

# Middle Columbia River Steelhead

Progress toward Recovery



# Focus on Middle Columbia River Steelhead

## The Federal Caucus

Twenty years ago, ten federal agencies<sup>1</sup> that have natural resource responsibilities in the Columbia River Basin formed the Columbia River Basin Federal Caucus to promote recovery of native fish and wildlife listed under the Endangered Species Act. Currently, 13 populations of Columbia River Basin salmon and steelhead are listed as threatened or endangered under ESA. Members of the Federal Caucus work together to

- Better integrate, organize and coordinate federal fish recovery and water quality efforts in support of protecting and restoring the basin's aquatic ecosystem; and
- Assist in coordination for the basin's federal trust and treaty responsibilities to Native American tribes within the basin.

In 2017, the Federal Caucus convened a focus team to conduct an assessment of the status of recovery efforts for Middle Columbia River steelhead (figure 1). The Team developed a comprehensive report that provides a detailed assessment of prior recovery efforts, profiles the current status of the populations, and proposes future objectives. The report draws information from the 2009 MCR Steelhead Recovery Plan, the 2015 Northwest Fisheries Science Center biological status review, and NMFS MCR Steelhead status reviews. The report also reflects ongoing efforts by the Yakama, Umatilla, and Warm Springs tribes, State of Washington recovery boards, watershed councils, partnerships, conservation districts, irrigation districts, state and local governments/agencies, and all members of the Federal Caucus. The report provided the basis for the progress summary presented in this document. The team addressed the following questions:

- Based on the five-year status review completed in 2015 (NWFSC 2015), what are the most important threats and limiting factors that need to be addressed to improve species viability, and which of these threats and limiting factors can federal agencies help to address?
- What has been accomplished by federal agencies that has contributed to improved viability and current status of the species (e.g., Reclamation's Yakima Basin Integrated Water Management Plan)?
- What are the remaining and future recovery needs, and how can actions by federal agencies improve viability and address these needs?



**Figure 1.** Middle Columbia River steelhead (photograph by NOAA Fisheries).

<sup>1</sup> The ten agencies that comprise the Federal Caucus are National Oceanic and Atmospheric Administration, Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Forest Service, Bureau of Land Management, U.S. Army Corps of Engineers, Bureau of Indian Affairs, Bureau of Reclamation, U.S. Geological Survey, and Natural Resource Conservation Service.



## Middle Columbia River Steelhead Major Population Groups

The MCR steelhead was listed as threatened in 1999, and this listing was reaffirmed in 2014. MCR steelhead spawn over an area of approximately 35,000 square miles in the Columbia

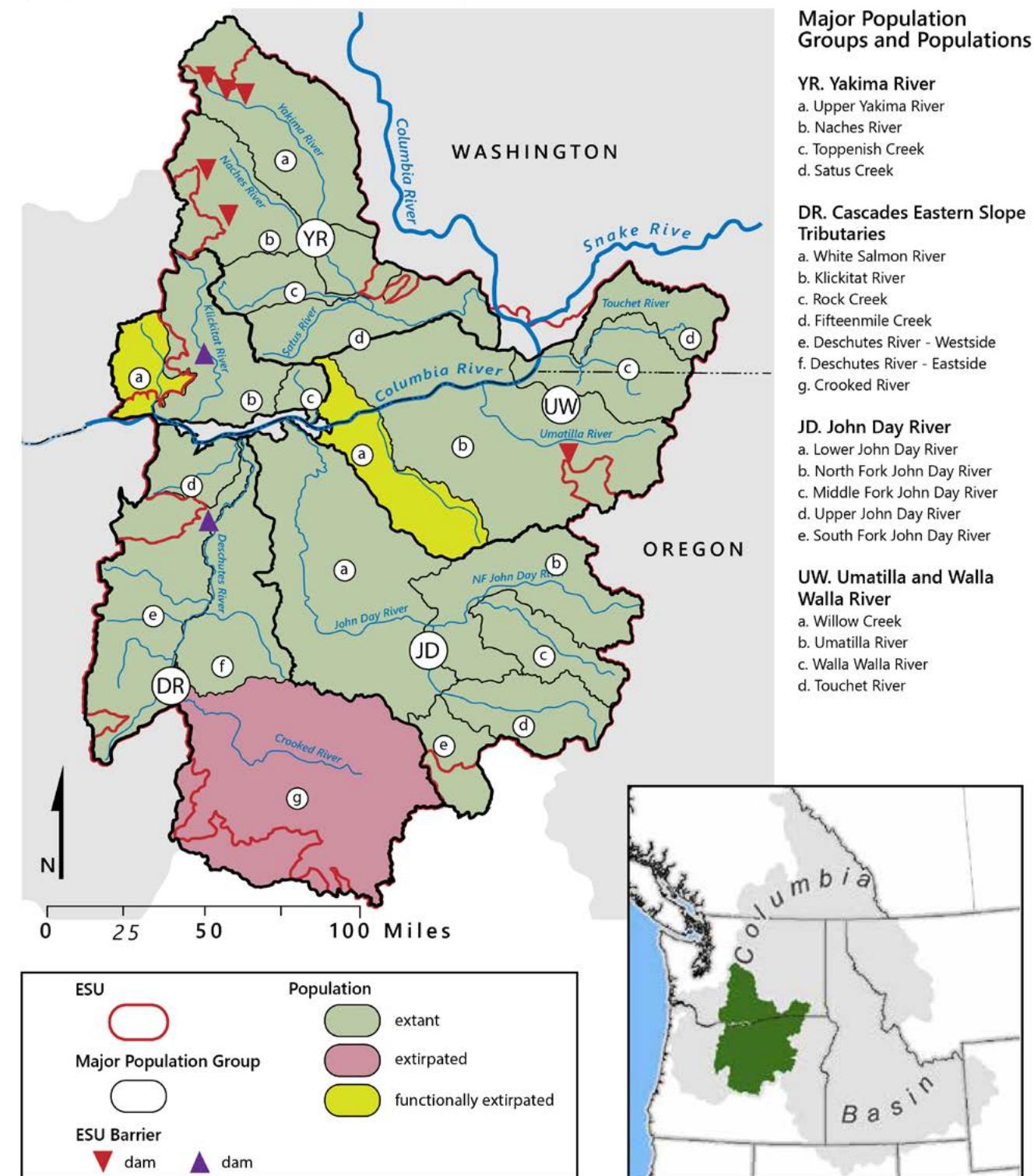
Plateau of eastern Washington and eastern Oregon (figure 2). The MCR steelhead Distinct Population Segment comprises four major population groups.

### Four Major Population Groups

- The Yakima River MPG, which includes four extant (surviving) populations;
- The John Day River MPG, which includes five extant exclusively wild populations;
- The Umatilla/Walla Walla MPG, which includes three extant populations and one population (Willow Creek) classified as extirpated, *i.e.*, the species has disappeared from the area; and
- The Cascades Eastern Slope Tributaries MPG, which includes four extant populations, one extant exclusively wild population (Fifteenmile Creek), one functionally extirpated population (White Salmon), and one extirpated population with a reintroduction program underway (Upper Deschutes–Crooked River).

### Middle Columbia Summer/Winter Run Steelhead

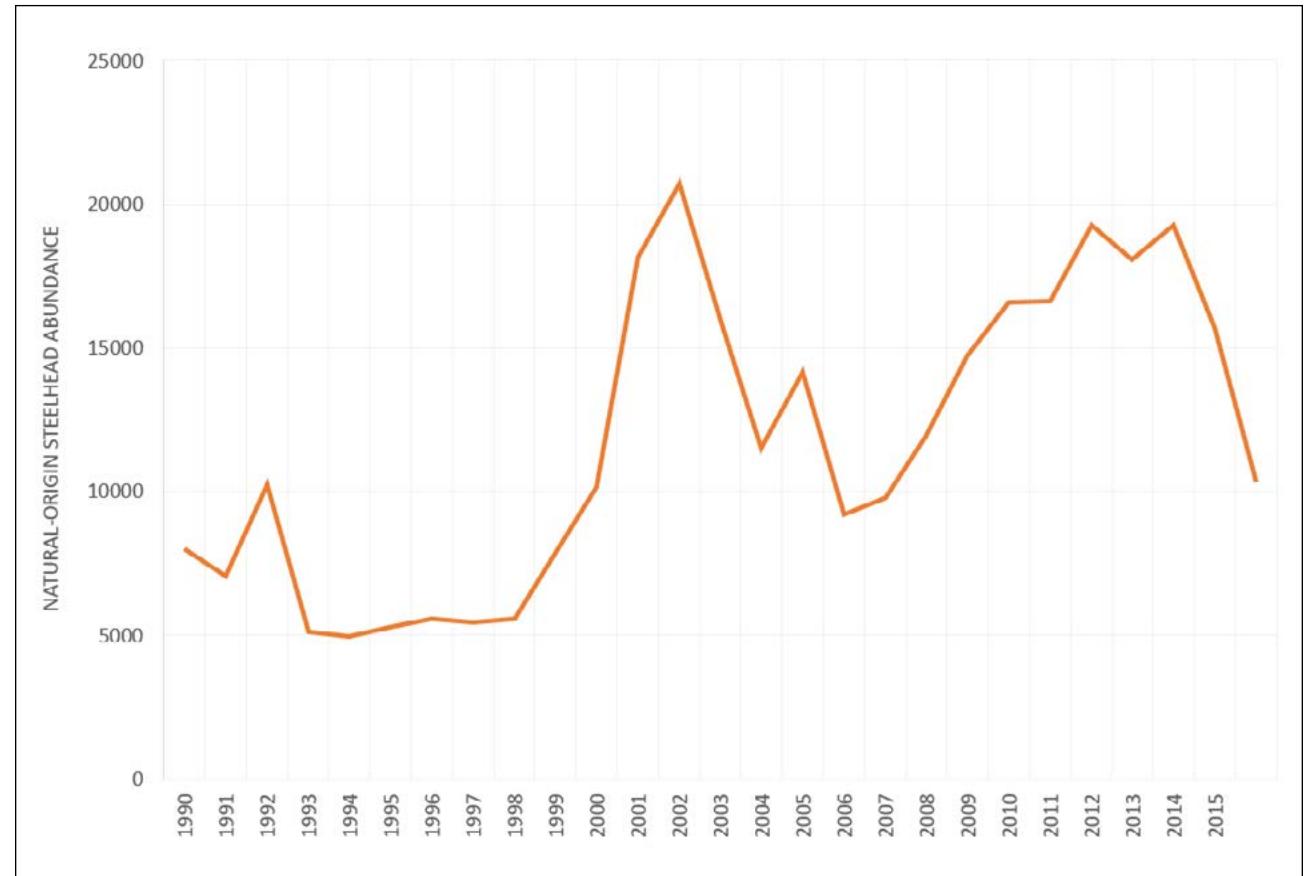
*Oncorhynchus Mykiss*  
Spring/Summer Chinook ESU and Major Population Groups



