



Willamette Mainstem *Anchor Habitat Working Group*

Upper and Middle Willamette Mainstem Anchor Habitats

AQUATIC HABITAT FOR NATIVE FISH SPECIES



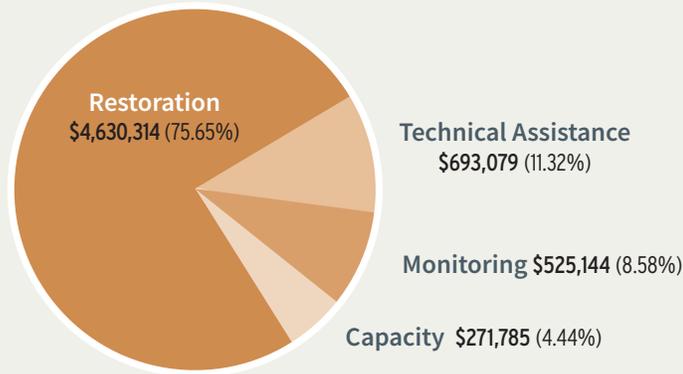
PHOTO Freshwaters Illustrated (Matt Blakeley-Smith)

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 which 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 \$6,120,321 in funding with \$4,100,833 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 implement strategic restoration actions and measure ecological outcomes through coordinated monitoring. In January 2016, the Oregon Watershed Enhancement Board awarded a FIP grant to the Willamette Mainstem Anchor Habitat Working Group. This report documents projects for which funding was obligated in Biennia 2-3 (2017-2021) and cumulative progress since the FIP was initiated in 2016.

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.

PARTNERS

Benton Soil and Water Conservation District, Bonneville Environmental Foundation, Calapooia Watershed Council, Coast Fork Willamette Watershed Council, Clackamas Soil and Water Conservation District, Friends of Buford Park and Mt Pisgah, Greenbelt Land Trust, Long Tom Watershed Council, Luckiamute Watershed Council, McKenzie River Trust, The Nature Conservancy – Oregon Chapter, Oregon Department of Fish and Wildlife, Oregon Parks and Recreation Department, Willamette Riverkeeper, City of Eugene, City of Salem, Trust for Public Land, United States Geological Service

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

IMPLEMENTATION (2017-2021)

Restoration

2.14

MILES
OFF-CHANNEL
FISH HABITAT

1282.6

ACRES OF FLOODPLAIN
FOREST RESTORED

4

BARRIERS MODIFIED
FOR FLOODPLAIN
CONNECTIVITY

251

ACRES OF AQUATIC
INVASIVE SPECIES
TREATED

Planning

5

TECHNICAL RESTORATION
DESIGNS COMPLETED

Scientific Investigation

5 + 300

RIVER MILES ACRES

monitored over 3 years to assess changes in vegetation, inundation, stream temperature, geomorphology, and fisheries

1

PRESENTATION
OF PRELIMINARY
MONITORING
FINDINGS TO
PARTNERS

Outreach & Engagement

1

COLLABORATIVE PROCESS
facilitated with landowners and
partners to inform restoration

12

PRIVATE
LANDOWNERS
ENGAGED

3

RESTORATION AGREEMENTS
with private landowners obtained

OUTCOMES

Expected Near Term 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

Expected Long Term 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

FIP Initiative Progress, Biennia 1-3

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



Monitoring Approach

The partnership will measure and report progress by implementing “A Proposed Framework for Willamette River Floodplain Implementation, Effectiveness and Status and Trends Monitoring” a plan developed by members of the partnership that:

- Provides 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

PHOTO Ann Kreager



Adaptive Management

Planning

CHALLENGES / OPPORTUNITIES

The progress monitoring framework has been the bedrock of the partnership's project prioritization process and the formation of the project implementation pipeline



LESSONS LEARNED

The agreed upon set of objectives and metrics of success allowed the partnership to easily articulate shared goals and make project prioritization decisions



