Walla Walla Subbasin Management Plan

Introduction

The Walla Walla subbasin includes all or part of five counties spanning two states i.e., Walla Walla and Columbia Counties in Washington and Umatilla, Union, and Wallowa Counties in Oregon. The Subbasin comprises 22% of the Ecoregion and is the second largest subbasin encompassing an area of approximately 1,126,198 acres (1,760 mi^2).

The Blue Mountains dominate the eastern portion of the subbasin with an average elevation of 5,000 feet. The highest point is 6,000 feet at Table Mountain. Valley lowlands extend from the center of the basin north to the divide between the Touchet and Snake Rivers and south to the Horse Heaven Hills.

Land Ownership

Approximately 11% of the Walla Walla subbasin is in federal, state, tribal and local government ownership, while the remaining 89% is privately owned or owned by non-government organizations (NGOs). Privately held lands in the Walla Walla Subbasin comprise 21% of the entire Ecoregion (Table 1).

Table 1. Landownership in the Southeast Washington Subbasin Planning Ecoregion (includes portions of Northeast Oregon and western Idaho).

Land Ownership	Subbasin					
	Palouse	**Lower Snake**	**Tucannon**	**Asotin**	**Walla Walla (WA/OR)** [3]	**Total**
Federal Lands[1]	68,778	24,542	78,417	64,684	102,100 (73,293/28,807)	**338,521**
Native American Lands	0	0	0	0	8,500 (8,500/0)	**8,500**
State Lands[2]	79,890	35,432	19,111	16,742	16,634 (12,142/4,492)	**167,809**
Local Government Lands	0	139	0	31	595 (434/161)	**765**
NGO Lands	49	0	0	0	0	**49**
Private Lands	1,977,093	999,816	228,657	164,544	998,369 (736,130/262,239)	**4,368,479**
Water	31	6	0	0	0	**37**
Total	**2,125,841**	**1,059,935**	**326,185**	**246,001**	**1,126,198 (817,923/308,275)**	**4,884,160**

[1] Includes lands owned by the U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Reclamation, and the U.S. Army Corps of Engineers.

[2] Includes lands owned by WDFW, Oregon DSL, Washington State Parks, University, and the Washington Department of Natural Resources

[3] Relative distribution between Washington and Oregon calculated based upon 90% private ownership, 9% federal ownership, and 8500 acres Native American ownership in the Washington portion of the subbasin. State and local government lands were split on relative area proportion between Washington and Oregon.

The Walla Walla Subbasin has the most acres under public ownership in the Ecoregion, but the third highest relative percentage of land under public ownership. Only the Tucannon and Asotin Subbasins have more government ownership (33% and 30% of each subbasin's land area respectively).

Primary federal land management entities include the U. S. Forest Service (Umatilla National Forest) and the U. S. Bureau of Land Management. All lands managed by the Forest Service (USFS) and Bureau of Land Management (BLM) are located in the Blue Mountains. The Umatilla National Forest forms the eastern border of the subbasin and extends into both Washington and Oregon.

State management entities in the subbasin include the Washington Department of Fish and Wildlife (WDFW), Oregon Department of Fish and Wildlife (ODFW), Oregon Department of Forestry (ODF), Washington Department of Forestry (WDF), Washington Department of Natural Resources (WDNR), Oregon Department of Environmental Quality (ODEQ), Washington Department of Ecology (WDE), and the Oregon Water Resources Department (OWRD).

Land Use

Land uses in the Walla Walla subbasin include agriculture, timber production, livestock grazing, and urban development. The Walla Walla region is one of the most productive agricultural areas in the world. Wheat, barley, peas, and fruit are the principle crops grown in the subbasin.

Irrigated lands primarily occur in the narrow lowland portions of the subbasin, representing the largest use of surface and groundwater. Non-irrigated grain crops account for about half of the 133,000 acres of crops in the Oregon portion of the Walla Walla Subbasin. Nearly 719,877 acres are dedicated to agricultural in the subbasin.

The majority of timber harvest on federally managed lands occurs in the high-elevation portions of the subbasin, while privately owned timber is generally harvested on mid-elevation lands. Little livestock grazing occurs on federal lands in the North and South Fork Walla Walla watersheds because of steep slopes. Livestock grazing does occur, however, in the upper portions of the subbasin, while dairies are southwest of Walla Walla in the Umapine area.

Numerous towns are located within the Walla Walla subbasin including Walla Walla, Dayton, Waitsburg, and Milton-Freewater (OR). Urban development has resulted in a growing number of ranchettes, subdivisions, subdivided cropland, and floodplain encroachments.

Technical Overview

The process used to develop wildlife assessments and management plan objectives and strategies is based on the need for a landscape level holistic approach to protecting the full range of biological diversity at the Ecoregion scale with attention to size and condition of core areas (subbasin scale), physical connections between core areas, and buffer zones surrounding core areas to ameliorate impacts from incompatible land uses. As most wildlife populations extend beyond subbasin or other political boundaries, this “conservation network” must contain habitat of sufficient extent, quality, and connectivity to ensure long-term viability of obligate/focal wildlife species. Subbasin planners recognized the need for large-scale planning that would lead to effective and efficient conservation of wildlife resources.

In response to this need, Ecoregion planners approached subbasin planning at two scales. The landscape scale emphasizes focal habitats and associated species assemblages that are important to Ecoregion wildlife managers while specific focal habitat and/or species needs are identified at the subbasin level. To facilitate this strategy, Ecoregion planners organized two interactive wildlife planning teams consisting of Ecoregion level planners and subbasin level planners (Figure 1).

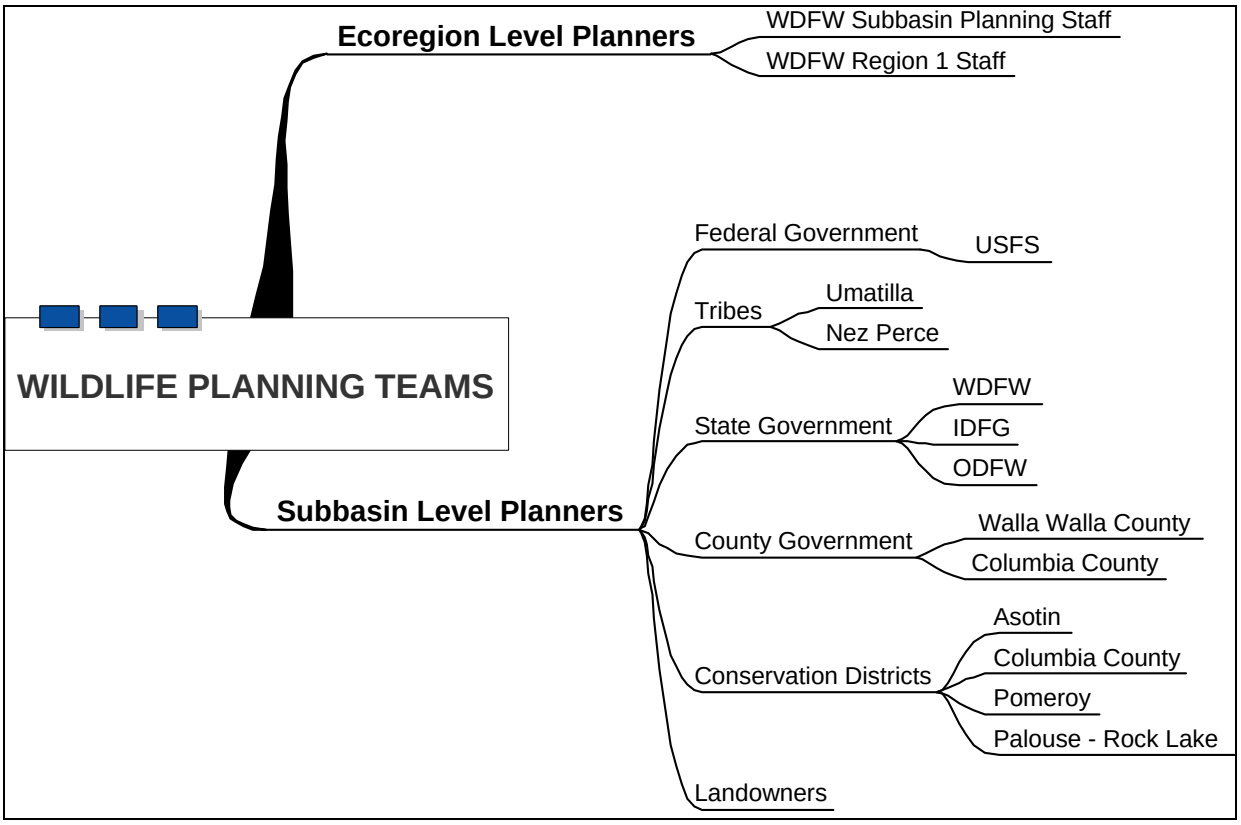

Figure 1. Southeast Washington Ecoregion wildlife planning teams.