**Figure 2.** Map showing the four MCR steelhead MPGs; information developed by NOAA Fisheries West Coast Regional Office and Northwest Fisheries Science Center.

The decline of the MCR steelhead DPS was caused by widespread habitat degradation, impaired mainstem and tributary passage, hatchery effects, predation, competition, disease, and changing ocean conditions. In response, federal agencies funded and implemented numerous projects over many years that benefited MCR steelhead. Significant investments in research, planning, regional coordination, and on-the-ground activities continue through coordinated state, tribal, federal, and local actions. In recent years, MCR steelhead were doing relatively well compared to other populations of salmon and steelhead in the Columbia River Basin. Based on natural spawner abundance data for the period from 1949 to 2019 (BPA et al. 2020), many

populations in the Yakima, Klickitat, Rock Creek, and Walla Walla basins are nearing recovery goals, and there have been improvements in the viability ratings for some of the component populations. Steelhead populations in the Middle Columbia River have generally increased in abundance since the 1990s (**figure 3**). More recently, MCR steelhead have experienced reductions in adult abundance, primarily due to poor ocean conditions. Some aspects of ocean conditions, such as temperature, salinity, and coastal food webs, appeared to be returning to normal in 2018. While this would be favorable to adult steelhead abundances, overall ocean conditions have continued to be impacted by recent warming trends.

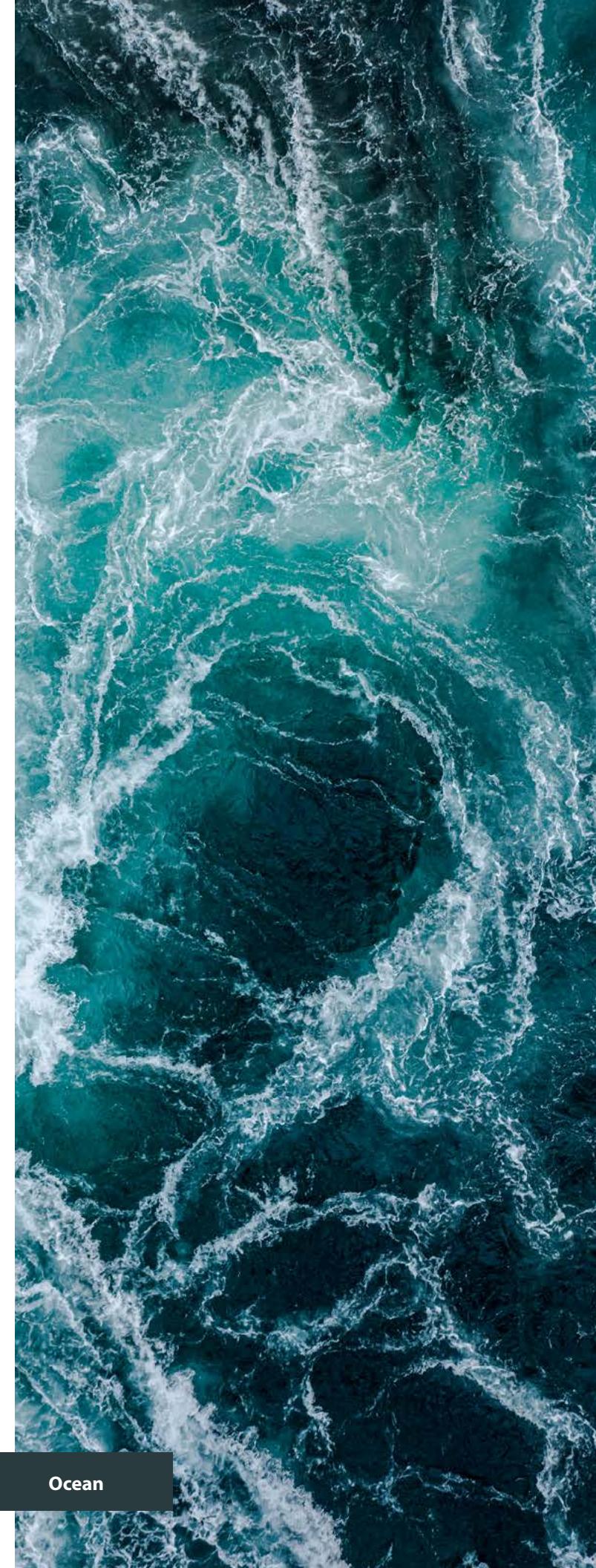


**Figure 3.** Historic MCR steelhead abundance trends, which represent the sum of all populations or MPG<sub>s</sub> that make up the MCR steelhead DPS (source: BPA et al. 2020, most recent available data).

Ocean conditions and related impacts will continue to affect MCR steelhead. However, during periods when ocean conditions are favorable—and where the region has worked to significantly improve freshwater habitat conditions—the Federal Caucus is optimistic that MCR steelhead populations will be highly productive. Actions such as habitat restoration, improved fish passage, and increased streamflows continue to improve, mitigate, or reduce limiting factors, resulting in reduced risks and increased survival. Tributary habitat improvement metrics for MCR steelhead between 2007 and 2015 include the following accomplishments:

- over 94,100 acre-feet of water were protected and kept instream to benefit MCR steelhead;
- over 42,800 acres of land were purchased for conservation easements;
- over 7,400 acres of riparian habitat were improved;
- over 1,850 stream miles were enhanced or made accessible; and
- stream complexity was increased on more than 157 miles of stream.

The following sections of this document focus on each of the four MPG<sub>s</sub>, respectively: the Yakima River MPG, the John Day River MPG, the Umatilla/Walla Walla MPG, and the Cascades Eastern Slope Tributaries MPG. Progress is summarized in terms of frameworks for collaboration, abundance status and trends, and actions being undertaken to improve habitat and passage conditions in the respective basins.



Ocean



# Yakima River MPG

## Collaboration Framework

The Yakima basin in central Washington occupies a substantial portion of Kittitas, Yakima, and Benton counties and a small area of Klickitat County. Salmon recovery efforts in the Yakima basin have been ongoing for more than 30 years. Federal, state, tribal, and non-governmental organizations came together in 2009 to develop the Yakima Basin Integrated Plan. Finalized in 2011, YBIP represents a coordinated effort by all stakeholders to address specific problems within the Yakima basin to benefit ESA-listed anadromous and resident fish species. With YBIP in place, diverse groups are collaborating with the federal government to improve aquatic resources in the Yakima basin.

