

## Willamette Basin

### Description

Covering nearly 12,000 square miles, the Willamette is one of the state's largest drainage basins. It is also one of the most urbanized – over two-thirds of Oregon's population lives in the Willamette Valley. Just over 60% of the basin is privately owned.

Geographically, the basin comprises a broad, relatively level valley flanked by the forested slopes of the Coast and Cascade mountain ranges. The Willamette River, which originates in these mountain ranges and meanders nearly 200 miles before reaching its confluence with the Columbia, contributes much to the character of the valley floor. Historically, the Willamette was the key feature in a broad floodplain of sloughs, wetlands, and bottomland forests surrounded by an open valley dominated by prairie and savanna vegetation. Since European settlement, the Willamette Valley has undergone extensive urban, suburban and agricultural development, and today its ecosystem is highly altered.

The Willamette River and its tributaries support threatened native populations of chinook salmon, steelhead trout and bull trout, as well as rainbow and cutthroat trout. Large dams on many of the Willamette's tributaries have significantly altered stream flow regimes.

Conservation issues in the basin vary depending on geography. A significant amount of relatively healthy, intact, protected forest habitat remains in the upland regions of the basin. In the Willamette Valley, habitat loss, fragmentation and degradation have led to the identification of numerous plants and animals as species of concern. According to the Oregon Biodiversity Project, three general habitat types – oak savannas and woodlands, wetlands, and bottomland hardwood forests – stand out as broad-scale conservation priorities based on an assessment of historical changes and current management status. Other conservation issues in the valley include the introduction and spread of non-native species such as bullfrogs, Scot's broom, and many non-native fish and perennial grasses; a simplified river channel (including the disconnection of the river from its floodplain); declining habitat complexity; declines in water quality; and lack of fire.

Recommended acquisition priorities reflect the character of the basin and current conservation concerns, and are consistent with the recommendations of a number of other agency and conservation organizations. The size, diversity and level of development in the basin yield lengthy initial lists of systems and species of concern. These initial lists are shortened significantly by the application of screening criteria. First, many species of concern in the basin are found in forested upland areas, where their conservation needs can be adequately addressed on extensive public land holdings. Second, because the challenges to conservation in the Willamette Valley are so great, the needs of some species are better addressed in other basins.

A number of the systems and species on the final lists of priorities are found only in the Willamette Valley. One system type, chaparral, is increasing in distribution, but is

included because of its importance as habitat for multiple wildlife species and because it occurs largely on non-public lands.

The conservation acquisition principles are of particular importance to Willamette Valley projects. Some of the principles – such as those emphasizing size, intactness, and connectivity – will be hard to employ because of the extent of habitat fragmentation and loss in the valley. These limiting factors will tend to emphasize projects that address priority species and systems in the context of complementing or building on existing conservation reserves and refuges. Acquisition may also be an important tool in helping reconnect the river with its floodplain in key areas, provided there is evidence that such projects are part of a larger, coordinated effort. Projects seeking to establish wholly new protected areas should be scrutinized carefully to determine whether the scale and context of the project will support the long-term health and functioning of the habitats, systems and species expected to benefit. However, even small restoration projects will help retain some of the natural diversity remaining in the basin.

#### Priority Ecological Systems

Autumnal freshwater mudflats  
Chaparral  
Coniferous forested wetlands  
Depressional wetland broadleaf forests  
Depressional wetland shrublands  
Freshwater aquatic beds  
Freshwater emergent marsh  
Herbaceous balds and bluffs  
Oak woodland  
Ponderosa pine woodland  
Riparian forests and shrublands  
Sphagnum bogs and fens  
Vernal pools  
Western Oregon upland prairie and oak savanna  
Western Oregon wet prairie

#### Rare or At-Risk Plant Communities

Bigleaf maple - red alder / sword fern - fringe cup  
Black cottonwood - red alder / salmonberry  
Black cottonwood / creek dogwood / touch - me - not  
Brodiaea prairie  
California oatgrass valley grassland  
Columbia sedge marsh  
Common downingia vernal pool  
Coyote-thistle - low gumweed vernal pool  
Coyote-thistle - smooth lasthenia vernal pool  
Creeping lovegrass - lowland cudweed vernal pool

