



## **OWEB Focused Investment Partnership Priority** **AQUATIC HABITAT FOR NATIVE SPECIES**

### **Summary Statement of Priority**

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The OWEB Board will consider proposals for investment in aquatic habitat for native species for initiatives that address habitat conservation and restoration needs to achieve ecological outcomes over time at the landscape scale, which will restore and protect ecologically meaningful areas.

OWEB's Focused Investment Priority for Aquatic Habitat for Native Species guides voluntary actions that address limiting factors related to the quality of this habitat type. These actions also support and/or improve watershed functions and processes. Action will be guided by the habitats, limiting factors, ecological outcomes, and conservation approaches outlined in associated federal recovery plans, state conservation plans, Oregon's State Wildlife Action Plan, tribal plans, and other plans listed at the end of this document.

### **Background**

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#### **Where it occurs**

As defined here, aquatic habitats include rivers, streams, estuaries, wetlands, floodplains, lakes, tidally influenced waters, and associated riparian habitats. These areas occur across the state and provide essential habitat to many at-risk species.

**The Aquatic Habitat for Native Species** priority map includes priority habitat for aquatic species of conservation concern. Priority species for this FIP include those that are federally listed or proposed for listing under the Endangered Species Act (ESA), including ESA-listed fish, Oregon Spotted Frog, and Northwestern Pond Turtle. In addition, it includes associated habitat for other species that have been identified as Species of Greatest Conservation Need (SGCN) in Oregon's State Wildlife Action Plan (SWAP), such as Pacific Lamprey and Western Ridged Mussel.

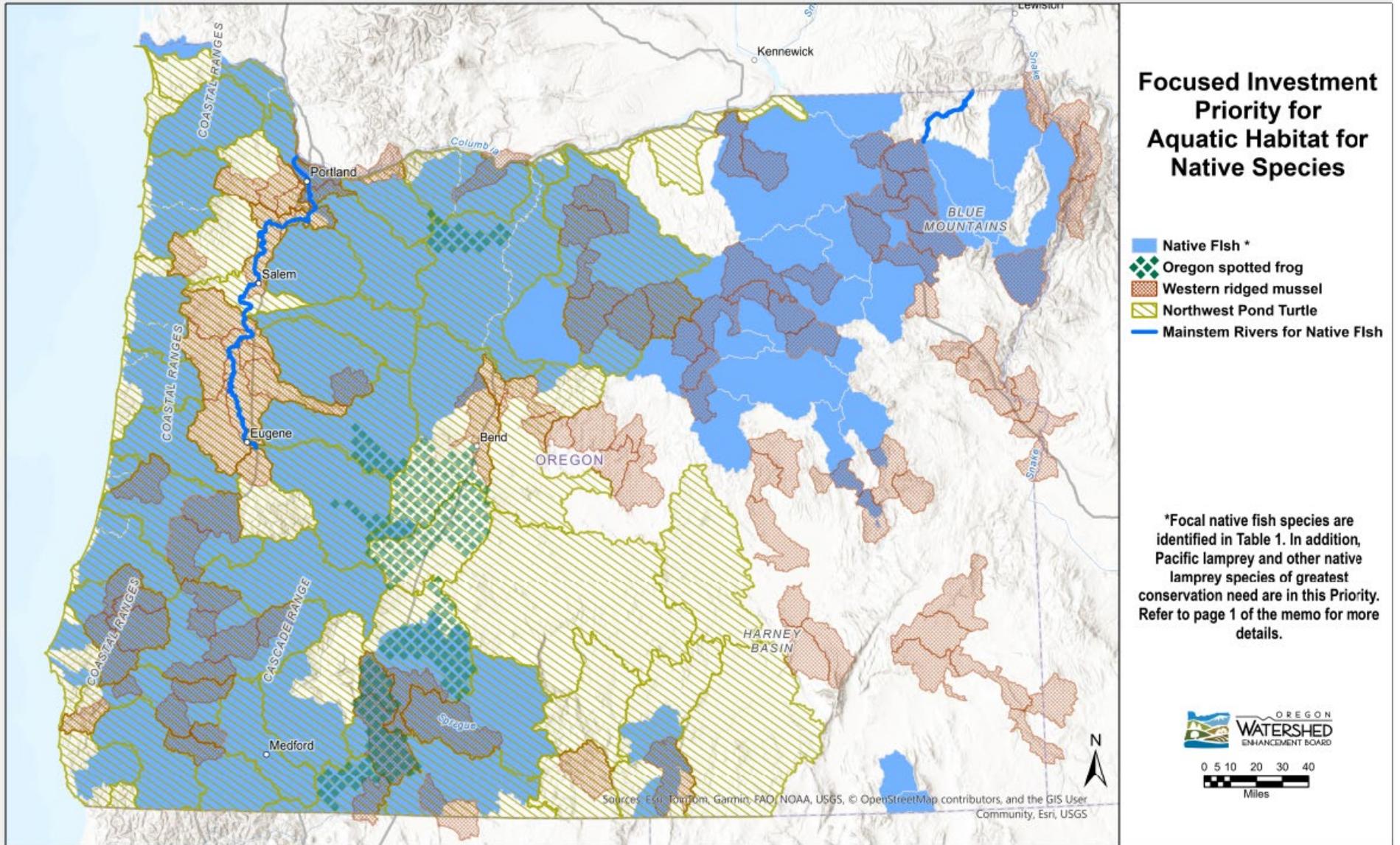
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#### **Indicator species and/or species of interest supported by these habitats**

