

Snake Fall Chinook

Existing Populations

The Snake Fall Chinook SMU consists of a single population and that population is still in existence (Table 43).

Table 43. Population list and existence status for the Snake Fall Chinook SMU.

| Exist | Population | Description |
|-------|------------|---|
| Yes | Snake | Snake River Basin upstream from Lower Granite Dam |

Habitat Use Distribution

Assessments based on current vs. historic habitat provided a reasonable estimate of habitat loss because fall chinook are primarily lower river, mainstem spawners. Snake fall chinook spawn primarily in the mainstem Snake River between the upper end of Lower Granite Reservoir and Hells Canyon Dam. Historically, these fish moved as far upstream as Shoshone Falls in Idaho.

Pre-development distribution of the Snake fall chinook included approximately 615 miles of habitat (Kostow 1995). Construction of the mainstem Snake River dams has limited that distribution to 108 miles in the mainstem Snake River (Connor et al. 2001), only 17% of historic habitat. There is an additional 92 miles of habitat in Oregon tributaries to the Snake River, of which 38 miles are accessible.

Table 44. Habitat accessibility data used in evaluating interim criteria for the Snake Fall Chinook SMU.

| Population | Accessible (miles) | Inaccessible (miles) | Percent Accessible |
|------------|--------------------|----------------------|--------------------|
| Snake | 146 | 561 | 21% |

Abundance

Abundance levels were evaluated based on naturally produced escapement past Lower Granite Dam as provided by WDFW (pers. comm., Cindy LeFleur, 1/17/05). Naturally produced escapement estimates were available through 2003. Counts at Little Goose Dam from 1970 to 1975 were added to the graph in the SMU factsheet for perspective on reductions in returns to the Snake in the early 1970s prior to initiation of counts at Lower Granite Dam. Little Goose Dam counts since 1975 have been similar to counts at Lower Granite Dam for the same time period. That abundance trend reflects returns of both adults and jacks which make up a significant portion of this population.

An estimate of full seeding was used as a surrogate to the 30-year average abundance for this population because abundance levels have been very low. Full seeding was based on an estimate of Snake River fall chinook redd capacity (Connor et al. 2001). Using a modification of the Instream Flow Incremental Methodology, the authors estimated the redd capacity of the Snake River between the upper end of Lower Granite Reservoir and Hells Canyon Dam to be between 2,446 and 2,570. Assuming equal sex ratio for spawners, this equates to an adult full seeding level of approximately 5,000.

Table 45. Abundance estimates (adults) used in evaluating interim criteria for the Snake Fall Chinook SMU.

| Population | Full Seeding Level | 25% of Full Seeding | Abundance by Return Year | | | | | No. Years >25% of Full Seeding |
|------------|--------------------|---------------------|--------------------------|-------|-------|-------|-------|--------------------------------|
| | | | 1999 | 2000 | 2001 | 2002 | 2003 | |
| Snake | 5,000 | 1,250 | 905 | 1,148 | 5,136 | 2,116 | 3,856 | 3 |

Productivity

Productivity was estimated using spawner abundance estimates, hatchery composition, and annual age composition data from the 1986-2003 return years provided by WDFW (pers. comm., Cindy LeFleur, 1/17/05). Age composition prior to 1986 was assumed to be equal to the average from the 1986-2003 return years. Natural parents were defined as in the “Abundance” section. Hatchery spawners included escapement of hatchery fish past Lower Granite Dam minus returns to Lyons Ferry Hatchery. Recruits were naturally produced offspring passing Lower Granite Dam. Jacks were not included in either the parent or recruit portion of the equation.

Table 46. Productivity estimates used in evaluating interim criteria for the Snake Fall Chinook 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 |
| Snake | 1994-98 | 0.5 | 2.6 | 0.9 | 3.4 | 3.0 | 3 |

Reproductive Independence

Estimates of hatchery fractions of fall Chinook in the Snake population based on observations at Lower Granite Dam were provided by WDFW (pers. comm., Cindy LeFleur, 1/17/05). Natural escapement of hatchery adults was calculated as the number estimated passing Lower Granite Dam minus the returns to Lyons Ferry Hatchery.

