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Oregon Plan Assessment  
Coho Harvest Management

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## Harvest as a Factor for Decline

- Federal Register and Oregon Plan (1997)
  - Harvest, along with hatcheries and habitat degradation are the predominant factors for decline
- Oregon Plan Assessment (2004)
  - Implementation of Amendment 13 ensures protection of OCN coho from over-harvest under variable environmental conditions

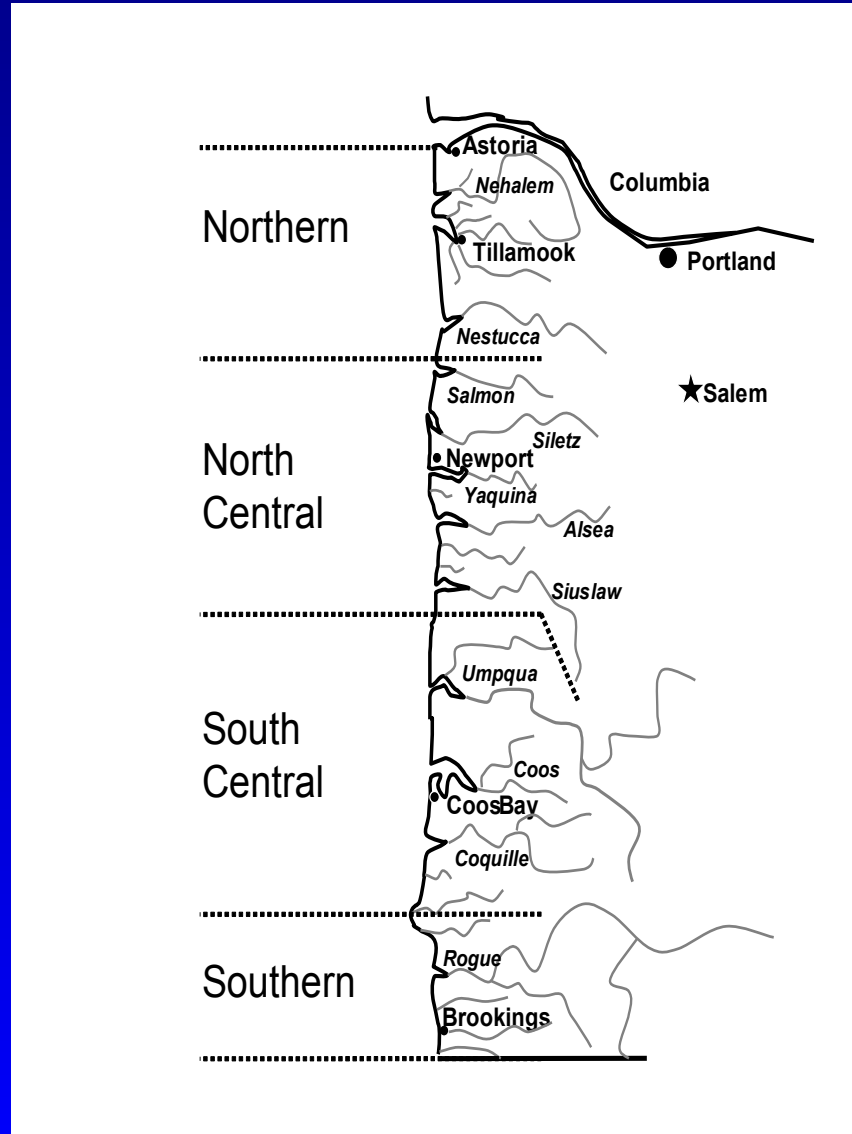
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# Oregon Coastal Natural Coho

- Aggregate of natural stocks
  - North of Cape Blanco
- OPI aggregate south of Leadbetter Point
  - Hatchery
  - Natural