Creeping spikerush - one-sided sedge marsh  
Creeping spikerush - water purslane marsh  
Dense sedge - tufted hairgrass prairie  
Douglas spiraea / sphagnum fen  
Fragrant popcorn-flower vernal pool  
Geyer willow - Piper willow  
Grand fir - bigleaf maple / vine maple - hazelnut  
Lemmon needlegrass / wavy-cell moss bald  
Lobb buttercup aquatic bed  
Martindale lomatium rock garden  
Nootka rose / tufted hairgrass brush prairie  
Nootka rose / water parsley shrub swamp  
One-sided sedge - meadow barley prairie  
Oregon ash / Dewey sedge - stinging nettle  
Oregon ash / spreading rush  
Pacific willow / stinging nettle  
Quaking aspen / slough sedge  
Roemer fescue valley prairie  
Tufted hairgrass - California oatgrass valley prairie  
Water purslane - waterpepper marsh  
White oak - black oak / poison oak  
White oak / Idaho fescue savanna  
White oak / poison oak / blue wildrye  
White oak / snowberry / sword fern

DRAFT - Willamette Basin – Priority Species

<i>Fish</i>	<i>Birds</i>	<i>Mammals</i>	<i>Amphibians and Reptiles</i>	<i>Invertebrates</i>	<i>Plants</i>
<p>Chinook Oregon Chub Pacific Lamprey Searun Coastal Cutthroat Trout Steelhead</p>	<p>Acorn Woodpecker American Bittern American Kestrel (natural nest sites only) Chipping Sparrow (valley only) Dunlin Dusky Canada Goose Harlequin Duck Hooded Merganser Oregon Vesper Sparrow Purple Martin (natural nest sites only) Short-Eared Owl (nest and roost habitat only) Streaked Horned Lark Western Meadowlark White-Breasted Nuthatch Yellow Warbler</p>	<p>Black-Tailed Jackrabbit Townsend’s Big-Eared Bat Western Gray Squirrel</p>	<p>Foothill Yellow-Legged Frog Painted Turtle Red-Legged Frog Western Pond Turtle</p>	<p><i>Icaricia icarioides fenderi</i> (Fender’s Blue Butterfly) <i>Acupalpus punctulatus</i> (Marsh Ground Beetle) <i>Driloleirus macelfreshi</i> (Oregon Giant Earthworm) <i>Euphydryas editha taylori</i> (Taylor’s Checkerspot Butterfly)</p>	<p><i>Aster curtus</i> (White-Topped Aster) <i>Aster vialis</i> (Wayside Aster) <i>Castilleja levisecta</i> (Golden Indian-Paintbrush) <i>Delphinium leucophaeum</i> (White Rock Larkspur) <i>Delphinium pavonaceum</i> (Peacock Larkspur) <i>Erigeron decumbens</i> var <i>decumbens</i> (Willamette Valley Daisy) <i>Erythronium elegans</i> (Coast Range Fawn-Lily) <i>Howellia aquatilis</i> (Howellia) <i>Lomatium bradshawii</i> (Bradshaw's Lomatium) <i>Lupinus sulphureus</i> ssp <i>kincaidii</i> (Kincaid's Lupine) <i>Sidalcea nelsoniana</i> (Nelson's Sidalcea)</p>

