

OWEB Proposed Focus Priority:

Improve the health of the Lower Deschutes River and tributaries (4th field HUC 17070306) for bull trout, steelhead and salmon strongholds.

1. Proposed Priority Description

a) what is the native fish or wildlife habitat to be conserved or other natural resource issues to be addressed?

The Lower Deschutes provides migration, rearing and spawning habitat important to various fish species including Mid-columbia steelhead, Chinook salmon, redband trout, bull trout, Pacific lamprey. Mammals include California big horn sheep, mule deer, mountain lion and various migratory birds.

Ecological systems:

- Lowland riparian (Lower Deschutes River, Bakeoven, Buckhollow, White River, Tygh Creek, Badger Creek, Ferry Creek, Oak Creek)
- Palouse Prairie Grassland
- Oak woodland
- Sagebrush shrubland

Natural resource issues – freshwater flows (water temperature, water quality and quantity), fish passage, habitat loss and fragmentation, weed invasion.

b) what are the specific ecological outcomes to be achieved after this priority is addressed?

Several ecological outcomes are proposed that will improve and protect aquatic and riparian habitat imperative for salmon and steelhead and other species.

- Reduce habitat fragmentation and improve connectivity
- Improve water quality (temperature, macro-invertebrate population, sedimentation)
- Increase in-stream flows (irrigation efficiency)
- Improve fish passage (remove in-stream barriers)
- Restore riparian and upland habitat (remove invasive weeds and plant natives)

c) what is the defined geographic location within which this proposed priority can be successfully addressed?

The geographic location associated with this proposed priority is the Lower Deschutes River. It includes the main stem of the Deschutes River below Pelton dam and tributaries (4th field HUC 17070306) relevant to Bakeoven, Buckhollow and White River watersheds. This area is within the Columbia Plateau Ecoregion and includes Wasco and Sherman Counties. The Lower covers approximately 2,500 square miles with 760 miles of perennial streams and 1440 miles of intermittent streams.

2. Significance to the State

a) why is this proposed priority of ecological significance to the state, even though it may not be present everywhere in the state?

Salmon are a keystone species that shape entire ecosystems. “We must protect the healthiest remaining ecosystems to ensure the long term survival of salmon, steelhead and the species that depend on them.” – Guido Rahr

The Deschutes River is one of Oregon’s most iconic river systems. Rising from the eastern slopes of the Cascades and the western Ochocos, the state’s second largest watershed supports an extraordinary diversity of habitat types, ranging from coniferous and deciduous woodlands to sagebrush shrubland to Palouse prairie grassland. These ecosystems promote an astounding network of tributary streams, wetlands, and off-channel rearing habitats, which historically generated some of the largest salmon and steelhead runs in the Columbia basin. On their long trip to the Pacific Ocean, all of these fish funneled into a large dynamic mainstem river that we know today as the lower Deschutes.

Over the past decade, the state of Oregon has joined federal, tribal, and private partners in restoring the Deschutes’ salmon and steelhead populations to much of their former range. While a tremendous investment is underway in this exciting and promising endeavor, threats to the lower Deschutes may jeopardize the program’s long term success. Because these threats may have already begun to manifest themselves – as recently observed declines in water quality, habitat, and trophic systems seem to indicate – impacts to native salmon and steelhead represent a significant ecological priority to the state and the re-introduction efforts that it supports. Similarly, because changes occurring in the lower river are not well understood at this time, we may be observing the local results of threats that are common beyond just the lower watershed.

In addition to its key role in the state-supported re-introduction effort, the health of the lower Deschutes also affects the state’s ability to recover federally-listed mid-Columbia steelhead. The lower Deschutes (Eastside) population is one of only three populations in the DPS

recognized as viable or highly viable. If this stronghold for summer steelhead declines and the population becomes threatened, the likelihood of de-listing significantly diminishes. Likewise, the Deschutes maintains critical populations of spring and fall Chinook, which are not listed. Declines in these populations may trigger a future listing. Avoiding listings has been a major priority of the state in recent years, as indicated by past efforts on coastal coho and those now underway with sage grouse.