Note-In addition to those entities listed in the figure above, the Walla Walla County Conservation District, Umatilla County, Umatilla County Soil and Water Conservation District, local cities, and the Walla Walla Basin Watershed Council participated at the Subbasin level.

Although all habitat types are important, Ecoregion planners focused on four specific habitat types including riparian/riverine wetlands, ponderosa pine, interior grasslands, and shrubsteppe due, in part, to limited planning resources and the documented change (loss) from historic (circa 1850) levels (Section 4.1.6, Ashley and Stovall 2004). In addition, a cover type of interest, agriculture, was also addressed at both the Ecoregion (Section 4.1.7.5, Ashley and Stovall 2004) and subbasin levels. To maintain consistency throughout the Ecoregion, the four primary focal habitats were addressed at the subbasin level wherever present.

All Ecoregion focal habitat types occur in the Walla Walla Subbasin including riparian/riverine wetlands, ponderosa pine, interior grasslands, and shrubsteppe (agriculture is a cover type of interest). Focal habitat types have changed significantly since pre-European settlement (Table 2). See Appendix A for focal habitat descriptions.

Table 2. Focal habitat acreage and percent change.

Status	FOCAL HABITAT TYPE/ACRES				Cover Type of Interest/Acres
	Shrubsteppe	Ponderosa Pine	Interior Grassland*	Riparian - Riverine	Agriculture
Historic	6,676	23,241	962,275	22,238	0
Existing	29,252	49,904	154,619	15,217	719,877
% Change	+381%	+115%	-84%	-32%	--------

* Canyon grasslands are contained within the interior grassland habitat type

In addition to addressing Ecoregion focal habitats, subbasin planners could have selected additional focal habitat types and species assemblages that were important at the subbasin level. Walla Walla Subbasin technical staff focused only on riparian/riverine wetlands, ponderosa pine, interior grasslands, and shrubsteppe habitats while recognizing that other habitat types, such as mixed conifer forest, are also important and should be included in future iterations of this plan. Canyon grassland habitat was added as a "habitat of interest" (canyon grassland is a subset of the interior grassland focal habitat type).

In addition to representing habitat conditions for shrubsteppe, mule deer were added to the grassland species assemblage, per subbasin level technical team discussions, to capture the importance of CRP grasslands. WDFW biologists report that mule deer populations in all Ecoregion subbasins have responded positively to the addition of CRP (P. Fowler, WDFW, pers comm. 2004). Similarly, ODFW and the Umatilla Tribe, per discussion at the subbasin technical team level, added bighorn sheep to represent canyon grassland habitat (Table 8). Bighorn sheep are culturally significant to the Umatilla Tribe and are an important managed species in Oregon.

Note that current, broad-scale habitat qualitative data is not available and is a significant data gap. For complete information on the focal habitat selection process see Section 4.1.3 (Ashley and Stovall 2004).

Assumptions

Ecoregion and subbasin planners agreed with Lambeck (1997) who proposed that species requirements (umbrella species concept) could be used to guide ecosystem management. The main premise is that the requirements of a demanding species assemblage encapsulate those of many co-occurring less demanding species. By directing management efforts toward the requirements of the most exigent species, the requirements of many cohabitants that use the same habitat type are met. Therefore, managing habitat conditions for a species assemblage should provide life requisite needs for most other focal habitat obligate species.

Ecoregion/subbasin planners also assumed that by focusing resources primarily on riparian/riverine wetland, ponderosa pine, interior grassland, and shrubsteppe habitats, the needs of most listed and managed terrestrial and aquatic species would be addressed during this planning period. Additional habitats and species assemblages will be addressed in future planning efforts.

Methods

Ecoprovince/subbasin planners identified a focal species assemblage (Table 3) for each focal habitat type and combined life requisite habitat attributes for each species assemblage to form a "recommended range of management conditions", that, when achieved, should result in functional habitats (Table 4). The rationale for using focal species assemblages is to draw immediate attention to habitat features and conditions most in need of conservation or most

important in a functioning ecosystem. The corollary is that factors that affect habitat quality and integrity within the Ecoregion and subbasins also impact wildlife species. As a result, identifying and addressing "factors that affect focal habitats" should support the needs of obligate wildlife populations as well. Planners recognize, however, that addressing factors that limit habitat does not necessarily address all anthropogenic induced limiting factors such as affects of human presence on wildlife species. Species of interest in the Subbasin include bighorn sheep, alkali bees, and the western painted turtle. Bighorn sheep are associated with canyon grassland habitats, alkali bees are a primary pollinator of alfalfa and other agricultural crops, and the western painted turtle is a species associated by stakeholders with riparian habitat quality the Walla Walla River distributary/spring branch system.

Table 3. Subbasin focal species assemblage.

Riparian/Riverine Wetlands	Ponderosa Pine	Interior Grasslands	Shrubsteppe
Yellow Warbler	Whiteheaded Woodpecker	Grasshopper Sparrow	Sage Sparrow
Great Blue Heron	Flammulated Owl	Mule Deer[1]	Brewer's Sparrow
Beaver	Elk	Bighorn Sheep[1,2]	Sage Thrasher
			Mule Deer

[1] Added to grassland habitat per discussion at the subbasin level.

[2] Bighorn sheep are found in the canyon grassland portions of the interior grassland habitat.

Table 4. Recommended range of management conditions for focal habitat types.

Focal Habitat Type	Recommended Range of Management Conditions
Riparian/Riverine Wetlands	The yellow warbler, beaver, and great blue heron represent wildlife species associated with riverine habitats. Ecoregion wildlife/habitat managers recommend the following ranges of conditions for the specific riparian/riverine habitat attributes described below: 1. Forty to 60 percent tree canopy closure (cottonwood and other hardwood species) 2. Multi-structure/age tree canopy (includes trees less than 6 inches in diameter and mature/decadent trees) 3. Woody vegetation within 328 feet of shoreline 4. Tree groves greater than 1 acre within 800 feet of water (where applicable) 5. Forty to 80 percent native shrub cover (greater than 50 percent comprised of hydrophytic shrubs) 6. Multi-structured shrub canopy greater than 3 feet in height See aquatic definition of "riparian function" for additional desired attributes.
Ponderosa Pine	**Mature ponderosa pine forest:** The white-headed woodpecker represents species that require/prefer large patches (greater than 350 acres) of open mature/old growth ponderosa pine stands with canopy closures between 10 - 50 percent and snags (a partially collapsed, dead tree) and stumps for nesting (nesting stumps and snags greater than 31 inches DBH).