Willamette Basin Priority Ecological Systems								
Ecological System Name	Existing (Ha)	Historic (Ha)	Protected (Ha)	Private (Ha)	% Loss (+/- =gain/loss)	% Public	Index	Comments
Western Oregon Wet Prairie	8.46	22763.52		8.46	-100.0%	0.0%	-99.96	
Western Oregon Upland Prairie and Oak Savanna	1162.17	53180.37	46.89	1095.21	-97.8%	5.8%	-93.78	
Oak Woodland	5126.04	70399.80	56.70	5013.00	-92.7%	2.2%	-91.61	
Freshwater Emergent Marsh	228.51	683.37	4.86	53.01	-66.5%	76.5%	-64.35	Most sites are on public lands, but a statewide priority
Lowland Riparian Woodland and Shrubland	9215.55	17772.30	118.08	8840.16	-48.1%	4.1%	-46.86	
Ponderosa Pine Woodland	434.25	795.96	6.48	409.32	-45.4%	5.7%	-43.90	
Chaparral	2759.58	681.48	5.22	2636.10	304.5%	4.5%	304.68	Increased, but potentially important for wildlife and poorly protected
Depressional Wetland Shrublands								Wetland / Riparian priority unmapped
Depressional Wetland Broadleaf Forests								Wetland / Riparian priority unmapped
Riparian Forests And Shrublands								Wetland / Riparian priority unmapped
Coniferous Forested Wetlands								Wetland / Riparian priority unmapped
Freshwater Aquatic Beds								Wetland / Riparian priority unmapped
Autumnal Freshwater Mudflats								Wetland / Riparian priority unmapped
Sphagnum Bogs And Fens								Wetland / Riparian priority unmapped
Vernal Pools								Wetland / Riparian priority unmapped
Herbaceous Balds And Bluffs								Unmapped ecoregional priority, all rare habitats

## Willamette Basin Priority Species

Common Name	Scientific Name	Lists on Which Species Appears	Rationale for Identifying as Priority	Comments
<b>BIRDS</b>				
Acorn Woodpecker		GAP priority, TNC ecoregional target, PIF focal species	State Sensitive; oak specialist; small, scattered colonies (many on private lands) need protection	
American Bittern		GAP priority, TNC ecoregional target	Use of high quality, large freshwater wetlands captures many other wetland species	
American Kestrel (natural nest sites only)		BCR priority, PIF focal species	Highly significant declining trend; loss of old oak savannah trees for nesting	
Chipping Sparrow		BCR priority, PIF focal species	Highly significant declining trend; loss/degradation of oak woodlands with an open understory, a desired condition in much of the oak restoration	
Dunlin		Regional shorebird priority, TNC ecoregional target	Good basin to emphasize because of extent of wetlands and flooded fields for non-breeding season foraging and roosting	
Dusky Canada Goose		TNC ecoregional target	State Sensitive; only basin to emphasize opportunities to protect habitat to support public land conservation and take pressure off private lands	
Harlequin Duck		GAP priority, TNC ecoregional target	State Sensitive; although mostly in streams along public lands, best basin to emphasis some opportunities on private lands for nesting habitat and improvement of instream water quality throughout the stream	
Hooded Merganser		GAP priority	Although aquatic, nests in tree cavities in the valley and lower basin elevations, sometimes not adjacent to body of water; best basin to emphasize opportunities for protection of habitat on private lands	
Oregon Vesper Sparrow		TNC ecoregional target, PIF focal species	State Sensitive; vulnerable small and local populations need protection, mostly on private lands in foothills of valley; significantly impacted by land management such as mowing and grazing	
Purple Martin (natural nest sites only)		TNC ecoregional target, PIF focal species	State Sensitive; loss of large snags in open forest and adjacent to large bodies of water	

