

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, although stocks produced north of Leadbetter Point are also intercepted in the OPI area. The largest naturally produced coho stock is OCN coho, which includes coho produced from Oregon river and lake systems south of the Columbia River. OCN coho are managed as a stock aggregate with four identified components. Prior to 2000, NMFS listed three coho ESUs within the OPI area as threatened: CCC coho listed October 1996, SONCC coho listed May 1997, and OCN coho listed August 1998. In 2002, NMFS began an update of all its listing determinations and in January of 2006 concluded that the OCN ESU did not warrant listing under the ESA. That determination was overruled by a U.S. Court decision in 2007, and subsequently relisted by NMFS as threatened in February 2008. Columbia River natural coho were listed as endangered under the Oregon State ESA in 2002, and as threatened under the Federal ESA on June 28, 2005. The primary OPI hatchery stocks include a south migrating Columbia River (early) stock, a north migrating Columbia River (late) stock, public hatchery coho from the Oregon and northern California Coast, and formerly a small cooperative program along the southern Oregon Coast known as the Salmon Trout Enhancement Program (STEP), which was discontinued after the 2004 brood releases.

Management Objectives

In establishing ocean salmon fisheries that impact OPI area coho stocks, the Council was guided by the reasonable and prudent alternatives of NMFS 1999 Supplemental Biological Opinion and Incidental Take Statement for CCC and SONCC coho and the March 2011 NMFS ESA guidance letter for LCN natural and OCN coho, which required:

1. No directed coho fisheries or retention of coho in all commercial and recreational fisheries off California to protect endangered CCC coho.
2. Marine fishery impacts on endangered CCC and threatened SONCC coho must be no more than 13.0 percent as indicated by projected impacts on RK hatchery coho.
3. Fishery impacts on threatened LCN coho must not exceed a coastwide marine and mainstem Columbia River exploitation rate of 15.0 percent.
4. Fishery impacts on threatened OCN coho must not exceed a coastwide marine and freshwater exploitation rate of 15.0 percent.

Based on parent escapement levels and observed OPI smolt-to-jack survival for 2008 brood OPI smolts, the total allowable OCN coho exploitation rate for 2011 fisheries was no greater than 20.0 percent under the Salmon FMP (Amendment 13) and no greater than 15.0 percent under the matrix developed by the OCN Coho Work Group during their review of Amendment 13. The work group recommendation was accepted by the Council as expert biological advice in November 2000.

The Council was also guided by a treaty Indian/non-Indian sharing agreement for Columbia upriver coho stocks, which required passage of 50 percent of the run destined for areas above Bonneville Dam.

Regulations to Achieve Objectives

Historically, OPI area coho stocks contributed primarily to ocean fisheries off Oregon and northern California and, to a lesser degree, Washington and B.C. The Council has prohibited retention of coho in all fisheries south of the Oregon/California border since 1996. For the adopted seasons the STT projected exploitation rates of 8.4 percent for RK coho in marine fisheries, 13.2 percent for OCN coho in marine and freshwater fisheries combined, and 10.6 percent for LCN coho in marine fisheries.

Total allowable harvest set preseason for the non-Indian commercial and recreational fisheries for coho in 2011 was 80,000, the same as in 2010. For the treaty Indian fishery, the overall quota of 42,000 coho was a slight increase from the 41,500 coho quota in 2010. Season and size limit details are presented in Tables I-1, I-2, and I-3.

Commercial Troll

Commercial troll fisheries have been closed to coho retention south of Cape Falcon since 1993 with the exception of limited fisheries in 2007 and 2009.

Non-Indian commercial troll fisheries from Cape Falcon to the U.S./Canada border in 2011 had an overall quota of 12,800 coho (Table I-1). The fisheries were restricted to mark-selective coho retention.

All species treaty Indian fisheries north of Cape Falcon were not restricted to mark-selective retention of coho, and operated on an overall quota of 42,000 coho (Table I-2).

Recreational

From 1994 through 1998 coho retention was prohibited in Oregon recreational fisheries south of Cape Falcon. Retention of coho has been prohibited off California since 1996 to protect ESA-listed CCC coho. Mark-selective coho directed ocean recreational fisheries have been implemented in the OPI area since 1998. Only two limited non-mark-selective recreational ocean coho fisheries have occurred in recent years, one in 2004 between Leadbetter Point and the Queets River, and one September 1-7, 2011 between Cape Falcon and Humbug Mt. Adequate abundance of marked coho in the OPI area has resulted in allowable harvests of marked coho in Oregon and Washington within constraints for OCN and LCN coho.

In 2011, after inseason adjustments, the recreational coho fisheries north of Cape Falcon operated with quotas of 5,990 in the Neah Bay subarea, 2,550 in the La Push subarea, 24,860 in the Westport subarea, and 33,600 in the Columbia River subarea (Table I-3). The recreational fishery between Cape Falcon and Humbug Mountain operated with a mark-selective quota of 15,000, July 2 through August 13 and after inseason adjustments, a non-selective quota of 5,900, September 1-7 (Table I-3).

Inside Harvest

Coho retention in all California fisheries was prohibited.

The 2011 inside recreational harvest of coho in Oregon coastal streams, as in recent years, was very restricted and generally limited to areas where surplus hatchery coho returns were expected. Estimates of the 2011 inriver recreational coho harvest for most areas were not available. Historical estimates of the recreational harvest of adult coho in Oregon coastal estuaries and rivers, derived from ODFW salmon and steelhead angler catch record cards, are reported in Table III-1.

Limited recreational fisheries for naturally-produced coho (non-mark-selective) were approved in ten estuaries and three lake systems in 2011. The total catch estimate for these fisheries was 8,022 in the estuaries, 564 in Siltcoos, 190 in Tahkenitch, and 27 in Tenmile lakes.

The 2011 Columbia River non-Indian commercial gillnet fishery harvested 5,900 adult coho, compared to 76,300 coho in 2010. Select Area fisheries in both Oregon and Washington accounted for 45,500 of the total 2011 Columbia River commercial coho catch. The Columbia River treaty Indian mainstem commercial gillnet coho catch was approximately 33,300 fish, compared to the 2010 catch of 7,100 coho. All Columbia River commercial coho fisheries were non-mark-selective. Coho harvest information for Columbia River commercial and recreational fisheries are presented in Appendix B, Table B-21.

The Buoy 10 and mainstem recreational fisheries below Bonneville Dam harvested 31,100 adult coho compared to 32,200 adult coho in 2010. All Columbia River recreational fisheries in 2011 were mark-selective for coho. In 2011, Columbia River managers opened the Buoy 10 fishery August 1 with a daily bag limit of two adult salmon with no more than one Chinook through August 28. From August 29 through September 15 the daily bag limit was two salmon with no Chinook retention. Beginning September 16 the fishery ran through December 31 with the daily bag limit of two salmon for Chinook and marked coho. The upriver boundary for the fishery was at the Tongue Point, Oregon to Rocky Point, Washington line. The 2011 Buoy 10 effort totaled 49,400 angler trips (Table III-2). Historical Buoy 10 catch and effort data are provided in Appendix B, Table B-22. Recreational coho harvest estimates for Columbia River tributaries were not available.

Escapement and Management Performance

The overall abundance estimate for OPI area stocks in 2011 was 753,900 compared to 818,100 in 2010 and to the recent ten-year average of 900,300 (Table III-3; Figure III-1). All Council area coho fisheries complied with quota limits except the September 1-7 Cape Falcon to Humbug Mt. non-mark-selective recreational fishery, which harvested 112 percent of its quota (Table I-6).

