Developing Habitat Types & Conservation Priorities

Restoring habitat upon the project site provides an excellent opportunity to conserve sensitive habitats and species and connect people with regional and local conservation priorities. Conservation science provides a context to help make decisions about restoration priorities and investments. Focusing on science we also create a unique destination where visitors can experience and appreciate Oregon's natural treasures in the context of a special historic setting. This effort will be grounded in conservation science.

Understanding the Science of the Site

Before setting conservation priorities we need to understand the differences between target habitat conditions and the current state of the site. Several questions help set the stage for prioritizing restoration activities:

- What habitat is here now? What used to be here? How and why has it changed?
- What fish, wildlife and plant species currently use (or should be using) the site?
- How does the site fit into a larger geographical context for the region?
- What guidance documents should we consider when prioritizing actions?
- What are the regional or state conservation priorities?

Priority species

It is our understanding that Metro gives special consideration to those sites where restoration or maintenance is necessary to conserve federal or state-listed or candidate species, state conservation strategy species, and/or species identified in plans such as the Pacific Coast Venture (now Pacific Birds) or Partners in Flight with significant documented regional declines. Known use of a location by priority species raises the priority of that particular habitat location over similar sites.

Setting priorities

Decisions about habitat restoration priorities are not simple, especially where multiple uses and values come into play. Our team's general habitat goal is to move substantial portions of the site toward healthier, resilient restored habitat. It is understood that this habitat goal is one goal among many for the project, and must be balanced in its approach. Our team's restoration priorities will be based on a combination of concerns including habitat type, potential project benefit (ecological uplift), location, species, timing, partnership and leverage opportunities, social factors and the site's other three core values. All of these factors will help determine appropriate areas to limit development and restore habitat.

In-Channel River

In-channel river habitat areas on the Willamette River are important to a wide range of native fish and wildlife species. Integrating tributary headwaters down to the valley floor, this habitat type serves as an iconic feature of the Northwest landscape. It includes open water riverine areas with no vegetation and islands of basalt rock formed in-channel at low water. In general rivers, streams, and open waters provide multiple ecological services, including: attenuating flood flows, recharging ground water, sediment storage and transport, diluting and converting harmful nutrients, water delivery and atmospheric heat moderation. Mainstem rivers such as the Willamette also support high levels of biodiversity and provide critical migration and movement corridors for fish, wildlife and birds.

Reference Areas

Lower mainstem Willamette River between Oregon City and City of Portland

Target Wildlife

Adult and juvenile Chinook salmon, steelhead, coho salmon, Pacific lamprey, and white sturgeon. Birds may include great blue heron, double-crested cormorant, and the belted kingfisher.

Sun Requirements

Full sun or riparian shade. Avoid or remove some constructed cover.

Hydrologic Requirements

Well oxygenated, low temperatures, low nutrient waters.

Sensitivity to Human Access

In-channel habitat aquatic habitat is resilient to non-motorized uses and intermittent motorized use. Adult fish species that hold in the river below the falls may be sensitive to noise from shoreline activities.

Human Interest

Salmon fishing and lamprey harvest are culturally important to the tribes. Salmon and lamprey life cycles influence the seasonality of fish runs. Adult fish can be seen swimming and jumping in the river during portions of the year.

Off-Channel Alcove

Highly diverse and dynamic in nature, off-channel alcove habitat on the Willamette River serves as an uncommon and important resource for native fish, wildlife and plant species.

Reference Areas

Lower mainstem Willamette River, Elk Rock Island and Willamette Narrows.

Target Plant Species

Emergent native wetland vegetation including sedges (Carex spp., Cyperus spp.), spikerush (Eleocharis spp.), rushes (Juncus spp.), and ferns (Polypodium spp. Polystichum spp.).

Invasive species such as water primrose (Ludwigia hexapetala), purple loosestrife (Lythrum salicaria), yellow flag iris (Iris pseudacorus), and knotweed (Fallopia spp.) should be removed to allow space for native vegetation.

Target Wildlife

Juvenile Chinook salmon, steelhead, and coho salmon. Pacific lamprey ammocoetes. Shorebirds including spotted sandpiper, belted kingfishers and great blue herons. Western painted turtles, river otter, beaver and bats.

Soil Requirements

In planted areas, depositional alluvial soils. Otherwise not applicable.

Sun Requirements

Full sun or riparian shade. Avoid or remove cultural cover.

Hydrologic Requirements

Low-energy environment for both vegetation growth and rest areas for migrating anadromous species.

Sensitivity to Human Access

Off channel alcove areas are moderately sensitive to disturbance.

Human Interest

Important for interpretation of life cycle and migration patterns of native fish.

