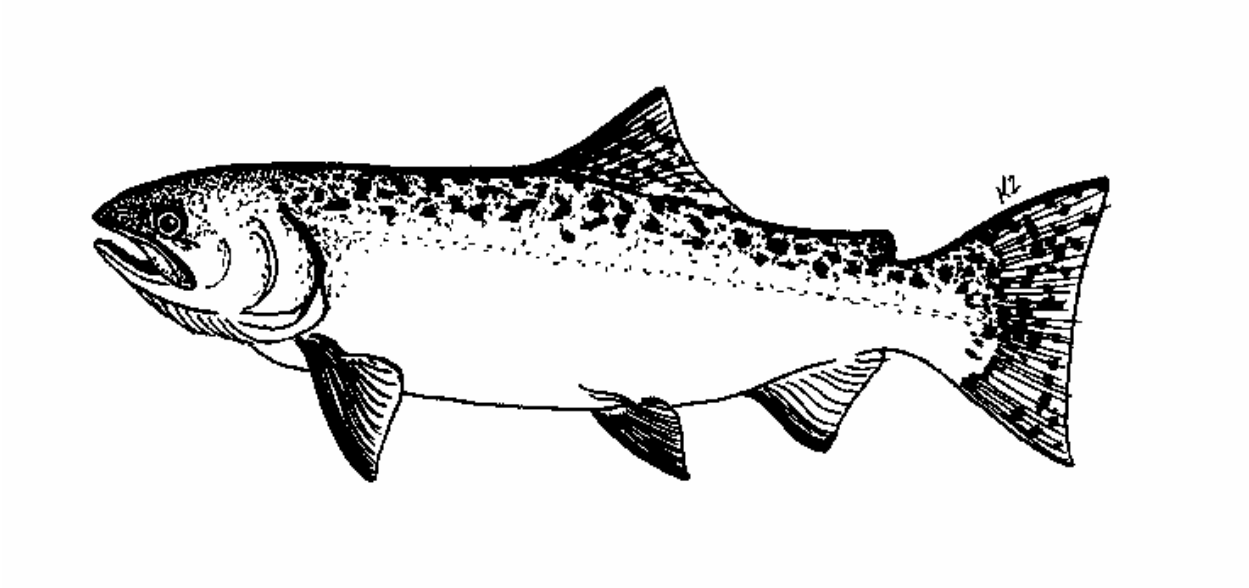
Spring Chinook



Coastal Spring Chinook

Species Management Unit and Populations

The Coastal Spring Chinook SMU and its constituent populations were defined based on limited historical information. Historic records of commercial landings of Chinook from bay and river fisheries in the late spring and early summer months were used to help identify where historical populations existed. In some instances, the commercial landings occurred at a time when hatchery releases of spring chinook were also occurring in some of the basins, making a determination more difficult. A more in-depth review of historical literature will occur during the development of a conservation plan for coastal spring Chinook and may determine that some populations defined here, especially the extinct or presumed extinct populations, were not historic populations. The conservation planning process may also determine a more appropriate boundary for the Species Management Unit. For the time being, we have identified nine populations of spring Chinook in one Species Management Unit.

Existing Populations

The Coastal Spring Chinook SMU includes nine populations (Table 48). The Coos is classified as extinct and the Siuslaw is presumed extinct, but the remaining populations are still in existence. Several of the populations are at chronically low levels.

Table 48. Population list and existence status for the Coastal Spring Chinook SMU.

Exist	Population	Description
Yes	Tillamook	Tillamook Bay tributaries, primarily the Wilson, Kilchis, and Trask rivers.
Yes	Nestucca	Nestucca River basin.
Yes	Siletz	Siletz River basin.
Yes	Alsea	Alsea River basin.
No	Siuslaw	Siuslaw River basin.
Yes	South Umpqua	South Fork Umpqua River basin.
Yes	North Umpqua	North Fork Umpqua River basin.
No	Coos	Coos River basin
Yes	Coquille	Coquille River basin.

Habitat Use Distribution

The criterion was evaluated based on current and historically accessible areas, because actual habitat usage by coastal spring Chinook is not currently quantifiable. Every existing population shows "0 miles inaccessible" (Table 49). It must be recognized that these estimates are derived at the 1:100,000 scale and thus ***will not*** capture habitat lost in many smaller (1:24,000) streams resulting from barriers such as culverts. Habitat lost in smaller streams will vary by population, but is not likely to account for 50% of any population, and thus does not alter assessment outcomes derived using data at the 1:100,000 scale. Data presented in this report on accessibility of habitat should be viewed as general approximations and not as a definitive analysis on habitat availability/accessibility. These issues will be more thoroughly addressed through the conservation planning process.

These data also do not reflect changes in habitat usage due to changes in habitat quality, or changes in availability of estuary habitat. Christy (2004) estimated that 82% of freshwater wetland and saltwater marsh habitat has been lost or converted to other habitat types in basins within this SMU since 1850.

Table 49. Habitat accessibility data used in evaluating interim criteria for the Coastal Spring Chinook SMU.

Population	Accessible (miles)	Inaccessible (miles)	Percent Accessible
Tillamook	93	0	100%
Nestucca	44	0	100%
Siletz	87	0	100%
Alsea	98	0	100%
Siuslaw		*Presumed extinct*	
South Umpqua	72	*0*	100%
North Umpqua	108	*0*	100%
Coos		*Extinct population*	
Coquille	158	0	100%

Abundance

Abundance indices for the SMU were derived from multiple sources. Resting hole counts were available for the Tillamook, Nestucca and South Umpqua populations. Spring chinook passage is monitored at Winchester Dam on the North Umpqua and at the Siletz Falls trap on the Siletz. Abundance in the Alsea has been periodically monitored via spawner surveys in Drift Creek since 1988. Supplemental surveys have been conducted in the mainstem Alsea and North Fork Alsea. Appropriate abundance data were not available for the Coquille population.

Table 50. Abundance estimates (adult indices) used in evaluating interim criteria for the Coastal Spring Chinook SMU.

	30 Year	25% of	Abundance by Return Year						# Years >25%
Population	Average	Average	1999	2000	2001	2002	2003	2004	of Average
Tillamook[a]	8.1	2.0	--	2.7	2.7	4.5	3.6	9.2	*Fail*
Nestucca[a]	6.2	1.6	--	3.0	3.1	3.7	2.3	6.6	*Fail*
Siletz[b]	246	62	--	323	593	275	195	362	5
Alsea[c]		*Insufficient data – chronically low numbers*							*Fail*
Siuslaw		*Presumed extinct*							
North Umpqua[d]	4,546	1,136	--	2,931	5,247	5,928	6,987	4,692	5
South Umpqua[e]	176	44	75	86	294	--	210	154	5
Coos		*Extinct population*							
Coquille[c]		*Insufficient data – chronically low numbers*							*Fail*

a. Data presented as number of adults counted per hole in resting hole counts. Naturally and hatchery-produced fish not differentiated. See "Population Details" for explanation of failure designation.
b. Siletz Falls trap counts. Average abundance based on 11 years of data.
c. See "Population Details" for explanation of failure designation.
d. Winchester Dam counts.
e. Total count in resting hole survey.

Productivity

Productivity was estimated based on spawner recruit run reconstructions using abundance and hatchery fraction data described in the "Abundance" and "Reproductive Independence" sections. The age composition of Rogue spring Chinook was used to represent the age composition of returns for each population. Though Nicholas and Hankin (1989) identified several important differences between Rogue spring Chinook and north Oregon coast spring Chinook life histories, no other age composition data were available for the assessment.

