Snake River Chinook & Steelhead Recovery Plans

Today NOAA Fisheries is releasing two recovery plans for three Snake River fish species: Snake River fall Chinook salmon, Snake River spring/summer Chinook salmon, and Snake River Basin steelhead. While all of the native species carry important ecological, economic and cultural value to the Northwest, each also has unique characteristics that shape its recovery needs. While salmon and steelhead returns will always fluctuate with climate and ocean conditions, recovery strategies position the species to prosper in favorable conditions.

Snake River fall Chinook salmon	Snake River spring/summer Chinook salmon	Snake River Basin steelhead
ESA LISTING		
Threatened, 1992	Threatened, 1992	Threatened, 1997
RECENT RETURNS & TREND		
Experienced strong comeback in last decade, nearing recovery goals for abundance and productivity.	Some populations in roadless areas improving, but all groups need increases in abundance and productivity.	Improving in a few areas, but numbers remain depressed in most areas.
LIFE HISTORY		
Adults return in fall to spawn in mainstem Snake River and lower reaches of large tributaries. Most juveniles migrate to ocean right after emerging from redds as the smallest salmon in the river.	Adults return and spawn in small tributaries in summer when flows are low and temperatures high. Juveniles spend a year in streams with deep pools before migrating to the ocean as yearlings.	Adults return in late summer through early winter, spawning in spring when flows are high. Juveniles may rear in freshwater for 1-3 years.

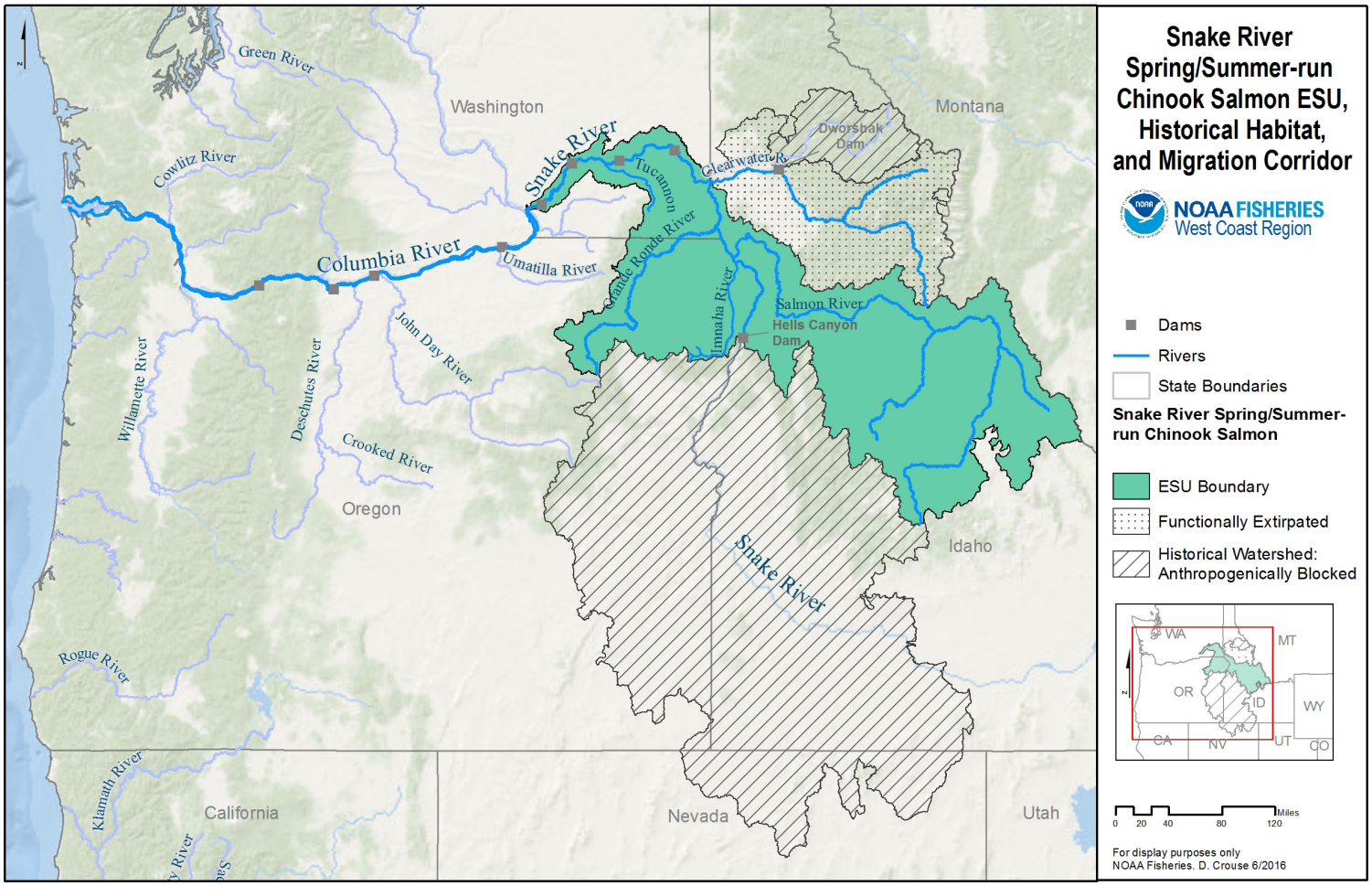
Adult Fall Chinook.

