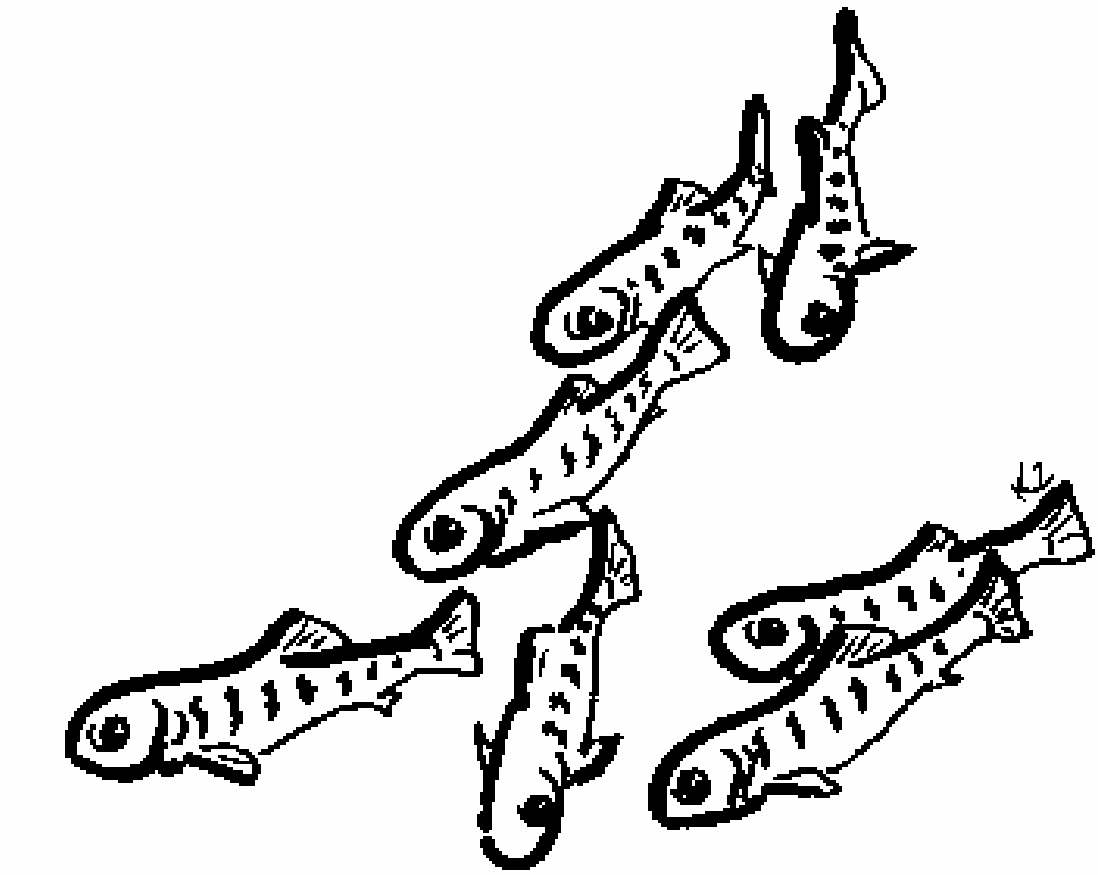
Coho



Coastal Coho

Existing Populations

The Coastal Coho SMU consists of 67 populations (Table 6). Of the 67 populations, 19 are identified as independent (ODFW 2005). The area encompassed by the independent and potentially independent populations makes up 95% of the habitat used by coho within the SMU (ODFW Coho distribution data). The remaining 48 populations are considered dependent populations. Little data is available from the dependent populations and because it is believed that these populations rely on seeding from independent populations making an assessment of their status is difficult. For the purposes of this assessment, the status of the SMU was based upon data available from the 19 independent and potentially independent populations. It is likely that the health of these populations drives the health of the SMU. None of the 19 independent or potentially independent populations are extinct.

Table 6. Population list and existence status for the Coastal Coho SMU.

Exist	Independent Population	Description (*Dependent populations*)
Yes	Necanicum	Necanicum River basin. (*Arch Cape, Asbury, Austin, Red Rock, Ecola, Canyon, Indian creeks*)
Yes	Nehalem	Nehalem River basin. (*Spring, Short Sand creeks*)
Yes	Tillamook	All tributaries to Tillamook Bay. (*Netarts Bay, Watseco creeks*)
Yes	Nestucca	Nestucca River basin. (*Neskowin, Sand, Rover creeks*)
Yes	Salmon	Salmon River basin.
Yes	Siletz	Siletz River basin. (*Rocky Creek, Depoe Bay Creek, Fogarty Creek, Schoolhouse Creek, Devils Lake*)
Yes	Yaquina	Yaquina River basin. (*Theil, Moore, Grant, Henderson, Big, Moolack, Coal, Wade, Spencer, Johnson creeks*)
Yes	Beaver	Beaver Creek basin.
Yes	Alsea	Alsea River basin. (*Yachats River, Vingie Creek, Big Creek, Little Creek*)
Yes	Siuslaw	Siuslaw River basin. (*Sutton, Berry, Cape, Blowout, China, Big, Rock, Squaw, Tenmile, Bob, Cummins, and Gwynn creeks*)
Yes	Upper Umpqua	Umpqua River basin upstream of, and including, Elk Creek.
Yes	Lower Umpqua	Umpqua River basin, including Smith River, upstream to mouth of Elk Creek. (*Threemile Creek*)
Yes	Tahkenitch	Tributaries to Tahkenitch Lake.
Yes	Siltcoos	Tributaries to Siltcoos Lake.
Yes	Tenmile	Tributaries to Tenmile and Eel Lakes.
Yes	Coos	Coos River basin.
Yes	Coquille	Coquille River basin. (*Twomile, Johnson creeks*)
Yes	Floras	Floras Lake basin.
Yes	Sixes	Sixes River basin.

Habitat Use Distribution

Coastal coho habitat use was evaluated by examining the percent occurrence of spawners in spawning survey sites. Percent occurrence of spawners was assessed using data from stratified random sample (SRS) spawner surveys. SRS Surveys are conducted at randomly selected reaches throughout the known distribution of coho spawning. Examining the percent of those reaches where spawning is observed provides an estimate of the annual distribution of spawners. A reach was considered occupied if the spawner density of naturally-produced spawners was equal to or greater than one fish per mile. The occupancy rate within a population was determined by calculating the percentage of reaches surveyed within the population that were occupied. Data were not yet available since 2004.

Though adult spawner data were used to evaluate the distribution criterion, sampling of juvenile coho throughout the SMU also indicate that naturally-produced fish consistently are distributed throughout greater than 50% of the available habitat (Jepsen and Rodgers 2004; Rodgers 2002; Rodgers 2001; Rodgers 2000).

Distribution was also assessed by examining the availability of current habitat in comparison to historic habitat. Assessments based on current vs. historic habitat provide a limited estimate of habitat losses. First, migration-only areas sometimes represent habitat that was historically suitable, particularly for rearing. However, it is unclear for what fraction of the migration-only areas this was the case. Second, analyses of distribution were based on 1:100,000 hydrography although coho distribution includes many smaller streams that show up only on a 1:24,000 scale that is not currently available. Thus, such analyses do not completely represent the potential loss of small stream habitat, for instance where a culvert may block the upper portions of headwater streams. Third, habitat that is still available may not provide for all uses it historically provided, such as over-wintering habitat. Finally, this method does not account for lost freshwater wetland and saltwater marsh habitat. Christy (2004) estimated that 74% of these types of habitat have been lost in basins within this SMU since 1850. Losses in individual basins ranged from 0% to 91%. These types of habitat may be critical to juvenile coho rearing and are not captured in our assessments based on accessible and inaccessible freshwater spawning and rearing habitat.

Table 7. Habitat accessibility data used in evaluating interim criteria for the Coastal Coho SMU.

	Accessible	Inaccessible	Percent	% of Sample Reaches Used					No. Years
Population	(mi.)	(mi.)	Accessible	1999	2000	2001	2002	2003	>50%
Necanicum	67	0	100%	73%	89%	100%	100%	89%	5
Nehalem	647	0	100%	73%	76%	82%	88%	97%	5
Tillamook	351	9	97%	63%	52%	72%	85%	91%	5
Nestucca	202	0	100%	47%	59%	86%	85%	95%	4
Salmon	54	0	100%	75%	0%	0%	100%	60%	3
Siletz	245	0	100%	91%	80%	82%	91%	100%	5
Beaver	34	0	100%	75%	100%	100%	100%	100%	5
Yaquina	231	0	100%	82%	70%	100%	100%	100%	5
Alsea	337	0	100%	79%	54%	82%	92%	100%	5
Siuslaw	684	0	100%	71%	79%	88%	86%	100%	5
Upper Umpqua	1,380	59	95%	55%	42%	73%	73%	69%	4
Lower Umpqua	521	0	100%	84%	77%	91%	98%	92%	5
Tahkenitch	36	0	100%	100%	100%	100%	100%	100%	5
Siltcoos	70	0	100%	75%	80%	67%	75%	100%	5
Tenmile	77	0	100%	67%	100%	90%	100%	100%	5
Coos	402	0	100%	89%	69%	97%	97%	94%	5
Coquille	534	2	100%	65%	78%	92%	84%	91%	5
Floras	60	0	100%	75%	100%	100%	67%	67%	5
Sixes	58	0	97%	*Assumed same as Floras*					*Pass*

Abundance

Estimates of full seeding levels are available for most of the independent and potentially independent coastal coho population based on habitat analyses (Nickelson 1998). Values used as the full seeding level were those presented as "Spawners Needed to Produce Maximum Smolts" by Nickelson (1998). Nickelson (1998) computed this metric under low (3%), moderate (5%), and high (10%) marine survival rates. We used those calculated under a marine survival of 5% (estimates provided by T. Nickelson, ODFW, pers. comm.). Full seeding estimates were not available for the Sixes, Floras, and Beaver populations. See the "Population Details" section for further discussion on the assessment of these populations. Abundance estimates for coastal coho populations were derived from SRS estimates made by ODFW (pers. comm., ODFW, Kelly Moore, 8/9/05).

Pre-marine harvest abundance was calculated based on annual coastwide Oregon Coast Natural (OCN) harvest rates to correct for the effects of highly variable fishing rates and to facilitate comparison of abundance estimates over time. Estimates of pre-harvest abundance were incorporated into the abundance graph of the SMU summary.

Table 8. Abundance estimates (adults) used in evaluating interim criteria for the Coastal Coho SMU.

	Full Seeding	25% of	Abundance by Return Year					No. Years >25%
Population	Level	Full Seeding	2000	2001	2002	2003	2004	of Full Seeding
Necanicum	1,900	475	489	4,271	2,383	3,051	2,262	5
Nehalem	31,700	7,925	14,235	22,750	17,996	31,693	20,471	5
Tillamook	5,700	1,425	1,734	1,416	13,733	14,042	4,584	4
Nestucca	6,400	1,600	1,178	4,110	16,427	10,239	6,502	4
Salmon	1,900	475	0	0	583	118	1,758	2
Siletz	7,400	1,850	3,387	1,322	1,785	8,118	5,612	3
Beaver[a]	1,224	306	614	2,945	5,237	4,355	5,647	5
Yaquina	11,800	2,950	637	3,290	23,800	16,484	5,293	4
Alsea	21,100	5,275	3,363	2,888	9,107	10,281	6,328	3
Siuslaw	39,200	9,800	6,532	10,606	55,319	28,967	9,036	3
Upper Umpqua	47,148	11,787	7,164	22,381	17,802	14,683	21,771	4
Lower Umpqua	15,052	3,763	4,760	11,987	21,136	14,656	9,777	5
Tahkenitch	2,032	508	634	3,526	3,487	3,203	3,496	5
Siltcoos	2,806	702	3,835	5,104	4,749	6,628	8,025	5
Tenmile	3,160	790	8,278	11,039	13,861	6,260	7,166	5
Coos	14,600	3,650	4,704	32,954	33,068	25,649	22,046	5
Coquille	18,900	4,725	6,253	12,933	7,626	22,445	22,407	5
Floras[b]			*Outcome based on Sixes*					*Pass*
Sixes[c]	12	3	7	13	6	8	36	5

a. No estimate of full seeding available. Used 25% of average abundance as threshold. Average abundance based on abundance estimates generated by Chilcote et al. (2005) for the period 1980-2003 and 2004 estimate provided by ODFW (pers. comm., Kelly Moore, 8/9/2005).

b. Abundance data are inconclusive in determining assessment outcome. Assessment based on outcome of Sixes assessment. See "Population Details" for a complete explanation.

c. No estimate of full seeding available. Average abundance based on 16 years of data. Abundance presented as peak counts of live and dead fish.

Productivity

For coastal coho, productivity was estimated using SRS spawner abundance estimates from 1990-2004. Because coho adults are all three years of age and the incidence of jack (2-year-old fish) is low, recruits-per-spawner could easily be estimated by comparing spawner numbers at three year intervals.

Table 9. Productivity estimates used in evaluating interim criteria for the coastal coho SMU.

