

## Helpful Tips for Reading the Fact Sheets

1. Fact sheets are included for Oregon's 10 existing Mid-C steelhead populations and the non-essential, experimental [ESA 10(j)] Upper Deschutes-Crooked River population since reintroduction and passage efforts above Pelton-Round Butte Complex aim to restore steelhead to their historically accessible areas {see Figure ES-1 (page 1) and Figure 1 (page 4) for population delineations}.
2. **2016 status** refers to an existing (extant) population's viability status, defined as probabilities of extinction risk over a 100-year time period, and based on the 2016 NMFS 5-year status review<sup>3</sup> of four viability criteria:
  - **Abundance**—the average number of naturally produced spawners in a population over a generation or more;
  - **Productivity**—performance of a population over time in terms of recruits per spawner;
  - **Spatial structure**—a population's geographic distribution and the processes that affect that distribution; and
  - **Diversity**—the distribution of genetic, life history, and phenotypic variation within and among populations.
3. **Population status & trends** figures summarize abundance, hatchery proportion, and recruits per spawner raw data.
  - The **abundance** graph displays the smoothed trend of estimated annual natural-origin spawner (light blue shaded area) and total spawner data (natural- and hatchery-origin; dark blue shaded area), the recovery minimum natural-origin spawner (NOSA) abundance threshold (black dashed line), and 10-year rolling geometric mean of natural-origin spawners (orange trendline).
    - Unlike the traditional average (arithmetic mean), the geometric mean (geomean) is used because it tends to dampen the effect of very high or low values in the dataset.
  - The **hatchery proportion** graph displays the annual raw data (red squares) and trend (dashed line) estimates, 5-year rolling average proportion of hatchery-origin spawners (pHOS) data (tan trendline), and the HSRG's recommended population-specific thresholds for low-risk hatchery influence (black dashed line). pHOS provides a measure of the population's genetic diversity risk<sup>4</sup>.
  - The **adult recruits per spawner (R/S)** graph displays annual raw data (purple points and trend), 20-year rolling geometric mean estimates (green trendline), population replacement threshold (R/S=1; gray dotted line), and recovery minimum productivity threshold (black dotted line)<sup>5</sup>. R/S is a measure of population productivity or growth rate. Values above replacement (R/S>1) indicate a growing population; values less than one indicate that the population did not replace the number of parents in that brood year<sup>5</sup>.
  - Conservation and Recovery Plan **viability thresholds** (e.g., abundance and productivity) start at **1999**, the year Mid-C steelhead were ESA-listed as threatened.
  - Data is available on ODFW's Salmon and Steelhead Recovery Tracker<sup>6</sup> (<http://odfwrecoverytracker.org/>) and StreamNet's Coordinated Assessments Data Exchange (<http://cax.streamnet.org/>) websites. Population-specific viability criteria data collection and analysis methods are further described in Carmichael et al. 2015<sup>7</sup>.
4. **Primary threats and limiting factors** are summarized for each population. Addressing primary threats is the highest priority for improving a population's viability and meeting recovery goals. Consequently, secondary threats (e.g., harvest, predation, etc.) are not presented in the fact sheets. An asterisk (\*) indicates new primary threats and/or limiting factors based on research and monitoring evidence.
5. **Actions implemented** to address the primary threats are summarized in the narrative, graphs, and tables for each population.
  - A recovery **strategy** is a management objective designed to address specific threats and factors limiting the Middle Columbia steelhead viability and achieve the recovery goals of establishing naturally self-sustaining, abundant, productive, and diverse populations.
  - A recovery **action** is the specific management practice or policy required in a specified geographic area to close the gap between current conditions and full achievement of a recovery strategy.
  - A **project** is a completed activity or suite of activities implemented to achieve a particular protection and/or restoration purpose. Multiple projects may address a single recovery plan action.
  - Mainstem Columbia River **hydrosystem** passage and operations remain a primary threat impacting all of Oregon's Mid-C Steelhead populations. Detailed information regarding this threat is provided on pages 39-40.
  - The **research, monitoring, and evaluation (RM&E)** bar graph and text box summarize the status of Oregon's Mid-C Plan RM&E actions implemented as of December 2016.
    - **RM&E Status: Fully Implemented** ● = RM&E objective is fully funded and executed to evaluate associated monitoring questions; **Partially Implemented** ● = RM&E objective is active, but only partially funded and executed to evaluate associated monitoring questions; **Not Started** ● = implementation of the RM&E objective is neither funded nor started to date.
    - **Appendix A** tables provide a detailed summary of the RM&E objectives, monitoring questions, and status in terms of current efforts, new work added, future work planned, and/or remaining implementation gaps for each population.
  - **Tributary habitat** pie charts were developed from the **Appendix B** tables that summarize habitat protection and restoration activities completed January 2010 through December 2016 for each population and their relationship to recovery actions and strategies identified in the plan. Many of the habitat recovery actions are defined at the HUC10 or watershed scale in the plan, therefore multiple projects may address the same recovery action. Additionally, many projects require long-term maintenance to ensure their implementation success. The habitat tables and graphs reflect the best available information from existing reporting databases, state/tribal/federal agency staff, and local restoration practitioners.
  - Where applicable, **tributary hydrosystem** and **hatchery** text boxes describe the implementation status of high priority strategic actions to address tributary hydrosystem and hatchery influence limiting factors for a population(s).
6. **Major population group (MPG)** summaries describe priority recovery gaps and management recommendations for each MPG.