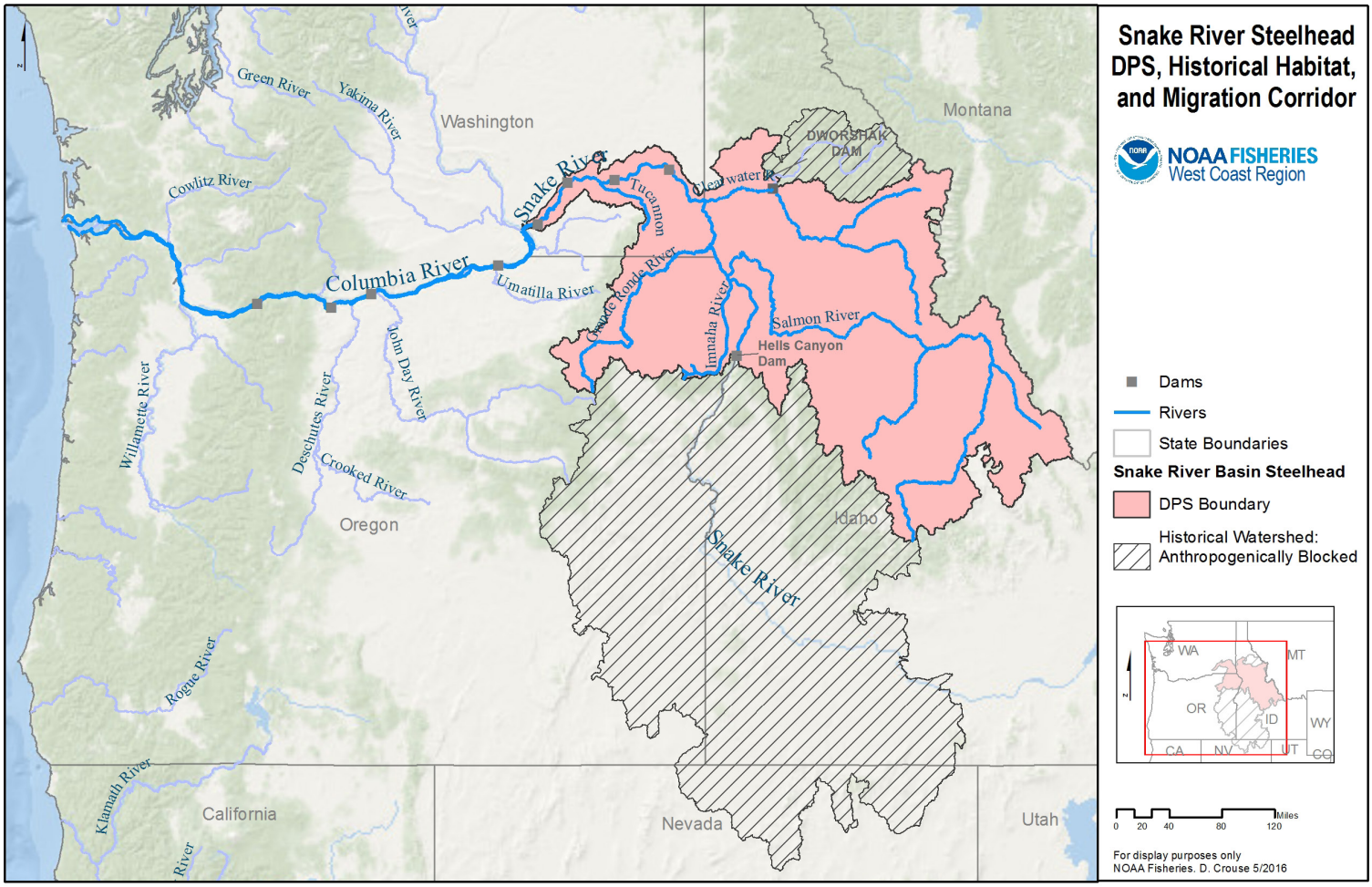
Snake River fall Chinook salmon	Snake River spring/summer Chinook salmon	Snake River Basin steelhead
FISHING		
Caught by anglers targeting hatchery fish at rate averaging 33 percent of returns in recent years, managed annually through regional processes. High cultural value to tribes.	Caught incidentally in other fisheries at rates averaging 10 percent of returns in recent years, managed through regional process. Important cultural value to tribes.	Caught incidentally. A-run: 1 percent in recreational fisheries, B-run: 13 percent in fall treaty fisheries and 1 percent in recreational fisheries. High cultural value to tribes.
HABITAT CONDITION		
About 80 percent of most productive historical mainstem Snake River habitat is blocked. Now spawn in the Snake mainstem between Lower Granite and Hells Canyon dams, and the lower reaches of the Clearwater, Grand Ronde, Salmon, and Tucannon Rivers, where there is less opportunity for habitat improvement	More than half of historic habitat blocked by dams, with remaining spawning areas in wide river valleys often degraded by development, withdrawals of water, and erosion. Habitat restoration especially beneficial and important.	More than half of historic habitat blocked by dams, with adult fish spawning widely wherever they can find suitable remaining habitat. These include some intermittent streams, especially those with abundant pools and slow water refuges. Habitat restoration is an important element of recovery.
CLIMATE CHANGE IMPACTS		
Less vulnerable to climate change because largely dependent on mainstem river and juvenile and adult migrants can largely avoid peak summer temperatures. Warmer temperatures could expand habitat and lead juveniles to grow faster and migrate earlier.	More vulnerable to climate change because adults migrate or spend summer in freshwater habitat and cannot easily avoid peak summer temperatures. Redds vulnerable to scouring by winter floods, reduced flows in summer, and high summer temperatures.	Moderately vulnerable to climate change because adults can largely avoid peak summer temperatures, spending weeks in cooler water refuges, and are generally more tolerant of higher temperatures. Juveniles spend summer in freshwater habitat that may go dry during low summer flows and high temperatures.
ROLE OF HATCHERIES		
Hatcheries play an important role in recovery by preventing extinction and boosting abundance. Maintaining hatchery production to support harvest continues to be important, but must also manage impacts to wild fish.	Hatchery supplementation using native broodstock is an element of recovery plan -- especially in areas where habitat is substantially degraded, while managing impacts to wild fish.	Hatchery supplementation using native broodstock is an important element of recovery plan -- especially in areas where habitat is substantially degraded, while managing impacts to wild fish