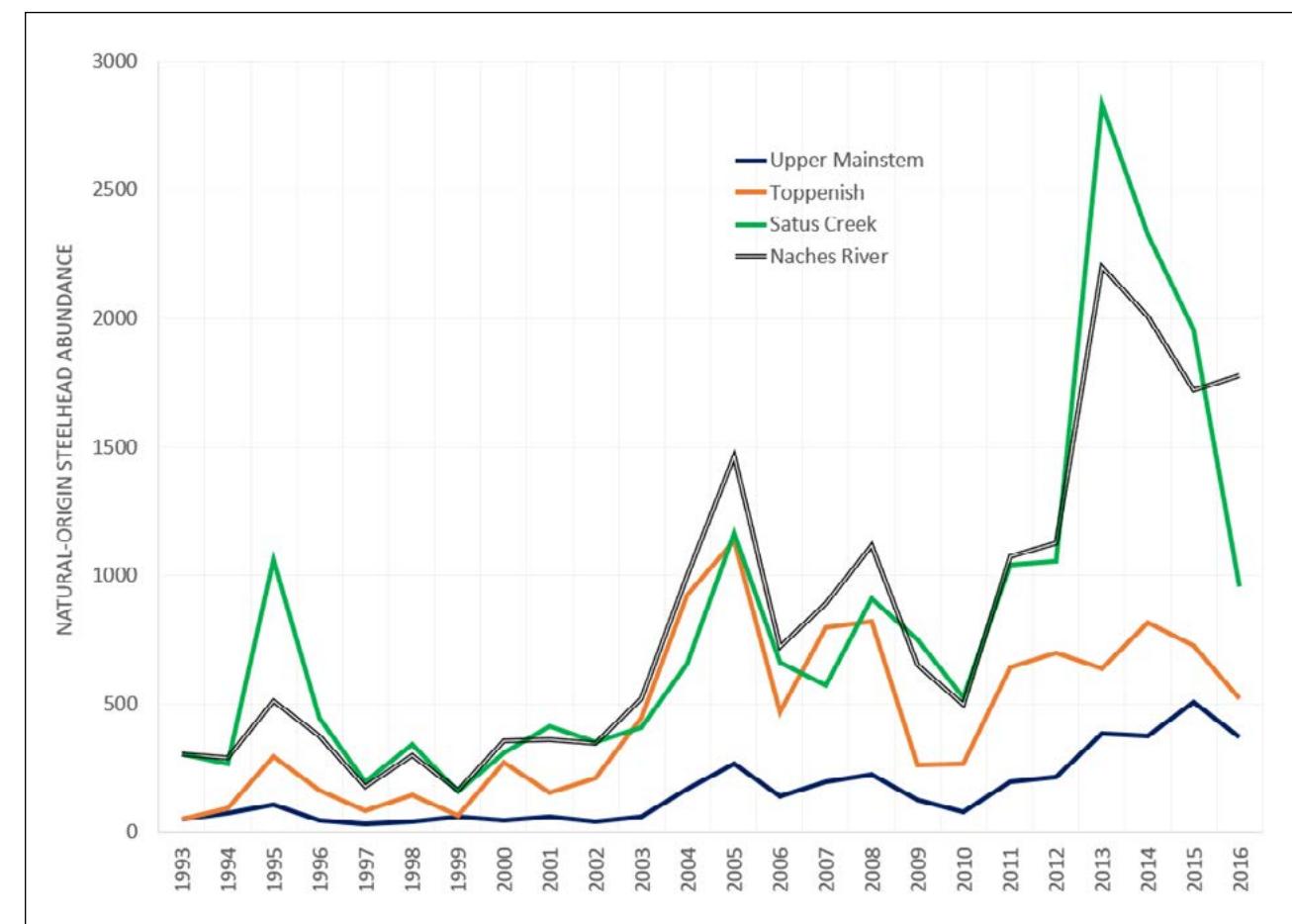
## Status

Progress is demonstrated by wild, or natural-origin, salmon and steelhead returning to spawn in Columbia River Basin streams and rivers. Utilizing criteria developed for the Yakima River MPG, actions for the Naches River and the upper Yakima River extant populations are being implemented toward the goal of attaining “viable” status (rated as low risk). Activities for the remaining two extant populations, Satus Creek and Toppenish Creek, are being implemented to achieve at least “maintained” status (rated as moderate risk).

**Table 1** compares Viable Salmonid Population steelhead population viability status information from the last three five-year status

Extant Population	Status Review	Abundance		Productivity		Spatial Structure/Diversity Integrated Risk	Viability Rating
		Estimate	Recovery Threshold	Estimate	Threshold		
Satus Creek	2005	379	1000	1.73	1.35	Moderate	Maintained
	2010	809		1.84		Moderate	Maintained
	2015	1127		1.93		Moderate	Viable
Toppenish Creek	2005	322	500	1.6	1.56	Moderate	Maintained
	2010	469		1.59		Moderate	Maintained
	2015	516		2.52		Moderate	Viable
Naches River	2005	472	1500	1.12	1.26	Moderate	High Risk
	2010	825		1.25		Moderate	Maintained
	2015	1244		1.83		Moderate	Maintained
Upper Yakima River	2005	85	1500	1.12	1.26	High	High Risk
	2010	156		1.28		High	High Risk
	2015	246		1.87		High	High Risk

**Table 1.** Summary of VSP viability status data for Yakima River MPG steelhead populations as reported in NMFS five-year status reviews for 2005, 2010, and 2015. Values that meet or exceed relevant criteria are highlighted in green (sources: Good et al. 2005; ICTRT 2008; NMFS 2009; Ford et al. 2011; NWFSC 2015).



**Figure 4.** This graph for the Yakima basin MPG shows abundance trends for all four extant populations of the Yakima River MPG (source: BPA et al. 2020, most recent available data).

reviews. Specifically, abundance and productivity estimates were calculated using five-year (2010 and 2015) or ten-year (2005) geometric means. The minimum viability thresholds for abundance and productivity were determined by the Interior Columbia Technical Recovery Team (ICTRT) in 2007. Abundance trends are illustrated in **figure 4**.

## Work Accomplished

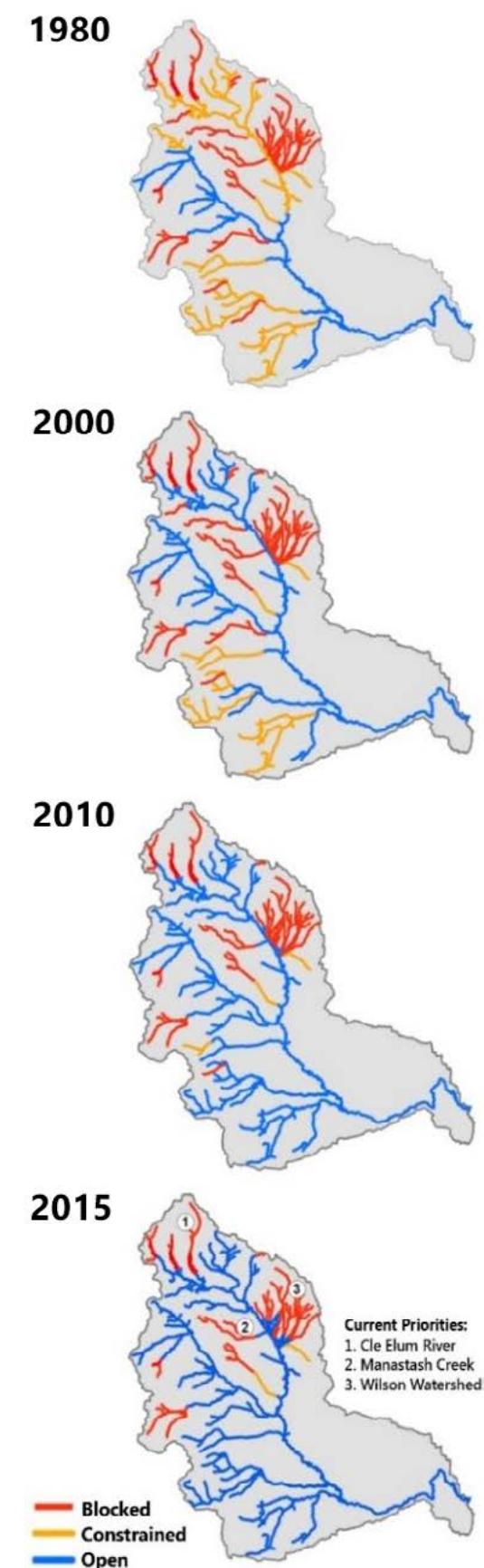
Federal Caucus agencies and their partners have implemented projects that have benefited MCR steelhead in the Yakima basin. Increased streamflow, increased floodplain and channel complexity, and improved passage have promoted recovery of the species.

### Improved fish passage and increased streamflow

Figure 5 illustrates the progression of fish passage barrier removal in the Yakima basin between 1980 and 2015. The combination of barrier removals and increases in instream flow have provided access to over 158 miles of fish habitat in the upper Yakima and Naches basins. Manastash Creek passage barriers were removed between 2006 and 2018; additionally, 18 cubic feet per second of conserved water were left instream for passage improvement. Reed Ditch and Abandon Dam were removed in early winter 2017. Cowiche Creek passage barriers were removed and greater than 7 cfs of conserved water were left instream. In addition to these passage improvements, the \$200 million Cle Elum Fish Passage Project is underway at Cle Elum Dam with an estimated completion date in 2025. The Cle Elum Fish Passage Project will provide fish access to historic habitat and restore biodiversity and the natural production of anadromous salmonids in the upper Cle Elum subbasin. Reclamation is implementing this project in collaboration with other stakeholders in the Yakima basin.

### Improved floodplain and channel complexity

The Corps, in partnership with Yakima County, is working on the Yakima River Gap-to-Gap Ecosystem



**Figure 5.** Progression of fish passage barrier removal over time in the Yakima basin.

Restoration Project to restore more than 320 acres of historical floodplain along the 10-mile Gap-to-Gap Reach. The project will reconnect approximately 2.4 miles of historical side channel habitat. In 2015, Phase 1 was completed and included the removal of 2,000 linear feet of levee, enhancement of 20 acres of floodplain, and removal of existing barriers to improve access to floodplain and side channel habitat. In addition to the Corps and Yakima County partnership, USFWS contributed \$25,000, BLM provided \$50,000, the Washington Salmon Recovery Funding Board contributed \$275,400, and in-kind work was provided by the Yakima Greenway Foundation and the Yakima Basin Fish & Wildlife Recovery Board.