# Umatilla River Summer Steelhead Population

## Population Status & Trends

- 2016 Status: **Maintained** (moderate, 6-25%, extinction risk)<sup>3</sup>
- The recent 10-year geomean of **potential\*** natural origin abundance estimate of **3,001** (range 2,804–5,528, Spawning Years 2007–2016) is **above** the minimum abundance threshold of 1,500 spawners for low risk extinction (Figure 73)<sup>1,6</sup>. **\*Note:** Estimate is based on adult returns passed at Three Mile Falls Dam not accounting for pre-spawn mortality; therefore, it is likely an overestimate of actual natural-origin steelhead spawners.
- During 2012–2016, hatchery strays accounted for an average of **14%** of total natural spawners (range 8% - 20%), which is **below** the HSRG's low risk hatchery-origin spawner threshold of 30% for an integrated, primary population (Figure 74)<sup>4,6</sup>.
- The recent 20-year geomean recruits per spawner estimate is **0.88** (range 0.31–3.14, Brood Years 1991–2010), **below** population replacement (R/S=1) and **below** the minimum threshold for recovery (R/S =1.26; Figure 75)<sup>1,5,6</sup>.
- **New Information:** Data regarding fish abundance, productivity, adult distribution, and survival changes over time is currently being collected. Adult spawner monitoring expanded and improved through implementation of GRTS-based monitoring protocol in Spring 2012. Monitoring evidence indicates that population productivity and survival is limited by freshwater habitat quantity and quality<sup>48</sup>. Tributary overshoot is an emerging threat impacting ~44%<sup>34</sup> of Umatilla River natural-origin adult steelhead returning above Bonneville Dam<sup>11,49</sup> (see page 39-40 for more information).

Figure 73. Potential\* Natural Spawning Abundance

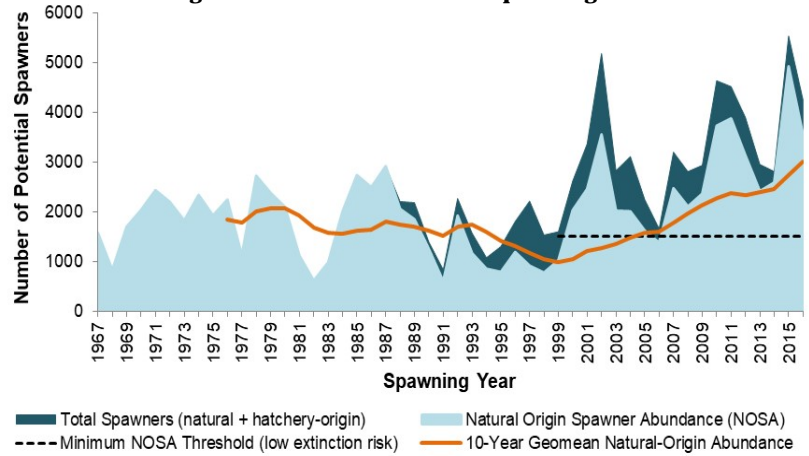


Figure 74. Hatchery Proportion of Natural Spawners

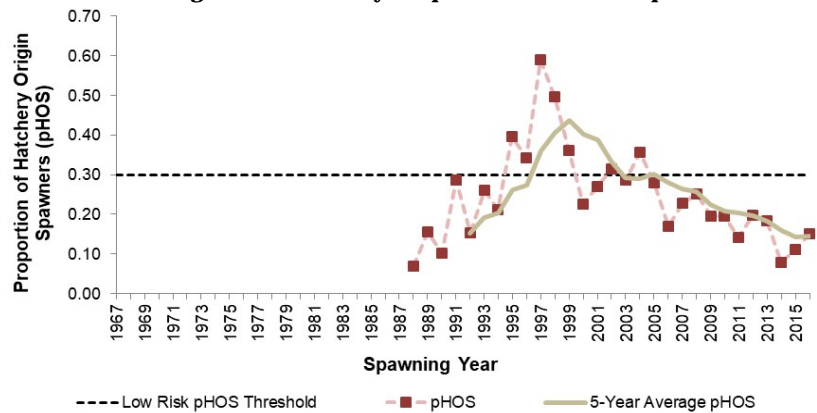
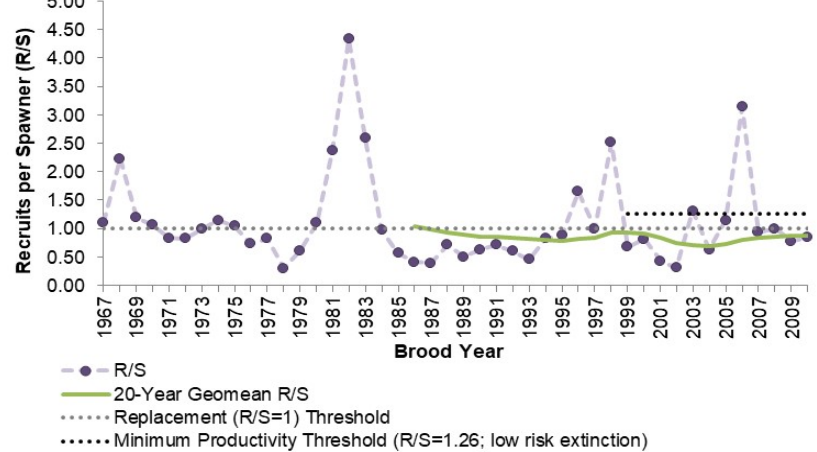


