

Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead Distinct Population Segment:

Implementation Toolkit



Oregon Department of Fish & Wildlife

September 2012



Introduction

The Implementation Toolkit was developed by the Oregon Department of Fish and Wildlife (ODFW) to accompany the *Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead Distinct Population Segment* (Oregon Mid-C Steelhead Conservation and Recovery Plan; the Plan) (ODFW 2010). The Middle Columbia River Steelhead Distinct Population Segment (DPS) was listed as threatened under the U.S. Endangered Species Act (ESA) in 1999. The Plan is a blueprint for the recovery of two (2) extirpated and 10 extant (existing) Middle Columbia River steelhead (*Oncorhynchus mykiss*) populations that occupy Oregon tributaries to the Columbia River.

This Toolkit is not intended to be comprehensive summary of or replacement for the Oregon Mid-C Steelhead Conservation and Recovery Plan, but rather a set of several key implementation tools derived from the Plan. These tools, when used together, will help Oregon Mid-C Implementation Team members (i.e., local implementers) put the Plan into practice by prioritizing, designing and executing conservation and restoration projects that address the primary factors and threats limiting Oregon’s Mid-C steelhead populations (Figure 1). Strategic, prioritized and coordinated implementation is essential to meeting Oregon’s delisting and broad-sense recovery goals for Mid-C steelhead.

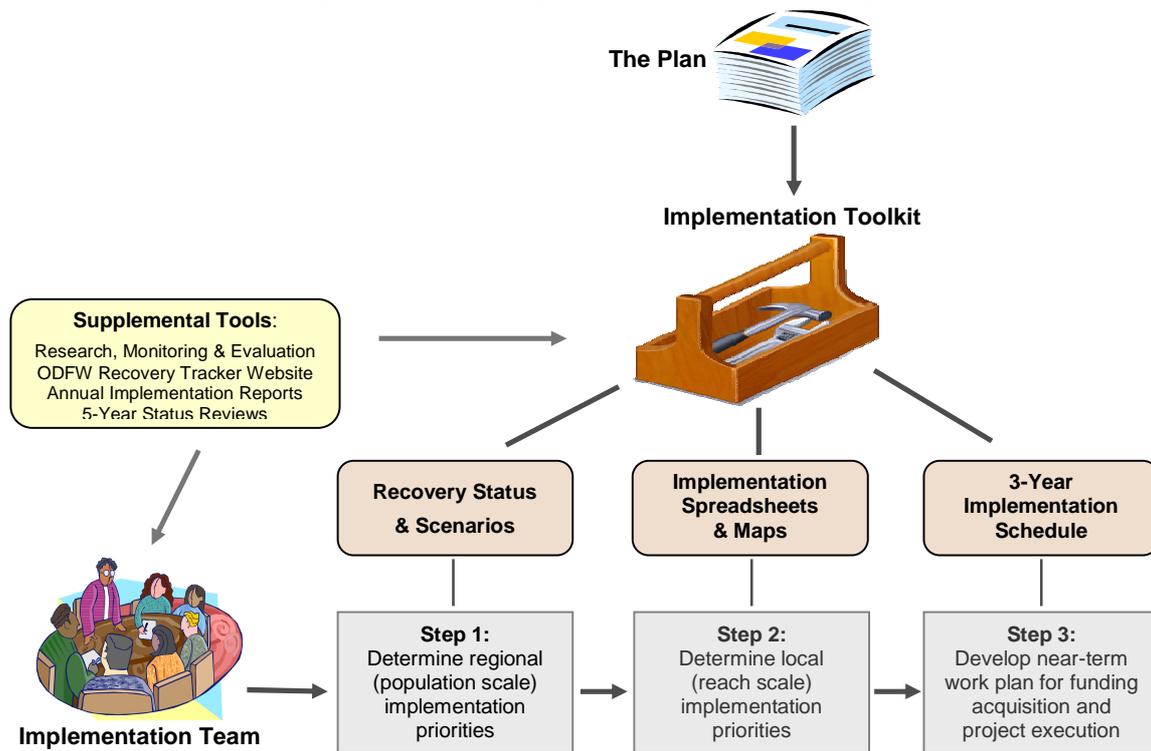


Figure 1. Diagram of Implementation Toolkit components and process for prioritized implementation of the Oregon Middle Columbia Steelhead Conservation and Recovery Plan. The supplemental tools provide key information to support the toolkit and the implementation process.

Recovery Status and Scenarios

Step 1: Use the recovery status and scenario information (Tables 1 – 3, Figure 2) to prioritize what limiting factors to address and where to focus Mid-C steelhead recovery efforts at the population scale.

All the Oregon and Washington independent populations must meet their viability criteria targets in order for the four major population groups (MPGs) and the Mid-C Steelhead Distinct Population Segment (DPS) to rate as viable (low extinction risk). Tables 1 through 3 summarize the population characteristics, 2010 viability assessment ratings, Interior Columbia Technical Recovery Team (ICTRT) recovery scenarios, and primary limiting factors and threats for Oregon Middle Columbia River steelhead populations within the Cascades Eastern Slope Tributaries, John Day River, and Umatilla and Walla Walla Rivers Major Population Groups (MPG), respectively. Figure 2 is a map of the ICTRT recovery scenarios for the Mid-C steelhead DPS populations. Local implementers can use this status and scenario information to guide project planning, workload allocation, and funding acquisition decisions when working across multiple populations.