The proposed priority of improving the health of the Lower Deschutes as a stronghold for steelhead, bull trout and salmon is significant on statewide level and aligns with numerous plans.

According to the Oregon Conservation Strategy steelhead, Chinook salmon and bull trout are conservation strategy species. The Lower Deschutes River (CP-03) and the White River Area (CP-02) are Conservation Priority Areas.

According to the North American Salmon Stronghold Partnership the Lower Deschutes has been identified as an Oregon Salmon Stronghold.

The priority and proposed outcomes align with the Northwest Power Planning Council Columbia River Basin Fish and Wildlife Program by connecting habitats, removing fish passage barriers and improving water quality and The Oregon Plan for Salmon and Watersheds by restoring salmon runs and improving water quality through partnerships and stewardship.

b) are there any social/economic considerations that the Board should understand regarding this proposed priority?

The harvest of salmon, steelhead, and other fish provides significant cultural, economic, and recreational benefits to the region.

The Lower Deschutes is home to the Confederated Tribes of the Warm Springs, Wasco County (population 25,477), Sherman County (population 1,731) and is appreciated by numerous user groups. According to BLM in 2011 the Lower Deschutes Management Area recorded over 35,000 user days.

The Lower Deschutes landscape has multiple uses and demands including agriculture, ranching, recreation and urban and rural development. Countless activities associated with these lands are constrained or prohibited by the mid-Columbia steelhead listing at significant economic cost, which is especially burdensome to the local agricultural industry and neighboring communities. Similarly, the lower Deschutes and several critical tributaries are included on the state 303(d) list. Once in place, TMDLs for these impairments, which include temperature,

dissolved oxygen, and pH, will have similar economic impacts on the agricultural industry and local communities. Fortunately, local conservation efforts, led by the SWCDs, watershed councils, and other community partners have enjoyed significant buy in from the local agricultural community, and there is a high degree of optimism among local partners that emerging threats can be abated.

While the recreation industry, which thrives from the lower Deschutes' broad appeal, has not been as impacted as the agricultural community, concern for the river's declining health is growing. While healthy local steelhead runs ensure continued sportfishing access to hatchery fish (fueling an economic engine in the region), declines in the Deschutes wild steelhead populations could curtail or eliminate access to the hatchery fishery, creating a severe impact on the local economy. As such the local recreational community is motivated and eager to engage in the process described in this proposal.

These conditions have contributed to an enlightened and collaborative community, which sets the stage for a successful community response to the threats addressed facing the lower river. We are confident that these economic drivers create the social context necessary for success.

c) in addition to its significance to the state, identify how the proposed priority fits within regional and local ecological priorities.

The priority aligns with the Oregon Conservation Strategy Plan and consists of Conservation Priority Areas CP-02 (White River Area), CP-03 (Lower Deschutes River) and EC-02 (Wasco Oaks). The priority aligns with the ODFW Lower Deschutes Management Area Plan, the Deschutes Subbasin Plan and the BLM Lower Deschutes River Management Plan.

Salmon and steelhead are keystone species that indicate the health of the watersheds and rivers upon which they rely. In addition to the extraordinary source of protein and energy that salmon supply to top predators like river otters, osprey, golden eagles, and coyotes, they also provide an important source of marine derived nutrients to aquatic species such as redband trout, lamprey, and a diverse macro-invertebrate community. Together these and other species form an ecosystem that generates extensive social and economic value within the region and local communities. In short, salmon and steelhead conservation aligns with countless regional and local ecological priorities.

3. Limiting Factors

a) What ecological limiting factors exist that relate to the proposed priority identified? (limiting factors are biological, physical or chemical conditions and associated ecological processes and interactions e.g, population size, habitat connectivity, water quality, quantity etc.) experience by the habitat that may influence viable population parameters (ie. Abundance, productivity, spatial structure and diversity).

