

OWEB Ecological Priorities for Land Acquisition by Basin

Adopted by the OWEB Board September 14, 2004

Introduction

Background

In 1998, voters approved a statewide ballot measure (Measure 66) amending the Oregon constitution to direct a portion of state lottery proceeds to be used “for the public purpose of financing the restoration and protection of native salmonid populations, watersheds, fish and wildlife habitats and water quality in Oregon.” Passage of the ballot measure capped a multi-year effort by a number of stakeholders to identify and secure a dedicated source of revenue for natural resource programs, especially fish and wildlife habitat protection and restoration.

Legislation enacted subsequently established the Oregon Watershed Enhancement Board (OWEB) as the agency responsible for administering key portions of the ballot measure and related legislation, including making grants in support of specific watershed purposes. Among other things, these purposes include land acquisition, which is defined as “entering into agreements to obtain from willing owners determinate interests in lands ... that protect watershed resources, including but not limited to fee simple interests in land, leases of land or conservation easements”.

State statutes, and the high demand for grants relative to available funding, require that OWEB establish priorities to guide its grant-making decisions, including decisions on land acquisition project applications. This report identifies high priority ecological attributes for each major drainage basin in Oregon. Focusing on applications that address these attributes will help ensure that land acquisition projects provide significant ecological benefits in support of OWEB’s mission.

Purpose and Scope

The primary purposes of establishing land acquisition priorities are to 1) help OWEB respond to acquisition applications and expend funds on acquisition projects in an informed and strategic manner; and 2) ensure that acquisition projects address critical watershed resources and processes. This report describes both a general framework for identifying priorities as well as specific high priority attributes for each basin.

The report focuses only on priorities related to ecological benefits - the habitats, species and key ecosystem principles and processes that should be addressed by land acquisition project applications. OWEB considers many other factors when it reviews land acquisition applications, including such things as the capacity of the grantee to manage the property over time and the level of community support. Projects with strong ecological benefits may not be funded if they fail to meet other criteria. Moreover, OWEB may decide to approve projects with lower priority ecological attributes when such projects address other agency goals.

Process

A project consulting team with facilitation, data analysis and natural resource planning expertise was retained to develop recommendations regarding land acquisition priorities. An advisory committee comprising conservation professionals from a range of backgrounds assisted the consulting team. The committee met seven times during the last half of 2003.

In its initial meetings, the consulting team and committee developed project assumptions, general conservation principles for acquisition projects, and a multi-step framework to be used in identifying basin-specific priority attributes. In the next phase of the project, the framework was applied to the fifteen major OWEB river basins, leading to development of draft priority attributes for each basin.

The draft framework and specific recommendations for the North Coast basin were reviewed and discussed by regional stakeholders in December 2003. The OWEB board reviewed draft recommendations in January 2004 and authorized extension of the analysis to all fifteen OWEB basins. Additional stakeholder review will be conducted by OWEB as part of the agency's continuing rulemaking process for the land acquisition grant program.

Key Considerations

Several important considerations served to frame the scope of the recommendations and guided the approach to identifying acquisition priorities:

Policy Context

The effort to identify priority ecological attributes is but one element of the continuously evolving policy framework that guides OWEB's response to acquisition applications. Past policy-making has addressed the general purposes of acquisition projects and clarified grant application and decision-making guidelines. In addition to acquisition priorities, future policy-making may be needed to address such issues as the role of easements in meeting watershed goals, the weight accorded factors other than ecological benefit in making funding decisions and the sequence of processing acquisition grant applications. This report does not address these issues.

OWEB's Unique Role

As the single largest source of state funding for watershed restoration and protection projects, OWEB receives far more grant requests than it is able to fund. Given this demand, and the relative expense of acquisition projects compared to other OWEB-supported watershed work, it is essential that approved acquisition projects are responsive to the goals of the ballot measure (the restoration and protection of native salmonid populations, watersheds, fish and wildlife habitats and water quality) and the statutory authorization to fund acquisition projects for the purposes of "maintaining or restoring watersheds, habitat and native salmonids." Projects aimed at other goals should seek primary funding from other sources.

Project Focus and Scope

This report makes recommendations regarding priority attributes of land acquisition projects, not conservation priorities in general. As a result, the recommendations de-emphasize habitat and species types with significant distribution on public land or conservation needs that cannot be addressed by land acquisition (e.g. certain marine species). The recommendations are not referenced to particular geographic areas within basins, except when examples are cited in the narrative to better define or distinguish certain attributes.

While the focus of the analysis is relatively narrow, its scope is broad. Priority attributes are identified from a statewide perspective (see below), and basin priorities are viewed within statewide and ecoregional contexts. In addition, the recommendations encompass a broad range of aquatic and terrestrial habitats and species. This broad scope is consistent with state law, which authorizes grants for the restoration and protection of “native salmonid populations, watersheds, fish and wildlife habitats and water quality.” It also acknowledges the important relationships between aquatic and terrestrial diversity and watershed health and the role individual species play as indicators of habitat and system condition.

Statewide Perspective

Although OWEB has many local and regional partners and constituencies, it is a state agency and, as such, must set its priorities within a statewide context. While this report does not identify “state priorities” per se, viewing basin priorities through a statewide lens does result in a focus on habitat and species types of statewide significance. In some cases, it results in different priorities than would similar analyses at a smaller spatial scale. For example, habitat and species types that are rare or locally significant in a particular basin, but found more commonly elsewhere in Oregon, would not be identified as priorities in that basin. Also, some statewide priorities may not be identified as priorities in a given basin (even though they occur in that basin) if they are better addressed in another part of the state.

Credible Information

The complexity, sensitivity and expense involved in land acquisition projects – from assembling and reviewing applications to expending funds on the acquisition itself – makes it essential that identified priorities are supported by credible information. Accordingly, the project relied primarily on data from the Oregon Natural Heritage Information Center at Oregon State University, the Oregon Department of Fish and Wildlife, and multi-partner sources of information such as Partners in Flight, the Oregon Biodiversity Project and the State of the Environment Report. Watershed assessments and sub-basin planning documents were also consulted.

Limitations

The wealth of information generated over the past decade about Oregon’s watershed resources was enormously helpful to the analysis of priority attributes. At the same time, statewide analysis requires statewide data, the availability and accuracy of which is still uneven in some areas. Much information about riparian area and wetland

location and condition simply does not exist. While the project was able to use expert review and input to overcome some of these limitations, it is important that the identification of priority attributes be revisited as new information becomes available. The state wildlife conservation plan currently in the planning stages by ODFW will provide a near-term opportunity to incorporate updated information.

Framework for Land Acquisition Priorities

Land Acquisition as a Conservation Tool

Land acquisition, one of many tools available to OWEB, can be an effective way to achieve watershed and habitat protection and restoration goals. Land acquisition projects can support OWEB's goals by:

1. Ensuring continued long-term management in support of specific watershed resources and/or functions; for example, when land containing critical habitat is for sale, and potential future owners could significantly affect that habitat through a change in land use or management; or
2. Allowing active, intensive management or restoration requiring most of a parcel or parcels to be dedicated to conservation to maintain or recover species and/or functions. In these situations, acquisition may be the only way to address landowner needs and meet restoration goals at the same time. In situations in which goals can be met with active restoration on only a portion of a parcel otherwise dedicated to non-conservation uses, conservation easements may be a more appropriate tool than fee acquisition.

Acquiring interests in land, whether in fee simple or through easements, can be complex and expensive. In order to achieve promised goals, land acquisition requires a long-term commitment to stewardship and management. As a result, land acquisition applications demand careful consideration by both project proponents and OWEB. The following framework is intended to enable OWEB to be more informed in its decision-making regarding the ecological benefits of acquisition applications, and to ensure that funded applications address critical watershed resources and processes.

General Framework

When considering grant applications for land acquisition projects, OWEB should give priority to projects that have the following attributes:

1. The project addresses the conservation needs of *priority habitat and species types* identified according to the methodology described below, *and*
2. The project supports one or more of the resource *conservation principles* described below, *and/or* assists in implementing a scientifically credible resource conservation plan.

A recommended approach to identifying priority habitats and species is described in the next section, followed by a discussion of the conservation principles that should be supported by acquisition projects.

Priority Habitats and Species

For this project, priority habitats and species were initially identified by synthesizing information from a variety of sources, including the Oregon Natural Heritage Information Center at Oregon State University, the Oregon GAP analysis project, the Oregon Biodiversity Project, ecoregional assessments conducted by The Nature Conservancy, and the Oregon Department of Fish and Wildlife (ODFW). In general, recommended priorities emphasize habitats and species that have experienced significant losses in distribution or population levels over time. Focusing on these types will help ensure a diverse array of species and habitat types in the future. As noted in the State of the Environment Report, such diversity “is critical for the normal functioning of ecological and evolutionary processes...Ecosystems with good representation of native species are better able to resist invasions by exotic species, regenerate in response to disturbances and provide such ecosystem services as erosion prevention, water purification and climate amelioration.”

Priority Habitats

In order to identify habitat priorities in a consistent manner, the project relied on two widely used habitat classification systems, both of which are mapped statewide in Oregon. The first, developed by the Oregon GAP analysis project, breaks state habitat types into 30-40 relatively broad categories. The GAP project identifies as priorities those habitat types that have lost significant acreage since European settlement, and which are poorly represented in the existing network of conservation lands in the state. GAP priorities are identified as recommended priorities in any basin in which they are found. Natural riparian areas and wetlands are statewide GAP priorities and critical to terrestrial and aquatic diversity and watershed function throughout the state. Accordingly, these areas are also identified as priorities in every basin.¹

Because it is a statewide assessment based on broad habitat types, GAP yields very general results. To provide more detail at the basin level, the project used a second classification system, developed by NatureServe, that recognizes 115 “ecological system” types in Oregon. A “prioritization index” was developed, similar to GAP, based on the extent of reduction in the distribution of each ecological system since European

¹ It should be noted that the availability and accuracy of historical and contemporary data regarding riparian areas and wetland is variable across the state, and the linear nature of riparian areas makes them very difficult to map and use in GAP-type analyses of habitat loss and protection. As a result, the status of specific riparian and wetland ecological system types has not been analyzed for this project, and no recommendations are made regarding priorities among different riparian and wetland types in a given basin, unless a system type is known to occur primarily on public lands (see Step 2). Additional data collection and analysis to be conducted by ODFW in conjunction with the state Wildlife Conservation Plan, and improvements in the Oregon Plan monitoring project, will allow more detailed analysis of natural riparian and wetland types in the near future. In the meantime, priorities within basins will be established based on the potential benefit to rare or at-risk plants and animals.

settlement and the amount of that system type's remaining distribution on public lands.²

For this project, which focuses on land acquisition, we looked at whether or not a significant proportion of the remaining distribution of the ecological system types was on public lands, not whether those lands were managed to protect habitat values.³ The project applied the same philosophy to the identification of priority species, as discussed below.