Central California Coast and Northern California Coho

For CCC coho, redd counts have been made for the Lagunitas Creek basin since 1995 and are reported in Table B-7. As of January 5, 2011, 55 redds were counted. However, the spawning season for this watershed may not be complete and the final redd count may change. Estimates were available for escapement to Klamath River Basin hatcheries, but not for coho spawning in natural areas. In 2011, a total of 1,948 adult coho returned to Trinity River Hatchery and 477 adult coho returned to Iron Gate Hatchery. These values compare to a combined goal of 2,000 adults.

Oregon Coast Natural Coho

The preliminary estimate of natural spawner escapement in 2011 to Oregon coastal river and lake systems from the Sixes River north (Oregon coast ESU) was 291,400 adult coho. This compares to 283,400 adults in 2010. Historical spawner escapement estimates of naturally produced coho are reported in Table III-1.

Preliminary information indicates the highest total natural spawning population on the Oregon coast since 1990 when the current random sampling protocol went into effect. The estimate of the natural spawning population in 2011 was 295,300, including estimates from the Rogue River, which is part of the SONCC ESU (Table III-4, Figure III-2).

Preliminary postseason estimates of combined marine and freshwater exploitation on OCN coho was 7.5 percent, less than the preseason projection of 13.2 percent, and below the 15.0 percent maximum allowed under the FMP and the OCN work group matrix. Preliminary postseason estimates of marine exploitation on RK coho was 3.8 percent, lower than the preseason projection of 8.4 percent, and below the 13.0 percent maximum ESA consultation standard.

Oregon Coastal Hatchery Coho

The preliminary estimate of total coho returns to Oregon coastal public hatcheries was 4,600 adults (Table III-1). Hatchery egg-take goals were expected to be met at all public hatchery stations.

Columbia River Coho

The 2011 ocean escapement of adult early and late Columbia River coho stocks was 352,000 fish, compared to 440,400 adults in 2010 (Appendix B, Table B-21). The 2011 Columbia River coho abundance was sufficient to meet all hatchery brood stock escapement needs.

Preliminary postseason estimates of marine exploitation on LCN coho was 5.8 percent, less than the preseason projected 10.6 percent.

WASHINGTON COASTAL COHO STOCKS

Washington coastal coho stocks include all natural and hatchery stocks originating in Washington coastal streams north of the Columbia River to the western Strait of Juan de Fuca (west of the Sekiu River). The stocks in this group most pertinent to ocean salmon fishery management were Willapa Bay (hatchery), Grays Harbor, Quinalt (hatchery), Queets, Hoh, and Quillayute coho. Those stocks contribute primarily to ocean fisheries off Washington and B.C.

Management Objectives

Preseason Management goals in 2011 for Grays Harbor and Olympic Peninsula coho stocks included achieving natural spawning escapement objectives and treaty Indian allocation requirements. The Council's preseason conservation objectives for stocks managed for natural production were based on maximum sustainable yield (MSY) spawner escapements established pursuant to the U.S. District Court order in *Hoh v. Baldrige*. The conservation objectives for the Queets, Hoh, and Quillayute rivers were developed as ranges intended to bracket estimates of MSY escapement. The range reflected the inherent uncertainty by using the high estimate of recruits-per-spawner and the low estimate of carrying capacity for the lower bound, and the low estimate of recruits-per-spawner and the high estimate of smolt carrying capacity for the upper end of the range. The ranges were further adjusted upward by 26 to 184 percent for risk aversion and habitat considerations. Annual targets for natural spawning escapement and total escapement were established by WDFW and treaty Indian tribes under the provisions of *U.S. v. Washington* and subsequent U.S. District Court orders. After an annual agreement was reached, ocean fishery escapement objectives were established for each river, or region of origin. Agreements included provisions for treaty Indian allocation requirements and inside non-Indian fishery needs. No agreements on annual spawning targets for Washington coastal coho other than those in the FMP in place during the preseason process were made in 2011.

In December 2011, Amendment 16 to the FMP was approved, which established new conservation objectives and SDC for Washington coastal coho based on either S_{MSY} estimates derived from FRAM run reconstruction programs or existing conservation objectives.

Regulations to Achieve Objectives

Washington coastal coho stocks did not play a primary role in 2011 Council area ocean fishery management because of greater constraints on Interior Fraser (Thompson River, B.C.) and LCN coho stocks. Overall harvest quotas were limited to levels well below those of the late 1980s and early 1990s. All non-Indian ocean coho fisheries were mark-selective except for a September recreational coho fishery south of Cape Falcon. Treaty Indian fisheries were not mark-selective. Season and size limit details are presented in Tables I-1, I-2, and I-3.

Willapa Bay Coho

Inside Harvest

Historical terminal run size, harvest and escapement data for Willapa Bay coho are presented in Appendix B, Table B-24. The 2011 gillnet coho harvest in Willapa Bay totaled 48,173 fish. Based on the preseason forecast for a terminal run of 76,293 fish, the scheduled commercial fisheries were expected to harvest approximately 53,486 total coho.

From June 18, 2011 through July 31, 2011, Willapa Bay (Marine Area 2-1) was open for recreational fishing concurrent with the Ocean Marine Area 2 (ocean rules applied). From August 1, 2011 through January 31, 2012, Willapa Bay was open to recreational fishing with a daily-bag-limit of six salmon, no more than three adults. Chum and unmarked Chinook retention was prohibited. Barbed hooks were prohibited when fishing for salmon. Expected harvest in recreational fisheries based on preseason forecast abundance was 4,125 coho. Marine and freshwater recreational harvest estimates were unavailable for 2011, but for 2010, Marine Area 2-1 and freshwater recreational harvest estimates totaled 4,891 fish.

Freshwater recreational fisheries in the Willapa Bay watersheds varied in duration but were generally open for salmon fishing from August 1, 2011 through January 31, 2012 with a daily-bag-limit of six salmon, and no more than two or three adults. Chum and unmarked Chinook retention was prohibited. Single-point barbless hooks were required in all areas except for the Naselle River.

Escapement and Management Performance

Willapa Bay coho were managed primarily for natural production. Estimates of natural spawning escapement for 2011 were unavailable. The most recent but still preliminary natural escapement estimate available was 77,784 in 2010, which met the WDFW escapement objective of 13,090 natural spawners. Escapement to Willapa Bay hatcheries in 2010 was estimated at 27,514 coho, which met the WDFW escapement objective of 6,100 spawners. FMP conservation objectives remain undefined for Willapa Bay coho.

The FMP conservation objective for Willapa Bay natural coho is undefined so a determination of overfished status could not be made. Estimates of exploitation rates were not available so an assessment of overfishing status was not possible, but based on exploitation rates for other Washington coastal coho stocks, it is unlikely that Willapa Bay coho were subject to overfishing (Table III-6).

Grays Harbor Coho

Inside Harvest

Historical terminal run size, harvest and escapement data for Grays Harbor coho are presented in Appendix B, Table B-26. The 2011 run size forecast for Grays Harbor coho, after accounting for ocean fishery impacts, was 133,054 fish (89,097 natural and 43,957 hatchery). Treaty Indian and non-Indian gillnet fisheries harvested 33,271 coho (natural, hatchery, and net-pen origin) in 2011. This included 28,101 coho in the Quinault Indian Nation fisheries, 3,628 in the non-Indian gillnet fishery, and an estimated 1,542 in the Chehalis tribal fishery. Recreational harvest estimates for 2011 were not available.

The Quinault Indian Nation operated two separately scheduled gillnet fisheries for Chinook, coho, and chum in the area of the Lower Humptulips and in the area of the Lower Chehalis, as described in Chapter II under the section labeled Grays Harbor Chinook. The expected coho fishery impacts were limited by the expected abundance and harvest of Chinook in the Lower Chehalis side of the fishery and by the expected abundance and harvest of natural coho in the Lower Humptulips side of the fishery. The

Chehalis area treaty Indian fishery caught 21,302 coho, whereas the Humptulips area treaty Indian fishery catch was 6,799 coho. The combined Grays Harbor treaty Indian coho catch was very close to the expected catch.