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## OCN Sub-Aggregates



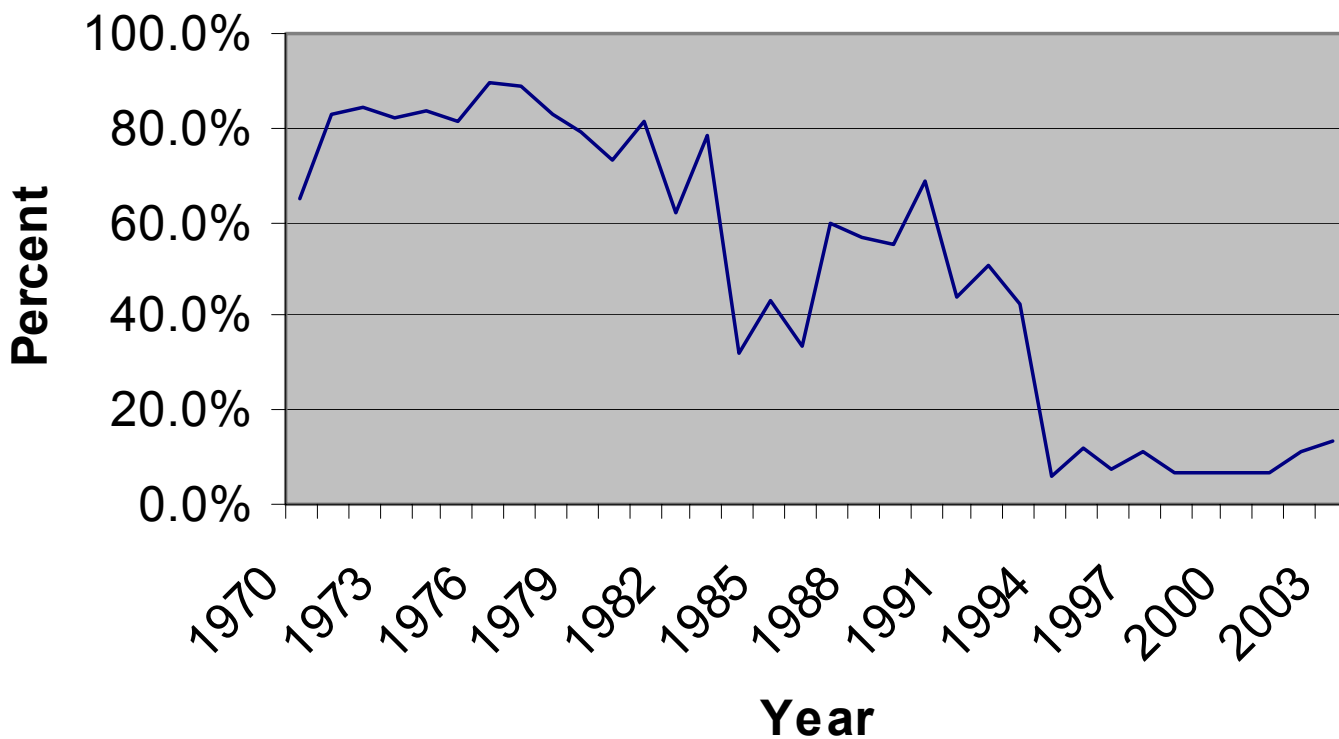
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## Harvest Management History

- Aggregate Escapement Goal
  - 200,000 spawners
  - 42 fish/mile in standard index streams
- Preseason Abundance Forecasts
  - Hatchery
  - Natural
- Ocean Quotas
  - Preseason abundance minus escapement
- Bias and Forecast Error
  - Unsustainable harvest rates