Priority Species

In addition to important habitat types, the project identified important fish, wildlife and plant species in each basin. Lists of species of concern were developed based on a variety of sources, including:

- State and federally listed threatened and endangered species;
- Species identified as at-risk by agencies or organizations with recognized expertise, such as Partners in Flight (birds)⁴, the Oregon Natural Heritage Information Center (ONHIC), (plants, mammals, invertebrates, reptiles and amphibians ranked as G1, G2, T1, T2 and S1)⁵, the Oregon Department of Fish and Wildlife (fish) and others.
- Other key fish or wildlife species: either widespread but declining or both poorly protected and which have lost significant habitat based on changes since European settlement (the Gap Analysis priority index).
- Rare plants and plant communities identified by ORNHIC.

Once initial lists of species of concern were developed, a set of screening criteria was used to eliminate some species from consideration as basin acquisition priorities. Generally, the criteria served to screen out species already adequately addressed or able to be addressed in that basin (for example, if they occur primarily on public lands), more appropriately addressed elsewhere in the state (for example, a species occurs in a basin peripheral to its core habitat), or better conserved through the application of other restoration or protection tools.

² The following formula was used to develop a priority index for ecological systems: $\text{Index} = [(h-c/h) - p/c] * 100$, where h = area of historic distribution, c = area of current distribution, and p = area currently protected.

³ Some reviewers have raised questions about this decision. Given limited resources, the project team believes it is important to focus on resources not already well-represented on existing public lands. Management of public land resources can be addressed through other processes.

⁴ Birds identified by the Partners in Flight (PIF) Species Assessment Database as at-risk as a result of threats to habitat or declining population trends, plus species identified as at-risk by other regional bird prioritization efforts as a result of declining habitat, species status and ecology, and species associations with key habitat attributes or conditions

⁵ The Oregon Natural Heritage Information Center (ORNHIC) participates in an international system for ranking rare, threatened and endangered species throughout the world. The system was developed by The Nature Conservancy and is now maintained by NatureServe in cooperation with Heritage Programs or Conservation Data Centers (CDCs) in all 50 states, in 4 Canadian provinces, and in 13 Latin American countries. G1 and G2 elements are imperiled globally; S1 elements are imperiled at the state level. The "T" designation indicates an imperiled subspecies of a more common species type.

Specific screening criteria were as follows:

- Eliminate species or plant communities from the list if there is a low degree of confidence regarding their existence in the basin; e.g. if occurrences are not well documented; or if no occurrences have been reported in recent years;
- Eliminate all introduced and extirpated species;
- Eliminate species if land acquisition is not appropriate based on its habitat requirements;
- Eliminate ecological systems, species and plant communities if their conservation needs can adequately be addressed on public lands; and
- Eliminate species, ecological systems or plant communities for which the basin in question is out-of-range or “peripheral” (at the edge of its historical range).

Conservation Principles

An acquisition application may include high priority ecological systems and species, yet still fail to deliver ecological benefits. To be effective, acquisition projects must also be structured in ways that support sound principles of resource conservation and restoration. These principles are important for many reasons – they help leverage OWEB’s investments with others’ to expand results, improve the viability of smaller projects by placing them in a larger geographic context, and can help avoid – and possibly resolve – the kind of resource “train wrecks” seen throughout the region in recent years.

Priority projects should therefore support the following widely accepted resource conservation principles. The order in which the principles are listed is not intended to connote priority or relative importance. Because of Oregon’s geographic and economic diversity, different regions have different resource conservation needs and goals. Consequently, application of a particular conservation principle may be more or less appropriate, or important, in different parts of the state.

1. Protecting Large, Intact Areas. Large areas, or smaller but key portions of larger landscapes, containing a diverse array of important fish and wildlife species and habitat types and relatively intact, functioning systems.
2. Stabilizing Areas “On the Brink”. Areas where natural systems and processes are still functioning, but where a trend toward ecosystem degradation requires action to prevent conditions from “tipping” to an unrecoverable (or very difficult to recover) state. Acquisition and restoration of key parcels can help stabilize such areas. However, OWEB should only invest in such areas when there are other significant restoration activities planned or in place, or where there is strong evidence that restoration of a key parcel can be a catalyst for broader efforts.
3. Securing Transition Areas. Areas or sites providing critical habitat or watershed function in areas undergoing transition from undeveloped to developed conditions.

4. Restoring Function. Areas where restoration and active management are necessary to re-establish critical ecological functions supporting broader, landscape-scale conservation strategies. Individual parcels in these areas may be in a degraded condition but still have potential for restoration within the geographic and management context of larger conservation efforts.
5. Protecting Sites with Exceptional Biodiversity Values. Areas containing aggregations of local endemics or at-risk species and habitat types, but only where the species or habitat types can be demonstrated to be viable and sustainable.
6. Improving Connectivity. Sites that contribute to habitat connectivity by expanding or connecting areas already managed to protect watershed resources and/or functions; for example, acquiring a parcel connecting two sections of a publicly owned migratory corridor for fish or wildlife.
7. Complementing Existing Networks. Parcels or sites that complete or complement existing networks or patterns of conserved areas; for example, a project contains land with a system type significantly underrepresented in the current network of lands managed for conservation purposes.

In addition to projects that support the above principles, OWEB should give priority to projects in which acquisition supports the implementation of scientifically credible plans for the conservation, restoration, recovery or protection of fish and wildlife and the habitats upon which they depend.

Projects Aimed at Benefiting Native Fish

The above conservation principles apply equally to applications involving terrestrial and aquatic resources. Projects aimed primarily at addressing the needs of priority fish species should in addition provide high ecological benefits to a large portion of the native species assemblage and/or species of concern. High ecological benefits are the result of acquisitions that address bottlenecks to survival based on the life cycle needs of the species.

Land acquisition projects aimed at benefiting native fish should involve stream segments within American Fisheries Society Aquatic Diversity Areas or other areas identified as native fish strongholds based on scientifically credible research and planning initiatives. Documentation of the importance of the basin to salmonid production or maintenance of aquatic species biodiversity should be developed for each application involving proposed acquisition of stream segments.

Preferred stream conditions for projects intended to benefit native fish are as follows:

1. Low Gradient, Unconfined Channels: Stream channel types that are unconfined and low gradient have the greatest potential for salmonid production. Channel habitat types that include estuarine channels (ES, EL), Low Gradient channels (FP1, FP2, FP3, AF, and LM) that are unconfined or moderately confined are the highest priority for protection. While these channel types are not sufficient to support all species, they are appropriate for protection actions.

2. Tributary Junctions: The confluence between tributaries and main stem channels is often the site of significant aquatic diversity. The complexity of channel junctions can create a diverse array of aquatic habitats suitable for protection. Preference should be on channel junctions with 6th order or greater channels.
3. Estuarine Channels: While often in public ownership, estuarine environments are highly productive and important to a number of life stages of anadromous and other fishes. Acquisition of estuarine channels and lands where estuarine channels can be restored should be considered a priority.

Application of the Framework

As noted previously, it is important that projects address both conservation principles *and* priority species and habitats. By focusing applicants' and OWEB's attention on the connections between parcel-specific acquisition proposals and the larger landscape, the conservation principles will help to ensure that desired conservation goals are achieved. At the same time, it should be noted that use of the species priorities and conservation principles to evaluate acquisition applications will not yield cut-and-dried, formula-driven decisions. Professional judgment – and other goals – will still be important parts of the process.

Basin Priorities

The rest of this report is devoted to separate descriptions of specific priority attributes of land acquisition projects for each of the state's fifteen major river basins. Each basin summary begins with a brief narrative describing the basin's physical characteristics and conservation issues and highlighting ecological system and species priorities. Lists and tables of priority ecological systems, species and plant communities are provided. More detailed information is provided in a separate documentation folder.

The basin summaries are presented (roughly) in "clockwise geographic order", beginning with the North Coast basin.

North Coast Basin

Rocky coastal headlands; tidal rivers, estuaries and floodplains; relatively flat stretches of coastal plain and the steep-sloped ridges and hills of the Coast Range characterize the North Coast Basin. The vegetation in this heavily forested region is dominated by Sitka spruce, western hemlock, and Douglas fir, with stands of alder in disturbed areas. The major land use is commercial timber production, with agriculture confined largely to coastal lowlands and river valleys. Roughly half of the basin is in public ownership.

Eight unobstructed tributaries to the Pacific Ocean drain the North Coast Basin, including some of the most diverse and healthiest aquatic systems in the state. The basin is a stronghold for coho, chum, and chinook salmon, cutthroat trout, and steelhead.

Major conservation issues in the North Coast Basin include conversion and fragmentation of tidal and floodplain wetlands, loss and degradation of sand dune systems and riparian areas and loss of old-growth forests.

Priority acquisition project attributes focus primarily on ecological systems and species associated with wetlands and riparian areas. Many other species and habitats of concern are found in the North Coast Basin, but existing public land ownership patterns and regulatory processes make these lands a lower priority for OWEB acquisition funding. (One exception is the marbled murrelet, which is included on the list of priority bird species because much of its remaining habitat is on unprotected private lands in this basin.) Some at-risk species found in the basin do not appear on the priority list because their core habitat requirements are not served or benefited by land acquisition (e.g. marine mammals, pelagic birds).