Riparian Basalt

The basalt outcrops and rocky substrate along the shoreline contribute to the mosaic of rocky habitats located to the north and south of the project site in and along the Willamette River. The outcrops are a relic of the Bretz or Missoula Floods, and exposures along this part of the Willamette River provide important habitat for both mesic and xeric species more common in the Columbia River Gorge. Shallow depressions that hold water on the basalt also provide unique wetland habitat. The vegetation assemblages found on basalt outcropping of the site are similar to those found in neighboring oak habitat and key habitat for pollinators and birds.

Reference Areas

Willamette Falls existing communities, Canemah Bluff, Camassia preserve, Elk Rock Island and Willamette Narrows Area

Target Plant Species

Roemer's fescue (Festuca idahoensis), white rock larkspur (Delphinium leucophaeum), Richardson's penstemon (Penstemon richardsonii), Oregon sunshine (Eriophyllum lanatum), mock orange (Philadelphus lewisii), goat's beard (Aruncus dioicus), oceanspray (Holodiscus discolor), streambank arnica (Arnica amplexicaulis) and sedum species.

Target Wildlife

Anna's hummingbird, spotted sandpiper, northern red-legged frog, pacific chorus frog and Oregon fairy shrimp.

Soil Requirements

Exposed basalt bedrock. Limited areas of soil and shallow depressions to hold water are necessary.

Sun Requirements

Full sun required.

Hydrologic Requirements

Periodic inundation tolerated and/or mists of falls necessary.

Sensitivity to Human Access

Basalt is very resilient. Herbaceous plant species that grow in these areas are highly sensitive to disturbance. Consider limiting access to basalt surface for education and restoration purposes.

Human Interest

Rare and endangered species specialized to dwell upon exposed, shallow soil basalt. Pollinator species and bloom time of wildflowers.

Riparian Forest

Riparian forest plant community areas are associated with alluvial soil and springs and seeps emerging from the site. Large areas of the site may have been historically dominated by this habitat but due to significant alterations and industrial development at the site this habitat has been reduced to small areas.

Reference Areas

Riparian areas along the lower mainstem Willamette River, Willamette Park in West Linn, Elk Rock Island and Willamette Narrows Area. Restored areas along the south bank waterfront in downtown Portland can serve as a reference for restoration of this plan community.

Target Plant Species

Pacific willow (Salix lasiandra var. lasiandra), Sitka willow (Salix sitchensis var. sitchensis), and Scouler's willow (Salix scouleriana). Pacific ninebark (Physocarpus capitatus), red-osier dogwood (Cornus sericea), Sitka alder (Alnus viridis), and Oregon ash (Fraxinus latifolia). Various sedges, rushes and ferns. Removal of invasive weeds including Himalayan blackberry (Rubus armeniacus), morning glory (Convolvulus spp.) and English ivy (Hedera helix).

Target Wildlife

Osprey, bald eagles, wood ducks, yellow warbler, Wilson's warbler and cedar waxwings. Western painted and pond turtles, beaver, river otter and bat species.

Soil Requirements

Alluvial floodplains, with thin poorly developed and coarse soils. Existing vegetation is growing through course and rocky areas at the base of basalt outcroppings.

Sun Requirements

Sun, shade, and dappled sun.

Hydrologic Requirements

Permanently saturated soils or seasonal rise in water table tolerated. Frequent flooding may occur.

Sensitivity to Human Access

Resilient once native vegetation is established. Avoid compaction of or erosion of soils due to use.

Human Interest

Restoring native vegetation in riparian areas will provide lush vegetated areas to portions of the highly developed site and increase wildlife watching opportunities.

Upland Forest

Upland forest areas with large conifer and deciduous trees are found on mid to toe of slopes on valley floors as exemplified at the Canemah Bluff and Willamette Narrows natural areas. The interior portions of the Project site may have been historically dominated by this habitat but due to significant alterations and industrial development this habitat is now limited to a narrow corridor alongside the railroad spur.

Reference Areas

Newell Creek Canyon, Canemah Bluff and street trees in downtown Oregon City.

Target Plant Species

Douglas fir (Pseudotsuga menziesii), big leaf maple (Acer macrophyllum), red-flowering currant (Ribes sanguineum), oceanspray (Holodiscus discolor), twinberry (Lonicera involucrata), Indian plum (Oemleria cerasiformis), thimbleberry (Rubus parviflorus) and swordfern (Polystichum munitum).

Target Wildlife

American peregrine falcon, osprey, slender-billed/white-breasted nuthatch, chipping sparrow. Coopers hawk. Northern red-legged frog and various bat species.

Soil Requirements

Generally deep, rich, fine to moderately coarse textured soils.

