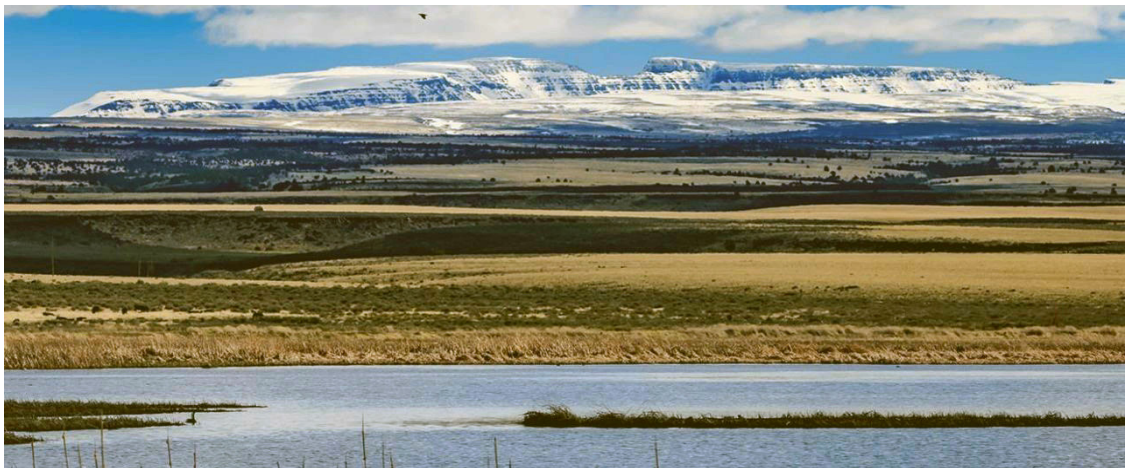
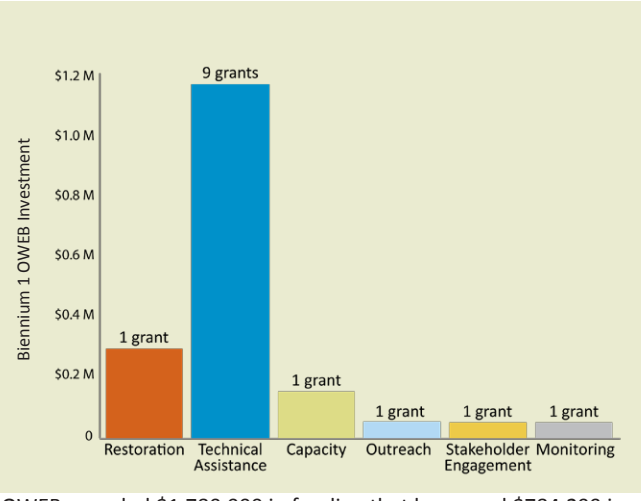
HARNEY BASIN WETLANDS INITIATIVE



The Harney Basin Wetlands Initiative focus area encompasses Malheur Lake and surrounding wetlands, including the floodplain wetlands of the Silvies River, Donner und Blitzen River, Silver Creek, and other tributaries. In total, the geographic scope encompasses 513,000 wetland acres, including the 187,000-acre Malheur National Wildlife Refuge. These wetlands provide critical habitat for Pacific and Central Flyway migratory birds. In recent decades, the expanding invasive common carp population and dynamic physical conditions have changed the Malheur shallow lake ecosystem from a clear lake with abundant aquatic plants and invertebrates to a muddy water body. The high turbidity results in a lake with nearly no submergent vegetation and fewer associated insects. As a result, the use of Malheur Lake by resident and migratory waterbirds, Redband Trout, and other native fish has declined dramatically.

Funding



OWEB awarded $1,780,000 in funding that leveraged $784,299 in matching funds.