Table 1. Population characteristics, recent viability assessment results [integrated abundance and productivity (A/P) risk, integrated spatial structure and diversity (SS/D) risk, overall viability rating], ICTRT recovery scenarios, and primary threats and limiting factors for Oregon Middle Columbia River steelhead populations in the Cascades Eastern Slope Tributaries Major Population Group (MPG).

Population	Extant / Extirpated	Life History	Historic Population Size	2010 A/P Risk	2010 SS/D Risk	2010 Viability Rating	ICTRT Low Risk Recovery Scenario	Minimum Viability Levels for Low Risk Recovery Scenario (5% Extinction Risk)	Primary Threats & Limiting Factors
Cascades Eastern Slope Tributaries MPG <i>For this MPG to be viable, four populations should meet viability criteria, and one should be highly viable.</i>									
Fifteenmile Creek	Extant	Winter	Basic	Low	Very Low	Viable	Must have for viable MPG status; only winter population in the MPG.	Abundance: Minimum threshold of 500 spawners Productivity: Minimum of 1.56 recruits/spawner at threshold abundance	Tributary Habitat: Altered hydrology (low flows); degraded water quality (high water temperatures); degraded riparian condition; altered sediment routing; degraded floodplain; degraded channel structure and complexity (channel confinement and overall habitat diversity). Hydrosystem: Columbia River mainstem hydrosystem passage.
Deschutes River Eastside	Extant	Summer	Intermediate	Low	Moderate	Viable	Must have for viable MPG status; only intermediate population in the MPG.	Abundance: Minimum threshold of 1,000 spawners Productivity: Minimum of 1.35 recruits/spawner at threshold abundance	Tributary Habitat: Degraded riparian condition, altered hydrology (low flows), degraded water quality (high water temperature), degraded channel structure and complexity, degraded floodplain connectivity and function, and impaired fish passage. Hatchery: Effects of naturally spawning stray hatchery fish on viability of wild fish. Hydrosystem: Columbia River mainstem hydrosystem passage.
Deschutes River Westside	Extant	Summer	Large	High	Moderate	High Risk	Must have for viable MPG status; only large population in the MPG.	Abundance: Minimum threshold of 1,500 spawners Productivity: Minimum of 1.26 recruits/spawner at threshold abundance	Tributary Habitat: Degraded channel structure and complexity, altered sediment routing, degraded water quality (high water temperature), altered hydrology (low flows), and lack of fish passage over Pelton-Round Butte Complex. Hatchery: Effects of naturally spawning stray hatchery fish on viability of wild fish. Hydrosystem: Columbia River mainstem hydrosystem passage and tributary passage to blocked areas above Pelton-Round Butte Complex.
Crooked River	Extirpated	Summer	Very Large	Extirpated	Extirpated	Extirpated	Not applicable for delisting recovery goal	Abundance: Minimum threshold of 2,250 spawners Productivity: Minimum of 1.19 recruits/spawner at threshold abundance	Tributary Habitat: Degraded channel structure and complexity, degraded floodplain connectivity and function, degraded riparian condition, degraded water quality (high water temperature), altered hydrology (low flows), altered sediment routing, and impaired fish passage. Hydrosystem: Columbia River mainstem hydrosystem passage and passage in the Deschutes River mainstem to blocked areas above Pelton-Round Butte Complex.
<p>Note: Seven populations, three in Washington and four in Oregon, comprise the Cascades Eastern Slope Tributaries MPG. The four populations that should be viable include the Klickitat River (WA), Fifteenmile Creek, Deschutes River Eastside, and Deschutes River Westside; one of these four populations should reach highly viable status. The Rock Creek (WA) population must meet or exceed maintained status. The White Salmon River (WA) is rated as functionally extirpated and the Crooked River population is rated as extirpated. Reintroduction efforts and fish passage improvements were initiated in 2007 to restore steelhead to their historic range above the Pelton-Round Butte Complex.</p>									

Table 2. Population characteristics, recent viability assessment results [integrated abundance and productivity (A/P) risk, integrated spatial structure and diversity (SS/D) risk, overall viability rating], ICTRT recovery scenarios, and primary threats and limiting factors for Oregon Middle Columbia River steelhead populations in the John Day River Major Population Group (MPG).