Figure 75. Adult Recruits per Spawner



### Revised Primary Threats & Factors Limiting Population Viability<sup>1</sup>




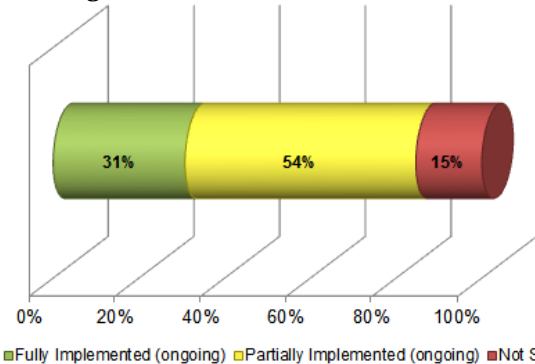
	<b>Hydrosystem:</b> Mainstem Columbia River passage and facility operations; Boyd Hydro Project facilities and operations; *tributary overshoot (adult returns)
	<b>Tributary Habitat:</b> Degraded water quality and temperature, altered sediment routing, impaired fish passage, degraded channel structure and complexity, and altered hydrology (low flows)
	<b>Hatchery:</b> Effects of naturally spawning stray hatchery fish on viability of wild fish

Figure 76. RM&E Action Status: 2010-2016



## Research, Monitoring, & Evaluation (RM&E): 2010-2016

- The plan specifies **13** RM&E recovery actions for the Umatilla River steelhead population<sup>1</sup>. **31%** (n=4) of the actions were fully funded and implemented as of December 2016; **54%** (n=7) were partially implemented and **15%** (n=2) not started (Figure 76).
- **Eleven** RM&E actions are ranked highest/high priority; **four** of these are fully implemented (Objectives 1, 2, 3, & 12, Appendix A, Table A-9).
- **Critical monitoring gaps:**
  - Additional funding is needed to fully implement the highest/high priority population diversity, environmental limiting factors, habitat status/trends, hatchery influence, and hydrosystem impacts to identify relationships between fish and habitat use, and evaluate restoration effectiveness (Objectives 4-10, Appendix A, Table A-9).
- See **Appendix A, Table A-9** for detailed RM&E action status information.

Umatilla & Walla Walla Rivers MPG

# Umatilla River Summer Steelhead Population

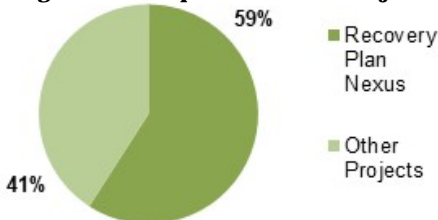
## Tributary Hydrosystem Facilities and Operations: 2010–2016

Improving facilities and operations at the Boyd Hydro Project to reduce fish passage and instream flow impacts is a highest priority recovery action in the plan<sup>1</sup>. **Current Status = Uncertain.** The facility has been non-operational since 2002. The FERC license was terminated in 2011. In 2016, FERC cancelled a 2014 preliminary permit to study the feasibility of the proposed Go With the Flow Hydroelectric Project at the site. The abandoned facilities and infrastructure remain on the lower Umatilla River (RM 9—RM 10). The project's 500 cfs hydroelectric water right (HE 363; 1981 priority date) terminated in 2012 when the project was unable to be transferred to a new owner under Oregon HB 3602. Instream water right transfer, as required by ORS 543A.305 for conversion of unused hydropower water rights, is pending completion by OWRD<sup>50</sup>.

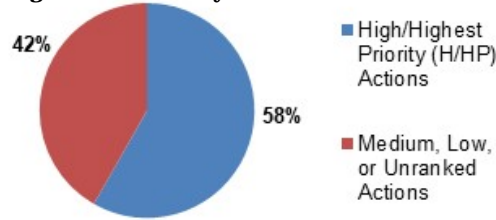
## Tributary Habitat Protection & Restoration: 2010–2016