Population	Recent Complete Brood Years of Below Full Seeding	Productivity (R/S) Year 1	Year 2	Year 3	Year 4	Year 5	Years > 1.2
Necanicum	1996-2000	0.8	3.4	4.5	4.6	6.2	4
Nehalem	1997-2001	6.1	10.5	4.7	2.2	0.8	4
Tillamook	1997-2001	4.1	4.9	6.4	6.2	2.5	5
Nestucca	1997-2001	4.3	17.3	7.0	8.1	1.5	5
Salmon	1997-2001	0.0	0.0	3.4	0.3	2.0	2
Siletz	1997-2001	10.1	3.7	1.3	2.4	2.3	5
Beaver[a]	1996-98, 2000-2001	4.8	1.5	2.3	7.1	1.3	5
Yaquina	1997-2001	1.2	5.1	9.3	25.9	1.5	5
Alsea	1997-2001	3.6	1.7	4.4	3.1	1.6	5
Siuslaw	1997-2001	9.8	8.0	17.3	4.4	0.9	4
Upper Umpqua	1997-2001	2.6	2.6	2.5	1.0	0.5	3
Lower Umpqua	1997-2001	4.1	2.8	7.2	3.0	0.7	4
Tahkenitch	1994-97, 2000	1.7	1.7	2.3	0.3	5.1	4
Siltcoos	1989-90, 1992, 1994, 1997	0.2	2.2	11.5	1.9	1.4	4
Tenmile	1988-92	1.2	0.6	3.3	1.1	4.0	3
Coos	1996-2000	0.4	4.2	11.0	6.9	5.4	4
Coquille	1997-2001	1.1	5.4	2.9	3.6	1.4	4
Floras[b]	*Insufficient data – Outcome based on Sixes*						*Fail*
Sixes	1995-97, 1999-2000	12.7	0.8	1.2	1.0	1.1	2

a. Productivity evaluated in most recent five brood years of below 30 year average abundance.

b. Assessment outcome based on outcome for the Sixes. See "Population Details" for a complete explanation.

Reproductive Independence

Estimates of hatchery fractions on the spawning grounds for coastal coho populations were taken directly from data provided by ODFW (pers. comm., Kelly Moore, 8/9/05). ODFW estimated hatchery fractions based upon the relative rates of observations of adipose finclipped and non-finclipped adults during random spawning surveys. Hatchery releases were obtained from ODFW and related to hatchery spawner fractions to provide a context for interpretation in the SMU summary.

Table 10. Reproductive independence estimates used in evaluating interim criteria for the Coastal Coho SMU.

	% Spawning Fish of Hatchery Origin					Years
Population	**2000**	**2001**	**2002**	**2003**	**2004**	**≤10%**
Necanicum	0%	7%	3%	0%	6%	5
Nehalem	1%	9%	17%	3%	0%	4
Tillamook	23%	22%	2%	1%	6%	3
Nestucca	7%	6%	2%	1%	2%	5
Salmon	100%	100%	47%	93%	53%	0
Siletz	0%	46%	29%	4%	0%	3
Beaver	0%	32%	4%	0%	0%	4
Yaquina	0%	8%	0%	0%	2%	5
Alsea	0%	26%	2%	0%	0%	4
Siuslaw	0%	0%	1%	0%	0%	5
Upper Umpqua	53%	45%	28%	37%	25%	0
Lower Umpqua	2%	14%	3%	0%	1%	4
Tahkenitch	0%	0%	0%	0%	0%	5
Siltcoos	0%	0%	0%	0%	0%	5
Tenmile	0%	0%	0%	0%	0%	5
Coos	0%	4%	1%	1%	1%	5
Coquille	0%	17%	3%	1%	0%	4
Floras[a]	0%	3%	0%	0%	0%	5
Sixes[a]	0%	3%	0%	0%	0%	5

a. Estimates based on standard random survey estimates for both Sixes and Floras combined..

Hybridization

Hybridization has not been identified as an issue for coastal coho.

Population Details

Beaver Creek

A full seeding estimate for Beaver Creek was not available, so the abundance criterion could not be evaluated in a manner consistent with other populations in the SMU. Instead, the 30-year average natural abundance was estimated and 25% of that was the criteria threshold used. Abundance estimates were derived from Chilcote et al. (2005). Habitat conditions within the Beaver Creek basin support the contention that the population would likely pass the abundance criterion. The lower Beaver Creek basin is a low gradient area with significant amounts of "lake-like" habitat highly suitable for juvenile coho over-winter rearing.

Coquille

Data from SRS spawning surveys in 2001 indicated that the percentage of fish on the spawning ground that were hatchery origin was 17%. District ODFW biologists believe that this number was not representative of the entire basin, and was an artifact of the point that one of the spawning surveys was on Bear Creek. Bear Creek is very near to one of the hatchery juvenile acclimation sites and is likely to have an uncharacteristically high number of strays relative to other tributaries in the basin. The coho hatchery program is small at 50,000 smolts released per year.

Floras Creek

No estimate of full seeding was available for Floras Creek, and only seven years of spawner estimates and hatchery fractions are available. Abundance estimates specific to the Floras population are not available. ODFW estimates abundance for the Floras and Sixes populations combined. In addition, the abundance estimates have a low precision. The 95% confidence interval of the estimates for these populations is approximately two times larger than the abundance estimate itself. Some coho are observed during a standard fall Chinook spawning survey on Floras Creek, but not on a consistent basis. This survey may not be located in coho habitat so these data were not used for this assessment.

Todd Confer (ODFW, Gold Beach) stated that the Floras basin has higher quality coho habitat than that of the Floras/Sixes combined abundance estimates and that 75% of the coho production is in the Floras system. He cites more suitable over-wintering habitat in Floras than in the Sixes which allows for higher over-winter survival for juvenile coho. Based on this reasoning, we decided that the Floras should pass the abundance criterion since the Sixes passed this criterion. Likewise, since the Sixes failed productivity, so did the Floras.

For reproductive independence, estimates of hatchery fractions of fish observed during SRS coho surveys were used to assess the criterion. ODFW presents these estimates for the Sixes and Floras combined, so the same data-set was used for both populations.

Sixes

Occupancy estimates were not available for the Sixes, so the outcome was based on that of the Floras population.

Abundance estimates via SRS spawning surveys are only available for the past six years in the Sixes, and are made in conjuction with the Floras population. In addition, the abundance estimates have a low level of precision. The 95% confidence interval of the estimates for these populations is approximately two times larger than the abundance estimate itself. For this assessment, abundance in the Sixes was assessed using the sum of peak counts of live and dead

coho adults observed in two standard fall Chinook surveys in the Sixes basin. Those two surveys over-lap with coho habitat, and surveyors note coho observed.

No estimate of full seeding was available for this population, so 25% of the average peak count observed in standard fall Chinook surveys was used as the abundance criterion threshold. Standard surveys in the Sixes began in 1989, so the average abundance was based on 16 years of data. Peak count estimates from those surveys were not adjusted by hatchery-to-wild ratios prior to 1998 because no hatchery fraction estimates were available prior to then.

For reproductive independence, estimates of hatchery fractions of fish observed during SRS coho surveys were used to assess the criterion. ODFW presents these estimates for the Sixes and Floras combined, so the same data set was used for both populations.

Assessment Conclusions

This SMU includes 19 populations that were assessed in ocean tributaries from the Necanicum to the Sixes River. All of the six interim criteria were met by at least 80% of the populations. Until recently, escapements have been at or near record lows. However, numbers, distributions, and productivity have rebounded for most populations in the last four years following improved ocean productivity. These improvements have eased near-term risks, but it is not clear whether all underlying factors for the recent decline have been addressed or if this is just a temporary response.

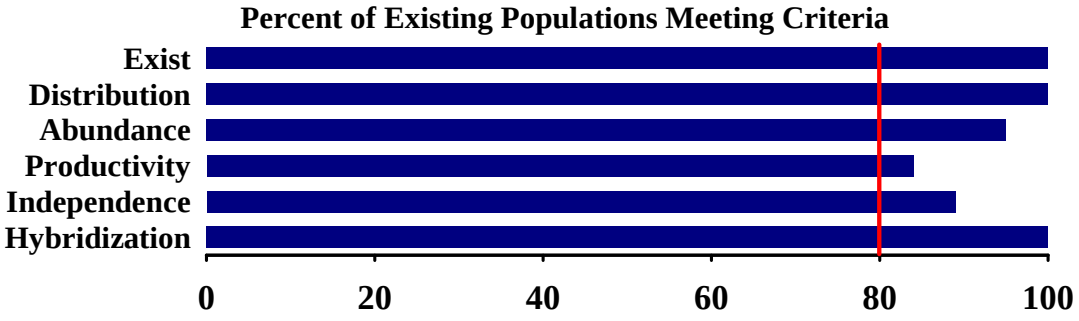
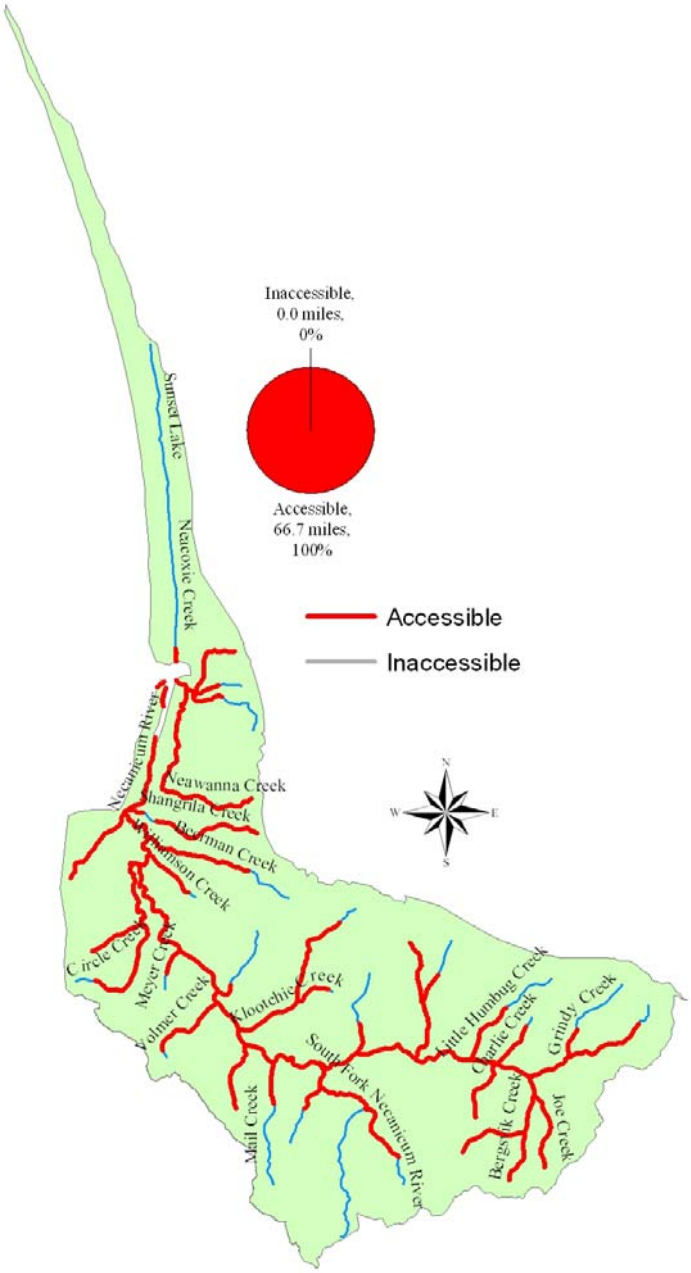
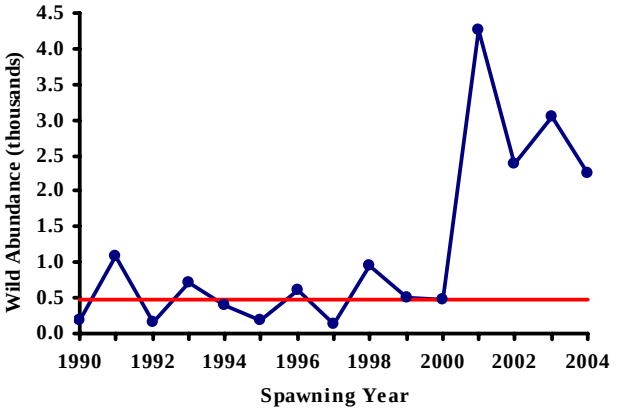
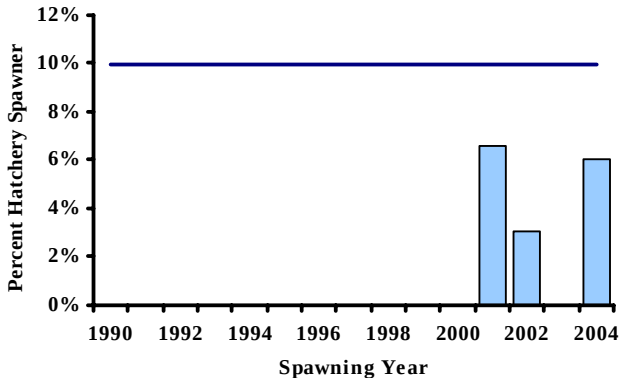


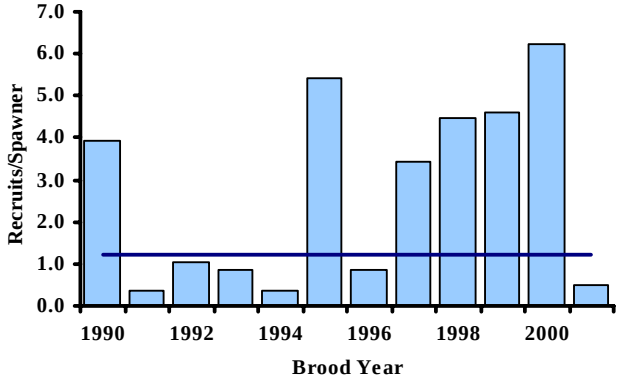
Figure 6. Assessment outcome for each of the six interim criteria with respect to the 80% threshold identified by the NFCP.

