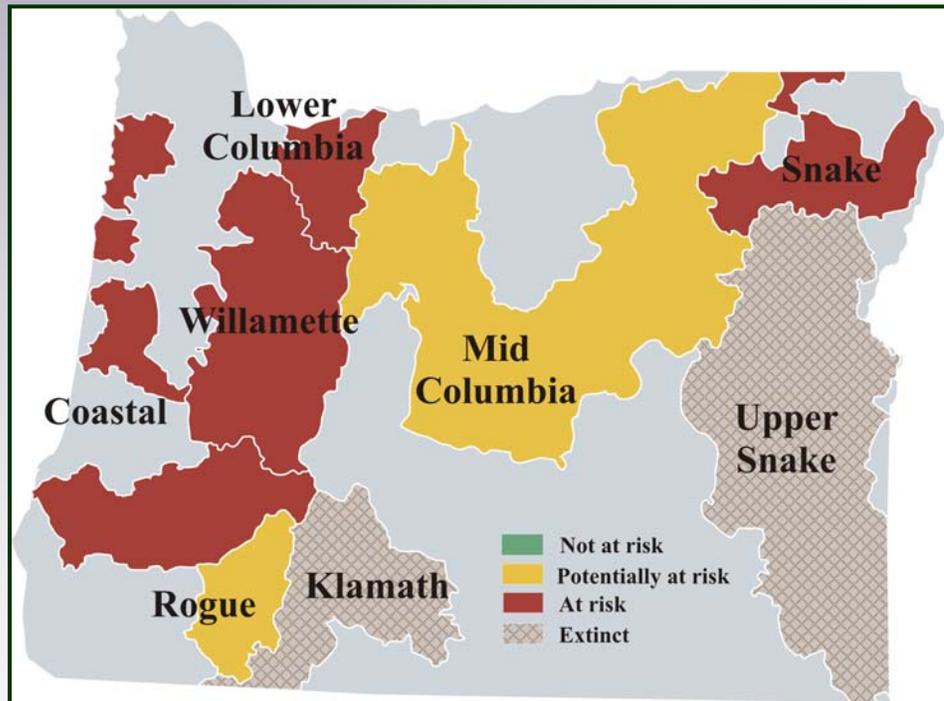


Spring Chinook



Spring Chinook are found in large river basins of the Oregon Coast, Willamette River, and Columbia River. These fish typically return to freshwater from March through June and spawn in late summer. Adults average 10-20 pounds. Juveniles generally leave freshwater in their second spring and adults return at ages 3 to 6. In the ocean, spring Chinook are far northward



migrating stocks. Eight spring Chinook SMUs include 40 historical populations. The upper Snake and Klamath SMUs are blocked by impassable dams and are extinct. Every remaining SMU is at risk or potentially at risk. Low numbers, low productivity, and significant hatchery fractions place the Snake SMU at risk. Lower Columbia and Willamette SMUs are at risk because some populations are extinct and others include significant fractions of hatchery fish. Extinction of half of the historical mid-Columbia populations flags this SMU as potentially at risk. The coastal SMU is at risk because abundance and productivity are low and hatchery fractions are high in a few populations. The Rogue SMU is potentially at risk from high levels of natural spawning by hatchery fish.

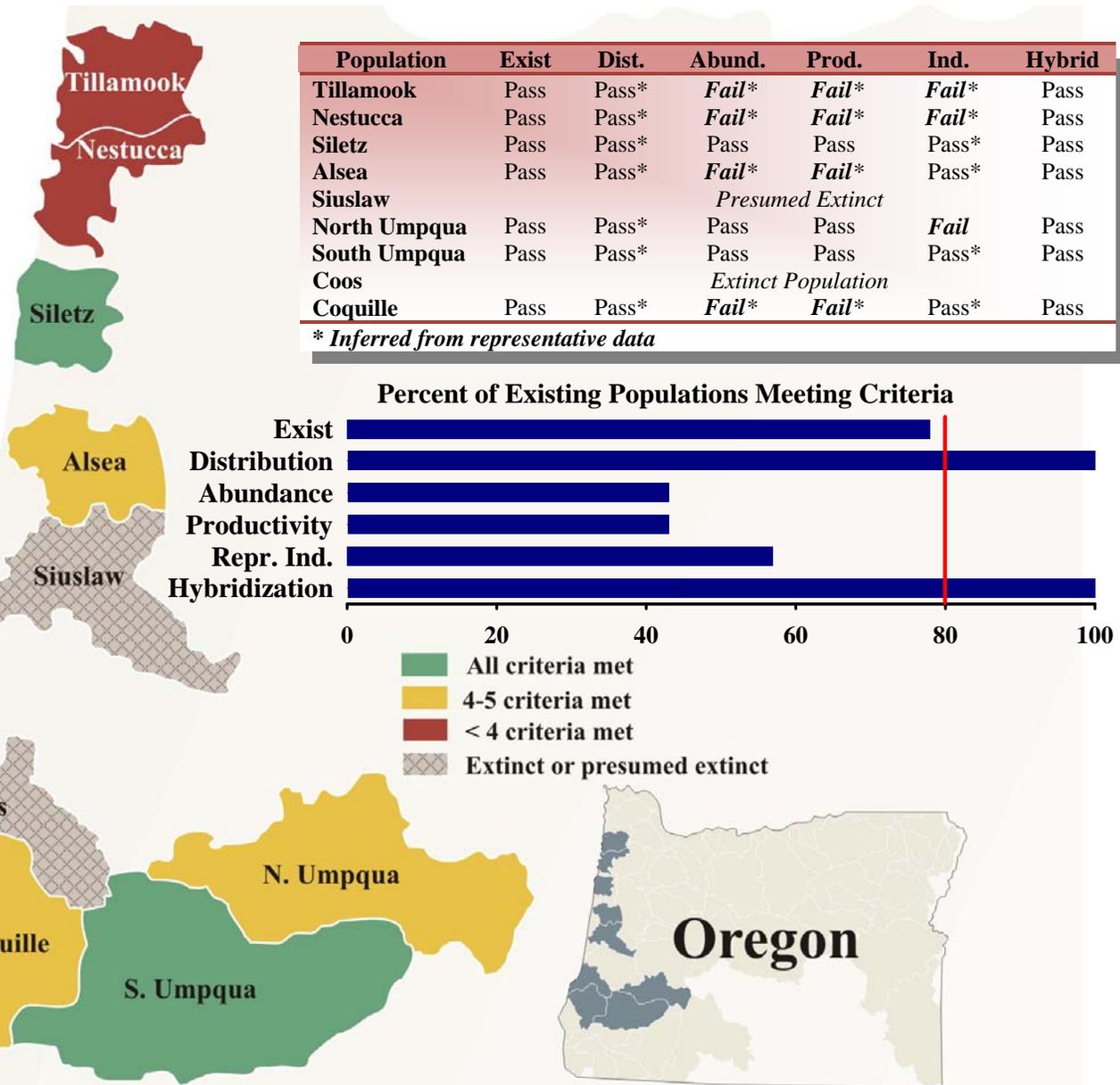
Coastal Spring Chinook SMU

ESA Designation:
Not Warranted 1998

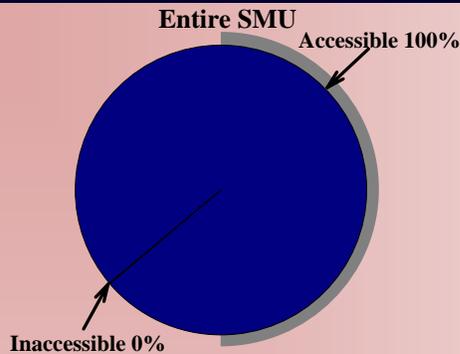
State Status:
Not Listed

Interim Assessment:
At Risk

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”. Limited data and inferences from other information for populations in this SMU provide a qualified level of confidence in the assessment of interim criteria.