Priority Ecological Systems

Chaparral and north coast shrublands

Eelgrass beds

Fens

Floodplain/outwash lowland riparian, linear, wetlands

Freshwater marsh and aquatic beds

Intertidal mudflats

Intertidal salt marsh

Lowland depressional shrub wetlands and wet prairies

Lowland non-linear forested wetlands (swamps)

Lowland riparian woodland and shrubland

Mesic herbaceous wetlands

Montane non-linear forested depressional wetlands (swamps)

Montane riparian

Mudflats

Noble fir

Oak woodlands

Sitka spruce forest
Tidally-influenced freshwater wetlands
Western Oregon upland prairie and oak savanna

Rare or At-Risk Plant Communities

Black cottonwood / creek dogwood / touch - me - not
Creeping spikerush - water purslane marsh
Crowberry - salal oceanfront shrubland
Douglas spiraea - bog blueberry / slough sedge / sphagnum
Martindale lomatium rock garden
Pacific reedgrass - blue wildrye
Western Labrador tea - salal / slough sedge bog
Western Labrador tea - sweet gale heath
Western Labrador tea / burnet / sphagnum bog
Western Labrador tea / darlingtonia / sphagnum bog
Western Labrador tea / slough sedge / sphagnum bog
White oak / Idaho fescue savanna

North Coast Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Chinook Salmon (spring run) Chum Salmon Coho Salmon Steelhead	Aleutian Canada Goose Bald Eagle (known and potential nest sites) Band-tailed Pigeon Black Oystercatcher Dunlin Great-blue Heron (nest/roost sites only) Marbled Murrelet Olive-sided Flycatcher Pacific-slope Flycatcher Peregrine Falcon (known and potential nest sites) Ruffed Grouse Rufous Hummingbird (natural habitat only) Willow Flycatcher	American Martin Red Tree Vole Townsend’s Big-Eared Bat White-Footed Vole	Clouded Salamander Coastal Tailed Frog Columbia Torrent Salamander Red-Legged Frog Southern Torrent Salamander	<i>Deroceras hesperium</i> (Evening Fieldslug) <i>Derephysia foliacea</i> (Foliaceous Lace Bug) <i>Hesperarion mariae</i> (Tillamook Westernslug) <i>Lygus oregonae</i> (Oregon Plant Bug) <i>Plebeius saepiolus littoralis</i> (Greenish Blue (Butterfly)) <i>Pristiloma pilsbryi</i> (Crowned Tightcoil (Snail)) <i>Prophysaon pardalis</i> (Spotted Taildropper (Slug)) <i>Pterostichus rothi</i> (Bellers Ground Beetle) <i>Speyeria zerene hippolyta</i> (Oregon Silverspot Butterfly)	<i>Erythronium elegans</i> (Coast Range Fawn-lily) <i>Sidalcea hirtipes</i> (Bristly-stemmed Sidalcea) <i>Sidalcea nelsoniana</i> (Nelson’s Sidalcea)

Lower Columbia Basin

Description

The lower Columbia is a relatively small basin draining the westernmost floodplains and tidal reaches of the Columbia River. Skipanon, Young's, and Clatskanie rivers flow into the lower Columbia from the Coast Range. About 43% of the basin is publicly owned. This OWEB basin also includes the Sandy River watershed, which flows from the west side of Mt. Hood to join the Columbia near the community of Troutdale. The Sandy basin is heavily forested, and provides significant drinking water, recreational and fish and wildlife benefits in close proximity to Oregon's largest metropolitan area. Portions of the Sandy are protected under the state and federal wild and scenic rivers programs.

The lower Columbia's tidal wetlands serve as the gateway between the entire Columbia system and the Pacific and are extremely important for anadromous fish, especially young out-migrating salmon seeking food and cover prior to entering the ocean. Nearly two-thirds of the shallow marshes and side channels along the lower Columbia have been converted to other uses, primarily farm and pastureland but also, more recently, hybrid cottonwood plantations. Restoring tidal wetlands is considered critical to ecosystem health on the lower Columbia.

The Oregon Biodiversity Project identified Columbia River bottomlands as a conservation opportunity area, noting that since there is already significant public ownership in these areas, it is possible to restore and manage critical wetlands on a larger scale than in some other parts of the state. The Lower Columbia River Estuary Management Plan seeks to restore 3000 acres of tidal wetlands along the lower 46 miles of the river in order to return tidal wetlands to 50% of their 1948 level. The priority attributes identified for this basin are consistent with these recommendations.

Priority Ecological Systems

- Coastal western hemlock forest
- Depressional wetland shrublands
- Freshwater aquatic beds
- Freshwater emergent marsh
- Freshwater mudflats⁶
- Herbaceous balds and bluffs
- Intertidal freshwater wetlands
- Intertidal mudflat
- Lowland riparian woodland and shrubland

⁶ Freshwater and intertidal mudflats and tidal salt marsh in the lower Columbia Basin are for the most part already in public ownership as state-owned submerged and submersible lands. From an ecological standpoint, they are clearly a high priority – significantly reduced from historic levels and providing important fish and wildlife habitat. Proposals to acquire lands and restore them to these system types should be considered a high priority by OWEB in this basin.

Oak woodland⁷
Sitka spruce forest
Subalpine or montane wet meadow
Tidal salt marsh
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
Bog blueberry / slough sedge shrub swamp
Bog blueberry / sphagnum shrub swamp
Bog blueberry / tufted hairgrass - slough sedge shrub swamp
Brodiaea prairie
California oatgrass valley grassland
Columbia sedge marsh
Common downingia 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 - bog blueberry / slough sedge / sphagnum
Douglas spiraea / sphagnum fen
Fragrant popcorn-flower vernal pool
Geyer willow - Piper willow
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
Roemer fescue valley prairie
Sitka spruce / creek dogwood - Hooker willow tideland
Tufted hairgrass - California oatgrass valley prairie
Water purslane - waterpepper marsh
Western hemlock / western Labrador tea / slough sedge - skunk cabbage swamp
Western Labrador tea / darlingtonia / sphagnum bog
Western Labrador tea / slough sedge / sphagnum bog
White oak / Idaho fescue savanna
White oak / snowberry / sword fern

⁷ Prairie and oak systems are extremely rare in the Lower Columbia Basin; any occurrences would easily meet the criteria for high priority systems.

Lower Columbia Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Chinook Salmon (Fall Run)	Bald Eagle (nest sites only)	Columbian White-Tailed Deer	Cope's Giant Salamander	<i>Anodonta californiensis</i> (California Floater)	<i>Howellia aquatilis</i> (Howellia)
Chum salmon	Band-Tailed Pigeon	Townsend's Bib-Eared Bat	Red-legged Frog	<i>Deroceras hesperium</i> (Evening Fieldslug)	
Coastal Cutthroat Trout	Bullock's Oriole				
Coho Salmon	Dunlin				
Pacific Lamprey	Great-blue Heron (nest/roost sites only)				
Steelhead Trout	Olive-Sided Flycatcher				
	Pacific Slope Flycatcher				
	Peregrine Falcon (nest sites only)				
	Purple Finch				
	Sandhill Crane				
	Trumpeter Swan				
	Willow Flycatcher				

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

Willamette Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
<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>

Hood River Basin

Description

The Hood River Basin is one of the smallest drainages in Oregon, covering just 482 Square miles or 1% of the state's land area. Located in the transitional zone between the influence of the Pacific Ocean and the drier continental climate of Eastern Oregon, it is also one of the most ecologically diverse. Land use in the basin is divided roughly equally between agricultural and forest uses, with about 25% of the basin devoted to cropland. Forested, mountainous terrain and the Hood River Valley dominate the western side of the basin, while range and dryland farming dominate the east. Over 60% of the basin is in private ownership.

Hood River and Fifteenmile Creek drain directly from glaciers on Mt. Hood and are the primary Oregon waterways entering the Columbia River Gorge. Many streams in the western portion of the basin maintain good flows throughout the summer months, while on the east side flows tend to be more erratic, with streams running quite low by late summer. Anadromous fish species present in the basin include winter and summer steelhead, spring and fall chinook salmon, coho and a remnant run of sea-run cutthroat. Pacific lamprey are present in the lower river. Resident species include rainbow, cutthroat, bull and a small distribution of brook trout.

The Hood River Watershed Action Plan identifies as a top priority the prevention of damage or loss of stream habitat already in good condition, and supports incentive-based, voluntary actions to protect and restore wetlands, riparian areas and other important or unique habitats. The plan also notes that undeveloped valley bottom and lower elevation lands are limited. Other key conservation issues in the basin include fish passage, water quality, and flow restoration.

According to the draft Hood River Subbasin Planning Summary (2000) prepared for the Northwest Power Planning Council, little land is protected or managed specifically for wildlife in the basin. Half the remaining winter range for deer and elk is on private land, and development has displaced low-elevation conifer habitat for birds and small mammals. In many areas, riparian vegetation is the last stronghold of native plant form and function.

Priority attributes for OWEB acquisition projects reflect the small size of the Hood Basin, the extent of development in the Hood River Valley, and the relative lack of occurrences of species of concern. Most of the priority ecological systems are wetland types. Remaining distribution of most types is fragmented in the basin, so project viability will be an important consideration.