Several native fish and wildlife species have been listed or are candidates for listing under the federal Endangered Species Act (ESA) or have been identified as threatened, endangered, or sensitive by the state of Oregon. These species include, but are not limited to: anadromous salmon, listed trout, several species of sucker, lamprey, chub, Oregon spotted frog, northwestern pond turtle, and Western ridged mussel.

Pacific lamprey and other ODFW-identified native lamprey species of greatest conservation need are also included in this Priority, and there are no geographic limits for proposed conservation actions targeting lamprey. Proposed FIP initiatives that include lamprey as a focal species will be assessed independently of the associated Aquatic Habitat for Native Species map.

**Figure 1: Map of Focused Investment Priority for Aquatic Habitat for Native Species**



The map above displays areas of priority for: Native Fish, Oregon Spotted Frog, Western Ridged Mussel, Northwest Pond Turtle, and Mainstem Rivers for Native Fish. Focal Native fish species are identified in Table 1. In addition, Pacific lamprey and other native lamprey species of greatest conservation need are in the Priority. Refer to page 1 of the memo for more details.

## Why it is significant to the state

Aquatic habitats support an incredible number of Oregon's native fish and wildlife species. The extent of biodiversity in an aquatic habitat is a reflection of the native fish and wildlife, plants, and other aquatic species present there. High-quality aquatic systems provide essential habitat to many at-risk species, including important spawning and rearing habitat for salmonids and other native fishes and Species of Greatest Conservation need, such as Oregon Spotted Frog, Western Pond Turtle, and Western Ridged Mussels.

Sustaining aquatic biodiversity is essential to the health of our environment and to the quality of human life. Healthy aquatic ecosystems are imperative for to Oregon's communities and economy, including fisheries and recreation. Many of the species that are a focus of this Priority provide substantial ecological, economic, and cultural benefits to Oregon tribes. A warming climate presents challenges to aquatic habitat in Oregon, and restoring and protecting these habitats helps build durable adaptation and resilience for these ecosystems.

