

# Columbia River Channel Improvement Reconsultation Project

## ENDANGERED FISH SPECIES AND THEY BRIEF ECOLOGICAL OVERVIEW

SPECIES AND DISTRIBUTION	STATUS	RUN AND SPAWNING TIMING	SPAWNING HABITAT	ESTUARINE LIFE HISTORY	HISTORIC AND CURRENT RUN SIZE
Chum salmon ( <i>Oncorhynchus keta</i> ) Bonneville Dam to the mouth of the Columbia River	Threatened	Adults- Early Oct- Nov. Spawning- Nov.-Dec Juveniles- Spring	Lower portions of rivers just above tidewater. Below Bonneville Dam in the side channel near Hamilton Island	Most juveniles spend little time in freshwater and rear extensively in the estuaries. Present from January to June. Residence time from 4-32 days. Occur in shallow water tidal areas.	Historically ranged to 500 km upstream. Now to below Bonneville Dam. Historic run of 500,000 now 1,500-3,200
Lower Columbia River steelhead ( <i>Oncorhynchus mykiss</i> ) Wind River, WA/Hood River, OR to the mouth of the Columbia River	Threatened	Adults Ocean maturing- fall Stream maturing- spring-summer Spawning- Feb-Mar. Juveniles- Spring to early summer.	Upper reaches of tributaries, no mainstem spawning.	Juveniles spend from 1-7 years in freshwater. They are actively migrating when they enter the estuary and do not spend anytime in the threr. Occur primarily along the channel margins	No estimates of historical (pre-1960s) abundance specific to this ESU are available. Total recent (5-year average) run size for major streams in this ESU was greater than 16,000, but this total includes only the few basins for which estimates are available.
Middle Columbia River steelhead ( <i>Oncorhynchus mykiss</i> ) Wind River, WA/Hood River, OR upstream to the Yakima River, WA, excluding the Snake River	Threatened	Adults Ocean maturing- fall Stream maturing- spring-summer Spawning- Feb-Mar. Juveniles- Spring to early summer.	Upper reaches of tributaries, no mainstem spawning.	Juveniles spend from 1-7 years in freshwater. They are actively migrating when they enter the estuary and do not spend anytime there. Occur primarily along the channel margins	Estimates of historical run size for this ESU might have been in excess of 300,000. The most recent 5-year average run size was 142,000, with a naturally produced component of 39,000. These data indicate approximately 74% hatchery fish in the total run to this ESU.

<p>Upper Columbia River steelhead (<i>Oncorhynchus mykiss</i>) Yakima River upstream to Canadian Border</p>	<p>Endangered</p>	<p>Adults Stream maturing- spring–summer Spawning- Feb-Mar. Juveniles- Spring to early summer</p>	<p>Upper reaches of tributaries, no mainstem spawning.</p>	<p>Juveniles spend from 1-7 years in freshwater. They are actively migrating when they enter the estuary and do not spend anytime there. Occur primarily along the channel margins</p>	<p>Estimates of historical (pre-1960s) abundance specific to this ESU are available from fish counts at dams. Counts at Rock Island Dam from 1933 to 1959 averaged 2,600-3,700, suggesting a pre-fishery run size in excess of 5,000 adults for tributaries above Rock Island Dam Recent average total escapement estimates for these stock is 2,400-2,500</p>
<p>Upper Willamette River steelhead (<i>Oncorhynchus mykiss</i>) Willamette Falls to Calapooia River inclusive</p>	<p>Threatened</p>	<p>Adults Ocean maturing- fall Spawning- Feb-Mar. Juveniles- Spring to early summer.</p>	<p>Upper reaches of tributaries, no mainstem spawning.</p>	<p>Juveniles spend from 1-7 years in freshwater. They are actively migrating when they enter the estuary and do not spend anytime in the there. Occur primarily along the channel margins</p>	<p>No estimates of historical (pre-1960s) abundance specific to this ESU are available. Total recent 5-year average run size for this ESU can be estimated from counts at Willamette Falls for the years 1989-93. Dam counts indicate that the late-run (native) winter steelhead average run size was approximately 4,200, while early-run winter and summer steelhead averaged 1,900 and 9,700, respectively</p>
<p>Snake River Basin Steelhead (<i>Oncorhynchus mykiss</i>) All accessible tributaries of the Snake River</p>	<p>Threatened</p>	<p>Adults Stream maturing- spring –summer Spawning- Feb-Mar. Juveniles- Spring to early summer</p>	<p>Upper reaches of tributaries, no mainstem spawning.</p>	<p>Spend from 1-7 years in freshwater. They are actively migrating when they enter the estuary and do not spend anytime there. Occur primarily along the channel margins</p>	<p>No estimates of historical (pre-1960s) abundance specific to this ESU are available. Total recent 5-year average escapement above Lower Granite Dam was approximately 71,000, with a natural component of 9,400</p>