Population	Extant / Extirpated	Life History	Historic Population Size	2010 A/P Risk	2010 SS/D Risk	2010 Viability Rating	ICTRT Low Risk Recovery Scenario	Minimum Viability Levels for Low Risk Recovery Scenario (5% Extinction Risk)	Primary Threats & Limiting Factors
John Day River MPG									
<i>For this MPG to be viable, three populations should be viable and one should be highly viable.</i>									
Lower Mainstem John Day River	Extant	Summer	Very Large	Moderate	Moderate	Maintained	Must have for viable MPG status; only very large population in the MPG and important for spatial structure because it is the most downstream population.	Abundance: Minimum threshold of 2,250 spawners Productivity: Minimum of 1.19 recruits/spawner at threshold abundance	Tributary Habitat: Degraded channel structure and complexity (habitat quantity and diversity), altered sediment routing, degraded water quality (water temperatures), and altered hydrology (low flows). Impaired fish passage is also a high priority limiting factor in Bridge, Butte, Kahler, Muddy, Rock and Thirtymile Creeks. Hatchery: Effects of naturally spawning stray hatchery fish on viability of wild fish. Hydrosystem: Columbia River mainstem hydrosystem passage.
North Fork John Day River	Extant	Summer	Large	Very Low	Low	Highly Viable	Must have for viable MPG status; only large population and important to protect because currently rated highly viable.	Abundance: Minimum threshold of 1,500 spawners Productivity: Minimum of 1.26 recruits/spawner at threshold abundance	Tributary Habitat: Degraded floodplain connectivity and function, degraded channel structure and complexity (key habitat quantity, habitat diversity, channel stability), altered sediment routing, degraded water quality (water temperatures), and altered hydrology (low flows). Hatchery: Effects of naturally spawning stray hatchery fish on viability of wild fish. Hydrosystem: Columbia River mainstem hydrosystem passage.
Middle Fork John Day River	Extant	Summer	Intermediate	Moderate	Moderate	Maintained	Optional for viable MPG status; need one viable intermediate population.	Abundance: Minimum threshold of 1,000 spawners Productivity: Minimum of 1.35 recruits/spawner at threshold abundance	Tributary Habitat: Degraded channel structure and complexity (habitat quantity and diversity), degraded floodplain connectivity and function, altered sediment routing, altered hydrology, and degraded water quality (water temperatures). Hatchery: Effects of naturally spawning stray hatchery fish on viability of wild fish. Hydrosystem: Columbia River mainstem hydrosystem passage.
South Fork John Day River	Extant	Summer	Basic	Moderate	Moderate	Maintained	Must meet or exceed maintained rating for viable MPG status.	Abundance: Minimum threshold of 500 spawners Productivity: Minimum of 1.56 recruits/spawner at threshold abundance	Tributary Habitat: Altered sediment routing, degraded channel structure and complexity (habitat quantity and diversity), altered hydrology and low flow, degraded water quality (water temperatures), and impaired fish passage. Hatchery: Effects of naturally spawning stray hatchery fish on viability of wild fish. Hydrosystem: Columbia River mainstem hydrosystem passage.
Upper Mainstem John Day River	Extant	Summer	Intermediate	Moderate	Moderate	Maintained	Optional for viable MPG status; need one viable intermediate population.	Abundance: Minimum threshold of 1,000 spawners Productivity: Minimum of 1.35 recruits/spawner at threshold abundance	Tributary Habitat: Degraded channel structure and complexity (habitat quantity and diversity), degraded riparian areas and LWD recruitment, altered sediment routing, degraded water quality (water temperatures), altered hydrology, and degraded floodplain connectivity and function. Impaired fish passage is also a priority limiting factor in Beech and Laycock Creeks. Hatchery: Effects of naturally spawning stray hatchery fish on viability of wild fish. Hydrosystem: Columbia River mainstem hydrosystem passage.

Table 3. Population characteristics, recent viability assessment results [integrated abundance and productivity (A/P) risk, integrated spatial structure and diversity (SS/D) risk, overall viability rating], ICTRT recovery scenarios, and primary threats and limiting factors for Oregon Middle Columbia River steelhead populations in the Umatilla and Walla Walla Rivers Major Population Group (MPG).

Population	Extant / Extirpated	Life History	Historic Population Size	2010 A/P Risk	2010 SS/D Risk	2010 Viability Rating	ICTRT Low Risk Recovery Scenario	Minimum Viability Levels for Low Risk Recovery Scenario (5% Extinction Risk)	Primary Threats & Limiting Factors
Umatilla and Walla Walla Rivers MPG <i>For this MPG to be viable, two populations should be viable and one should be highly viable.</i>									
Umatilla River	Extant	Summer	Large	Moderate	Moderate	Maintained	Must have for viable MPG status; only large population in the MPG.	<p>Abundance: Minimum threshold of 1,500 spawners</p> <p>Productivity: Minimum of 1.26 recruits/spawner at threshold abundance</p>	<p>Tributary Habitat: Degraded water quality and temperature, altered sediment routing, impaired fish passage, degraded channel structure and complexity, and altered hydrology (low flows).</p> <p>Hatchery: Effects of naturally spawning stray hatchery fish on viability of wild fish.</p> <p>Hydrosystem: Columbia River mainstem hydrosystem passage.</p>
Walla Walla River	Extant	Summer	Intermediate	Moderate	Moderate	Maintained	Optional for viable MPG status; need one of two intermediate populations to meet viability criteria and the Walla Walla population is closer to meeting criteria than the Touchet population.	<p>Abundance: Minimum threshold of 1,000 spawners</p> <p>Productivity: Minimum of 1.35 recruits/spawner at threshold abundance</p>	<p>Tributary Habitat: Degraded water quality (high water temperature), altered sediment routing, impaired fish passage, degraded channel structure and complexity, degraded floodplain connectivity and function, and altered hydrology (low flows).</p> <p>Hatchery: Effects of naturally spawning stray hatchery fish on viability of wild fish.</p> <p>Hydrosystem: Columbia River mainstem hydrosystem passage.</p>
Willow Creek	Extirpated	Summer	Intermediate	Extirpated	Extirpated	Extirpated	Not applicable for delisting recovery goal	<p>Abundance: Minimum threshold of 1,000 spawners</p> <p>Productivity: Minimum of 1.35 recruits/spawner at threshold abundance</p>	<p><i>Primary threats and limiting factors are not identified for this population in the Oregon Middle Columbia Steelhead Conservation and Recovery Plan (ODFW 2010).</i></p>
<p>Note: Four populations comprise the Umatilla and Walla Walla Rivers MPG. The two populations that should be viable include the Umatilla River and either the Walla Walla or Touchet River populations; one of these populations should reach highly viable status. The Willow Creek population is rated as extirpated.</p>									