- Physical (barriers to fish and wildlife movement)- pelton dam, White River Falls, diversion dams on private land, and development.
- water quantity and quality (water temperatures, sedimentation, inefficient irrigation systems etc.)
- fragmented habitats/connectivity
- soil erosion
- invasive plant species
- data gaps
- land use changes and competing land uses

b) reference any frameworks that exist (recovery plans, implementation plans, HCPs etc)

NMFS Mid Columbia steelhead recovery plan

USFWS Bull Trout draft recovery plan

ODA Lower Deschutes Agriculture Water Quality Management Plan

OR DEQ - Water Quality Status and Action Plan for the Deschutes Basin

Wasco SWCD Long Range Plan

Columbia Inter-Tribal Fish Commission Plan

ODFW Lower Deschutes Management Area plan

ODFW Lower Deschutes River Subbasin Fish Management Plan

ODFW Oregon Conservation Strategy Plan

ODFW Bighorn Sheep Management Plan

BLM Lower Deschutes River Management Plan

Deschutes Subbasin Plan

Deschutes River Subbasin Salmon and Steelhead Production Plan

Deschutes River Alliance Science Plan

Salmon Stronghold Designation by Wild Salmon Center

Partners in Flight Columbia Plateau Conservation Strategy

4. Threats and Benefits

a) what overall threats exist to the proposed priority identified? (Threats are the human actions (fishing, development, road building ect). Or natural (flood, drought, volcano etc). events that cause or contribute to limiting factors. Threats may be associated with one or more specific life cycle stages and may occur in the past, present or future.

Threats – Salmon and steelhead runs, along with other native fish and wildlife in the basin, have declined significantly in the last 150 years. Many human activities have contributed to this decline.

1. Water quality

a) Stream flow is vulnerable and prone to accelerated runoff, sediment and erosion due to wild fires, livestock grazing, channelization, road-system runoff and conversion of native vegetation to exotic plants species.

b) Temperature fluctuations due to loss of riparian vegetation, nutrients, reduced stream flow (The Deschutes, Bakeoven Creek, Buck Hollow Creek, Clear Creek, Gate Creek, Oak Canyon, Rock Creek Tenmile Creek, Threemile Creek, Wapinitia Creek, White River Willow Creek and Sixteen Canyon have been 303(d) listed).

c) Loss of macro-invertebrate populations

d) upland and riparian invasive plant species

2. Fragmentation and loss of native grasslands, riparian and wetland, oak woodlands and shrub-steppe habitat due to population growth, development, parcelization and competing land uses.

3. Water quantity

a) Insufficient in-stream flows due to inefficient use of irrigated water

4. Climate Change – environmental changes considered most significant to salmon viability include:

a) increased stream temperatures

b) altered hydrographs

c) increased and more severe drought

d) increased and more severe fires

5. Invasive weeds – cheatgrass, medusa head, rush skeleton weed, yellow star thistle, Himalayan blackberry.

b) what will happen if threats aren't addressed?

If these threats aren't addressed impacts to salmon and steelhead include reduced rearing capacity due to a loss of habitat, reduced growth rates due to increase in water temperatures, reduced ability to compete with predators, reduced migration success and increased mortality. Alteration of smolt seaward migration due to hydrographic changes, increased smolt mortality in tributaries.

c) describe the economic, social, iconic and cultural benefits of addressing the outcome and impacts of not addressing it.

The Lower Deschutes has many stakeholders including federal and state fish and wildlife managers, private landowners, recreation users, tribes and local governments. Chinook salmon, an indigenous anadromous species, Steelhead which are native to the Deschutes and bull trout a federally listed species, is valued for their ecological and cultural values. If a well-informed, collaborative approach that includes funding for voluntary actions is developed, the issues can be dealt with in a way that will reduce the stress on and competition for the natural resources. This will benefit fish and farmers. Otherwise it will be an either/or approach that will intensify the competition for the natural resources and compromise the cold-water fishery.

d) briefly summarize how much has been done already, how much is remaining.