Necanicum – Coastal Coho







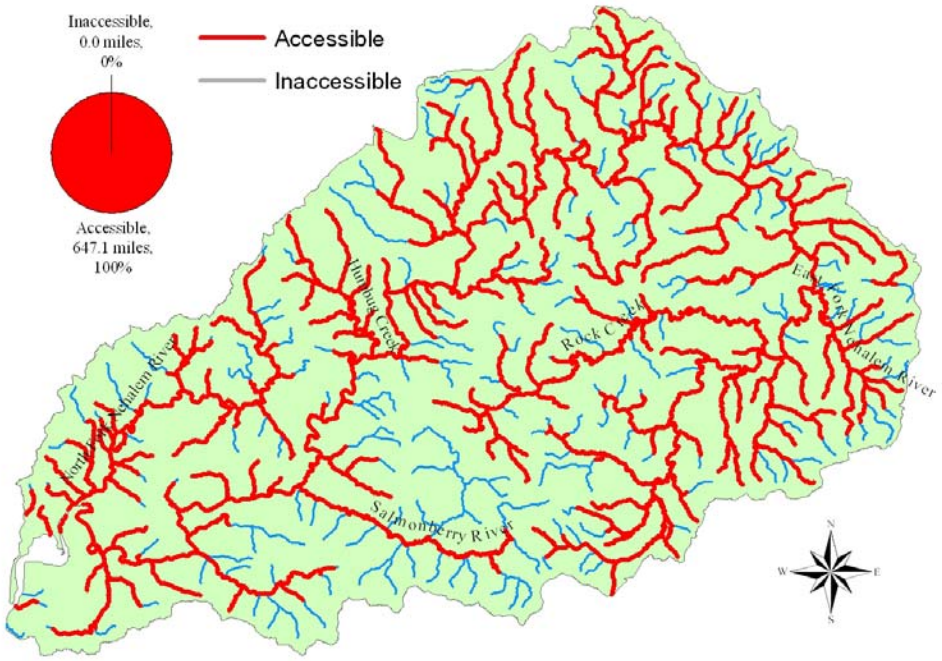


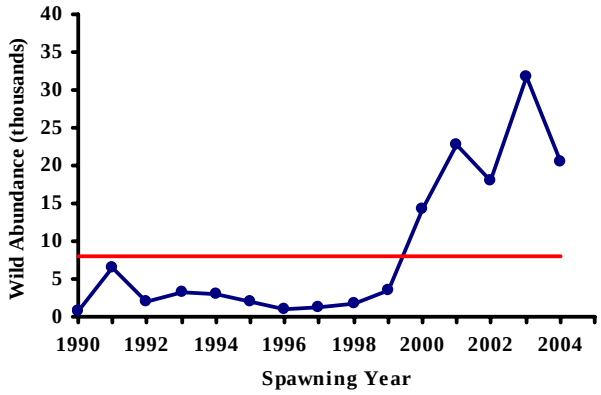
The Necanicum is the smallest coho producer in the north coast, and is among the smallest potentially independent populations in the SMU. The population passed each of the interim criteria. Landownership in the Necanicum is primarily state and private timberland. No hatchery releases have been made into the population in the last 13 years. Much of the habitat historically used by coho is still accessible today. Data from Ecola/Elk Creek were included in the assessment of the Necanicum population.

Assessment Outcome

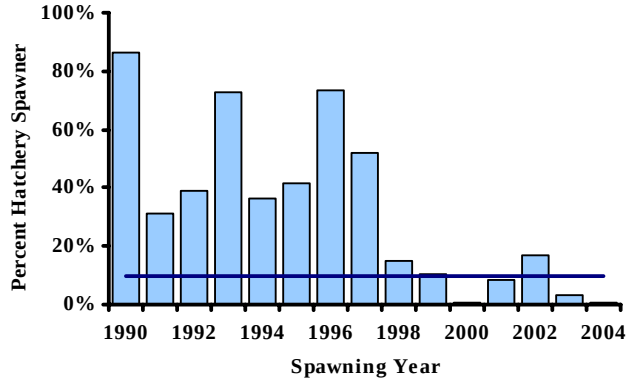
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

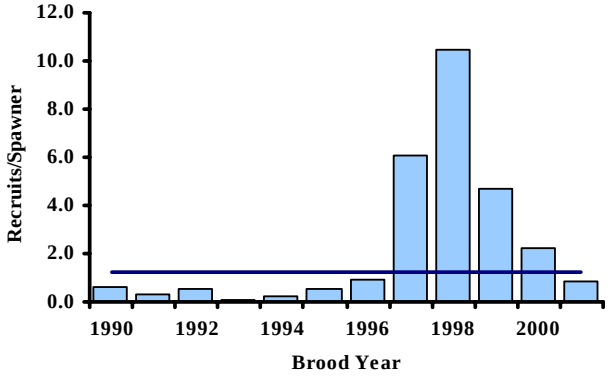
Nehalem – Coastal Coho





The Nehalem is one of the largest coho producers within the SMU. Current smolt releases of 100,000 are approximately one-sixth of releases through the 1990s. Hatchery fish contribution on the spawning ground has averaged 34% of natural spawners since 1990, but has been 10%or less in three of the last five yeaars. Much of the habitat historically used by coho is still accessible today. This population passed each of the interim criteria.

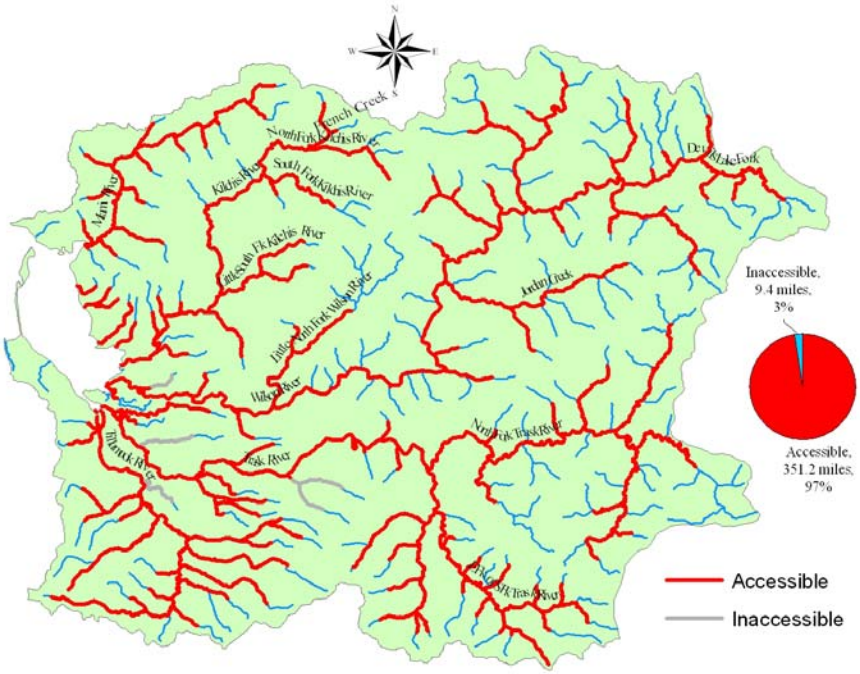


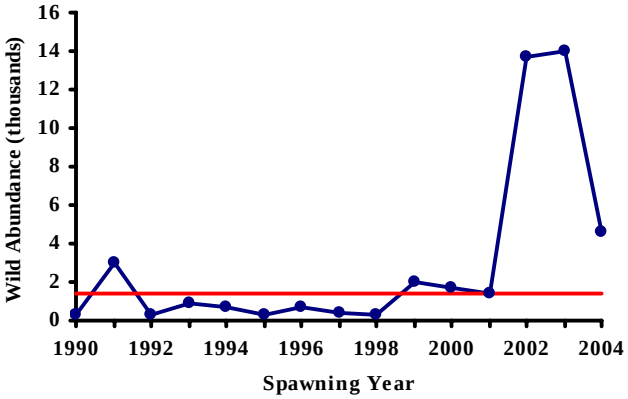


Assessment Outcome

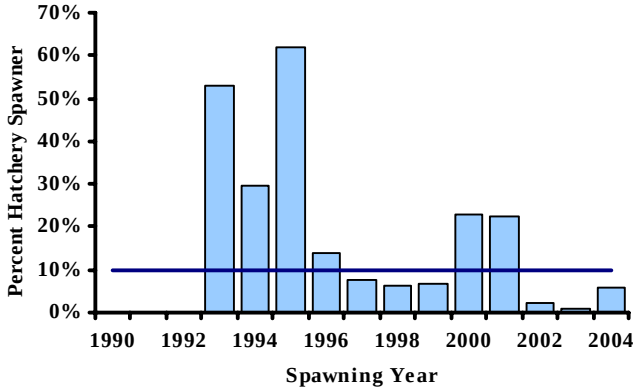
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

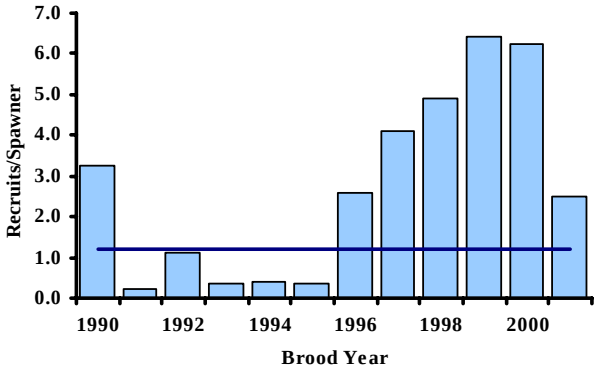
Tillamook – Coastal Coho





The Tillamook population consists of all the rivers emptying into Tillamook Bay and Netarts Bay including the Tillamook, Wilson, Trask, Kilchis and Miami rivers. While much of the upper watersheds of these rivers are held in state and industrial timberlands, the lower watersheds are marked by extensive agricultural and urban development. The Tillamook passed each of the interim criteria.

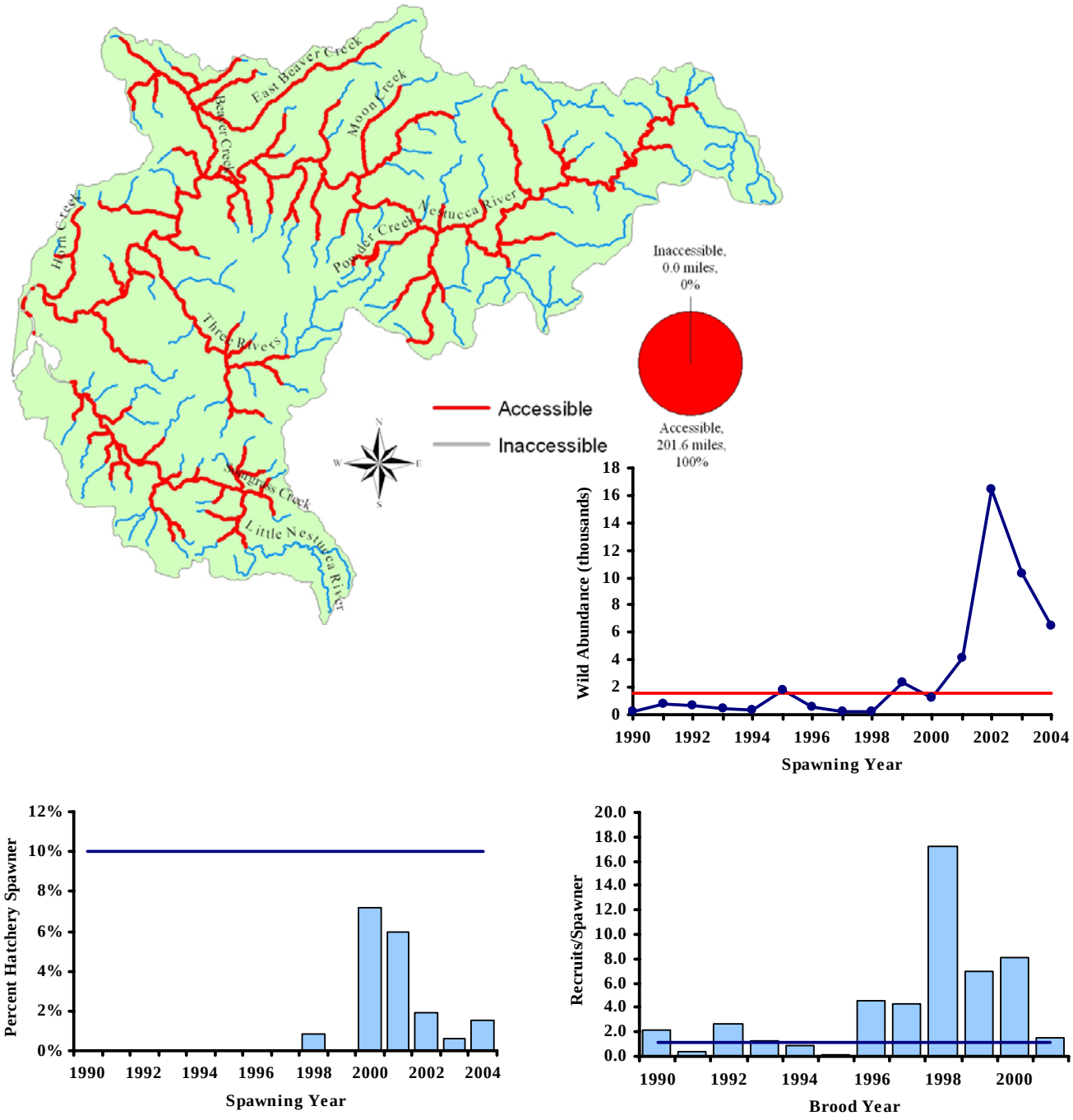




Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Nestucca – Coastal Coho

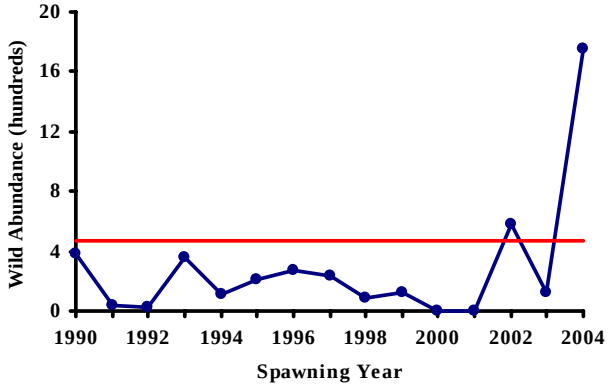


The Nestucca is the second smallest population in the north coast. Land use in the basin is primarily industrial timberlands in the upper watershed, and agriculture in the lower watershed. Much of the habitat historically used by coho is still accessible today. The Nestucca passed each of the interim criteria.