Focal Habitat Type	Recommended Range of Management Conditions
	Multiple canopy ponderosa pine mosaic: Flammulated owls represent wildlife species that occupy ponderosa pine sites that are comprised of multiple canopy, mature ponderosa pine stands or mixed ponderosa pine/Douglas-fir forest interspersed with grassy openings and dense thickets. Flammulated owls nest in habitat types with low to intermediate canopy closure, two layered canopies, tree density of 508 trees/acre (9 foot spacing), basal area of 250 feet^2/acre, and snags greater than 20 inches DBH 3-39 feet tall. Food requirements are met by the presence of at least one snag greater than 12 inches DBH/10 acres and 8 trees/acre greater than 21 inches DBH. Private landowners recommend a 20-foot spacing to support timber production and enable use of fire for management of understory grasses. Recommended management conditions need to incorporate timber production needs and to consider habitat for multiple species.
	Dense canopy closure: Rocky Mountain Elk were selected to characterize ponderosa pine habitat that is greater than 70 percent canopy closure and 40 feet in height.
Interior Grassland	Grasshopper sparrow, bighorn sheep, and mule deer were selected to represent interior grassland wildlife species. The range of conditions recommended for interior grassland habitat includes: 1. Native bunchgrasses greater than 40 percent cover 2. Native forbs 10 to 30 percent cover 3. Herbaceous vegetation height greater than10 inches 4. Visual obstruction readings (VOR) at least 6 inches 5. Native non-deciduous shrubs less than 10 percent cover 6. Exotic vegetation/noxious weeds less than 10 percent cover Multi-structured fruit/bud/catkin producing deciduous trees and shrubs (macrophyllus draws and riparian sites) dispersed throughout the landscape.
Shrubsteppe	**Condition 1:** *Sagebrush dominated shrubsteppe:* The sage thrasher and sage sparrow were selected to represent shrubsteppe obligate wildlife species that require sagebrush dominated shrubsteppe habitats and that are dependent upon areas of tall sagebrush within large tracts of shrubsteppe habitat. Suitable habitat includes 5 to 20 percent sagebrush cover greater than 2.5 feet in height, 5 to 20 percent native herbaceous cover, and less than 10 percent non-native herbaceous cover. **Condition 1a:** Brewer's sparrow was selected to represent wildlife species that require sagebrush dominated sites, but prefer a patchy distribution of sagebrush clumps 10-30 percent cover, lower sagebrush height (between 20 and 28 inches), native grass cover 10 to 20 percent, non-native herbaceous cover less than 10 percent, and bare ground greater than 20 percent. **Condition 2:** *Diverse shrubsteppe:* Mule deer were selected to represent species that require/prefer diverse, dense (30 to 60 percent shrub cover less than 5 feet tall) shrubsteppe habitats comprised of bitterbrush, big sagebrush, rabbitbrush, and other shrub species with a palatable herbaceous understory exceeding 30 percent cover.

Source: WDFW Southeast Washington Ecoregion Assessment 2004, Section 6.

Relationships between focal habitats and focal species assemblages are summarized in Figure 2. Changes in the extent and quality of Ecoregion/subbasin focal habitat conditions were compared to establish the magnitude of change that occurred in focal habitats since European settlement (circa 1850). Ecoregion/subbasin planners documented current habitat conditions, where possible, and reviewed the habitat/life requisites for each wildlife species assemblage. Focal species' habitat needs defined the range of recommended future conditions for each focal habitat type. Current habitat conditions/attributes were compared to those defined by the species assemblages to initially identify "factors that limit focal habitats." Additional factors were obtained through literature and peer review (section 4.3, Ashley and Stovall 2004).

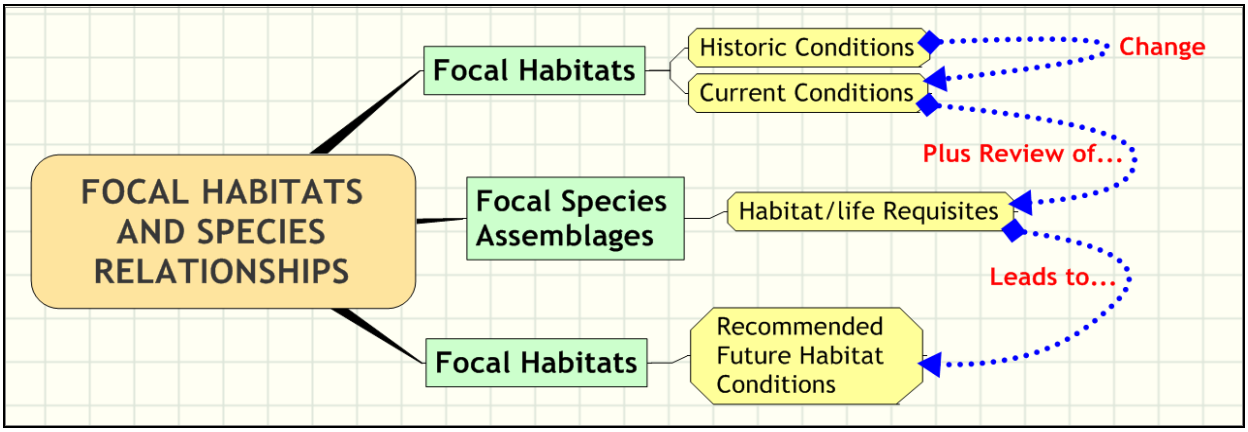

Figure 2. Focal habitats and species assemblage relationship.

Assumptions

Focal habitats are functional if a focal species assemblage's recommended management conditions are achieved. Planners also assume that the species assemblages adequately represent focal habitats. Both assumptions may be problematic based on an analysis of IBIS structural conditions for ponderosa pine and riparian/riverine habitat types as described in Sections 5.2.1.4 and 5.2.3.4 respectively (Ashley and Stovall 2004). Relatively few ponderosa pine structural conditions are closely associated with any of the focal species selected for that habitat type. Similarly, no riparian/riverine structural conditions are closely associated with the riparian/riverine species assemblage (the term "closely associated" means that the structural condition must be present in order for the species to survive). As a result, the recommended management conditions for ponderosa pine and riparian/riverine habitats, based on the selected species assemblages, may not adequately represent the needs of obligate wildlife species. Objective1 within each terrestrial habitat type includes a strategy that addresses this issue.

Future analyses and planning efforts will include additional structural conditions/focal species for riparian/riverine wetland habitats as well. Structural conditions are important to wildlife managers because most habitat management takes place at the "structural conditions" level.

Working Hypotheses

The working hypotheses for focal habitat types are based on factors that affect/limit focal habitats (the term, "factors that affect habitat" is synonymous with "limiting factors" for wildlife species). Ecoregion/subbasin level working hypotheses are statements that assist subbasin planners and their communities to clearly articulate a program aimed at addressing the most pressing needs in a given area. The basis for the hypothesis is the proximate or major factors affecting focal habitats as described within individual subbasin assessments and summarized in Section 4.3 (Ashley and Stovall 2004). The relationship subbasin planners are attempting to address is that between management objectives, strategies or actions, and recommended (desired future) focal habitat conditions necessary to meet habitat and/or wildlife objectives and goals. These relationships are tested through implementation, followed by monitoring and evaluation. Ultimately, adaptive management is used to respond to the outcomes of these "tests" of "working hypotheses." Hypotheses for subbasin focal habitat types are summarized below.

Riparian/Riverine Wetlands Working Hypothesis: The near term or major factors affecting this focal habitat type are direct loss of habitat due primarily to urban/agricultural development, reduction of habitat diversity and function resulting from exotic vegetation, livestock overgrazing, fragmentation and recreational activities. The principal habitat diversity stressor is the spread and proliferation of invasive exotic vegetation. This coupled with poor habitat quality of existing vegetation have resulted in extirpation and or significant reductions in riparian habitat obligate wildlife species.

FACTORS AFFECTING THE HABITAT:

- Loss of habitat due to numerous factors including riverine recreational developments, inundation from impoundments, cutting and spraying of riparian vegetation, etc.
- Alteration of natural hydrology due to diking, channelization, etc. resulting in reduced stream flows, reduction of overall area and extent of riparian habitat, streambank stabilization, and loss of vegetative structure, narrowed stream channels.
- Habitat alteration from 1) hydrological diversions, dams, and control of natural flooding regimes resulting in reduced stream flows and reduction of overall area of riparian habitat, loss of riparian vegetative structure, and lack of recruitment of young cottonwoods, ash, willows, etc., and 2) stream bank stabilization which narrows stream channel, reduces the flood zone, and reduces extent of riparian vegetation.
- Habitat degradation from livestock overgrazing which can widen channels, raise water temperatures, reduce understory cover, etc.
- Habitat degradation from conversion of native riparian shrub and herbaceous vegetation to invasive exotics.
- Fragmentation and loss of large tracts necessary for area-sensitive species.
- Landscapes in proximity to agricultural, residential, and recreational development may be subject to high levels of human disturbance and disproportionately support non-native species that displace and/or impact native species productivity, e.g. nest competitors (European starlings and house sparrows), nest parasites (brown headed cowbird), and domestic predators (cats and dogs).
- Recreational disturbances (e.g., ORVs), particularly during nesting season, and particularly in high-use recreation areas.

Ponderosa Pine Working Hypothesis: Although ponderosa pine has more than doubled in extent since circa 1850 (from 23,241 acres to 49,904 acres), anecdotal evidence (professional judgment) suggests that the majority of this habitat type is not functional within the Walla Walla Subbasin. Major factors affecting this focal habitat type stem from changes in climax forest structure and floristic conditions due primarily to timber harvesting, fire reduction/wildfires, mixed forest encroachment, development, recreational activities, reduction of habitat diversity and function resulting from invasion by exotic species and vegetation and overgrazing. The principal habitat diversity stressor is the spread and proliferation of mixed forest conifer species within ponderosa pine communities due primarily to fire reduction and intense wildfires. Habitat loss and fragmentation (including fragmentation resulting from extensive areas of undesirable vegetation) coupled with poor habitat quality of existing vegetation have resulted in extirpation and or significant reductions in ponderosa pine habitat obligate wildlife species.