Short-eared Owl (nest and roost habitat only)		BCR priority, GAP priority, TNC ecoregional target	Vulnerable small breeding (possibly extirpated) and winter roosting population; loss fragmentation of large wetland/upland prairie complexes	
Streaked Horned Lark		BCR priority, TNC ecoregional target, PIF focal species, Listed species	Subspecies; Federal Candidate species; Vulnerable small and local populations need protection, mostly on private lands; significantly impacted by land management (e.g., mowing, tilling)	
Western Meadowlark		BCR priority, TNC ecoregional target, PIF focal species	State Sensitive; highly significant declining trends; loss/degradation of grassland/prairie and oak savannah habitat; significantly impacted by land management (e.g., mowing, grazing)	
White-breasted Nuthatch		BCR priority, TNC ecoregional target, PIF focal species	State Sensitive; highly significant declining trends; loss/degradation of oak woodlands and savannah, especially old trees; some local extirpations	
Yellow Warbler		BCR priority, PIF focal species	Significant declining population trend; good basin to emphasize because of loss/fragmentation of structurally diverse riparian woodlands and thickets dominated by willow and cottonwood	
<b>MAMMALS</b>				
Black-tailed jackrabbit		TNC ecoregional target	Declining; loss/degradation of grasslands & prairies	
Townsend's big-eared bat		TNC ecoregional target	Habitat (caves, mines) is rare	
Western gray squirrel		GAP priority, TNC ecoregional target	Declining; oak woodland habitats	
<b>HERPS</b>				
Foothill yellow-legged frog		GAP priority, TNC ecoregional target	Disjunct population; special habitat requirements	
Painted turtle		TNC ecoregional target	Occurs primarily on private lands; habitat threats	
Red-legged frog		GAP priority, TNC ecoregional target	Declining habitat (forested wetlands)	
Western pond turtle		GAP priority, TNC ecoregional target	Occurs primarily on private lands; habitat threats	

<b>FISH</b>				
Oregon chub		TNC ecoregional target, Federally listed	Endemic; habitat threats	
Steelhead		Federally Listed, TNC ecoregional target	Target for Oregon Plan in Basin	spawning areas limited primarily on private timber land
Chinook		Federally Listed, TNC ecoregional target	Target for Oregon Plan in Basin	best emphasized above Harrisburg
Pacific Lamprey		TNC ecoregional target	Declining	focus on spawning tributaries
Searun Coastal Cutthroat Trout		State Sensitive Species - Critical	Declining	Searun only in lower Willamette and Clackamas
<b>INVERTS</b>				
marsh ground beetle	<i>Acupalpus punctulatus</i>	TNC ecoregional target	Endemic	
Oregon giant earthworm	<i>Driloleirus macelfreshi</i>	TNC ecoregional target	Endemic; habitat threats	
Taylor's checkerspot (butterfly)	<i>Euphydryas editha taylori</i>	TNC ecoregional target	Habitat threats	
Fender's blue butterfly	<i>Icaricia icarioides fenderi</i>	TNC ecoregional target, Federal Endangered	Endemic; habitat threats	
<b>PLANTS</b>				
White-Topped Aster	<i>Aster curtus</i>	State Listed taxa		
Wayside Aster	<i>Aster vialis</i>	State Listed taxa		
Golden Indian- Paintbrush	<i>Castilleja levisecta</i>	Federal, State Listed, G1G2 taxa	Extirpated from Oregon	
White Rock Larkspur	<i>Delphinium leucophaeum</i>	State Listed, G1G2 taxa		

Peacock Larkspur	<i>Delphinium pavonaceum</i>	State Listed, G1G2 taxa		
Willamette Valley Daisy	<i>Erigeron decumbens</i> var <i>decumbens</i>	Federal, State Listed, G1G2 taxa		
Coast Range Fawn-Lily	<i>Erythronium elegans</i>	State Listed, G1G2 taxa		
Howellia	<i>Howellia aquatilis</i>	Federal, State Listed, G1G2 taxa		
Bradshaw's Lomatium	<i>Lomatium bradshawii</i>	Federal, State Listed, G1G2 taxa		
Kincaid's Lupine	<i>Lupinus sulphureus</i> ssp <i>kincaidii</i>	Federal, State Listed, G1G2 taxa		
Nelson's Sidalcea	<i>Sidalcea nelsoniana</i>	Federal, State Listed, G1G2 taxa		



