Outline for the Oregon Department of Fish and Wildlife Coho Harvest Report

Introduction

Purpose is to present results of analysis of the following factors for decline: Commercial harvest, recreational harvest, scientific and educational take, and illegal take (poaching). This report also describes regulatory programs related to these decline factors.

Description of Regulatory and Volunteer Measures

Describe regulatory and volunteer programs in relation to information required by the Policy for Evaluation of Conservation Efforts (PECE).

Scope of Decline Factors Assessment

Spatial (ESU, Monitoring Area, Population Unit - where applicable)
Temporal (1997-2003, historical perspective - where possible)
Landuse, intrinsic potential, geology - where possible

Data Sources

Description of monitoring programs (state, federal, watershed council, SWCD, etc.)

Data sources used in report and reasons for not using omitted sources

Analytical Methods

Status
Trend

Results

Status and Trend ESU (all reports)
Status and Trend Monitoring Area (where possible)
Status and Trend Population Unit (where possible)

Discussion

Discuss programs in relation to factors for decline findings (both yours and other reports where pertinent)

Address critiques/concerns outlined in:
1997 NMFS Federal Register
(http://www.nwr.noaa.gov/reference/frn/1997/62FR24588.pdf)

pertinent IMST reports
(http://www.fsl.orst.edu/imst/reports/techindex.html)

Tables

Figures

Map with location of sample sites (where applicable)

References

Oregon Coastal Natural Coho Harvest Management in Ocean and In-River Salmon Fisheries

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Introduction

Oregon Coastal Natural (OCN) coho represent an aggregate of naturally produced coho stocks originating from Oregon coastal streams north of Cape Blanco (Figure 1). Historically, this aggregate was the largest contributor of naturally produced coho caught in ocean fisheries off Oregon and California (Lewis 1994). OCN coho are also part of a larger aggregate of natural and hatchery production south of Leadbetter Point, Washington known as the Oregon Production Index (OPI). Because of their importance to fisheries and their well-documented decline in productivity (Oregon Plan 1997), OCN coho have been the focus of a series of conservation strategies in both state and federal management forums (Oregon Plan 1997, PFMC 2003a). Initially, these strategies focused on harvest management with a general progression towards more conservative actions but have culminated with the comprehensive *Oregon Plan for Salmon and Watersheds*.

Harvest Management History

Prior to the development of the Oregon Plan, salmon fisheries were managed for an aggregate natural spawning escapement goal of 200,000 coho salmon. Using estimates of total available habitat (in river miles), the escapement goal was considered equivalent to 42 fish per mile in long-standing Oregon Department of Fish and Wildlife (ODFW) survey index reaches on coastal river systems. Preseason abundance estimates were used to establish catch quotas by simply subtracting the 200,000 spawning escapement goal to determine the number of OCN coho available for fisheries.

In the early 1990s, ODFW developed a more rigorous spawning escapement monitoring program and it became apparent that the index area estimates of fish per mile were heavily biased and not representative of the majority of the coastal habitat (Jacobs and Nickelson). The 42 fish per mile equated to only about one third of the 200,000 fish escapement goal. Moreover, in many years the preseason OCN population abundance forecasts had declined to the point that the total forecast was less than the escapement goal. In response to this decline, the Pacific Fishery Management Council (PFMC) adopted a series of amendments to the Pacific Coast Salmon Fishery Management Plan (FMP) requiring more conservative harvest management strategies for OCN coho. These strategies prescribed a maximum harvest rate of 15% in years when the forecast abundance was not expected to meet the 200,000 fish goal.

As the OCN stock continued to decline in the mid 1990s, and in conjunction with development of the Oregon Plan, the State of Oregon began advocating for the use of a harvest management matrix that did not rely upon preseason abundance forecasts or fixed escapement goals. Instead, the matrix relied upon the abundance of parent spawners and an index of marine survival to determine the maximum allowable exploitation rate (Table 1). This approach was included in the Oregon Plan and ODFW successfully sponsored an amendment to the PFMC Salmon FMP. The 13th amendment to the Salmon FMP was adopted by the PFMC in November 1997 (PFMC 1999) and mandated a review of the matrix during the year 2000.

In 2000, a review team was formed consisting of state and federal scientists including participation by the Oregon Governor's Independent Multidisciplinary Science Team. The review team developed an expanded harvest management matrix using habitat based productivity models that included more conservative exploitation rates at critically low parent spawner abundances (OCN Workgroup 2000). The PFMC adopted the revised harvest management matrix (Table 2) as technical guidance in October 2000 and expressed intent to incorporate it in the Salmon FMP upon development of the next amendment. This federal process is now underway (Amendment 15 to the Salmon FMP) and is scheduled for completion in 2005.

Ocean Harvest Rates

Prior to the OCN coho stock collapse in the 1990s, observed ocean harvest rates on OCN coho were as high as 90% and averaged 61% (Table 3 and Figure 2). These high harvest rates were a function of large abundances of hatchery coho available to ocean fisheries and the aforementioned fixed escapement goal management strategy for OCN coho.

Beginning in 1994, ocean coho fisheries were reduced considerably and in many cases closed entirely. With the development of hatchery mass marking programs in the mid 1990s and improved marine survival rates beginning about 2000, mark selective fisheries for coho salmon have been utilized to provide access to hatchery coho while still maintaining very low harvest rates on OCN coho. As a result, ocean harvest rates on OCN coho from 1994-2003 have been as low as 6% and have averaged 9% (Table 3 and Figure 2).

