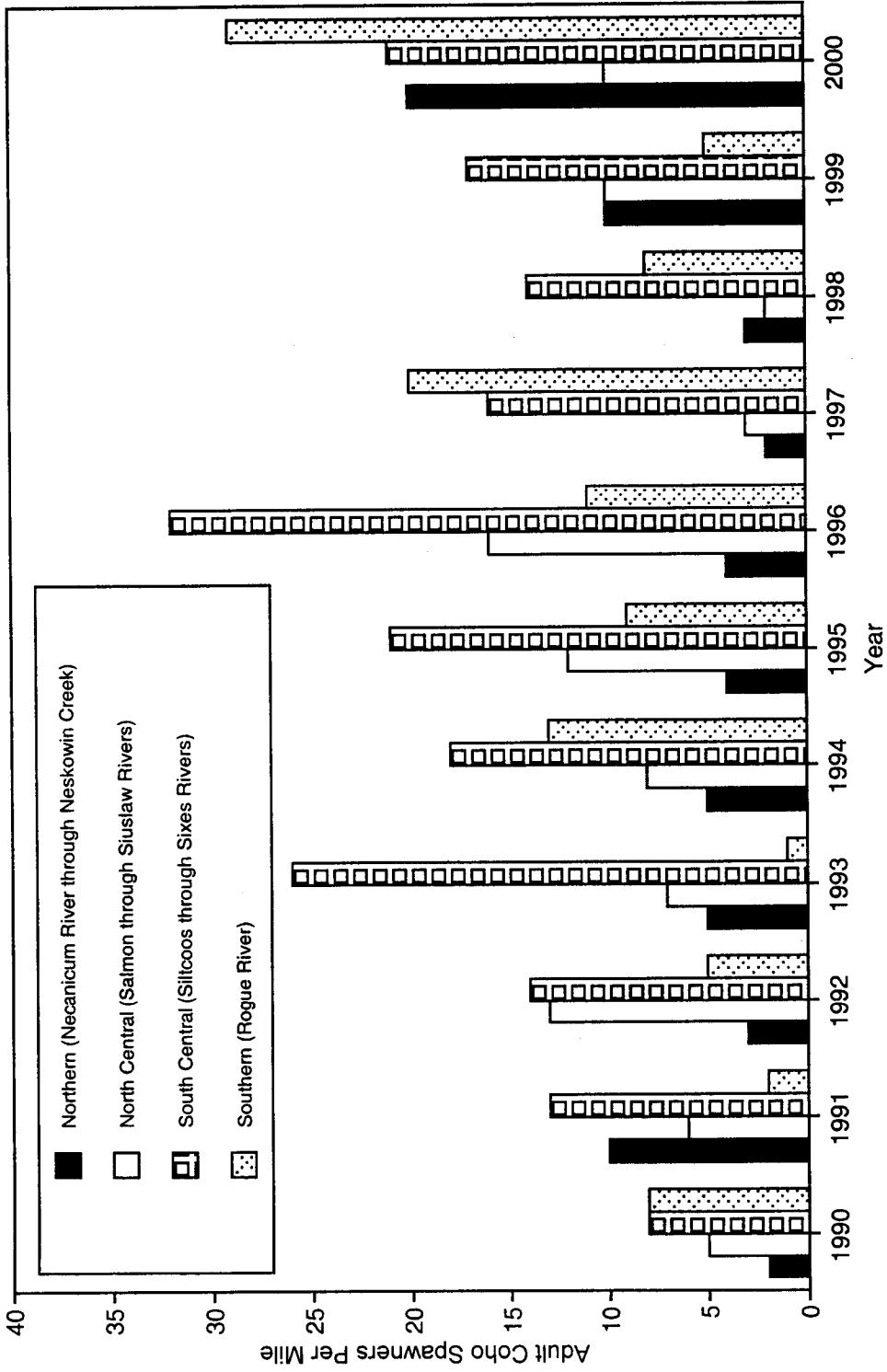


FIGURE III-1. Oregon coastal natural adult coho salmon spawners per spawner habitat mile by coastal region based on SRS, 1990-2000.