- **215** tributary habitat strategic recovery actions are identified in the plan for the Umatilla steelhead population<sup>1</sup>. **32** actions (**15%**) were implemented through multiple projects as of December 2016.
- **180** partners, including private landowners, implemented approximately **154** habitat projects in the population area. **59%** (n=91) of these projects had a nexus to one or more recovery plan actions (Figure 77); **58%** (n=53) of these projects implemented high/highest priority recovery actions (Figure 78) and of these, **38%** (n=20) occurred in high protection and/or restoration benefit areas (Figure 79).
- Predominant recovery plan strategies implemented: **Strategy 7** - restoring water quality; **Strategy 2** - restoring passage and connectivity to habitats; **Strategy 5** - restoring riparian condition and LWD recruitment; and **Strategy 8** - restoring upland processes to minimize erosion (Figure 80). This is somewhat consistent with the plan's highest priority tributary habitat recovery strategies (1, 2, 4, 5, and 6) for the population<sup>1</sup>. Multi-strategy projects addressed strategies 2, 3, 4, 5, 6, and/or 8.
- **Implementation highlights:**
  - 7 fish passage barriers addressed (~54 miles made accessible) and 14 fish screens installed in the Birch Creek watershed (Strategy 2).
  - Irrigation efficiency improvements and instream leases adopted population-wide, with an average of ~5.5 cfs conserved/protected instream and ~43 stream miles improved for flow annually (Strategy 6).
  - Levee removal, floodplain connectivity, channel form, instream habitat, wetland habitat, and riparian restoration in lower Meacham Creek treating 2.5 linear stream miles, 12.6 wetland acres, and 271 floodplain-upland acres (Strategies 3, 4, and 5).
- **Critical gaps:**
  - There is insufficient data to adequately assess whether restoration projects completed thus far have improved steelhead habitat quantity and quality, and population viability. Additional funding is needed to fully implement the habitat related research objectives, including implementation of a CHaMP study design and collection/evaluation of instream flow data (see Objectives 2, 5, 6, & 8 in **Appendix A, Table A-9**).
- See **Appendix B, Table B-10** for a summary of completed habitat projects and associated treatment metrics.

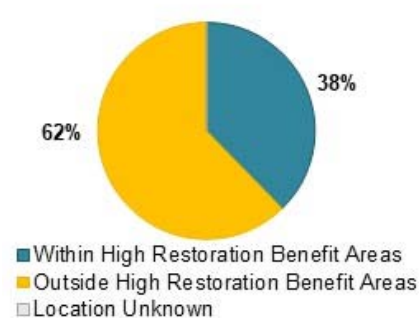
**Figure 77. Completed Habitat Projects**



**Figure 78. Recovery Plan Actions Addressed**



**Figure 79. High Priority Plan Actions Implemented in Recovery Benefit Areas**



**Figure 80. Recovery Plan Strategies Implemented: 2010–2016**



## Tributary Hatchery Actions to Reduce Hatchery Origin Strays Spawning Naturally: 2010–2016

The plan specifies five hatchery strategic actions, four of which are non-consensus (**NC**), for the Umatilla River population<sup>1</sup>. **Action (NC)** - Uniquely mark Umatilla Hatchery steelhead and remove other hatchery strays at Three Mile Falls Dam; **Action (NC)** - Re-establish natural production in Little Butter and Butter Creeks spawning areas through adult outplanting and juvenile releases; **Action (NC)** - Eliminate the use of hatchery produced adults in the broodstock to reduce potential for divergence in genetic and phenotypic traits; **Action (NC)** - Conduct volitional releases of steelhead smolts and remove fish that do not migrate; and **Action (partially NC)** - Reduce the number of hatchery Coho released in the Umatilla River and relocate releases downstream of areas important for steelhead production.

**Current Status = Partially Implemented.** Umatilla hatchery steelhead are uniquely marked. Known out-of-basin hatchery fish are removed at Three Mile Falls Dam. Re-establishing steelhead into Butter Creek will require substantial instream flow restoration to sufficiently support steelhead production. Current hatchery program uses a mix of wild and known Umatilla hatchery steelhead returns (up to 30%; no hatchery by hatchery crosses) for broodstock. Steelhead smolts are volitionally released; fish that do not migrate are not being removed at this time. Hatchery Coho releases have been reduced from 1 million to 500,000 fish. Coho are acclimated and released at the downstream end of steelhead spawning and rearing habitat<sup>51</sup>. Full funding of high priority RM&E Objectives 4, 7, and 12 is needed to support genetic sample analysis, evaluate hatchery influence on natural-origin steelhead viability, and develop consensus-based, hatchery actions that advance recovery (**Appendix A, Table A-9**).

# Walla Walla River Summer Steelhead Population

## Population Status & Trends

- 2016 Status: **Maintained** (moderate, 6-25%, extinction risk)<sup>3</sup>
- The recent 10-year geomean natural origin abundance estimate of **878** (range 464—1,632, Spawning Years 2007—2016) is **below** the minimum abundance threshold of 1,000 spawners for low risk extinction (Figure 81)<sup>1,6</sup>.
- During 2012-2016, hatchery strays accounted for an average of **2%** of total natural spawners (range 0% - 4%), which is **well below** the HSRG's low risk hatchery-origin spawner threshold of 10% for a contributing population (Figure 82)<sup>4,6</sup>.
- There is **insufficient data** to calculate a 20-year geomean recruits per spawner estimate for the population. **Annual estimates have varied from 0.37 to 3.34 R/S during Brood Years 1993—2010** (Figure 83)<sup>1,5,6</sup>, with an 18-year geomean R/S estimate of 1.05.
- **New Information:** Data regarding fish abundance, productivity, adult distribution, and survival changes over time is currently being collected. Additional monitoring is needed to evaluate current distribution in the population's major and minor spawning areas. Tributary overshoot is an emerging threat impacting ~37%<sup>34</sup> of Walla Walla River natural-origin adult steelhead<sup>52</sup> (see pages 39-40 for more information).