Since the implementation of the *Oregon Plan for Salmon and Watersheds* and the adoption of the corresponding harvest management matrix, harvest rates in mixed stock ocean fisheries have been dramatically reduced. Correspondingly, dramatic declines in marine survival rates and OPI coho abundance during the 1990s renders comparison of harvest rates between recent and historic years less informative. A retrospective analysis of the current harvest matrix applied to historic OCN parent spawners and marine survival indices provides an additional perspective on the relative benefits from the new harvest management approach (Figure 4). The retrospective harvest rates displayed in Figure 4 represent the maximum that would have been allowed for the parent spawner level and marine survival index observed for each year from 1970-2003 compared to the observed rate for those years. This analysis provides a "snap-shot" for each individual

year and does not account for the benefits that the more conservative harvest rates would have provided (through increased spawner abundance) in subsequent years.

In-River Harvest Rates

Prior to the closure of all freshwater coho fisheries in 1994, observed freshwater harvest rates on OCN coho were as high as 20% and averaged 10% (Table 3 and Figure 3). Since 1994, with the exception of a very small wild coho directed fishery in Siltcoos and Tahkenitch lakes in 2003, all Oregon coastal freshwater coho fisheries have been closed or constrained to the retention of marked hatchery fish only. As a result, in-river impact rates for 1994-2003 were reduced considerably and estimated at 1% annually (Table 3 and Figure 3).

Conclusion

High harvest rates were a significant factor in the decline of OCN coho. A harvest management strategy incorporating fixed escapement goals combined with a lack of accurate escapement estimates lead to harvest rates that were not sustainable. The current harvest management strategy provides significantly higher spawner escapements across the full range of marine survival rates. These increased spawner escapements will effectively buffer populations through protracted periods of low marine survival and combined with mark selective fisheries, still provide harvest access to abundant hatchery coho stocks.

References

Jacobs, S.E. and T.E. Nickelson. 1998. Use of stratified random sampling to estimate the abundance of Oregon coastal natural coho. Oregon Department of Fish and Wildlife, final report. Project F-145-R-09. Portland.

Lewis, M.A. 1994. Stock Assessment of Anadromous Salmonids. Oregon Department of Fish and Wildlife. Annual Progress Report. Portland.

OCN Work Group. 2000. 2000 review of Amendment 13 to the Pacific Coast Salmon Plan. Exhibit B.3.b, Work Group Report, November 2000. Portland, Oregon.

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PFMC. 2000. 2000 Review of Amendment 13 to the Pacific Coast Salmon Plan. PFMC, Portland, Oregon.

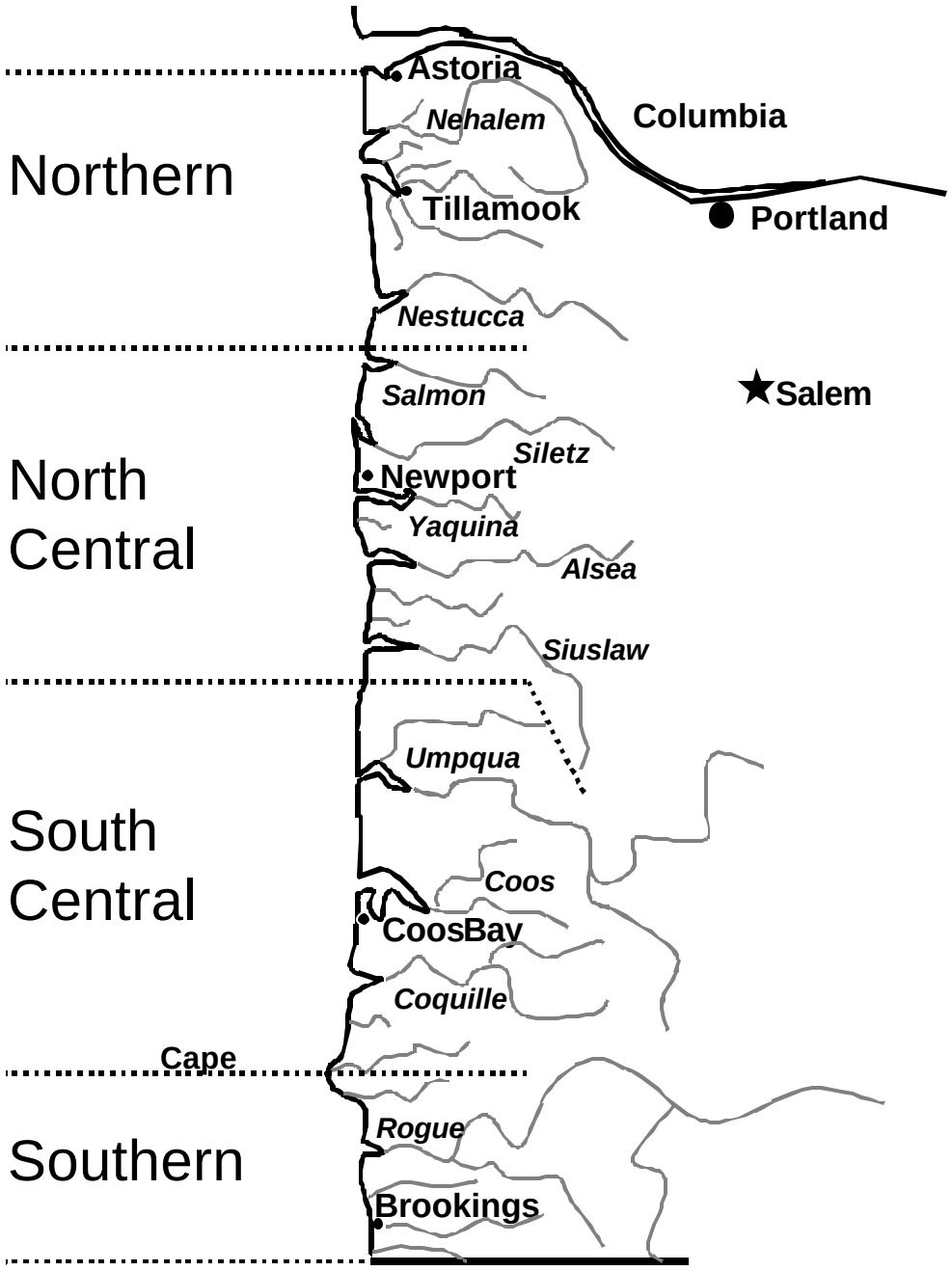


Figure 1. Map of the Oregon Coast showing major river basins that produce OCN coho and the sub-aggregate grouping of those basins. The southern sub-aggregate, south of Cape Blanco is not included in the OCN aggregate.