The non-Indian gillnet fishery in Humptulips commercial Area 2-C was open for eight days in mid-August through mid-September, in addition, two 10-hour fisheries were conducted in October. Retention of fall Chinook and marked coho was allowed. Live boxes were required and unmarked coho could not be retained. Catches totaled 1,858 Chinook and 79 coho. The non-Indian gillnet fishery in the Chehalis River commercial Areas 2A and 2D was open for four 10-hour and one 9-hour periods in October; live boxes were required, and Chinook could not be retained. Catches totaled 3,549 coho.

Estimates of catch in recreational fisheries for 2011 were unavailable. However fisheries were conducted in three general areas: Marine Area 2.2, the Chehalis River and its tributaries, and the Humptulips River. The recreational fishery in Marine Area 2.2 was open from September 16 through November 30 for two adult salmon daily, with Chinook and chum retention prohibited.

The Chehalis River and its tributaries were open for coho fishing on the following dates and areas:

- Downstream of Fuller Bridge: September 16 through October 31, 2011 with a daily limit of 6 salmon, up to 2 adults, and no Chinook or chum retention. November 1, 2011 through January 31, 2012 with a daily limit of 6 salmon, up to 2 adults, with no Chinook, chum, or unmarked coho retention.
- Fuller Bridge to the bridge crossing at the town of Porter: September 16 through November 30, 2011 with a daily limit of 6 salmon, up to 2 adults, and no Chinook or chum retention. December 1, 2011 through January 31, 2012 with a daily limit of 6 salmon, up to 2 adults, with no Chinook, chum, or unmarked coho retention.
- From the bridge crossing at the town of Porter to the high bridge on Weyerhaeuser 1000 line approximately 400 yards downstream of Roger Creek: September 16 through November 30, 2011. With a daily limit of 6 salmon, up to 2 adults, with no Chinook or chum retention. December 1, 2011 through January 31, 2012 with a daily limit 6 salmon, up to 2 adults, with no Chinook, chum, or unmarked coho retention.

The Humptulips River recreational fishery was open for coho fishing on the following dates and areas, with a bag limit of two adult salmon daily.

- From the mouth to Ocean Beach Road to October 1, 2011 to January 31, 2012 with a daily limit of 6 salmon, up to 2 adults, with no retention of chum or unmarked coho.
- From the Ocean Beach Road to the confluence of the East and West forks: September 16 through January 31, 2012 with a daily limit of 6 salmon, up to 2 adults, no more than one of which could be a Chinook, and no retention of chum or unmarked coho. Fishing with bait was prohibited in September.

Escapement and Management Performance

Grays Harbor coho are managed for natural production with a spawning escapement goal of 35,400. The 2011 terminal run forecast for natural spawning coho was 89,097 adult fish and 43,958 hatchery-origin coho. An escapement estimate for 2011 Grays Harbor coho was not available. The returns of hatchery-origin coho to Grays Harbor hatchery programs were sufficient to provide for 2012 coho production goals.

The geometric mean of Grays Harbor coho escapement in 2008, 2009, and 2010 was 62,231, which was above the MSST of 18,320; therefore, Grays Harbor coho should not be considered overfished. Estimates of Grays Harbor coho exploitation rates were not available for 2010 or 2011; however, fisheries in earlier

years resulted in exploitation rates well below the MFMT (0.65); therefore, Grays Harbor coho should not be considered subject to overfishing (Table III-6).

Quinault River Coho

Inside Harvest

Historical terminal run size, harvest, and escapement for Quinault River coho are presented in Appendix B, Table B-28. The treaty Indian gillnet fishery targeted hatchery Chinook and coho from early September through mid-November. A total of 38,426 coho were harvested by the gillnet fishery during the 2011 season.

Escapement and Management Performance

Quinault River coho were managed for hatchery production. Escapement estimates for Quinault River coho in 2011 were unavailable. The Quinault National Fish Hatchery egg take objectives for 2011 were achieved.

Queets River Coho

Inside Harvest

Historical terminal run size, harvest, and escapement for Queets River coho are presented in Appendix B, Table B-31. Queets River fisheries were managed according to preseason agreement with WDFW based on preseason abundance estimates and planned Council ocean fisheries. The fishery was structured to target returning hatchery and natural coho while also harvesting Chinook at a total tribal and non-tribal harvest rate of 40 percent. The total harvest of coho in the Treaty Indian gillnet fishery was 16,638 commercially landed fish, which was above the expected preseason catch of 9,159. The gillnet harvest was comprised of a mix of early-timed hatchery fish and normal/late-timed natural fish, with the larger than expected catch attributed to a greater hatchery return than expected. A final estimate of the hatchery/natural mix in the catch was unavailable. Coho catch estimates in the treaty Ceremonial and Subsistence fishery was not available. Recreational fisheries operated with standard September 1 through November 30 schedules in the Queets, Clearwater, and Salmon Rivers, and a standard bag limit in the Clearwater and Queets. A third adult coho was allowed in the Salmon River in Park and State waters. Recreational fisheries for Chinook operated in a similar manner as coho, except within Olympic National Park waters, where only mark-selective Chinook retention was allowed. Estimates of the non-Indian and treaty Indian recreational catches were not available.

Escapement and Management Performance

The 2011 natural escapement estimate was unavailable, but the tribal catch through the season suggested the natural escapement exceeded the MSY spawner escapement objective of 5,800. The expected natural coho escapement for 2011 based on preseason modeling was 6,912, with a preseason escapement objective range of 5,800 to 14,500 natural coho.

The geometric mean of Queets River coho escapement in 2008, 2009, and 2010 was 7,885, which was above the MSST of 4,350; therefore, Queets River coho should not be considered overfished. Estimates of Queets River coho exploitation rates were not available for 2010 or 2011; however, fisheries in earlier years resulted in exploitation rates well below the MFMT (0.65); therefore, Queets River coho should not be considered subject to overfishing (Table III-6).

Hoh River Coho

Inside Harvest

Historical terminal run size, catch, and escapement data for Hoh River coho are presented in Appendix B, Table B-34. The 2011 terminal run size of Hoh River natural coho was projected to be 11,625. The tribal fishery targeted 35.7 percent of the terminal run. The treaty Indian gillnet fishery occurred from the week of September 1 to the week of December 31 (which included weeks 49-52 of steelhead management), as described in Chapter II under the section labeled Hoh River Chinook. The tribal fishery harvested approximately 3,418 coho, all estimated to be natural origin, including dip-in natural fish. The non-Indian recreational fishery extended from September 1 through November 30, with the area below Willoughby Creek open and a daily-bag-limit of six salmon, two of which could be adults and no mark-selective coho restriction. The portion of the river between Willoughby Creek and Morgan's Crossing opened October 16 to reduce impacts on spawning spring/summer Chinook in that reach. The river above Morgan's Crossing did not open for recreational salmon fishing. A catch estimate for the 2011 recreational fishery was not available.

Escapement and Management Performance

The preliminary 2011 spawning escapement estimate for coho in the Hoh River was unavailable. Tribal catch and expected harvest rates indicate the fall coho terminal run size may be near the level anticipated pre-season. The escapement goal range established for this stock is 2,000 to 5,000. The geometric mean of Hoh River coho escapement in 2008, 2009, and 2010 was 5,035, which was above the MSST of 1,890; therefore, Hoh River coho should not be considered overfished. Estimates of Hoh River coho exploitation rates were not available for 2010 or 2011; however, fisheries in earlier years resulted in exploitation rates well below the MFMT (0.65); therefore, Hoh River coho should not be considered subject to overfishing (Table III-6).