FACTORS AFFECTING THE HABITAT:

- Timber harvesting has reduced the amount of old growth forest and associated large diameter trees and snags.
- Changes in land use for urban, residential, and agricultural purposes have contributed to loss and degradation of properly functioning ecosystems.

- Fire suppression/exclusion has contributed towards habitat degradation, particularly declines in characteristic herbaceous and shrub understory from increased density of small shade-tolerant trees. High risk of loss of remaining ponderosa pine overstories from stand-replacing fires due to high fuel loads in densely stocked understories.
- Overgrazing has resulted in loss of properly functioning conditions, including recruitment of sapling trees and modification of understory vegetation.
- Invasion of exotic plants has altered understory conditions and increased fuel loads.
- Fragmentation of remaining tracts has negatively impacted species with large area requirements.
- Landscapes in proximity to agricultural, residential, and recreational areas may be subject to high levels of human disturbance and disproportionately support non-native species that displace and/or impact native species productivity, e.g. nest competitors (European starlings and house sparrows), nest parasites (brown headed cowbird), and domestic predators (cats and dogs).
- Spraying insects that are detrimental to forest health may have negative ramifications on beneficial moths, butterflies, and non-focal bird species.

Interior Grassland Working Hypothesis: Major factors affecting this focal habitat type are direct loss of habitat due primarily to conversion to agriculture and urban development, reduction of habitat diversity and function resulting from invasion of exotic vegetation and wildfires, and overgrazing. The principal habitat diversity stressor is the spread and proliferation of annual grasses and noxious weeds such as cheatgrass and yellow-star thistle that either supplant and/or radically alter entire native bunchgrass communities significantly reducing wildlife habitat quality. Habitat loss and fragmentation (including fragmentation resulting from extensive areas of undesirable vegetation) coupled with poor habitat quality of existing vegetation have resulted in extirpation and or significant reductions in grassland obligate wildlife species.

FACTORS AFFECTING THE HABITAT

- Extensive permanent habitat conversions of grassland habitats resulting in fragmentation of remaining tracts.
- Changes in land use for urban, residential, and agricultural purposes have contributed to loss and degradation of properly functioning ecosystems.
- Degradation of habitat from overgrazing and invasion of exotic plant species.
- Fire management, either suppression or over-use, and wildfires.
- Invasion and seeding of crested wheatgrass and other introduced plant species which reduces wildlife habitat quality and/or availability.
- Loss and reduction of cryptogamic crusts, which help maintain the ecological integrity of grassland communities.
- Conversion of CRP lands back to cropland.
- Landscapes in proximity to agricultural, residential, and recreational areas may be subject to high levels of human disturbance and disproportionately support non-native species that displace and/or impact native species productivity, e.g. nest competitors

(European starlings and house sparrows), nest parasites (brown headed cowbird), and domestic predators (cats and dogs).

Shrubsteppe Working Hypothesis: Shrubsteppe habitat has nearly quadrupled in extent from circa 1850. Fire suppression, overgrazing, and drought have favored a shift in succession of grassland habitats to woody shrub lands. Near term or major factors affecting this focal habitat type are reduction of habitat diversity and function resulting from invasion of exotic vegetation, wildfires, and overgrazing. The principal habitat diversity stressor is the spread and proliferation of annual grasses and noxious weeds such as cheatgrass and yellow-star thistle that either supplant and/or radically alter entire shrubsteppe communities significantly reducing wildlife habitat quality. Although the extent of shrubsteppe habitat has increased significantly, conversion of shrubsteppe habitat to other land uses has resulted in direct loss and fragmentation (including fragmentation resulting from extensive areas of undesirable vegetation) of shrubsteppe habitat within its historic range.

FACTORS AFFECTING THE HABITAT

- Extensive permanent habitat conversions of shrubsteppe habitats resulting in fragmentation of remaining tracts.
- Changes in land use for urban, residential, and agricultural purposes have contributed to loss and degradation of properly functioning ecosystems.
- Degradation of habitat from overgrazing and invasion of exotic plant species.
- Fire management, either suppression or over-use, and wildfires.
- Invasion and seeding of crested wheatgrass and other introduced plant species which reduces wildlife habitat quality and/or availability.
- Loss and reduction of cryptogamic crusts, which help maintain the ecological integrity of grassland communities.
- Conversion of CRP lands back to cropland.
- Landscapes in proximity to agricultural, residential, and recreational areas may be subject to high levels of human disturbance and disproportionately support non-native species that displace and/or impact native species productivity, e.g. nest competitors (European starlings and house sparrows), nest parasites (brown headed cowbird), and domestic predators (cats and dogs).

Objectives

Biological objectives describe physical and biological changes within the subbasin needed to achieve the vision and address factors affecting focal habitats. Biological objectives for all Ecoregion subbasins are habitat based and describe priority areas and environmental conditions needed to achieve functional focal habitat types. Where possible, biological objectives are empirically measurable and based on an explicit scientific rationale (the working hypothesis).

Biological objectives are based upon the following, in no specific order:

- Consistent with subbasin-level visions and strategies
- Developed from a group of potential objectives based on the subbasin assessment and resulting working hypotheses
- Realistic and attainable within the subbasin
- Respectful of and consistent with private property rights (also add to Tucannon)
- Consistent with legal rights and obligations of fish and wildlife agencies and tribes with jurisdiction over fish and wildlife in the subbasin, and agreed upon by co-managers in the subbasin

- Complementary to programs of tribal, state and federal land or water quality management agencies in the subbasin
- Quantitative and have measurable outcomes where practical.

Biological objectives are organized into two categories: 1) protection of habitats and 2) habitat function (enhancement and maintenance). Protection objectives focus primarily on identification and protection of focal habitats through education and outreach, leases, easements, and acquisitions and upholding existing land use and environmental protection regulations. Habitat enhancement objectives focus on improving habitat function based on recommended habitat management conditions (Table 4). Subbasin planners also took into account three broad land categories when developing objectives. These include:

1. Ecoregion Assessment and Conservation identified lands
2. Lands currently assigned GAP protection status
3. Other lands of ecological importance

In general, several assessment "tools", including Ecoregion Assessment and Conservation (ECA) data and Washington GAP protection information, were used to develop terrestrial habitat objectives. Riparian habitats are unique. Subbasin planning technical staff used best professional judgment to determine that riparian/riverine habitat should be protected/restored to historic levels in order to provide maximum benefits to both terrestrial wildlife and aquatic species.

In depth ECA information is located in Section 3.4 and Appendix A in Ashley and Stovall (2004). ECA concepts are described below.

> Ecoregion Conservation Assessments are conducted at the ecoregional scale and provide information for decisions and activities that:
> 1. establish regional priorities for conservation action
> 2. coordinate programs for species or habitats that cross state, county, or other political boundaries
> 3. judge the regional importance of any particular site in the ecoregion
> 4. measure progress in protecting the full biodiversity of the ecoregion.
>
> ECA combines diverse data sources into a single system. Terrestrial species and habitat information is brought together as an integrated planning resource to identify which areas contribute the most to the conservation of existing biodiversity.
>
> ECA has no regulatory authority. It is simply a guide for conservation action across the Ecoregion that is intrinsically flexible that should not constrain decision makers in how they address local land use and conservation issues. Since many types of land use are compatible with biodiversity conservation, the large number and size of conservation areas creates numerous options for local conservation of biodiversity. Ultimately, the management or protection of the conservation priority areas will be based on the policies and values of local governments, organizations, and citizens.

Ecoregion/subbasin technical staff prioritized ECA data into three conservation priority classes. The primary distinction between ECA classes is the amount of risk potential associated with those habitats. Ecoregional Conservation Assessment classifications include:

- Class 1: Key habitats mostly under private ownership (high risk potential)
- Class 2: Key habitats on public lands (low to medium risk depending on ownership)
- Class 3: Unclassified/unspecified land elements (mainly agricultural lands)

ECA data included in the subbasin assessment provided subbasin planners with a logical path to initially determine how many acres of each focal habitat to protect and where protection should occur. An integral part of this land protection process is to identify lands already under public ownership within ECA identified areas (Figure 3; Washington) (Figure 3a; Oregon). Public ownership, key aquatic areas, vegetation zones, and rare plant communities are fine filters subbasin planners will use to support and/or guide protection and enhancement objective efforts within the subbasin (Figure 4; Washington) (Figure 4a; potential/historic vegetation zone data only for the Oregon portion of the subbasin). This “fine filter” concept is applicable to all protection and enhancement objectives.