Figure 81. Natural Spawning Abundance

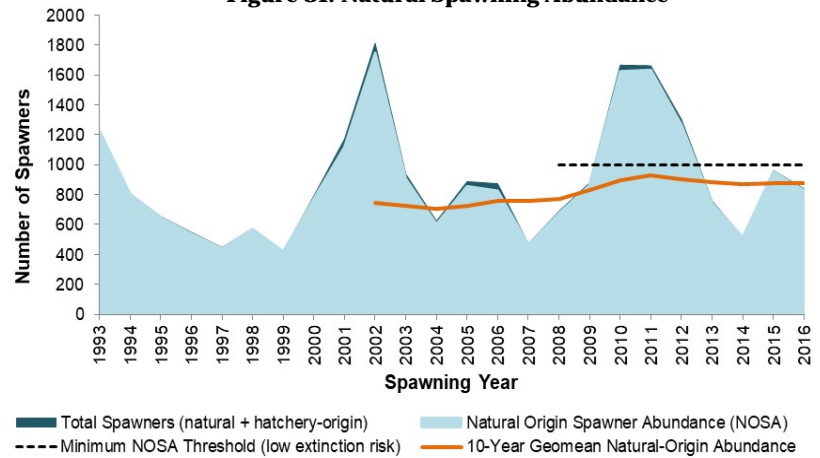
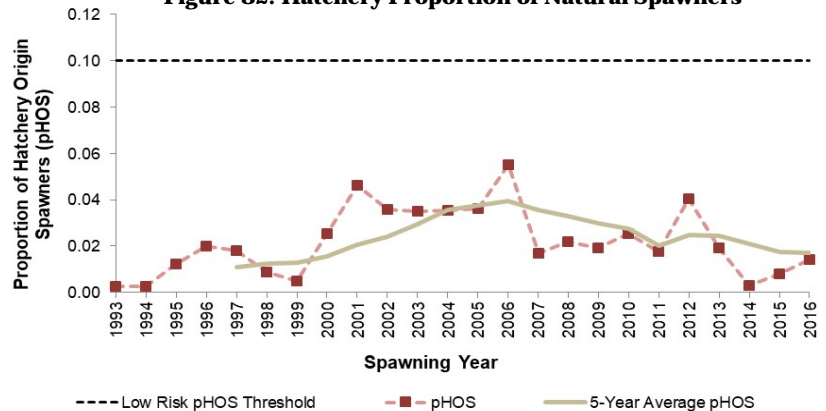


Figure 82. Hatchery Proportion of Natural Spawners






Revised Primary Threats & Factors Limiting Population Viability <sup>1</sup>	
	<b>Hydrosystem:</b> Mainstem Columbia River passage and facility operations; Twin Reservoirs Project facility and operations (Washington); *tributary overshoot (adult returns)
	<b>Tributary Habitat:</b> 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)
	<b>Hatchery:</b> Effects of naturally spawning stray hatchery fish on viability of wild fish

Figure 83. Adult Recruits per Spawner

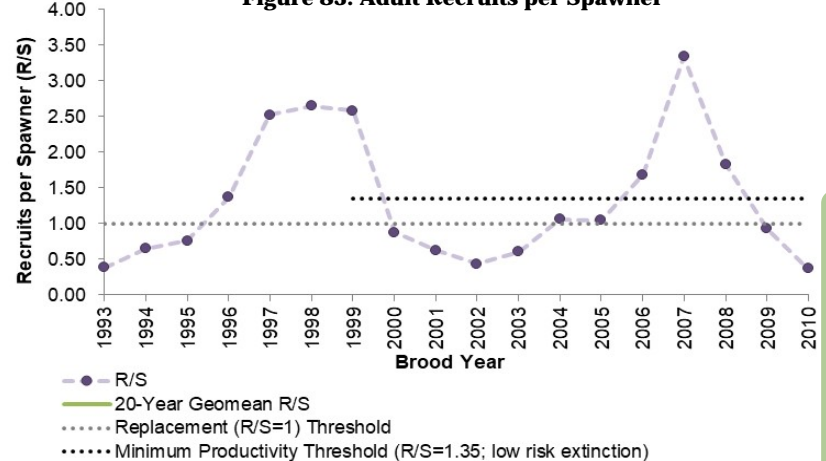
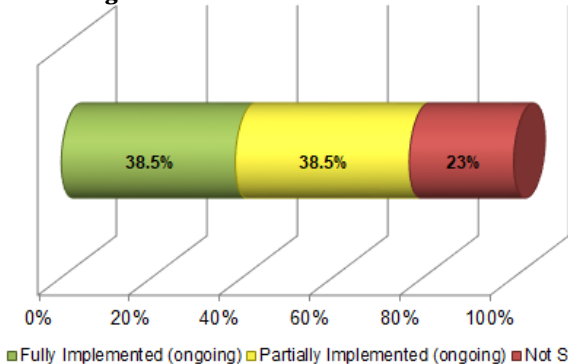


