Chinook Salmon (Snake River spring/summer–run)

Oncorhynchus tshawytscha

Actinopterygii — Salmoniformes — Salmonidae

CONSERVATION STATUS / CLASSIFICATION

Rangewide:	Critically imperiled run (G5T1)
Statewide:	Critically imperiled (S1)
ESA:	Threatened
USFS:	Region 1: Sensitive; Region 4: Threatened
BLM:	Threatened, Endangered, Proposed, and Candidate (Type 1)
IDFG:	Game fish; Threatened

BASIS FOR INCLUSION

Threatened under the U.S. Endangered Species Act; declining population trend, loss of habitat.

TAXONOMY

Chinook salmon were originally described by Walbaum in 1792 (Nelson et al. 2004, Scott and Crossman 1973). This species has a variable life history and based on when they return to their home stream to spawn, are classified as spring, summer, or fall races (runs) in the northwest (Wydoski and Whitney 2003).

DISTRIBUTION AND ABUNDANCE

Snake River spring/summer Chinook salmon historically were found spawning in the Snake River tributaries of the Clearwater, Salmon, Weiser, Payette and Boise rivers. Populations using the rivers above Hells Canyon Dam were eliminated with the construction of Hells Canyon complex from 1955 to 1967 and earlier upriver dams. Populations in the Clearwater drainage were eliminated or severely depressed by the Lewiston dam in the 1950s. The Idaho portion of the Snake River spring/summer Chinook salmon ESU consists of all of all the Salmon River drainage and the Snake River drainage upstream to Hells Canyon Dam. The Clearwater drainage was not included due to loss of this population in the 1950s. Although not listed in the ESU, the reestablished Clearwater River populations need conservation consideration as part of the historical range and interactions with other populations.

POPULATION TREND

A review of run size for Snake River of spring/summer Chinook salmon is provided by Matthews and Waples (1991). Their summary of research on run size reports historic runs in the Snake River probably exceeded 1 million fish annually in the late 1800s. By the mid–1900s, the abundance of adult spring and summer Chinook salmon had greatly declined to near 100,000 adults/year in the 1950s. Since the 1960s, counts of spring and summer Chinook salmon adults have declined considerably at the lower Snake River dams. Counts at Ice Harbor Dam declined steadily from an average of 58,798 fish in 1962–1970 to a low of 11,855 fish in 1979. Over the next 9 years, counts gradually increased and reached a peak of 42,184 fish in 1988. In 1989, counts began

dropping reaching a low of 2200 fish in 1995. These counts, although illustrative of population trends for all fish, are not indicative of the abundance of wild fish in the population, because adult counts at dams have been confounded by hatchery–reared fish since 1967 (Matthews and Waples 1991). . The average number of spring/summer Chinook salmon passing over Lower Granite Dam for the 1995–2004 period during March to mid–August is 56,014 fish (Columbia River DART program). This includes both hatchery and wild fish. During this period, the percent wild fish has averaged less than 40% of the run (range: 16–60%) (IDFG, unpublished data). The Snake River spring/summer Chinook salmon population was listed at threatened under ESA in 1992 (Federal Register Vol 57, No 78 p 14653).

HABITAT AND ECOLOGY

Chinook salmon are the largest of any salmon, with adults often exceeding 40–60 pounds after 3–5 years in the ocean. Spring/summer Chinook salmon use smaller, higher elevation tributary systems for spawning and juvenile rearing compared to fall run fish which spawn in mainstem of larger rivers. Spring/summer Chinook salmon normally spawn in late July–September using gravel bars in smaller river and tributary streams. As with most salmon, adults die after spawning providing a large nutrient source for juvenile fish. Juvenile spring/summer Chinook salmon behave differently than fall Chinook in that they remain in headwater streams for a year and out–migrate the following spring. Optimal water temperatures range from 14–19 C (59–64 F) with temperatures exceeding 21 C (73 F) being lethal (Wydoski and Whitney 2003). Juvenile Chinook salmon feed on small aquatic invertebrates in both fresh and salt water, primarily insects in freshwater and crustaceans in marine environments. As they grow in saltwater, the quickly change to a fish diet.

ISSUES

The construction of hydroelectric dams on the main stem Snake and Columbia rivers blocked access to nearly half of the historic spawning habitat and reduced survival of juveniles and adults migrating to and from the ocean. Additional effects from hydroelectric dams and water storage projects have resulted in altered hydrographs and water temperature regimes affecting run timing of juveniles and adults. Diversions in spawning and rearing streams have caused direct mortality, loss of habitat and migration barriers. Land management activities have resulted in degraded habitat with the loss of riparian cover, sedimentation and artificial barriers to passage. The addition of hatchery programs to mitigate for lost habitat and survival of fish have introduced genetic concerns about effects to wild stocks. Declining water quality from increasing development in and along river and tributary streams can affect fish populations. Introductions of non–native fish in some waters can increase predation and competition with juvenile fish.