Priority Ecological Systems

Big sagebrush steppe
Deciduous swamp

Foothill and lower montane riparian woodland
Freshwater emergent marsh
Hardpan vernal pool
Inland dune
Lowland riparian woodland and shrubland
Montane riparian forest and shrubland
Oak woodland
Palouse prairie grassland
Ponderosa pine woodland
Semi-desert shrub steppe

Rare or At-Risk Plant Communities

Annual hairgrass - branched popcorn flower vernal pool
Bitterbrush / Idaho fescue - (bluebunch wheatgrass)
Bitterbrush / needle-and-thread
Black cottonwood / black hawthorn
Black cottonwood / pacific willow riparian
Black hawthorn - woods rose
Bluebunch wheatgrass - Sandberg bluegrass Palouse
Chokecherry
Coyote willow - Pacific willow
Idaho fescue - (houndstongue hawkweed)
Inland shrub dunes
Mountain alder - western birch
Needle-leaf navarretia - Kellogg knotweed vernal pool
Ponderosa pine - Oregon white oak / arrowleaf balsamroot
Slender-branched popcorn-flower - purslane speedwell vernal pool
White oak / blue wildrye
White oak / bluebunch wheatgrass
White oak / poison oak / blue wildrye

Hood Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Bull Trout Chinook Salmon (Summer & Fall Runs) Coastal Cutthroat Trout Coho Salmon Pacific Lamprey Steelhead – (Lower Columbia Winter & Summer Run) Steelhead (Middle Columbia Winter Run)	Ash-Throated Flycatcher Lewis’ Woodpecker Nashville Warbler Peregrine Falcon	Pallid Bat Townsend’s Big-Eared Bat Western Gray Squirrel	Red-Legged Frog Western Toad	<i>Monadenia fidelis minor</i> (Dalles Sideband) <i>Oreohelix variabilis variabilis</i> (Dalles Mountainsnail) <i>Vespericola columbianus</i> <i>depressa</i> (Columbia Gorge Hesperian)	<i>Artemisia campestris</i> var. <i>wormsioldii</i> (Northern Wormwood) <i>Meconella oregana</i> (White Meconella) <i>Ranunculus reconditus</i> (Dalles Mt. Buttercup)

Deschutes Basin

Description

The Deschutes River drains over 10,000 square miles, making its basin one of the largest in Oregon. The terrain of the basin varies markedly, from the east slope of the Cascades and the western edge of the Ochoco Mountains to the Deschutes Valley and the high plateau between the Deschutes and John Day rivers. The climate of the basin is slightly influenced by the Pacific Ocean, making it a little warmer, and a little moister, than most other east side drainages.

The Deschutes Basin straddles parts of three different ecoregions – the Columbia Basin, East Cascades and the Blue Mountains. Its vegetation is as varied as its climate and elevation, and many ecological systems are represented here. On the west side of the basin, coming down from the crest of the Cascades, the slopes are covered by conifer forests. To the east, in the Blue Mountains ecoregion, Western juniper is dominant. Prior to European settlement, basin big sagebrush, native grasslands and riparian woodlands were also widespread in this area. Today, irrigated agriculture occupies most of the valley bottoms and plains, while juniper has spread into many former shrub-steppe vegetation types. About half the basin is in public ownership.

The Deschutes River itself, fed by snowfields in the Cascades, flows through high-elevation wet meadows and lava plains before dropping through scenic canyons and shrub steppe to join the Columbia. The Deschutes supports one of the few remaining wild spring chinook populations in the Columbia Basin, as well as fall chinook and summer steelhead. Bull trout and steelhead are listed under the federal Endangered Species Act.

Conservation issues in the Deschutes Basin include habitat loss and fragmentation due to rapid population growth and urban development around Bend, Redmond and Madras, and to recreational development in both these and outlying areas. In the eastern part of the basin, concerns include loss of grasslands and shrub steppe due to juniper invasion, agricultural development, the spread of exotic plant species, historic livestock management practices, and reduced fire frequency. Loss and degradation of wetland and riparian habitats is a concern throughout the basin.

Acquisition priorities in the Deschutes reflect these issues and the current pattern of land ownership in the basin. Included are relatively rare and/or degraded ecological system types adversely affected by development pressures and not well-represented on public lands, such as oak woodlands. Also included are many riparian and wetland habitats.

Of note is the inclusion of old growth western juniper as a priority. In general, western juniper has become a problem species in the basin, but the scattered remnants of healthy old growth juniper woodlands are important for a number of wildlife species, and little of this particular type of juniper habitat is currently protected on public lands.

Also of note is the exclusion of Ponderosa pine systems as an acquisition priority in this basin. While Ponderosa pine woodlands have declined significantly from historic levels in the Deschutes, most remaining stands are found on public lands.

Projects that address important systems and species and also provide for flow improvements in the Upper Deschutes and Crooked River systems would have particularly high ecological benefit in this basin. Similar to other east side basins, peak flows in the Deschutes occur in the spring and lowest flows (and highest demand) in late summer. The upper Deschutes has been fully appropriated since 1913; a volume representing about one-third of the consumptive water rights issued in the basin is diverted from the Deschutes near Bend. The most even flows in the basin are found in the Metolius drainage, and the greatest variability is found in Crooked River flows (another third of the volume of consumptive water rights issued in the basin is diverted from the Crooked River). The lower Deschutes, fed by springs originating as snowmelt in the upper basin, is characterized by more uniform flows.

Priority Ecological Systems

- Alkaline wetlands
- Aspen forest and wetland
- Black greasewood
- Deciduous swamp
- Foothill and lower montane riparian woodland
- Freshwater emergent marsh
- Lowland riparian woodland and shrubland
- Montane riparian forest and shrubland
- Oak woodland
- Palouse prairie grassland
- Rigid sage, bluegrass and buckwheat scablands
- Subalpine or montane wet meadow
- Western juniper woodland (old growth only)
- Xeric mixed sagebrush shrubland

Rare or At-Risk Plant Communities

- Basin big sagebrush / basin wildrye
- Basin big sagebrush / Sandberg bluegrass - bluebunch wheatgrass Palouse
- Basin wildrye bottomlands
- Bitterbrush / Idaho fescue - (bluebunch wheatgrass)
- Bitterbrush / Sandberg bluegrass
- Black cottonwood - white alder
- Black cottonwood / black hawthorn
- Black cottonwood / coyote willow
- Black cottonwood / Pacific willow riparian
- Black hawthorn - Woods rose
- Bluebunch wheatgrass - Idaho fescue palouse

Bluebunch wheatgrass - Sandberg bluegrass Palouse
Chokecherry
Douglas-fir / common snowberry / Hawkweed
Douglas-fir / mountain mahogany
Douglas-fir / western fescue
Grand fir - western red cedar / vanillaleaf
Grand fir / golden chinquapin
Idaho fescue - (common snowberry)
Idaho fescue - (houndstongue hawkweed)
Mockorange
Mountain alder - western birch
Ponderosa pine - Oregon white oak / arrowleaf balsamroot
Ponderosa pine / blue wildrye
Ponderosa pine / low sagebrush
Ponderosa pine / woolly wyethia
Quaking aspen / aquatic sedge
Sand dropseed
Scouler willow riparian
Shrubby cinquefoil / tufted hairgrass meadow
Silver sagebrush / Nevada bluegrass
Western birch - mockorange
Western juniper / curlleaf mountain mahogany / elk sedge
White alder / chokecherry
White alder / hackberry
White alder / mockorange
White alder / serviceberry
White alder / water birch
White alder / woods rose
White oak / blue wildrye
White oak / bluebunch wheatgrass
White oak / poison oak / blue wildrye
Wyoming big sagebrush / needle-and-thread
White alder / hackberry
White alder / mockorange
White alder / serviceberry
White alder / water birch
White alder / woods rose
White oak / blue wildrye
White oak / bluebunch wheatgrass
White oak / poison oak / blue wildrye

Deschutes Basin - Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Inland Rainbow Trout Pacific Lamprey Steelhead (Middle Columbia Winter Run and Lower Columbia Winter and Summer Run) Chinook (Middle Columbia Fall and Spring Run) Sockeye Bull Trout	Ash-Throated Flycatcher Golden Eagle (nest sites only) Greater Sage Grouse Lewis's Woodpecker Loggerhead Shrike Long-Eared Owl (natural nest sites only) Pinyon Jay Townsend's Solitaire Yellow-Headed Blackbird	Pallid Bat Pygmy Rabbit Spotted Bat Townsend's Big-Eared Bat Western Gray Squirrel White-Tailed Jackrabbit	Columbia Spotted Frog Oregon Spotted Frog Striped Whipsnake Western Toad	<i>Anodonta californiensis</i> (California Floater) <i>Fisherola nuttalli</i> (Shortface Lanx) <i>Juga bulbosa</i> (Bulb Juga) <i>Juga hemphill Maupinensis</i> (Purple-Lipped (Deschutes) Juga) <i>Juga hemphill ssp. nov.</i> (Indian Ford Juga) <i>Juga sp. nov.</i> (Crooked River Juga) <i>Juga sp. nov.</i> (Purple Juga) <i>Monadenia fidelis ssp. nov.</i> (Deschutes Sideband Snail) <i>Monadensia fidelis minor</i> (Dalles Sideband Snail) <i>Orehelix variabilis ssp. nov.</i> (Deschutes Mountainsnail) <i>Oreohelix variabilis variabilis</i> (Dalles Mountainsnail) <i>Satyrium sylvinum</i> (Sylvan Hairstreak)	<i>Astragalus tygensis</i> (Tygh Valley Milkvetch) <i>Penstemon peckii</i> (Peck's Penstemon)

John Day Basin

Description

The John Day River drains 8100 square miles, making it the fourth-largest river basin in Oregon. The basin encompasses portions of two ecoregions - the Columbia Basin ecoregion to the north and west, and the Blue Mountains ecoregion in the south and east. The upper basin is characterized by coniferous forests and meadows at higher elevations, and by grasses, sagebrush and junipers at lower elevations. The level to rolling terrain of the lower basin is underlain by Columbia basalt and deeply dissected by the John Day and its tributaries. Nearly 40 percent of the basin is public land.

Ponderosa pine forests in the Ochoco and Blue mountains dominate the John Day River headwaters. The north and middle forks of the John Day meander through open meadows and prairie ranchland. Historic overgrazing and wildfire suppression have led to a decrease in native grasses such as wheatgrass, bunchgrass and bluegrass and fescues, while exotics have increased. As in other eastern Oregon basins, juniper has become a significant problem in the John Day.

The John Day is the longest free-flowing river supporting wild anadromous salmon and steelhead in the Columbia Basin. It is also relatively free of hatchery influences. The John Day basin's populations of spring chinook and summer steelhead are two of the last remaining intact wild populations of anadromous fish in the Columbia Basin. The South Fork of the John Day River includes eight aquatic diversity areas identified by the American Fisheries Society for their high ecological function and value to anadromous fish. The Middle and North Forks also support relatively healthy salmon runs.