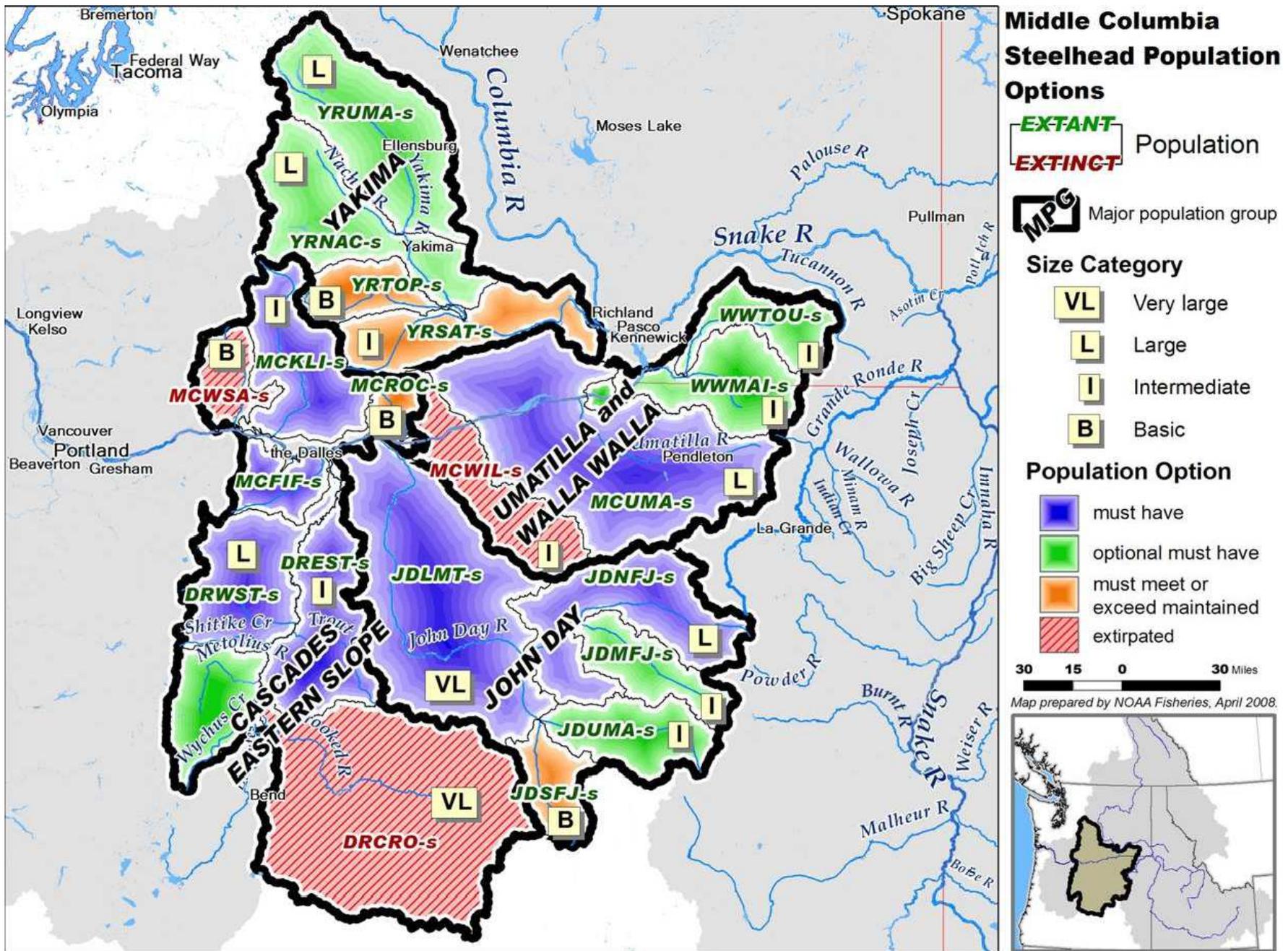


Figure 2. Map of ICTRT recovery scenarios for populations within the Middle Columbia River steelhead Distinct Population Segment. Population Recovery Options: **Must Have** (blue) = a population that must meet viable status [low extinction risk (1-5%)] for its associated MPG to meet viable status; **Optional Must Have** (green) = one of two populations within an MPG, either of which must meet viable status for MPG viability; and **Must Meet or Exceed Maintained** (orange) = a population that must meet moderate extinction risk (6-25%) status for the MPG to be viable. At least one population within each MPG must meet highly viable status [very low extinction risk (<1%)] for an MPG to be viable. **Extirpated** (red hashed) = locally extinct populations whose improved viability does not enhance overall DPS viability (i.e., the delisting recovery goal), but will contribute towards meeting the broad-sense recovery goal.

Implementation Spreadsheets and Priority Action Maps

Step 2: Use the implementation spreadsheets and priority action maps to determine within population (reach scale) Mid-C steelhead protection and restoration project priorities.

