

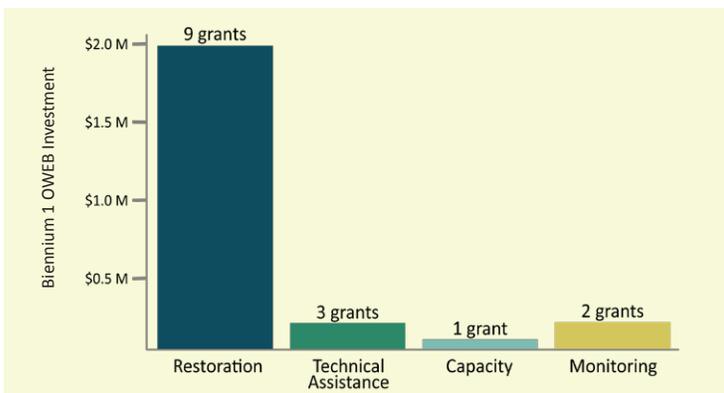


# UPPER <sup>and</sup> MIDDLE WILLAMETTE MAINSTEM ANCHOR HABITATS



Willamette River Anchor Habitats range from the Middle Fork and Coast Fork confluence to habitats above Willamette Falls. Scientists have identified them as the locations with the highest value fish and wildlife habitat and offer the greatest return on restoration investments. Anchor Habitats represent a stepping stone approach to providing essential habitat for species with wide ranges such as salmon, songbirds, and butterflies. Since the late 1800s, land use has dramatically altered the river. Development has resulted in over half of the river’s 180-mile length being armored. Channels are straightened and dams block upstream fish passage. Runoff from adjacent farms and urban centers has degraded water quality and elevated stream temperatures, nutrients, and bacteria. Rare floodplain forests, which provide critical seasonal habitat for fish, have declined by more than 70%.

## Funding



OWEB awarded \$2,539,664 in funding that leveraged \$2,640,910 in matching funds.

## Benefits

- Expanded floodplain habitat from removing levees and enhancing former gravel pits
- Increased number of side channels that support cooler water temperatures
- Enhanced riparian vegetation along sloughs and channels providing shade and habitat
- Reduced coverage of aquatic invasive species
- Improved fish passage by modifying artificial barriers
- Coordinated monitoring approach to measure progress and quantify outcomes

## About This Report

The Focused Investment Partnership (FIP) grant program is a bold, new conservation approach that supports high-performing partnerships to strategize restoration actions and measure ecological outcomes through coordinated monitoring. In January 2016, the Oregon Watershed Enhancement Board awarded an Implementation Focused Investment Partnership grant to the Willamette Mainstem Anchor Habitat Working Group. This report documents progress made from 2016 to 2017 to meet their strategic action plan goals. Work completed under the FIP grant program is part of a much larger, on-going collaborative effort of federal, state and local agencies, private landowners and non-governmental organizations implementing restoration work guided by the Willamette Basin Planning Atlas. The restoration is backed by the funding partnership between Bonneville Power Administration, Meyer Memorial Trust and OWEB that supports large-scale and complex projects on the mainstem Willamette River.



## Goal

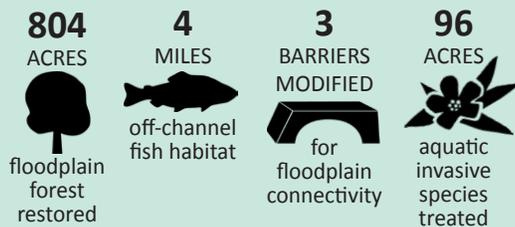
Sustain and enhance seasonally important resources for native fish through increasing habitat complexity and quantity, improving floodplain connectivity, and restoring floodplain forests in the Upper and Middle Willamette Mainstem Anchor Habitats

## Strategies

- Remove revetments and levees in reaches likely to experience channel changes
- Construct lateral channels in areas with high likelihood of hyporheic flow
- Plant riparian vegetation along sloughs and side channels
- Control aquatic invasive weeds
- Increase and enhance floodplain plant communities
- Modify floodplain topography to increase the extent and duration of floodplain inundation
- Modify artificial barriers to aid fish passage and increase extent and duration of floodplain inundation
- Enhance former gravel pits by re-connecting pits, re-grading boundaries and filling ponds

## Biennium 1 Implementation Results (2016-17)

### Restoration



### Scientific Investigation



### Outreach & Engagement



## Near-Term Outcomes (0-10+ Years)

- River channel is re-connected to its historical floodplain
- Length of secondary channels is increased
- Native fish accessibility to the floodplain is increased
- Native riparian forest is enhanced
- Extent of invasive plant species is reduced