Quillayute River Coho

Inside Harvest

Historical terminal run size, catch, and escapement data for Quillayute River summer and fall coho are presented in Appendix B, Table B-37. The recreational and tribal fisheries for coho were established by pre-season agreement between WDFW and the Quileute Tribe. A total of 757 (347 natural) summer coho were harvested in the Quileute Tribe's commercial, ceremonial and subsistence fisheries. An estimate of the 2011 recreational catch was unavailable.

Tribal harvest of fall coho in 2011 was 21,994. This includes 11 coho taken in the ceremonial and subsistence catch. The Quileute Tribal net fishery harvested 10,495 natural fall coho. Ten natural and one hatchery fall coho were taken in the ceremonial and subsistence fishery. An estimate of the 2011 recreational catch was unavailable.

WDFW reduced the impacts of the recreational fishery on natural summer and fall coho by requiring mark-selective fisheries for coho through October. The Quileute Tribe did not have a closure in their fishery this year, but as in past years, limited their fishery to 29 hours per week during July and August.

Escapement and Management Performance

The summer coho run in the Quillayute is managed primarily for its hatchery component, which returns in August and September. The summer coho hatchery rack return was 3,800, well above the goal of 300. Natural summer broodstock was not collected for the Sol Duc hatchery. The preliminary estimate for 2011 natural summer coho escapement was 1,644.

The preliminary 2011 escapement estimate for natural fall coho was 9,512. This exceeded the MSY spawner escapement objective of 6,300, and was well within the preseason escapement goal of 6,300 to 15,800 for this stock. Sol Duc Hatchery collected an additional 15 natural fall coho for integration in their fall coho program.

The geometric mean of Quillayute fall coho escapement in 2009, 2010, and 2011 was 9,028, which was above the MSST of 6,300; therefore, Quillayute fall coho should not be considered overfished. The MFMT for Quillayute fall coho was undefined; therefore an assessment of overfishing was not possible for Quillayute fall coho; however, fisheries in earlier years resulted in exploitation rates similar to other Washington coastal coho stocks, and it is unlikely that Quillayute fall coho were subject to overfishing (Table III-6).

PUGET SOUND COHO STOCKS

Puget Sound coho salmon stocks include natural and hatchery stocks originating from U.S. tributaries in Puget Sound and the Strait of Juan de Fuca. The primary stocks in this group that are most pertinent to ocean salmon fishery management were Strait of Juan de Fuca, Hood Canal, Skagit, Stillaguamish, Snohomish, and South Puget Sound (hatchery) coho. Those stocks contribute primarily to ocean fisheries off Washington and B.C.

Management Objectives

The Council's previous conservation objectives were based on the Puget Sound Salmon Management Plan, which defined management objectives and long-term goals for these stocks as developed by representatives from Federal, state, and tribal agencies. Conservation objectives for specific stocks were based on either maximum sustainable production for stocks managed primarily for natural production or on hatchery escapement needs for stocks managed for artificial production. 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 were subsequently modified by the U.S. District Court Fisheries Advisory Board and later determinations of the WDFW/Tribal Technical Committee. However, annual natural management objectives may vary from the FMP conservation objectives if agreed to by WDFW and the treaty Indian tribes under the provisions of *U.S. versus Washington* and subsequent U.S. District Court orders. (see "Memorandum Adopting Salmon Management Plan"; *U.S. versus Washington*, 626 F. Supp. 1405 [1985]).

The PSC adopted a management plan for coho salmon originating in Washington and southern B.C. river systems in 2002. The plan was directed at the conservation of key management units, four from Southern B.C. (Interior Fraser, Lower Fraser, Strait of Georgia Mainland, Strait of Georgia Vancouver Island) and nine from Washington (Skagit, Stillaguamish, Snohomish, Hood Canal, Strait of Juan de Fuca, Quillayute, Hoh, Queets, and Grays Harbor). Under the plan, the United States and Canada were required to constrain total fishery exploitation rates to levels associated with the categorical status and target exploitation rates of the key management units as determined by domestic managers. Ceilings on exploitation rates by intercepting fisheries were established through formulas specified in the plan. Categorical status was employed by the PST under the 2002 Coho Agreement to indicate general ranges of allowable total exploitation rates for U.S. and Canadian coho management units in 2011. Three categories were employed: low (total exploitation rate <20 percent), moderate (total exploitation rate 20-40 percent), and abundant (total exploitation rate >40 percent).

In 2011, the Council adopted management objectives for Puget Sound coho as recommended by WDFW and tribal co-managers under provisions of *U.S. v. Washington*. The annual objectives were based on the Comprehensive Coho Agreement categorical status and associated maximum exploitation rate limits. The Council formally adopted exploitation rate management objectives for Puget Sound coho in November 2009, which were generally consistent with PSC objectives, and replaced the longstanding FMP spawning escapement objectives in 2010. For 2011, the objectives were as follows:

- Strait of Juan de Fuca (East and West): Low status 40 percent maximum exploitation rate
- Hood Canal: Normal status 65 percent maximum exploitation rate
- Skagit: Normal status 60 percent maximum exploitation rate
- Stillaguamish: Normal status 50 percent maximum exploitation rate
- Snohomish: Normal status 60 percent maximum exploitation rate

Regulations to Achieve Objectives

Puget Sound coho stocks did not play a primary role in 2011 ocean fishery management considerations, since management of impacts to Interior Fraser (Thompson River, B.C. Canada) and LCN coho were more constraining. Inside fisheries, primarily in Puget Sound, were constrained to meet PSC objectives for Interior Fraser coho. The mark-selective regulations in ocean and Puget Sound recreational fisheries served to increase harvest of marked hatchery fish while minimizing impacts on natural Puget Sound coho, LCN coho, OCN coho, and Interior Fraser coho. Season and size limit details are presented in Tables I-1, I-2, and I-3.

Inside Harvest

Inside harvest of Puget Sound coho was managed on the basis of the six regional management units. 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-39. The 2011 total Puget Sound commercial catch of coho was 251,304 fish, compared to a catch of 173,104 coho in 2010. Non-Indian harvest was 28,821 coho, compared to 18,220 coho in 2010. Treaty Indian net and troll fisheries harvested 222,483 coho, compared to 154,884 coho in 2010.

Historical coho catches in the Puget Sound recreational fishery beginning in 1971 are listed in Appendix B, Table B-40. Catch estimates for the 2011 Puget Sound recreational fishery were unavailable.

Escapement and Management Performance

Puget Sound FMP conservation objectives were updated to reflect exploitation rate management objectives adopted by the Council in 2009. No 2011 postseason estimates were available for southern U.S. (SUS) harvest impacts on Puget Sound coho stocks; therefore, the 2011 preseason exploitation rate objectives could not be evaluated, although none of the Puget Sound coho management units have exceeded their annual exploitation rate limits in recent years. Preliminary 2011 escapement information indicates natural Puget Sound coho escapements were generally average or below average, but actual escapement numbers were unavailable.

Adult spawning escapements for Western Strait of Juan de Fuca coho in 2005, 2006, 2007, and 2008 were lower than the FMP conservation objective in place at the time, and therefore an Overfishing Concern was triggered, which resulted in a NMFS determination that the stock was overfished. The geometric mean of Strait of Juan de Fuca coho escapement (combined Western and Eastern; the current stock designation) in 2009, 2010, and 2011 was 9,875, which was above the MSST of 7,000 identified in FMP Amendment 16 and less than the S_{MSY} estimate of 11,000; therefore, Strait of Juan de Fuca coho should be considered not overfished/rebuilding. Estimates of Strait of Juan de Fuca coho exploitation rates were not available for 2010 or 2011; however, fisheries in earlier years resulted in an exploitation rates well

below the MFMT (0.60); therefore, Strait of Juan de Fuca coho should not be considered subject to overfishing (Table III-6).