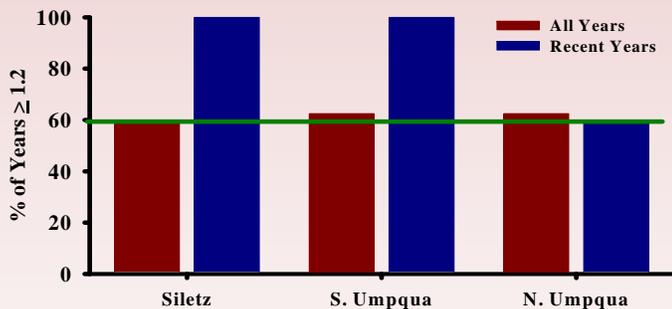
Distribution – Pass



- Essentially all of the potential spring Chinook habitat within the SMU remains accessible today.
- Distribution and habitat use patterns within accessible habitats may vary annually, and likely do not include all of the available habitat in each year. Some of the accessible habitats may not be in a condition that they can currently be used as they were in pre-settlement times.
- Habitat changes and use patterns have not been reduced to the point where this criterion is failed.

Productivity - Fail

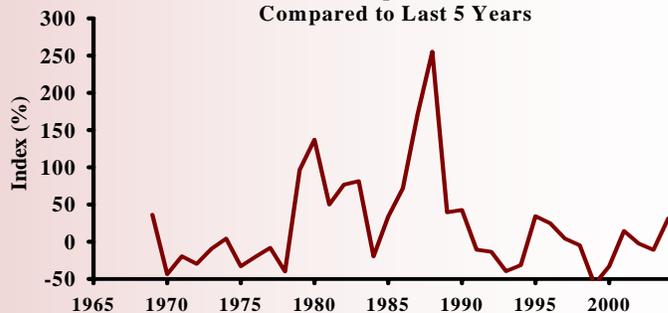
Productivity in Years of Low Abundance



- Three of seven existing populations passed this criterion.
- Productivity could not be estimated for the Tillamook and Nestucca because hatchery and wild fish could not be distinguished in the abundance data. These populations were assumed to have failed based on reduced returns since the late 1980s.
- The Alsea failed the criterion due to chronically low abundance indicating the population is not resilient.
- The remaining populations exceeded the 1.2 recruits per spawner standard in at least three of the last five years. Productivity in recent years of low abundance has been somewhat better than the long-term average in the Siletz and South Umpqua.

Abundance – Fail

Trends in Wild Spawner Abundance Compared to Last 5 Years



- Three of seven existing populations passed the criterion.
- The Tillamook and Nestucca populations failed this criterion because returns (hatchery and wild combined) have declined since the 1980s despite significant hatchery releases. The Alsea and Coquille failed because of chronically low returns.
- Returns in each of the other existing populations exceeded the criterion in at least four of the last five years.
- The abundance trend above incorporates data from the Tillamook, Nestucca, Siletz, North Umpqua, and South Umpqua populations. Since abundance is measured by different metrics in these basins, a relative index was used within the graph.

Independence - Fail

- Four of seven existing populations passed this criterion.
- The Tillamook and Nestucca failed based on the presence of hatchery releases.
- The Siletz, Alsea, South Umpqua, and Coquille each passed because no hatchery fish are released there.
- The assessment for the North Umpqua was based on a 2004 spawning survey that showed 17% of naturally spawning fish were hatchery origin. Based on hatchery release practices, it is likely that this estimate is representative of recent years.

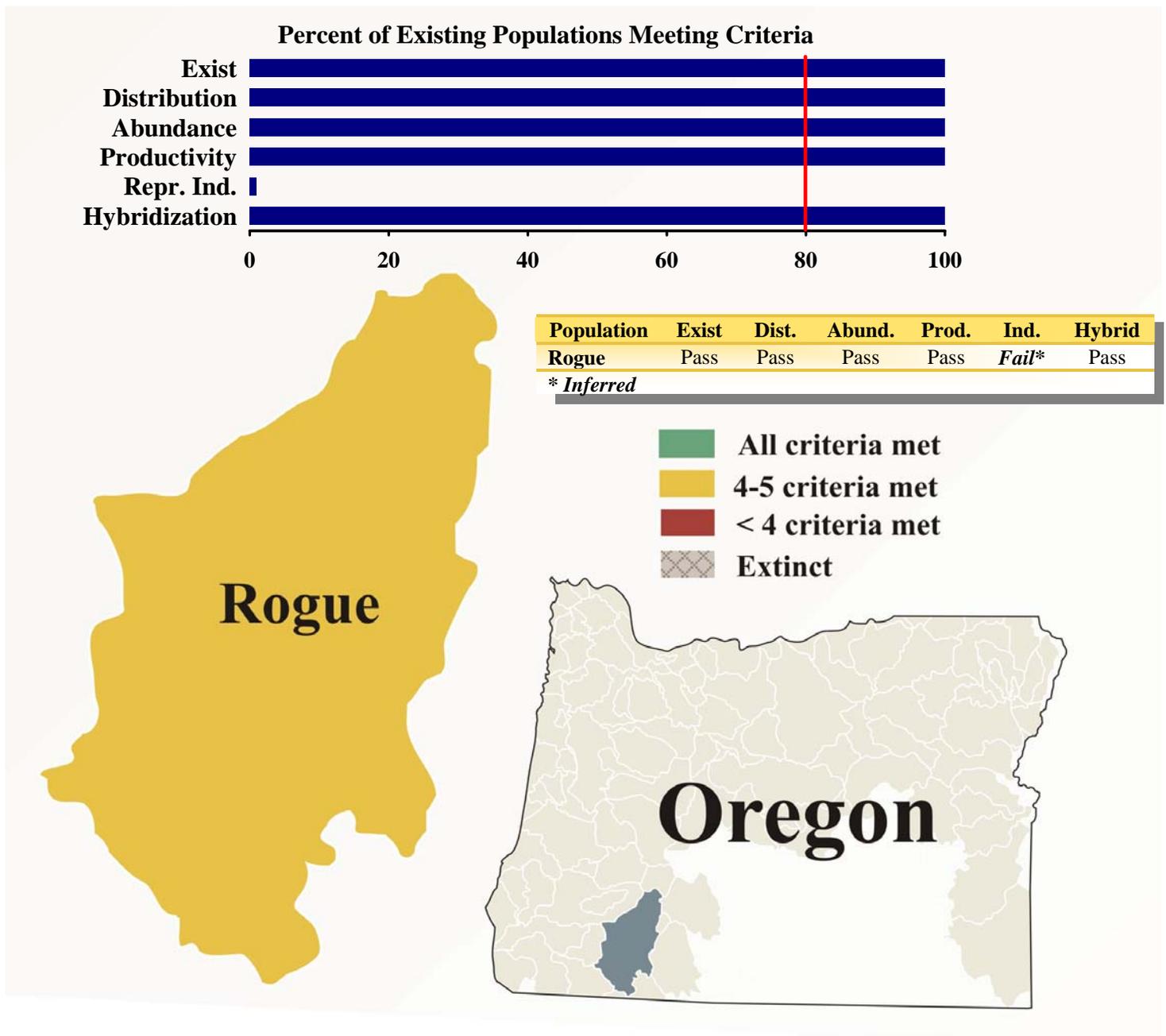
Rogue Spring Chinook SMU

ESA Designation:
Not Warranted 1999

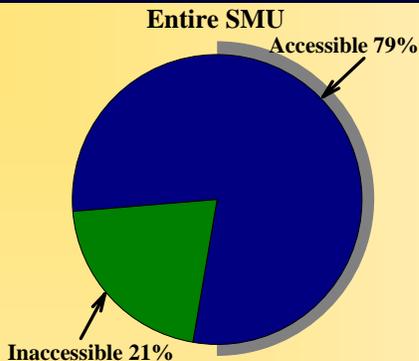
State Status:
Not Listed

Interim Assessment:
Potentially at Risk

This SMU consists of a single population upstream of Gold Ray Dam in the Rogue River. The population passed all criteria except for reproductive independence resulting indicating the near-term sustainability of the SMU is potentially at risk. The Rogue Basin is home of the largest Chinook hatchery program on the Oregon coast. Cole Rivers Hatchery releases approximately 1.9 million spring Chinook smolts annually to mitigate for habitat lost to Lost Creek Dam.