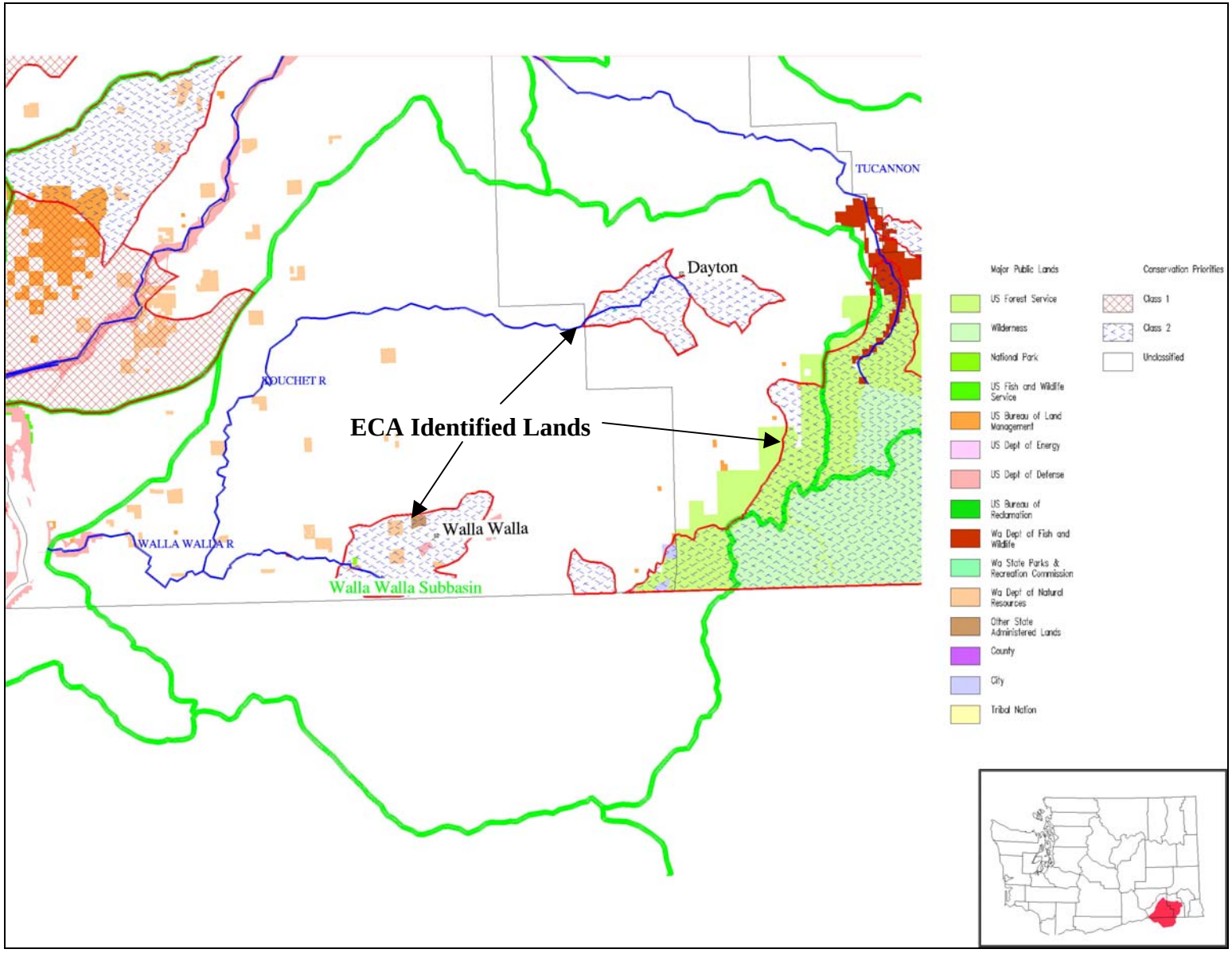

Figure 3. ECA identified lands and public ownership.

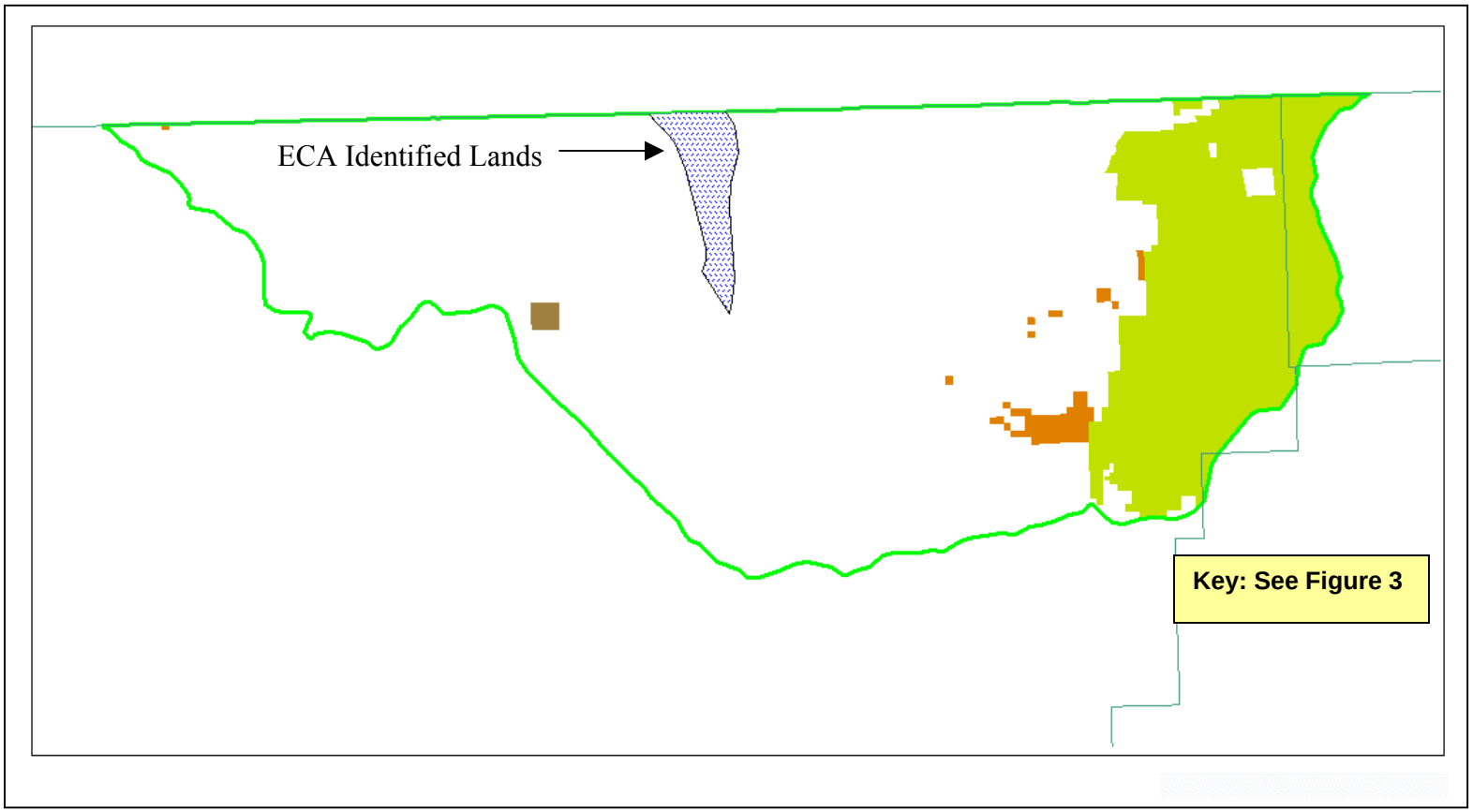

Figure 3a. ECA identified lands and public ownership in the Oregon portion of the Walla Walla Subbasin.