Table 51. Productivity estimates used in evaluating interim criteria for the Coastal Spring Chinook SMU.

Population	Recent Complete Brood Years of Below Average Abundance	Productivity (R/S) Year 1	Year 2	Year 3	Year 4	Year 5	Years ≥ 1.2
Tillamook[a]	*Insufficient data – high hatchery fractions*						*Fail*
Nestucca[a]	*Insufficient data*						*Fail*
Siletz	1994-95, 1997-99	2.8	1.2	3.5	3.7	2.1	5
Alsea[a]	*Insufficient data – chronically low numbers*						*Fail*
Siuslaw	*Presumed extinct*						
North Umpqua	1994, 1996-99	1.1	0.8	1.5	1.4	2.2	3
South Umpqua	1984, 1986, 1992-93, 1999	3.4	1.6	7.9	1.8	2.6	5
Coos	*Extinct population*						
Coquille[a]	*Insufficient data – chronically low numbers*						*Fail*

a. See "Population Details" for explanation of failure designation.

Reproductive Independence

Annual empirical estimates of hatchery-to-naturally produced fractions on the spawning ground were not available for any population. The assessment of reproductive independence was based on other available information. As a general rule, if a population did not have hatchery smolt releases, it passed the criterion. The Siletz passed not only because hatchery fish are not released there, but very few, if any, hatchery fish are observed at Siletz Falls trap each year. See "Population Details" for an explanation of the assessment of the North Umpqua.

Table 52. Reproductive independence estimates used in evaluating interim criteria for the Coastal Spring Chinook SMU.

Population	Percent of Spawning Fish of Hatchery Origin 2000	2001	2002	2003	2004	Years Below 10%
Tillamook[a]	*Insufficient data – 2004 data suggests high hatchery fractions*					*Fail*[a]
Nestucca[a]	*Insufficient data*					*Fail*[a]
Siletz	*Insufficient data - no hatchery releases*					*Pass*
Alsea	*Insufficient data - no hatchery releases*					*Pass*
Siuslaw	*Presumed extinct*					
North Umpqua	17%	17%	17%	17%	17%	0
South Umpqua	*Insufficient data - no hatchery releases*					*Pass*
Coos	*Extinct population*					
Coquille	*Insufficient data - no hatchery releases*					*Pass*

a. See "Population Details" for further explanation on failure designation.

Hybridization

Hybridization has not been identified as an issue for coastal spring Chinook.

Population Details

Tillamook/Nestucca

Abundance in these two populations was indexed via resting hole counts. Hatchery and naturally produced fish could not be differentiated during these counts, so the 30-year average abundance is not a reliable indicator of equilibrium returns. The declining trend in count densities (number of fish counted per resting hole) since the late 1980s indicates that naturally-produced abundance may be on the decline. Declines in resting hole densities come despite increased hatchery smolt release levels in the Tillamook, and consistent release levels in the Nestucca through the 1980s and 1990s. In the Tillamook population, 2004 spring Chinook spawning ground surveys showed that 53% of natural spawners were hatchery origin. Though this was the first year of these surveys, it is likely that 53% is a conservative estimate relative to years before 2003. Implementation of a selective freshwater fishery in 2002 reduced the number of natural fish removed from the run and thereby influence of hatchery-to-wild ratios of fish reaching the spawning grounds. However, the effect of this change may have been counteracted by lower hatchery releases prior to 1994. This information was cited as sufficient for failure of the abundance and productivity criteria. The abundance criterion was failed because the first rule of the "Abundance Threshold Determination Rules" was violated. Productivity was failed because it is unlikely that a population with 50% hatchery fish among parents can achieve the required levels of naturally produced recruits per spawner, especially in years of decreasing abundance.

The Nestucca population failed the abundance, productivity, and independence criteria based on inconclusive data. Failure of the productivity criterion was further justified by the failure of the Tillamook population - the Tillamook and Nestucca population are expected to perform similarly for productivity. In addition, not only do significant numbers of hatchery fish return to the Nestucca, but many of those are recycled downstream for additional freshwater harvest opportunities. Few of these fish arrive at the hatchery a second time indicating that many may be spawning naturally.

Hatchery smolts continue to be released in the Tillamook and Nestucca at 318,000 smolts and 110,000 smolts per year, respectively.

Alsea

Abundance has been monitored in the Alsea populations via spawning surveys since 1988. Surveys have not been conducted in every year, and in some years more surveys were done than in others. Survey reaches have targeted Drift Creek, the mainstem Alsea, and the North Fork Alsea. Surveys have been most consistent in the Drift Creek reach where surveys have been done in 12 years since 1988. Both the abundance and productivity criteria were failed because abundance levels from these surveys have shown chronically low numbers over the survey period despite surveys being targeted at areas most likely to hold spring Chinook and recent years of good ocean conditions.

North Umpqua

Abundance of naturally produced spring Chinook in the North Umpqua population was estimated by subtracting removals of fish from counts of fish passing Winchester Dam and harvest above the dam. Harvest rates were relatively consistent through the period 1969-2001 and the rates were assumed to be the same for hatchery and naturally-produced fish. Harvest rates prior to 1969 were assumed equal to the 1969-1973 average (16%). The harvest rate in 2002 and 2003 was assumed equal to the average of rates from 1997-2001 (7%).

In 2004, carcass surveys in the North Umpqua upstream of Rock Creek showed that the proportion of fish on the spawning ground that are hatchery origin was 17%. ODFW Umpqua watershed district staff advise that this rate is likely representative of the past 10-15 years because changes in hatchery practices are likely to have had minimal impacts on this rate. This 17% hatchery fraction was applied to the last 15 years and used in evaluating reproductive independence and productivity. Hatchery practices changes that have occurred recently are likely to have reduced the natural spawning percentage of hatchery fish, so 17% is a conservative estimate of hatchery fractions for previous years.

Coquille

The appropriate data were not available to evaluate the abundance and productivity criteria as defined by the interim criteria. Failure designations of these criteria were based on chronically low numbers that were based on freshwater harvest estimates, a few years of resting hole counts in recent years, and observations by local ODFW biologists. Additionally, current habitat conditions in the Coquille are not favorable for spring Chinook. During the period of adult migration and holding, there is no snowmelt available; flows become low, temperatures high, and there is limited cool water refugia for spring Chinook.

Assessment Conclusions

This SMU includes nine populations between Tillamook Bay and the Coquille River. There is no comprehensive monitoring program for coastal spring Chinook, so the assessment was based on available indices of abundance and anecdotal information. The SMU met only two of six criteria so the near-term sustainability of the SMU is at risk. While a couple of the populations appear to be stable and passed each of the criteria, it is thought that returns to the SMU are generally low. The 1998 ESA designation of "Not Warranted" by NOAA Fisheries does not distinguish between coastal fall Chinook and spring Chinook. Elsewhere in this report coastal fall Chinook are assessed as "Not at Risk".