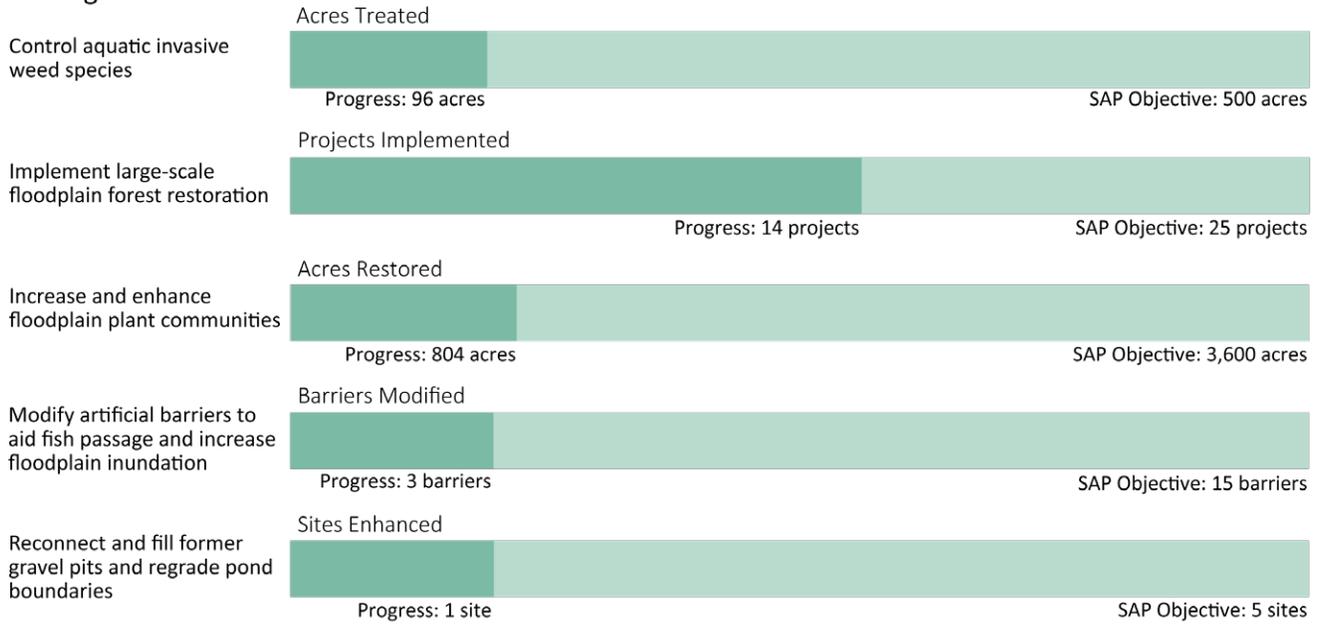
## Long-Term Outcomes (20+ Years)

- Channel migration and sinuosity increases
- Canopy cover and near-bank shading increases
- Temperature and dissolved oxygen conditions improve
- Habitat connectivity and complexity increases
- Seasonally-important habitat resources for native fish increase



# Strategic Action Plan (SAP) Progress, Biennium 1

## Strategies



Progress on metrics reflects implementation supported by OWEB funding, and does not represent all progress achieved via other funding sources.

## Monitoring Approach

- Builds a framework to assess implementation and effectiveness of restoration projects
- Collects data to monitor changing water levels and river features that native fish need at different times of year
- Evaluates the impact of aquatic invasive species on water quality
- Tracks changes in vegetation and ecological responses to reforestation
- Conducts fish sampling to assess native fish habitat use



Willamette Riverkeeper and Benton SWCD partnered with Portland State University and U.S. Geological Service to assess the invasive plant *Ludwigia hexapetala* infestation and water quality at Mission Lake/ Windsor Island Slough prior to restoration. *Ludwigia* traps sediment and reduces open-water habitats. It also negatively affects water quality by reducing dissolved oxygen from rapid seasonal growth and decay. These data provides a baseline for comparison for effectiveness monitoring to occur after future removal.

# Adaptive Management in the FIP

	Restoration	Monitoring	Engagement		
Challenges	Permitting to do earthwork for floodplain reconnection and side channel projects is a major hurdle, resulting in construction delays.	A long timescale is required for floodplain forests to be established and for the ecological benefits of re-vegetation to be realized.	Cultivating relationships with landowners for private lands restoration along the mainstem is a long-term process that requires an investment of time and energy.	The large scale of the geographic scope, number of stakeholders, and diversity of issues in the FIP has resulted in overlapping goals and geography with other initiatives.	Transitions in leadership mean that new staff need time to get up-to-speed on complex partnerships and projects.
Lessons Learned	High-level permitting agreements among key federal agencies, state agencies, and counties could accelerate earthwork projects.	Most projects are taking place on public or otherwise protected lands. The uncertainty surrounding future funding affects landowner participation.	The results chain model has supported creative thinking on how to use indicators to efficiently assess effectiveness of actions.	Linkages between limiting factors in the results chain and anticipated impacts have been helpful to scale expectations among stakeholder groups and to plan monitoring efforts.	The partnership has exceeded anticipated progress toward outreach targets, is on track for volunteer targets, and will revisit outreach targets for salience to key audiences.
Adaptations	Opportunities to coordinate permitting among agencies are being explored.	The partnership is developing new approaches to assess changes in vegetation and ecological responses to meet shorter-term monitoring needs.	The partnership is exploring ways to engage with private landowners that continue to build trust and illuminate the value of restoration now and into the future.	The partnership has honed its focus to maintain an emphasis on mainstem-specific issues, science, and projects.	The partnership is working to become more resilient to change by building leadership capacity across organizations.



Through the Willamette Confluence Middle Fork Restoration Project, The Nature Conservancy restored 330 acres of natural floodplain and in-channel habitat. This included removing levees separating old gravel extraction ponds. The pits are now seasonally connected to the river and offer new backwater fish habitat.

## For More Information

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