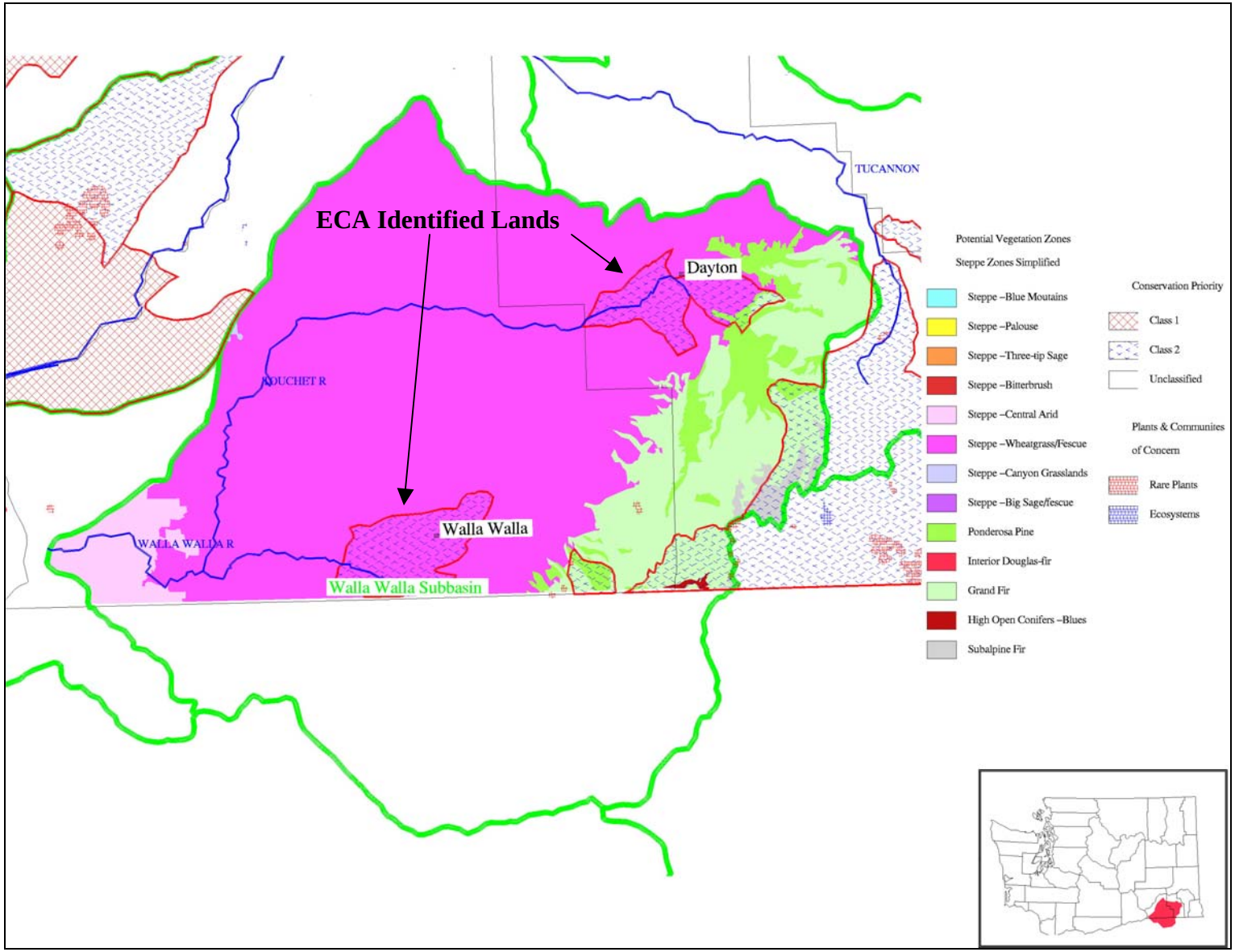

Figure 4. ECA identified lands, vegetation zones, and rare plant communities.

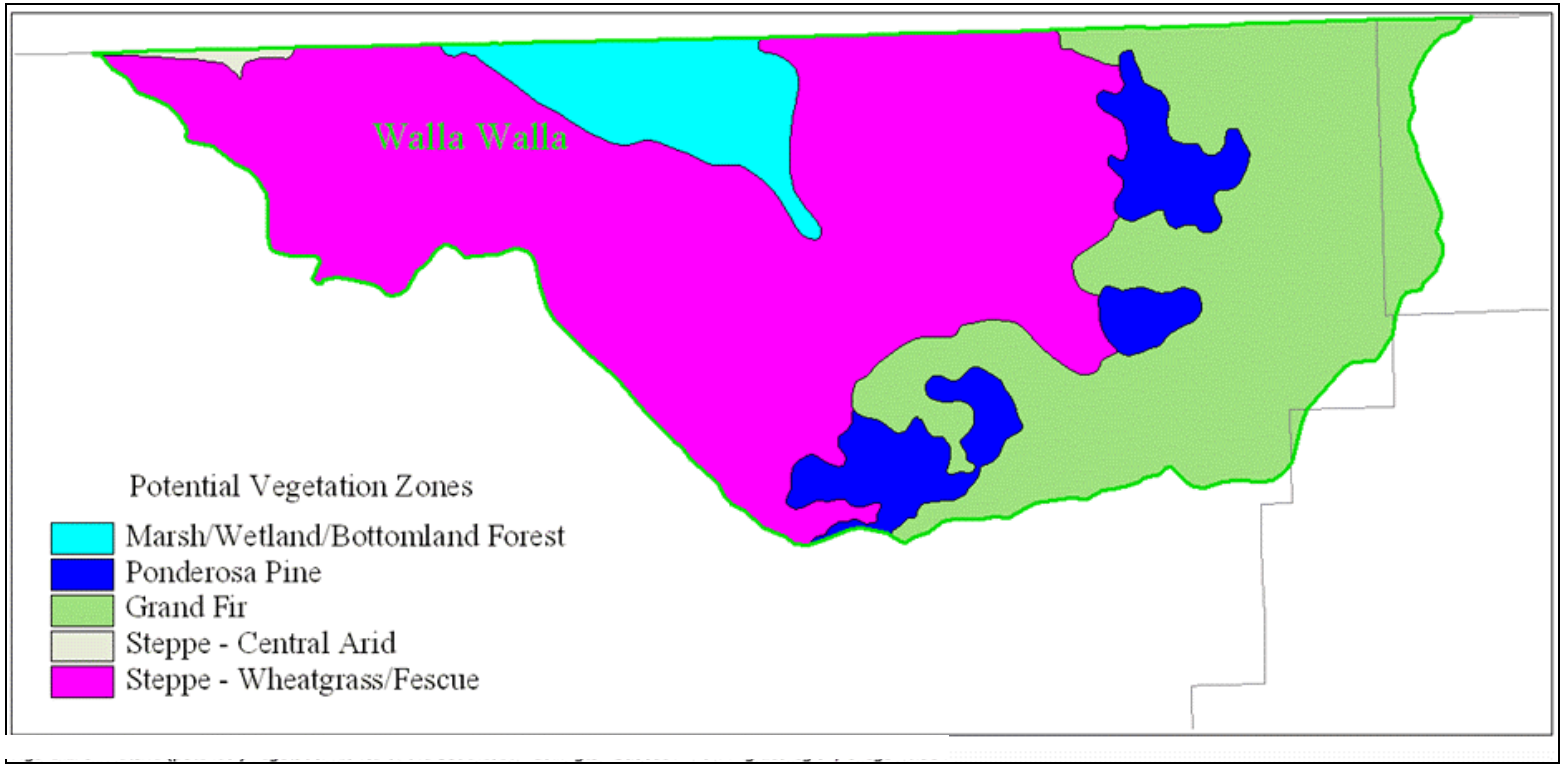

Figure 4a. Potential/historic vegetation zones in the Oregon portion of the Walla Walla Subbasin.

Washington GAP data was also used to define objectives and identify potential areas for protection based on current GAP protection status. The rationale is that lands currently not threatened by habitat conversion/destruction should continue to be protected and enhanced wherever possible. GAP protection status is summarized below and discussed in Section 3.3 (Ashley and Stovall 2004).

> The "*GAP status*" is the classification scheme or category that describes the relative degree of management or protection of specific geographic areas for the purpose of maintaining biodiversity. Locations where species concentrations lie outside protected areas constitute a "gap" in the conservation protection scheme of the area. The goal is to assign each mapped land unit with categories of management or protection status, ranging from Priority 1 (highest protection for maintenance of biodiversity - includes a management plan) to Priority 4 (no or unknown amount of protection).