The geometric mean of Hood Canal coho escapement in 2008, 2009, and 2010 was 11,414, which was above the MSST of 10,750; therefore, Hood Canal coho should not be considered overfished. Estimates of Hood Canal coho exploitation rates were not available for 2010 or 2011; however, fisheries in earlier years resulted in exploitation rates below the MFMT (0.65); therefore, Hood Canal coho should not be considered subject to overfishing (Table III-6).

The geometric mean of Skagit coho escapement in 2008, 2009, and 2010 was 35,711, which was above the MSST of 14,875; therefore, Skagit coho should not be considered overfished. Estimates of Skagit coho exploitation rates were not available for 2010 or 2011; however, fisheries in earlier years resulted in exploitation rates well below the MFMT (0.60); therefore, Skagit coho should not be considered subject to overfishing (Table III-6).

The geometric mean of Stillaguamish coho escapement in 2008, 2009, and 2010 was 16,329, which was above the MSST of 6,100; therefore, Stillaguamish coho should not be considered overfished. Estimates of Stillaguamish coho exploitation rates were not available for 2010 or 2011; however, fisheries in earlier years resulted in exploitation rates well below the MFMT (0.50); therefore, Stillaguamish coho should not be considered subject to overfishing (Table III-6).

The geometric mean of Snohomish coho escapement in 2008, 2009, and 2010 was 55,931, which was above the MSST of 31,000; therefore, Snohomish coho should not be considered overfished. Estimates of Snohomish coho exploitation rates were not available for 2010 or 2011; however, fisheries in earlier years resulted in exploitation rates well below the MFMT (0.60); therefore, Snohomish coho should not be considered subject to overfishing (Table III-6).

BRITISH COLUMBIA COHO STOCKS

Management Objectives

B.C. coho stocks were managed under the PSC management plan as described in the previous section on Puget Sound coho.

Regulations to Achieve Objectives

In 2011, Interior Fraser coho were in the “low” status category, which required the total exploitation rate in SUS fisheries not to exceed 10.0 percent. This requirement constrained both Council area and inside fisheries. The preseason expectation was that the total SUS fishery exploitation rate on Interior Fraser coho would be 10.0 percent (4.1 percent in Council area fisheries). The mark-selective regulations in ocean and Puget Sound recreational fisheries served to increase harvest of marked hatchery fish while minimizing impacts on natural Interior Fraser coho.

Inside Harvest

Harvest of coho in inside waters affecting B.C. coho stocks occurred in Puget Sound fisheries, which were described in the previous section of this chapter.

Escapement and Management Performance

Postseason estimates of SUS inside harvest impacts on coho stocks subject to the PSC coho management plan were unavailable. Preseason expectations were for an exploitation rate of 6.0 percent for inside fisheries on Interior Fraser coho.

COASTWIDE GOAL ASSESSMENT SUMMARY

FMP Conservation objectives for Council managed coho stocks in effect during the preseason planning process of 2011 were met for all stocks with available estimates (Table III-5). Information to assess compliance with FMP conservation objectives and ESA consultation standards in 2011 was unavailable for Grays Harbor, Queets River, Hoh, and all Puget Sound coho stocks. In 2010, Hood Canal and Snohomish coho also failed to achieve their MSY spawning escapement objectives.

Stock Status Determinations

In 2011 the Council adopted new SDC for overfishing, overfished, not overfished/rebuilding, and rebuilt under FMP Amendment 16. These criteria, approved and implemented in December 2011, were:

- Overfishing occurs when a single year exploitation rate exceeds the MFMT (F_{MSY});
- Overfished status occurs when a 3-year geometric mean spawning escapement is less than the MSST;
- Not overfished/rebuilding status occurs when a stock has been classified as overfished and has not yet been rebuilt, and the most recent a 3-year geometric mean spawning escapement is greater than the MSST but less than S_{MSY} ;
- A stock is rebuilt when the most recent a 3-year geometric mean spawning escapement exceeds S_{MSY} .

All criteria rely on the most recent estimates available, which in some cases may be a year or more in the past because of incomplete broods or data availability. The above criteria for rebuilt status are the default criteria provided in the FMP; however, alternative criteria may be developed through a rebuilding plan if warranted by stock specific circumstances. While the Amendment 16 SDC may not have been in place for all stocks during the preseason process, all relevant stocks were evaluated relative to these new SDC as required by the FMP. Stock specific reference points and recent year estimates for relevant stocks are presented in Table III-6.

All relevant coho stocks that were assessed for compliance with SDC were not overfished and no coho stocks were subject to overfishing in the most recent year(s) assessed. The Strait of Juan de Fuca coho are classified as not overfished/rebuilding, and their status continued to improve in 2010 (Table III-6).

TABLE III-1. Estimated returns to Oregon coastal streams and lakes in thousands of adult coho.

Year	Returns to Hatcheries			Winchester Dam	Number of OCN Spawners ^{a/}			Inside	Ocean
	Private	Public	STEP ^{b/}	Count ^{c/} (North Umpqua)	Lakes	Rivers	Total	Harvest Impacts ^{d/}	Escapement to Oregon Coast ^{a/}
1970-75	-	22.8	-	0.4	14.9	40.3	55.2	20.5	98.8
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	23.5	30.3	6.3	95.3
1981	117.8	21.2	-	0.1	2.5	25.5	32.6	9.9	177.0
1982	184.7	14.8	-	2.7	7.9	68.0	76.2	14.7	292.8
1983	133.9	9.5	-	1.2	3.4	18.9	22.7	6.8	173.7
1984	115.4	28.6	-	3.2	14.8	52.6	74.4	17.4	232.0
1985	332.0	15.8	-	4.0	7.6	65.3	73.9	15.7	440.3
1986	453.7	35.8	2.5	9.6	11.8	57.2	70.0	30.3	600.8
1987	119.3	12.3	0.2	2.1	4.2	25.3	30.1	7.7	171.1
1988	116.1	33.7	1.2	1.2	5.8	45.7	56.8	13.3	217.0
1989	46.9	37.3	1.2	3.0	4.8	40.6	46.4	15.1	148.9
1990	35.6	15.5	1.6	1.9	4.4	22.5	20.9	9.5	91.0
1991	35.1	39.6	4.9	3.9	7.2	38.1	45.3	31.5	160.3
1992	-	23.3	0.6	5.0	2.0	44.2	46.2	18.7	93.9
1993	-	20.2	2.0	2.3	10.1	56.1	66.3	13.3	104.1
1994	-	23.4	1.8	2.0	5.8	48.5	54.3	2.4	83.9
1995	-	25.2	0.4	2.7	11.2	57.3	68.6	3.6	100.4
1996	-	23.4	1.0	5.1	13.5	79.3	92.8	4.0	126.3
1997	-	17.7	0.2	2.2	8.6	31.6	40.2	4.3	64.6
1998	-	15.3	0.2	4.6	11.1	34.3	45.4	5.2	70.6
1999	-	13.3	0.4	3.3	13.4	51.2	64.7	2.8	84.5
2000	-	15.0	0.5	9.7	12.7	81.1	93.8	4.4	123.4
2001	-	37.4	1.4	16.0	19.7	185.2	204.9	10.1	269.8
2002	-	30.9	2.6	7.4	22.2	269.0	291.1	8.0	340.0
2003	-	15.9	3.6	10.7	16.7	235.3	252.0	6.8	289.0
2004	-	13.2	0.8	7.2	18.6	197.2	215.9	6.2	243.3
2005	-	10.0	0.3	8.9	14.7	164.6	179.4	6.1	204.6
2006	-	9.8	0.1	7.0	24.1	132.7	156.9	2.5	176.4
2007	-	3.6	0.0	2.7	9.0	71.4	80.4	1.3	88.0
2008	-	7.0	0.0	0.2	23.6	180.1	203.7	3.1	213.9
2009	-	6.1	0.0	0.7	17.3	265.3	282.7	7.4	296.9
2010	-	7.9	0.0	1.7	38.7	286.5	325.2	5.7	340.5
2011 ^{e/}	-	4.6	0.0	0.2	20.4	295.3	315.7	12.1	332.6

a/ Does not include estimates for the southern OCN component (Rogue River). Spawner escapements to rivers prior to 1990 were estimated by a nonrandom standard index of streams north of the Rogue River. A total coastwide spawner escapement methodology based on stratified random sampling (SRS) was initiated in 1990 and used through 1997 and was 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. Since 1998 a random site selection procedure based on the EPA's Environmental Monitoring and Assessment Program (EMAP) has been used.

b/ Oregon coastal Salmon Trout Enhancement Program (STEP) production from hatchery smolt rearing sites only.

c/ Natural and hatchery fish prior to 1990, marked fish only thereafter.

d/ Freshwater sport catch from ODFW salmon/steelhead angler catch record card information and represents only those coho greater than 24 inches total length through 1993, and those coho with a total length greater than 20 inches from 1994 on. Includes estimated mortality from hook-and-release..

e/ Preliminary.