For these reasons, the John Day system is widely regarded as a bright spot in Columbia Basin anadromous fish recovery efforts. At the same time, both the spring chinook and summer steelhead populations are depressed relative to historic levels. Summer steelhead and bull trout in the basin are listed under the federal Endangered Species Act.

Low streamflows are also a concern in the John Day. Total basin discharge is adequate to satisfy all water rights on an average annual basis, but there is insufficient flow on many streams in late summer to satisfy all water rights holders and meet instream needs.

Conservation priorities in the John Day reflect its importance to anadromous fish in the region. Over the past 15 years there has been a tremendous increase in stream restoration work involving multiple agencies and numerous private landowners, and there are indications that these efforts have led to improved habitat quality in some areas.

Acquisition priorities identified for this project include systems contributing to improved hydrologic function (wetlands and riparian areas) and prairie grasslands, which have declined significantly from historic levels and are underrepresented on public lands.

Ponderosa pine woodlands and big sagebrush steppe also have been included on the list even though their distribution has not decreased as much as that of other types and they are relatively well-represented on public lands. The John Day basin is a good area in which to address the statewide decline in these types because of the nature of their current distribution and opportunities to expand or connect existing conservation areas to greater effect.

Priority Ecological Systems

- Alkaline wetlands
- Badlands
- Big sagebrush steppe
- Black greasewood
- Foothill and lower montane riparian woodland
- Freshwater emergent marsh
- Lowland riparian forest and shrubland
- Montane riparian forest and shrubland
- Montane wet meadow
- North Pacific hardpan vernal pool
- Palouse prairie grassland
- Ponderosa pine woodland
- Semi-desert shrub steppe
- Subalpine or montane wet meadow

Rare or At-Risk Plant Communities

- Annual hairgrass – branched popcorn flower vernal pool
- Basin big sagebrush/ basin wildrye
- Basin big sagebrush/ needle-and-thread
- Basin big sagebrush/ Sandberg bluegrass – bluebunch wheatgrass Palouse
- Basin wildrye bottomlands
- Bitterbrush/ Idaho fescue (bluebunch wheatgrass)
- Bitterbrush / needle-and-thread
- Bitterbrush / Sandberg bluegrass
- Black cottonwood - white alder
- Black cottonwood / black hawthorn
- Black cottonwood / coyote willow
- Black cottonwood / Pacific willow riparian
- Black hawthorn - common snowberry
- Black hawthorn - common snowberry / Idaho fescue
- Black hawthorn - woods rose
- Bluebunch wheatgrass - Idaho fescue Palouse
- Bluebunch wheatgrass - needle-and-thread grass
- Bluebunch wheatgrass - Sandberg bluegrass Palouse
- Chokecherry

Coyote willow - Pacific willow
Mountain alder - western birch
Ponderosa pine / black hawthorn
Sand dropseed
Slender-branched popcorn-flower - purslane speedwell vernal pool
Western birch - black hawthorn
Western birch - creek dogwood
Western birch - mockorange
White alder / chokecherry
White alder / hackberry
White alder / mockorange
White alder / serviceberry
White alder / water birch
White alder / woods rose
Wyoming big sagebrush / needle-and-thread

John Day Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Bull Trout Chinook Salmon Redband Trout Steelhead Pacific Lamprey Westslope Cutthroat Trout	Burrowing Owl (burrow nest sites only) Grasshopper Sparrow Greater Sage Grouse Lewis Woodpecker Loggerhead Shrike Long-Billed Curlew Mountain Quail Swainson’s Hawk (nest sites only) Willow Flycatcher	California Bighorn Sheep Pygmy Rabbit Townsend’s Big- Eared Bat Washington Ground Squirrel White-Tailed Jackrabbit	Columbian Spotted Frog	<i>Gomphus lymnae</i> (Lynn’s Clubtail) <i>Monadenia fidelis</i> <i>minor</i> (Dalles Sideband)	<i>Astragalus diaphanus</i> var. <i>diurnus</i> (South John Day Milk-Vetch) <i>Thelypodium eucosmum</i> (Arrowleaf Thelypody)

Umatilla Basin

Description

The Umatilla Basin is comprised of two distinct ecoregions – the Columbia Basin, a broad upland plain formed by basalt lava flows, and the Blue Mountain ecoregion, composed of rugged terrain created by the folding and faulting of volcanic, sedimentary and metamorphic rock.

This basin includes the drainages of Willow Creek and the Umatilla and Walla Walla rivers. The headwaters of the Umatilla and Walla Walla spring from the forested hillsides of the Blue Mountains, areas that support remarkably high numbers and diversity of native fish species. In addition to the Umatilla and its tributaries, the basin includes a number of smaller streams directly tributary to the Columbia.

The Umatilla Basin once supported runs of fall and spring chinook, coho salmon and steelhead. Natural conditions and extensive irrigation withdrawals create extremely low streamflows during the summer months. Other limiting factors for fish production include dewatered stretches of river, high water temperatures and major diversion dams.

The Umatilla tribe began producing and re-introducing chinook salmon to the basin in the mid-1980's with a goal of restoring a naturally-spawning population.

The Umatilla is one of the most developed of the major drainages in eastern Oregon. About 13% of the land in the basin is forested, with around 3% in urban uses. The rest – roughly 84% - is fairly evenly divided between agriculture and range/range-forestland. Just over half the basin's land is in private ownership.

Priority ecological systems in the Umatilla are focused primarily on grassland, wetland and riparian types. One exception is black greasewood. Although black greasewood has substantial distribution on public lands in the basin, it has declined significantly enough from historic distribution levels, and is important enough from a habitat perspective, to warrant additional conservation efforts.

Priority Ecological Systems

- Aspen forest and woodland
- Big sagebrush steppe
- Black greasewood
- Canyon and foothill deciduous shrubland
- Foothill and canyon dry grassland
- Foothill and lower montane riparian woodland
- Freshwater emergent marsh
- Lowland riparian shrublands and woodlands
- North Pacific hardpan vernal pool
- Palouse prairie grassland
- Subalpine or montane wet meadow
- Western juniper woodland (Columbia Basin)

Rare or At-Risk Plant Communities

Annual hairgrass - branched popcorn flower vernal pool
Basin big sagebrush / basin wildrye
Basin big sagebrush / needle-and-thread
Basin big sagebrush / Sandberg bluegrass - bluebunch wheatgrass Palouse
Basin wildrye bottomlands
Bitterbrush / needle-and-thread
Bitterbrush / Sandberg bluegrass
Black cottonwood - white alder
Black cottonwood / black hawthorn
Black cottonwood / coyote willow
Black hawthorn - woods rose
Bluebunch wheatgrass - Idaho fescue Palouse
Bluebunch wheatgrass - needle-and-thread grass
Bluebunch wheatgrass - Sandberg bluegrass Palouse
Chokecherry
Coyote willow - pacific willow
Downy wheatgrass - needle-and-thread
Idaho fescue - (common snowberry)
Inland shrub dunes
Needle-and-thread grass - Sandberg bluegrass
Slender-branched popcorn-flower - purslane speedwell vernal pool
White alder / chokecherry
White alder / hackberry
White alder / mockorange
White alder / serviceberry
White alder / water birch
White alder / woods rose
Wyoming big sagebrush / needle-and-thread

Umatilla Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Bull Trout Redband Trout Steelhead Pacific Lamprey	Burrowing Owl (burrow nests only) Ferruginous Hawk (nest sites only) Grasshopper Sparrow Loggerhead Shrike Long-billed Curlew Swainson’s Hawk (nest sites only) White-Headed Woodpecker Willow Flycatcher	Townsend’s Big-Eared Bat Washington Ground Squirrel Western Small-Footed Bat	Columbia Spotted Frog Northern Leopard Frog	<i>Satyrium sylvinum</i> (Sylvan Hairstreak)	<i>Astragalus collinus</i> var. <i>laurentii</i> (Laurence’s Milk-vetch) <i>Myosurus sessilis</i> (Sessile Mousetail)

Grande Ronde Basin

Description

The Grande Ronde basin, part of the Blue Mountains ecoregion, occupies the far northeastern corner of Oregon, encompassing nearly all of Wallowa County, a large portion of Union County and parts of Baker and Umatilla counties. The rugged Blue and Wallowa mountain ranges, high elevation plateaus and the Grande Ronde and Wallowa river valleys, and the spectacular river canyons including Hells Canyon characterize the topography of the basin. Elevation differences are extreme – ranging from 2500 feet in the valleys to over 10,000 feet in the Wallowas – and contribute to the great variety of natural diversity found in this basin. Roughly 60% of the basin is in public ownership.

Major streams in the basin include the Wallowa, Grande Ronde, and Imnaha rivers. The Grande Ronde originates in the Blue Mountains; flows are highest in spring and early summer and low the rest of the year. Fed by snowmelt from the higher elevation Wallowa Mountains, the Wallowa River sustains flows until late in the season. The Imnaha is directly tributary to the Snake River. Low flows occur throughout the basin from late summer through the fall, interfering with the movement, spawning and rearing of several sensitive fish stock.

Some of the highest concentrations of at-risk species in the Blue Mountain ecoregion are found in the Wallowa Mountains, in areas already within the existing conservation network. The Oregon Biodiversity Project identified the Joseph-Imnaha plateau, which includes the Zumwalt Prairie, as a conservation opportunity area based on its native grasslands, high raptor concentration and aquatic diversity.

Bull trout, spring chinook salmon, and summer steelhead are listed as threatened under the federal Endangered Species Act. In addition, the Joseph-Imnaha plateau area provides habitat for other at-risk species such as wolverine, lynx, Columbia sharp-tailed grouse and ten at-risk plant species.

Lower elevation riparian forest and shrubland ecological systems are of high importance in the Grande Ronde basin, as are several wetland and grassland types.