Figure 84. RM&E Action Status: 2010-2016



## Research, Monitoring, & Evaluation (RM&E): 2010-2016

- The plan specifies **13** RM&E recovery actions for the Walla Walla River steelhead population<sup>1</sup>. **~38%** (n=5) of these were fully funded and implemented as of December 2016. **~38%** (n=5) were partially implemented and **23%** (n=3) not started (Figure 84).
- **Nine** RM&E actions are ranked highest/high priority; **four** of these are fully implemented (Objectives 1, 2, 3, & 11, Appendix A, Table A-10).
- **Critical monitoring gaps:**
  - Additional funding is needed to fully implement the high/highest priority population spatial structure, habitat status/trend, environmental limiting factors, implementation effectiveness, and instream flow monitoring objectives (Objectives 2, 5, 6, & 8, Appendix A, Table A-10).
- See **Appendix A, Table A-10** for detailed RM&E action status information.

Umatilla & Walla Walla Rivers MPG

# Walla Walla River Summer Steelhead Population

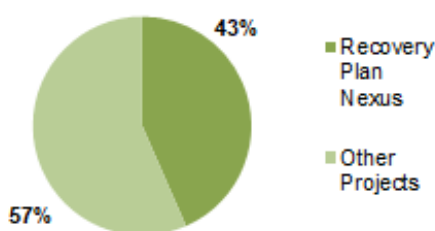
## Tributary Hydrosystem Facilities and Operations: 2010–2016

Conducting a juvenile fish passage assessment and updating the Twin Reservoirs dam fishway on Mill Creek is identified as a highest priority recovery action in the Plan<sup>1</sup>. **Current Status: Uncertain.** Although the Plan states that the Project requires updating to meet NMFS, ODFW, and WDFW fish passage requirements, the Project lies wholly within the state of Washington<sup>53</sup> and outside the jurisdiction of ODFW Fish Passage Requirements and Criteria (ORS 509.580 through 910 and OAR 635-412). The Oregon Mid-C Steelhead Recovery Action Implementation Summary Spreadsheet for the Walla Walla River population<sup>31</sup> will be revised to reflect the applicable requirements and responsible parties information.

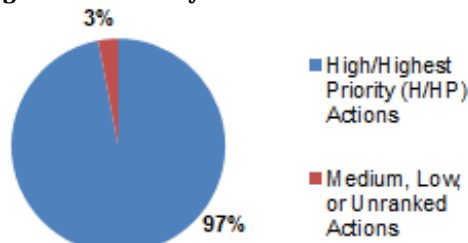
## Tributary Habitat Protection & Restoration (Oregon portion of the population area): 2010–2016

- **216** tributary habitat strategic recovery actions are identified in the plan for the Walla Walla steelhead population<sup>1</sup>. **24** actions (**11%**) were implemented as of December 2016.
- **121** partners, including private landowners, implemented approximately **76** habitat projects in the population area. **43%** (n=33) of the projects had a nexus to one or more recovery plan actions (Figure 85); **97%** (n=32) of the plan-nexus projects implemented high/highest priority recovery actions (Figure 86) and of these, **3%** (n=1) occurred in high protection and/or restoration benefit areas (Figure 87).
- Predominant recovery plan strategies implemented: **Strategy 6** - providing sufficient instream flow during critical periods; **Multiple Strategies** (combinations of strategies 3, 4, 5, and/or 8); and **Strategy 2** - restoring passage and connectivity (Figure 88). This is mostly consistent with the plan’s highest priority tributary habitat recovery strategies (1, 2, 4, 5, and 6) for the population<sup>1</sup>.
- **Implementation highlights:**
  - 83 irrigation systems upgraded to improve water management and monitoring, and conserve/protect an annual average of ~1,385 acre-feet of groundwater, ~6.37 cfs of surface (instream) water, and ~31 stream miles for flow (Strategy 6).
  - Fish passage restoration at Zell Ditch Diversion, Smith Diversion and Sill, and Nursery Bridge Dam (ongoing) improving connectivity to ~109 miles in the Walla Walla River (Strategy 2).
  - Instream-floodplain-riparian connectivity restoration on the Upper South Fork Walla Walla River treating 0.75 linear stream miles and 10 riparian acres (Strategies 3, 4, & 5).
- **Critical gaps:**
  - There is insufficient data to adequately assess whether restoration projects completed thus far have improved steelhead habitat quantity and quality, and population viability. Additional funding is needed to fully implement the habitat related research objectives, including the collection and evaluation of habitat quantity/quality, environmental limiting factors, habitat restoration effectiveness, and instream flow data (Objectives 5, 6, 7, and 11 in Appendix A, Table A-10).
- See **Appendix B, Table B-11** for a summary of completed habitat projects and associated treatment metrics.