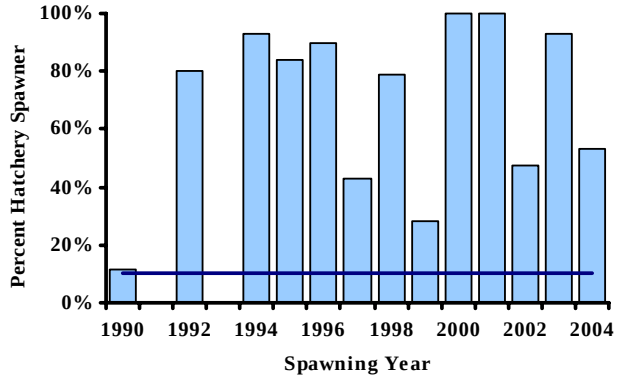
Assessment Outcome

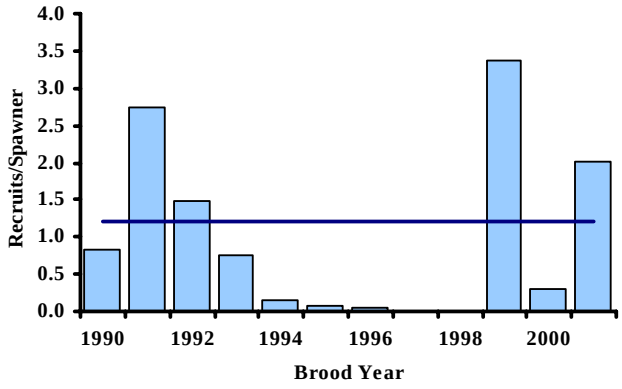
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Salmon – Coastal Coho



The Salmon is one of the smallest producers of coho in the SMU. Hatchery releases in the Salmon have consistently ranged between 200,000 and 500,000 smolts annually since 1990. In the same time period, hatchery spawners have been prevalent on the spawning grounds, and in 2000 all naturally-spawning fish in the basin were hatchery produced. Productivity in the Salmon is the lowest of populations in the SMU. The Salmon failed the abundance, productivity, and reproductive independence criteria.

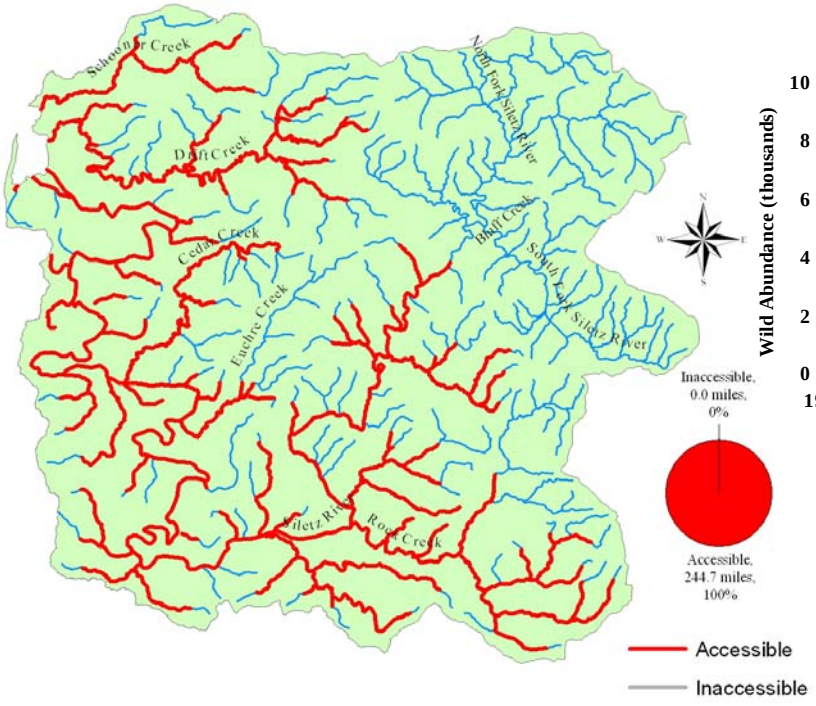


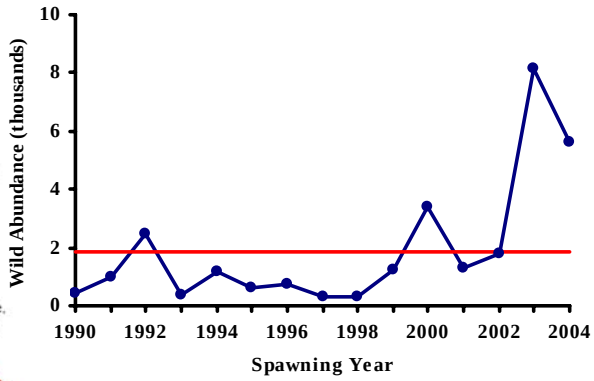


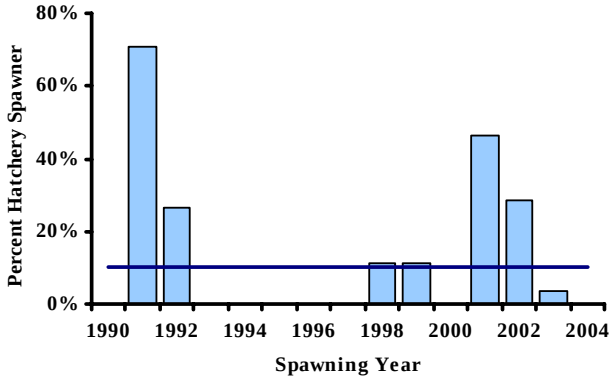
Assessment Outcome

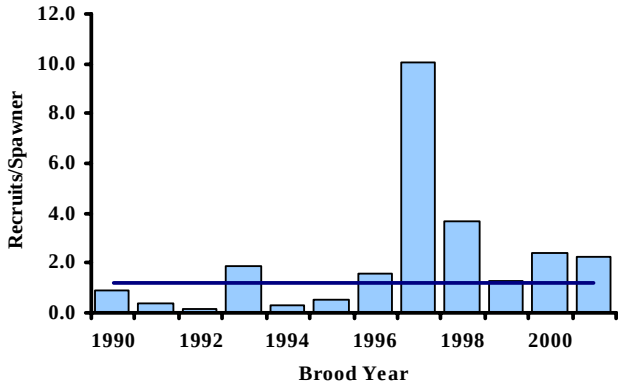
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Fail*	*Fail*	*Fail*	*Pass*

Siletz – Coastal Coho







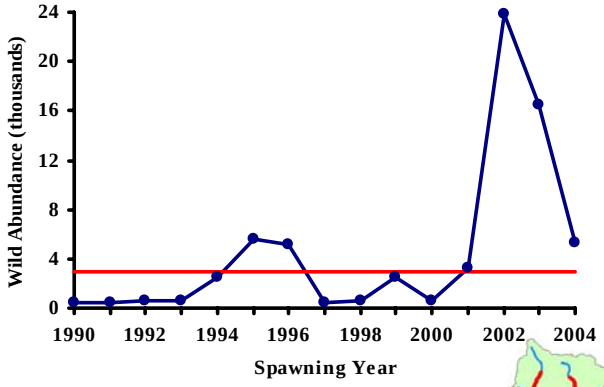


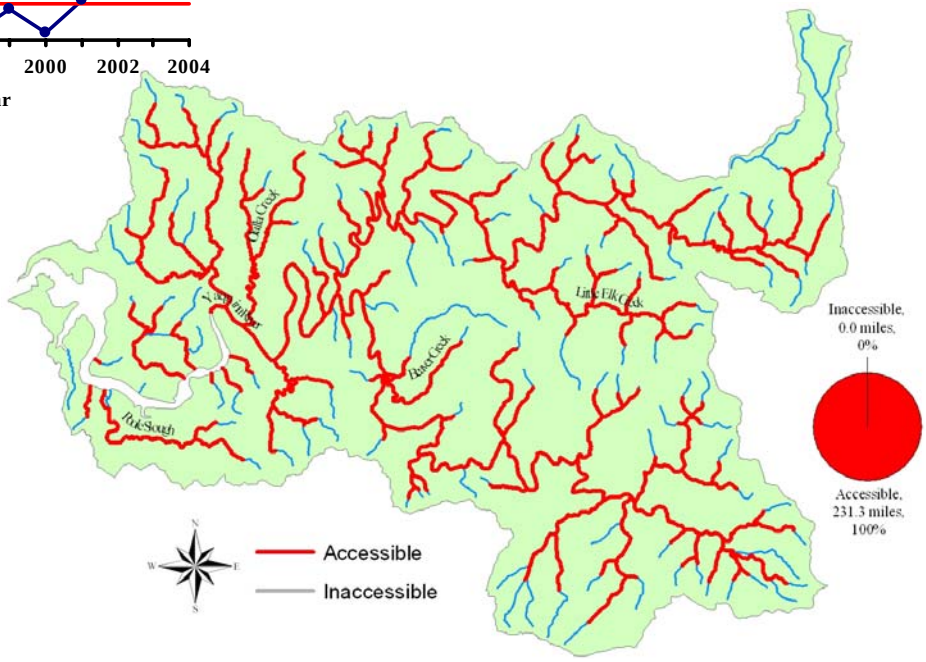
The Siletz produces numbers of coho typical of other basins in the mid-coast. While the Siletz was stocked with over one million coho smolts as recently as 1992, today no hatchery coho are planted in the basin. Much of the basin is held in managed timberland. This population passed each of the interim criteria.

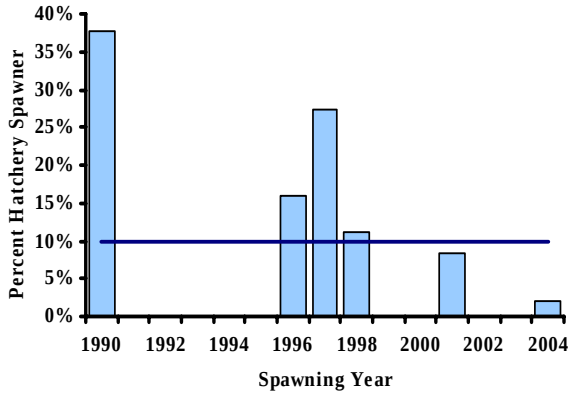
Assessment Outcome

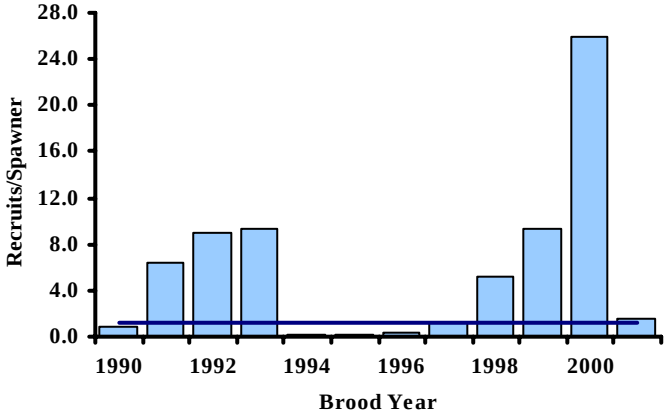
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Yaquina – Coastal Coho







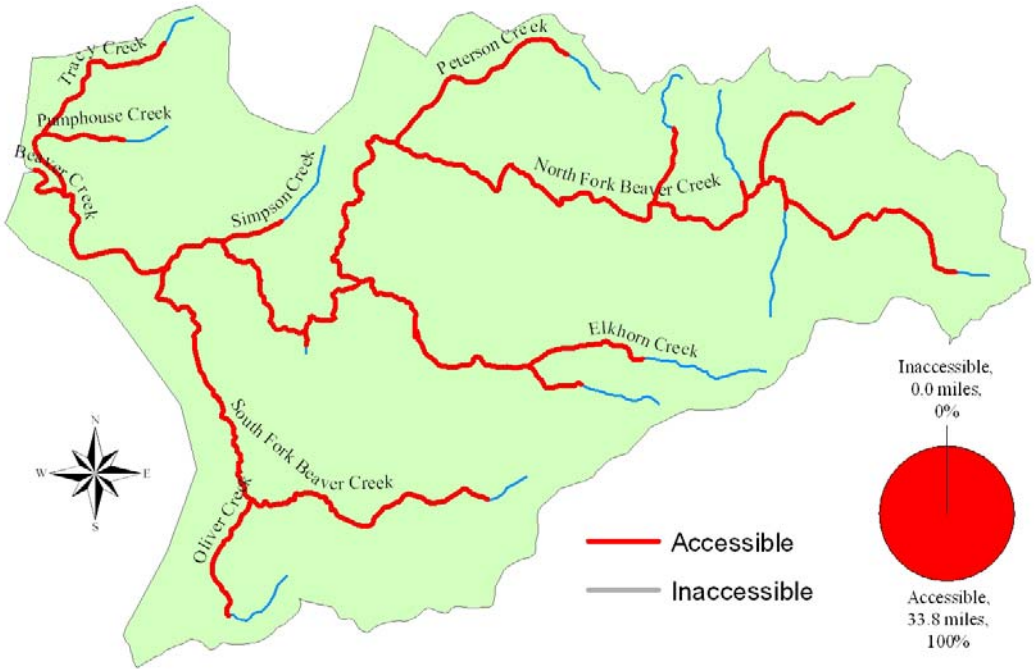


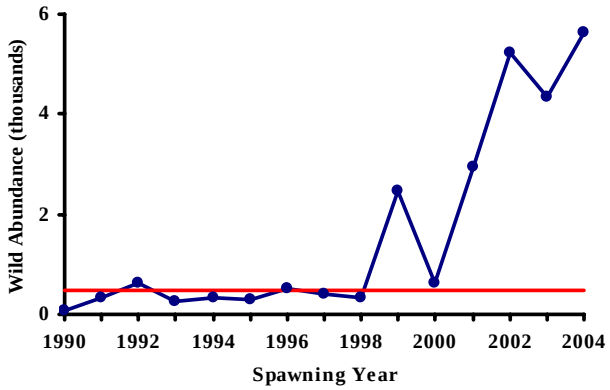
The Yaquina produces numbers of coho typical of other basins in the mid-coast. While the Yaquina was stocked with nearly three million coho smolts in 1990, today there are no coho planted in the Yaquina Basin. Much of the habitat historically used by coho is still accessible today. The Yaquina passed each of the interim criteria.