Table 1. Original Amendment 13 harvest management matrix with parental spawner and marine survival categories and associated fishery harvest impact rates for OCN coho.

PARENT SPAWNER STATUS [b/]	SMOLT TO ADULT MARINE SURVIVAL [a/]		
	Low	**Medium**	**High**
	ALLOWABLE TOTAL FISHERY IMPACT		
High Parent Spawners achieved Level #2 rebuilding criteria *and* grandparent spawners achieved Level #1 rebuilding criteria	**≤15%**	**≤30%**	**≤35%**
Medium Parent spawners achieved Level #1 or greater rebuilding criteria	**≤15%**	**≤20%**	**≤25%**
Low Parent spawners less than Level #1 rebuilding criteria	**≤15%** **≤10-13%** [c/]	**≤15%**	**≤15%**

Stock Component Rebuilding Criteria:	**Level #1** (50%)	**Level #2** (75%)
Northern	10,900	16,400
North - Central	27,500	41,300
South - Central	25,000	37,500
Southern	2,700	4,100
Total	66,100	99,300

a/ Smolt to adult marine survival is projected from smolt to jack marine survival for representive OPI hatchery stocks from the appropriate brood year. Low medium and high marine survival categores are defined as less than 0.09%, from 0.09% to 0.34% and greater than = 0.34% respectively.

b/ In the event that a spawner criteria is achieved, but a *major* basin within the stock component is *less than ten percent of the full seeding level* , the next tier of additional harvest would not be allowed in mixed stock fisheries for that component, nor additional impacts within that particular basin. (see Table A-3 in Appendix A of Amendment 13 to the FMP for a listing of major basins within stock components and Table A-2 in Appendix A of Amendment 13 for spawners needed for full seeding at 3% marine survival.

c/ This exploitation rate criteria applies when parent spawners are less than 38% of the Level #1 rebuilding criteria, or *when marine survival conditions are extremely low as in 1994-98 (i.e. < 0.06% hatchery smolt to jack survival)*

Table 2. OCN work group revisions to the harvest management matrix in Plan Amendment 13 showing allowable fishery impacts and ranges of resulting recruitment for each combination of parental spawner abundance and marine survival.

Parent Spawner Status [1/]	Marine Survival Index (based on return of jacks per hatchery smolt)			
	Extremely Low (<0.0008)	**Low** (0.0008 to 0.0014)	**Medium** (>0.0014 to 0.0040)	**High** (>0.0040)
High Parent Spawners > 75% of full seeding	**E** ≤ 8%	**J** ≤ 15%	**O** ≤ 30%	**T** ≤ 45%
Medium Parent Spawners > 50% & ≤ 75% of full seeding	**D** ≤ 8%	**I** ≤ 15%	**N** ≤ 20%	**S** ≤ 38%
Low Parent Spawners > 19% & ≤ 50% of full seeding	**C** ≤ 8%	**H** ≤ 15%	**M** ≤ 15%	**R** ≤ 25%
Very Low Parent Spawners > 4 fish per mile & < 19% of full seeding	**B** ≤ 8%	**G** ≤ 11%	**L** ≤ 11%	**Q** ≤ 11%
Critical [2/] Parental Spawners ≤ 4 fish per mile	**A** 0 - 8%	**F** 0 - 8%	**K** 0 - 8%	**P** 0 - 8%

Sub-aggregate and Basin Specific Spawner Criteria Data

Sub-aggregate	Miles of Available Spawning Habitat	100% of Full Seeding	"Critical"		Very Low, Low, Medium & High		
			4 Fish per Mile	12% of Full Seeding	19% of Full Seeding	50% of Full Seeding	75% of full Seeding
Northern	899	21,700	3,596	NA	4,123	10,850	16,275
North - Central	1,163	55,000	4,652	NA	10,450	27,500	41,250
South - Central	1,685	50,000	6,740	NA	9,500	25,000	37,500
Southern	450	5,400	NA	648	1,026	2,700	4,050
Coastwide Total	4,197	132,100	15,636		25,099	66,050	99,075

1/ Parental spawner abundance status for the OCN aggregate assumes the status of the weakest sub-aggregate.

2/ "Critical" parental spawner status is defined as 4 fish per mile for the Northern, North-Central, and South-Central sub-aggregates. Because the ratio of high quality spawning habitat to total spawning habitat in the Rogue River Basin differs significantly from the rest of the basins on the coast, the spawner density of 4 fish per mile does not represent "Critical" status for that basin. Instead. "Critical" status for the Rogue Basin (Southern Sub-aggregate) is estimated as 12% of full seeding of high quality habitat.

Table 1. Estimates of OPI and OCN coho harvest rate in ocean and freshwater salmon fisheries, 1970-2003 (ODFW 2003).