Preliminary estimates of total coho returns to Oregon coastal public hatcheries and STEP smolt production facilities were 25,590 and 500 adults, respectively (Table III-1). Hatchery egg-take goals are expected to be met at all public hatchery stations.

Columbia River Coho

The 2000 ocean escapement of adult early and late Columbia River coho stocks was 543,200 fish, compared to 259,900 adults in 1999 (Appendix B, Table B-20). The 2000 Columbia River coho abundance was sufficient to meet all hatchery brood stock escapement needs.

WASHINGTON COASTAL COHO STOCKS

Washington coastal stocks include all natural and hatchery stocks originating in Washington coastal streams north of the Columbia River through the western strait of Juan de Fuca (west of the Elwha River). The primary stocks in this group which are most pertinent to ocean salmon fishery management are Willapa Bay (hatchery), Grays Harbor, Quinault (hatchery), Queets, Hoh, and Quillayute coho.

Management Objectives

Management goals for Grays Harbor and Olympic Peninsula coho stocks include achieving natural spawning escapement objectives and treaty Indian allocation requirements, although Grays Harbor also contains a significant amount of hatchery production. The conservation objectives for stocks managed for natural production are based on maximum sustainable yield (MSY) spawner escapements established pursuant to the U.S. District Court order in *Hoh versus Baldrige*. Annual natural spawning escapement targets and total escapement objectives are established by the Washington Department of Fish and Wildlife (WDFW) and treaty Indian tribes under the provisions of *U.S. versus Washington* and subsequent U.S. District Court orders. After agreement to annual targets is reached by the parties in this litigation, ocean fishery escapement objectives are established for each river, or region of origin, which include provisions for providing treaty Indian allocation requirements and inside, non-Indian fishery needs. The conservation objectives for the Queets, Hoh, and Quillayute rivers were developed as ranges intended to bracket estimates of MSY escapement. The range reflects the degree of uncertainty inherent by using the high estimate of recruits-per-spawner and low estimate of carrying capacity for the lower bound, and the low estimate of recruits-per-spawner with the high estimate of smolt carrying capacity for the upper end of the range. The ranges were subsequently adjusted upward for risk aversion and again for habitat considerations by 26% to 184%.

Regulations to Achieve Objectives

Washington coastal coho stocks contribute primarily to ocean fisheries off Washington and British Columbia. To manage for optimum yield in the 2000 fisheries, the Council regulations were aimed at protecting escapements for depressed natural stocks, especially Queets and western Strait of Juan de Fuca coho. Toward that end, the overall harvest quotas were limited to levels well below those of the late 1980s and early 1990s and all retention of coho in recreational ocean fisheries north of Cape Falcon was limited to marked hatchery fish.

Willapa Bay Coho

Inside Harvest

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

The gillnet catch of coho in Willapa Bay in 2000 totaled 10,035 fish (3,467 wild and 6,568 hatchery). Based on the preseason forecast for a terminal run of 48,800 fish, the scheduled fisheries were expected to harvest approximately 7,630 total coho.

Recreational harvest estimates are not yet available for 2000. All recreational fisheries opened at the usual time, were of normal duration, and maintained normal bag limits.

Willapa Bay was open to recreational fishing from August 16 through January 31 with a daily-bag-limit of six salmon, two of which could be adults. All retained coho were required to have a healed adipose fin clip. Estimates of total catch are not yet available for Willapa Bay.

Escapement and Management Performance

Willapa Bay coho are managed for hatchery production. Escapement to Willapa Bay hatcheries in 2000 numbered 12,900 coho. Estimates of natural spawning escapement for 2000 are not yet available.

Grays Harbor Coho

Inside Harvest

Run size, harvest and escapement data for Grays Harbor coho are presented in Appendix B, Table B-25. The forecasted run size for Grays Harbor wild coho was for 111,173 fish (46,818 wild and 64,355 hatchery). A total of 22,038 coho (wild, hatchery, and net-pen origin) were harvested in net fisheries. This included 16,205 coho in the Quinault Indian Nation fisheries, 5,562 in the non-Indian gillnet fishery, and 271 in the Chehalis tribal fishery.

Recreational harvest estimates are not yet available for 2000. The Chehalis River and its tributaries were open to non-selective coho harvest with a limit of two adult coho, one of which may be wild, through November 15. After November 15, fish without a healed adipose fin clip were required to be released. The Humptulips recreational fishery required release of all coho without a healed adipose fin clip throughout the season.