Assessment Outcome

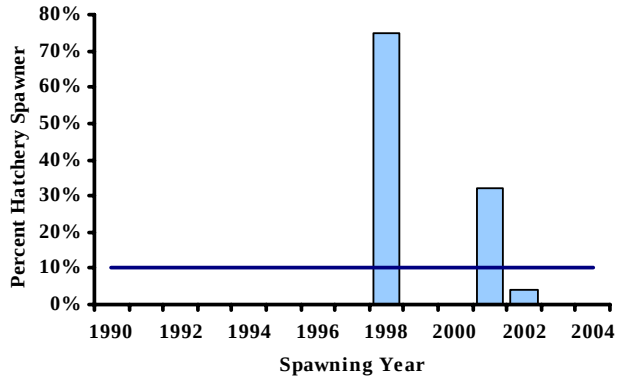
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

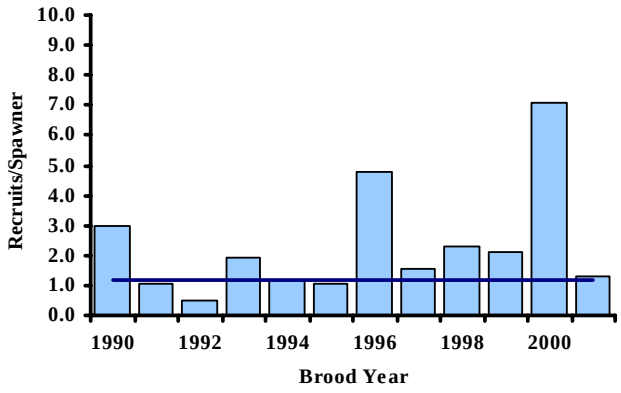
Beaver – Coastal Coho





The Beaver Creek population is one of the smallest coho producers in the SMU. Beaver Creek has the least amount of habitat currently used of any population on the Oregon coast. Habitat within the Beaver Creek Basin is favorable to coho production because there is a large amount of lower basin slow-water, pond-like habitat. This type of habitat provides optimal over-wintering refuge for juvenile coho. The Beaver population passed each of the interim criteria.

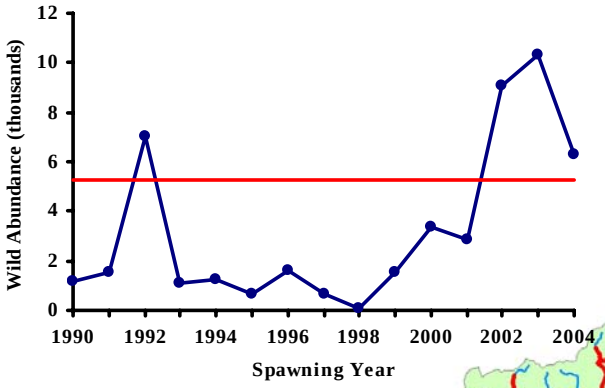


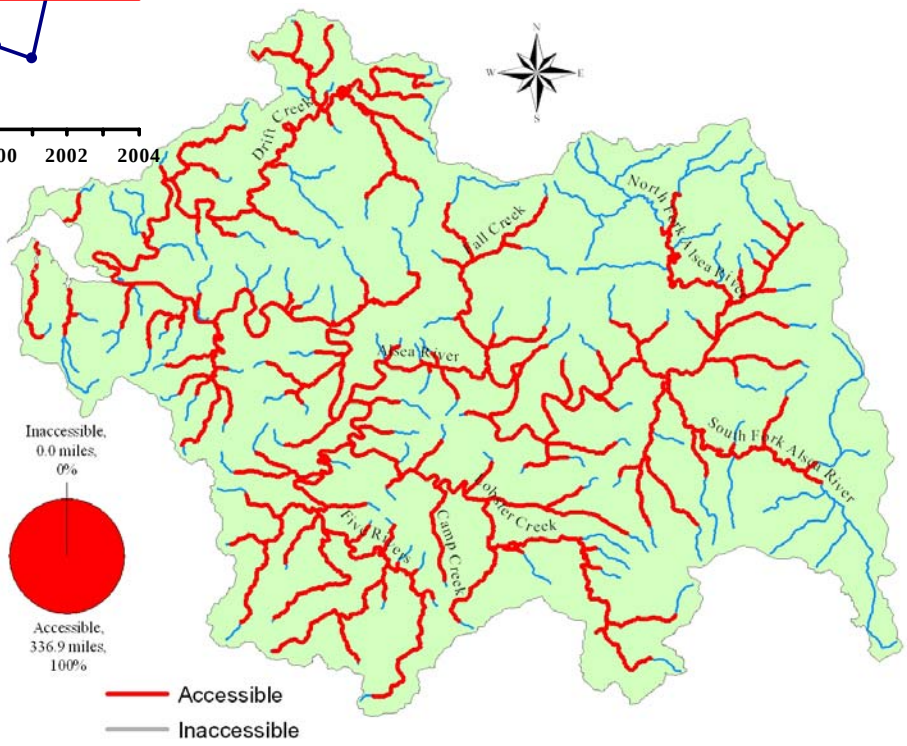


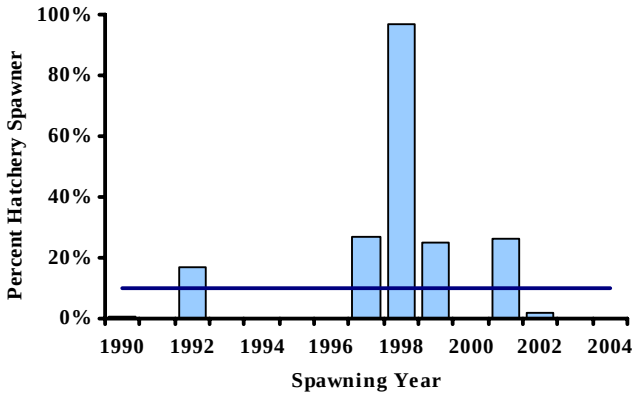
Assessment Outcome

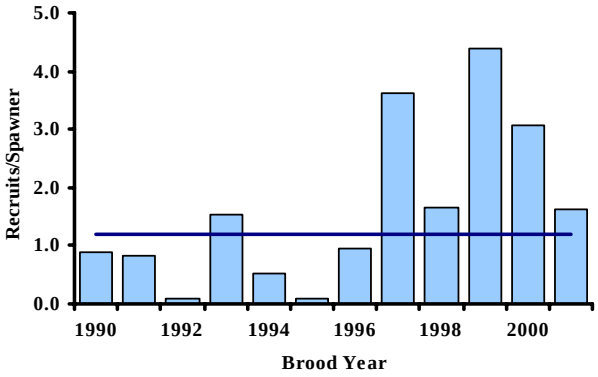
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Alsea – Coastal Coho







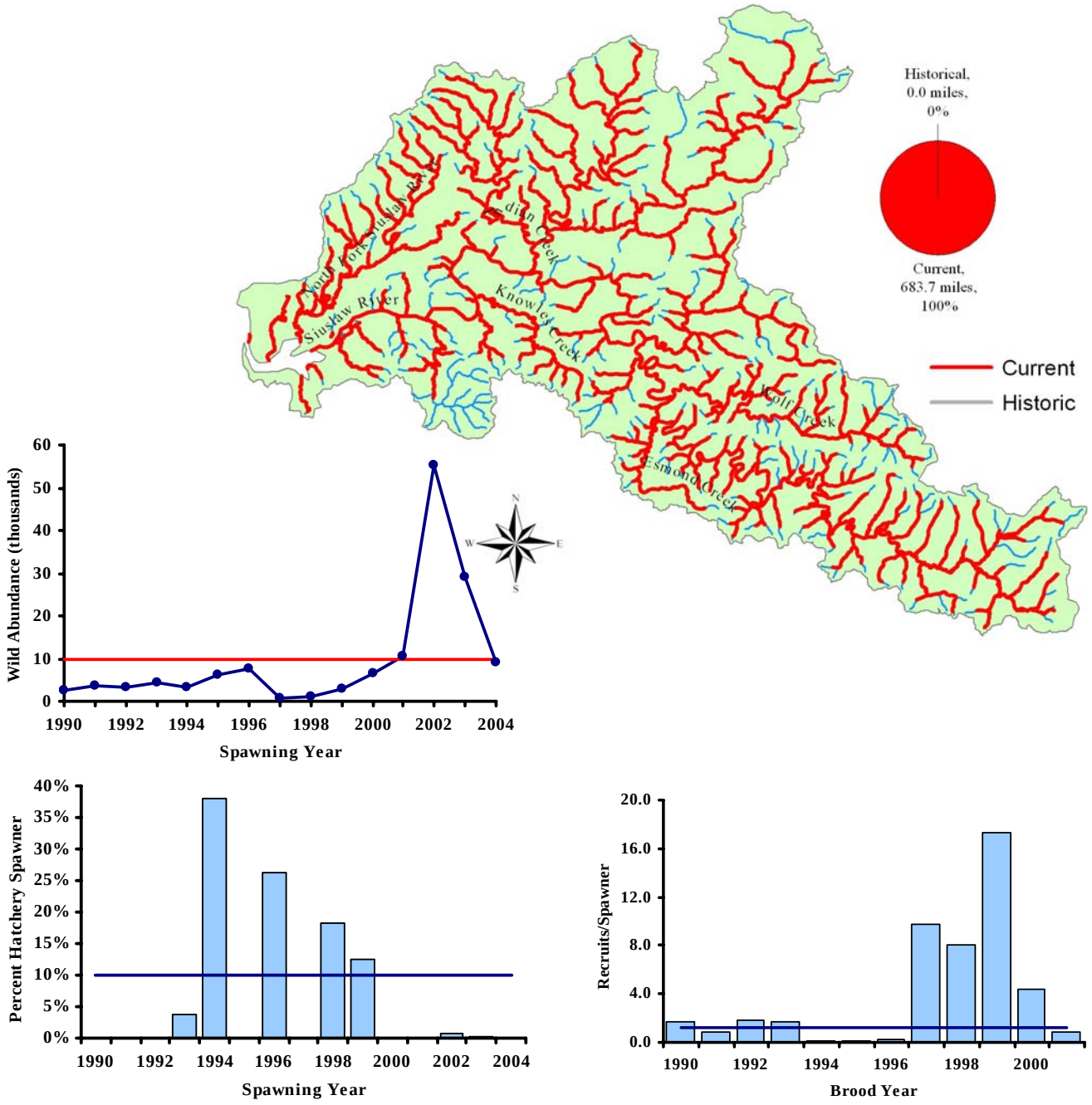


The Alsea produces numbers of coho typical of other basins in the mid-coast. While the Alsea was stocked with over one million coho smolts as recently as 1997, today there are no coho planted in the Alsea Basin. Much of the habitat historically used by coho is still accessible today. The Alsea passed all six criteria.

Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Siuslaw – Coastal Coho

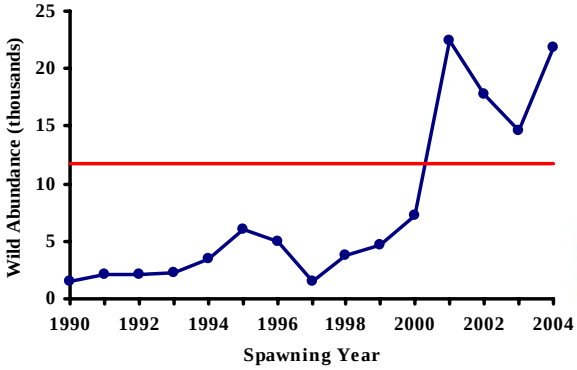


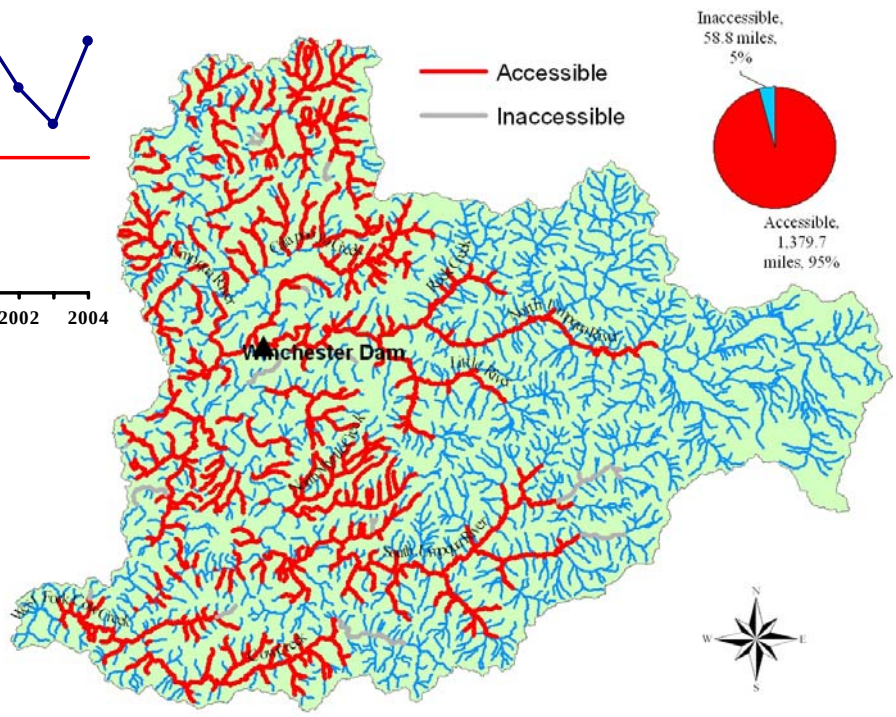
The Siuslaw is the largest coho producing basin in the mid coast. In 2002, the Siuslaw had a larger spawning escapement than any population within the Coastal SMU. A large portion of the Siuslaw is held in industrial and federal timberlands. Much of the habitat historically used by coho is still accessible today. The Siuslaw passed each of the interim criteria.

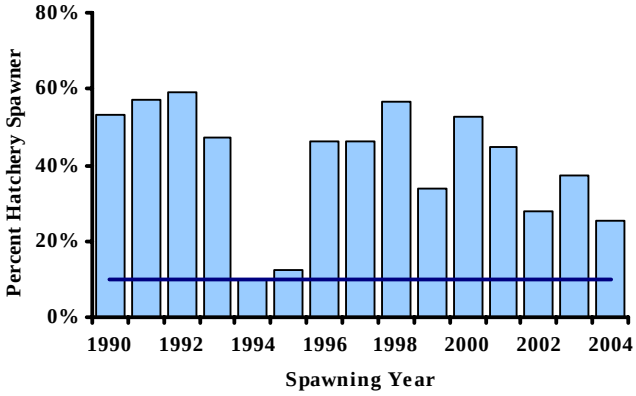
Assessment Outcome

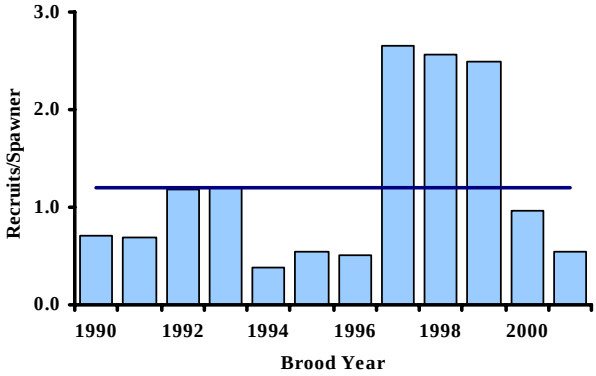
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Upper Umpqua – Coastal Coho







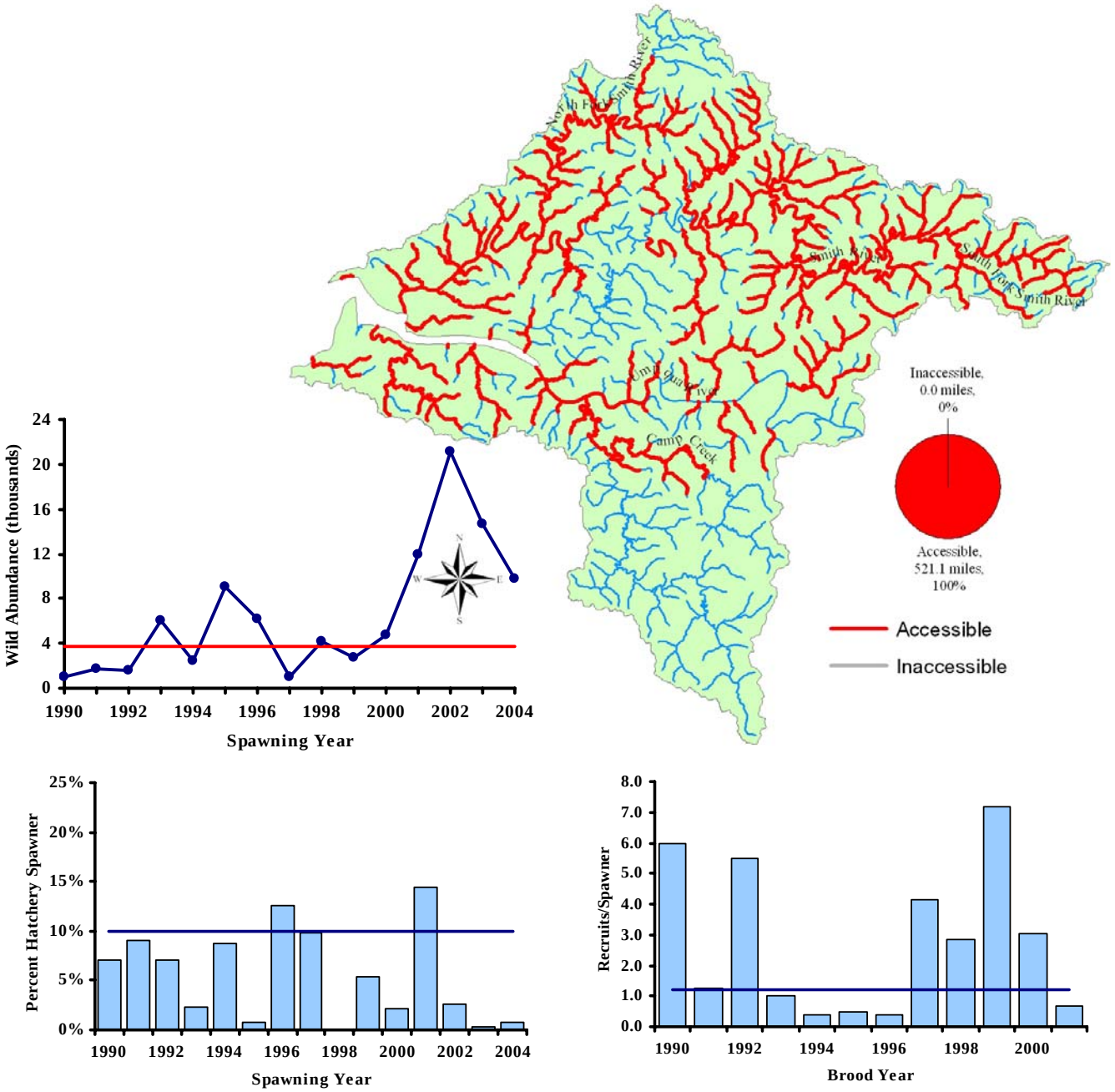


The Upper Umpqua is defined as the Umpqua basin above the mouth of the North Umpqua. The basin is primarily divided into two subbasins, the North Umpqua and the South Umpqua. The North Umpqua coho population has been monitored historically by counts at Winchester Dam since 1946. The South Umpqua is characterized by warm summer temperatures and a substantial smallmouth bass population. Both subbasins originate mainly in the Cascade Range. This population passed each of the interim criteria with the exception of reproductive independence.

Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Fail*	*Pass*

Lower Umpqua – Coastal Coho

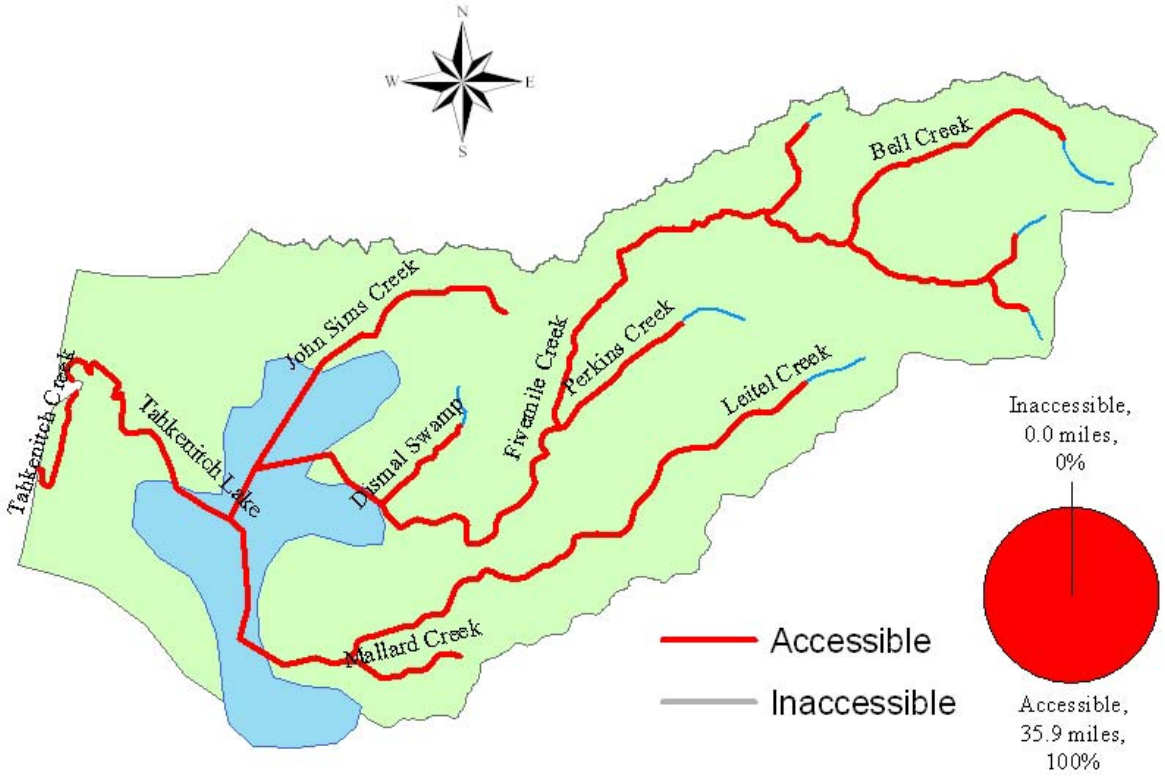


The Lower Umpqua includes the portion of the Umpqua basin below the mouth of the North Umpqua. In contrast to the Upper Umpqua which drains the Cascades, much of the lower Umpqua originates in the Coastal Range. The mainstem lower Umpqua supports a substantial smallmouth bass population and is characterized by warm summer temperatures. The lower Umpqua passed each of the interim criteria.

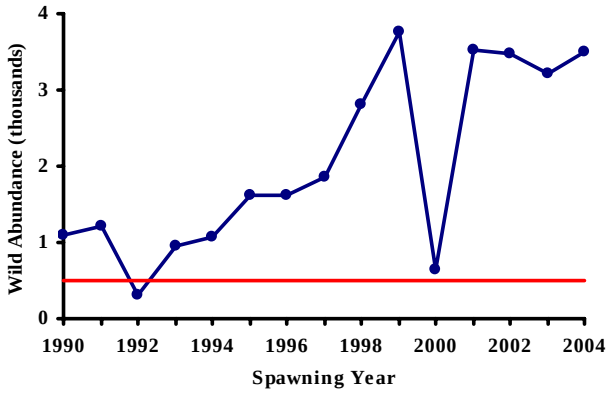
Assessment Outcome

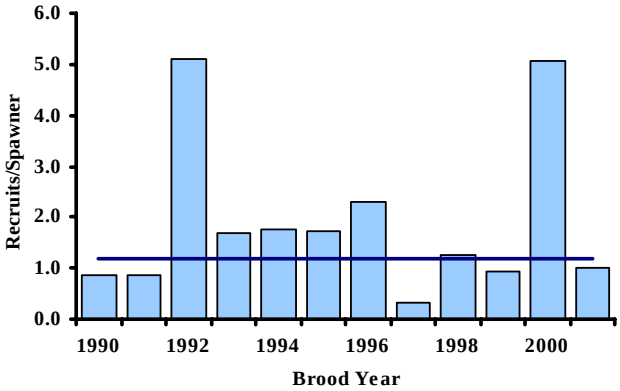
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Tahkenitch – Coastal Coho



Tahkenitch Lake is the smallest of three major coho producing lakes in the mid-south coast. The stable physical and biological environments provided by these lakes are highly suitable for over-winter rearing of juvenile coho salmon. Through the latter half of the twentieth century, as coho abundance declined in Oregon coastal rivers, abundance in Tahkenitch Lake remained relatively steady. This population passed each of the interim criteria.