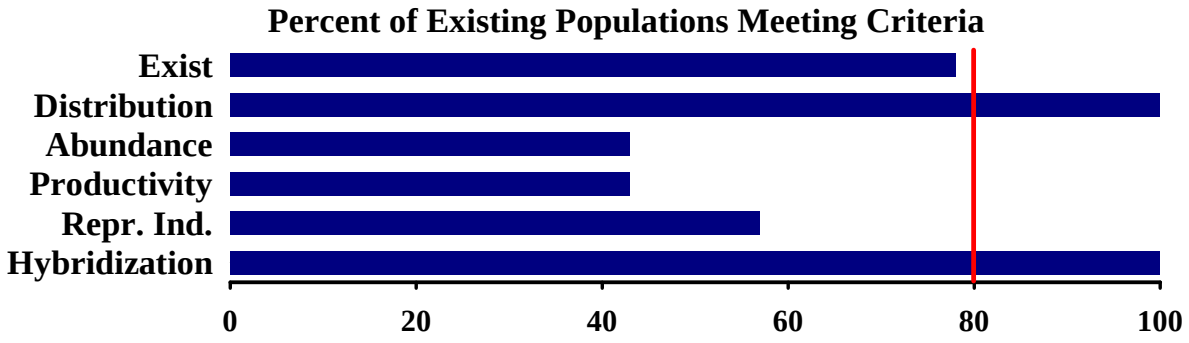
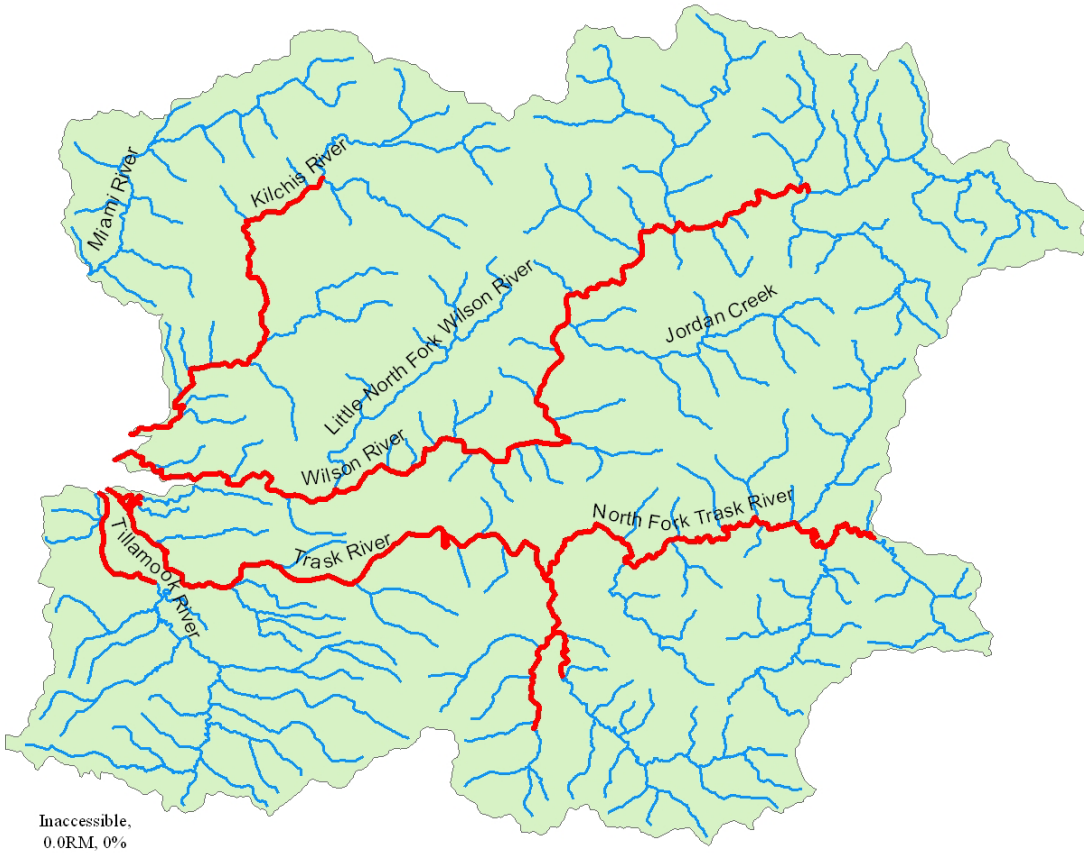
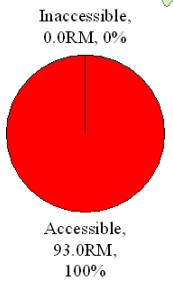
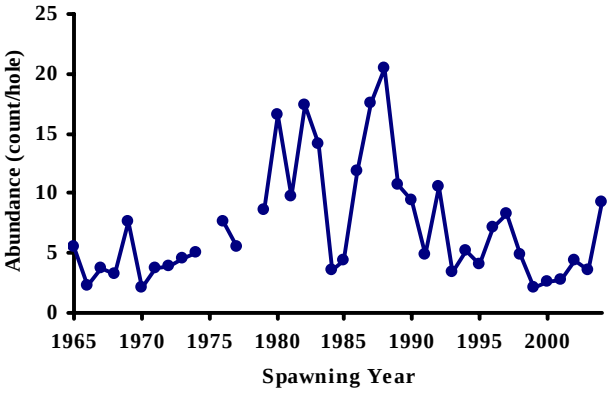


Figure 15. Assessment outcome for each of the six interim criteria with respect to the 80% threshold identified by the NFCP.