Priority Ecological Systems

- Alkaline wetlands
- Black greasewood
- Columbia Basin grassland
- Foothill and canyon dry grassland
- Foothill and lower montane riparian woodland
- Freshwater emergent marsh
- Lowland riparian forest and shrubland
- Montane riparian forest and shrubland
- Montane riparian woodland and shrubland
- Semi-desert grassland

Subalpine or montane wet meadow

Rare or At-Risk Plant Communities

Basin big sagebrush / basin wildrye
Basin big sagebrush / needle-and-thread
Basin wildrye bottomlands
Black cottonwood - white alder
Black cottonwood / black hawthorn
Black cottonwood / coyote willow
Black cottonwood / pacific willow riparian
Black hawthorn - common snowberry
Black hawthorn - common snowberry / Idaho fescue
Black hawthorn - woods rose
California oatgrass - Idaho fescue
Coyote willow - pacific willow
Idaho fescue - (common snowberry)
Mockorange
Mountain alder - western birch
Needle-leaf navarretia - Kellogg knotweed vernal pool
Quaking aspen / mountain alder - birch - currant
Red alder / lady fern
Red alder / pacific ninebark
Scouler willow
Tufted hairgrass - Douglas' sedge alkaline prairie
Western birch - black hawthorn
Western birch - creek dogwood
Western birch - mockorange
White alder / chokecherry
White alder / hackberry
White alder / mockorange
White alder / water birch
White alder / woods rose

Grande Ronde – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Inland Redband Trout Steelhead Chinook Salmon Bull Trout	Bobolink Ferruginous Hawk (nest sites only) Lewis’s Woodpecker Long-Billed Curlew Sharp-tailed Grouse Willow Flycatcher Wilson’s Phalarope	Western Small- Footed Bat White-Tailed Jackrabbit	Columbia Spotted Frog	<i>Fisherola nuttalli</i> (Shortface Lanx)	<i>Pleuropogon oregonus</i> (Oregon Semaphore Grass) <i>Silene spaldingii</i> (Spalding’s Campion)

Powder River Basin

Description

The Powder River basin is located in northeastern Oregon and bordered by the Blue Mountains to the west, the Wallowa Mountains to the northeast, the Snake River canyon to the east, and the Malheur River basin to the south. Elevations in the basin vary from 2,000 feet at Brownlee Dam on the Snake River to 9,600 feet at the summit of Eagle Cap in the Wallowas. Land use is dominated by agriculture, range, and timber. Just over half the land in the basin is in public ownership.

The Powder and Burnt rivers flow south and east through the basin from the Blue Mountains to the Snake River. Streamflows in the Powder Basin are consistently low from July through February. Although present historically, anadromous fish have been absent from the basin since the 1970's. Bull trout, found in limited headwater areas in this basin, are listed as threatened under the federal Endangered Species Act.

The Oregon Biodiversity Project (OBP) identified Baker Valley as a conservation opportunity area based on the potential to restore key habitats such as riparian thickets and bottomland hardwood forests. Wetlands, black greasewood flats and alkaline grasslands are also present. According to the OBP, wetland and riparian restoration in this area "could improve water quality and late-season stream flows and boost habitat values for a broad range of species".

Black greasewood and valley bottom sagebrush vegetation priorities are worth additional comment. Within the big sagebrush steppe ecological system, three-tip sagebrush, basin big sagebrush and those occurrences along valley bottoms and riparian areas are most important, as well as areas known to provide habitat for sage grouse, which occurs here at the edge of its range. Greasewood is also important in valley bottoms.

Priority Ecological Systems

Subalpine or montane wet meadow
Foothill and lower montane riparian woodland
Black greasewood
Alkaline wetlands
Big sagebrush steppe
Semi-desert grassland
Montane riparian woodland and shrubland
Lowland riparian forest and shrubland
Freshwater emergent marsh

Rare or At-Risk Plant Communities

Basin wildrye bottomlands
Black cottonwood - white alder

Black cottonwood / black hawthorn
Black cottonwood / coyote willow
Black cottonwood / pacific willow riparian
Black hawthorn - woods rose
Coyote willow - Pacific willow
Mockorange
Mountain alder - western birch
Nevada bluegrass - lemmon alkaligrass
Ponderosa pine / black hawthorn
Scouler willow
Tufted hairgrass - Douglas' sedge alkaline prairie
Western birch - black hawthorn
Western birch - creek dogwood
Western birch - mockorange
White alder / chokecherry
White alder / hackberry
White alder / mockorange
White alder / serviceberry
White alder / water birch
White alder / woods rose
Wyoming big sagebrush - squawapple / idaho fescue

Powder Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Bull Trout	Bobolink Burrowing Owl (burrow nest sites only) Greater Sage Grouse Lewis’s Woodpecker Loggerhead Shrike Long-Billed Curlew Sharp-Tailed Grouse ¹ Willow Flycatcher Wilson’s Phalarope	Pallid Bat Preble’s Shrew Pygmy Rabbit Western Small-Footed Bat	Columbia Spotted Frog Northern Leopard Frog	<i>Clossiana selene atrocotalis</i> (Silver-Bordered Fritillary) <i>Satyrium sylvinum</i> (Sylvan Hairstreak)	<i>Pleuropogon oregonus</i> (Oregon Semaphore Grass) <i>Thelypodium howellii</i> ssp. <i>spectabilis</i> (Howell’s Spectacular Thelopody)

¹ This species was extirpated from the basin in 1950, but is a priority for restoration. It was recently restored in the Grande Ronde, and natural re-establishment is possible.

Owyhee-Malheur Basin

Description

The Owyhee and Malheur basins lie in the remote and sparsely populated southeastern corner of Oregon. Together, their land area comprises nearly 12% of the state's total area.

Most of the region is high desert, with elevations between 3,000 and 6,000 feet, but the middle Owyhee and upper Malheur drainages are rough and incised by deep canyons.

The dominant vegetation type is sagebrush steppe. Exposed volcanic ash in the Owyhee uplands ecoregion has yielded unique soils and related endemic plant species. Big sagebrush, riparian habitats (including riparian woodlands, riparian shrub-thickets, and native riparian meadows), wetlands, salt desert scrub, mountain mahogany and aspen woodlands all have been identified as important in the Owyhee-Malheur basin.

The Malheur River rises in the Strawberry Mountains (a southern spur of the Blues); the Owyhee rises in northern Nevada. Both are tributary to the Snake. There are no anadromous fish in these drainages. Bull trout, found in the Malheur drainage, are listed as threatened under the federal Endangered Species Act. Parts of the mainstem of the South Fork of the Owyhee, as well as parts of the mainstem Owyhee, are designated as state scenic waterways.

All priority ecological systems in the Owyhee-Malheur Basin are wetland or riparian systems. The relatively small number of systems and species identified as priorities reflects the large amount of publicly owned land in this basin.

Priority Ecological Systems

- Alkaline wetland
- Aquatic bed
- Foothill and lower montane riparian woodland
- Freshwater emergent marsh
- Lowland riparian forest and shrubland
- Subalpine or montane wet meadow

Rare or At-Risk Plant Communities

- Arroyo willow - creek dogwood
- Basin big sagebrush / basin wildrye
- Basin wildrye bottomlands
- Black cottonwood - white alder
- Black cottonwood / coyote willow
- Black cottonwood / Pacific willow riparian
- Black hawthorn - common snowberry
- California oatgrass - Idaho fescue

Chokecherry
Coyote willow - Pacific willow
Curlleaf mountain mahogany / mountain snowberry
Curlleaf mountain mahogany / pinegrass
Inland shrub dunes
Mockorange
Mountain alder - western birch
Sand dropseed
Western birch - mockorange
White alder / chokecherry
White alder / hackberry
White alder / mockorange
White alder / water birch
White alder / woods rose
Wyoming big sagebrush - squawapple / Idaho fescue
Wyoming big sagebrush / needle-and-thread

Owyhee-Malheur – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
No Priority Fish in this Basin	American Avocet Ferruginous Hawk (nest sites only) Grasshopper Sparrow Long-Billed Curlew Swainson’s Hawk (nest sites only) Wilson’s Phalarope Yellow-Breasted Chat	Pallid Bat Pygmy Rabbit Townsend’s Big-Eared Bat Western Small-Footed Bat	Columbia Spotted Frog Northern Leopard Frog Western Ground Snake Woodhouse's Toad	<i>Stygobromus hubbsi</i> (Malheur Cave Amphipod)	<i>Amsinckia carinata</i> (Malheur Valley Fiddleneck) <i>Astragalus mulfordiae</i> (Mulford's Milk-Vetch) <i>Collomia renacta</i> (Barren Valley Collomia) <i>Stanleya confertiflora</i> (Biennial Stanleya) <i>Thelypodium howellii</i> ssp. <i>spectabilis</i> (Howell's Spectacular Thelypody)

Closed Lakes Basin

Description

The Closed Lakes Basin includes two large sub-areas. To the east is a region characterized by large, relatively low-lying valleys framed by benches and mountains ranging from 8-10,000 feet in elevation. Here the major watercourses rise in the Steens, Strawberry and Ochoco mountains and flow into Harney Lake. To the west, in a region characterized by broad valleys broken by cinder cones and uplifted fault-block mountains, large numbers of small drainages feed into Goose Lake, the Warner lakes, Lake Abert, Summer Lake, Silver Lake and a number of playas. The topography and habitats are typical of the Northern Basin and Range ecoregion.

Although there are no anadromous fish in the Closed Lakes Basin, its streams and headwater lakes provide important habitat for redband and rainbow trout and a number of sensitive native non-game fish, including the Warner sucker and several species of tui chub. Stream species tend to reside in isolated reaches or pools.

Many of the lake and wetland systems in this region provide critical resting and wintering area for large populations of waterfowl migrating along the Pacific flyway. According to the *State of the Environment* report, Harney basin wetlands draw up to 2.5 million ducks, 100,000 snow geese and 16,000 lesser sandhill cranes during the spring migration. The region is also known for high numbers of endemic species.

Much of the biodiversity in this region is still intact, and many and diverse upland habitat types are found here. Of particular importance are wetland and riparian types.