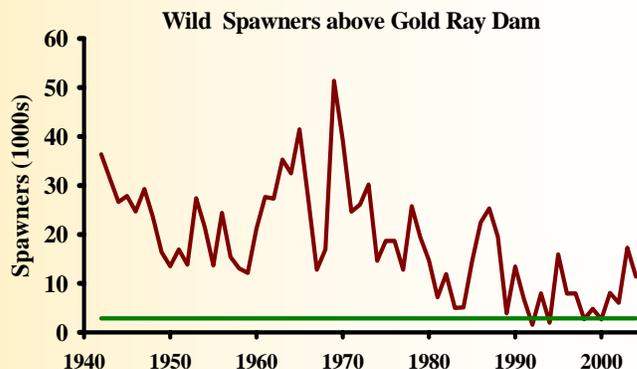


Distribution – Pass



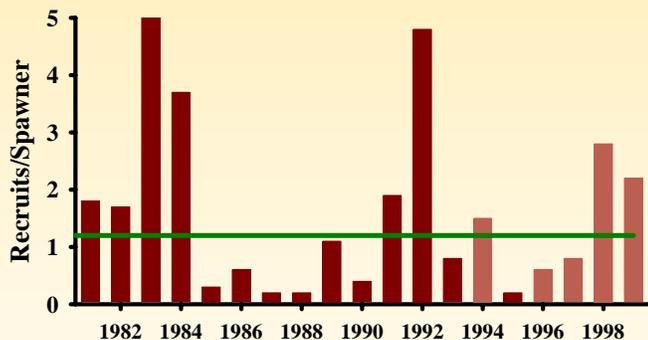
- Construction of Lost Creek Dam in 1977 on the mainstem upper Rogue eliminated access to 21% of the spring chinook habitat in the basin.
- More than 50% of the historically accessible habitat remains accessible today, so the SMU passes the criterion.

Abundance - Pass



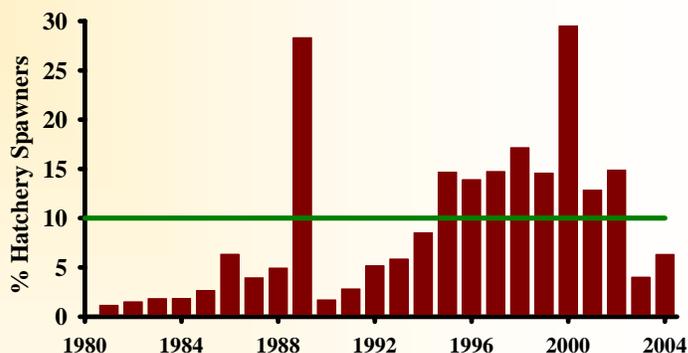
- Returns have generally declined since 1970 with a slight increase since 2000.
- The graph above reflects adult and jack abundance up until 1977, and only adult abundance since 1978. Jacks have made up 18% of returns since 1978.
- The population exceeded the abundance criterion in four of the last five years.

Productivity - Pass



- The population met the criterion threshold of 1.2 in three of the last five years of low abundance. In the graph above, the last five years of low abundance are identified by lighter shading.
- Productivity estimates in the Rogue have exceeded 1.2 recruits per spawner in nine of the last 19 years.

Independence - Fail



- Over 10% of spawners have been of hatchery origin in three of the last five years.
- The proportional contribution of hatchery spawners to the natural spawning population has decreased with increased returns of wild fish in the last couple years.
- From 1995-2002 hatchery fractions among natural spawners exceeded 10% in every year.

Additional Information

- A new regulation was implemented in 2004 to reduce freshwater harvest of wild spring Chinook in the Rogue. Anglers are now limited to one non-finclipped fish per day and three per year. Previous regulations allowed harvest of two non-finclipped fish per day and 20 per year.
- A Conservation Plan is currently under development for Rogue spring Chinook. The Plan will identify goals for the wild spring Chinook population in the Rogue and management strategies that will help achieve those goals.

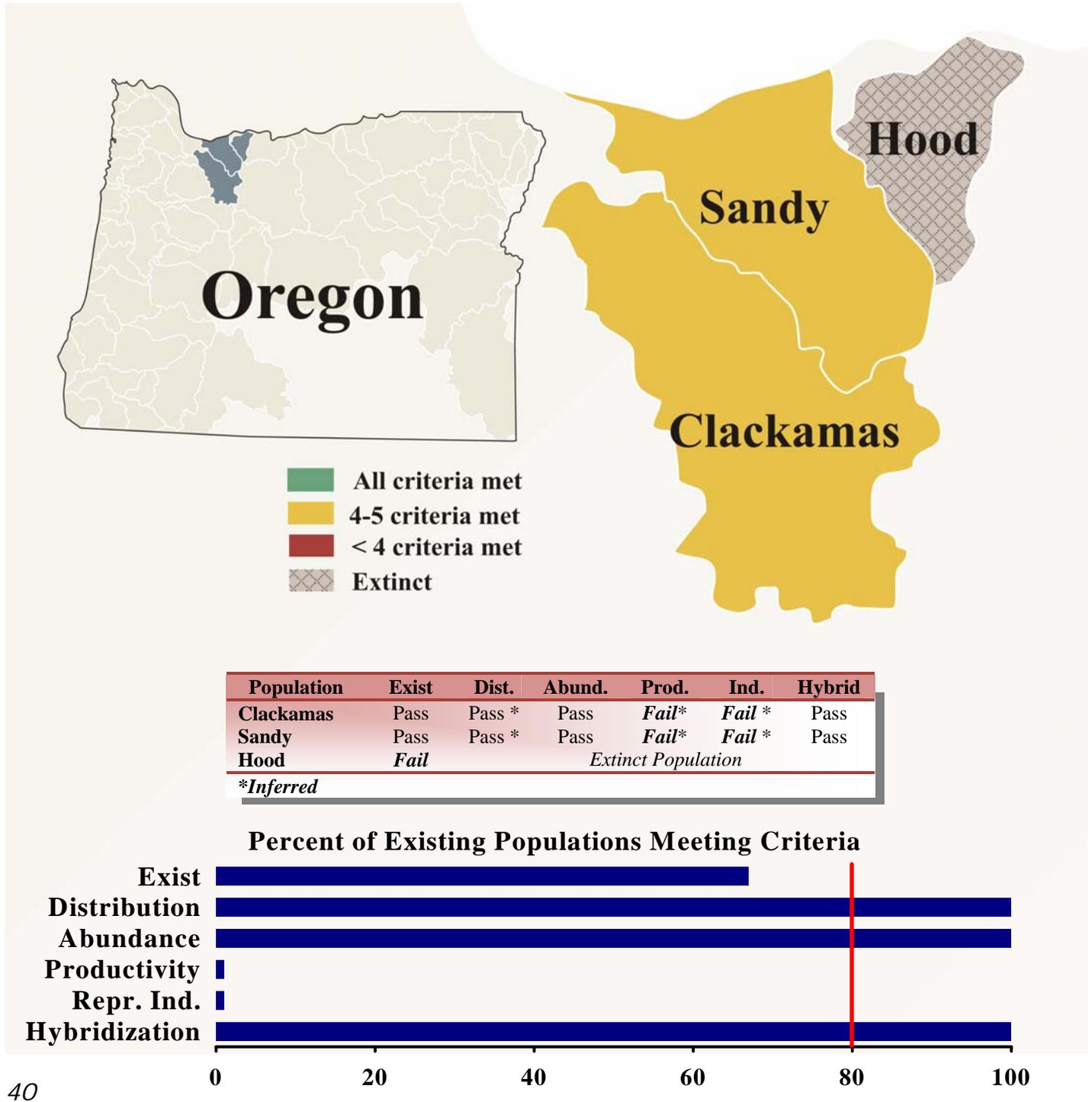
Lower Columbia Spring Chinook SMU

ESA Designation:
Threatened 1999

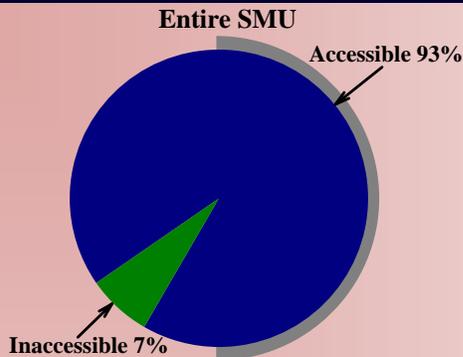
State Status:
Not Listed

Interim Assessment:
At Risk

This SMU includes Clackamas, Sandy, and Hood historical populations. The Clackamas and Sandy have been substantially influenced by hatchery fish. The Hood population is extinct. The SMU only met three of the interim criteria indicating the near-term sustainability is at risk. Suitable data and other information on populations in this SMU provide a moderate level of confidence in the assessment of the interim criteria.