Tillamook – Coastal Spring Chinook





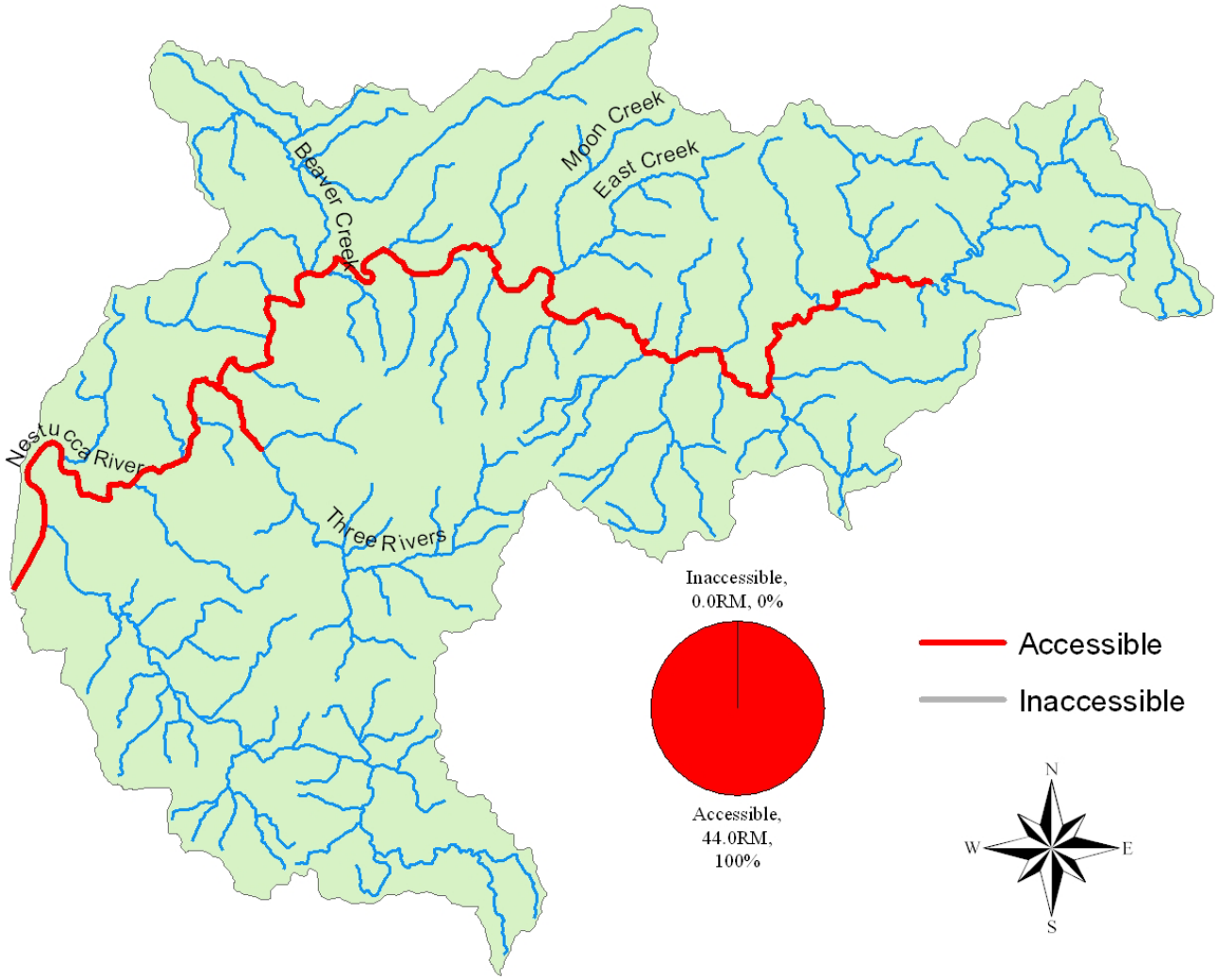


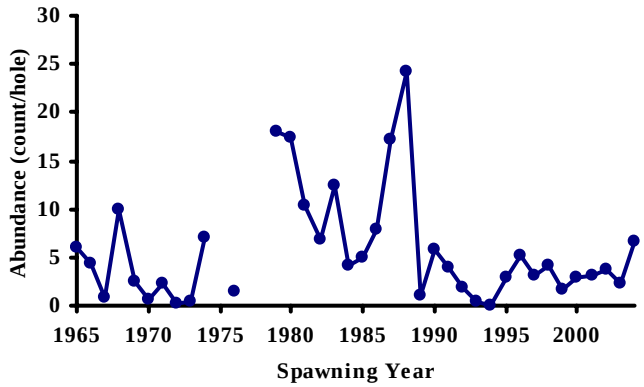
The Tillamook population failed three of the six criteria including abundance, productivity, and independence. Abundance was indexed by annual resting hole counts. Those counts do not distinguish between naturally and hatchery-produced fish. The abundance and productivity criteria were failed because resting hole counts have been decreasing since the 1980s despite increased smolt releases. Spawning surveys in 2004 showed that 53% of spawners were of hatchery origin.

Assessment Outcome

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

Nestucca – Coastal Spring Chinook



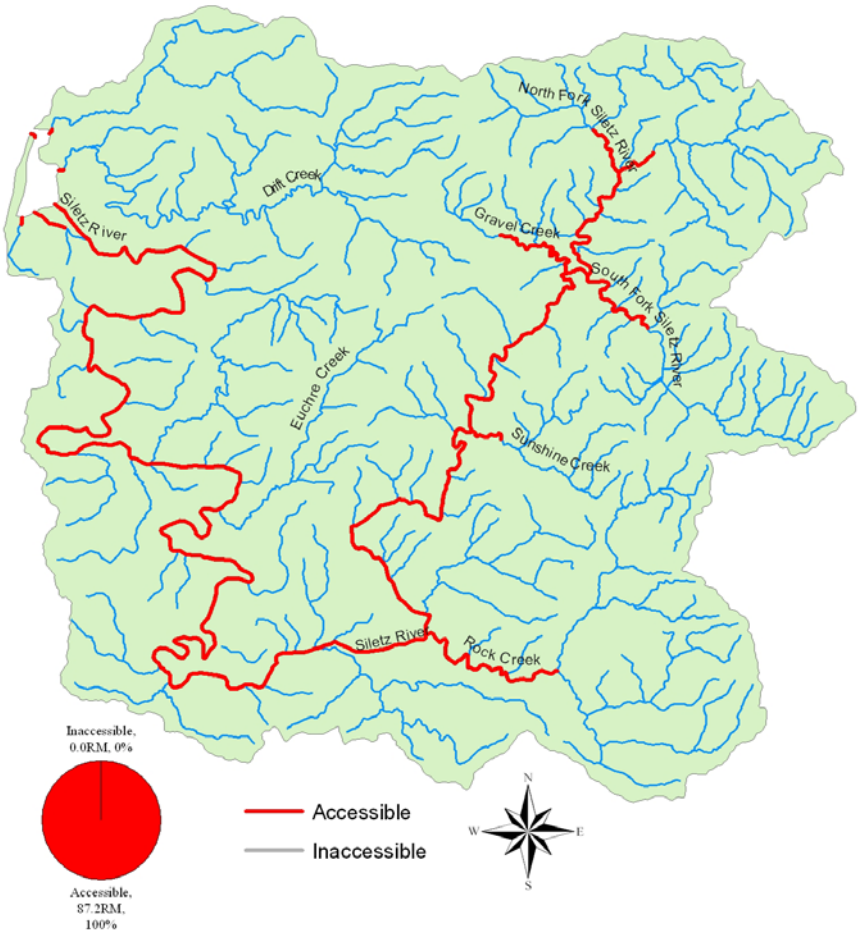


The Nestucca population failed the abundance, productivity, and independence criteria. Abundance was indexed by annual resting hole counts. Those counts do not distinguish between naturally and hatchery-produced fish. The abundance criterion was failed based on insufficient information. Productivity was failed based on the assessment outcome for the Tillamook - these two populations are expected to have similar productivity. Reproductive independence was failed because significant hatchery releases are made.

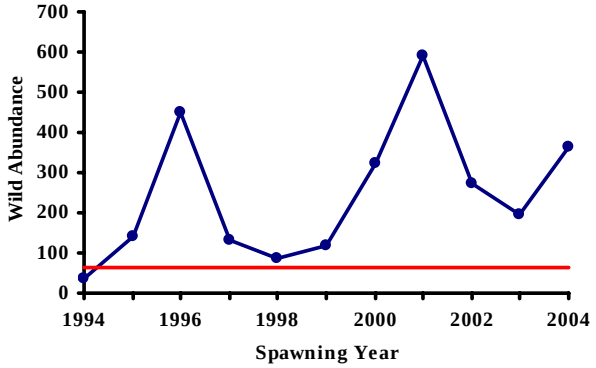
Assessment Outcome

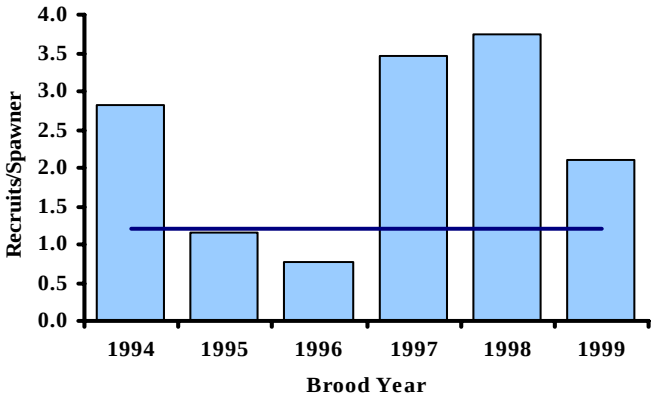
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Fail*	*Fail*	*Fail*	*Pass*

Siletz – Coastal Spring Chinook



The Siletz population passed each of the interim criteria. Abundance was indexed by counts of adults at the Siletz Falls trap in the upper Siletz. Returns over the past 11 years have been low, but recent returns have been above the criterion. Productivity has been equal to or above 1.2 for each of the last five broods with low parent abundance. Reproductive independence was passed because no hatchery spring Chinook releases are made in the basin.