TABLE III-2. Estimated weekly effort (in angler trips) and catches of Chinook and coho in the 2011 Buoy 10 recreational fisheries (all data are preliminary).^{a/}

Week Number	Ending Date of Period	Angler Trips	Catch ^{b/}		Catch Per Trip
			Chinook	Coho	
32	Aug.-7	1,120	81	7	0.08
33	Aug.-14	3,533	549	34	0.17
34	Aug.-21	12,334	4,309	1,123	0.44
35	Aug.-28	19,862	5,689	2,460	0.41
36	Sept.-4	5,160	84	1,213	0.25
37	Sept.-11	3,137	17	1,291	0.42
38	Sept.-18	2,423	163	1,292	0.60
39	Sept.-25	1,648	27	190	0.13
40	Oct.-2	192	0	4	0.02
Total		49,409	10,919	7,614	0.38

a/ Includes boat-based and shore-based fisheries from the upstream boundary at the Tongue Point/Rocky Point line (2000), 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 1-28 for Chinook and marked coho, with the daily-bag-limit of two adult salmon, only one of which may be a Chinook. From August 29-September 15 the fishery was open for marked coho with the daily-bag-limit of two adult salmon, Chinook retention was not allowed. From September 16-December 31 the fishery was open for Chinook and marked coho, with the daily-bag-limit of two adult salmon.

b/ Includes adults and jacks as determined by CWT analysis.

TABLE III-3. Oregon production index (OPI) area coho harvest impacts, spawning, abundance, and exploitation rate estimates in thousands of fish.^{a/}

Year or Avg.	Oregon and California Coastal Returns							Ocean	OCN Exploitation
	Ocean Fisheries ^{b/}		Hatcheries and			Columbia River	Exploitation Rate	Rate Based on	
	Troll	Sport	Freshwater Harvest ^{c/}	OCN Spawners ^{d/}	Private Hatcheries	Returns	Abundance ^{e/}	Based on OPI Abundance ^{f/}	Postseason FRAM
1970-1975	1,629.6	558.4	45.8	55.2	-	460.4	2,749.3	0.80	-
1976-1980	1,253.6	555.0	31.2	31.1	26.1	263.3	2,154.2	0.83	-
1981-1985	451.2	274.0	37.2	56.0	176.8	305.3	1,328.6	0.60	-
1986	638.9	320.6	79.3	70.0	453.7	1,549.1	3,195.4	0.37	0.44
1987	468.2	296.2	45.1	30.1	119.3	316.5	1,272.4	0.83	0.65
1988	844.7	297.2	61.1	56.8	116.1	670.9	1,918.9	0.69	0.66
1989	645.1	425.5	61.1	46.4	46.9	709.0	2,176.5	0.52	0.62
1990	275.9	357.1	28.7	22.5	35.6	196.7	987.4	0.78	0.73
1991	448.4	469.9	77.8	38.1	35.1	955.1	2,040.4	0.48	0.64
1992	67.4	256.5	51.0	44.2	-	216.1	629.6	0.51	0.63
1993	13.1	140.8	38.6	56.1	-	114.2	315.9	0.49	0.40
1994	2.7	3.0	28.2	48.5	-	169.2	267.5	0.02	0.06
1995	5.4	43.5	37.5	57.3	-	74.8	204.1	0.24	0.11
1996	7.0	31.8	45.7	79.3	-	113.0	260.3	0.15	0.06
1997	5.5	22.4	26.9	31.6	-	149.1	230.5	0.12	0.09
1998	3.5	12.8	29.4	34.3	-	168.4	270.8	0.06	0.08
1999	3.6	36.5	22.6	51.2	-	274.1	432.0	0.09	0.07
2000	25.2	74.6	33.2	81.1	-	548.2	762.4	0.13	0.04
2001	38.1	216.8	75.8	185.2	-	1,108.3	1,673.2	0.15	0.04
2002	15.0	118.7	54.0	269.0	-	499.9	972.2	0.14	0.05
2003	28.8	252.4	45.1	235.3	-	677.7	1,266.9	0.22	0.08
2004	26.2	159.3	38.1	197.2	-	442.6	904.5	0.21	0.08
2005	10.5	58.2	42.8	164.6	-	341.0	629.9	0.11	0.04
2006	4.5	47.5	29.6	132.7	-	386.2	674.1	0.08	0.08
2007	26.2	128.5	10.9	71.4	-	336.9	631.3	0.25	0.12
2008	0.6	26.4	16.0	180.1	-	494.3	769.8	0.04	0.02
2009	27.7	201.2	16.7	265.3	-	729.8	1,341.3	0.17	0.07
2010	5.8	48.8	19.6	286.5	-	440.4	848.4	0.06	0.04
2011 ^{g/}	4.2	54.7	19.3	295.3	-	352.0	760.7	0.08	0.08

a/ The OPI area includes ocean and inside harvest impacts and escapement to streams and lakes south of Leadbetter Pt., Washington.

b/ Includes estimated nonretention mortality: troll fishery--hook-and-release mortality for 1982-2005 and drop-off mortality for all years; sport fishery--hook-and-release mortality for 1994-2005 and drop-off mortality for all years.

c/ Includes returns from Salmon-Trout Enhancement Program (STEP) smolt releases through the 2007 return year, after which the program was terminated.

d/ Includes Rogue River.

e/ FRAM post season runs used after 1985 and includes OPI origin stock catches in all fisheries.

f/ Ocean fishery impacts on private hatchery stock and returns to private hatcheries are excluded in calculating the OPI area stock aggregate ocean exploitation rate index.

g/ Preliminary.

TABLE III-4. Oregon Coast Natural adult coho salmon conservation objective, fishery impacts, and spawner escapement.