Benefits

- Improved understanding of the distribution and behavior of invasive carp and evaluated methods to control them
- Developed model to understand unique interactions among physical environment, invasive carp, and the shallow lake ecosystem
- Enhanced understanding of water table and plant community dynamics in wet meadows
- Improved irrigation infrastructure to better manage flood-irrigated wet meadows for wildlife and agriculture
- Protected privately-owned wet meadows to maintain habitat values for migratory birds
- Engaged landowners, community groups, and partners to increase interest in and support for local conservation
- 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 Harney Basin Wetlands Initiative Partners. 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-government organizations.

Goal

Enhance and restore a crucial ecosystem that is a magnet for migratory birds on the Pacific flyway while maintaining a sustainable ranching community in southeastern Oregon.

Strategies

- Control carp populations in Malheur Lake and surrounding aquatic ecosystems
- Manage wetlands/flood irrigated wet meadows on refuge and private lands
- Conduct community and partner outreach and communications

Implementation Actions

Planning

3 DESIGNS for flood irrigation infrastructure

5 LANDOWNER AGREEMENTS to support projects

Scientific Investigation

1 BASELINE SURVEY of basin-wide aquatic health

15,000 ACRES ASSESSED water table and plant community relationships

1 AQUATIC ECOSYSTEM MODEL to understand carp, wind, light, and lake dynamics related to water clarity

1 LIDAR SURVEY 42,474-acre Silver Creek watershed

Outreach & Engagement

5 SCHOOL PRESENTATIONS

39 OUTREACH EVENTS

1 COMMUNICATIONS PLAN

14 VOLUNTEER DOCENTS trained

1 WEBSITE & E-NEWSLETTER

15 INTERVIEWS with private landowners

2 VIDEOS & **5** PRINTED PRODUCTS

Near-Term Outcomes (0-10+ Years)

- Improved water clarity and quality
- Water table dynamics support emergent wetland plant communities
- Extent of reed canary grass is reduced
- Aquatic vegetation in the lake is more abundant and diverse
- Invertebrate fauna recovers
- Increased abundance of breeding and migratory birds

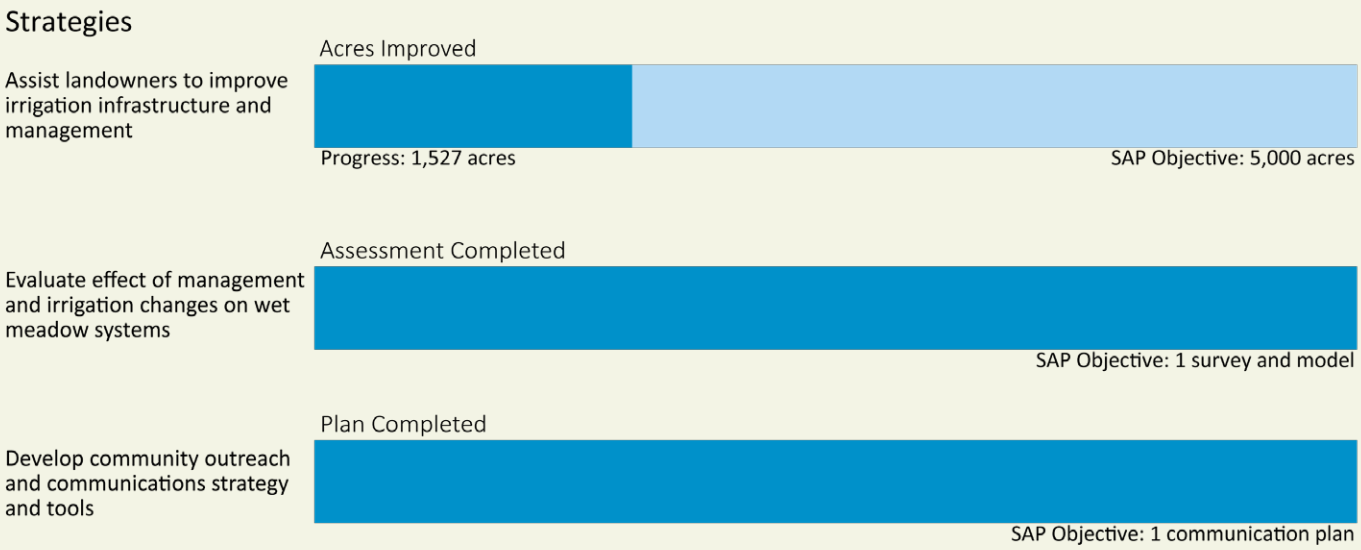
Long-Term Outcomes (20+ Years)