RECOMMENDED ACTIONS

Continue to work with Federal and State agencies, Tribes, and hydropower managers in developing recovery plans and actions to mitigate passage, habitat loss, harvest and hatchery issues, and altered hydrographs. Watershed agreements with private land owners, state and federal agencies need to be developed as needed to address

upstream habitat and flow issues. Management of non–native species needs to consider effects on spring/summer Chinook salmon.

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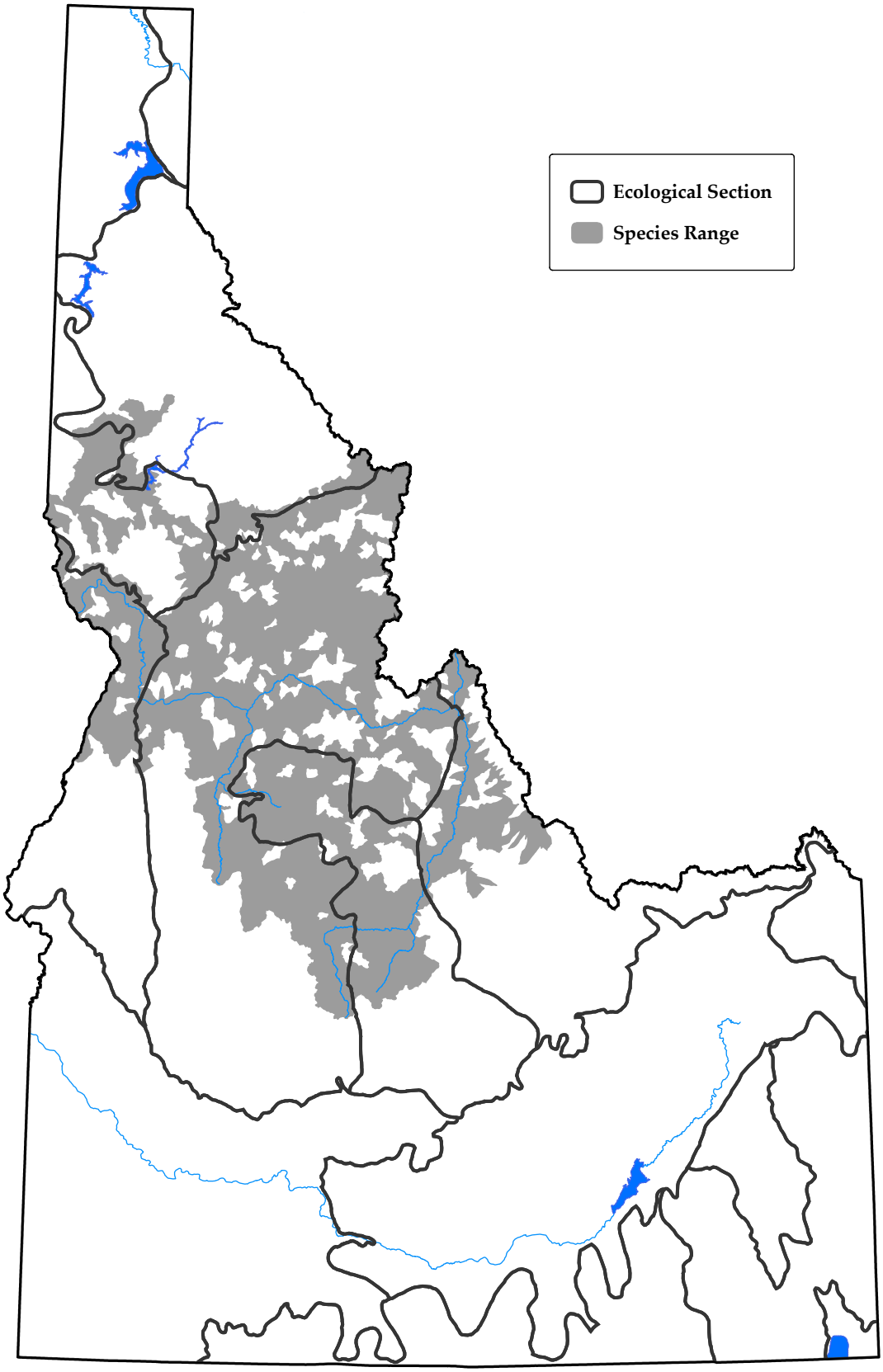

10 August 2005
Fish information is from Idaho Fish and Wildlife Information System, Idaho Deptartment of Fish and Game and displayed at the 6th code hydrologic unit.

0 20 40 80 Kilometers

0 20 40 80 Miles