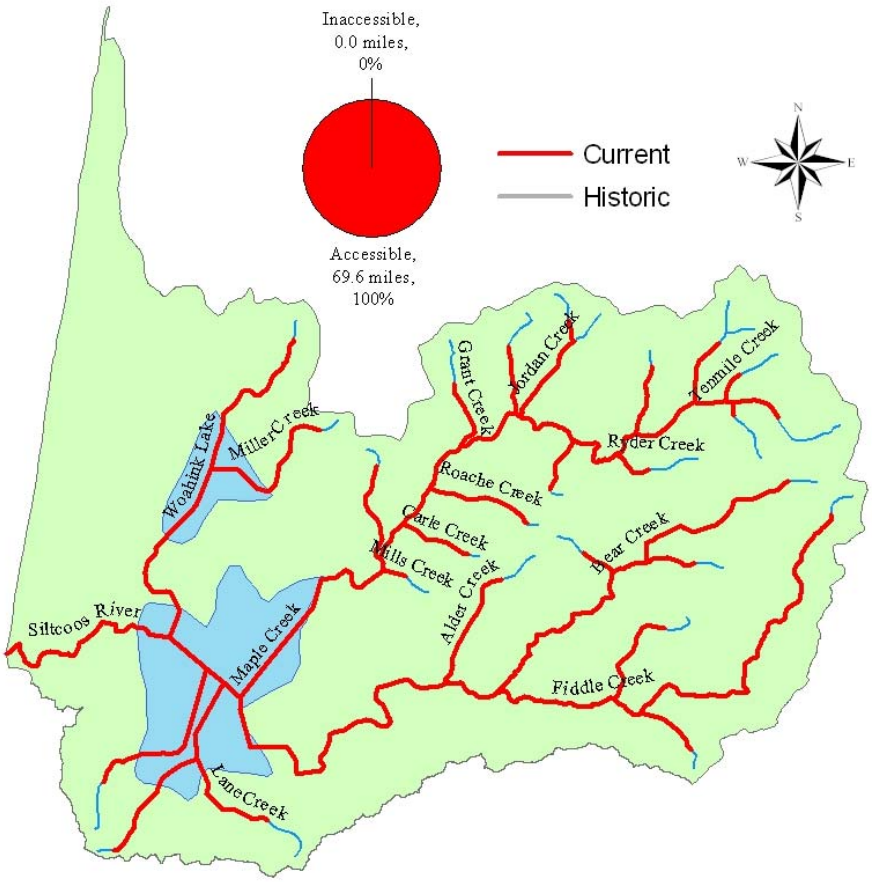


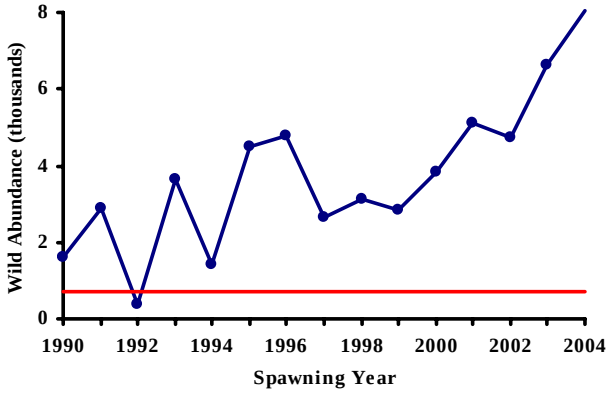


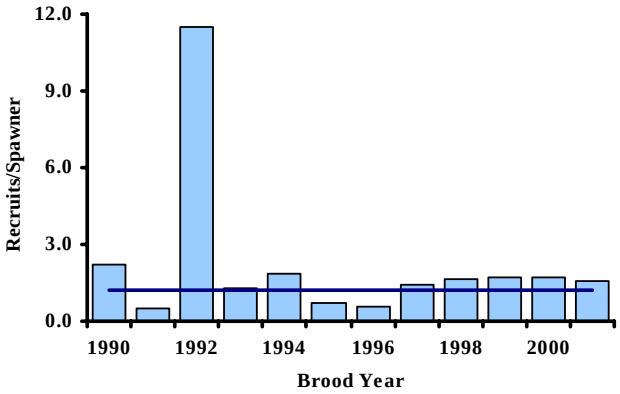
Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Siltcoos – Coastal Coho





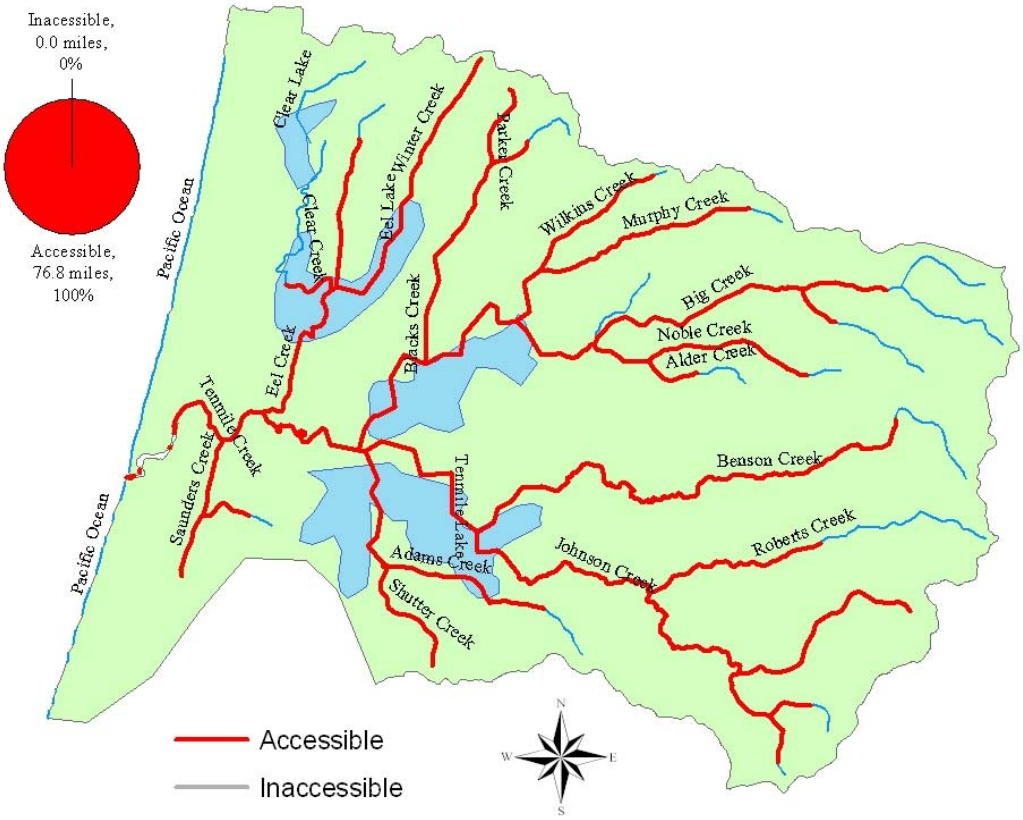


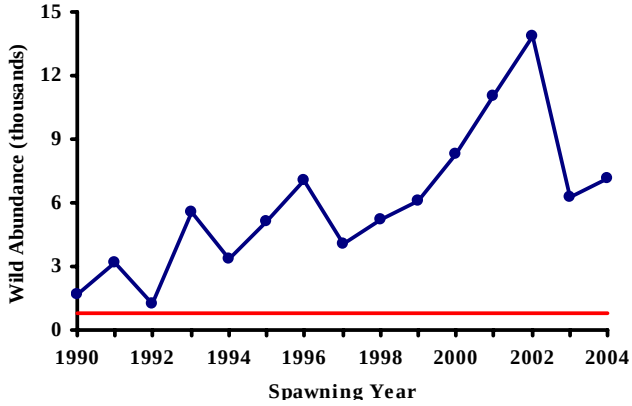
Siltcoos Lake is one of three major coho producing lakes in the mid-south coast. The stable physical and biological environments provided by these lakes are highly suitable for juvenile coho salmon. However, environmental alterations such as sedimentation, shallowing of lake arms, accelerated eutrophication, excess nitrification, and the introduction of non-native warmwater species have resulted in an environment less hospitable to coho rearing than historically existed. This population passed each of the interim criteria.

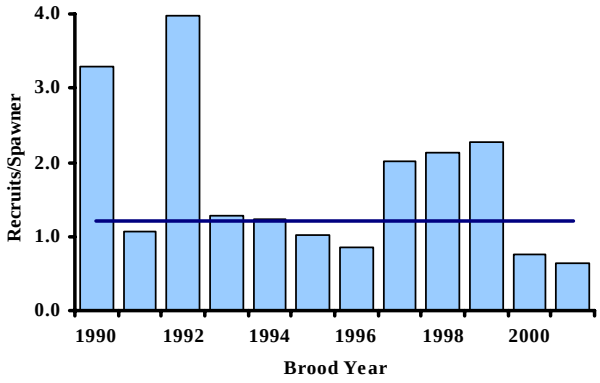
Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Tenmile – Coastal Coho





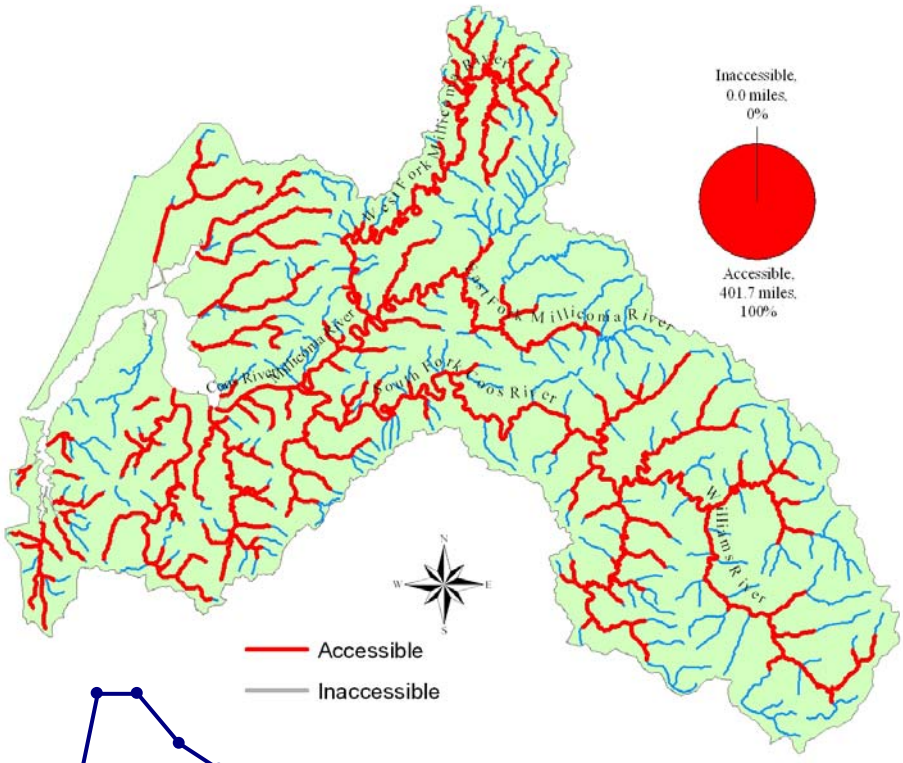


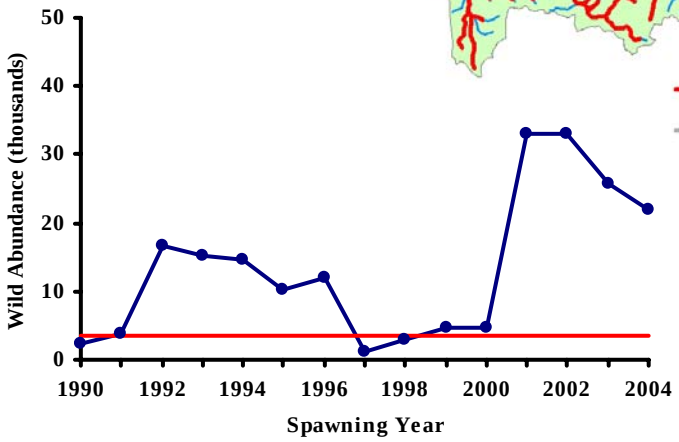
Tenmile Lake is one of three major coho producing lakes in the mid-south coast, and is the largest producer of those lakes. The stable physical and biological environments provided by these lakes are highly suitable for juvenile coho salmon. However, environmental alterations such as sedimentation, shallowing of lake arms, accelerated eutrophication, excess nitrification, and the introduction of non-native warmwater species have resulted in an environment less hospitable to coho rearing than historically existed. This population passed each of the interim criteria.

Assessment Outcome

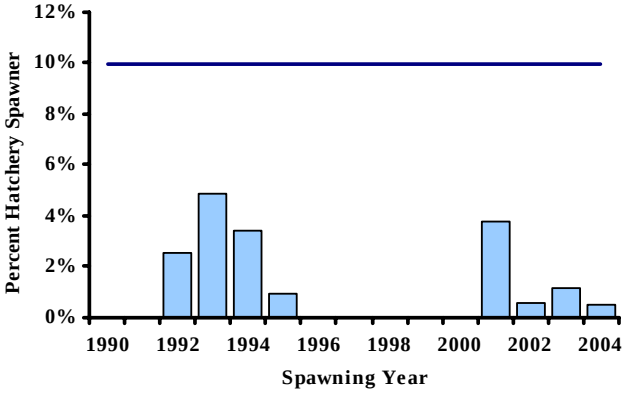
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

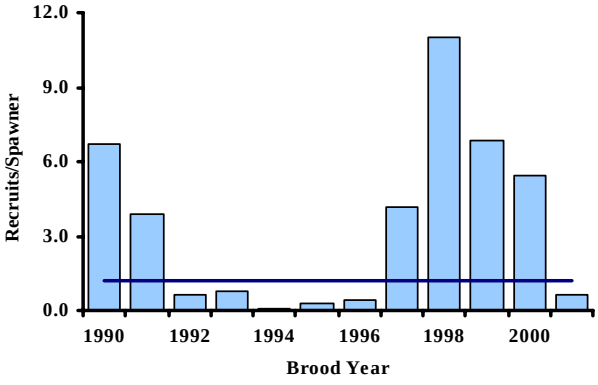
Coos – Coastal Coho





The Coos is the largest coho producing population in the mid-south coast. The Coos was historically stocked with millions of juveniles annually through private hatcheries releases as late as 1989. Today, releases range between 50,000 and 150,000 smolts and originate at state-operated hatcheries. The Coos passed each of the interim criteria.