Table 47. Reproductive independence estimates used in evaluating interim criteria for the Snake Fall Chinook SMU.

| Population | % Spawning Fish of Hatchery Origin | | | | | Years Below 10% |
|------------|------------------------------------|------|------|------|------|--------------------|
| | 1999 | 2000 | 2001 | 2002 | 2003 | |
| Snake | 51% | 57% | 51% | 79% | 71% | 0 |

Hybridization

Hybridization has not been identified as an issue for Snake River fall Chinook.

Assessment Conclusions

This SMU includes a single remnant population currently limited to Oregon, Washington, and Idaho portions of the Snake River between Lower Granite Dam reservoir and Hells Canyon Dam. Construction of three dams in Hells Canyon eliminated access to historic spawning areas in tributary mainstems and the Snake mainstem as far upstream as Shoshone Falls in central Idaho. Numbers today are near 5% of estimates in the 1940s, but in the last few years have approached the capacity of remaining habitat due to aggressive hatchery supplementation and favorable ocean conditions. The Snake population met four of six interim risk criteria leading to the conclusion that its near-term sustainability is potentially at risk.

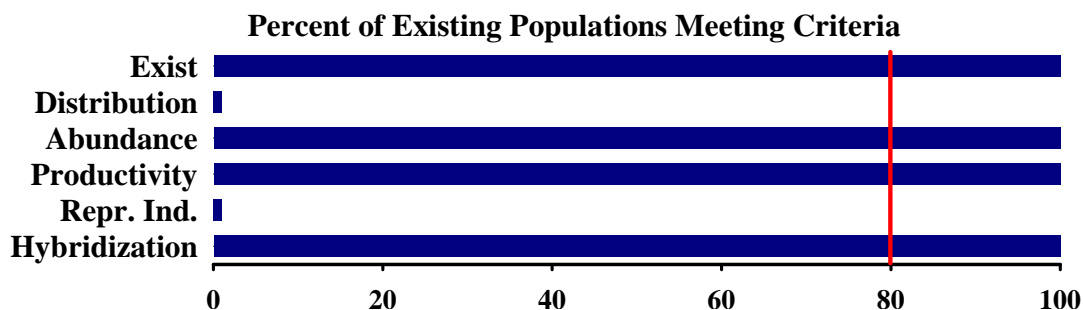
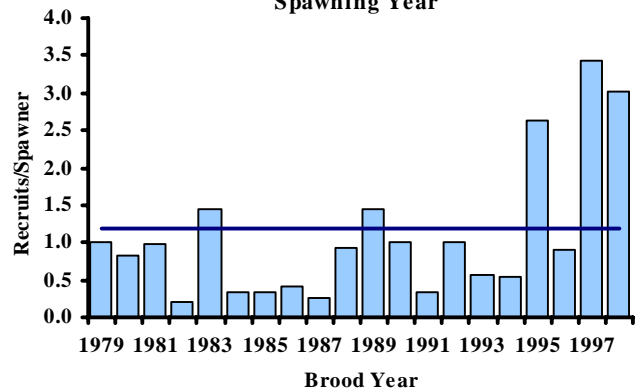
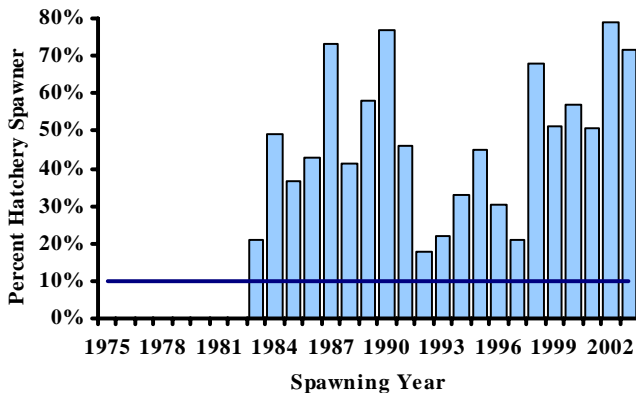
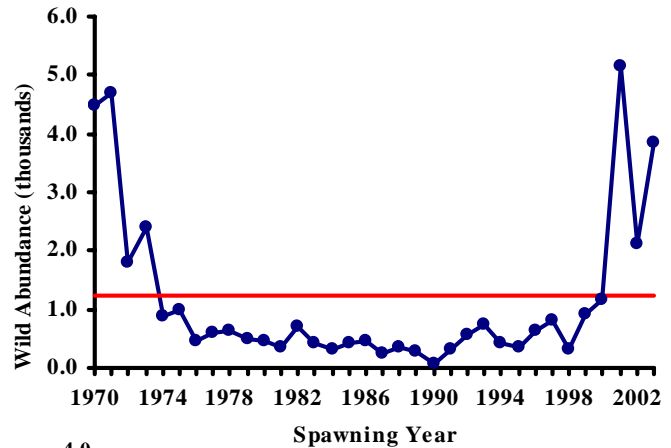