GAP status for each focal habitat type within the subbasin is listed in Table 5. In general, high protection status lands include wilderness areas and other highly protected sites; medium protection status lands include property owned by WDFW and Tribes, low protection sites include lands owned by WDNR, USFS, and BLM, while private lands constitute the bulk of no protection status lands. Protection status and vegetation zones are illustrated in Figure 5 (Washington only – not available for Oregon).

Table 5. GAP protection status of focal habitats within the subbasin (Washington).

GAP Protection Status	Shrubsteppe	Ponderosa Pine	Interior Grasslands	Riparian - Riverine
High Protection	0	544	1,478	0
Med. Protection	0	0	0	0
Low Protection	1,555	11,229	16,457	421
No Protection	27,697	38,131	136,684	14,796
Total Acres Low and No Protection Status	**29,252**	**49,904**	**154,619**	**15,217**

In addition to ECA identified lands and GAP protection status areas, subbasin planners support and encourage protection and enhancement of private lands that:

- directly contribute to the restoration of aquatic focal species
- have high ecological function
- are adjacent to public or other protected lands
- contain rare or unique plant communities
- support threatened or endangered species/habitats
- provide connectivity between high quality habitat areas
- have high potential for reestablishment of functional habitats

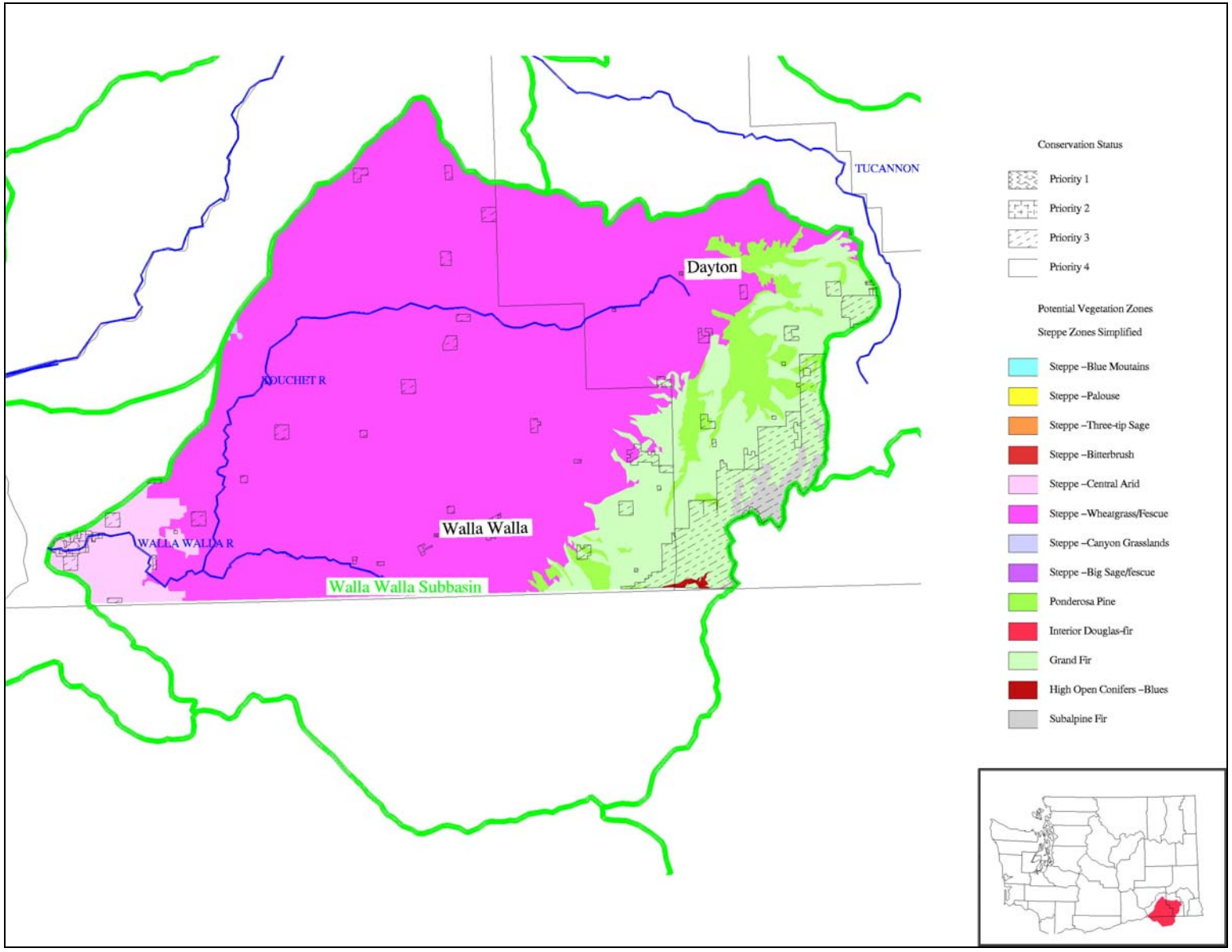

Figure 5. GAP protection status/priority areas (Washington only – not available for Oregon).

Habitat managers will work with federal, state, and local governments to strengthen and/or apply environmental guidelines and regulations to protect habitats on all lands within the subbasin regardless of ownership or protection status. Focal habitat objectives are described in Table 6. Steps to accomplish terrestrial and riparian/riverine protection and/or enhancement objectives are illustrated in Figure 6 and Figure 7 respectively. Objectives and strategies are not prioritized and will be implemented based on opportunity.

Table 6. Summary of focal habitat type biological objectives.

Habitat	Biological Objective *NOTE: The working horizon for accomplishing objectives is 2004-2020. These objectives were developed from a larger group of potential objectives based on the subbasin assessment and resulting working hypotheses. Objectives are not prioritized within or between habitat types.*	
Riparian Riverine	R1	Protect riparian riverine function on a minimum of 22,000 acres (conservative estimated historic acreage), with an initial focus on areas that directly contribute to the restoration of aquatic focal species (steelhead, spring chinook, & bull trout).
	R2	Enhance riparian riverine function on up to 22,000 acres (conservative estimated historic acreage), with an initial focus on areas that directly contribute to the restoration of aquatic focal species (steelhead, spring chinook, & bull trout).
Ponderosa Pine	P1	Protect all P. Pine habitat classified as ECA Class 1&2 (4,100 acres).
	P2	Enhance functionality on all P. Pine habitat classified as ECA Class 1&2 (4,100 acres) to achieve habitat parameters for focal and other obligate species.
	P3	Protect P. Pine habitat within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.
	P4	Enhance P. Pine functionality to achieve habitat parameters for focal and other obligate species in protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.
Interior Grassland	G1	Protect all Interior Grassland habitat classified as ECA Class 1&2 (33,600 acres).
	G2	Enhance functionality on all Interior Grassland habitat classified as ECA Class 1&2 (33,600 acres) to achieve habitat parameters for focal and other obligate species.
	G3	Protect Interior Grassland habitat within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.
	G4	Enhance Interior Grassland functionality to achieve habitat parameters for focal and other obligate species in protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.

Habitat		Biological Objectives *NOTE: The working horizon for accomplishing objectives is 2004-2020. These objectives were developed from a larger group of potential objectives based on the subbasin assessment and resulting working hypotheses. Objectives are not prioritized within or between habitat types.*
Grassland	G5	Show an upward trend in CRP acreage and/or functionality.
Shrub-steppe	S1	Protect all shrubsteppe habitat classified as ECA Class 1&2 (no ECA identified shrubsteppe at this time).
	S2	Enhance functionality on all shrubsteppe habitat classified as ECA Class 1&2 (no ECA identified shrubsteppe at this time) to achieve habitat parameters for focal and other obligate species.
	S3	Protect shrubsteppe habitat within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.
	S4	Enhance shrubsteppe functionality to achieve habitat parameters for focal and other obligate species in protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas.
	S5	Show an upward trend in CRP acreage and/or functionality.