<p>Snake River sockeye salmon <i>(Oncorhynchus nerka)</i> All accessible habitat in the Snake River</p>	<p>Endangered</p>	<p>Adults Stream maturing- spring –summer Spawning- Feb-Mar. Juveniles- Spring to early summer</p>	<p>Spawn either in inlets or outlets of lakes or in river systems with out lake habitat</p>	<p>Rear in freshwater in the Snake River either in the lake or in the bigger tributaries. Do not use estuary for rearing only as migration corridor along channel margins.</p>	<p>Historically abundant in several lake systems in Idaho and Oregon. In this century, a variety of factors (including overfishing, irrigation diversions, obstacles to migrating fish, and eradication through poisoning) have led to the demise of all Snake River sockeye salmon except those returning to Redfish Lake in the Stanley Basin of Idaho.</p>
<p>Lower Columbia River chinook salmon <i>(Oncorhynchus tshawytscha)</i>  Mouth of the Columbia River upstream to Little White Salmon River, WA and Hood River, OR including the Willamette River up to Willamette Falls</p>	<p>Threatened</p>	<p>Adults Fall run-midAug- Sept-Oct Spring run- late winter to spring Spawning- late August- Nov Juvenile- early spring to fall depending upon run type.</p>	<p>Spawn in main river to upper reaches of tributaries in areas where substrate (gravel 2.5-5”) and flow (sufficient to percolate water into gravel) are adequate.</p>	<p>At least two general life history strategies, an ocean type and a stream type. Ocean type juveniles migrate downstream immediately after hatching and rear along the way and in the estuary. The amount of time that they rear in the estuary is dependent upon on their age when they reach the estuary. Lower river fish likely rear extensively in the estuary. Rearing can also occur in several areas but mostly occurs in sandy/slit in sub and intertidal areas. Stream type juveniles rear predominately in freshwater areas near where they hatched. They can remain in fresh water from 1-3 years and are physiologically ready to enter the ocean (smolts) when they reach the estuary. They do not spend much if any time in the estuary rearing.</p>	<p>There are no estimates of historic abundance for this ESU, but there is widespread agreement that natural production has been substantially reduced over the last century. Busby <i>et al.</i> 1995; 1996</p>

<p>Upper Columbia River spring-run chinook salmon (<i>Oncorhynchus tshawytscha</i>) Columbia River tributaries upstream of the Rock Island Dam and downstream of Chief Joseph Dam in Washington, excluding the Okanogan River.</p>	<p>Endangered</p>	<p>Adults - late winter to Spring Spawning- late August- Nov Juvenile- early spring to summer.</p>	<p>Spawn in main river to upper reaches of tributaries in areas where substrate (gravel 2.5-5") and flow ( sufficient to percolate water into gravel) are adequate</p>	<p>Stream type juveniles that rear predominately in freshwater areas near where they hatched. They can remain in fresh water from 1-3 years and are physiologically ready to enter the ocean (smolts) when they reach the estuary. They do not spend much if any time in the estuary rearing.</p>	<p>Historic estimates is in the hundreds of thousands, but declining due to harvest by 1900. Total recent river runs for the ESU averaged 58,000 adults (geometric mean for 1990-94), estimated from total summer- and fall-run chinook salmon</p>
<p>Upper Willamette River chinook salmon (<i>Oncorhynchus tshawytscha</i>) Clackamas River and Willamette River and tributaries above Willamette Falls</p>	<p>Threatened</p>	<p>Adults - late winter to spring Spawning- late August- Nov Juvenile- early spring to summer</p>	<p>Spawn in tributaries in areas where substrate (gravel 2.5-5") and flow ( sufficient to percolate water into gravel) are adequate</p>	<p>Combination of ocean type and stream type. Fry migrate downstream after hatching but rear in main portions of the larger rivers or the Willamette. Also some may migrate to the estuary to rear.</p>	<p>Total abundance has been relatively stable at approximately 20,000 to 30,000 fish; however, recent natural escapement is less than 5,000 fish and has been declining sharply. About two-thirds of spawners are first-generation hatchery fish, suggesting that the natural population is falling far short of replacing itself.</p>

<p>Snake River spring/summer-run chinook salmon (<i>Oncorhynchus tshawytscha</i>)</p> <p>Mainstem Snake River and any of the following subbasins: Tucannon River, Grande Ronde River, Imnaha River, and Salmon River.</p>	<p>Threatened</p>	<p>Adults - late winter to spring Spawning- late August- Nov Juvenile- early spring to summer</p>	<p>Spawn in tributaries in areas where substrate (gravel 2.5-5") and flow (sufficient to percolate water into gravel) are adequate. The majority of the spawning habitat occurs in the Northern Rockies and Blue Mountains ecoregions.</p>	<p>Stream type juveniles that rear predominately in freshwater areas near where they hatched. They can remain in freshwater from 1-3 years and are physiologically ready to enter the ocean (smolts) when they reach the estuary. They do not spend much if any time in the estuary rearing.</p>	<p>Historical abundance probably exceeded 1.5 million adults in some years in the 1800s The most recent 5-year (1992-96) geometric mean abundance was 3,820 naturally-produced spawners</p>
<p>Snake River fall chinook salmon (<i>Oncorhynchus tshawytscha</i>).</p> <p>Mainstem Snake River and any of the following subbasins: Tucannon River, Grande Ronde River, Imnaha River, Salmon River, and Clearwater River</p>	<p>Threatened</p>	<p>Adults -midAug-to Sept-Oct Spawning- late August- Nov Juvenile- early spring to fall depending upon run type.</p>	<p>Spawn in Snake River and lower reaches of tributaries.</p>	<p>Ocean type juveniles migrate downstream immediately after hatching and rear along the way and in the estuary. The amount of time that they rear in the estuary is dependent upon on their age when they reach the estuary. Rearing occurs in several areas but mostly in sub and intertidal areas with sandy/slity substrate. A few may also exhibit the stream type life cycle</p>	<p>Historically, the Snake River populations dominated production in this ESU; total abundance is estimated to have been about 72,000 in the 1930s and 1940s, and it was probably substantially higher before that. Production from the Deschutes River was presumably only a small fraction of historic production in the ESU. In contrast, recent (1990-96) returns of naturally spawning fish to the Deschutes River (about 6,000 adults per year) have been much higher than in the Snake River (5-year mean about 500 adults per year,</p>