Fishery Year	OPI Ocean Harvest Rate		FRAM OCN Ocean Harvest Rate		OCN Ocean Harvest Rate		OCN Freshwater Harvest Rate	Freshwate Exploitatio Rate
1970	65.2%				65.2%		15.8%	5.51%
1971	82.5%				82.5%		8.0%	1.40%
1972	84.3%				84.3%		14.1%	2.21%
1973	81.9%				81.9%		8.6%	1.55%
1974	83.5%				83.5%		11.8%	1.94%
1975	81.4%				81.4%		10.2%	1.90%
1976	89.9%				89.9%		14.1%	1.43%
1977	88.8%				88.8%		19.1%	2.14%
1978	82.5%				82.5%		7.0%	1.23%
1979	79.4%				79.4%		0.9%	0.18%
1980	73.1%				73.1%		11.4%	3.07%
1981	81.1%				81.1%		9.7%	1.83%
1982	61.6%				61.6%		4.4%	1.69%
1983	78.7%				78.7%		6.2%	1.31%
1984	31.9%				31.9%		7.8%	5.31%
1985	43.2%				43.2%		6.3%	3.60%
1986	33.5%				33.5%		9.7%	6.44%
1987	59.5%				59.5%		8.0%	3.22%
1988	56.4%				56.4%		6.1%	2.67%
1989	55.3%				55.3%		10.4%	4.63%
1990	68.9%				68.9%		11.1%	3.44%
1991	44.4%				44.4%		20.8%	11.58%
1992	50.9%				50.9%		9.5%	4.64%
1993	42.3%				42.3%		4.5%	2.62%
1994	2.3%		5.8%		5.8%		1.0%	0.98%
1995	22.6%		11.6%		11.6%		1.0%	0.77%
1996	14.6%		7.4%		7.4%		1.0%	0.85%
1997	12.5%		11.5%		11.5%		1.0%	0.88%
1998	6.6%		6.9%		6.9%		1.0%	0.93%
1999	11.9%		6.7%		6.7%		1.0%	0.92%
2000	13.1%		6.4%		6.4%		1.0%	0.93%
2001	15.7%		6.5%		6.5%		1.0%	0.93%
2002	13.8%		11.4%	1/	11.4%	1/	1.0%	0.88%
2003	22.0%	1/	13.5%	1/	13.5%	1/	1.0%	0.88%

1/ Post-season analysis is not yet available. Represents pre-season expected impact rates.

Figure 2. Ocean Salmon Fishery Harvest Rate on Oregon Coastal Natural Coho, 1970-Present

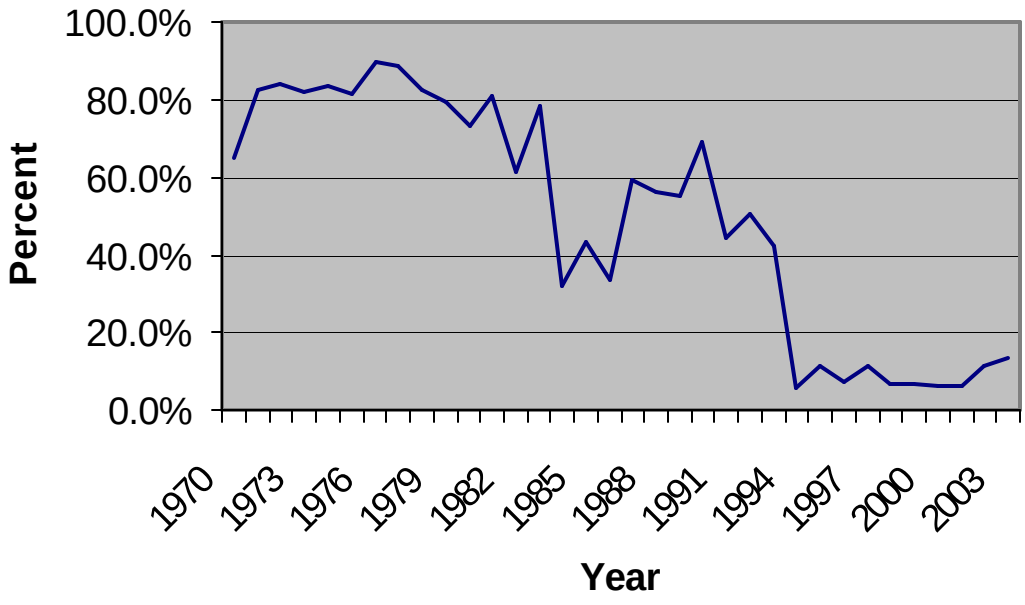


Figure 3. Freshwater Salmon Fishery Harvest Rate on Oregon Coastal Natural Coho, 1970-Present