Sun Requirements

Shade and dappled sun.

Hydrologic Requirements

Upland forest areas are outside of areas inundated by the floodplain. Generally drought tolerant. Upland forest areas are outside of areas inundated by the floodplain. Generally drought tolerant.

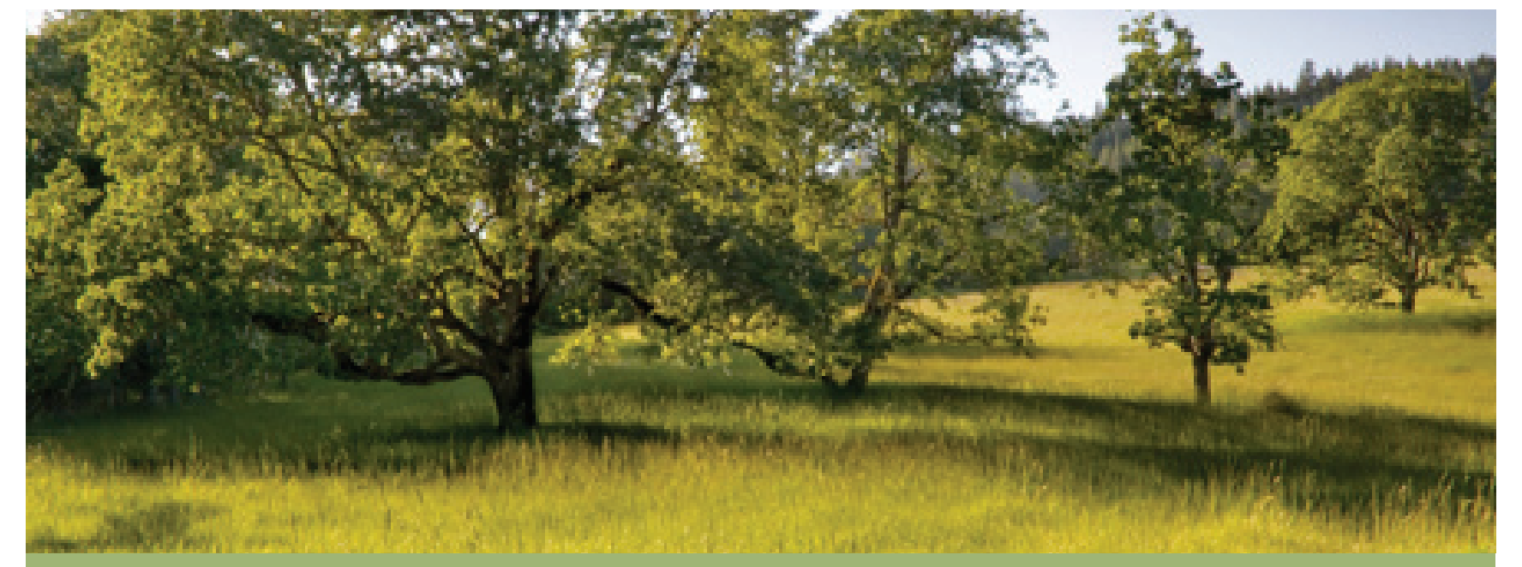
Sensitivity to Human presence

Subject to degradation. Avoid concentration of foot traffic.

Human Interest

Incorporation of street trees into the site would provide shade and natural habitats resembling upland forests. Fall color and birding.

Oak Woodland & Savanna



Dry to mesic grasslands occurring on hilltops and slopes with patches of shrubs and Oregon white oak. This habitat type surrounds the Willamette Falls site and can be found along the McLaughlin promenade. Oak savanna is an Oregon Department of Fish and Wildlife conservation strategy habitat.

Reference Areas

Canemah Bluff, Camassia preserve, Elk Rock Island and Willamette Narrows Area

Target Plant Species

Oregon white oak, Roemer's fescue and native herbaceous and grass species similar to those that exist in riparian basalt habitats.

Target Wildlife

Slender-billed/white-breasted nuthatch, black-throated gray warblers, downy woodpecker, black tail bumble bee.

Soil Requirements

Shallow to bedrock soils. Steep slopes or upper slope.

Sun Requirements

Full sun.

Hydrologic Requirements

Adapted to drought conditions. Wet winters, characterized by a dry summer

Sensitivity to Human Access

Fragile and subject to degradation. Limit foot traffic to avoid impacts.

Human Interest

Fall color and bloom time of wildflowers. Open grown Oregon white oak trees and birding.

Willamette Falls
LEGACY PROJECT

Riverwalk - Pre-Concept Phase
Community Engagement Event 3
November 17, 2016

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