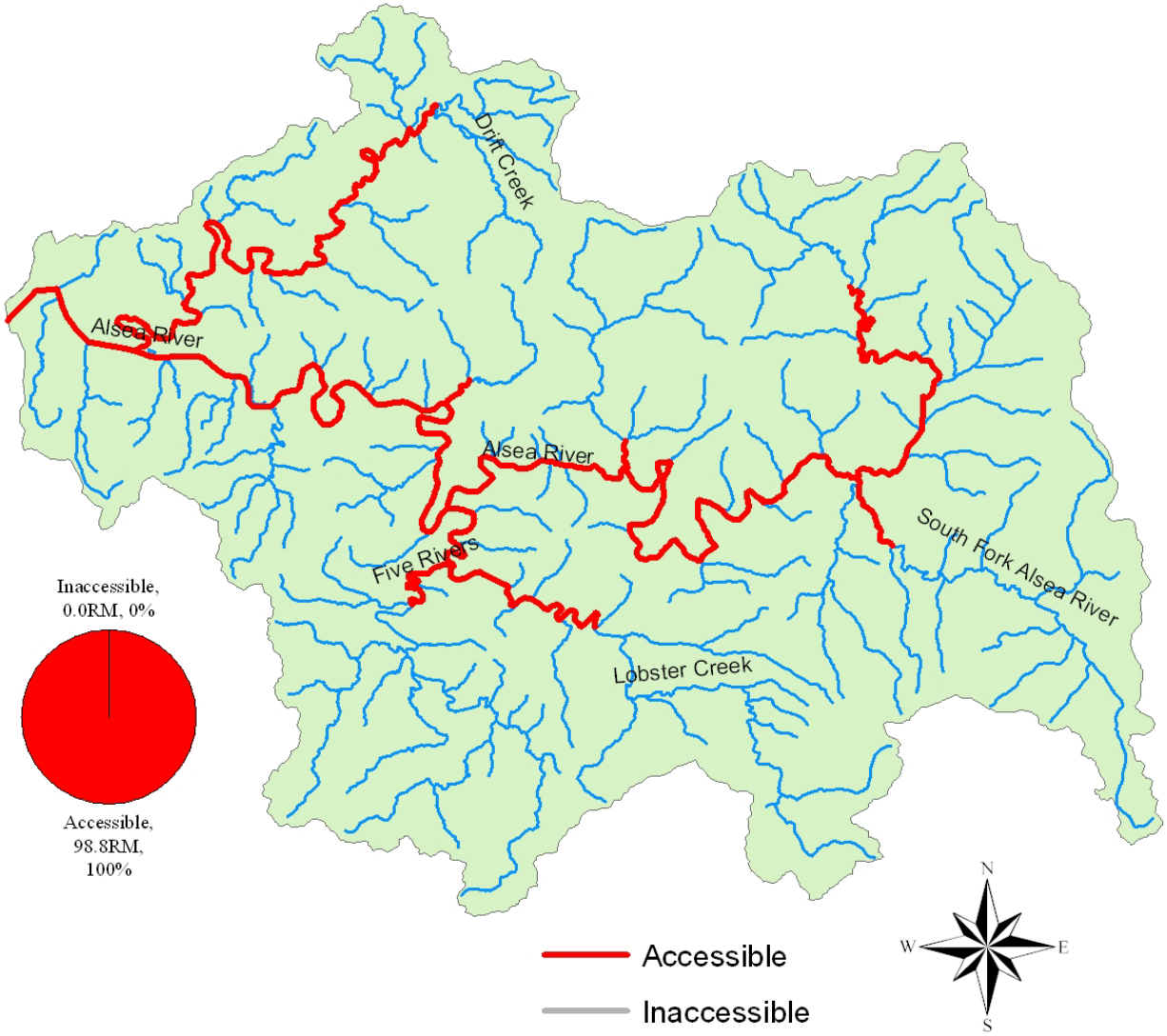


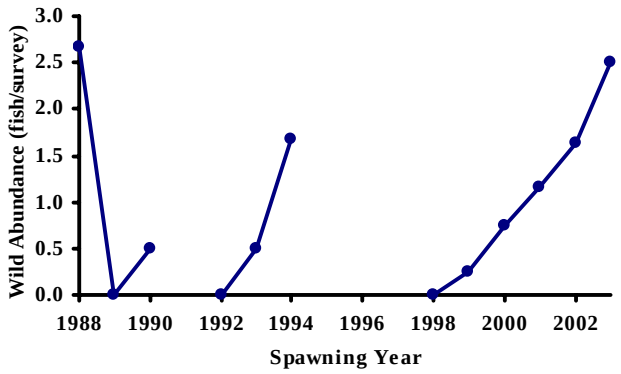


Assessment Outcome

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

Alsea – Coastal Spring Chinook



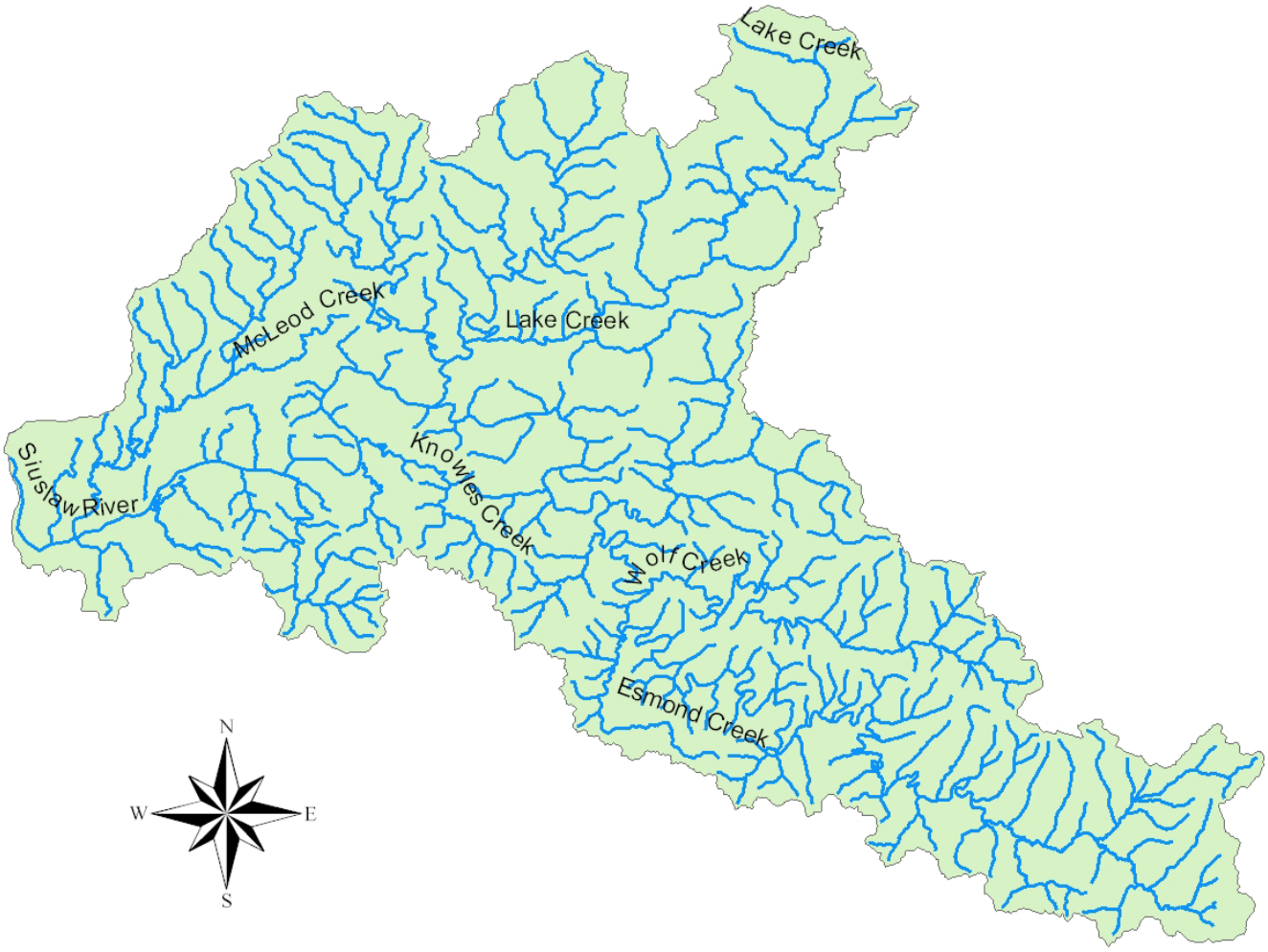


The Alsea population failed the abundance and productivity criteria due to chronically low returns. The graph to the left depicts spawning survey results from Drift Creek. Other surveys have periodically been conducted in the mainstem Alsea and North Fork Alsea. Independence was passed because no hatchery spring Chinook releases are made in the basin.

Assessment Outcome

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

Siuslaw – Coastal Spring Chinook

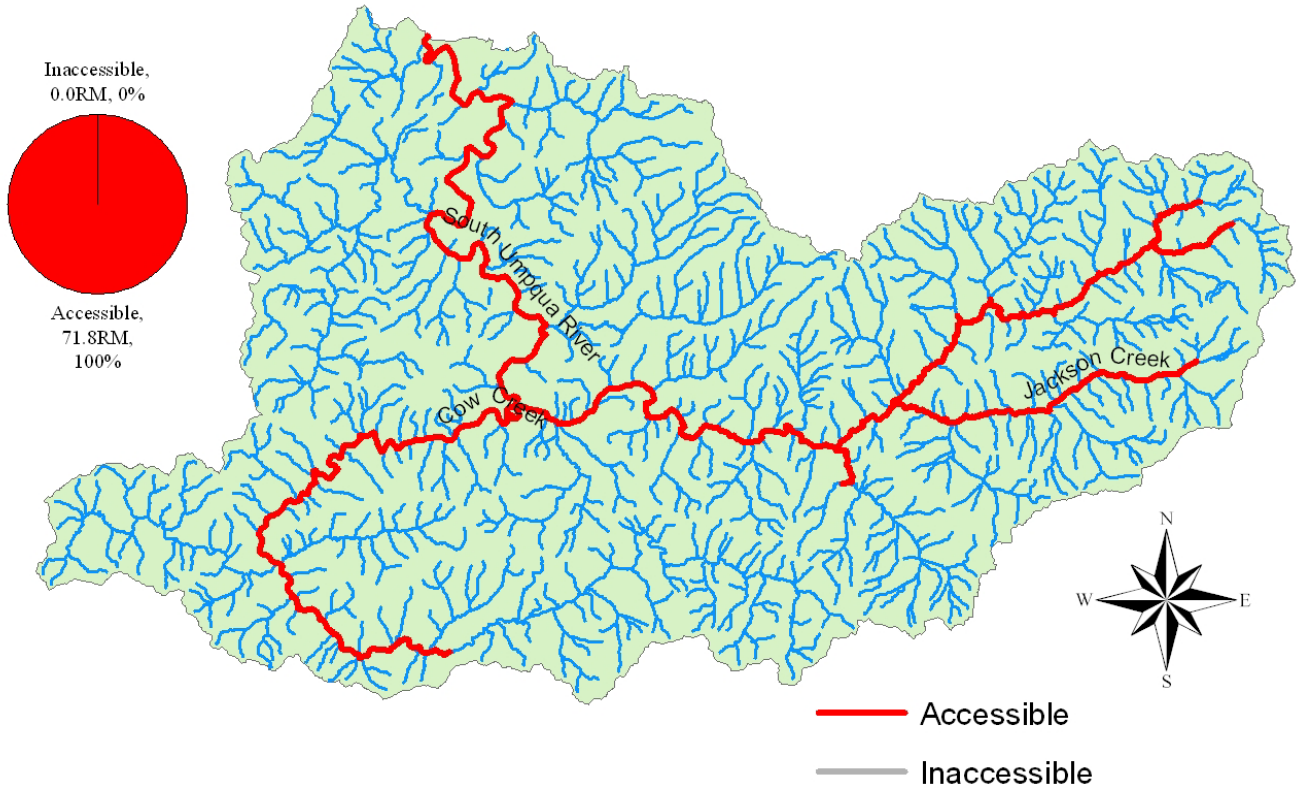