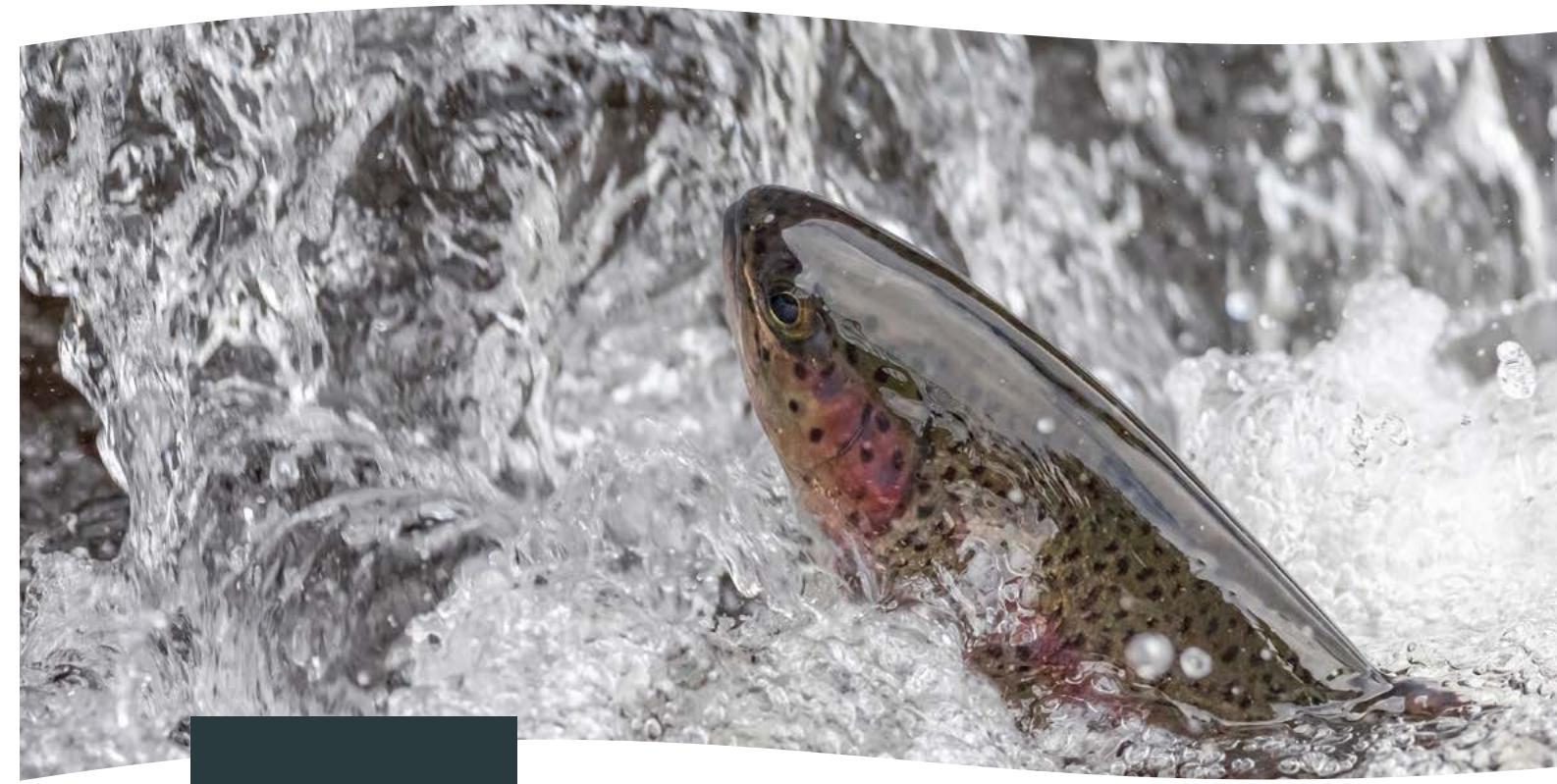
### Potential Future Actions

While much progress has been achieved, recent low returns and poor ocean conditions underscore the vulnerability of these populations. The recovery plans (NOAA 2009) document key areas for future restoration efforts. Potential

future federal action(s) for the Yakima basin may focus on improving mainstem smolt outmigration flows, infrastructure modifications, and habitat restoration actions, including

- Changes to diversion dam infrastructure and screening to improve smolt outmigration survival;
- Management of springtime operations to benefit flows for smolt outmigration using conserved water that will benefit all Yakima basin MPG populations; and
- Implementation of projects for mainstem and tributary habitat restoration (all four extant populations).

VSP parameters to be addressed may include abundance, productivity, spatial structure, and genetic diversity. These are applicable for all Yakima River MPG populations but would be especially helpful to increase viability for upper Yakima and Naches populations (both of which need to improve for overall MPG viability).





Middle Fork of the John Day River

# John Day River MPG

## Collaboration Framework

The John Day River basin covers over 8,100 square miles in central Oregon. Its diverse landscape includes parts of the Deschutes-Umatilla Plateau through the Blue Mountains, with elevations ranging from 150 to 9,000 feet. The John Day River is protected as a “Wild and Scenic” river under the Oregon Scenic Waterways Act. The John Day basin hosts two of the last remaining intact and wild anadromous fish populations of summer steelhead and spring chinook in the Columbia River watershed. Providing important habitat for these iconic native fish makes the John Day basin one of the most important undammed river systems in the West. Since 2008, federal agencies and the Columbia Basin Fish Accord partners (composed of Corps, BPA, Reclamation, states, and tribes) came together to support the John Day Basin Native Fish Habitat Initiative. In 2019, the initiative was awarded a \$4 million grant from the Oregon

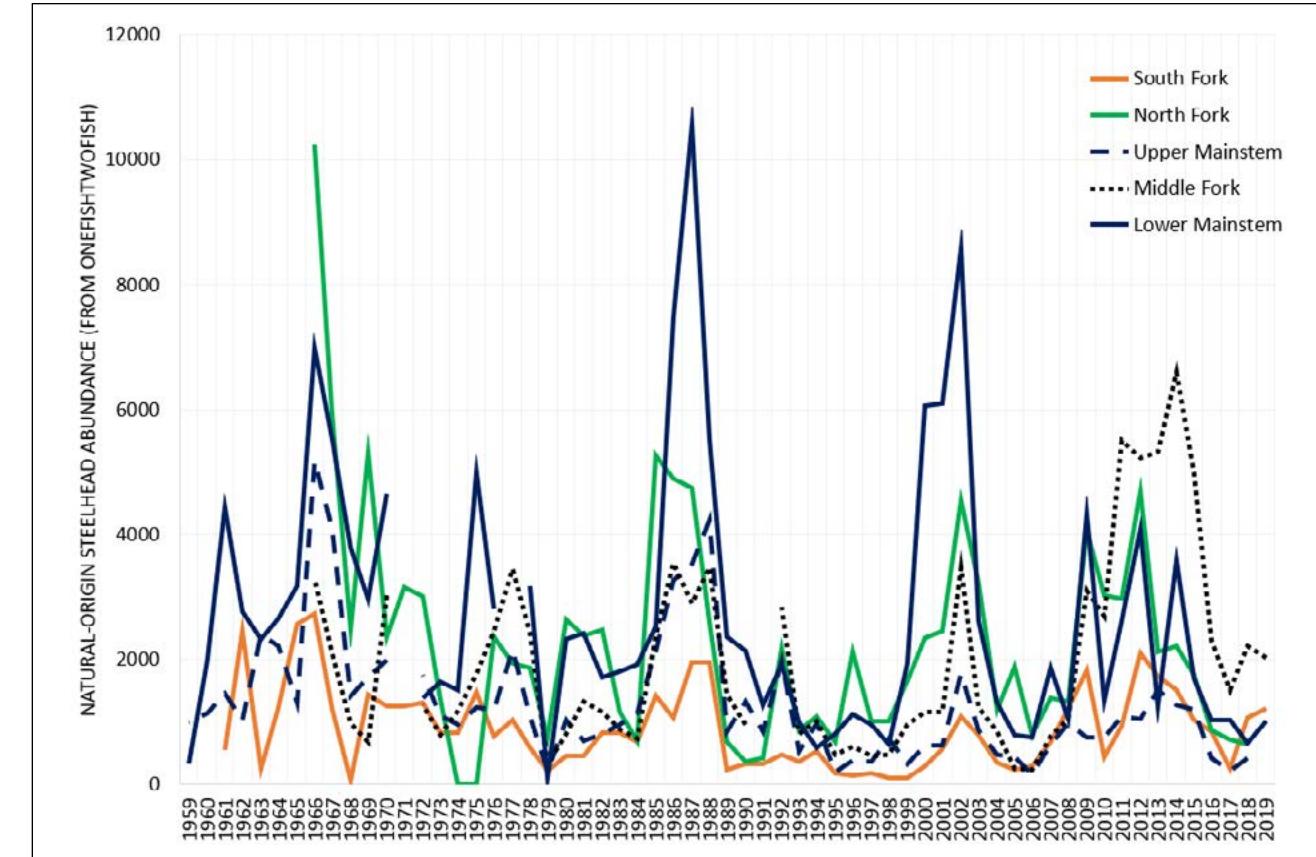
Watershed Enhancement Board’s Focused Investment Partnership grant program to conduct restoration, technical assistance, and outreach.

## Status

Overall, actions taken to promote recovery of this MPG have been positive. **Table 2** compares information from the three previous five-year status reviews. Abundance and productivity estimates were calculated using five-year (2010 and 2015) or 10-year (2005) geometric means. Minimum viability thresholds for abundance and productivity were determined by the ICTRT in 2007. The ICTRT viability goals are to achieve viable status (low risk) for the Lower Mainstem John Day River, North Fork John Day River, and either the Middle Fork John Day River or the Upper Mainstem John Day River extant populations, with one highly viable (very low risk) population. Abundance trends are illustrated in **Figure 6**.