ODFW has created 11 population-specific, implementation Excel® spreadsheets to catalog the tributary habitat, hydropower, harvest and hatchery recovery strategies, actions, limiting factors and threats, and prioritization information from the multiple chapters and appendices of the Oregon Mid-C Steelhead Conservation and Recovery Plan into a comprehensive, user-friendly format for local implementers (Tables 4 & 5).

Table 4. Oregon Mid-C Steelhead Conservation and Recovery Plan implementation spreadsheet filenames.

Population	Excel® Spreadsheet Filename
Cascades Eastern Slope Tributaries Major Population Group (MPG)	
Fifteenmile Creek	<i>MC_FMC Stw Popn_Impl Spdsh.xls</i>
Deschutes River Eastside	<i>MC_DRE Sts Popn_Impl Spdsh.xls</i>
Deschutes River Westside	<i>MC_DRW Sts Popn_Impl Spdsh.xls</i>
Deschutes/Crooked River	<i>MC_DCR Sts ext Popn_Impl Spdsh.xls</i>
John Day River Major Population Group (MPG)	
Lower Mainstem John Day River	<i>MC_LMJD Sts Popn_Impl Spdsh.xls</i>
North Fork John Day River	<i>MC_NFJD Sts Popn_Impl Spdsh.xls</i>
Middle Fork John Day River	<i>MC_MFJD Sts Popn_Impl Spdsh.xls</i>
South Fork John Day River	<i>MC_SFJD Sts Popn_Impl Spdsh.xls</i>
Upper Mainstem John Day River	<i>MC_UMJD Sts Popn_Impl Spdsh.xls</i>
Umatilla/Walla Walla Rivers Major Population Group (MPG)	
Umatilla River	<i>MC_UR Sts Popn_Impl Spdsh.xls</i>
Walla Walla River	<i>MC_WWR Sts Popn_Impl Spdsh.xls</i>
<p>Note: The information from these spreadsheets will be uploaded into federal and/or state recovery plan implementation databases in the near future to facilitate efficient tracking of recovery plan implementation progress. A spreadsheet file was not compiled for the extirpated Willow Creek population (Umatilla/Walla Walla Rivers MPG) as the Oregon Mid-C Steelhead Conservation and Recovery Plan does not contain recovery strategies, actions and associated implementation prioritization information for this population.</p>	

For a given population, each spreadsheet organizes the recovery management strategies, actions, and associated limiting factors, threats, implementation and prioritization information by geographic location (Table 5). The spreadsheet files listed in Table 4 are accessible on the ODFW Middle Columbia River Steelhead Conservation and Recovery Plan website, http://www.dfw.state.or.us/fish/CRP/mid_columbia_river_plan.asp, under the “Implementation Team Toolbox” section. The spreadsheets are formatted to print in landscape orientation on 11 x 17 inch paper.

The Priority Action Maps illustrate the geographic areas that are currently in protected status (wilderness areas, proposed wilderness areas, and municipal watersheds); stream reaches where priority 1 and priorities 1 and 2 protection actions are proposed (Column R of the population spreadsheets); and, restoration benefits from priority 1 and priorities 1 and 2 restoration actions for all reaches (Columns T, U, V of the population spreadsheets). These maps are available in Section 10 of the Plan and the geospatial data files are accessible under the “Final Documents” section of the ODFW Middle Columbia River Steelhead Conservation and Recovery Plan website (see web link above).

Local implementers should use the spreadsheets and priority action maps jointly to plan and design comprehensive, site-specific, recovery projects that address multiple strategies and limiting factors for a given population, as identified in the Plan.

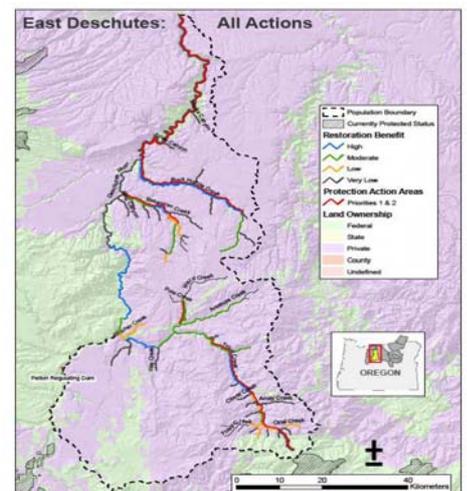


Figure 3. Priority Action Map example from the Oregon Middle Columbia Steelhead Conservation and Recovery Plan.

Table 5. Oregon Mid-C Steelhead Conservation and Recovery Plan implementation spreadsheet contents.