- Native wet meadow communities are enhanced
- Native fish density and diversity improves
- Increased survival and reproductive success of waterbirds
- Waterbird populations increase and become more stable

Northern Pintail ducks *(Anas acuta)*

Sandhill cranes *(Antigone canadensis tabida)* among cattle
Photo by Jeremy Hill

Strategic Action Plan (SAP) Progress, Biennium 1



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

Monitoring Approach

- Collect basin-wide baseline data on water quality conditions, fish and macroinvertebrate communities, and submerged aquatic vegetation cover to monitor changes over time
- Develop a model to determine the restoration strategies that will most effectively improve water clarity and quality
- Increase understanding of flood-irrigated wet meadow communities to determine the management approach that will increase habitat values, suppress invasive species and optimize agricultural production

Partners are taking a system-wide approach to modeling that helps explains how hydrology, carp control, sunlight penetration, and wind and sediment dynamics affect aquatic health. The model will integrate the results from a variety of partner investigations. U.S. Geological Survey scientists are developing a wind dynamics model to investigate how environmental variables, such as wind speed and direction, wind fetch length, and water depth relate to sediment suspension in the lake. This information is critical to identify the causes of the turbidity problem and evaluate all restoration alternatives that could mitigate it.

Adaptive Management in the FIP

	Restoration		Monitoring	Engagement	
Challenges	Determining water rights and meeting fish passage requirements caused project delays and increased costs, which created potential barriers to landowner participation.	Unique shallow lake wetland ecosystem of Malheur Lake Basin requires further study for development of effective restoration strategies.	Staff turnover created challenges for data access and project coordination.	Engaging the local community and diverse stakeholders is time-consuming and requires consistent messaging and dedication.	Local community may not be familiar with benefits of conservation to agriculture and the local economy.
Lessons Learned	Have well-informed conversations with all stakeholders at the onset of project development.	Dynamics of wind, sediment, and invasive carp impact the lake's turbidity. Controlling carp alone may not lead to desired outcomes.	Capacity funding has been critical; engage as many people as possible (including partners) to help with project logistics, coordination, and internal communication.	Events focused on migratory bird education, which attract Oregonians and out-of-state visitors, contribute to a positive public perception of restoration work.	Both landowners and the conservation community value a healthy landscape.
Adaptations	Despite water rights complexities, implementers advanced projects through a planning process and engaged with state-level regulators to develop solutions to meet regulatory requirements.	Partners conducted additional scientific investigations to better understand variables that impact water quality, including lake-level fluctuations and sediment dynamics.	Aquatic Health Coordinator was hired to ensure on-the-ground projects were tracked, and has played an instrumental role in field coordination and support.	Stories, scientific findings, and project results were shared with partners and Harney County residents; diverse stakeholders were engaged with tours and events.	Interviews with private landowners were conducted to better understand concerns and overlapping conservation and agricultural values.

To understand the relationship between hydrology and plant community type, The Wetlands Conservancy and Oregon State University's Eastern Oregon Agricultural Research Center conducted wet meadow plant surveys on public and private lands through the Silvies River Floodplain and Vegetation Project. This work included installing water wells and piezometers to measure and track variations in groundwater pressure or depth. Results will inform irrigation management decisions to achieve the desired mix of plant species. The state-and-transition model developed from data collected will illustrate the multiple pathways of plant succession, providing a toolbox for restoration, conservation, and management actions that will support the conservation of wet meadows and continued flood irrigation in the basin.

For More Information

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highdesertpartnership.org/our-initiatives/harney-basin-wetlands-initiative

www.oregon.gov/oweb