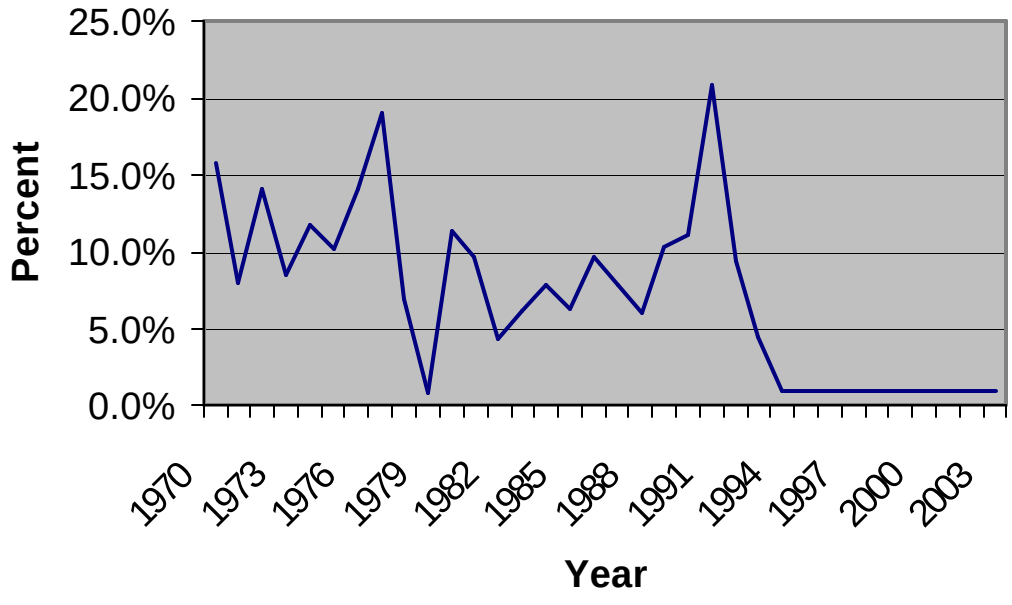
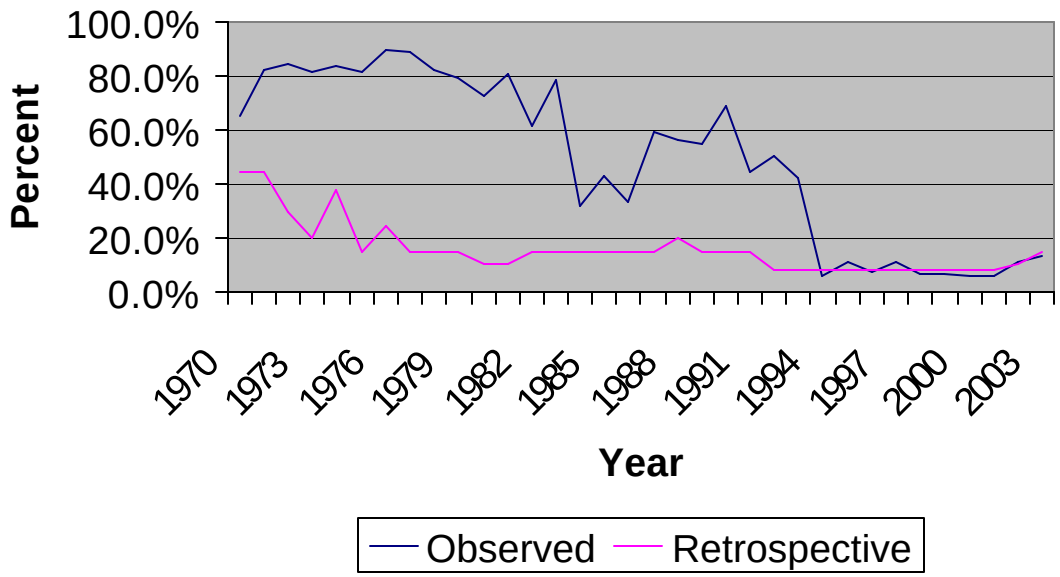


Figure 4. Ocean Salmon Fishery Harvest Rate on OCN Coho with Comparison to Retrospective Application of Current Management Plan



Oregon Plan Coastal Coho Assessment
Scientific and Educational Take

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Take of listed salmon and steelhead for scientific research in Oregon is authorized and regulated under the Endangered Species Act Section 4(d) and Section 10 by NOAA Fisheries and under Oregon statute and rule by Oregon Department of Fish and Wildlife (ODFW). ODFW issues permits for take of fish (listed and non-listed) and marine invertebrates for scientific purposes through the Scientific Take Permit (STP) process. The information obtained from the research projects authorized by NOAA Fisheries is considered important to the recovery of the species, and the actual take is not believed to be detrimental to the long-term survival of the species.

Application for a STP is made through an online website hosted by NOAA Fisheries (NOAA) for federal take of NOAA listed fish under Section 4(d) of the Endangered Species Act. The website and permit database were developed cooperatively by NOAA and ODFW as a result of the issuance of a 4(d) rule in 2000 for take prohibitions on 14 Pacific salmon and steelhead stocks (8 in Oregon), including Oregon Coastal coho salmon. Implementation of the web-based process occurred in late 2001 for projects taking place in 2002. Prior to the 2002, Oregon STPs applicants were required to fill out an application that was available electronically, but was not tied to any database. The move to the web-based application allowed applicants to use one application to apply for both the federal authorization under Section 4(d) and the State STP. The online application process is also used by ODFW staff for applying for federal authorization for District work that takes listed species covered under the 2000 4(d) rule. In addition to the convenience of one-stop permitting afforded researchers, the web based application has been extremely useful for efficiently processing the large number of applications submitted to ODFW, e.g., 351 in 2004, and for computing actual take of species for ODFW's state and federal reporting requirements.

Data is not immediately available for the interval from January 1, 2001 (when NOAA began authorizing take) and the implementation of the online database. Obtaining these data would involve tabulating take from individual permits and reports and would be very time consuming.

The following table shows the amount of actual take of Oregon Coastal coho salmon since the online database has been in operation. The definition of take includes fish that are handled and released (may or may not be tagged) and fish that are purposefully sacrificed to meet research objectives, e.g., otolith research. Fish that are killed unintentionally during collection are recorded as indirect mortality. Each permit prescribes a limit on indirect mortality that may not be exceeded. The limits are approved by NOAA Fisheries.