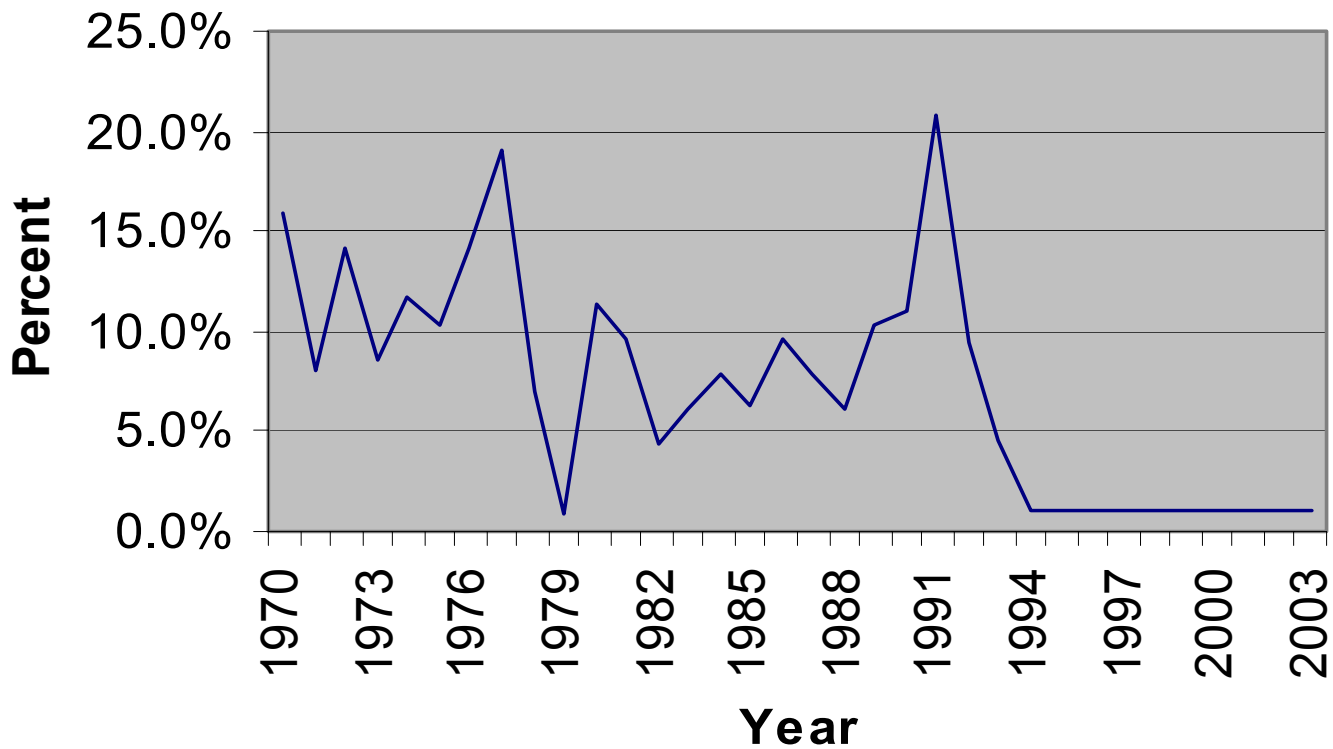
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## Ocean Salmon Fishery Harvest Rate on Oregon Coastal Natural Coho, 1970-Present



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## Freshwater Salmon Fishery Harvest Rate on Oregon Coastal Natural Coho, 1970-Present



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# Harvest Management History

- Oregon Plan Harvest Matrix
  - Amendment 13
- OCN Work Group Harvest Matrix



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## Original Oregon Plan Harvest Matrix

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

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 representative OPI hatchery stocks from the appropriate brood year. Low medium and high marine survival categories 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)*