SWCD

- In the past 15 years Wasco SWCD has been focusing on riparian buffers in the Lower Deschutes (Bakeoven, Buck Hollow and White River watersheds). A restoration plan was written and 134 miles of riparian buffers covering 4,683 acres has been enhanced through fencing, off site water, reseeding and replanting.
- It is estimated that there is roughly 300+ miles of streams in the Lower and roughly 165 miles of riparian that could still be enhanced and improved.
- Rangeland health and juniper control is a current focus. Roughly 1,500 acres of juniper control (through hand falling, and prescribed fire) has been accomplished. It is estimated that an additional 10,000 acres could be managed.
- Invasive plant species is a significant problem. There is an opportunity to complete an inventory and restore areas with native grass.

- Piping has been implemented on Lost and Boulder, Rock Creek and Forest Creek ditches. These projects total around 2 miles and obtained 5 cfs of water savings. Designs have been completed to pipe the entire Rock Creek Irrigation District and convert it to a pressurized on demand system. This would put an additional 3-4 CFS back in-stream.
- Two unscreened fish passage barriers on Badger Creek and Boulder Creek have been removed and there is an opportunity to remove seven more barriers in the White River Watershed on Tygh, Badger and Threemile Creeks.
- There are numerous opportunities to improve irrigation application and to eliminate flood irrigation, convert to pivots and increase pumping efficiency.
- Deschutes River Alliance has carried out water quality sampling initiatives including biological sampling of algae species at multiple sites on the lower Deschutes River.
- A thermal infrared imaging overflight of the Lower Deschutes was taken in 2014. Information from this study will help understand the temperature influences in the canyon, as well as locate possible nutrient sources.
- Temperature sensors/recorders have been placed in the lower Deschutes River. Monitoring has begun and will continue through 2015.

e) what is your best estimate of the cost to address the priority and as a result, how economically feasible do you believe it is to address this priority overtime?

Conservation projects that will restore and improve stream flow, fish passage, water quality and reduce habitat loss and fragmentation over the next 5-years is estimated to cost \$12,000,000.

Specific projects are underway with secured partial and full funding. There is additional work to be done with willing landowners and agency commitment.

5) Opportunities

a) Ecological:

1) What are the measures of ecological success? What's the likelihood of ecological success in the short term (6 years), medium and long-term?

Short term:

Improve fish passage – remove concrete and wooden in-stream barriers, install fish screens

Improve water quantity - Increase stream flows through ditch elimination, flood to sprinkler irrigation, application efficiency systems, piping

Improve water quality – address the source of excessive sediment problems and nutrients in the water.

Reduce habitat fragmentation – Protect and restore upland and riparian vegetation

Enhance existing populations of resident and anadromous fish and terrestrial wildlife downstream of Pelton dam.

2) what types of voluntary conservation actions could be undertaken to address the proposed priority?

Eighty-four percent of the Columbia Plateau ecoregion is privately owned. Thus, voluntary cooperative approaches including; conservation easements, upgrades to irrigation systems, enrollment in CRP and CREP, fencing riparian areas, improved agriculture and grazing practices, acquisition or leasing of water rights to in-stream flow, are a handful of options that will provide benefits.

3) should the proposed priority be divided into geographic areas that are appropriate for partners to address?

The priorities are relevant to the entire geographic area however certain priorities may be addressed by narrowing the geographic focus and/or phasing the approach with one priority emerging during the first year and several partners working to address it. For instance, improving water quantity by tackling water inefficiencies on farms in the White River watershed is a specific project that will best be addressed by the Wasco SWCD with help from the White River watershed council. Water quality improvements may happen by first collecting and evaluating the sampling data from the DRA studies and the thermal imaging from the fly over, using this information to develop a plan for addressing the source of the problems and deploying other partners to talk with landowners about creating solutions.

b) Social:

1) do partnerships exist to address the proposed priority? If so, briefly describe. If not, note why this proposed priority is important enough that partnerships may form to address it.