Distribution – Pass



- Both remaining populations passed the criterion.
- 93% of the historical spring Chinook habitat within the SMU remains accessible today, though actual habitat use is unknown.
- Hydrosystem modifications on the Sandy have eliminated 18 miles of historic habitat.
- All of the historical spring Chinook habitat in the Hood Basin (56 miles) is still accessible today.

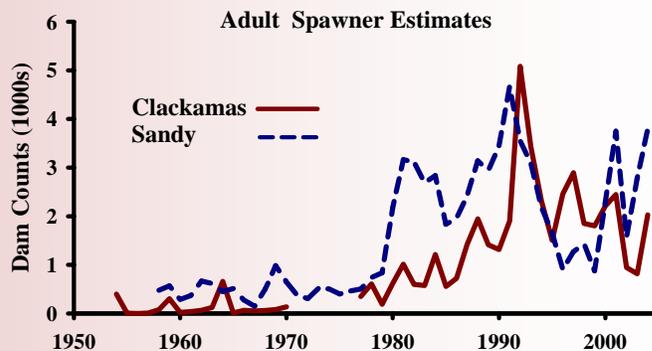
Productivity – Fail

- Uncertain hatchery fractions among spawners prior to 2002 in the Clackamas and 1996 in the Sandy made estimating productivity difficult. High numbers of hatchery spawners resulted in low estimates of productivity for both populations. However, parent abundance levels were typically above the 30-year natural return average.
- The Clackamas failed because in one of two years of low abundance, productivity was below 1.2. The Sandy failed based on insufficient information. Precautionary application of the interim criteria treat incomplete data as a failure in assessment of risks to the SMU.

Additional Information

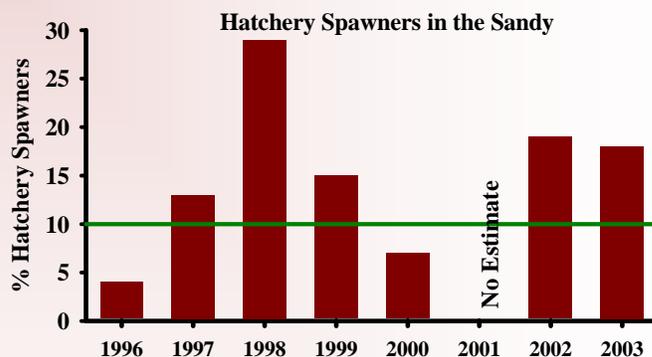
- The Confederated Tribes of the Warm Springs Reservation of Oregon, Bonneville Power Administration, and ODFW are currently operating a supplementation program to re-introduce spring Chinook in the Hood Basin using Deschutes stock. Initial returns over the past decade have been low.
- Management practices are aimed at reducing passage of hatchery adults into natural production areas. In recent years, all spring Chinook smolts released into the Clackamas and Sandy have been adipose fin-clipped. Only unclipped adults returning to North Fork Dam and Marmot Dam are allowed upstream.

Abundance - Pass



- Trends above reflect returns of both wild and hatchery fish prior to 2002 in the Clackamas, and prior to 1996 in the Sandy, because spawner origin could not be identified.
- Prior to major hatchery fish returns in the 1980s, natural returns were consistently at low levels.
- Both the Clackamas and Sandy have exceeded the interim criterion in each of the last five years.

Independence - Fail



- Both the Clackamas and Sandy failed this criterion.
- Prior to 2002, not all hatchery returns were adipose fin-clipped so many hatchery fish were passed above the dams in each basin onto the spawning grounds.
- Since 2002, only unmarked fish have been passed above the dams. However, research has found that there are many hatchery fish even among the unmarked fish passed above the dam.
- Despite passing only non-finclipped fish, studies found that 24-30% of spawners above North Fork Dam, and 18-19% of spawners above Marmot Dam were hatchery fish in 2002 and 2003.