Escapement and Management Performance

Grays Harbor coho are managed for natural production. Natural spawning escapement estimates are not yet available. Initial indications are that the escapement goal of 35,400 fish will be met.

The preliminary estimates of the total return to Grays Harbor hatcheries is 15,500 coho. Net pen reared coho also returned to Grays Harbor in 2000 and contributed to the coho harvest, but no estimate of escapement is available.

Quinault River Coho

Inside Harvest

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

The treaty Indian gillnet fishery targets chinook and coho from early September through mid-November. A total of 16,214 coho were harvest by the gillnet fishery in 2000.

Escapement and Management Performance

Quinault River coho are managed for hatchery production. Escapement estimates for Quinault River coho in 2000 are 10,356 and 7,138 adult hatchery and natural coho, respectively. Hatchery production objectives 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 conducted in accordance with a preseason agreement between the Quinault Indian Nation and WDFW, based on preseason abundance forecasts and planned Council ocean fisheries. The treaty Indian gillnet fishery was structured to target returning hatchery coho during September and early October. The total harvest of fall coho by the net fishery was 4,984, comprised primarily of hatchery fish (76%). The non-Indian inriver recreational fishery was closed to retention of unmarked chinook and coho, except in the Salmon River tributary where hatchery stocks predominate.

Escapement and Management Performance

Analysis of spawning escapement survey data for Queets River coho has not yet been completed. No inseason estimates of terminal run size and escapement were available due to the limited fishing schedule established in anticipation of a return well below the lower end of the escapement objective of 5,800 to 14,500 established for this stock. Early indications are that the spawning escapement is stronger than anticipated preseason and that the spawning escapement goal will be attained. Preliminary estimates of spawning escapement are 6,700 wild, 1,400 supplemental, and 4,800 hatchery coho. Since 1998, carcasses from hatchery rack returns have been distributed in two pairs of study streams in the Clearwater River to evaluate potential effects nutrient enhancement on production and survival. Summer fry densities and condition, smolt production, and adult return are being monitored in Christmas (treated)–Miller (untreated) and Hurst (treated)–Shale(untreated) Creeks; these study pairs are comparable in size and habitat quality.

Hoh River Coho

Inside Harvest

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

The preseason terminal run size for Hoh coho was projected to be 3,323 after planned ocean fisheries under PFMC regulations. Returning adults in 2000 were the results of low freshwater smolt production, but a better than recent average smolt to ocean recruit survival rate of 5.75%. The smolt production estimate was derived from the census of Queets River smolt outmigrants. Both the Queets and Hoh wild parental populations had spawned at levels significantly below their respective escapement goal floors for the recent two cycles.

The tribal terminal fishery was designed to harvest wild coho at a 25.8% rate and was conducted with 6-inch and larger mesh size. The fishery was conducted one day per week in week 36 and 2 days per week from weeks 37 through 39, prior to the normal peak entry timing of wild coho. The fishery continued for one day per during weeks 40, 41 and 42, two days during week 43, one day during week 44, two days during week 45 and one day each week up to week 48 before the start of the steelhead season. The non-Indian recreational fishery opened below the Oxbow Campground boat ramp with a bag limit of 6 salmon, two of which may be adults. The river between the Oxbow ramp and Morgan's Crossing opened October 16 with the same bag limit. The later opening was timed to protect spawning spring/summer chinook. The tribal steelhead fishery opened with normal 6" and larger mesh beginning in week 49. Significant wild coho catch began occurring in week 41, followed by larger than expected catches in week 43 and the remainder of the season. The tribal harvest consisted of about 1,920 coho, of which approximately 1,700 were wild coho with the balance being marked and unmarked hatchery fish.

Escapement and Management Performance

The coho run has been confirmed to be larger than expected based on spawner ground survey observations. Preliminary escapement data suggest the 2000 coho escapement will be 4000, in the mid to upper half of the

escapement goal range. Flow conditions within the Hoh River Basin were significantly lower than in all other recent years during coho spawning. The distribution of spawners is much heavier toward the upper mainstem areas of the river than the smaller surface tributaries compared to years of normal precipitation and flow.