The Siuslaw population of spring Chinook is presumed to be extinct.

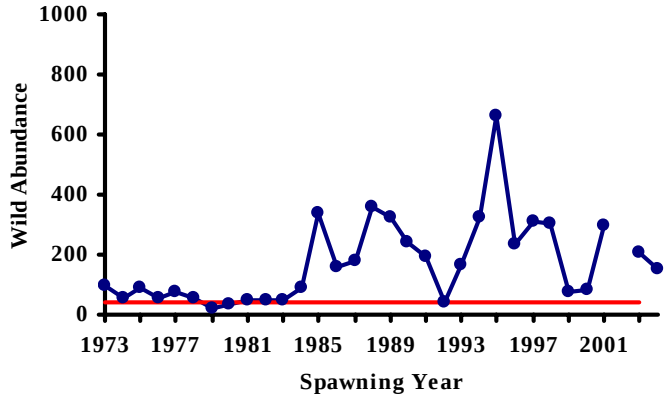
Assessment Outcome

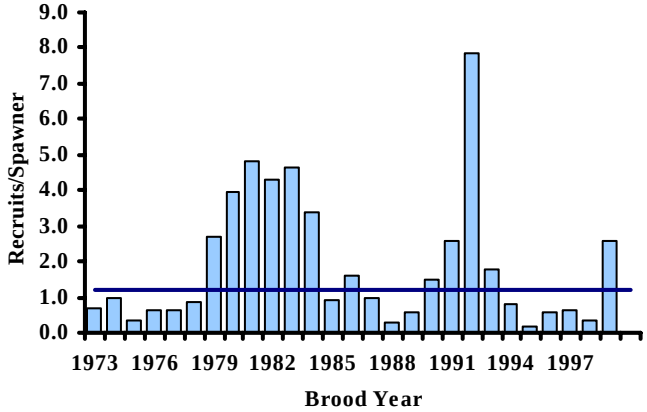
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Fail	--	--	--	--	--

South Umpqua – Coastal Spring Chinook



The South Umpqua population passed each of the interim criteria. Abundance was indexed by snorkel counts conducted since 1973. Returns since the mid 1980s have been higher than those between 1973 and 1984. Productivity was above 1.2 for each of the last five broods where parent abundance was below the 30-year average. Reproductive independence was passed because no hatchery spring Chinook releases are made in the South Umpqua.