Oregon Coastal Coho take 2002 - 2004 (partial)

Year	Life Stage	Take Action	Actual Take	Indirect Mortality	
2002	Juvenile	Direct Mortality	25	NA	
2003	Juvenile	Direct Mortality	0	NA	
2004*	Juvenile	Direct Mortality	36	NA	
			61	NA	
2002	Smolt	Direct Mortality	150	NA	
2003	Smolt	Direct Mortality	-	NA	
2004*	Smolt	Direct Mortality	-	NA	
			150	NA	
2002	adult	Handled	12256	33	
2003	adult	Handled	8209	44	
2004*	adult	Handled	172	0	
			20637	**77**	**0.37% IM**
2002	Juvenile	Handled	125452	1779	
2003	Juvenile	Handled	208563	4633	
2004*	Juvenile	Handled	230880	1224	
			564895	**7636**	**1.33% IM**
2002	Smolt	Handled	47742	478	
2003	Smolt	Handled	52590	192	
2004*	Smolt	Handled	53719	136	
			154051	**806**	**0.52% IM**

* Reporting results for 2004 is currently underway, these data are not complete.

Oregon State Police
Fish and Wildlife Division
Assessment of Enforcement on Coastal Coho ESU

Introduction

The Oregon Sate Police Fish and Wildlife Division have specific legal authorities and are responsible for enforcement of laws related to fish and wildlife and environmental protection, including the following laws.

- Sport fishing and hunting laws
- Commercial fishing laws
- Environmental laws and administrative rules
- Boating and marine safety rules

Description of Regulatory and Volunteer Measures

The Oregon State Police Fish and Wildlife Division assign uniform officers to patrol and enforce all wildlife and fishing laws. The Division has 114 officers stationed around the state. All work on all aspects of protection of Oregon Natural Resources. The Division employs aircraft, boats, ATV's and 4 x 4 vehicles to accomplish these patrols. Within the division some officers are tasked with specific areas of enforcement. These include Oregon Plan (13), Department of Environmental Quality (1), and Commercial Fish enforcement (6) and General Fish and Wildlife (85). We also have a three (3) person unit that work on long-term major investigations.

The Fish and Wildlife Division has also developed a volunteer program. These volunteers are used for a variety of activities. These volunteers have been used as boat operators, observers on flights, decoy operations as well as maintain equipment to name a few. This allows officers to have more time for enforcement activities.

Scope of Decline Factors Assessment

OSP has twenty eight (28) Troopers stationed throughout the Coastal Coho ESU that are assigned to enforce laws that would provide protection to the listed species. Enforcement action by OSP most directly addresses the following factors for decline:

- Commercial harvest,
- Recreational harvest,
- By-catch,
- Illegal take (poaching).

OSP field troopers also investigate allegations of violations of habitat laws. Information is gathered and forwarded to the appropriate State agency for follow-up. These include areas such as:

- Oregon Forest Practices Law

- Oregon Water Law
- Fill and Removal Law
- Water Quality

Data Sources and Analytical Methods

The Oregon State Police have tracked information on contacts and violation rates for at least 8 years through a system called Bros/Lund. Officers in the field provide information on their activities every two weeks. State Police then compile this information and can track the number of people that are contacted and the number of violations as they relate to species. The information is broken down to stream units (some times multiple areas).

With this information State Police can evaluate the data and determine problem areas or times when increased effort is needed. This information is shared with Biologists to determine if legal harvest or Illegal harvest may be having impacts on a specific population. Oregon State Police working with ODFW established a goal for compliance rates to be maintained at 85 % or above. It was felt at this level both legal and illegal Harvest would not be a limiting factor.

However, data collected relative to compliance rates and violations of environmental laws are not based on any statistical sampling plan. The data are recorded as a consequence of the overall intent of the enforcement program, that is, to use selective enforcement action to maintain a high level of public understanding of and compliance with laws related to fish, wildlife, and the environment. Therefore, the available data from OSP are viewed as anecdotal and are considered in context with information regarding the abundance and status of coho salmon in the ESU.

Results and Discussion

Table 1 displays the trend in salmon/steelhead harvest compliance rates. The trend was increased compliance from 1995 to 1997 with a high of 90.9%. Compliance dropped in 1999 to 88.4 %. The trend has been that compliance has remained around 88% to 89% the last 5 years.

In General, illegal take in commercial and recreational fisheries and poaching is judged to not be a significant factor limiting recovery of the Coastal Coho ESU. The OSP enforcement program works in concert with ODFW biologists to assess relative conservation risk within the local patrol area of each field trooper. This provides an appropriate risk-based focus of enforcement during key portions of the specie's life cycle. Compliance rates with regulations limiting harvest of coho were high when the species was at low population levels during the 1990s. Compliance rates for coho harvest restrictions have declined slightly in recent years at the same time that coho escapement numbers have reached 50 year highs, probably because encounter rates have increased and anglers have made identification errors.

Data and anecdotal observation do not suggest spatial trends in our assessment that illegal harvest is not currently limiting coho recovery, either at the scale of the monitoring unit or at the scale of populations within the monitoring units.

We conclude that enforcement action related to environmental law (Table 2) is an effective mechanism to educate landowners, increase voluntary compliance, and set the stage for mitigation action if needed.

PECE Policy Evaluation

1. The certainty that the conservation effort will be implemented:

1. The conservation effort, the party (ies) to the agreement or plan that will implement the effort, and the staffing, funding level, funding source, and other resources necessary to implement the effort are identified

Harvest Management: The states of Oregon, Washington, California, and Idaho, the U.S. Fish and Wildlife Service and NOAA Fisheries have agreed with the new harvest management strategy as technical guidance as well as an amendment to the Pacific Fishery Management Council's (PFMC) Salmon Fishery Management Plan (FMP). The PFMC fully funds the activities of the Salmon Technical Team (STT) to analyze salmon fisheries for compliance with requirements of the FMP. Oregon, Washington, California, and NOAA Fisheries fund management of salmon fisheries with a combination of state and federal funds.

Scientific and Educational Take: Scientific and educational take is overseen by ODFW under state statute. ODFW works cooperatively with NOAA Fisheries to implement ESA take prohibitions under Section 4 (d) of ESA. Currently 2.0 FTE are assigned to these duties with 1.0 FTE state-funded and 1.0 FTE federal-funded by NOAA Fisheries.