## Key limiting factors and/or threats, with a focus on ecosystem function and process

- Degraded and impaired water quality (e.g., temperature and sedimentation, dissolved oxygen, temperature, bacteria load), including those factors associated with the loss of riparian and floodplain vegetation;
- Reduced and insufficient water quantity/flows during critical flow periods (e.g., low streamflow and altered hydrology due to water diversions, dam operations, and loss of beaver);
- Loss of habitat complexity (e.g., high-quality instream structure and spawning gravel, floodplain connectivity, connected off-channel habitat, presence of pools, and presence of large wood);
- Impaired ecosystem functions that have resulted in decreased quantity and quality of instream complexity and degraded rearing and spawning habitats;
- Degraded riparian areas;\_
- Loss of habitat connectivity, including: floodplain connectivity; access to cold-water refugia; and fish-passage barriers that are identified as primary limiting factors for native fish species and as noted by ODFW's statewide fish passage priority list;
- Spread of invasive plant and animal species (e.g., reed canary grass, bullfrogs);
- Climate change which may exacerbate drought and water temperature stress;
- Disease: emerging pathogens such as chytrid fungus (*Bd*);
- Habitat loss from development and impacts from grazing;
- Landscape-scale disturbance, including wildfire, landslides, flooding or similar events may occur within the FIP geography. Post-disturbance restoration actions addressing landscape-scale disturbance may be eligible FIP actions; and
- Loss of wildlife habitat connectivity. Many species rely on the ability to move throughout the landscape to fulfill their daily and seasonal needs for access to food, shelter, and opportunities to reproduce. ODFW produced [Priority Wildlife Connectivity Areas \(PWCAs\) maps](#) to show where habitat connectivity is most important. Fifty-four species were selected for the project as surrogates, representing a variety of taxa, movement types, dispersal capabilities, and sensitivity to anthropogenic threats. FIP Initiatives may include actions enhancing PWCAs within the geographic boundary of their FIP Initiative.

## Reference plans

1. [Oregon State Wildlife Action Plan](#)
2. Species-specific conservation and recovery plans:
  - Table 1. Conservation and Recovery Plans for Native Fish Species
  - Table 2. Conservation and Recovery Plans for Oregon Spotted Frog
  - Table 3. Conservation and Recovery Plans for Western Pond Turtle
  - Table 4. Reference Plans for Western Ridged Mussels

Oregon Tribes may also have native fish species plans guiding conservation efforts that can be referenced in developing FIP initiatives under this Priority. All of the plans noted here focus on maintaining sustainable native fish and wildlife populations that contribute to their ecosystems and provide a variety of recreational, commercial, cultural, and aesthetic benefits.

These plans identify key limiting factors for specific fish and wildlife species, geographies in which habitat for these species occur, and priority actions that will address limiting factors. While these plans have a species focus, addressing the limiting factors and meeting the goals of each plan supports native fish and wildlife communities and the ecosystem function of aquatic habitats more generally. Thus, achieving the desired habitat and population objectives within these plans will provide significant ecological, economic and cultural benefits for all Oregonians.

**Table 1. Conservation and Recovery Plans for Native Fish Species**

USFWS = U.S. Fish and Wildlife Service

NMFS = NOAA Fisheries

ODFW = Oregon Department of Fish and Wildlife

Conservation and Recovery Plans	Native Fish Species	Associated Basin(s)
USFWS Recovery Plan for the Threatened and Rare Native Fishes of the Warner Basin and Alkali Sub-basin (1998)	Warner Sucker, Hutton Tui Chub, Foscett Speckled Dace	Closed Lakes
USFWS Recovery Plan for the Lahontan Cutthroat Trout (1995)	Lahontan Cutthroat Trout	Closed Lakes
USFWS Recovery Plan for the Coterminous United States Population of Bull Trout (2015)	Bull Trout	Deschutes, John Day, Upper Klamath, Lower Columbia, Willamette, Grande Ronde
USFWS Revised Recovery Plan for the Lost River Sucker and Shortnose Sucker (2013)	Lost River Sucker, Shortnose Sucker	Upper Klamath
<a href="#">ODFW Coastal, Columbia, and Snake Conservation Plan for Lampreys in Oregon (2020)</a>	Pacific Lamprey, Western River Lamprey, Western Brook Lamprey, Pacific Brook Lamprey	