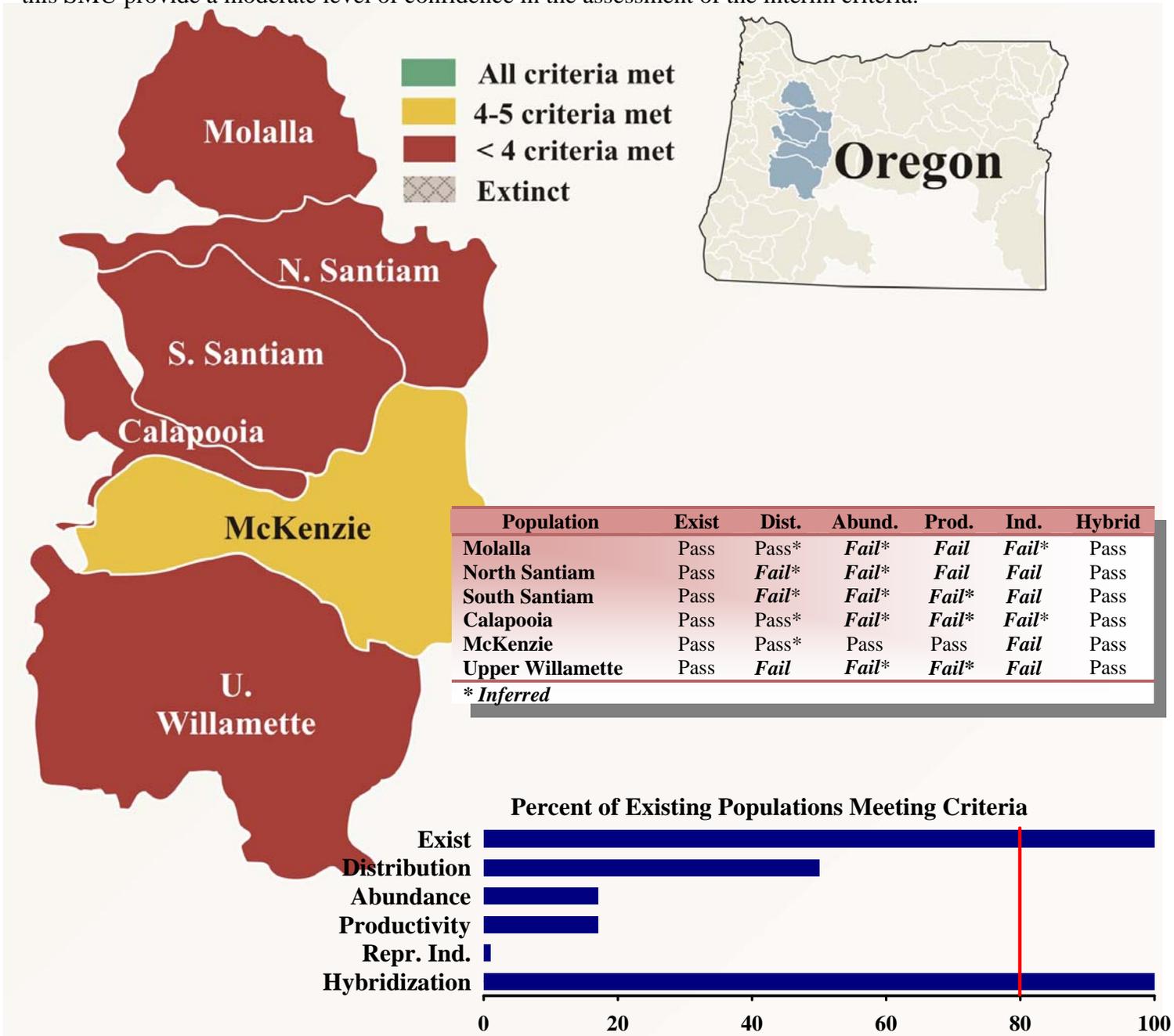
Willamette Spring Chinook SMU

ESA Designation:
Threatened 1999

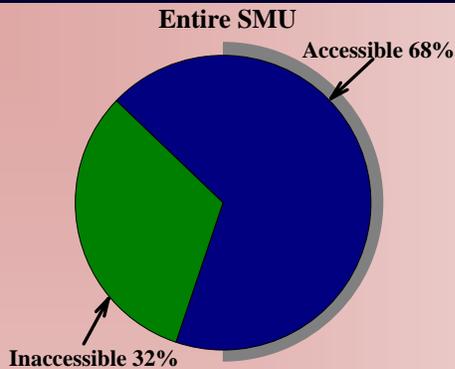
State Status:
Not Listed

Interim Assessment:
At Risk

This SMU includes six populations in the basin above Willamette Falls. The SMU only met two of the six interim criteria leading to the conclusion that the near-term sustainability of the SMU is at risk. The largest remaining natural population in the SMU is in the McKenzie River. Tributary dams block passage to most historical habitats, and have altered habitat quality in downstream reaches. Hatchery fish make up a substantial portion of natural spawning within the Willamette Basin. Suitable data and other information on populations in this SMU provide a moderate level of confidence in the assessment of the interim criteria.

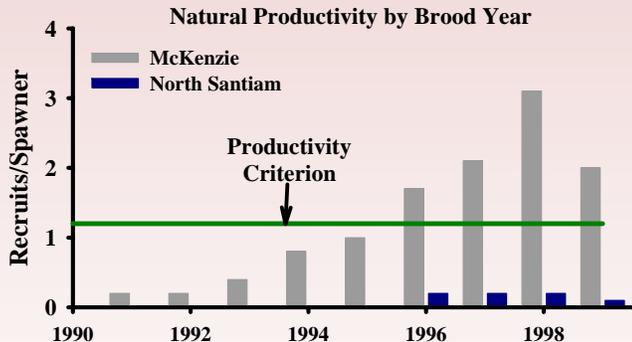


Distribution – Fail



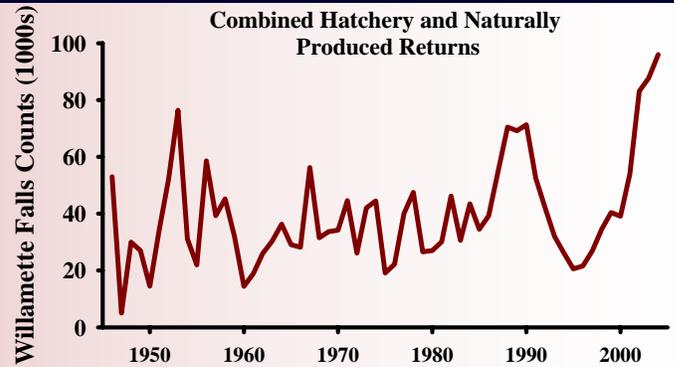
- 32% of the historically available habitat in the SMU is inaccessible today.
- Only three of six populations can still access over 50% of their historical range.
- Green Peter Dam (South Santiam), Foster Dam (South Santiam), Detroit Dam (North Santiam), Dexter Dam (Middle Fork Willamette) have all eliminated habitat historically accessible to spring Chinook, and have altered habitat quality in accessible areas.
- Cougar Dam and Blue River Dam have blocked habitat in the McKenzie.

Productivity – Fail



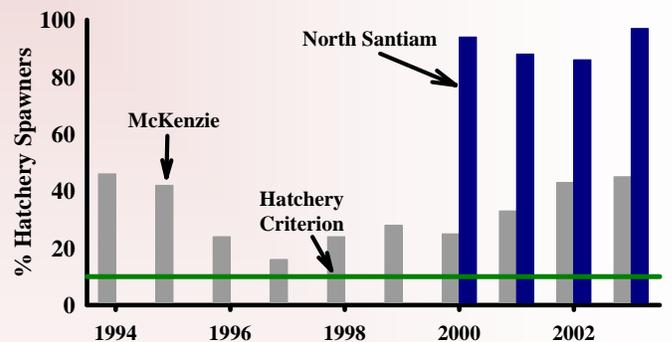
- Only one of six populations (McKenzie) met the productivity criterion.
- Productivity estimates in the McKenzie have been increased steadily since the 1992 brood.
- Recruit per spawner estimates were very low in four years that estimates could be made for the North Santiam.
- South Santiam, Calapooia, and Upper Willamette populations failed the criterion because of altered habitat quality, chronically low returns of naturally produced fish, high hatchery fractions among spawners, and lack of data.
- The Molalla was presumed to have failed based on similarity to the Calapooia and S. Santiam.

Abundance – Fail



- Five of six populations did not meet the interim criterion causing the SMU to fail.
- Returns of naturally-produced fish in the North and South Santiam, Calapooia, Upper Willamette, and Molalla have been chronically low for many years.
- Counts of wild fish at Leaburg Dam in the McKenzie have risen since 1994.
- Combined counts of wild and hatchery fish at Willamette Falls have fluctuated widely over time, but in 2004 reached the highest level in 58 years. Most are hatchery origin.

Independence – Fail



- None of the populations passed this criterion.
- Hatchery spawners have made up 15-46% of the spawning population in the McKenzie since 1994.
- Most spawners in the N. Santiam are hatchery origin.
- Hatchery fish comprise at least 10% and up to 97% of the spawning population in the South Santiam, Calapooia, and Upper Willamette.
- The Molalla population failed because hatchery releases are made in the basin. Two years of data indicate hatchery fractions in the Molalla are greater than 90%.