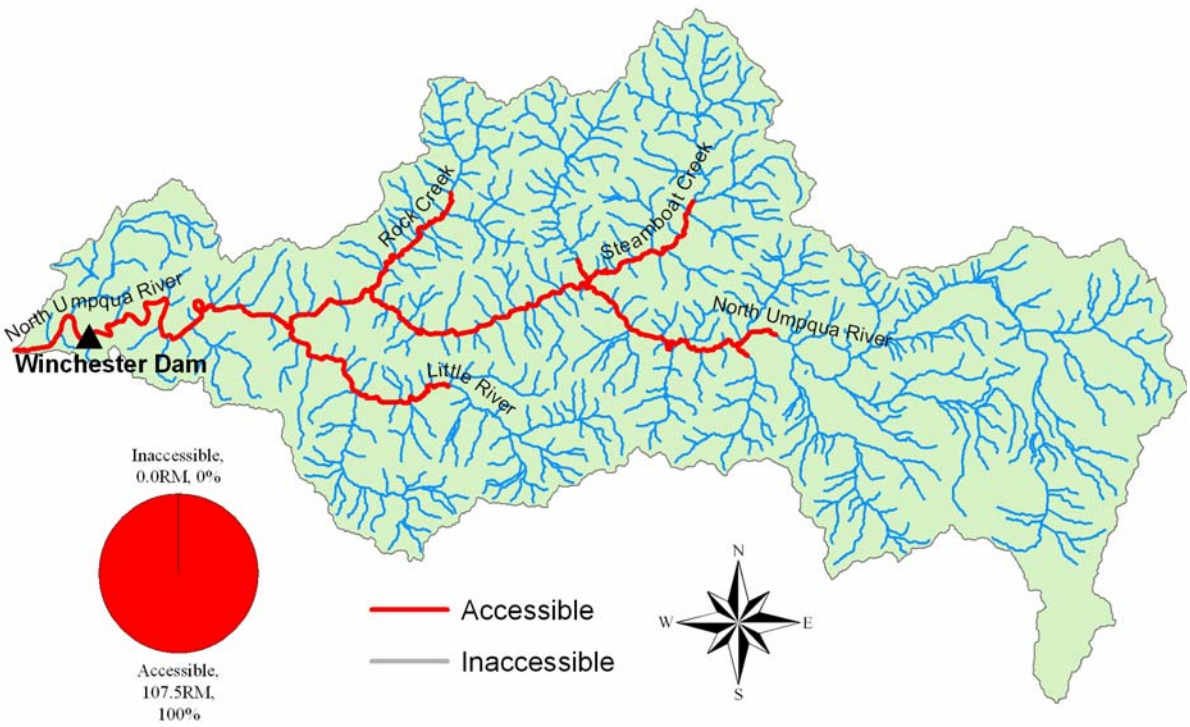


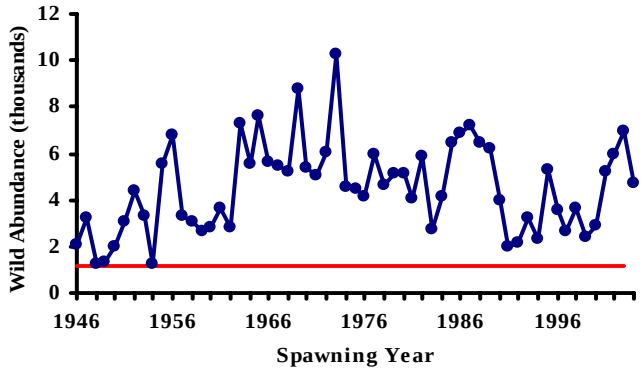


Assessment Outcome

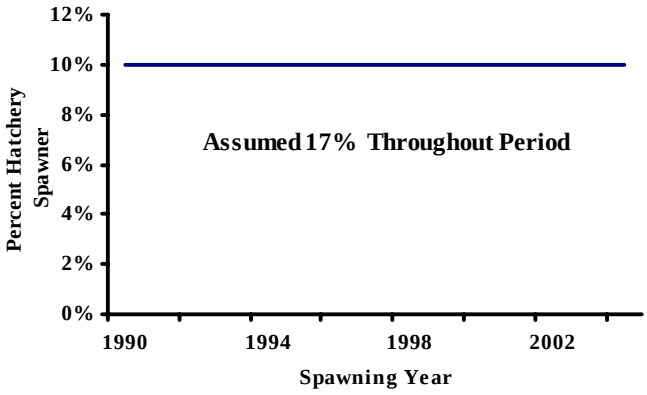
Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Pass	*Pass*	*Pass*	*Pass*	*Pass*	*Pass*

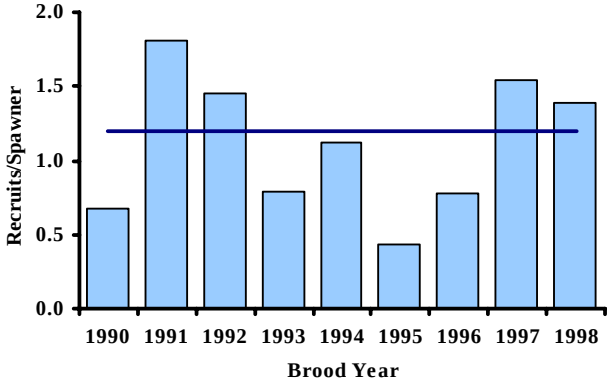
North Umpqua – Coastal Spring Chinook





The North Umpqua passed all of the interim criteria except for reproductive independence. Monitoring of passage at Winchester Dam provides the most consistent reliable indicator of spring Chinook abundance on the Oregon coast. Returns of naturally-produced fish have fluctuated, but have remained above the criterion threshold since 1954. Productivity has been high in years of low parent abundance. Hatchery spawners made up 17% of the natural spawning population in 2004. It was assumed that this rate was similar to what would have been observed the past 10-15 years.