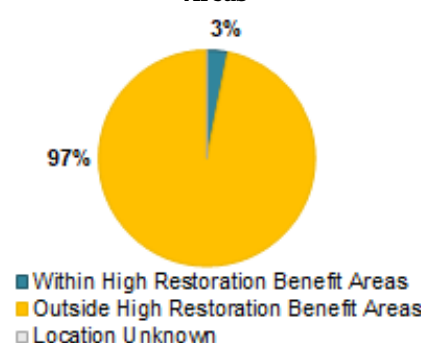
**Figure 85. Completed Habitat Projects**



**Figure 86. Recovery Plan Actions Addressed**



**Figure 87. High Priority Plan Actions Implemented in Recovery Benefit Areas**



**Figure 88. Recovery Plan Strategies Implemented: 2010–2016**

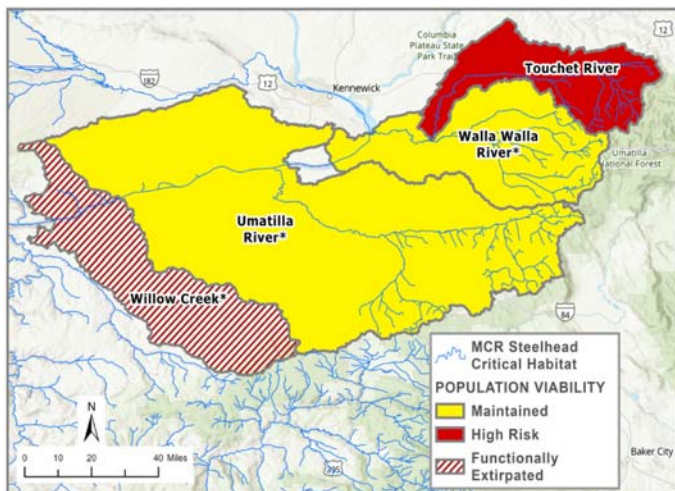


## Tributary Hatchery Actions to Reduce Non-Local Hatchery Strays Spawning Naturally: 2010–2016

The plan specifies the following five, non-consensus (**NC**), strategic hatchery actions for the Walla Walla population<sup>1</sup>: **Action (NC)** - Eliminate adult hatchery strays above Nursery Bridge Dam by resuming trapping operations and removing hatchery fish; **Action (NC)** - Alter the release strategy of Lyons Ferry Hatchery smolts released into the lower Walla Walla River from direct stream to acclimated releases and implement trap and removal near the acclimation site; **Action (NC)** - Develop local broodstock to replace Lyons Ferry stock for use in the current harvest augmentation program; **Action (NC)** - Develop local broodstock to replace Lyons Ferry stock and initiate a natural production supplementation program; and **Action (NC)** - Maintain current Lyons Ferry harvest augmentation program and initiate endemic local broodstock supplementation program in upper mainstem Walla Walla River and Mill Creek.

**Current Status = Partially Implemented.** Recent hatchery stray rates are well below HSRG standards for a contributing population. The Lyons Ferry stock has been discontinued; WDFW releases Wallowa (non-local) stock steelhead into the Walla Walla for harvest and operates an endemic Touchet River steelhead program<sup>54</sup>. Wallowa stock releases may be phased out in the future. Spring Chinook hatchery construction is planned for an existing CTUIR facility on the South Fork Walla Walla. The future status of developing a local steelhead broodstock program is uncertain. Full funding of RM&E Objectives 4 and 10 is needed to expand study design and enhance monitoring efforts of hatchery influence on Walla Walla River summer steelhead viability (Appendix A, Table A-10).

# Umatilla/Walla Walla Rivers MPG: summary & recommendations



## Viability Status

% of Oregon Viable Extant Populations in the MPG<sup>3</sup>

0%

Currently, both the Umatilla River and Walla Walla River populations are rated maintained (moderate extinction risk)<sup>3</sup>. The Umatilla River population, the only large population within in the Major Population Group, and the Walla Walla River or Touchet River (in Washington) populations need to achieve at least viable status, with one population reaching highly viable (very low extinction risk) status for the MPG to be rated viable<sup>1-3</sup>. Beyond ESA-delisting, Oregon’s long-term goal is to achieve broad-sense recovery (very low extinction risk) for the Umatilla and Walla Walla population areas.

## Priority Recovery Gaps & Near-Term Recommendations

Highest priority, recovery gaps and recommended future actions for Oregon populations of Middle Columbia River Steelhead within the Umatilla/Walla Walla Rivers MPG include:

### Tributary Overshoot

Tributary overshoot is a significant limiting factor, affecting ~44% of Umatilla River and ~37% of Walla Walla River<sup>34</sup> natural-origin steelhead adult returns annually. Increased monitoring to evaluate overshoot causal mechanisms and viability impacts at the population scale and improving up- and downstream adult passage through the FCRPS are highest priority actions<sup>11,49</sup>. See pages 39-40 for more information on this emerging threat.