Steelhead. Photo: John McMillan

Snake River fall Chinook salmon	Snake River spring/summer Chinook salmon	Snake River Basin steelhead
OCEAN RESIDENCE		
Disperse north, moving more slowly and staying in shallower waters, moving into Gulf of Alaska in second year at sea. Ocean survival varies widely, often biggest factor in determining returns.	Disperse in all directions from river mouth, and then migrate north, farther offshore than subyearling Chinook, becoming one of most abundant salmon stocks in Gulf of Alaska	Disperse west and north across the North Pacific. Ocean survival varies widely depending on conditions, and is commonly the most influential factor in determining returns.
MAIN RECOVERY CHALLENGES		
Understanding potential impacts of high proportion of hatchery spawners, as well as the factors that have driven improvements in productivity and abundance over the last decade or more.	Increasing productivity across the life-cycle; improving habitat conditions and stream flows throughout spawning and rearing habitat.	Increasing productivity across the life-cycle; improving habitat conditions by restoring stream flows and reconnecting floodplain channels to rivers and stream.
SURVIVAL THROUGH HYDROSYSTEM		
Juvenile survival rates have increased substantially given 24/7 spill and surface passage routes at all dams, and may be sufficient to recover the species. Adult survival rates consistently at around 98-99% per project.	Juvenile survival rates have increased substantially given 24/7 spill and surface passage routes at all dams, but additional increases in survival may be needed to recover the species. Adult survival consistently around 98-99% per project in the Snake River, but less consistent between Bonneville and McNary dams.	Juvenile survival rates have increased substantially due to 24/7 spill and surface passage routes at all dams, but additional increases in survival rates may be needed to recover the species. Adult survival rates consistently around 98-99% per project in the Snake River, but less consistent between Bonneville and McNary dams.