Illegal Take: The Fish and Wildlife Division has a total of 120 position with 114 assigned to the field. Approximately 24% of the division is funded by Lottery dollars. Additional revenue is received from ODFW (55%), General Fund (15%), Marine Board (4%), DEQ & Federal Funds (2%).

2. The legal authority of the party (ies) to the agreement or plan to implement the formalized conservation effort, and the commitment to proceed with the conservation effort are described.

Harvest Management: The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) require that the PFMC develop an FMP for the Pacific coast salmon fishery. The FMP is federal law and is published in the federal register. The new harvest management strategy was adopted by the state of Oregon through the Oregon Plan for Salmon and Watersheds. Annual salmon fishery regulations are published in the federal register as well as in Oregon Administrative Rules adopted by the Oregon Fish and Wildlife Commission.

Scientific and Educational Take: State Take Permits are legal documents and include federal authorizations pertinent to the project.

Illegal Take: ORS 496.610 State Police to enforce wildlife laws;

3. The legal procedural requirements (e.g. environmental review) necessary to implement the effort are described, and information is provided indicating that fulfillment of these requirements does not preclude commitment to the effort.

Harvest Management: Amendments to the FMP require an EA/EIS under provisions of the NEPA. PFMC staff and the STT fulfill this requirement for all amendments. Implementation of annual ocean salmon regulations in federal waters also requires the completion of an EA/EIS under provisions of the NEPA. PFMC staff and the STT fulfill this requirement annually.

Scientific and Educational Take: Not applicable

Illegal Take: Not applicable

4. Authorizations (e.g., permits, landowner permission) necessary to implement the conservation effort are identified, and a high level of certainty is provided that the party (ies) to the agreement or plan that will implement the effort will obtain these authorizations.

Harvest Management: Oregon, Washington, California, Idaho, the U.S. Fish and Wildlife Service, and NOAA Fisheries are all authorized under the MSFCMA to participate in the PFMC process. The PFMC functions under the authority of the MSFCMA, NOAA Fisheries, and the U.S. Department of Commerce. The U.S. Secretary of Commerce must approve annual salmon regulations as well as amendments to the FMP. The Oregon Fish and Wildlife Commission is authorized under Oregon Revised Statutes to adopt fishery regulations (through Oregon Administrative Rule) consistent with conservation and recovery goals identified in the Oregon Plan.

Scientific and Educational Take: Most projects are implemented. Some are not because funding is not obtained or priorities change. Due to the application process for the 4(d) approval, some permittees do not have their plans finalized at the time they apply for the permit. Permits that are not acted upon may be withdrawn and renewed for the following year.

Illegal Take: Not applicable

5. The type and level of voluntary participation necessary to implement the conservation effort is identified, and a high level of certainty is provided that the party (ies) will implement the conservation effort will obtain that level of voluntary participation.

Harvest Management: There is no voluntary participation necessary to implement the harvest management matrix.
Scientific and Educational Take: Generally speaking this would be detailed in the project description and list of collectors.

Illegal Take: Not applicable

6. Regulatory mechanisms (e.g., laws, regulations, ordinances) necessary to implement the conservation effort are in place.

Harvest Management: Federal salmon fishery regulatory mechanisms are fully described in the MSFCMA, the PFMC Salmon FMP, and published in the federal register. Oregon salmon fishery regulatory mechanisms are fully described in Oregon Revised Statutes and Oregon Administrative Rules.

Scientific and Educational Take: It is a requirement for approval of the permit.

Illegal Take: Yes, with adequate enforcement and prosecution.

7. A high level of certainty is provided that the party (ies) to the agreement or plan that will implement the conservation effort will obtain the necessary funding.

Harvest Management: The current harvest management plan has been in place since 2000 (in a similar form since 1997) thus implementation of the conservation effort amounts to implementation of annual salmon fishery management. The PFMC has funded the STT for FMP development and annual fishery implementation since 1978. NOAA Fisheries has been providing grants to Oregon for annual implementation of anadromous fisheries since the early 1980's. Oregon receives an annual Sport Fish Restoration grant through the USFWS for annual ocean salmon fishery management. Oregon has an annual contract with the Bonneville Power Administration to supplement ocean salmon fishery management for coded wire tag recovery. Oregon receives funds through the Pacific Salmon Commission under the US/Canada Pacific Salmon Treaty to sample ocean salmon fisheries. Oregon receives annual funds from commercial and recreational license sales and commercial *ad valorem* taxes.

Scientific and Educational Take: See answer under 4.

Illegal Take: The Fish and Wildlife Division has a total of 120 position with 114 assigned to the field. Approximately 24% of the division is funded by Lottery dollars. Additional revenue is received from ODFW (55%), General Fund (15%), Marine Board (4%), DEQ & Federal Funds (2%).

8. An implementation schedule (including incremental completion dates) for the conservation effort is provided.

Harvest Management: Amendment 13 to the PFMC Salmon FMP was formally adopted in November 1997. The revised harvest matrix was adopted by the PFMC as technical guidance in October 2000. The revised harvest matrix will be included in the next Salmon FMP amendment scheduled for completion in 2005.

Scientific and Educational Take: Permits are issued on an annual basis and the timeframe for project work spelled out in the application and subsequently in the permit.

Illegal Take: Not applicable

9. The conservation agreement or plan is approved by all parties to the agreement or plan.

Harvest Management: Oregon, Washington, California, Idaho, the U.S. Fish and Wildlife Service, and NOAA Fisheries unanimously supported the new harvest management plan adopted under Amendment 13 to the Salmon FMP as well as the OCN workgroup amended harvest matrix. The U.S. Secretary of Commerce has approved the Salmon FMP amendment and annual ocean salmon regulations.