Mid Columbia Spring Chinook SMU

ESA Designation:
Not Warranted 1998

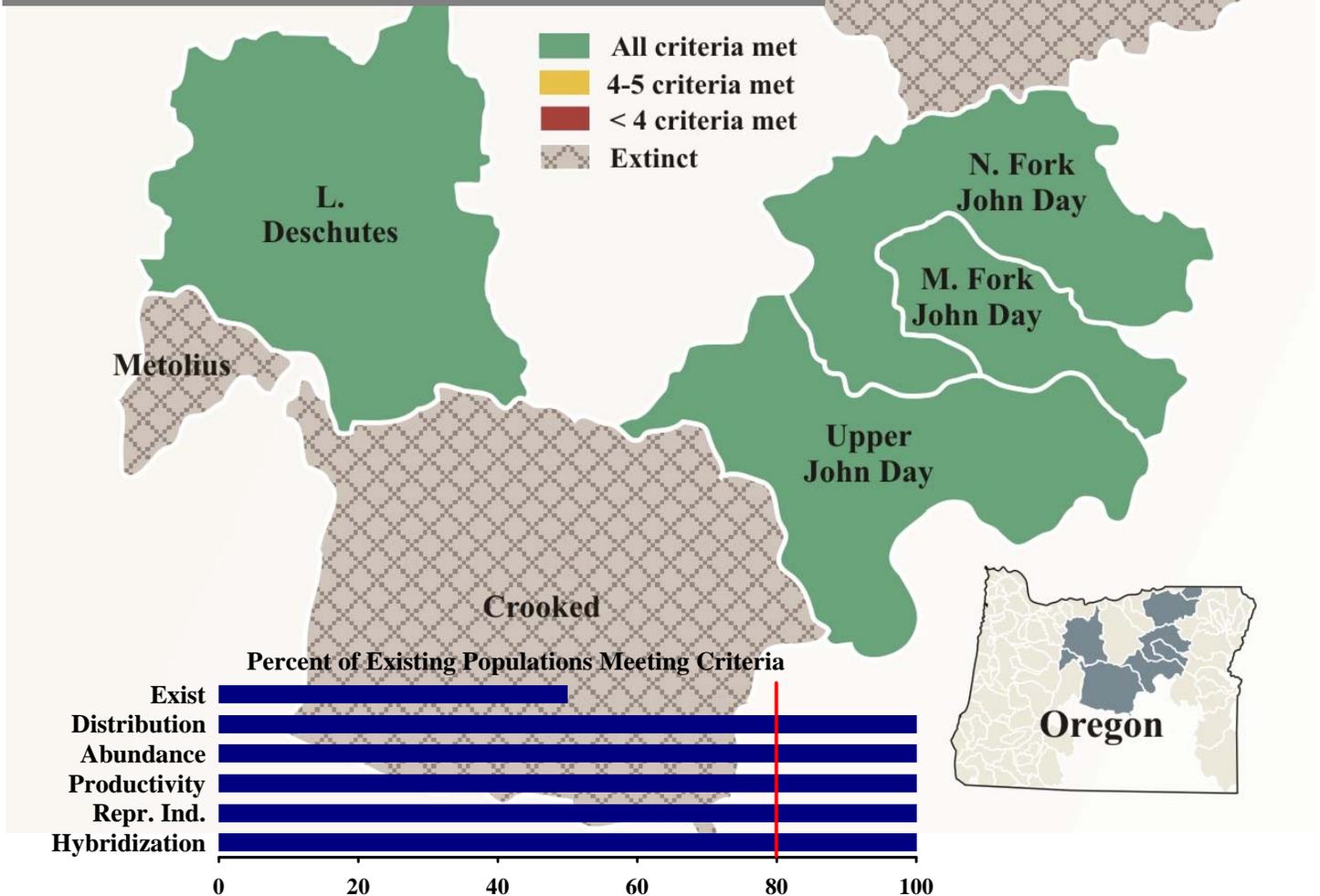
State Status:
Not Listed

Interim Assessment:
Potentially at Risk

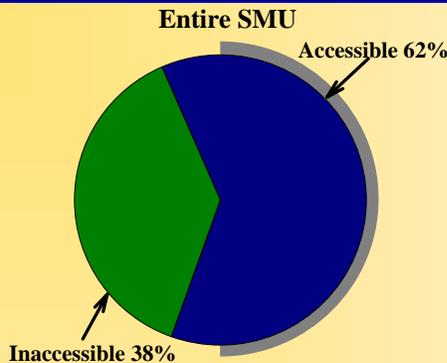
This SMU includes eight populations in tributaries between The Dalles Dam and the Snake River. The Deschutes population and all three John Day populations met each of the interim criteria. However, extinction of 4 of 8 historical populations causes the near-term sustainability of the SMU to be potentially at risk. The Umatilla and Walla Walla populations became extinct in the early 1900s due to extensive irrigation development. Construction of the Pelton-Round Butte complex eliminated access to the Metolius and Crooked populations in 1958. Suitable data and other information on populations in this SMU provide a moderate level of confidence in the assessment of the interim criteria.

Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Lower Deschutes	Pass	Pass*	Pass	Pass	Pass	Pass
Metolius	<i>Fail</i>		<i>Extinct Population</i>			
Crooked	<i>Fail</i>		<i>Extinct Population</i>			
N. Fk. John Day	Pass	Pass*	Pass	Pass	Pass	Pass
M. Fk. John Day	Pass	Pass*	Pass	Pass	Pass	Pass
Upper John Day	Pass	Pass*	Pass	Pass	Pass	Pass
Umatilla	<i>Fail</i>		<i>Extinct Population</i>			
Walla Walla	<i>Fail</i>		<i>Extinct Population</i>			

**Inferred*

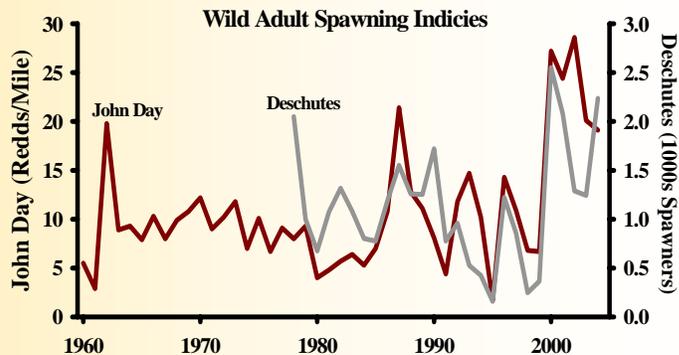


Distribution – Pass



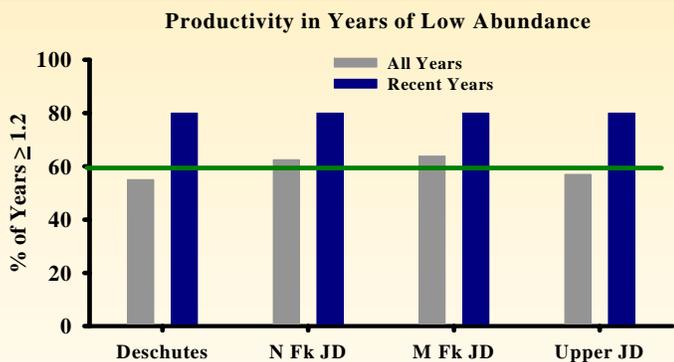
- The distribution of spring Chinook in this SMU was drastically reduced by the loss of Metolius, Crooked, Umatilla, and Walla Walla populations.
- Approximately 99% of historical habitat is still accessible within the existing populations.
- Habitat availability at certain life stages has probably been reduced by high stream temperatures and low flows in the John Day River.

Abundance - Pass



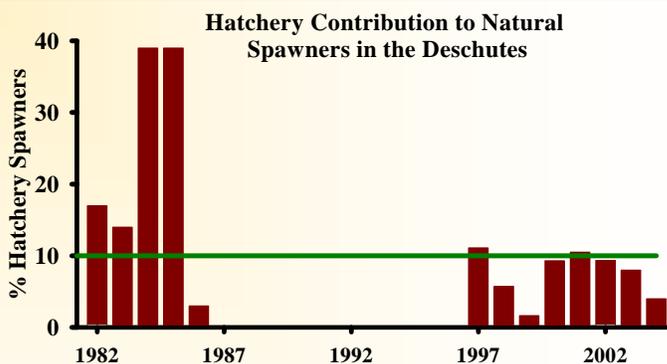
- Each of the four existing populations passed the abundance criterion.
- Good ocean conditions recently produced strong returns in both the Deschutes and John Day rivers which closely follow low numbers in the late 1990s.
- Recent returns to the John Day were the largest in 40 years.
- Deschutes returns have been variable and have not shown a clear increasing or decreasing trend.

Productivity - Pass



- Each of the four remaining populations met the criterion of 1.2 in at four of the last five years of below- average abundance.
- Productivity in the Deschutes and John Day have rebounded in recent years following a long period when spawners frequently failed to replace themselves.
- In years of low parent abundance over the long-term, productivity has been similar among each of the four existing populations. In 55-65% of those years, recruits per spawner exceed 1.2.

Independence - Pass



- Each of the four existing populations passed the reproductive independence criterion.
- A weir at Warm Springs National Fish Hatchery on the Warm Springs River limits numbers of hatchery fish among natural spawners in the lower Deschutes population.
- The John Day Basin is managed as a wild fish basin and stray hatchery fish comprise <2% of the spawners.

Additional Information

- A feasibility study is currently underway in the Deschutes to assess the potential of re-establishing spring Chinook, summer steelhead, and sockeye passage through the Pelton-Round Butte Dam Complex. If successful, this would restore salmon and steelhead access to historical habitat in the Crooked and Metolius rivers.