There are several groups working in the Lower Deschutes to address the priority issues. Over the past year these groups have been meeting, sharing information, providing data, support and information for individual projects. Collectively these groups are well aligned to bring fish, wildlife, conservation, ecological and scientific expertise, landowner relationships, agency and

political relationships and funding together to deliver a broader, more comprehensive vision for the Lower Deschutes. This collective, more organized partnership is important in order to deliver on several common goals and objectives – primarily increasing water quality and quantity for fish while preserving an economic base in a landscape that is largely centered on farming and ranching.

While there are a myriad of plans and documents from different agencies, most are outdated and focused on a singular issue. The partners would like to first work towards developing a plan that addresses the core priorities outlined in this proposal and attract other agencies and organizations to participate in the process.

2) what social opportunities exist to address the proposed priority? Is there momentum built?

Recently the Wasco County Watershed Councils signed an MOU with the Wasco County SWCD in order to improve on-the-ground activities and collaboration. This will include public outreach, education, planning and project implementation all with an effort to promote conservation and wise-use of natural resources.

The emerging partnerships in the Lower Deschutes will continue to improve access to information through shared resources/data, leverage private and public funds and expand the relevance from individual projects to a landscape level approach, evaluation and prioritization.

3) describe educational benefits if any.

4) summarize the social, community, political, regulatory or other factors that will help lead to the success of this proposed priority.

Factors that are being used and will continue to be used include:

- Enrollment in various federal programs such as CRP, CREP, FRPP, ALE
- Conservation easements and fee acquisition of land that restores riparian habitats, prevents fragmentation and connects habitat
- Landowner willingness to work with NGOs and SWCD to improve irrigation systems, remove fish passage barriers and restore riparian areas.
- Collaboration and information sharing between federal, state, tribes, NGOs, landowners and user groups.

5) what can be leveraged to address the proposed priority (funding, acreage impacts, other resources)?

-State funds invested in the priorities and geography can be leveraged with private, local and federal funds. For instance on various projects (riparian planting, weed control, fencing, piping etc) over \$3 million has been spent in Buck Hollow watershed and over \$1 million in Bakeoven watershed . Funding has come from OWEB, BPA, USDA, landowners, ODFW and other private sources.

- In Bakeoven and Buck Hollow watersheds over 50 miles of riparian buffers has already been improved with plantings and streambank stabilization.

-Through the different partnerships, information and stories about the projects and priorities can be shared to a broader audience.

-Volunteers can be leveraged to help with restoration and monitoring projects.

-Landowner's willing to make upgrades to irrigation systems and remove barriers will serve as a spokesperson by encouraging other landowners to make similar investments.

c) Economic Benefits

1) describe the economic benefits to addressing the ecological proposed priority, including ecosystem services.

Agriculture is the predominant land use in the priority geography. One proposed project, the Rock Creek piping project would save landowners over \$60,000 from pumping expenses and save over 65k of electricity.

The Lower Deschutes is a destination for hunting, fishing, wildlife viewing and river recreation. Improvements proposed by the partners that will result in healthier riparian and upland habitats will contribute to the local economy. For instance in 2008 travel expenditures associated with hunting, fishing and wildlife viewing in Wasco County generated over \$23 million and in Sherman County over \$3 million. (*Dean Runyan and Associates 2009*)

6) Is there other information the Board should know regarding this priority?

7) In lieu of attaching letters of support, please submit a list of other supporting individuals or organizations.

Wasco Soil and Water Conservation District, Wasco County Watershed Councils, the Natural Resource Conservation Service, Wasco County, The Trust for Public Land, Deschutes River Alliance, and Wild Salmon Center.