Scientific and Educational Take: Not applicable

Illegal Take: Not applicable

2. The certainty that the conservation effort will be effective:

1. The nature and extent of threats being addressed by the conservation effort are described, and how the conservation effort reduces the threats is described.

In a summary of factors affecting coho salmon (50 FR 227), NOAA Fisheries concluded under the category of "Overutilization for Commercial, Recreational, or Education Purposes" that overfishing in non-tribal fisheries was believed to be a significant factor in the decline of the Oregon Coast coho ESU. They concluded that effect was largely attributed to overfishing in the ocean, with recreational, scientific, and educational programs having little to no impact on coho salmon populations.

Commercial and Recreational Harvest –

- High harvest rates were a significant factor in the decline of OCN coho and were not sustainable.

- In 1994, in response to declining spawner escapements, ocean harvest of naturally produced coho was significantly reduced and freshwater harvest was eliminated. From 1950 to 1993, ocean harvest averaged 63% annually declining to 10% annually from 1994 to 2003. Freshwater harvest averaged about 10% historically and has been reduced to about 1%.
- Amendment 13 to the PFMC Salmon FMP: Based on a matrix of the abundance of parent spawners and an index of marine survival to determine the maximum allowable exploitation rate. This approach was included in the Oregon Plan and ODFW successfully sponsored an amendment to the PFMC Salmon FMP. The 13th amendment to the Salmon FMP was adopted by the PFMC in November 1997 (PFMC 1999) and mandated a review of the matrix during the year 2000. Harvest management is limited by the weakest of the four aggregates that constitute the ESU.
- In 2000, a State/Federal review team developed an expanded harvest management matrix using habitat based productivity models that included more conservative exploitation rates at critically low parent spawner abundances and increased the maximum allowable harvest rate to 45%. The PFMC adopted the revised harvest management matrix as technical guidance in October 2000 and expressed intent to incorporate it in the Salmon FMP upon development of the next amendment.
- Amendment 15 to the PFMC Salmon FMP: this federal process has been started and Oregon is proposing the formal adoption of the 2000 technical guidance. The amendment process is scheduled for completion in 2005.
- The current harvest management strategy provides significantly higher spawner escapements across the full range of marine survival rates. These increased spawner escapements will effectively buffer populations through protracted periods of low marine survival and combined with mark selective fisheries, still provide harvest access to abundant hatchery coho stocks.
- In 2003, ODFW implemented a limited harvest of naturally produced coho in Siltcoos and Tahkenitch Lakes under an FMEP issued by NOAA Fisheries.

Scientific and Educational Take: Depends on the type of project and the research objectives.

Illegal Take: The focus of law enforcement programs is to prevent the illegal take of fish and wildlife species as directed by state law.

2. Explicit incremental objectives for the conservation effort and dates for achieving them.

Harvest Management

Objective 1 – Support implementation of the harvest matrix adopted as technical guidance under the 2000 review.

- This is an on-going objective that is reported on annually.

Objective 2 – Support the development and implementation of Amendment 15 under the Salmon FMP.

- Work within the PFMC process to support the formal adoption of the harvest matrix developed in the 2000 review under Amendment 15. This federal process is now underway (Amendment 15 to the Salmon FMP) and is scheduled for completion in 2005.

Scientific and Educational Take: Provided in the project description and outline in the permit application.

Illegal Take: Not applicable

3. The steps necessary to implement the conservation effort are identified in detail.

Harvest Management

- Step 1 – continue to monitor and report fishery impacts and recommend revisions to PFMC as monitoring results and analysis warrants.
- Step 2 – Conduct research to test assumptions of hooking mortality, etc. under variable hatchery: wild fish encounter rates in ocean selective fisheries for OCN coho.
- Step 3 – Develop additional selective fishery opportunities in concert with existing limits. Option for consideration might include developing selective recreational fisheries in freshwater. This option has the potential to direct fisheries at stronger populations and providing relief to weaker populations from the effects of mixed stock fisheries.

Scientific and Educational Take: Methods described in project description.

Illegal Take: Not applicable

4. Quantifiable, scientifically valid parameters that will demonstrate achievement of objectives, standards for these parameters by which progress will be measured, are identified.

Harvest Management

- Harvest rates are within limits of harvest matrix allocation.
- Escapement needs met based on harvest limits, both need to line-up

Scientific and Educational Take: Reporting of actual take is a condition of the permit. Most research findings would be expected to be published and peer reviewed.

Illegal Take: Not applicable

5. Provisions for monitoring and reporting progress on implementation (based on compliance with the implementation schedule) and effectiveness (based on evaluation of quantifiable parameters) of the conservation effort provided.

Harvest Management:

- Annual reports to PFMC documenting pre-season predictions and post season harvest (question of compliance and effectiveness of program and monitoring, hooking mortality, freshwater mortality, etc.)
- Annual escapement reports

Scientific and Educational Take: See answer under #4.

Illegal Take: Not applicable

6. Principles of adaptive management are incorporated.

Harvest Management:

- Revisions to Amendment 13 were accepted as advisory in 2000 by the PFMC.
- Revisions are proposed for formal adoption in Amendment 15 process, scheduled for completion in 2005.
- Fisheries in Lakes (NOAA-approved).
- Take of unmarked fish at the mouth of the Columbia to reduce overall impact on unmarked fish.
- Committing to review of effectiveness of matrix and underlying assumptions at each Amendment cycle of the Salmon FMP. Review would be reported on in the annual harvest report coinciding with the amendment cycle.

Scientific and Educational Take: Permits may be modified at the request of the applicant and subsequent review and approval by state and federal regulators.

Illegal Take: Not applicable.