Year	Fishery Impact (Total Marine and Freshwater Exploitation Rate)			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		Southern ^{g/}	Coastwide	Northern ^{d/}	North		Southern ^{g/}	Coastwide Average
					Central ^{e/}	South Central ^{f/}				Central ^{e/}	Central ^{f/}		
1990	-	-	-	2.2	5.6	13.5	1.2	22.5	2	5	8	3	6
1991	-	0.460	0.454	9.3	6.7	21.6	0.5	38.1	10	6	13	1	9
1992	-	0.420	0.511	2.4	15.4	24.4	2.0	44.2	3	13	15	5	11
1993	-	0.260	0.423	4.5	7.8	43.1	0.8 ^{h/}	55.7	5	7	27	1 ^{h/}	14
1994	≤0.20	0.111	0.068	3.5	9.8	30.9	4.3	48.5	4	8	19	11	12
1995	≤0.20	0.118	0.124	3.9	13.6	36.5	3.4	57.3	4	12	22	8	14
1996	≤0.20	0.125	0.083	3.3	18.1	52.6	5.2	79.3	4	16	32	13	19
1997	≤0.20	0.110	0.124	2.1	2.8	18.4	8.2	31.6	2	2	11	20	8
1998	≤0.13	0.119	0.078	2.6	3.3	26.1	2.3	34.3	3	3	16	6	8
1999	≤0.15	0.087	0.076	8.9	11.8	29.2	1.4	51.2	10	10	18	3	13
2000	≤0.15	0.082	0.073	17.9	14.3	37.9	11.0	81.1	20	12	23	27	20
2001	≤0.08	0.074	0.074	33.5	25.2	113.9	12.6	185.2	37	22	70	31	45
2002	≤0.15	0.123	0.123	52.5	104.0	104.1	8.4	269.0	58	89	64	20	66
2003	≤0.15	0.144	0.144	59.6	68.9	100.1	6.8	235.3	66	59	62	16	57
2004	≤0.15	0.147	0.147	28.8	42.1	101.9	24.5	197.2	32	36	63	60	48
2005	≤0.15 ^{j/}	0.111	0.111	16.5	51.4	86.7	10.0	164.6	18	44	53	24	40
2006	≤0.15 ^{j/}	0.096	0.059	24.1	21.2	83.5	3.9	132.8	27	18	51	10	32
2007	≤0.20	0.113	0.109	17.5	12.3	36.5	5.2	71.5	19	11	22	13	17
2008	≤0.08	0.069	0.020	25.6	68.1	86.0	0.4	180.1	28	59	53	1	44
2009	≤0.15	0.130	0.109	48.1	86.4	128.2	2.6	265.3	54	74	79	6	65
2010	≤0.15	0.112	0.048	55.0	56.5	171.9	3.1	286.5	61	49	106	7	70
2011 ^{j/}	≤0.15	0.132	0.075	47.8	105.0	138.6	3.9	295.3	53	90	85	10	72

a/ A spawner escapement methodology study based on SRS had been in effect from 1990 to 1997 in which coho salmon population estimates have been made for Oregon coastal river systems from the Sixes River and north. Since 1998 a random site selection procedure based on the EPA's Environmental Monitoring and Assessment Program (EMAP) has been used. 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, Tahkenitch, 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/ The Salmon FMP specified an allowable marine and freshwater exploitation rate of 20%, however, the OCN workgroup matrix specified 15% and the Council chose to manage at the more conservative level for 2005 and 2006.

j/ Preliminary.

TABLE III-5. Performance of coho salmon stocks in relation to 2011 preseason conservation objectives (preliminary data).
(Page 1 of 2)

System and Stock	2011 FMP Conservation Objective	Achievement
OPI Area Coho		
(Columbia River and coastal stocks south of Leadbetter Point)	Natural spawner escapement objectives as provided below; meet hatchery egg-take goals; meet treaty Indian obligations.	Hatchery egg-take goals achieved. No information available on catch allocation.
Northern California (Threatened) and CCC (Endangered)	No directed coho fisheries or retention of coho south of the OR/CA border. Marine exploitation rate \leq 13.0% as indicated by R/K hatchery stocks.	No fisheries south of the California/Oregon border. Preliminary postseason estimate of 3.8%.
OCN	Combined marine and freshwater exploitation rate \leq 15.0%.	Preliminary post-season estimate of 6.5%.
Columbia River Natural (Threatened)	Combined marine and mainstem Columbia River exploitation rate \leq 15.0%.	A postseason estimate of mainstem Columbia River fishery exploitation was unavailable. Preliminary postseason estimate of 5.8% in marine fisheries was less than the preseason expectation of 10.6%.
Washington Coast Coho		
	Natural spawner escapement objectives as provided below and in state/tribal agreements; meet hatchery egg-take goals; meet treaty Indian obligations.	Hatchery egg-take goals achieved. No information available on catch allocation.
Grays Harbor	35,400 natural adult spawners.	Escapement estimate was unavailable; pre-season projection was 81,400 ocean escapement.
Queets	5,800 to 14,500 natural adult spawners.	Escapement estimate was unavailable; pre-season projection was 10,500 ocean escapement
Hoh	2,000 to 5,000 natural adult spawners.	Escapement estimate was unavailable; pre-season projection was 10,000 ocean escapement
Quillayute Fall	6,300 to 15,800 natural adult spawners.	Preliminary postseason escapement estimates was 9,512.

TABLE III-5. Performance of coho salmon stocks in relation to 2011 preseason conservation objectives (preliminary data).
(Page 2 of 2)

System and Stock	2011 FMP Conservation Objective	Achievement
Puget Sound Coho	Stepped exploitation rate objectives; meet hatchery egg-take goals; meet treaty Indian obligations and inside non-Indian fishery needs for six management units.	Data not available for 2011 natural spawner escapements. Hatchery egg-take goals likely will be met.
Strait of Juan de Fuca	≤40% total exploitation rate.	Preseason expectation of an 11% total exploitation rate; postseason estimate unavailable.
Hood Canal	≤65% total exploitation rate.	Preseason expectation of a 40% total exploitation rate; postseason estimate unavailable.
Skagit	≤60% total exploitation rate.	Preseason expectation of a 35% total exploitation rate; postseason estimate unavailable.
Stillaguamish	≤50% total exploitation rate.	Preseason expectation of a 26% total exploitation rate; postseason estimate unavailable.
Snohomish	≤60% total exploitation rate.	Preseason expectation of a 26% total exploitation rate; postseason estimate unavailable.

TABLE III-6. Coho stock status relative to overfished and overfishing criteria. A stock is overfished if the 3-year geometric mean spawning escapement is less than the minimum stock size threshold (MSST); a stock experiences overfishing if the total annual exploitation rate exceeds the maximum fishing mortality threshold (MFMT).

Coho Stock	Spawning Escapement					3-yr Geo Mean	MSST	S _{MSY}	Total Exploitation Rate					MFMT
	2007	2008	2009	2010	2011				2007	2008	2009	2010	2011	
Willapa Bay	18,009	16,419	47,333	77,784	NA	39,246	Undef	Undef	NA	NA	NA	NA	NA	Undef
Grays Harbor	25,121	34,054	69,222	102,237	NA	62,231	18,320	24,426	0.31	0.31	0.33	NA	NA	0.65
Queets	4,680	4,629	9,404	11,261	NA	7,885	4,350	5,800	0.35	0.37	0.43	NA	NA	0.65
Hoh	3,072	2,461	6,595	7,864	NA	5,035	1,890	2,520	0.48	0.43	0.52	NA	NA	0.65
Quillayute Fall	6,947	6,252	7,863	9,837	9,512	9,028	4,725	6,300	0.42	0.37	0.50	NA	NA	Undef
Juan de Fuca	8,045	3,339	14,957	19,282	NA	9,875	7,000	11,000	0.21	0.13	0.30	NA	NA	0.60
Hood Canal	46,658	11,756	26,927	4,697	NA	11,414	10,750	14,350	0.52	0.63	0.59	NA	NA	0.65
Skagit	51,972	24,093	60,798	31,090	NA	35,711	14,875	25,000	0.37	0.32	0.31	NA	NA	0.60
Stillaguamish	38,732	12,938	22,179	15,172	NA	16,329	6,100	10,000	0.25	0.23	0.28	NA	NA	0.50
Snohomish	117,736	36,015	98,945	49,100	NA	55,931	31,000	50,000	0.25	0.28	0.26	NA	NA	0.60