Column	Column Title	Description of Content by Column
A	ESU/DPS	Biological hierarchical organization information for the Middle Columbia River Steelhead Distinct Population Segment (DPS), including the major population group (MPG) and independent population for which the site-specific, strategic action information (columns D-W) applies.
B	MPG	
C	Population	
D	Action ID	Unique alpha-numeric identification code assigned to each site-specific, strategic recovery action. Although not contained in the Oregon Mid-C Steelhead Conservation and Recovery Plan, these action identification numbers: 1) provide local implementers with a simple coding scheme that can be included in grant applications and project reports to cross-reference a project's alignment with plan recovery strategies, actions and priorities and 2) will facilitate efficient identification and tracking of recovery projects in various funding/reporting databases (e.g., OWEB, BPA PISCES, etc.).
E	Geographic Location	Geographic location for a given tributary strategic action as specified in Section 9 of the Plan.
F	Geographic Sub-Location	Additional detailed location information for a given strategic action as specified in Section 9 of the Plan.
G	Tributary Recovery Strategy	The ecologically-based recovery strategy or rationale for addressing the factors limiting Mid-C steelhead viability throughout their life cycle as specified in Section 9 of the Plan.
H	Tributary Recovery Action	A site-specific method to bridge the gap between current conditions and full implementation of a recovery strategy as specified in Section 9 of the Plan.
I	Limiting Factor(s) Addressed	The limiting factors addressed by a strategic action as specified in Sections 8 & 9 of the Plan.
J	Threats Addressed	The general tributary threat addressed by a strategic action as specified in Sections 8 & 9 of the Plan. The general tributary threat categories are habitat degradation, hydrosystem, harvest, and hatcheries (the four H's).
K	Threat Sub-Category	The tributary habitat degradation threat sub-categories addressed by a strategic action as specified in Tables 9.3.1 – 9.3.11 of the Plan.
L	VSP Parameter(s) Addressed	The Viable Salmonid Population (VSP) criteria - abundance, productivity, spatial structure, diversity - addressed by a strategic action as specified in Sections 8 &/or 9 of the Plan.
M	Life Stages Affected	Mid-C steelhead life stages affected by a strategic action as specified in Section 8 &/or 9 of the Plan.
N	Implementing Entities	Potential implementing entities for a strategic action as specified in Section 9 of the Plan.
O	Status	2008 action implementation status as specified in Tables 9.3.1 – 9.3.11 of the Plan.
P	Implementation Timeframe	Predicted timeframe for action implementation as specified in Tables 9.3.1 – 9.3.11 of the Plan.
Q	Discussion	Additional notes and comments regarding a strategic action as specified in Section 9 of the Plan.
R	Initial Action Prioritization <i>1 = 1st priority, 2 = 2nd priority, 3 = 3rd priority</i>	Strategic action prioritization rankings as specified in Section 9 or Appendix G of the Plan. To ensure ranking consistency across strategic actions, the high (H), medium (M) and low (L) culvert rankings in Appendix G were converted to 1s, 2s and 3s, respectively.
S	Expert Panel Refined Prioritization <i>HP = highest priority</i>	Expert panel refined prioritization of column S rankings as specified in Section 1 or Section 9 (for culverts) of the Plan.
T	Proposed Protection Management Action Reaches <i>1 = Highest Priority, 2 = Second Priority</i>	Reaches identified for Proposed Protection Management Actions (those protection actions associated with tributary habitat strategy 1 listed in columns G & H) based on the Ecosystem Diagnosis and Treatment (EDT) information and Priority Action Maps in Section 10 and Appendix H of Plan.
U	Restoration Benefit from High Priority Proposed Restoration Actions for All Reaches <i>High (H), Moderate (M), Low (L), Very Low (VL)</i>	Restoration benefit from high priority (priority 1) proposed restoration actions (all 1s in Column L for Strategy 2-8 restoration actions in Columns G & H) based on the EDT information and Priority Action Maps in Section 10 and Appendix H of the Plan.
V	Restoration Benefit from All Proposed Restoration Actions for All Reaches <i>High (H), Moderate (M), Low (L), Very Low (VL)</i>	Restoration benefit from all (priority 1 and priority 2) proposed restoration actions (i.e., all 1s and 2s in Column L for Strategy 2-8 actions in Columns G & H) based on the EDT information and Priority Action Maps in Section 10 and Appendix H of the Plan.
W	Recovery Plan Reference	Cross-reference to the Plan for each site-specific strategic action (e.g., table, figure, page and section numbers; appendices; EDT filenames; etc.).

Three-Year Implementation Schedules (3YIS)

Step 3: Develop a near-term work plan for recovery project planning, implementation, and funding acquisition.

The Mid-C Implementation Coordinator will work with members of the Oregon Mid-C Implementation Team to develop a three-year implementation schedule (3YIS). The 3YIS is the Oregon Management Unit's work plan that summarizes how and when strategic actions in the Oregon Mid-C Steelhead Conservation and Recovery Plan will be implemented over a three-year period. The intent of the 3YIS is to plan, prioritize, and track progress in the near-term to facilitate long-term planning and implementation. Information from the 3YIS will be used to develop Annual Oregon Middle Columbia Steelhead Implementation Reports and will be incorporated into federal and/or state implementation tracking databases.

Supplemental Tools

Implementation is an adaptive process, requiring the continuous assessment of Mid-C steelhead populations and their viability, recovery action implementation and effectiveness monitoring, and adjustments to implementation that are grounded in the best available scientific and technical input. Several supplemental tools provide key information to guide implementation, management, and policy decisions regarding Oregon's Mid-C steelhead populations. These tools include:

- **Research, Monitoring and Evaluation (RM&E)**

As outlined in Section 13 of the Plan, RM&E data are used to assess the status and trends in population viability and evaluate the success of recovery plan implementation in meeting the delisting and broad sense recovery goals. This information is periodically incorporated into ODFW stock assessment updates, annual implementation reports, and NOAA 5-year status reviews.