Extant Population	Status Review	Abundance		Productivity		Spatial Structure/Diversity Integrated Risk	Viability Rating
		Estimate	Recovery Threshold	Estimate	Threshold		
John Day Lower Mainstem Tributaries	2005	1800	2250	2.99	1.19	Moderate	Maintained
	2010	1006		2.98		Moderate	Maintained
	2015	1270		2.67		Moderate	Maintained
Middle Fork John Day	2005	756	1000	2.45	1.35	Moderate	Maintained
	2010	367		2.28		Moderate	Maintained
	2015	1736		3.66		Moderate	Viable
North Fork John Day	2005	1740	1500	2.41	1.26	Very Low	Highly Viable
	2010	1484		2.53		Low	Highly Viable
	2015	1896		2.48		Low	Highly Viable
South Fork John Day	2005	259	500	2.06	1.56	Moderate	Maintained
	2010	398		1.81		Moderate	Maintained
	2015	697		2.01		Moderate	Viable
John Day Upper Mainstem	2005	524	1000	2.14	1.35	Moderate	Maintained
	2010	459		1.25		Moderate	Maintained
	2015	641		1.32		Moderate	Maintained

**Table 2.** Summary of VSP viability status data for John Day River MPG steelhead populations as reported in NMFS five-year status reviews for 2005, 2010, and 2015. Values that meet or exceed relevant criteria are highlighted in green (sources: Good et al. 2005; ICTRT 2008; NMFS 2009; Ford et al. 2011; NWFSC 2015).



**Figure 6.** This graph for the John Day basin MPG shows abundance trends for all five extant populations (source: BPA et al. 2020, most recent available data).



Steelhead in the Middle Fork of the John Day

## Work Accomplished

The effect of habitat improvements on fish survival are often difficult to isolate because there are many factors that affect fish health; however, projects that improve floodplains, channel capacity, and passage can be most effective for helping fish colonize previously blocked or less accessible areas and withstand the high temperature fluctuations that occur in the John Day basin. In addition to implementing on-the-ground projects, federal agencies have been working to improve and streamline permitting processes and conducting focused research to help guide future restoration projects. For example:

- The USFS has streamlined consultation and permitting with both federal and state agencies;
- NOAA Fisheries and USFWS have streamlined restoration project permitting for BPA's Habitat Improvement Program, NOAA Fisheries' Aquatic Restoration Biological Opinion, the Corps restoration projects in Washington, and Washington Salmon Recovery Fund Board Limit eight projects;
- The Corps is studying tributary overshoot (when adults continue upstream past the mouth of their natal stream) to evaluate the loss of John Day adults; and
- BPA has funded passive integrated transponder (PIT) tag readers at the mouth of the John Day River to evaluate origin and spawning success of out-of-basin hatchery strays.

### Improved fish passage

Over the past decade, Reclamation has worked with irrigators to address safe passage over 23 irrigation diversions on the main river channel, and USFS has worked with local conservation districts, watershed councils, and the Confederated Tribes of the Warm Springs Reservation to implement restoration actions identified in the 2012 Wallowa-Whitman National Forest Bull Run Creek Watershed Restoration Action Plan (USFS 2012). BPA-funded habitat improvement actions, including passage barrier removal, also have occurred in the subbasin. Partners in the basin have recently celebrated the removal more than 100 fish passage barriers.

### Improved floodplain and channel complexity

USFS has completed the Camp Creek Headwaters and East Fork Beech Creek restoration projects, which were identified in its restoration plan for the Malheur National Forest. To accelerate fish habitat recovery efforts, these efforts targeted streams that provide critical habitat on the Malheur National Forest. The selected areas provide the greatest return in terms of direct beneficial impacts that include increasing groundwater flow to streams; storing water in the adjacent floodplain; and promoting stream meandering, which slows water velocity along bends and deposits gravels adult fish need for spawning. As a result, juvenile fish have access to more water over a longer time period, increasing their survival rates.

The Oxbow Tailings Project was a five-phase project completed in 2017. Mining for gold in the early 1940s left a dredge channel that cut off Granite Boulder Creek and split the flow of the river. This project, accomplished in partnership with the Confederated Tribes of the Warm Springs Reservation, BPA, USFS, Reclamation, and the local soil conservation district, was designed to re-meander the river, reconnect it to the floodplain, and restore habitat complexity, such as side channels (**figure 7**).

The restoration resulted in the following:

- 5,800 feet of new river channel and 1,100 feet of new stream channel;
- 5,700 feet of existing river channel enhanced by flow restoration and habitat improvements;
- more large, woody debris, with the addition of 2,600 whole trees plus additional vegetation debris used for habitat improvements, comprising at least 260 instream structures; and
- the planting of over 30,000 containerized plants and 13,000 cuttings.



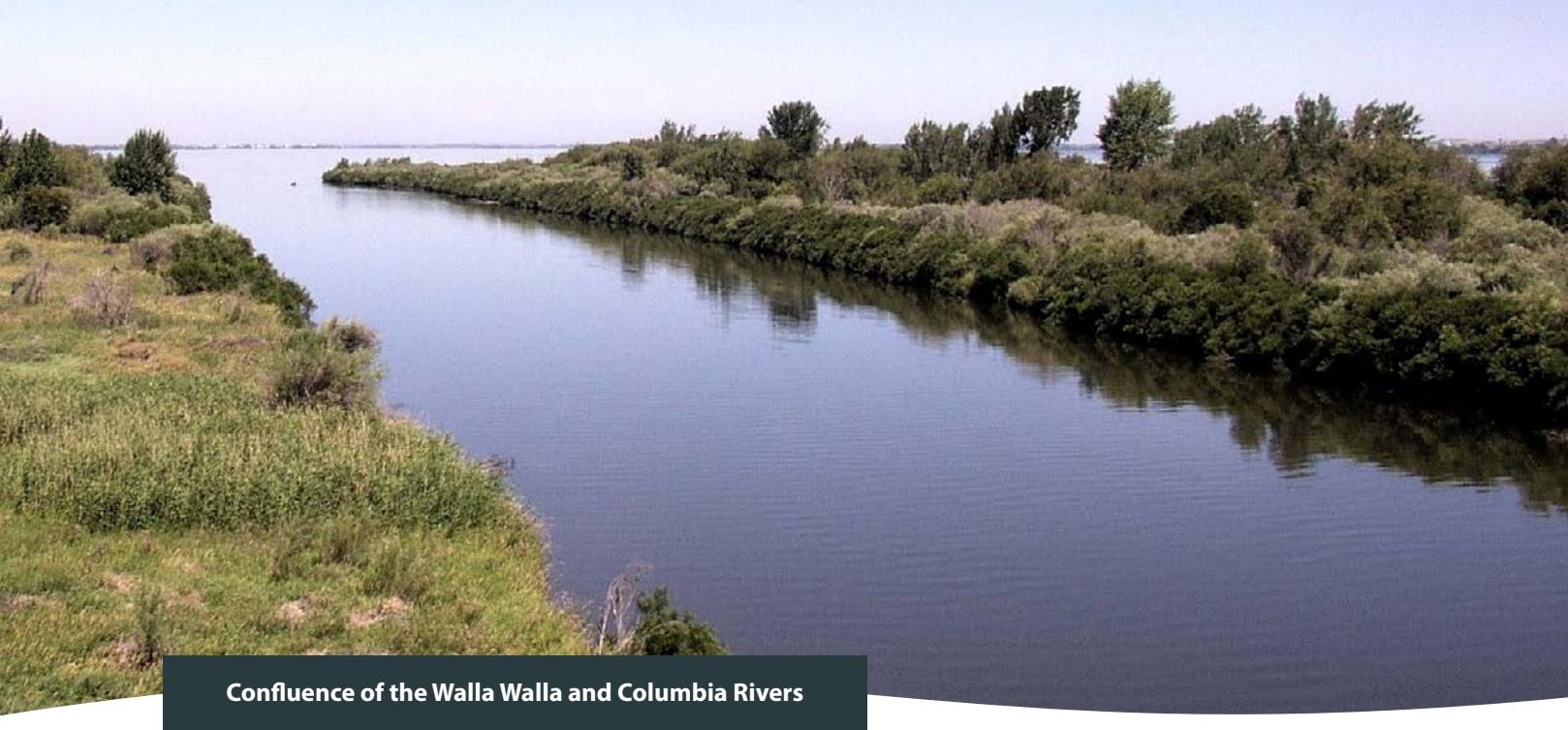
**Figure 7.** Photograph showing a segment of completed constructed river channel, Middle Fork John Day River, Oxbow Conservation Area. (Photograph by Columbia River Inter-Tribal Fish Commission).

### Potential Future Actions

As with the other MPG, much has been done to support MCR steelhead in the John Day MPG. However, recent low returns and poor ocean conditions highlight the vulnerability of these populations. The recovery plans document key focus areas for future restoration. Potential future federal action(s) and VSP parameter actions for the John Day basin may address elevated stream temperatures, low summer stream flow, and lack of juvenile rearing habitat, as these factors remain the most significant limiting factors for John Day River summer steelhead and spring chinook (co-indicator) populations. Potential actions could involve

- Public land management actions needed to improve floodplain connectivity and channel hydrology (e.g., using restoration methods to achieve desired ecological outcomes) to protect and restore riparian areas (legacy and ongoing actions resulting in high stream temperatures, increased sedimentation, and shallow, wide channels with few undercut banks or shade); targeting cold-water input sources for habitat protection and restoration will maximize ecological effectiveness; and
- Participation by all agencies in the John Day Basin Partnership's Atlas Prioritization process to prioritize protection and restoration actions, coordinate project implementation, and synchronize restoration and monitoring.

VSP parameters to be addressed may include improve abundance and productivity, for the mainstem and mainstem tributaries.