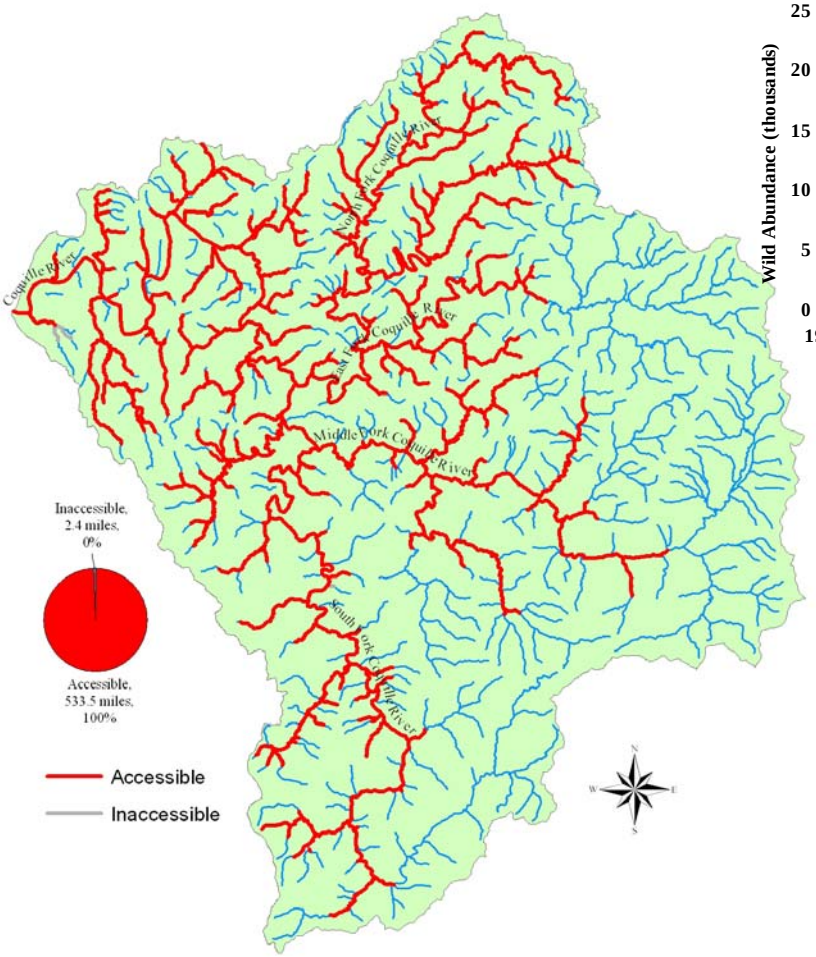


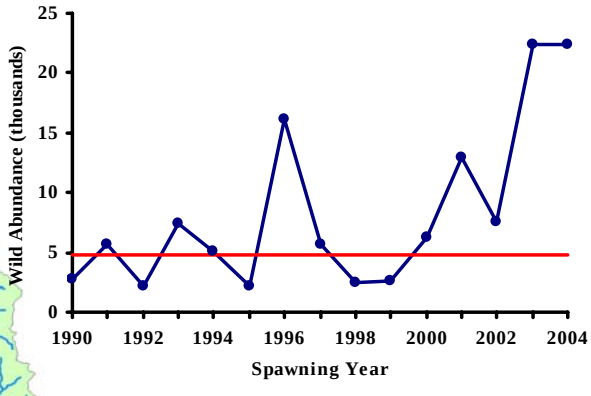


Assessment Outcome

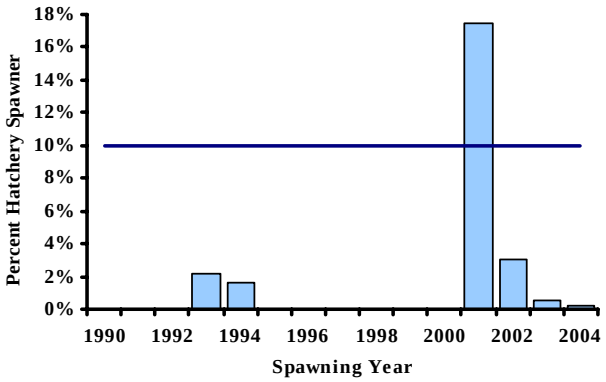
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

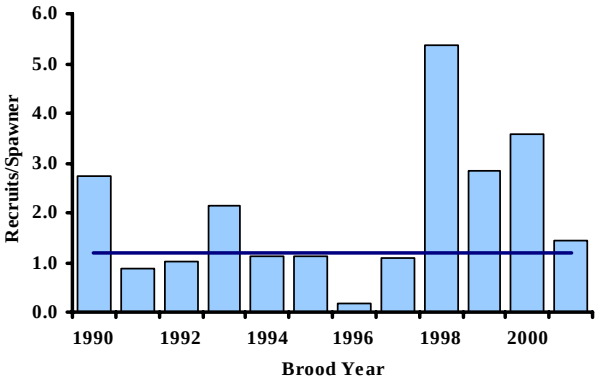
Coquille – Coastal Coho





The Coquille is one of the two main coho producing rivers in the mid-south coast. Coho distribution throughout the basin is similar to historic distribution. This population passed each of the interim criteria.

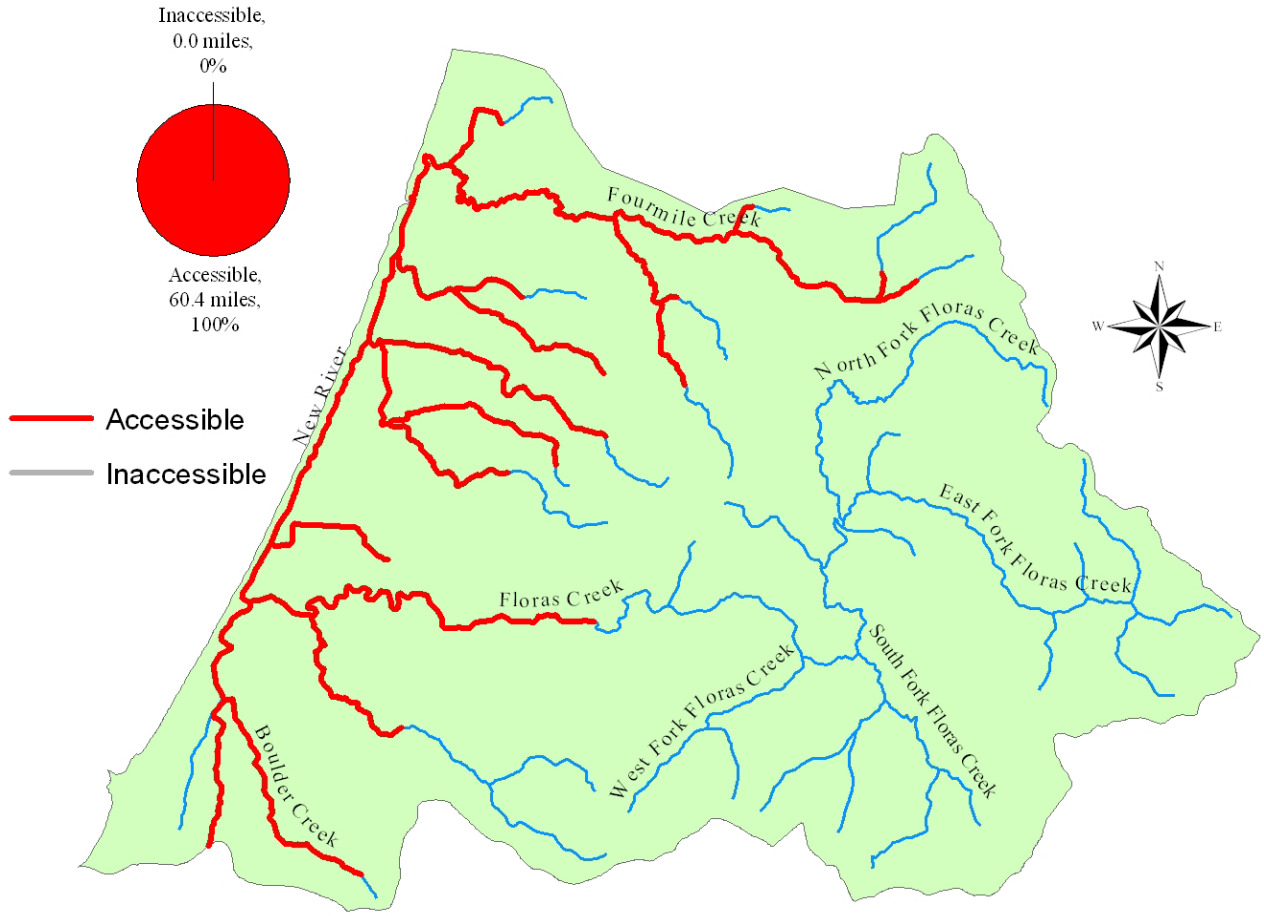


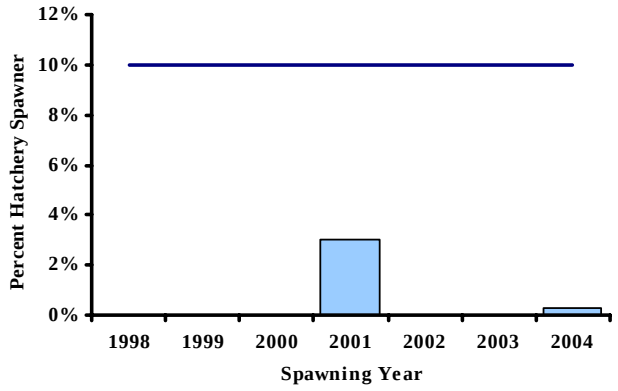


Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

Floras – Coastal Coho



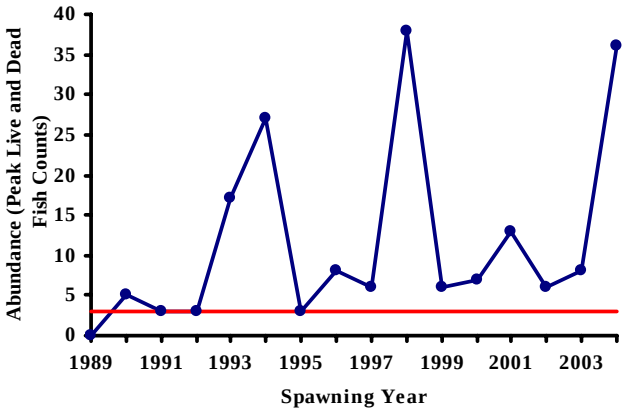


Floras is the fourth smallest population in the SMU. The population passed each of the criteria except productivity. The abundance estimates from SRS surveys, and observations of coho during standard fall Chinook surveys both proved inadequate for evaluating abundance and productivity. The assessments for abundance and productivity were based on outcomes for the Sixes population. ODFW biologists believe that the Floras basin is better suited to coho than the Sixes because there is greater availability of over-wintering habitat. Reproductive independence was evaluated with the last five years of data from the SRS surveys.

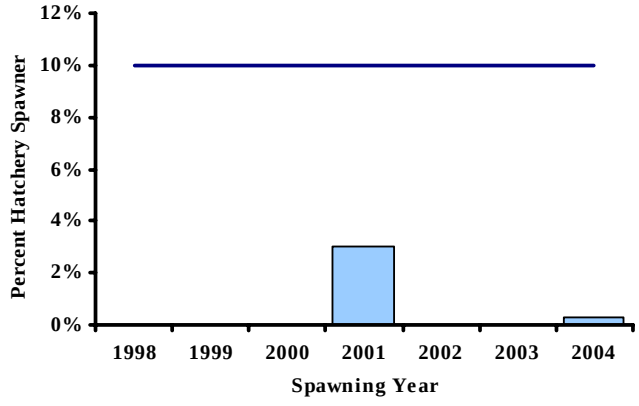
Assessment Outcome

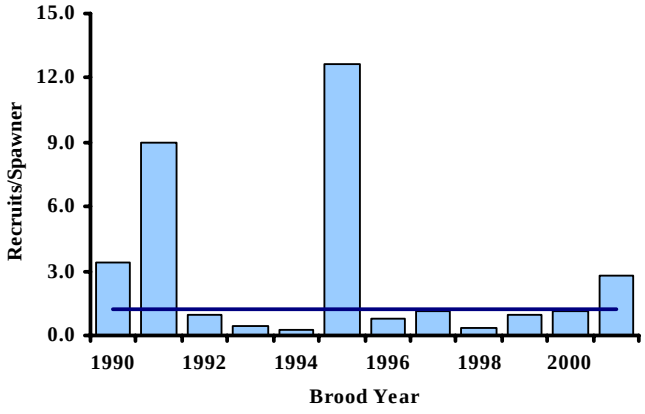
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Fail*	*Pass*	*Pass*

Sixes – Coastal Coho



The Sixes is the third smallest population in the SMU. The Sixes passed each of the criteria except productivity. Standard random survey population estimates used for most other coastal coho populations were only available for the past six years for the Sixes. Further, those estimates for the Sixes have a low level of precision. Abundance and productivity were indexed with peak counts of coho observed during standard fall Chinook surveys which have been conducted since 1989. Reproductive independence was evaluated with the last five years of data from the SRS surveys.





Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Fail*	*Pass*	*Pass*