- **ODFW Salmon & Steelhead Recovery Tracker Website**

This website (<http://odfwrecoverytracker.org/>) provides information on the health of Oregon's anadromous salmon and steelhead populations, including Mid-C steelhead (Figure 4). Website users can explore and download abundance, productivity, hatchery stray, and spatial structure data for each Mid-C steelhead population in Oregon.

- **Annual Implementation Reports**

These fiscal year reports summarize the status of the Oregon Mid-C Recovery Plan's implementation, critical implementation needs and challenges, and adaptive management recommendations. The first implementation report was completed in April 2012 for the February 2010 through June 2011 implementation period.

- **NOAA 5-Year Status Reviews**

In 2010, NOAA completed a 5-year status review update for Pacific salmon and steelhead listed under the Endangered Species Act which evaluated status based on recent viability (VSP) criteria data and trends in the threats limiting salmon and steelhead viability. The next review will be released in 2015.

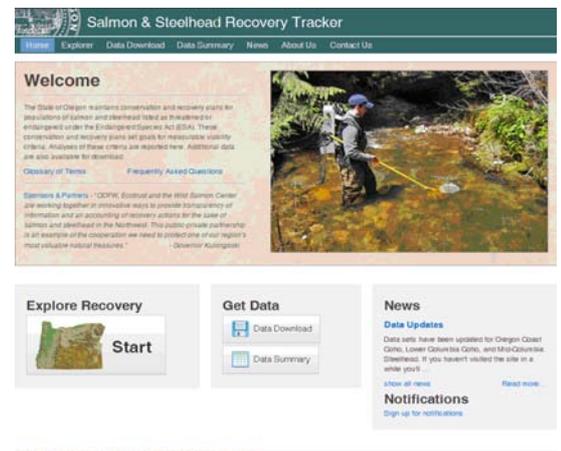


Figure 4. Screenshot of the ODFW Salmon and Steelhead Recovery Tracker website.

Glossary

Abundance (A): One of the four viability criteria parameters; the average number of spawners (adult fish returning to spawn) in a population over a generation or more.

Broad-Sense Recovery Goal: Oregon's Mid-Columbia River natural steelhead populations are sufficiently abundant, productive, and diverse (in terms of life histories and geographic distribution) so that they provide significant ecological, social, cultural, and economic benefits. This goal as defined in the Oregon Mid-C Steelhead Conservation and Recovery Plan goes beyond the requirements for Endangered Species Act delisting (delisting recovery goal) to incorporate many of the traditional uses, as well as rural and Native American values, deemed important in the Pacific Northwest.

Conservation and Recovery Plan: A State of Oregon guidance document consistent with the legal requirements of Oregon's Native Oregon's Fish Conservation Policy (OAR 635-007-0502 to 0509) and Section 4(f) of the U.S. Endangered Species Act (ESA; 16 U.S. Code 1533). The document describes the current species status, threats and factors limiting species viability, and the site-specific actions and adaptive process for protecting and restoring a listed species and their habitats. The Oregon Middle Columbia Steelhead Conservation and Recovery Plan (ODFW 2010) is part of the National Atmospheric Administration's National Marine Fisheries Service (NOAA – NMFS) Middle Columbia River Steelhead Distinct Population Segment ESA Recovery Plan (NMFS 2009).

Delisting Recovery Goal: Oregon's Mid-Columbia River natural steelhead populations reach desired levels of biological viability to support removal of the Middle Columbia River Steelhead Distinct Population Segment (DPS) from the Federal List of Endangered and Threatened Wildlife and Plants (50 CFR 17.11 and 17.12). Achieving the delisting goal is the first benchmark in advancing towards broad-sense recovery (see broad-sense recovery goal above).

Distinct Population Segment (DPS) or Evolutionarily Significant Unit (ESU): A listable entity under the U.S. Endangered Species Act; in terms of Pacific salmonids, a group of Pacific salmon, steelhead or trout populations that is substantially reproductively isolated from other conspecific units, and represents an important component of the evolutionary legacy of the species. The Middle Columbia River Steelhead Distinct Population Segment includes all steelhead populations in Oregon and Washington tributaries of the Columbia River upstream of the Hood and Wind River systems, up to and including the Yakima River.

Diversity (D): One of the four viability criteria parameters; the distribution of genetic, life history, and phenotypic variation within and among populations. Populations exhibiting greater diversity are generally more resilient to short-term and long-term environmental changes.

Extant: An existing population.

Extirpated: A locally extinct population. Extirpation in terms of Middle Columbia steelhead refers to the absence of only the anadromous life-history form.

Independent Population: "A group of fish of the same species that spawns in a particular lake or stream (or portion thereof) at a particular season and which, to a substantial degree, does not interbreed with fish from any other group spawning in a different place or in the same place at a different season" (ODFW 2010, McElhany et al. 2000). Not interbreeding to a 'substantial degree' means that two groups are considered to be independent populations if they are isolated to such an extent that exchanges of individuals among the populations do not substantially affect the population dynamics or extinction risk of the independent populations over a 100-year time frame. Populations are the primary units for recovery action implementation.

Interior Columbia Technical Recovery Team (ICTRT): Appointed by the National Marine Fisheries Service (NMFS), the team provides geographic and species expertise for the entire Interior Columbia domain and includes biologists from NMFS, state, tribal and local entities, academic institutions, and private consulting firms. The ICTRT played an important role in recovery planning, including developing ESU/DPS and population viability criteria that will be used, along with threats-based criteria, to determine whether a species has recovered sufficiently to be delisted (if threatened) or downlisted to threatened (if endangered). More information about the team can be found at the following website: <http://www.nwfsc.noaa.gov/trt/columbia.cfm>.