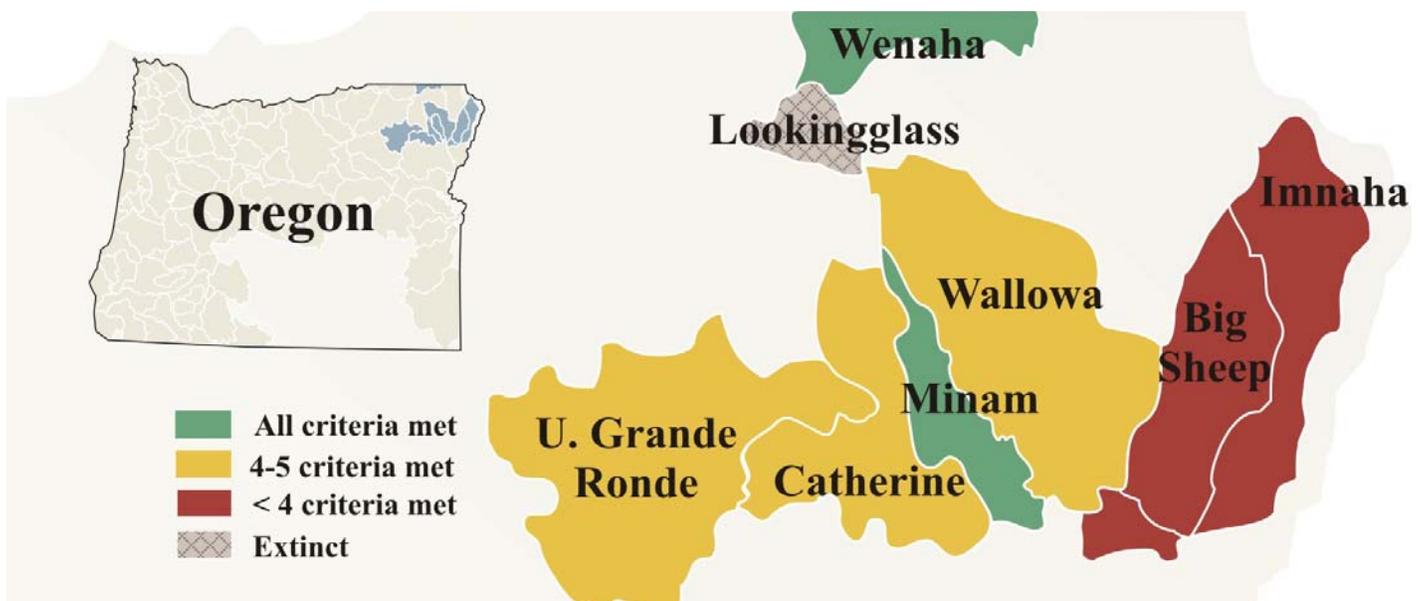
Lower Snake Spring Chinook SMU

ESA Designation:
Threatened 1992

State Status:
Threatened

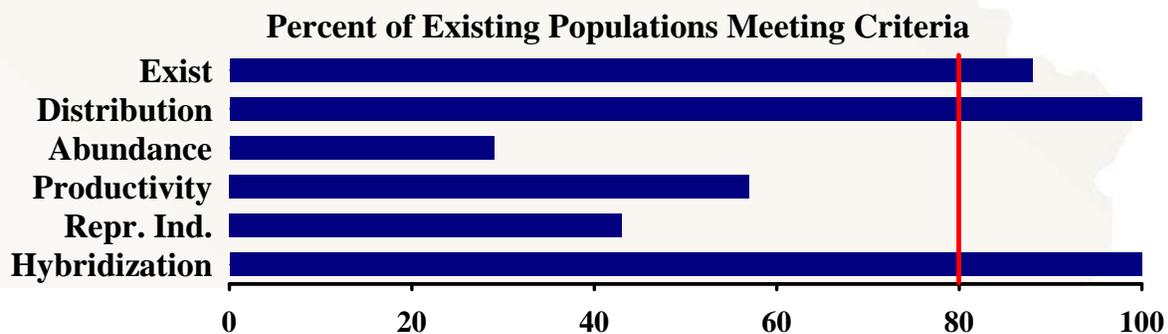
Interim Assessment:
At Risk

This SMU includes eight populations in tributaries between the mouth of the Snake River and Hells Canyon Dam. Failure to meet three of six interim criteria led to the conclusion that the near-term sustainability of the SMU is at risk. The SMU includes a mixture of populations at varying levels of health depending on the quality of spawning and rearing habitats. All populations have been constrained by Snake and Columbia dam passage and migration conditions. Significant hatchery programs have occurred in Lookingglass Creek (Lower Grande Ronde), the Upper Grande Ronde, Catherine Creek, Lostine River, and the Imnaha River basin. Suitable data and other information on populations in this SMU provide a moderate level of confidence in the assessment of the interim criteria.

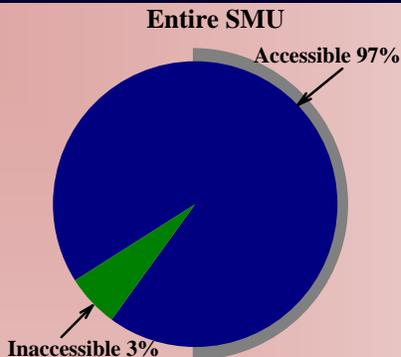


Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Wenaha	Pass	Pass*	Pass	Pass	Pass	Pass
Wallowa	Pass	Pass*	<i>Fail</i>	Pass	<i>Fail</i>	Pass
Minam	Pass	Pass*	Pass	Pass	Pass	Pass
Catherine	Pass	Pass*	<i>Fail</i>	Pass	<i>Fail</i>	Pass
Lookingglass	<i>Fail</i>			<i>Extinct Population</i>		
U. Grande Ronde	Pass	Pass*	<i>Fail</i>	<i>Fail</i>	Pass	Pass
Imnaha	Pass	Pass*	<i>Fail</i>	<i>Fail</i>	<i>Fail</i>	Pass
Big Sheep	Pass	Pass*	<i>Fail</i>	<i>Fail*</i>	<i>Fail*</i>	Pass

* *Inferred*

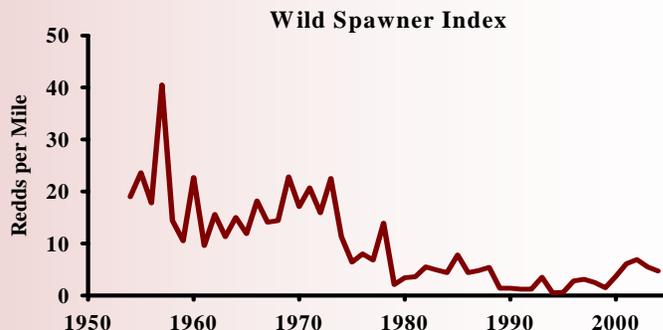


Distribution – Pass



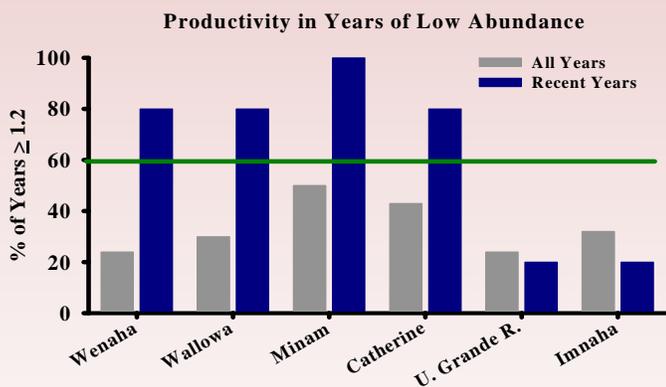
- Each of the seven existing populations passed the distribution criterion.
- Nearly all of the habitat historically accessible to Oregon populations of spring Chinook is still accessible today. However, declines in spawning and rearing habitat quality have reduced the extent of use.
- The Wallowa has lost the largest proportion of its historical habitat, but still maintains 92% accessibility.

Abundance – Fail



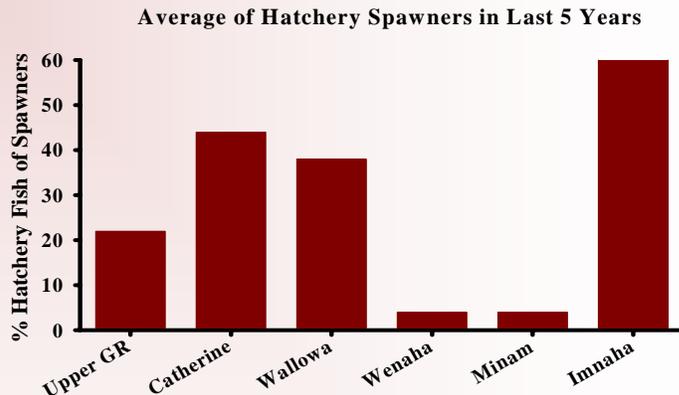
- Only two of seven populations (Wehnaha and Minam) within the SMU met the interim criterion.
- All of the populations within the SMU had a drastic reduction in adult returns from historical levels. Most populations have shown some increases in the last 3-5 years from critical lows in the mid 1990s. The Minam has increased to levels of the 1950s and 1960s.
- Increases in Catherine Creek and the Upper Grande Ronde have not been as strong as for other populations.