<a href="#">NMFS/ODFW Conservation &amp; Recovery Plan for Oregon Steelhead Populations in the Middle Columbia River Steelhead DPS (2010)</a>	Steelhead	Deschutes, John Day, Umatilla, Walla Walla
NMFS ESA Recovery Plan for Northeast Oregon Snake River Spring and Summer Chinook Salmon and Snake River Steelhead Populations (2017)	Spring Chinook Salmon, Steelhead	Grande Ronde, Imnaha
<a href="#">NMFS/ODFW Lower Columbia River Conservation and Recovery Plan for Oregon Populations of Salmon and Steelhead (2010)</a>	Spring and Fall Chinook Salmon, Chum Salmon, Coho Salmon, Summer and Winter Steelhead	Lower Columbia River
<a href="#">NMFS/ODFW Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead (2011)</a>	Spring Chinook Salmon, Winter Steelhead	Willamette
<a href="#">Oregon Coast Coho Conservation Plan for the State of Oregon (2007)</a>	Coho Salmon	Coastal watersheds from the Necanicum River to the Sixes River
NMFS Final ESA Recovery Plan for Oregon Coast Coho Salmon (2016)	Coho Salmon	Coastal watersheds from the Necanicum River to the Sixes River
<a href="#">ODFW Coastal Multi-Species Conservation and Management Plan (2014)</a>	Spring and Fall Chinook salmon, Chum Salmon, Summer and Winter Steelhead, Cutthroat Trout	Coastal watersheds from Cape Blanco to the Columbia River (including Umpqua, Tillamook, many others)
NMFS Final Recovery Plan for the Southern Oregon/Northern California Coast ESU of Coho Salmon (2014)	Coho Salmon	Rogue, coastal watersheds south of Cape Blanco
<a href="#">ODFW Rogue–South Coast Multi-Species Conservation and Management Plan (2021)</a>	Coho Salmon, Summer and Winter Steelhead, Cutthroat Trout	Rogue, coastal watersheds south of Cape Blanco
<a href="#">ODFW Rogue Spring Chinook Salmon Conservation Plan (2007)</a>	Spring Chinook Salmon	Rogue
<a href="#">ODFW Conservation Plan for Fall Chinook Salmon in the Rogue Species Management Unit (2013)</a>	Fall Chinook Salmon	Rogue, coastal watersheds south of Cape Blanco
<a href="#">ODFW Plan for the Reintroduction of Anadromous Fish in the Upper Klamath Basin (2008)</a>	Coho Salmon, Chinook Salmon, Steelhead, Pacific Lamprey	Upper Klamath
<a href="#">ODFW/The Klamath Tribes Implementation Plan for the Reintroduction of Anadromous Fishes into the Oregon Portion of the Upper Klamath Basin (2021)</a>	Coho Salmon, Chinook Salmon, Steelhead, Pacific Lamprey	Upper Klamath

**Table 2. Conservation and Recovery Plans for Oregon Spotted Frog**

Reference or Plan	Description
<a href="#">USFWS Recovery Plan for the Oregon Spotted Frog (2023)</a> U.S. Fish and Wildlife Service. 2023. Draft Recovery Plan for the Oregon Spotted Frog ( <i>Rana pretiosa</i> ). Portland, Oregon xi + 23 pages	Recovery criteria include achieving moderate or higher resiliency in at least 12 sub-basins, representing all six genetic groups and five ecoregional areas.  Recovery actions include restoring hydrology, managing invasive species, improving connectivity, and conducting monitoring and research.
Deschutes Basin Habitat Conservation Plan (2020)	Provides complementary conservation measures for Oregon spotted frog habitat in the Upper Deschutes.