Spring Chinook. Photo: Lance Kruzic, NOAA


Snake River Spring/Summer-run Chinook Salmon ESU, Historical Habitat, and Migration Corridor
NOAA FISHERIES West Coast Region
Dams
Rivers
State Boundaries
Snake River Spring/Summer-run Chinook Salmon
ESU Boundary
Functionally Extirpated
Historical Watershed: Anthropogenically Blocked
Miles
0 20 40 80 120
For display purposes only
NOAA Fisheries. D. Crouse 6/2016
Washington
Montana
Oregon
Idaho
California
Nevada
Utah
Green River
Cowlitz River
Columbia River
Snake River
Tucannon
Clearwater R.
Dworshak Dam
Grande Ronde River
Umatilla River
Imnaha River
Salmon River
Hells Canyon Dam
John Day River
Willamette River
Deschutes River
Crooked River
Rogue River
Klamath River


Snake River Steelhead DPS, Historical Habitat, and Migration Corridor
NOAA FISHERIES West Coast Region
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Rivers
State Boundaries
Snake River Basin Steelhead
DPS Boundary
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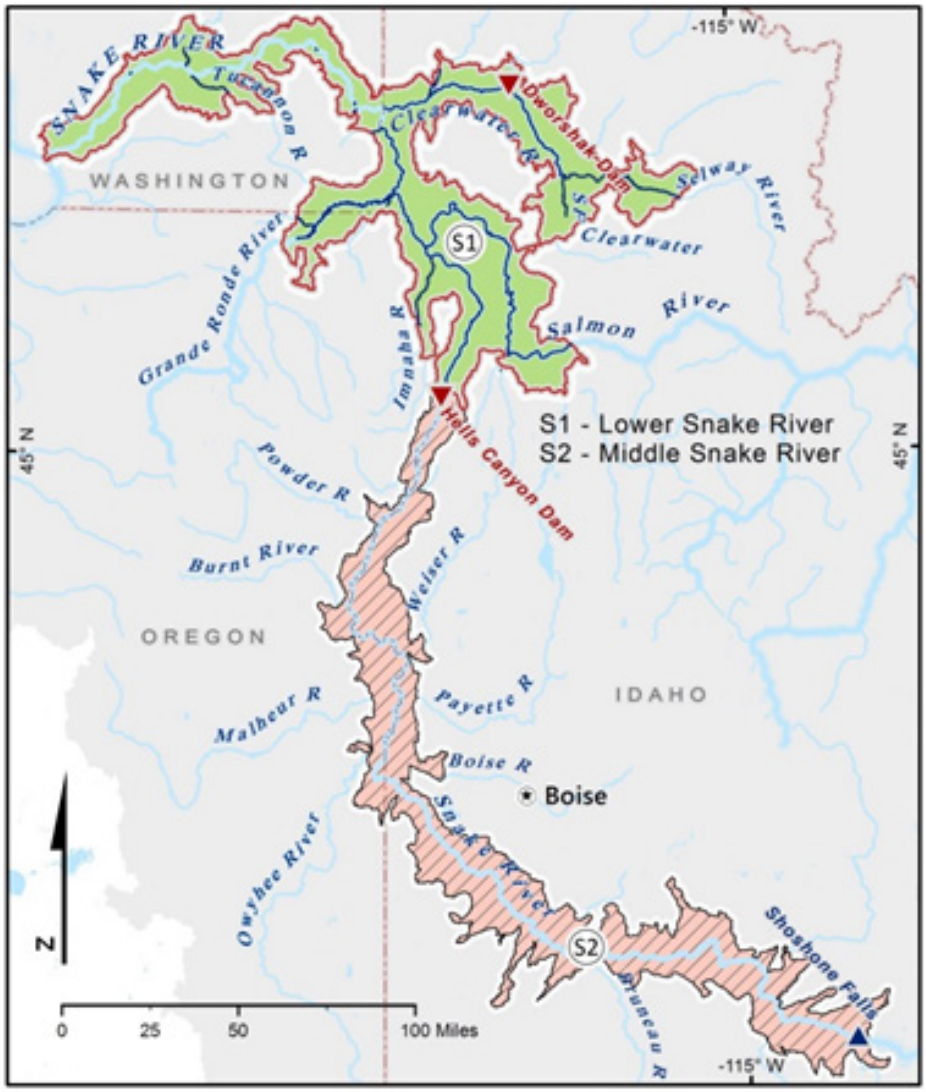

Snake River Fall Chinook Salmon

Oncorhynchus tshawytscha

Extant and extirpated populations within current and undefined historic Snake River Fall Chinook ESU.

ESU
current

Spawning reach

Population
extant
extirpated

ESU barrier
dam
waterfall

ESU and population data developed by NMFS Northwest Regional Office and NMFS Northwest Fisheries Science Center, 2011.

Hydrography data obtained and modified from the EPA's National Hydrography Dataset, NHDPlus version 1, 2006.

These maps are for reference only.

National Marine Fisheries Service

Northwest Fisheries Science Center

Map prepared July 2015.