### Viability and Threats Criteria Monitoring and Evaluation

Data regarding fish abundance, productivity, adult distribution, and survival changes over time is currently being collected for the Umatilla River and Walla Walla River populations. Although the long-term trend in Umatilla “potential” natural-origin adult spawner abundance is increasing, these estimates are based on the number of adult spawners passed above Three Mile Falls Dam not accounting for pre-spawn mortality. Therefore, this data likely overestimates the number of natural origin adult steelhead on the spawning grounds. Future analysis will focus on validating the potential spawner data with spawning ground survey data to develop annual “actual” natural-origin spawner abundance estimates for the Umatilla population. Walla Walla River population abundance continues to track below the minimum viability threshold of 1,000 natural-origin spawners. Population productivity (R/S) remains at or below replacement (R/S=1) for both populations. Current summer steelhead spatial distribution is significantly limited in the Umatilla and Walla Walla Rivers compared to historic conditions. Research evidence indicates that current habitat is at spawner capacity, resulting in density dependence and low juvenile growth and survival (i.e., low productivity)<sup>48</sup>. Continued funding of the Umatilla and Walla Walla River life cycle monitoring projects is highest priority. Additional funding is needed to carry out the habitat related research objectives including, implementation of a fish-habitat monitoring study design and collection/evaluation of instream flow data for the Umatilla basin. Several hatchery-related monitoring actions are in partially funded/implemented status. Study design expansion is needed to support genetic analysis, and evaluate and quantify the ecological interactions of hatchery- and naturally-reared summer steelhead in the Umatilla and Walla Walla River basins. Increased funding and technological capacity are needed to execute the highest/high priority Recovery Plan RM&E actions for the Umatilla and Walla Walla River populations, including: population spatial structure and diversity, all “H” threat (hydrosystem, habitat, hatchery and harvest) status and trends, instream flow monitoring, and restoration effectiveness. See Tables A-8 and A-9 in Appendix A.

### Improving Habitat Quantity and Quality

Current steelhead distribution in the Umatilla and Walla Walla Rivers is significantly limited and disconnected compared to historic conditions, resulting in increased gaps between spawning and rearing areas, insufficient juvenile rearing habitat availability, and degraded foodwebs<sup>1,48</sup>. Critically low streamflows, high instream water temperatures, and

## **Umatilla/Walla Walla Rivers MPG: summary & recommendations, continued**

degraded habitat quantity/quality (instream, floodplain, riparian), and impaired access to historic habitat areas remain primary tributary habitat limiting factors for both populations. Actions that proactively and demonstrably (1) protect and conserve high quality steelhead habitats, (2) improve fish passage and screening, (3) manage water use to reduce the occurrence of low instream flows and high water temperatures, and (4) increase instream-riparian-floodplain habitat connectivity, are highest priority<sup>1,3,48</sup>. In the Umatilla, increasing habitat complexity in the lower river for out-migrating juvenile steelhead will likely improve the population's productivity and viability<sup>48</sup>. For additional information, refer to the [Oregon Mid-C Plan recovery action spreadsheets](#) for each population<sup>31</sup>.

### **McKay Dam Passage (Umatilla River)**

Oregon's Statewide Fish Passage Priority List identifies the US Bureau of Reclamation's McKay Dam on McKay Creek (Umatilla River) as a high priority barrier in need of fish passage<sup>30</sup>. McKay Dam is a complete barrier to all native migratory fish. Providing passage at this site would restore habitat connectivity to approximately 84.1 miles of high quality steelhead habitat. Conducting a geo-referenced watershed-scale stream habitat inventory and exploring the feasibility of fish passage restoration at this site are highest priority.

### **Boyd Hydroelectric Project (Umatilla River)**

The Recovery Plan Expert Panel ranked the Boyd Hydroelectric Project as a highest priority strategic action in the Plan. The Project is an abandoned hydroelectric facility on the lower Umatilla River (RM 9 – RM 10). The facility is non-operational as FERC terminated the Project license. Per Oregon Statute (ORS 543A.305), a hydropower water right is transferred to an instream water right upon the hydropower Project's termination. OWRD terminated the Boyd Project 500cfs hydroelectric water right (1981 priority date) in 2014, but has not finalized the instream water right transfer<sup>50</sup>. Finalizing the instream water right transfer is highest priority. Exploring opportunities to remove the Project's infrastructure and restore the stream channel is a high priority action.

### **Army Corps-Nexus Priority Recovery Actions (Walla Walla River)**

Impacts from Army Corps initiated projects and infrastructure (e.g., levees, tributary dams, flood control, hydrograph and channel alteration) continue to limit steelhead habitat access and quality. On behalf of the Middle Columbia Steelhead Recovery Steering Committee, NMFS staff submitted a cover letter and summary table of Mid-Columbia steelhead recovery actions to Army Corps staff in February 2012 and October 2014<sup>55,56</sup>. These documents outline the high priority, Army Corps-nexus tributary recovery action that are needed to advance viability status and threats amelioration for Mid-Columbia steelhead populations. High priority actions for the Walla Walla River population include: Mill Creek channel passage, Lower Walla Walla River flow enhancement feasibility study, Bennington Dam fish passage, and Nursery Bridge Dam fish passage. Fully implementing these actions is highest priority to advance recovery of Walla Walla River steelhead.

### **Expected benefits to Umatilla and Walla Walla River steelhead populations from implementing these recommendations:**

- Increase steelhead survival in the mainstem Columbia River FCRPS corridor and natural-origin adult returns to natal spawning tributaries.
- Increase detection of viability criteria gaps including the threats/factors limiting population and MPG viability.
- Increase tributary habitat connectivity and productivity by addressing high priority barriers to fish passage, and improving streamflows and instream water temperatures to support steelhead rearing and migration.