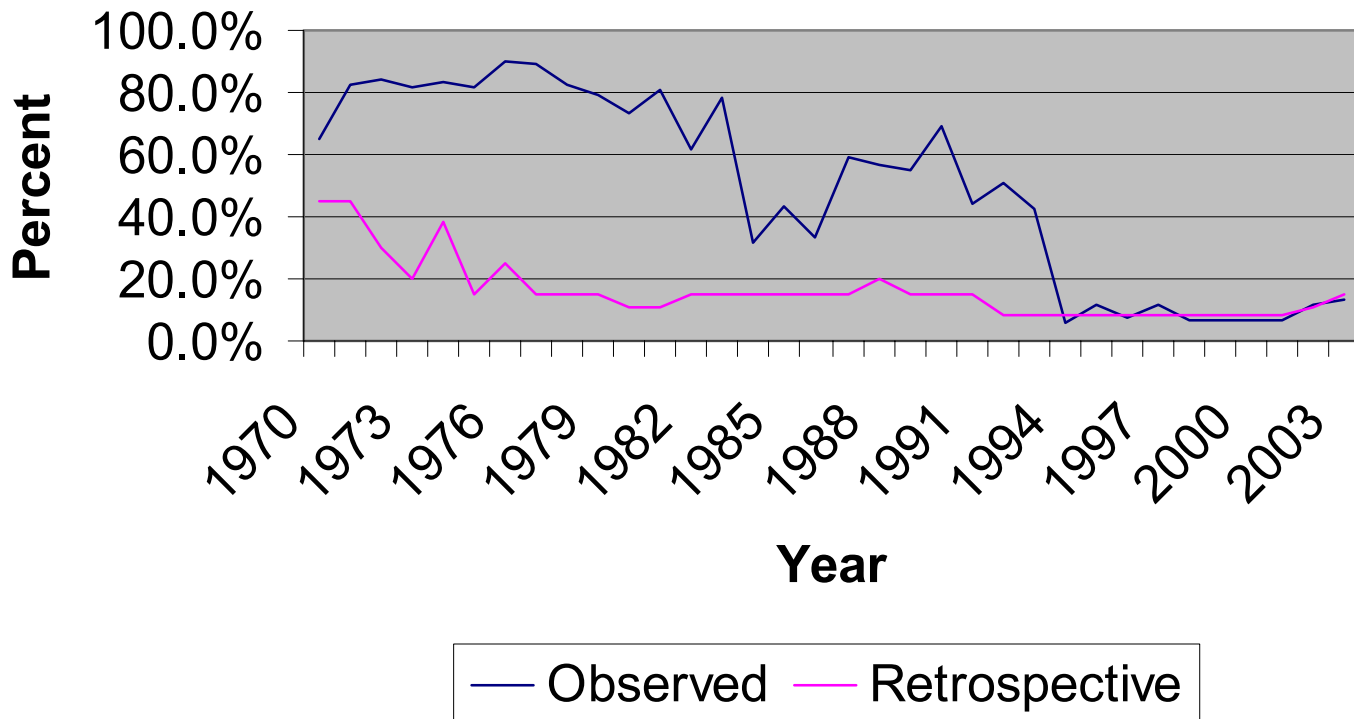
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## OCN Work Group Revised Harvest Matrix

Parent Spawner Status	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 ( $>0.0040$ )
<b>High</b> Parent Spawners $> 75\%$ of full seeding	<b>E</b> $\leq 8\%$	<b>J</b> $\leq 15\%$	<b>O</b> $\leq 30\%$	<b>T</b> $\leq 45\%$
<b>Medium</b> Parent Spawners $> 50\%$ & $\leq 75\%$ of full seeding	<b>D</b> $\leq 8\%$	<b>I</b> $\leq 15\%$	<b>N</b> $\leq 20\%$	<b>S</b> $\leq 38\%$
<b>Low</b> Parent Spawners $> 19\%$ & $\leq 50\%$ of full seeding	<b>C</b> $\leq 8\%$	<b>H</b> $\leq 15\%$	<b>M</b> $\leq 15\%$	<b>R</b> $\leq 25\%$
<b>Very Low</b> Parent Spawners $> 4$ fish per mile & $\leq 19\%$ of full seeding	<b>B</b> $\leq 8\%$	<b>G</b> $\leq 11\%$	<b>L</b> $\leq 11\%$	<b>Q</b> $\leq 11\%$
<b>Critical</b> Parental Spawners $\leq 4$ fish per mile	<b>A</b> $0 - 8\%$	<b>F</b> $0 - 8\%$	<b>K</b> $0 - 8\%$	<b>P</b> $0 - 8\%$

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



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End

	<b>Marine Survival Index</b> (based on return of jacks per hatchery smolt)			
	<b>Extremely Low</b> ( $<0.0008$ )	<b>Low</b> ( $0.0008$ to $0.0014$ )	<b>Medium</b> ( $>0.0014$ to $0.0040$ )	<b>High</b> ( $>0.0040$ )
<b>Parent Spawner Status</b> <sup>1/</sup>				
<b>High</b> Parent Spawners $> 75\%$ of full seeding	<b>E</b> $\leq 8\%$	<b>J</b> $\leq 15\%$	<b>O</b> $\leq 30\%$	<b>T</b> $\leq 45\%$
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<b>Critical</b> <sup>2/</sup> Parental Spawners $\leq 4$ fish per mile	<b>A</b> 0 - 8%	<b>F</b> 0 - 8%	<b>K</b> 0 - 8%	<b>P</b> 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.

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