Confluence of the Walla Walla and Columbia Rivers

Extant Population	Status Review	Abundance		Productivity		Spatial Structure/ Diversity Integrated Risk	Viability Rating
		Estimate	Recovery Threshold	Estimate	Threshold		
Umatilla River	2005	1472	1500	1.5	1.26	Moderate	Maintained
	2010	2273		1.21		Moderate	Maintained
	2015	2379		1.2		Moderate	Maintained
Walla Walla River	2005	650	1000	1.34	1.35	Moderate	Maintained
	2010	815		1.42		Moderate	Maintained
	2015	877		1.65		Moderate	Moderate
Touchet River	2005	375	1000	1.54	1.35	Moderate	High Risk
	2010	347		1.46		Moderate	Maintained
	2015	382		1.25		Moderate	High Risk

**Table 3.** Summary of VSP viability status data for the Umatilla/Walla Walla MPG steelhead populations as reported in NOAA Fisheries five-year status reviews for 2005, 2010, and 2015; values that meet or exceed relevant criteria are highlighted in green (sources: Good et al. 2005; ICTRT 2008; NMFS 2009; Ford et al. 2011; NWFSC 2015)

## Umatilla/Walla Walla MPG

### Collaboration Framework

The Umatilla/Walla Walla MPG consists of three extant populations in the Umatilla River in Oregon, the Touchet River in Washington, and the Walla Walla River in both states.

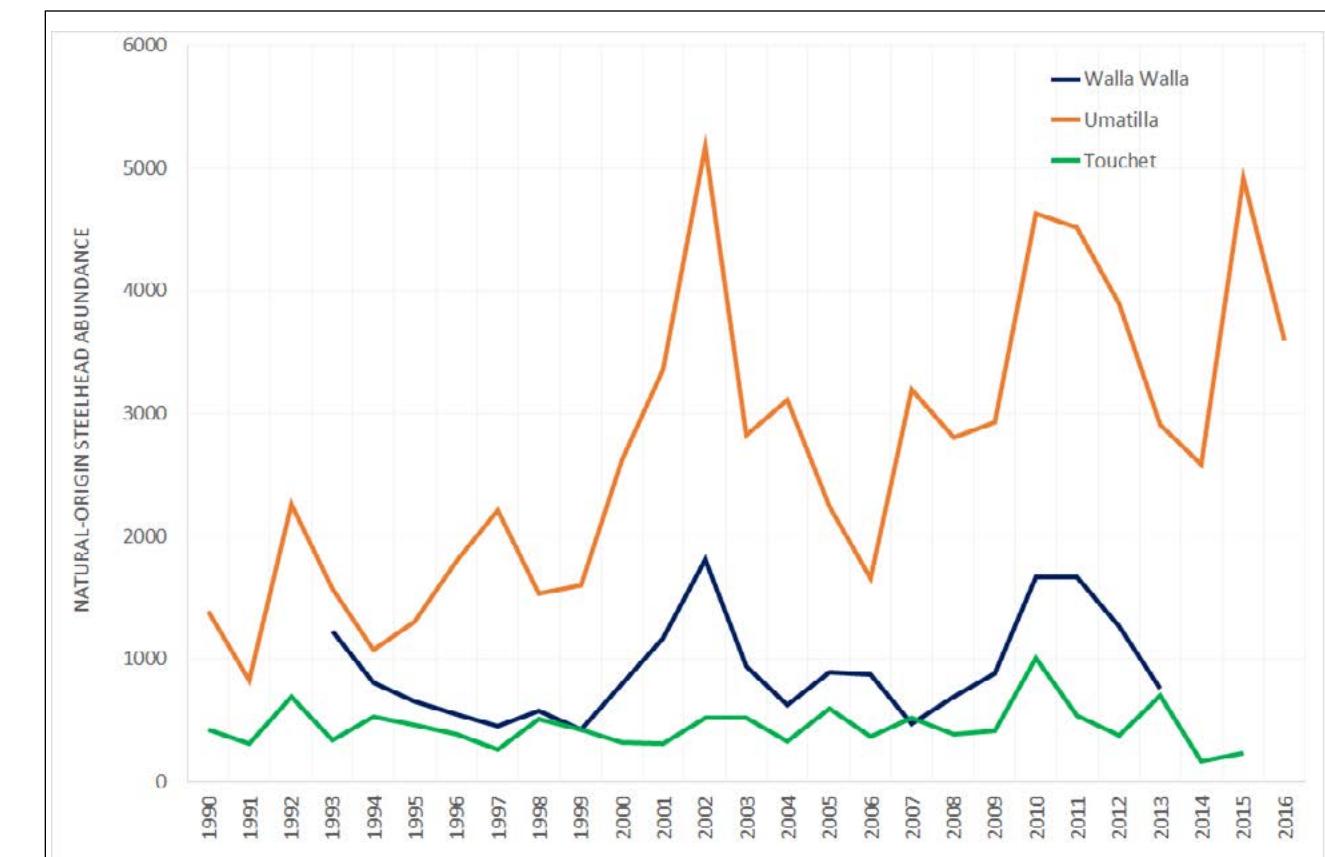
The Umatilla River originates in the Blue Mountains of northeastern Oregon and flows north and west to enter the Columbia River at river mile 288. The Walla Walla River also originates in Oregon and flows northwest into Washington to join the Columbia River at river mile 314. The Touchet River originates in the Blue Mountains in Washington and flows south and west into the Walla Walla River. In the early 1990s, low stream flows and low numbers of steelhead adults were observed in the Umatilla River. In response, the Confederated Tribes of the Umatilla Indian Reservation, in coordination with federal and state agencies, completed work to increase streamflow and fish abundance. The 2008 Columbia Basin

Fish Accords established a historic partnership among the tribes (including the CTUIR), the federal agencies, and the states. This partnership has set the stage for increasing the number of steelhead returning to the basin.

### Status

The Umatilla/Walla Walla MPG includes three extant steelhead populations in the Umatilla River, the Walla Walla River, and the Touchet River, along with one extirpated population from Willow Creek. All three extant populations in this MPG are summer run. The Umatilla and Walla Walla river populations are monitored with dam counts, PIT tag arrays, and spawning ground surveys.

**Table 3** provides data comparing Umatilla/Walla Walla MPG information from the last three, five-year status reviews. Specifically, abundance and productivity estimates were calculated using five-year (2010 and 2015) or 10-year



**Figure 8.** This graph for the Umatilla/Walla Walla MPG shows abundance trends for all three extant populations (source: BPA et al. 2020, most recent available data); note that this plot excludes 1990–1992 Walla Walla River data and 2017 Touchet River data.



**Figure 9.** Photographs showing planning (top) and remedial bank stabilization planting (bottom) for the Meacham Creek floodplain restoration and instream enhancement project. This project in northeastern Oregon was a collaborative effort completed by the CTUIR and USFS. Levees and dikes were removed to increase floodplain connectivity, side channel habitat was increased, and 60 log jams or similar structures were placed to improve habitat complexity (photographs by CTUIR).

(2005) geometric means. The minimum viability thresholds for abundance and productivity were determined by the ICTRT in 2007. The ICTRT viability goal is to achieve viable status (low risk) for the Umatilla River population because it is the only large population. Goals for the Walla Walla River and Touchet River populations are to achieve viable status (low risk) for either one of the populations and a maintained status rating for the other. Abundance trends are illustrated in **figure 8**.

### Work Accomplished

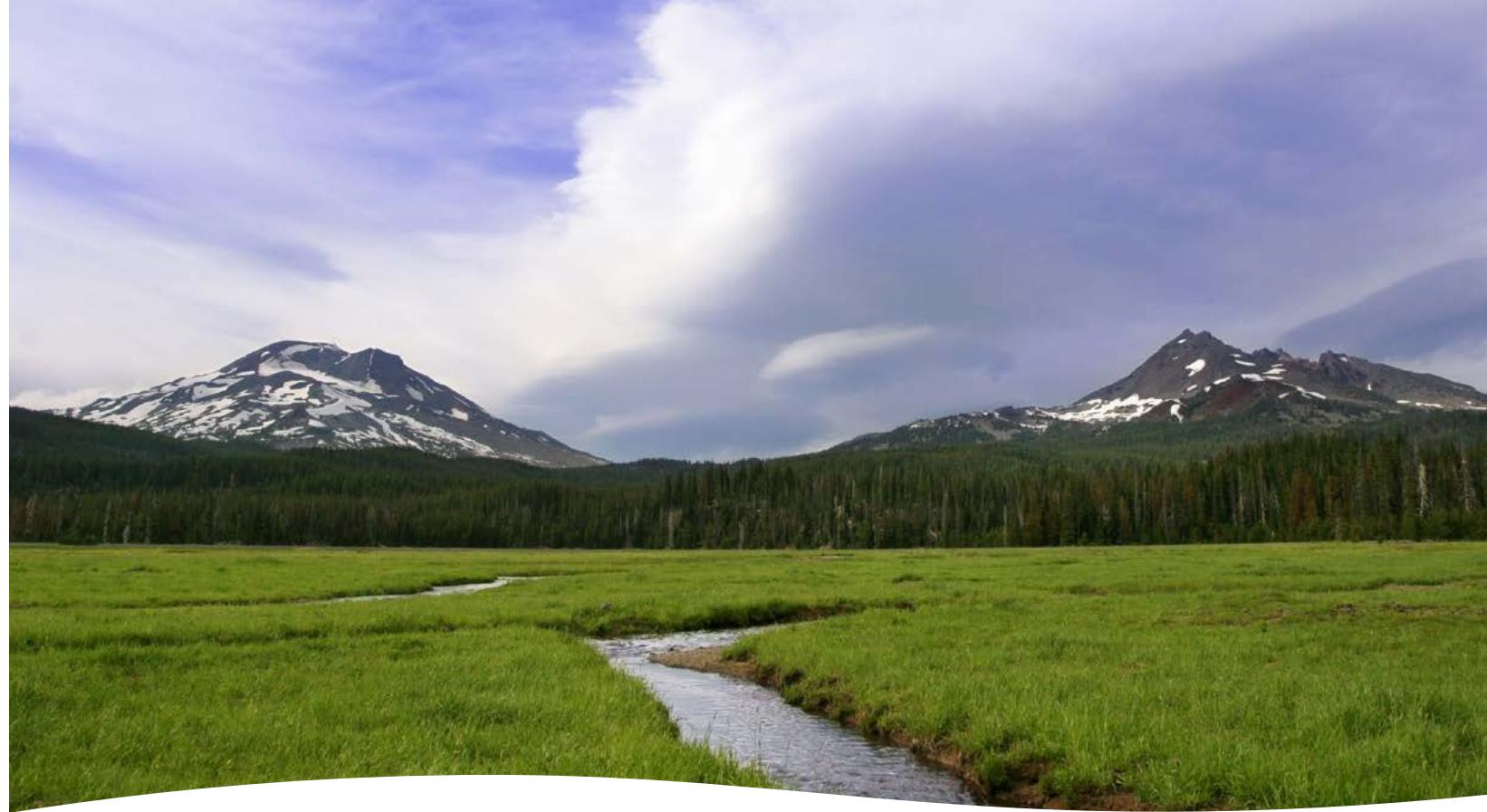
Federal Caucus agencies have partnered with other entities to complete projects that address fish passage and habitat improvement to benefit MCR steelhead in the Umatilla River, Walla Walla River, and Touchet River basins. The CTUIR annually implements approximately 20 contracts for work related to habitat enhancement, fish passage improvement, hatchery supplementation, and monitoring and evaluation. An example of the types of projects completed to support the Umatilla/Walla Walla MPG is provided in figure 9.