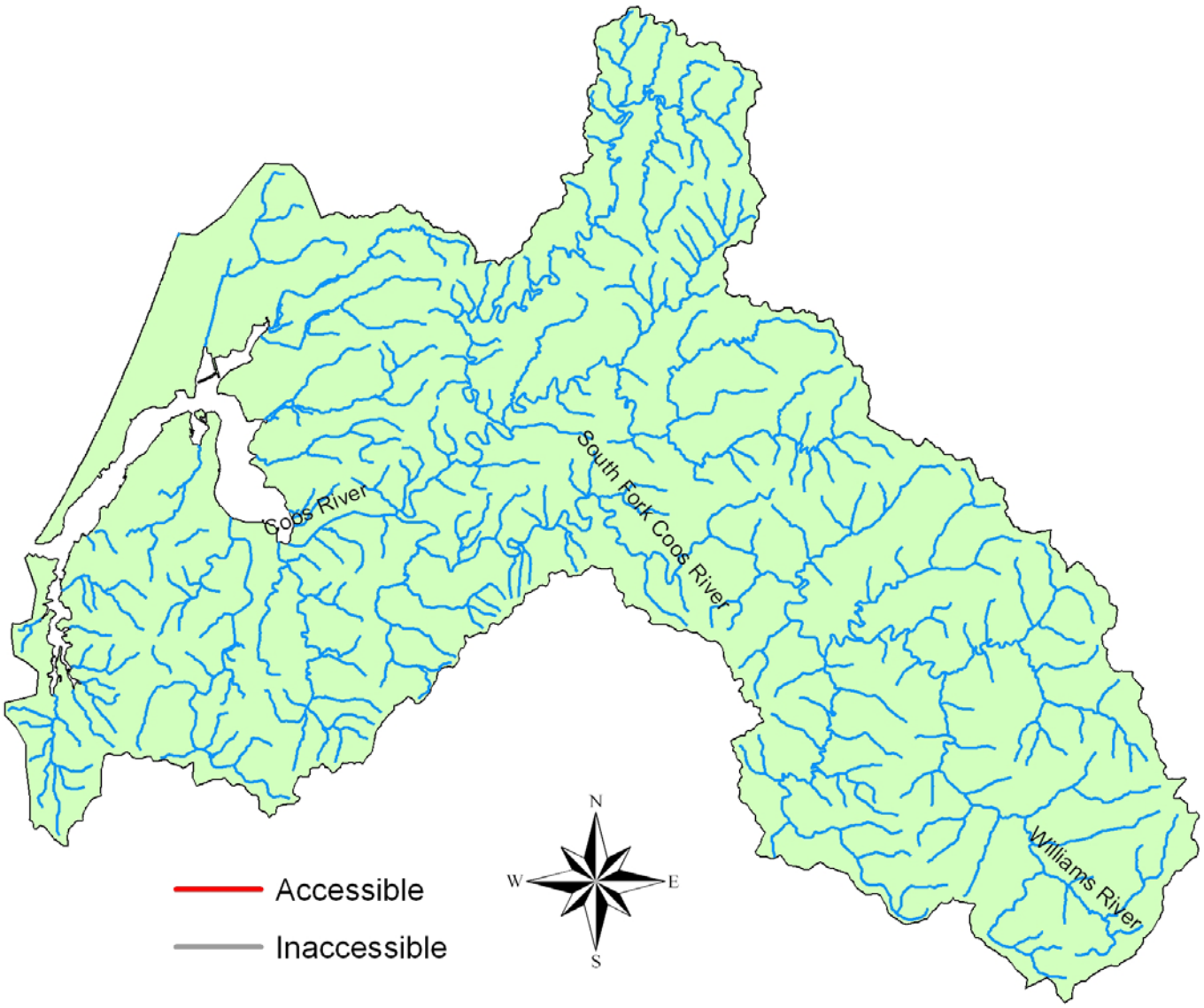




Assessment Outcome

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

Coos – Coastal Spring Chinook

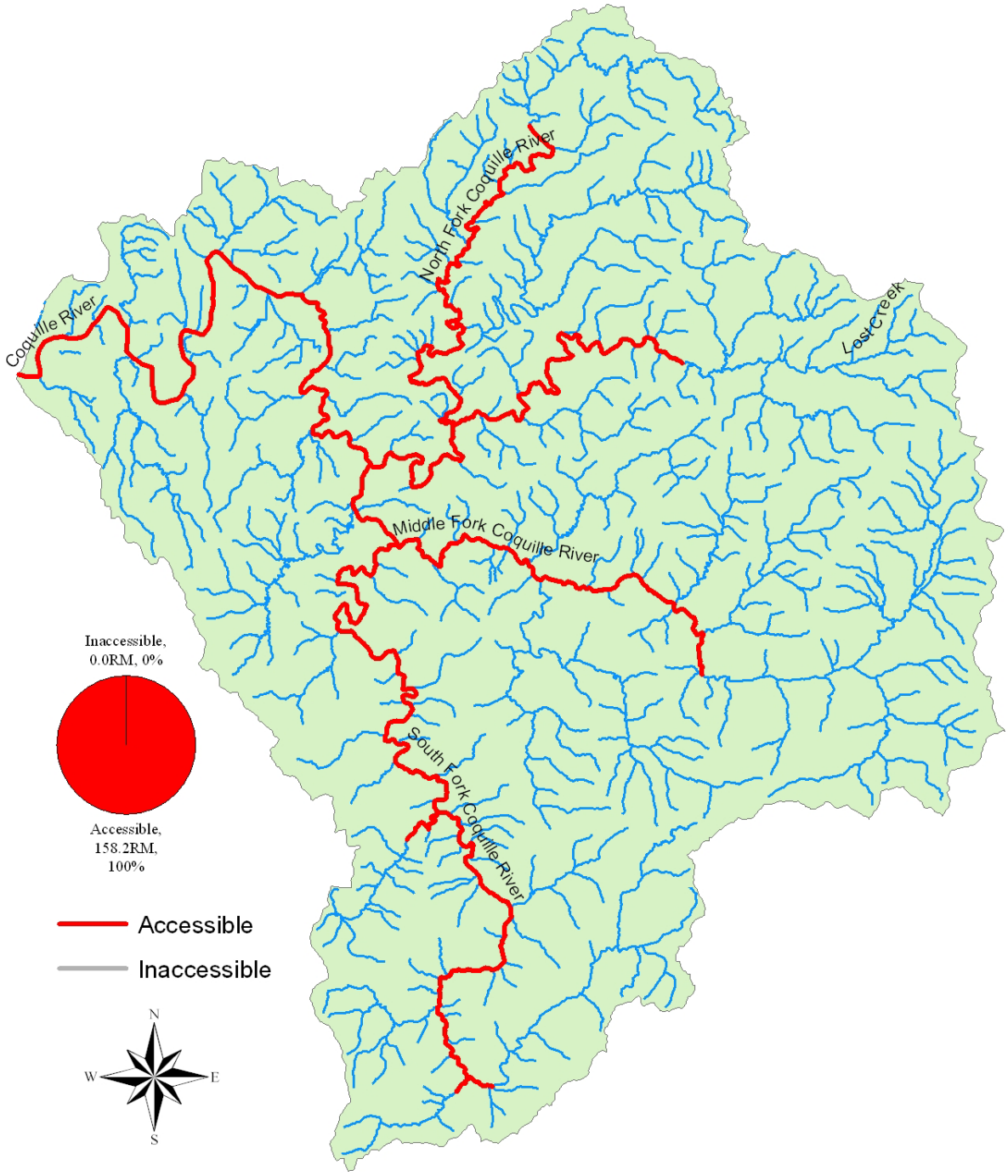


The Coos population of spring Chinook is presumed to be extinct.

Assessment Outcome

Existence	Distribution	Abundance	Productivity	Independence	Hybridization
Fail	--	--	--	--	--

Coquille – Coastal Spring Chinook



The Coquille failed the abundance and productivity criteria because of chronically low returns to the basin. Independence was passed because no hatchery spring Chinook releases are made in the basin.

Assessment Outcome

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