Priority Ecological Systems

- Alkaline wetlands
- Aquatic bed
- Foothill and lower montane riparian woodland
- Freshwater emergent marsh
- Lowland riparian forest and shrubland
- Subalpine or montane wet meadow

Rare or At-Risk Plant Communities

- Arroyo willow - creek dogwood
- Basin big sagebrush / basin wildrye
- Basin big sagebrush / needle-and-thread
- Basin wildrye bottomlands
- Black cottonwood - white alder
- Black cottonwood / black hawthorn
- Black cottonwood / coyote willow
- Black cottonwood / pacific willow riparian
- Black hawthorn - woods rose

Chokecherry
Coyote willow - pacific willow
Drummond willow / Holm sedge
Mountain alder - western birch
Mountain big sagebrush / western needlegrass
Quaking aspen / aquatic sedge
Quaking aspen / mountain alder - birch - currant
Sandberg bluegrass - Lemmon alkaligrass
Scouler willow
Silver sagebrush / basin wildrye
Silver sagebrush / tufted hairgrass
Tufted hairgrass - Douglas' sedge alkaline prairie
Western birch - creek dogwood
Wyoming big sagebrush - squawapple / idaho fescue

Closed Lakes Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Catlow Tui chub Goose Lake Lamprey Goose Lake Sucker Goose Lake Tui Chub Hutton Spring Tui Chub Inland Redband Trout Oregon Lakes Tui Chub Sheldon Tui Chub Warner Sucker	American Bittern Bobolink Greater Sandhill Crane Long-Billed Curlew Long-Eared Owl (Nest Sites Only) Snowy Egret Snowy Plover Swainson’s Hawk (Nest Sites Only) Trumpeter Swan Upland Sandpiper Willow Flycatcher Wilson’s Phalarope Yellow-Headed Blackbird	Kit Fox Pallid Bat Pygmy Rabbit Spotted Bat Townsend’s Big-Eared Bat Western Small-Footed Bat White-Tailed Jack Rabbit	Columbia Spotted Frog Western Toad	<i>Ochlodes yuma</i> (Yuma Skipper) <i>Planorbella oregonensis</i> (Borax Lake Ramshorn Snail)	<i>Pleuropogon oregonus</i> (Oregon Semaphore Grass) <i>Stanleya confertiflora</i> (Biennial Stanleya) <i>Thelypodium howellii</i> Ssp. <i>howellii</i> (Howell's Thelypody)

Klamath Basin

Description

The Klamath Basin is a broad, relatively flat valley extending from the eastern foothills of the Cascade Range and Oregon's portion of the Northern Great Basin into the Modoc Plateau in California. The climate is characterized by hot, dry summers and wet, cold winters. About half the basin is publicly owned. The Oregon Forest Legacy Assessment showed this basin having one of the highest historical losses of forests in Oregon (second only to the Willamette), mostly declines in Ponderosa pine habitats.

Upper Klamath Lake, Oregon's largest lake, is one remnant of a vast expanse of lakes and marshes that once covered the basin. Although most of the basin's historic wetlands have been drained for use as agricultural land, many lakes and wetlands still dot the basin along the Klamath, Sycan, Sprague, Williamson, and Wood rivers. Anadromous fish are blocked from the Upper Klamath Basin by dams on the mainstem Klamath River. The basin contains a number of endemic fish species.

Some of Oregon's most important wildlife habitats are located in the Klamath basin. Situated at the convergence of the migratory routes of numerous bird species, the basin is a critical component of the Pacific Flyway and is recognized as supporting one of the largest concentrations of waterfowl, and the largest wintering population of bald eagles, in North America. Most of the at-risk species in the basin – both terrestrial and aquatic – are associated with wetland and riparian habitats. The extensive list of priority invertebrates reflects the large number of small, isolated springs containing numerous endemic species of snails.

In recent years a number of major wetland restoration projects have been initiated in the basin involving federal, state, non-profit and private partners.

Priority Ecological Systems

- Alkaline wetlands
- Aquatic bed
- Freshwater emergent marsh
- Klamath mixed oak-evergreen woodland
- Lowland riparian woodland and shrubland
- Oak woodland
- Ponderosa pine woodland
- Silver sagebrush steppe
- Subalpine or montane wet meadow
- Vernal pool

Rare or At-Risk Plant Communities

- Arroyo willow - creek dogwood
- Basin big sagebrush / basin wildrye

Basin wildrye bottomlands
Bitterbrush / Idaho fescue - (bluebunch wheatgrass)
Cascade downingia - least navarretia vernal pool
Chinquapin
Coyote willow - Pacific willow
Greenleaf manzanita - cherry - bitterbrush chaparral
Ponderosa pine - Oregon white oak / arrowleaf balsamroot
Sandberg bluegrass - Lemmon alkaligrass
Scouler willow
Tufted hairgrass - Douglas' sedge alkaline prairie
White oak / blue wildrye
White oak / bluebunch wheatgrass
Wyoming big sagebrush / needle-and-thread

Klamath Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Inland Redband Trout Bull Trout Lost River Sucker Shortnose Sucker	American Bittern Bald Eagle (nest and roost sites only) Greater Sandhill Crane Green Heron Lewis’s Woodpecker Loggerhead Shrike Swainson’s Hawk Tricolored Blackbird Trumpeter Swan Willet Yellow Rail Yellow Warbler	California Kangaroo Rat Pallid Bat Ringtail Townsend’s Big-Eared Bat White-Tailed Jackrabbit	Northwestern Pond Turtle Oregon Spotted Frog	See Separate Sheet	<i>Astragalus applegatei</i> (Applegate's Milk-Vetch) <i>Perideridia erythrorhiza</i> (Red-Root Yampah) <i>Thelypodium howellii</i> ssp. <i>howellii</i> (Howell's Thelypody)

Klamath Basin Priority Invertebrates

Amnicola sp. 5 (Klamath Dusksnail)
Amnicola sp. 7 (Mare's Egg Dusksnail)
Amnicola sp 8 (Nodose Dusksnail)
Fluminicola Sp 11 (Nerite Pebblesnail)
Fluminicola Sp 12 (Odessa Pebblesnail)
Fluminicola Sp 13 (Ouxy Spring Pebblesnail)
Fluminicola Sp 14 (Tall Pebblesnail)
Fluminicola Sp 15 (Tiger Lily Pebblesnail)
Fluminicola Sp 16 (Toothed Pebblesnail)
Fluminicola Sp 18 (Wood River Pebblesnail)
Fluminicola Sp 2 (Casebeer Pebblesnail)
Fluminicola Sp 20 (Crooked Creek Pebblesnail)
Fluminicola Sp 3 (Diminutive Pebblesnail)
Fluminicola Sp 4 (Fall Creek Pebblesnail)
Fluminicola Sp 5 (Klamath Pebblesnail)
Fluminicola Sp 6 (Klamath Rim Pebblesnail)
Fluminicola Sp 7 (Lake Of The Woods Pebblesnail)
Fluminicola Sp 8 (Lost River Pebblesnail)
Helisoma newberryi (Great Basin ramshorn)
Lanx klamathensis (Scale Lanx – Snail)
Pisidium ultrmontanum (Montane Peaclam)
Pyrgulopsis archimedis (Archimedes Springsnail)
Pyrgulopsis Sp 7 (Lost River Springsnail)
Pyrgulopsis Sp 9 (Klamath Lake Springsnail)
Vespericola sierranus (Siskiyou Hesperian (Snail))
Vorticifex klamathensis (Ramshorn (Snail))

Rogue Basin

Description

The Rogue River flows for 200 miles from its headwaters near Crater Lake to join the Pacific Ocean at Gold Beach. Its large drainage basin covers an area characterized by steep, forested, dissected mountains to gentle foothills and valley bottoms. Land use patterns in the basin range from the cities and towns of the Rogue Valley with their surrounding suburbs, orchards and farms, to commercial forestlands, to extensive public forest lands and wilderness areas.

The basin lies largely within the Klamath Mountains ecoregion, an area widely recognized for its complex geologic structure, vegetation patterns and overall biological diversity. Of note are the serpentine, limestone and granitic habitats, which are found only in this part of western Oregon and adjacent California. This unusual geology, and the fact that the mountains are the oldest in Oregon, have resulted in the evolution of many endemic plant species, a number of which are considered at-risk.

Major rivers include the Rogue, Applegate and Illinois. The lower 88 mile section of the Rogue is a state and federal wild and scenic river, and the lower 46 miles of the Illinois has been designated a state scenic waterway. While the basin's chinook salmon and steelhead fisheries are world-renowned, native stocks of almost all its anadromous fish are declining. Coho salmon are listed as threatened under the Endangered Species Act.

Douglas fir forests, oak woodlands and ponderosa pine woodlands once dominated most of the landscape in the Rogue Basin. All have declined significantly over the past 150 years due to fire suppression, rural residential development and timber harvesting. Important conservation issues in the basin include dealing with the long-term impacts of fire suppression, loss of wetlands, riparian habitat and floodplain connectivity along portions of the Rogue and its tributaries, restoration of coastal salmon populations, and conservation of at risk plant species, especially endemics, in developing areas.