ADAPTATIONS

The partnership will update its strategic action plan to tie efforts to other regional initiatives to build more robust partnerships that can leverage funding from a wider array of sources

Monitoring

CHALLENGES / OPPORTUNITIES

There are many restoration partners and associated monitoring programs across the Willamette basin



LESSONS LEARNED

Synthesizing all existing monitoring programs in the basin and telling a cohesive story about the effectiveness of specific restoration actions is challenging



ADAPTATIONS

Partnership members USGS, BEF and the Benton Soil and Water Conservation District developed "A Proposed Framework for Willamette River Floodplain Implementation, Effectiveness and Status and Trends Monitoring", a comprehensive monitoring framework. Implementing the Framework will require securing long-term dedicated funding.

Partnership Capacity

CHALLENGES / OPPORTUNITIES

The covid pandemic prevented the partnership from meeting in person creating substantial challenges to collaborative decision making



LESSONS LEARNED

Over the preceding years, the partnership has developed a high level of trust, an updated project prioritization framework, and a project pipeline with broad partnership buy-in



ADAPTATIONS

The partnership held meetings virtually and a new internal web portal allowed all members to easily access documents and decision-making tools

Several key staff members important to the partnership have moved on to other positions



Staff turnover has proved challenging to the health of the partnership and its ability to collaborate, and integration of new staff was challenged by the inability to meet in person and winddown of the FIP initiative



These funds have supported project managers and contractors throughout the regions in numerous ways. The initiative has also supported a dedicated partnership coordinator and a monitoring team.

With the sunseting of the FIP initiative and Meyer Memorial Trust's Willamette River Initiative, it will be difficult to retain the talent and expertise in the organizations which have been a part of our partnership.

Engagement

CHALLENGES / OPPORTUNITIES

Some outreach and engagement objectives were hampered due to the COVID-19 pandemic and the inability to host field days and public meetings



LESSONS LEARNED

Because of the inability to meet in person the partnership developed a series of online tools and processes that enabled effective and efficient internal and external collaboration and communication



ADAPTATIONS

The partnership built an inward facing website designed to house all partnership documents and keep all partners abreast of all elements of the initiative's work and an outward facing story map to help all members of the partnership communicate effectively about accomplishments

Addressing Climate Change

From the outset of the FIP initiative the partnership focused on building climate resilience in the Willamette Basin. The anchor habitat stepping stones approach is focused on protecting and enhancing remnant locations along the mainstem Willamette River that can provide survivable habitats under changing climatic conditions. Altered flows and warming temperatures will continue to impact the ability of native fish to find suitable habitat in the Willamette. The partnership has been focused on ensuring that these relatively high-quality habitats are resilient in the face of climate change and fish are able to move up and down the river throughout the year.

Warm stream temperatures are a major limiting factor for the health of native fish. As summers become hotter and longer, some reaches of the Willamette may prove increasingly treacherous to fish species intolerant of water temperatures above a certain threshold. Some off-channel habitats currently dominated by invasive aquatic weeds are potentially too warm for Chinook salmon and steelhead even if aquatic invasive weeds are removed and habitat structure restored.

Thus, the partnership has been interrogating its approach to dealing with the issue of aquatic invasive weeds, however they have not formally updated their objectives.

The partnership's 2015 action plan included climate change considerations as a core factor in developing the initiative's strategies and actions. The FIP initiative and associated project pipeline was conceived to move the needle over a relatively short period of time (6 years). While all partners agree that climate change is going to influence ecosystem function, it is difficult to incorporate a clear understanding of what these changes will be, and more specifically, how they will impact individual projects. General trends associated with climate change (warming temperatures, decreased snowpack/summer flows) are understood and largely agreed upon amongst partners. However, partners are focused on implementing the current project pipeline in accordance with our existing theory of change and lack the capacity, expertise, or time to make substantial updates to the initiative as it relates to an increased understanding as to the local effects of climate change.



PHOTO Freshwaters Illustrated (Matt Blakeley-Smith)