Productivity - Fail



- Four of seven existing populations failed the criterion.
- In the years of low abundance within the last 50 years the Snake populations typically have not shown strong resilience. Productivity has been less than 1.2 in more than half of those years. Resilience in recent years of low abundance has been stronger.
- Long-term recruit per spawner estimates have averaged greater than 1.2 in the Minam, Catherine and Wallowa populations, and less than 1.2 for all other populations.
- Data were not available to evaluate the Big Sheep population. Significant natural spawning by hatchery fish occurs within the basin and it is suspected this would drive productivity below the criterion.

Independence - Fail



- Only three of seven populations passed, causing the SMU to fail this criterion.
- Historical hatchery practices oriented to mitigation have resulted in substantial straying. In the early 1990s goals were re-directed towards genetic conservation and population recovery.
- Hatchery fractions in the Wenaha and Minam have consistently been low in recent years.
- Hatchery ratios were below 10% in three of five years in the Upper Grande Ronde.
- Natural spawning by hatchery fish has been very high in the Catherine, Wallowa, and Innaha.

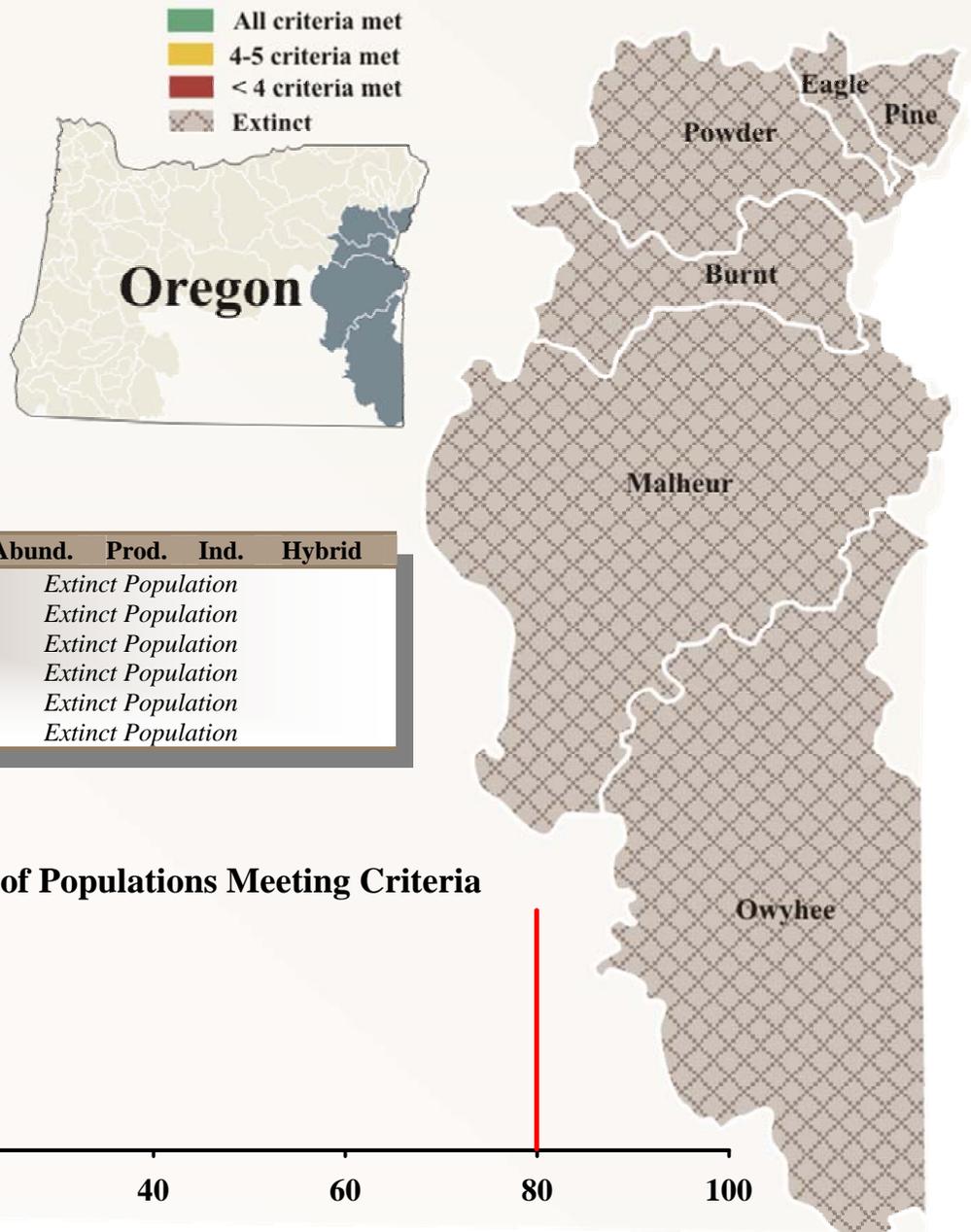
Upper Snake Spring Chinook SMU

ESA Designation:
No Designation

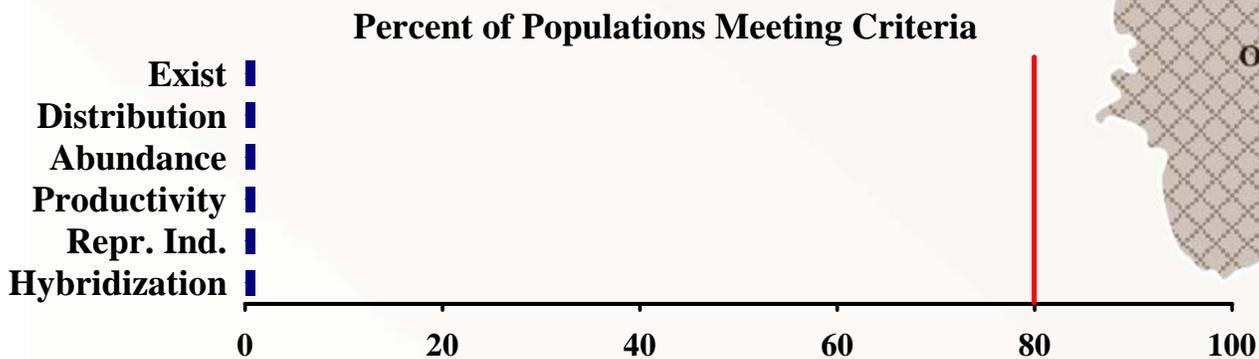
State Status:
No Status

Interim Assessment:
Extinct

Small irrigation dams and diversions had already reduced habitat quality in the first half of the 20th century. Passage to the Malheur basin was eliminated with the construction of Warm Springs Dam (1919) and Agency Dam (1935). All of the populations within this SMU became extinct after completion of the Hells Canyon Dam complex in 1967 eliminated anadromous passage.



Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Pine	Fail					<i>Extinct Population</i>
Eagle	Fail					<i>Extinct Population</i>
Powder	Fail					<i>Extinct Population</i>
Burnt	Fail					<i>Extinct Population</i>
Malheur	Fail					<i>Extinct Population</i>
Owyhee	Fail					<i>Extinct Population</i>



Upper Klamath Spring Chinook SMU

ESA Designation:
No Designation

State Status:
No Status

Interim Assessment:
Extinct

This SMU historically consisted of a single population in the Klamath basin upstream of the Oregon/California border. A series of dams has extirpated spring Chinook and other anadromous salmonids in the upper Klamath, 190 miles upstream from the river mouth. Access was originally blocked in 1918 with the installation of Copco 1 Dam. In 1925, Copco 2 Dam was built just a quarter mile downstream of the original dam. Iron Gate Dam, built in 1962, eliminated another seven miles of habitat downstream of the previous two dams.

Population	Exist	Dist.	Abund.	Prod.	Ind.	Hybrid
Upper Klamath	<i>Fail</i>					<i>Extinct Population</i>

Percent of Populations Meeting Criteria