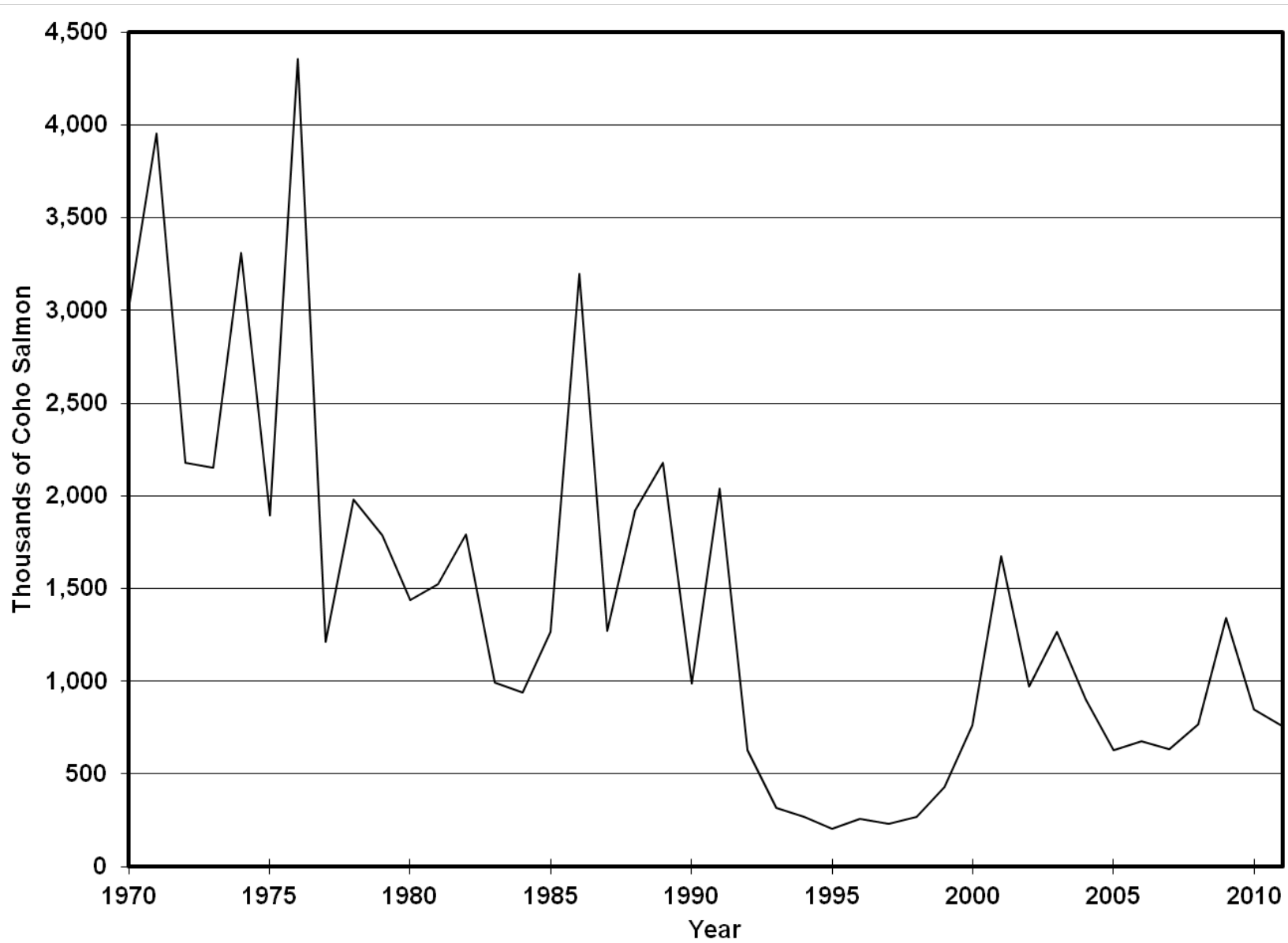


Figure III-1. Oregon Production Index (OPI) area coho abundance estimates by stratified random surveys (SRS) accounting methods, 1970-2011.

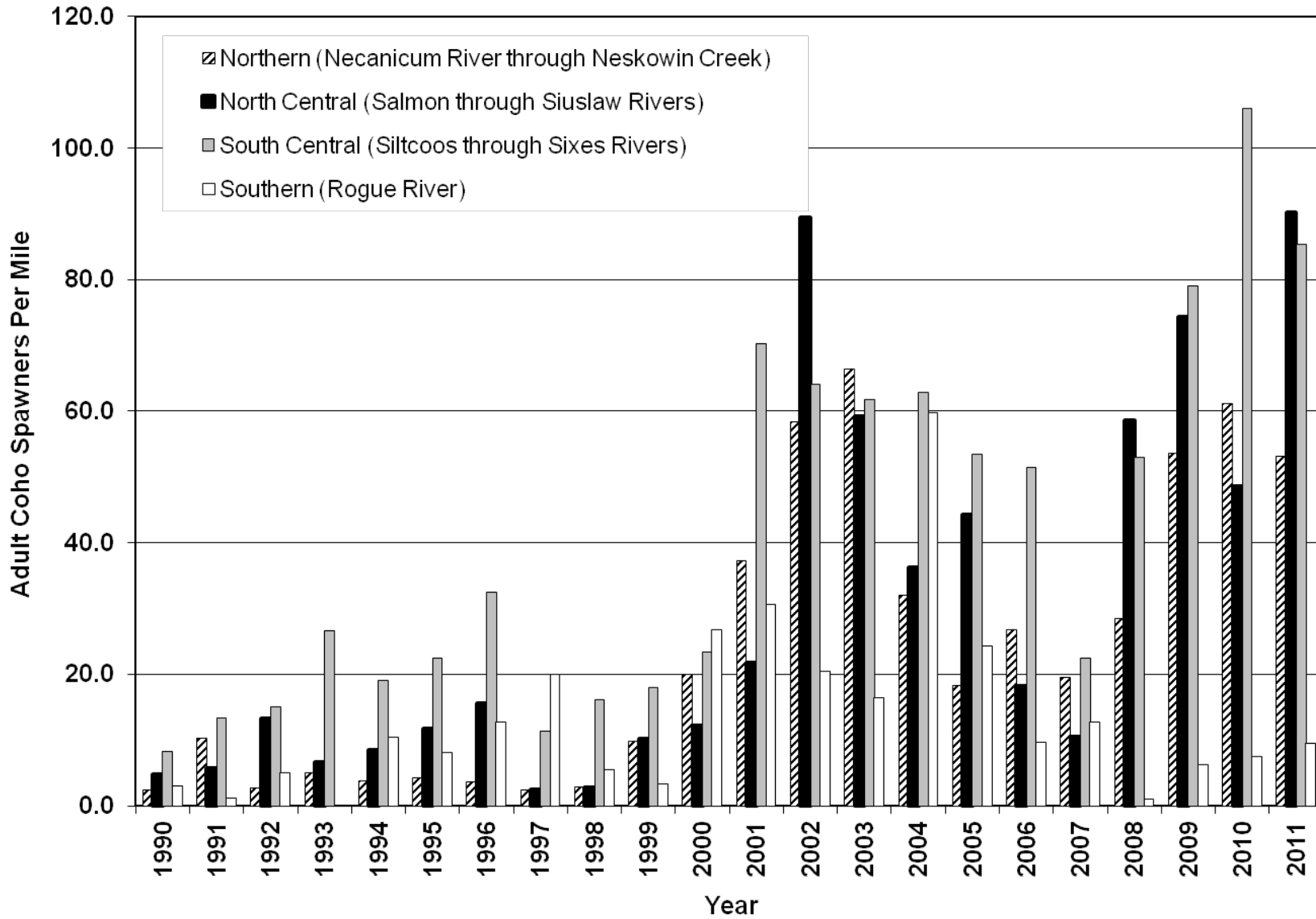


Figure III-2. Oregon coastal natural (OCN) adult coho spawners per habitat mile by coastal region based on SRS accounting methods, 1990-2011.

Page Intentionally Left Blank