Quillayute River Coho

Inside Harvest

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

Recreational and tribal summer fisheries were established through agreement between the Quileute Tribe and WDFW. The summer coho run in the Quillayute River is managed primarily for its hatchery component, which returns to the Quillayute during the last weeks of the spring/summer fishery and the first weeks of the fall fishery. The Quileute tribal fishery was limited to two days per week during the spring/summer fishery due to a concern for wild summer chinook. A total of 1,188 summer coho were harvested in the Quileute tribe's commercial and ceremonial & subsistence fisheries. The non-Indian recreational fishery remained open through the spring/summer period, but required release of all wild (unmarked) coho during the months of July and August, when the summer coho enter the river. No estimate of the 2000 inriver sport fishery catch of summer coho is available.

No formal agreement was reached between the Quileute Tribe and WDFW for the fall management period. The fall coho preseason terminal run size forecasts were 12,799 hatchery and 8,194 wild coho under the ocean fishery regulations. The fall fisheries were constrained by wild coho numbers, as well as a concern for declining chinook returns in recent years. The fall tribal gill net fishery was set at 4.5 days per week during the early weeks (36-39) when summer coho were entering the river. The Quileute Tribe shut down fishing during weeks 45 through 47 to stay above the wild coho escapement floor, and to conserve fall chinook. The total tribal harvest of fall coho was 6,794 of which 4,016 were estimated wild and 2,778 were hatchery. The non-Indian recreational fishery continued through the fall with the normal bag limit of 6 fish, two of which may be adults. No estimate of the 2000 inriver sport fishery catch of fall coho is available.

Escapement and Goal Assessment

The summer coho run in the Quillayute River is managed primarily for the hatchery component. The summer coho hatchery rack return was 3,745 adults, far in excess of the 300 egg take goal. No estimate of natural escapement of summer coho in 2000 is available.

In season catches and post season spawner surveys suggest the run of wild fall coho was greater than the preseason expectation; preliminary information indicates that the escapement was 11,600 adults, well within the range of 6,300 to 15,800 established for this stock. The hatchery fall coho rack return was 13,118 adults, far in excess of the 600 adult egg take goal.

PUGET SOUND COHO STOCKS

Puget Sound coho salmon stocks include natural and hatchery stocks originating from U.S. tributaries to Puget Sound and the eastern Strait of Juan de Fuca (east of Salt Creek). The primary stocks in this group which are most pertinent to ocean salmon fishery management are eastern Strait of Juan de Fuca, Hood Canal, Skagit, Stillaguamish, Snohomish, and South Puget Sound (hatchery) coho.

Management Objectives

The Puget Sound Salmon Management Plan defines management objectives and long term goals for these stocks as developed by representatives from federal, state, and tribal agencies. Conservation objectives for specific stocks are currently based on either maximum sustainable production for stocks managed primarily for natural production or upon hatchery escapement needs for stocks managed for artificial production. However, a transition to exploitation rate management is currently under consideration by the involved managers. Annual escapement targets for these coho stocks are developed through procedures established

in U.S. District Court. Puget Sound management procedures are outlined in a "Memorandum Adopting Salmon Management Plan" (*U.S. versus Washington*, 626 F. Supp. 1405 [1985]). The original conservation objectives were developed by a State/Tribal Management Plan Development Team following the Boldt Decision with the goal for natural spawning stocks defined as "the adult spawning population that will, on the average, maximize biomass of juvenile outmigrants subsequent to incubation and freshwater rearing under average environmental conditions." The methodology used to develop the objectives was based on assessment of the quantity and quality of rearing habitat and the number of adult spawners required to fully seed the habitat. Some objectives have subsequently been modified by the U.S. District Court Fisheries Advisory Board and later determinations of the WDFW/Tribal Technical Committee.

Regulations to Achieve Objectives

Puget Sound coho stocks contribute primarily to ocean fisheries off Washington and British Columbia. These stocks did not play a primary roll in 2000 ocean fishery management considerations since the needs of Washington coastal and OCN stocks were more critical. The mark selective regulations in ocean and Puget Sound recreational fisheries served to increase harvest of marked hatchery fish while protecting wild Puget Sound coho and Thompson River coho (Canada).