Priority Ecological Systems

California – Southern Oregon coastal bluffs and headlands

Coastal sand dune

Deciduous swamp

Intertidal freshwater wetland

Intertidal mudflat

Lowland riparian woodland and shrubland

Montane riparian woodland and shrubland

Oak woodland

Ponderosa pine woodland

Serpentine barrens

Subalpine or Montane wet meadow

Tidal salt marsh

Western Oregon upland prairie and oak savanna
Western Oregon wet prairie

Rare or At-Risk Plant Communities

Annual hairgrass vernal pool
Bracted popcorn-flower - purslane speedwell vernal pool
Bractless hedge-hyssop - bracted popcorn flower vernal pool
Brodiaea prairie
Buckbrush / Lemmon needlegrass
California oatgrass - Roemer fescue
California oatgrass valley grassland
Cascade downingia - bracted popcorn flower vernal pool
Dense sedge - spreading rush marsh
Dwarf woolly-heads vernal pool
Greenleaf manzanita - cherry - bitterbrush chaparral
Hyacinth brodiaea - annual hairgrass vernal pool
Knobcone pine / hoary manzanita
Mousetail - bracted popcorn flower vernal pool
Navarretia - bracted popcorn flower vernal pool
Nuttall quillwort - bracted popcorn flower vernal pool
Ponderosa pine - white oak - black oak / woodland and savanna
Ponderosa pine - white oak / bunchgrass savanna
Rogue - Umpqua upland grassland
Tufted hairgrass - California oatgrass valley prairie
White oak - black oak / poison oak
White oak / buckbrush / Idaho fescue
White oak / Idaho fescue savanna

Rogue Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Coho Salmon Chinook Salmon (fall run)	Blue-Gray Gnatcatcher Bullock's Oriole Green Heron Lewis's Woodpecker Oak Titmouse Tricolored Blackbird White-Breasted Nuthatch	Fringed Bat Townsend's Big-Eared Bat	Cascade Frog Common Kingsnake Foothill Yellow-Legged Frog Red-Legged Frog Northwestern Pond Turtle Siskiyou Mountains Salamander	<i>Branchinecta lynchi</i> (Vernal Pool Fairy Shrimp) <i>Flumincola</i> sp 19 (Keene Creek Pebblesnail) <i>Helminthoglypta hertleini</i> (Oregon Shoulderband – Snail) <i>Monadenia fidelis celeuthia</i> (Traveling Sideband) <i>Polites mardon</i> (Mardon Skipper Butterfly) <i>Prophysaon</i> Sp 1 (Klamath Tail-Dropper) <i>Stygobromus oregonensis</i> (Oregon Cave Amphipod)	<i>Agrostis hendersonii</i> ¹ (Henderson's Bentgrass) <i>Calochortus persistens</i> (Siskiyou Mariposa Lily) <i>Cirsium ciliolatum</i> (Ashland Thistle) <i>Fritillaria gentneri</i> (Gentner's Fritillaria) <i>Limnanthes floccosa</i> Ssp. <i>grandiflora</i> (Big-Flowered Woolly Meadowfoam) <i>Limnanthes gracilis</i> var. <i>gracilis</i> (Slender Meadow-Foam) <i>Lomatium cookii</i> (Agate Desert Lomatium) <i>Meconella oregana</i> (White Meconella) <i>Plagiobothrys figuratus</i> ssp. <i>Corallicarpus</i> (Coral Seeded Allocarya)

¹This small vernal pool species is only known from the watershed, but has not been seen in over 40 years.

Umpqua Basin

Description

The Umpqua Basin includes the drainages of the South Umpqua, North Umpqua, mainstem Umpqua and the Smith River. The North Umpqua, with its steep gradient and incised channel, contrasts sharply with the shallow, slow-moving South Umpqua. The North Umpqua has been designated a state scenic waterway.

The basin lies primarily within three ecoregions (Coast Range, Cascades and Klamath Mountains) and contains a wide variety of vegetation, from Sitka spruce-dominated forests on the coast, to Oregon white oak and Pacific madrone woodlands in interior valleys, to Douglas fir and mixed conifer forests in the Cascades. Anadromous fish, including spring and fall chinook, chum salmon, summer and winter steelhead and sea-run cutthroat, are found in large and small stream systems throughout the Umpqua. Although a number of anadromous fish runs in the basin are in decline, spring chinook and summer steelhead runs in the North Umpqua are considered relatively healthy.

The South Umpqua boundaries of the Umpqua Basin are roughly coterminous with the boundaries of Douglas County. Roughly 55% of the basin is publicly owned.

Whitetail deer have recovered in this basin and have been de-listed from their status as threatened under the federal Endangered Species Act. However, oak woodlands and grassland habitats, which historically made up most of the valley bottom and margin habitats, have declined significantly, with fire suppression and invasive plants continuing to affect these resources.

Priority Ecological Systems

- Autumnal freshwater mudflats
- Chaparral
- Coniferous forested wetlands
- Depressional wetland broadleaf forests
- Depressional wetland shrublands
- Emergent marsh
- Freshwater aquatic beds
- Klamath ponderosa pine
- Lowland riparian woodland and shrubland
- Montane riparian forests and shrublands
- Oak woodland
- Sitka spruce forest
- Sphagnum bogs and fens
- Vernal pools
- Western Oregon upland prairie and oak savanna
- Western Oregon wet prairie

Rare or At-Risk Plant Communities

Annual hairgrass vernal pool
Buckbrush / Lemmon needlegrass
California oatgrass - Roemer fescue
California oatgrass valley grassland
Dense sedge - spreading rush marsh
Dense sedge - tufted hairgrass prairie
Hyacinth brodiaea prairie
Lobb buttercup aquatic bed
Oregon ash / spreading rush
Ponderosa pine - white oak / bunchgrass savanna
Tufted hairgrass - California oatgrass valley prairie
White oak - black oak / poison oak
White oak / buckbrush / Idaho fescue
White oak / Idaho fescue savanna
White oak / poison oak / blue wildrye

Umpqua Basin – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
Coho Salmon Chinook Salmon Spring run Umpqua Chub	Bullock’s Oriole California Towhee Lewis’s Woodpecker Oregon Vesper Sparrow White-Breasted Nuthatch	Fringed Bat Oregon Red Tree Vole Pallid Bat Townsend’s Big-Eared Bat	Common Kingsnake Foothill Yellow-Legged Frog Red-Legged Frog Northwestern Pond Turtle Southern Torrent Salamander	<i>Lanx subrotunda</i> (Rotund Lanx – Snail)	<i>Arabis koehleri</i> var. <i>koehleri</i> (Koehler’s Rockcress) <i>Perideridia erythrorhiza</i> (Red-root Yampah) <i>Plagiobothrys hirtus</i> (Rough Popcorn Flower)

South Coast Basin

Description

This basin is characterized by two types of drainages. To the north, the Coos and Coquille rivers flow from headwaters in the Coast Range across the Coos Bay dunes and marine terraces to the ocean. In the south, several smaller streams (the Floras and Hunters creeks, and Sixes, Elk, Winchuck, Chetco, and Pistol rivers) flow from the steeper headwaters in the Klamath Mountains.

Habitats in the South Coast Basin are particularly diverse. It includes grasslands and shrublands typical of the central and northern California coast, as well as habitats more similar to those in the Willamette and Umpqua Valleys. It includes Oregon's only Coast Redwood forests, and most of the world's habitat for Port Orford cedar, another giant conifer that was formerly widespread, but is declining due to an introduced root-rot. The terraces from Bandon south to Cape Blanco support unique shorepine forests, wetlands and cranberry bogs. Further south, the coastal headlands and off-shore rocks are among the most spectacular and pristine in Oregon.

This basin contains several areas identified as "core areas" for the recovery of coastal salmon and as important genetic refuges for aquatic species (American Fisheries Society). The Oregon Biodiversity Project identified native sand dune systems, estuaries and headlands and old-growth conifer forests as priority habitats in this basin, and identified the Cape Blanco area as a good place to address biodiversity conservation because of its at-risk species and unique coastal habitats. Coho salmon in this basin are listed as threatened under the Endangered Species Act.

The South Coast Watershed Council is one of the oldest in Oregon. It serves as the coordinating council and "umbrella" for a number of watershed councils operating in Curry County. These organizations and their partners have focused salmon recovery efforts on riparian restoration and management, improved estuarine and wetland productivity, increased stream complexity and overwintering habitat, removing barriers to passage, and improved range and forest health.

Priority Ecological Systems

- California-Southern Oregon coastal bluffs and headlands
- Deciduous swamp
- Freshwater emergent marsh
- Intertidal freshwater wetland
- Intertidal mudflat
- Klamath ponderosa pine
- Lowland riparian woodland and shrubland
- Lowland riparian woodland and shrubland
- Montane riparian woodland and shrubland
- Oak woodland

Sitka spruce forest
South coast grassland
Tidal salt marsh
Western Oregon upland prairie and oak savanna
Western Oregon wet prairie

Rare or At-Risk Plant Communities

Buckbrush / Lemmon needlegrass
Darlingtonia ultramafic fen
Grand fir - Douglas - fir / tanoak / sword fern
Port Orford cedar - Sitka spruce / evergreen huckleberry - western rhododendron
Red fescue - California oatgrass south coast headland or hillslope grassland
Sitka spruce - grand fir / salal / sword fern
South coast herb dunes
Western hemlock / western Labrador tea / slough sedge - skunk cabbage swamp
Western Labrador tea / burnet / sphagnum bog
Western Labrador tea / darlingtonia / sphagnum bog

South Coast – Priority Species

Fish	Birds	Mammals	Amphibians and Reptiles	Invertebrates	Plants
<p>Coho Salmon</p> <p>Chinook Salmon (fall run)</p>	<p>Band-Tailed Pigeon</p> <p>Black Oystercatcher</p> <p>Black-Throated Gray Warbler</p> <p>Brant</p> <p>Green Heron</p> <p>Marbled Murrelet</p> <p>Olive-Sided Flycatcher</p> <p>Peregrine Falcon (known and potential nest sites)</p> <p>Purple Finch</p> <p>Rufous Hummingbird (natural habitat only)</p> <p>Short-Billed Dowitcher</p> <p>Snowy Plover</p>	<p>Red Tree Vole</p>	<p>Del Norte Salamander</p> <p>Foothill Yellow-Legged Frog</p> <p>Northwestern Pond Turtle</p> <p>Red-Legged Frog</p>	<p><i>Algamorda Newcombiana subrotunda</i> (Newcomb’s Littorine Snail)</p> <p><i>Anodonta californiensis</i> (California Floater/Mussel)</p> <p><i>Callophrys johnsoni</i> (Johnson’s Mistletoe Hairstreak)</p> <p><i>Plebeius saepiolus</i> (All ssp In Area) (Greenish Blue Butterfly)</p> <p><i>Pomatiopsis binneyi</i> (Robust Walker)</p> <p><i>Saldula villosa</i> (Hairy Shore Bug)</p>	<p><i>Castilleja mendocinensis</i> (Mendocino Coast Indian Paintbrush)</p> <p><i>Lilium occidentale</i> (Western Lily)</p> <p><i>Sidalcea malviflora</i> ssp. <i>patula</i> (Coast Checker Bloom)</p>