Limiting Factors: The physical, biological, or chemical conditions of the environment and associated ecological processes and interactions (e.g., habitat connectivity, water quality, physical habitat quality, etc.) that result in reductions in the Mid-C steelhead viable salmonid population (VSP) parameters (abundance, productivity, spatial structure, and diversity). Primary limiting factors are those with the greatest impacts on a population's ability to reach a desired viability status.

Major Population Group (MPG): A group of independent populations that share similar genetic, geographic (hydrographic and ecoregion), and/or habitat characteristics. These "major groupings" are isolated from one another over a longer time scale than that defining the individual populations, but which retain some degree of connectivity greater than that between ESUs or DPSs.

Productivity (P): One of the four viability criteria parameters; performance of a population over time in terms of recruits (adult offspring) per spawner. Productivity, or population growth rate, is an indicator of a population’s ability to sustain itself or its ability to rebound from low numbers.

Recovery Goal: As outlined in a conservation and recovery plan, the specific desired result in terms of recovering a listed steelhead or salmon DPS/ESU. The Oregon Middle Columbia Steelhead Conservation and Recovery Plan (ODFW 2010) specifies two recovery goals, delisting and broad-sense recovery, for Mid-C steelhead.

Recovery Scenarios: A description of population-specific recovery levels necessary for the DPS or ESU to achieve a viable status rating.

Spatial Structure (SS): One of the four viability criteria parameters; a population’s geographic distribution and the processes that affect that distribution. A population with a complex spatial structure, including multiple spawning areas, may experience more opportunity for gene flow, developmental substructure, and life history diversity.

Threatened Species: Defined under the Endangered Species Act as a species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

Threats: Human actions (e.g., fishing, operation of hatcheries, operation of hydrosystem, land use practices, etc.) or natural events (e.g., flood, drought, volcano, etc.) that cause or contribute to limiting factors. Threats may influence one or multiple life stages and may occur in the present, future or have occurred in the past. Primary threats to steelhead and salmon are those with the greatest affects on a population’s viability and are commonly referred to as the “four H’s” – habitat degradation, hydropower system, hatcheries and harvest.

Viability Criteria: Describe a viable salmonid population (VSP) based on the measurable, biological parameters of abundance, productivity, spatial structure, and diversity associated with a low extinction risk (less than 5% probability) in a 100-year period.

Viability Status Rating: An assessment of the current status of populations and DPSs/ESUs based on recent viability criteria data and trends in the threats limiting salmon and steelhead viability. The viability status ratings are defined as integrated probabilities of extinction risk over a 100-year period (Figure 5). NOAA compiles this information into 5-year status review updates for Pacific salmon and steelhead listed under the Endangered Species Act (e.g., Ford 2011).

		Spatial Structure/Diversity (SS/D) Risk			
		Very Low	Low	Moderate	High
Abundance/ Productivity (A/P) Risk	Very Low (< 1%)	HV	HV	V	M
	Low (1 - 5%)	V	V	V	M
	Moderate (6 - 25%)	M	M	M	HR
	High (> 25%)	HR	HR	HR	HR

Figure 5. Matrix used to integrate the four viable salmonid population parameter (viability criteria) risk ratings and determine overall viability level. Viability rating key: HV = highly viable, V = viable, M = maintained, and HR = high risk (does not meet viability criteria).

References

- M.J. Ford (ed.). 2011. Status review update for Pacific salmon and steelhead listed under the Endangered Species Act: Pacific Northwest. U.S. Dept. Commerce, NOAA Technical Memorandum. NMFS-NWFSC-113, 281 p. Available at: http://www.nwfsc.noaa.gov/assets/25/7962_01312012_150050_SRUpdateSal&SteelheadTM113WebFinal.pdf.
- Interior Columbia Basin Technical Recovery Team (ICTRT). 2007. Viability criteria for application to Interior Columbia basin salmonid ESUs. ICTRT Review Draft Report to NOAA Fisheries. Portland, Oregon.
- McElhany, P., M.H. Ruckelshaus, M.J. Ford, T.C. Wainwright, and E.P. Bjorkstedt. 2000. Viable salmon populations and the recovery of Evolutionarily Significant Units. U. S. Department of Commerce, National Marine Fisheries Service, Northwest Fisheries Science Center, NOAA Technical Memorandum NMFS-NWFSC-42. 156 pp. Seattle. Available at: <http://www.nwfsc.noaa.gov/publications/techmemos/tm42/tm42.pdf>.
- National Marine Fisheries Service (NMFS). 2009. Middle Columbia River Steelhead Distinct Population Segment ESA Recovery Plan. NMFS Northwest Region, Portland, Oregon. Available at: <http://www.nwr.noaa.gov/Salmon-Recovery-Planning/Recovery-Domains/Interior-Columbia/Mid-Columbia/Mid-Col-Plan.cfm>.
- Oregon Department of Fish and Wildlife (ODFW). 2010. Conservation and Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead Distinct Population Segment. Oregon Department of Fish and Wildlife, La Grande, Oregon. Available at: http://www.dfw.state.or.us/fish/CRP/mid_columbia_river_plan.asp.