## Willamette Basin Priority Rare Communities

Scientific name	Common name
<i>Lomatium martindalei</i> rock garden	Martindale lomatium rock garden
<i>Eleocharis acicularis</i> - <i>Ludwigia palustris</i>	creeping spikerush - water purslane marsh
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i> / <i>Cornus sericea</i> / <i>Impatiens capensis</i>	black cottonwood / creek dogwood / touch - me - not
<i>Quercus garryana</i> / <i>Festuca idahoensis</i> var. <i>romeri</i>	white oak / Idaho fescue savanna
<i>Brodiaea</i> sp. prairie	Brodiaea prairie
<i>Carex densa</i> - <i>Deschampsia cespitosa</i>	Dense sedge - tufted hairgrass prairie
<i>Carex unilateralis</i> - <i>Hordeum brachyantherum</i>	one-sided sedge - meadow barley prairie
<i>Danthonia californica</i> valley grassland	California oatgrass valley grassland
<i>Deschampsia cespitosa</i> - <i>Danthonia californica</i> valley prairie	tufted hairgrass - California oatgrass valley prairie
<i>Fraxinus latifolia</i> / <i>Juncus patens</i>	Oregon ash / spreading rush
<i>Ludwigia palustris</i> - <i>Polygonum hydropiperoides</i>	water purslane - waterpepper marsh
<i>Abies grandis</i> - <i>Acer macrophyllum</i> / <i>Acer circinatum</i> - <i>Corylus</i>	grand fir - bigleaf maple / vine maple - hazelnut
<i>Acer macrophyllum</i> - <i>Alnus rubra</i> / <i>Polystichum munitum</i>	bigleaf maple - red alder / sword fern - fringedcup
<i>Carex aperta</i>	Columbia sedge marsh
<i>Downingia elegans</i> vernal pool	common downingia vernal pool
<i>Eleocharis palustris</i> - <i>Carex unilateralis</i>	creeping spikerush - one-sided sedge marsh
<i>Eragrostis hypnoides</i> - <i>Gnaphalium palustre</i> vernal pool	creeping lovegrass - lowland cudweed vernal pool
<i>Eryngium petiolatum</i> - <i>Grindelia nana</i> vernal pool	coyote-thistle - low gumweed vernal pool
<i>Eryngium petiolatum</i> - <i>Lasthenia glaberrima</i> vernal pool	coyote-thistle - smooth lasthenia vernal pool
<i>Festuca roemerii</i> - <i>Sidalcea virgata</i>	Roemer fescue valley prairie
<i>Fraxinus latifolia</i> / <i>Carex deweyana</i> - <i>Urtica dioica</i> ssp. <i>gracilis</i>	Oregon ash / Dewey sedge - stinging nettle
<i>Plagiobothrys figuratus</i> vernal pool	fragrant popcorn-flower vernal pool
<i>Populus balsamifera</i> ssp. <i>trichocarpa</i> - <i>Alnus rubra</i> / <i>Rubus</i>	black cottonwood - red alder / salmonberry
<i>Populus tremuloides</i> / <i>Carex obnupta</i>	quaking aspen / slough sedge
<i>Quercus garryana</i> / <i>Symphoricarpos albus</i> / <i>Polystichum</i>	white oak / snowberry / sword fern
<i>Rosa nutkana</i> / <i>Deschampsia cespitosa</i>	Nootka rose / tufted hairgrass brush prairie
<i>Rosa nutkana</i> / <i>Oenanthe sarmentosa</i>	Nootka rose / water parsley shrub swamp
<i>Salix geyeriana</i> - <i>Salix hookeriana</i>	Geyer willow - Piper willow
<i>Salix lucida</i> ssp. <i>lasiandra</i> / <i>Urtica dioica</i> ssp. <i>gracilis</i>	Pacific willow / stinging nettle
<i>Spiraea douglasii</i> / <i>Sphagnum</i>	Douglas spiraea / sphagnum fen
<i>Stipa lemmonii</i> / <i>Racomitrium canescens</i>	Lemmon needlegrass / wavy-cell moss bald
<i>Quercus garryana</i> - <i>Quercus kelloggii</i> / <i>Toxicodendron</i>	white oak - black oak / poison oak
<i>Ranunculus lobbii</i>	Lobb buttercup aquatic bed
<i>Quercus garryana</i> / <i>Toxicodendron diversilobum</i> / <i>Elymus</i>	white oak / poison oak / blue wildrye