**Table 3. Conservation and Recovery Plans for Northwestern Pond Turtle**

Reference or Plan	Description
Western Pond Turtle Range-wide Management Strategy (2020). WPTRCC	Guidance document that provides a shared conservation strategy to ensure persistence of pond turtle species throughout their range.
<a href="#">Species Status Assessment Report for Northwestern Pond Turtle (<i>Actinemys marmorata</i>) and Southwestern Pond Turtle (<i>Actinemys pallida</i>) (2023)</a> . USFWS	Provides the best available science on northwestern pond turtle biology, habitat, demography, and threats. Assesses current and future status considering two plausible future scenarios.
<a href="#">Endangered and Threatened Wildlife and Plants; Threatened Species Status With Section 4(d) Rule for the Northwestern Pond Turtle and Southwestern Pond Turtle (2023)</a> . USFWS	Proposed rule to list northwestern pond turtle as threatened after a positive 12-month finding (without critical habitat designation).
Northwestern Pond Turtle Coordinator Project (2021). Samara Group	Final report on 1) habitat restoration at three sites with pre- and post-treatment monitoring, and 2) pond turtle data compilation, analysis, and standardized occupancy surveys.
<a href="#">Guidance for Conserving Oregon's Native Turtles Including Best Management Practices (2015)</a> . ODFW	Recommended management practices to plan projects, mitigate project impacts, create and/or restore habitat, and achieve conservation goals for native turtles.
<a href="#">Western Pond Turtle: Biology, Sampling techniques, Inventory and Monitoring, Conservation, and Management (2012)</a> . Bruce BR, Welsh Jr. HH, Germano, DJ, Ashton DT	Synthesis of biology, management, and conservation information for pond turtle.
<a href="#">Washington State Recovery Plan for the Western Pond Turtle (1999)</a> . Hays DW, McAllister KR, Richardson SA, Stinson DW	Summary of Washington pond turtle distribution, abundance, and factors affecting persistence. Establishes recovery goals and prescribes actions needed to meet recovery.

Reference or Plan	Description
<a href="#">The Western Pond Turtle: Habitat and History: Final Report (1994)</a> . Holland DC	Provides comprehensive natural history information for western pond turtle including status of the Willamette basin population; summaries of reproductive ecology, aquatic movements, overwintering, effects of introduced species, and molecular genetics; and considerations for translocation efforts for mitigation.
<a href="#">Conservation of Northwestern and Southwestern Pond Turtles: Threats, Population Size Estimates, and Population Viability Analysis (2021)</a> . Manzo SE, Nicholson G, Z. Devereux Z, Fisher RN, Brown CW, Scott PA, and Shaffer HB	Analysis to determine impacts of threats, population sizes, and future population viability assessment under various drought scenarios.
<a href="#">Effective removal of the American bullfrog (<i>Lithobates catesbeianus</i>) on a landscape level: long term monitoring and removal efforts in Yosemite Valley, Yosemite National Park (2020)</a> . Kamoroff C, Daniele N, Grasso RL, Rising R, Espinoza T, Goldberg CS.	Case study of successful bullfrog eradication effort to support native wildlife recovery.
<a href="#">Effects of drought on western pond turtle survival and movement patterns (2017)</a> . Purcell KL, McGregor EL, Calderala K	Case study of the impacts of drought on movement, survival, and resiliency of western pond turtle.
<a href="#">Drivers of Non-Random Nest-Site Selection in an Oviparous Vertebrate (2019)</a> . St. John WA	Case study of nesting ecology and nest-site selection in western pond turtle.

**Table 4. Reference Plans for Western Ridged Mussels**

Reference or Plan	Description
<a href="#">Freshwater Mussels of the Pacific Northwest (2nd ed.)</a> . The Xerces Society for Invertebrate Conservation (2009)	Provides species-specific information on distribution, habitat, life history, and conservation needs.
<a href="#">Oregon Conservation Strategy (2016)</a> . ODFW	Identifies freshwater mussels and aquatic habitats as conservation priorities.
<a href="#">Assessment and Status Report on the Rocky Mountain Ridged Mussel (<i>Gonidea angulate</i>) in Canada (COSEWIC 2003)</a>	Offers additional context on species status and threats across its range