### Potential Future Actions

Although much has been accomplished for the Umatilla/Walla Walla MPG, recent low returns and poor ocean conditions underscore continued population vulnerability. The recovery plans identify key focus areas for future actions. Potential future federal action(s) and VSP parameter actions may be structured to address the following:

- Mill Creek passage (Walla Walla River population)
- Nursery Bridge Reach passage (Walla Walla River population)

VSP parameters addressed: abundance, productivity, spatial structure, and genetic diversity.



## Cascades Eastern Slope Tributaries MPG

### Collaboration Framework

The Cascades Eastern Slope MPG includes a large portion of the Deschutes River basin in Oregon and portions of the Klickitat, Rock-Glade, and the Wind and White Salmon watersheds in Washington. The Deschutes River basin is bounded by the Cascade Range to the west and southwest and by the Ochoco Mountains to the east. Major tributaries of the Deschutes River include the Crooked, Little Deschutes, Metolius, Warm Springs, and White rivers. Whychus Creek, tributary to the Deschutes River, and McKay Creek, tributary to the Crooked River, are important

tributaries relative to fish reintroductions. Major Washington tributaries in this MPG are Rock Creek, the White Salmon River, and the Klickitat River, which flow from the eastern slope of the Cascades and the dry Columbia Plateau. To benefit MCR steelhead in the Cascades Eastern Slope MPG, Federal Caucus agencies have partnered with entities, including the Yakama Nation, irrigation districts, Oregon Water Resources Department, Pacific Gas and Electric Company, Oregon Department of Fish and Wildlife, Trout Unlimited, and the Oregon Water Enhancement Board.

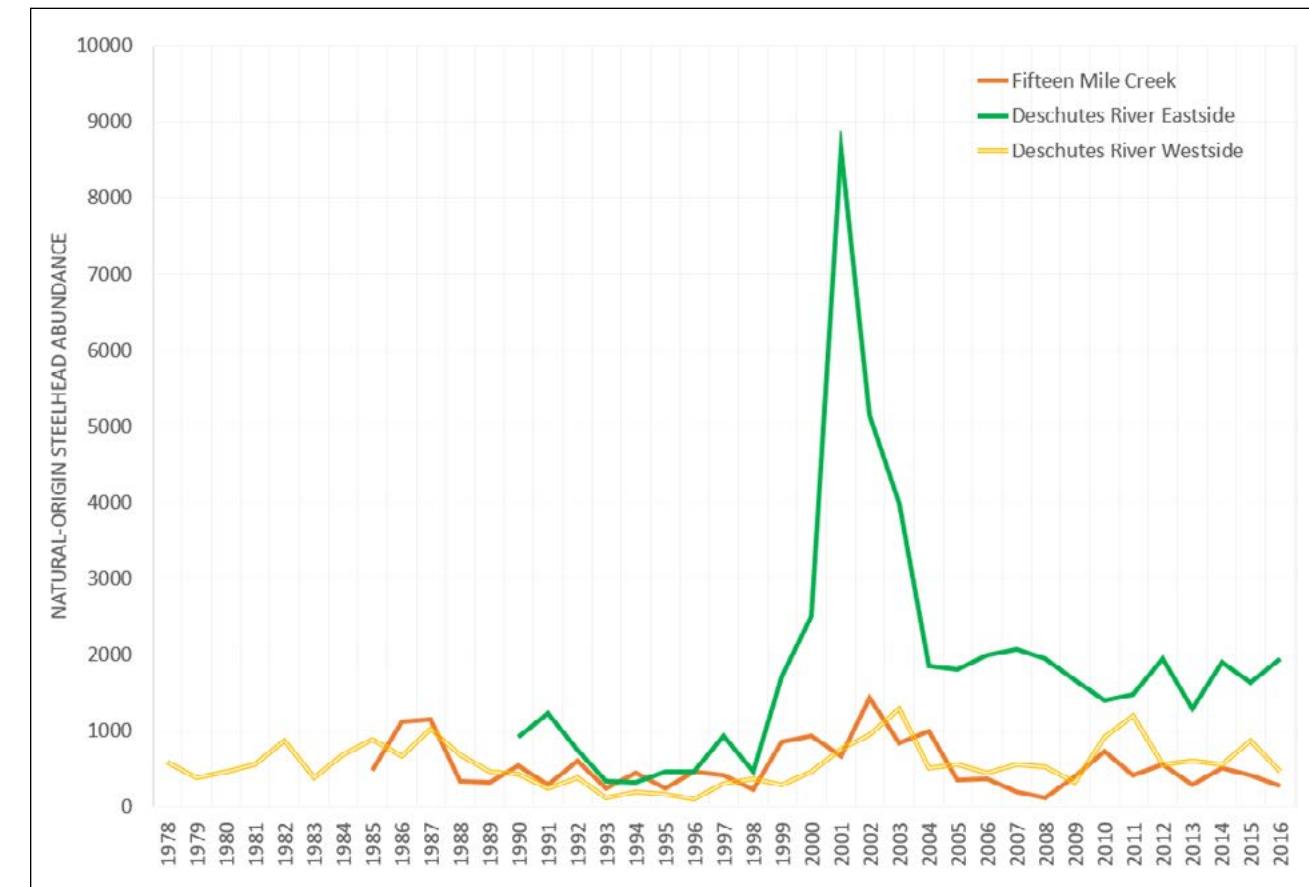
## Status

The Cascades Eastern Slope Tributaries MPG contains five extant populations (Fifteenmile Creek, Deschutes River Westside, Deschutes River Eastside, Klickitat, and Rock Creek) and two extirpated populations (White Salmon and Crooked River). The MPG supports summer run and winter run life history forms of steelhead. Fifteenmile Creek steelhead are exclusively winter-run fish and are considered the easternmost distribution of winter steelhead in the Columbia Basin. Overall, the status of the Cascades Eastern Slope Tributaries MPG were steadily improving at the time of the last status

review, although numbers of returning adults have declined more recently (NMFS 2020). **Table 4** provides VSP viability criteria information for all seven independent populations in the Cascades Eastern Slope MPG for the last three 5-year MCR steelhead status reviews. Abundance and productivity estimates were calculated using 5-year (2010 and 2015) or 10-year (2005) geometric means. The minimum viability thresholds for abundance and productivity were determined by the ICTRT in 2007. Abundance trends are illustrated in **figure 10**.

Extant Population	Status Review	Abundance		Productivity		Spatial Structure/Diversity Integrated Risk	Viability Rating
		Estimate	Recovery Threshold	Estimate	Threshold		
Fifteenmile Creek	2005	703	500	1.82	1.56	Low	Viable
	2010	452		1.83		Low	Viable
	2015	356		1.84		Low	Maintained
Deschutes (Westside)	2005	456	1500	1.05	1.26	Moderate	High Risk
	2010	472		1.11		Moderate	High Risk
	2015	634		1.16		Moderate	High Risk
Deschutes (Eastside)	2005	1599	1000	1.89	1.35	Moderate	Viable
	2010	1945		2.31		Moderate	Viable
	2015	1749		2.52		Moderate	Viable
Klickitat River	2005	Insufficient Data	1000	--	1.35	Moderate	Maintained
	2010					Moderate	Maintained
	2015					Moderate	Maintained
Rock Creek	2005	Insufficient Data	500	--	1.56	Moderate	High Risk
	2010					Moderate	High Risk
	2015					Moderate	High Risk
Crooked River (extirpated)	2005	Extripated	2000	--	1.19	NA	Extinct
	2010					NA	Extirpated
	2015					NA	Extirpated
White Salmon River (extirpated)	2005	Extripated	500	--	1.56	NA	Extinct
	2010					NA	Extirpated
	2015					NA	Extirpated

**Table 4.** Summary of VSP viability status data for Cascades Eastern Slope MPG steelhead populations as reported in NOAA Fisheries five-year status reviews for 2005, 2010, and 2015. Values that meet or exceed relevant criteria are highlighted in green (sources: Good et al. 2005; ICTRT 2008; NMFS 2009; Ford et al. 2011; NWFSC 2015).



**Figure 10.** This graph for the Cascades Eastern Slope MPG shows abundance trends for three of seven populations that make up the MPG (source: BPA et al. 2020, most recent available data).