Inside Harvest

Commercial inside fishery harvest of Puget Sound coho is managed on the basis of six regional management 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 2000 total Puget Sound commercial catch of coho was 385,600 fish, compared to a catch of 108,200 coho in 1999. Non-Indian harvest was 22,400 coho, compared to a catch of 11,400 coho in 1999. Treaty Indian net and troll fisheries harvested 363,200 coho, compared to a catch of 96,900 coho in 2000.

Historic coho recreational catches in the Puget Sound recreational fishery for the years from 1971 through 1999 are listed in Appendix B, Table B-38.

Escapement and Management Performance

Estimates of 2000 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.

In general, Puget Sound hatchery coho escapement and egg-take goals were met in all regions except for South Puget Sound and Snohomish.

COASTWIDE GOAL ASSESSMENT SUMMARY

A summary of 2000 performance for coho salmon by stock in relation to the Council's conservation objectives (Amendment 14) is presented in Table III-4.

TABLE III-4. Performance of coho salmon stocks in relation to 2000 conservation objectives (preliminary data). (Page 1 of 1)

System and Stock	2000 FMP Conservation Objective	Achievement
Puget Sound Coho	Natural spawner escapement objectives as provided below and in state-tribal agreements; meet hatchery egg-take goals; and meet treaty Indian allocation requirements and inside non-Indian fishery needs for 6 management units.	Data not available for 2000 natural spawner escapements, but all are expected to be better than preseason expectations. Hatchery egg-take goals met, except for South Puget Sound. No information available on catch allocation.
Eastern Strait of Juan de Fuca	3,130 natural adult spawners	Preseason expected ocean escapement of 11,200 adult fish for eastern and western Strait of Juan de Fuca combined.
Hood Canal	21,500 natural adult spawners	Preseason expected ocean escapement of 50,400 adult fish.
Skagit	30,000 natural adult spawners	Preseason expected ocean escapement of 24,700 adult fish.
Stillaguamish	17,000 natural adult spawners	Preseason expected ocean escapement of 15,000 adult fish.
Snohomish	70,000 natural adult spawners	Preseason expected ocean escapement of 45,000 adult fish.
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Washington Coast Coho	Natural spawner escapement objectives as provided below and in state-tribal agreements; meet hatchery egg-take goals; and meet treaty Indian obligations.	Hatchery egg-take goals achieved. No information available on catch allocation.
Western Strait of Juan De Fuca	9,720 natural spawners	Postseason estimate not available. Preseason expectation for an ocean escapement of 11,200 adult fish for eastern and western Strait of Juan de Fuca combined.
Quillayute Fall	6,300 to 15,800 natural adult spawners	Postseason estimate not available, but expected to be in the upper end of the range. Preseason expectation for an ocean escapement of 12,800 adult fish.
Hoh	2,000 to 5,000 natural adult spawners	4,000 natural adult spawners
Queets	5,800 to 14,500 natural adult spawners	NA
Grays Harbor	35,400 natural adult spawners	Postseason estimate not available, but the objective is expected to be met. Preseason expectation for an ocean escapement of 50,300 adult fish.
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OPI Area Coho (Columbia River and coastal stocks south of Leadbetter Point)	Natural spawner escapement objectives as provided below; meet hatchery egg-take goals; and meet treaty Indian obligations.	Hatchery egg-take goals achieved. No information available on catch allocation.
OCN (Threatened)	Combined marine and freshwater exploitation rate $\leq 15\%$ for the 4 stock components. Council adopted a projected exploitation rate of 8.2 with an expected 48,900 adult spawners (SRS of rivers and lakes from the Coquille River north).	Postseason exploitation rate estimate not available. Preliminary OCN escapement of 62,700 adult spawners (SRS of rivers and lakes from the Coquille River north).
Northern California (Threatened) and CCC (Threatened)	No directed coho fisheries or retention of coho south of Humbug Mt. Marine exploitation rate $\leq 13\%$ as indicated by R/K hatchery stocks. Council adopted a projected exploitation rate on R/K hatchery coho of 6.0%.	No directed coho fisheries or retention of coho south of Humbug Mt. Postseason exploitation estimate not available.