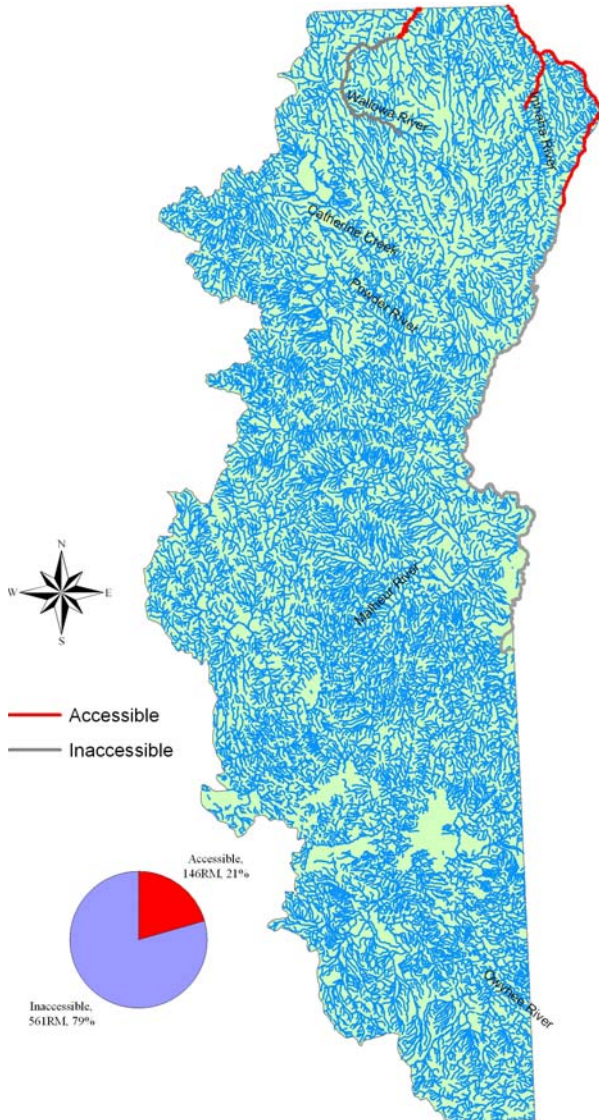


Figure 14. Assessment outcome for each of the six interim criteria with respect to the 80% threshold identified by the NFCP.

Snake – Snake Fall Chinook

The Snake Fall Chinook SMU includes a single population currently limited to Oregon, Washington, and Idaho portions of the Snake River between Lower Granite Dam reservoir and Hells Canyon Dam. The Snake population met four of six interim risk criteria leading to its “Potentially At Risk” designation. The population failed the distribution and independence criteria. Construction of three dams in Hells Canyon eliminated access to historic spawning areas in tributary mainstems and the Snake mainstem as far upstream as Shoshone Falls in central Idaho. In the pie chart to the left, numbers reflect the proportionate availability of historical habitat including that in Washington and Idaho. The map displays only those areas accessible and inaccessible in Oregon. Returns today are only 5% of estimates in the 1940s. Abundance was measured by counts at Little Goose Dam between 1969 and 1974, and at Lower Granite Dam since 1974. Recent improvements in ocean conditions have stimulated strong returns in the last three years allowing the population to pass both the abundance and productivity criteria.



Assessment Outcome

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