## Work Accomplished

Continuing cooperation among multiple agencies, partners, and local landowners has gradually improved habitat and habitat conditions within this MPG. Restoration activities have focused on addressing small- and large-scale fish passage barriers and fish reintroduction to extirpated areas.

## Enhanced instream flow

Recent efforts have focused on returning water to stream channels to improve fish habitat. The passage of the Crooked River legislation in 2014 allows for the use of up to 80,000 acre-feet of previously unallocated Prineville Reservoir water for fish and wildlife purposes in the Crooked River. Canal piping projects in Whychus Creek and the Crooked River by

irrigation districts, Reclamation, and USFS conserved over 15 cfs. Water leasing funded by BPA and partners improves stream flow in Fifteenmile Creek. Projects such as the Upper Whychus Subwatershed Restoration by the USFS improved floodplain and side channel connectivity along portions, reducing water velocities and runoff. The 2019 Upper Deschutes River Basin Study, funded by Reclamation and the Oregon Water Resources Department, provides a framework for future collaborative projects to improve instream flows.

## Enhanced fish passage

Fish migration barriers are being mitigated at large and small scales. Removal of one of the larger barriers, the Condit Dam, was completed on the lower White Salmon River

in 2012, providing access to 33 miles of river habitat that had been blocked for nearly 100 years. Removal of the dam allows for natural recolonization by native salmon and steelhead, and for improvement of habitat both above and below the dam site. Although the Pelton Round Butte dam complex on the Deschutes River blocked all anadromous fish passage and led to the extirpation of the Crooked River population, fish passage was restored in 2010. Spring Chinook salmon and summer steelhead can now access Whychus Creek for spawning and rearing. Passage has also been provided on smaller barriers such as diversion dams used for irrigation purposes. The USFS completed modifications to two large irrigation diversions, opening up 25 miles of habitat in Whychus Creek. The Opal Springs passage project, funded by Pacific Gas and Electric Company, Oregon Department of Fish and Wildlife, BLM, Trout Unlimited, Oregon



**Figure 11.** Photograph showing reconstruction of the over-60-year-old Lyle Falls Fishway. This project improves fish passage in the Klickitat River basin (photograph by Yakama Nation).

Water Enhancement Board, and Deschutes Valley Water District, was completed in 2019. Recent passage improvements at Castile Falls in the upper Klickitat River have opened an additional 56 miles of high-quality steelhead habitat. Planned passage improvements in the lower Klickitat River basin (*e.g.*, Lyle Falls at river mile 2.2; **figure 11**) also are expected to benefit migrating adults.

### Habitat improvement projects

Multiple habitat improvement projects have been completed throughout the MPG. The USFS restoration on Whychus Creek included decommissioning 15 miles of roads and closing an additional 10 miles of roads to reduce sedimentation; seven miles of perennial channels in Whychus Creek were reconstructed for fish rearing habitat. Similar restoration on McKay Creek, including road decommissioning, riparian fencing, floodplain reconnection, and habitat enhancement, contributes to improved habitat conditions. The Fifteenmile Creek restoration project, a collaborative effort by local stakeholders and state and federal agencies, completed instream restoration, riparian fencing, road removal, and streamside buffers to reduce sedimentation, and addressed fish passage issues. In Washington, roads have been removed and floodplains restored in the lower middle reach of the Klickitat River basin. The Yakama Nation has initiated modeling using the Beaver Restoration Assessment Tool, and BLM has installed fencing to exclude cattle grazing from portions of the Rock Creek system. To assist planning, the Yakama Nation Fisheries Program completed a report titled “Fluvial Reconnaissance of Rock Creek and Selected Tributaries with Implications for Anadromous Salmonid Habitat Management, Rock Creek, Klickitat County, WA.”

### Other projects

The Yakama Nation, in coordination with NOAA Fisheries, is developing a hatchery master plan to improve hatchery management, which will support steelhead conservation. USGS and the Yakama Nation are monitoring juvenile and adult steelhead in the White Salmon River and Rock Creek.

### Potential Future Actions

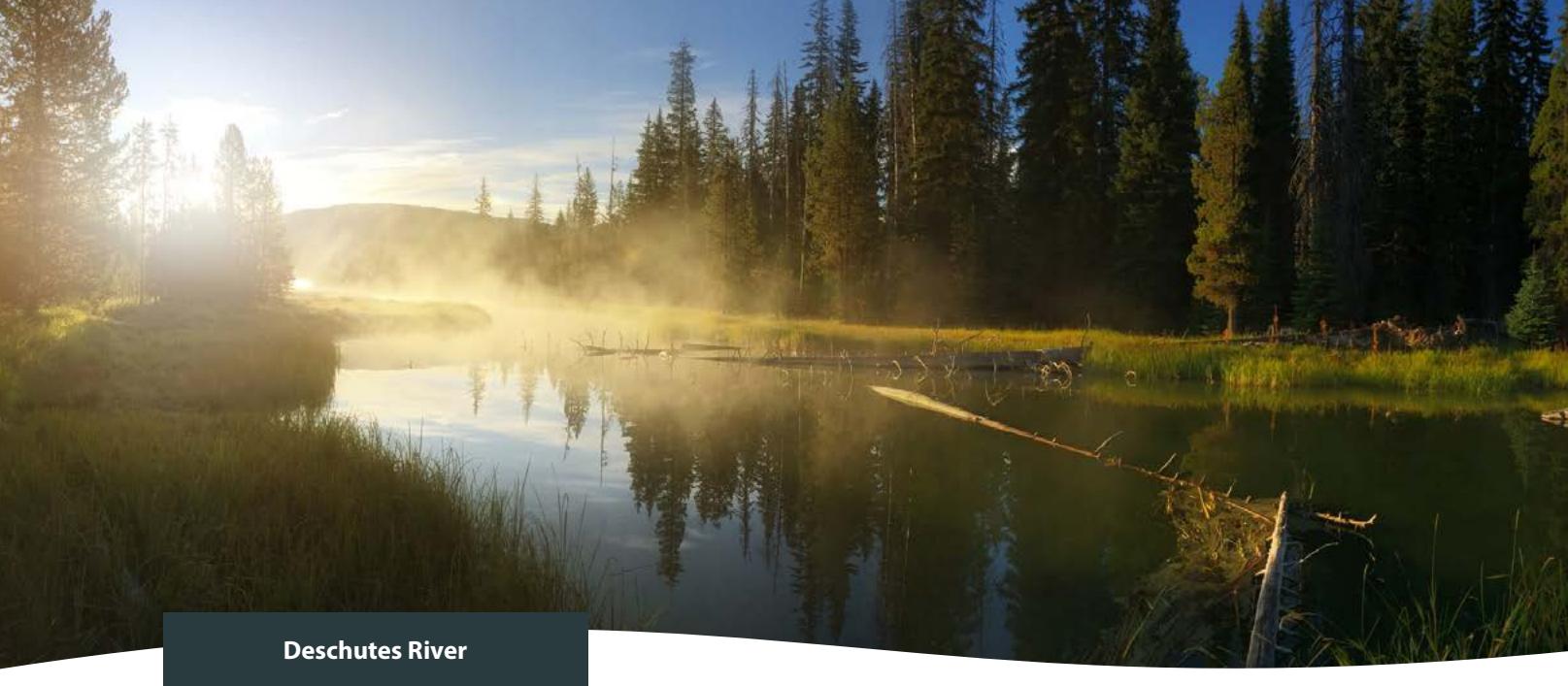
As for the other MPG, much has been accomplished to support MCR steelhead in the Cascades Eastern Slope Tributaries MPG, but recent low returns and poor ocean conditions underscore continued population vulnerability. The recovery plans identify key areas to focus future actions. Potential future federal action(s) and VSP parameter actions may be targeted to address:

- Fifteenmile Creek, Eastside Deschutes, and Westside Deschutes extant populations: Protection and restoration actions that measurably increase summer steelhead juvenile rearing habitat by increasing summer baseflows and decreasing summer water temperatures within the population areas. Such actions could include, but would not be limited to restoring longitudinal connectivity and access to habitats; restoring floodplain connectivity and channel hydrology (*e.g.*, beaver dam analogues or other restoration methods); protecting and increasing riparian development and shading; improving forest stand management to enhance subsurface water storage and delivery; and targeting cold-water sources for protection actions and habitat improvements.

VSP parameters addressed: Abundance, Productivity, and Spatial Structure.



Klickitat River



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Deschutes River

## Challenges and Next Steps

Ocean conditions and related impacts have affected, and will continue to affect, MCR steelhead populations. However, observed dips in abundance trends in recent years, could have been larger without the collaborative efforts described in this report. During periods when ocean conditions are favorable—and where the region has worked to significantly improve freshwater habitat conditions—the Federal Caucus believes that MCR steelhead populations can rebound and perhaps even resume an upward trajectory. Actions such as habitat restoration, improved fish passage, and increased streamflows continue to improve, or reduce limiting factors, resulting in reduced risks and increased survival. Tributary habitat improvement metrics for MCR steelhead

between 2007 and 2015 show that implemented projects are achieving tangible improvements. The history of Federal Caucus efforts demonstrates that resource management agencies in the Pacific Northwest have long sought to improve the Columbia River basin ecosystem to a healthier and more natural condition. It will be increasingly difficult to achieve recovery in the face of large-scale factors such as climate change, population pressures, human development, and water quality conditions. Where a more holistic approach is needed to respond to these landscape-scale stressors, the Federal Caucus will continue to collaborate with partners across the basin to ensure progress toward recovery of MCR steelhead populations.



Middle Fork of the John Day River