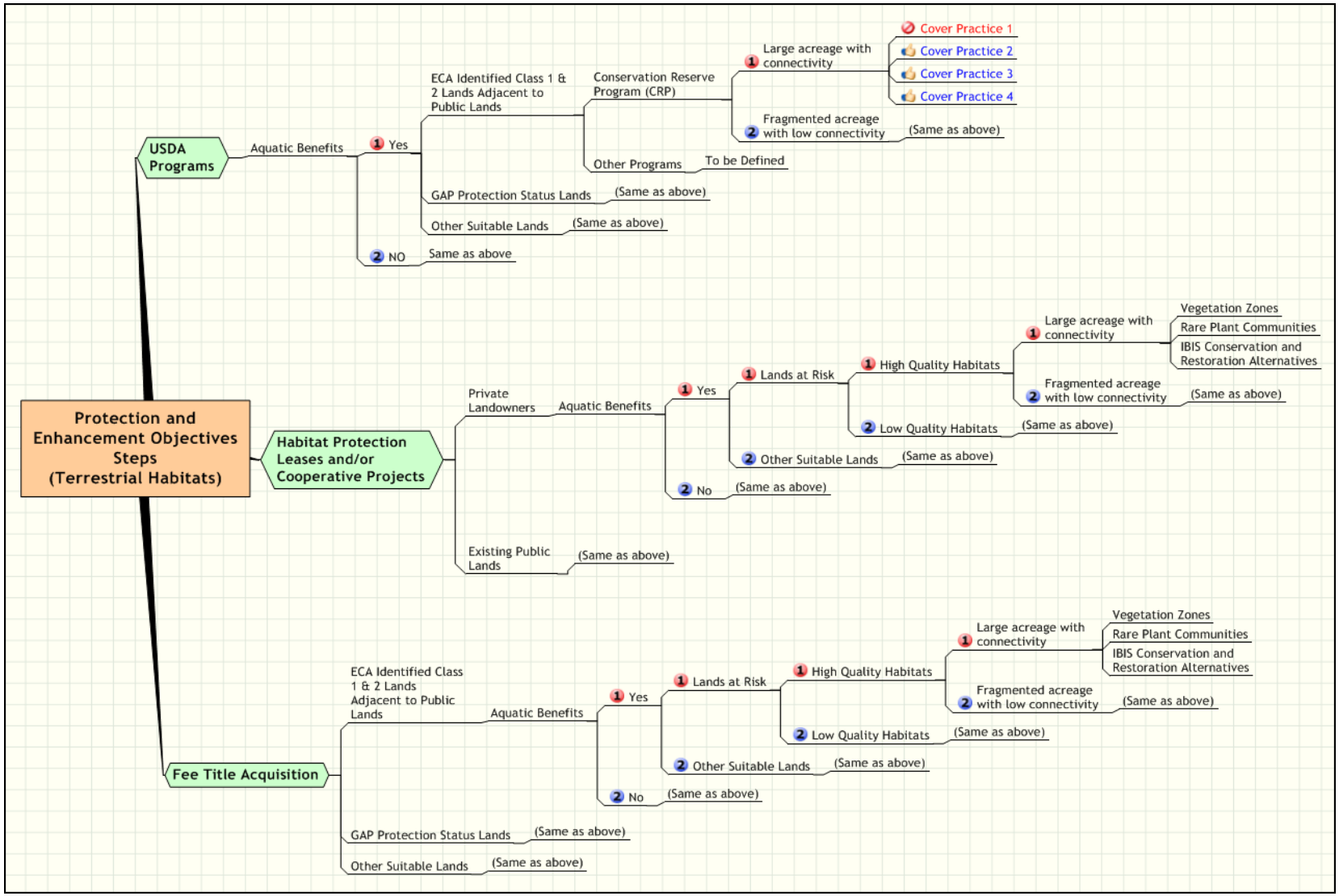

Figure 6. Steps to accomplish terrestrial habitat protection and enhancement objectives.

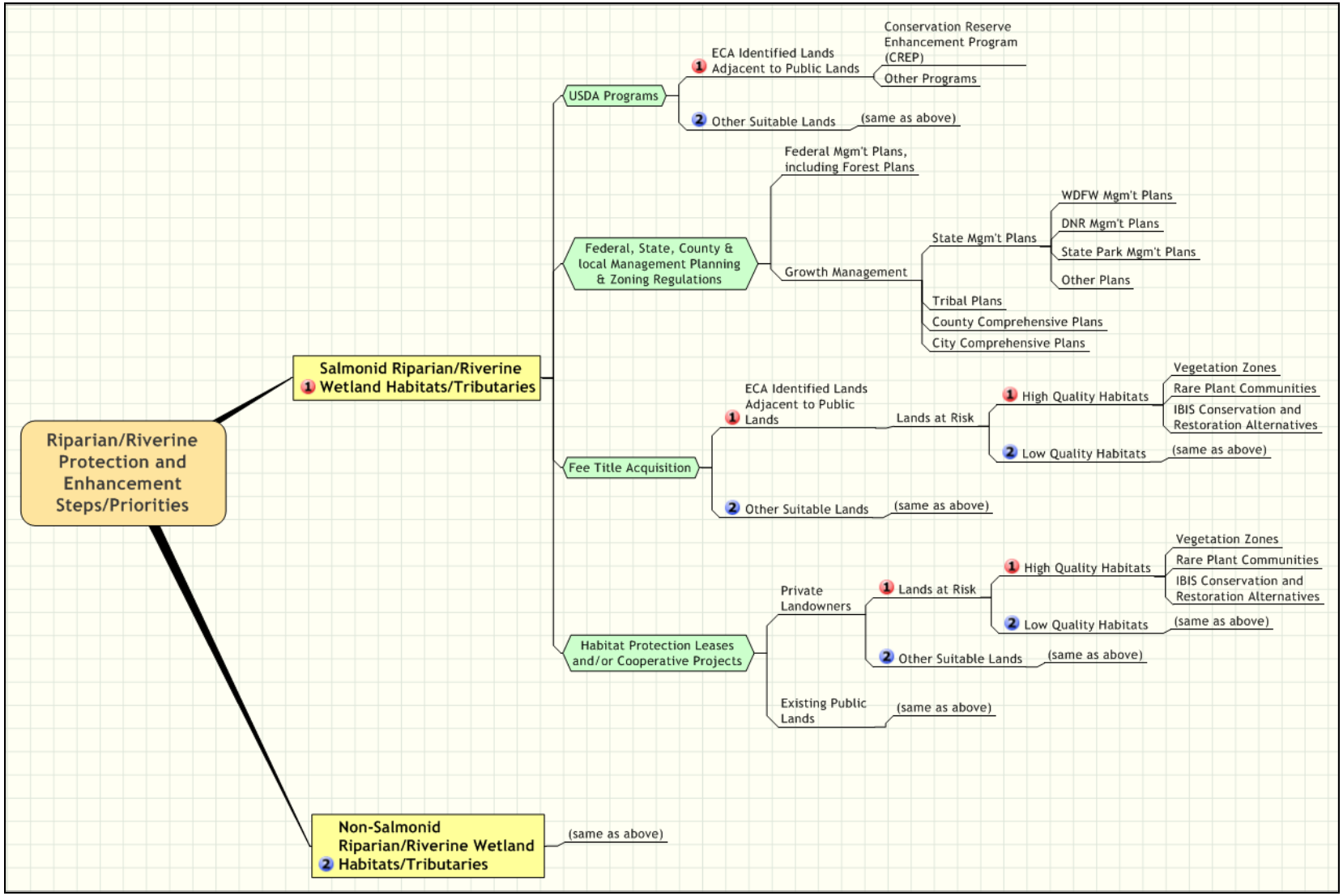

Figure 7. Steps to accomplish riparian/riverine habitat objectives.

Strategies
Strategies are sets of actions to accomplish the biological objectives that take into account not only the desired outcomes, but also the physical and biological realities expressed in the working hypothesis. Strategies are not projects but instead are the guidance for development of projects as part of the implementation plan and will be used as a basis for Northwest Power and Conservation Council recommendations to the Bonneville Power Administration regarding project funding.

Strategies support focal habitat objectives derived from working hypotheses. Strategies that identify high value habitats, protect habitat through easements, leases, or acquisitions, and/or uphold existing protection regulations/measures contribute towards addressing factors that caused the direct loss of focal habitats. In contrast, focal habitat enhancement strategies to increase habitat function include:

- direct habitat manipulation
- weed control activities
- improved grazing management
- enhanced silviculture practices
- cooperative habitat enhancement agreements with federal, state, tribal, local government, and private entities

Rather than focus solely on acquisitions as the major protection strategy, subbasin planners examined a number of alternate strategies from which preferred strategies were identified i.e., easements, leases, and acquisitions, existing/new environmental regulations, USDA programs (CRP and CREP), cooperative projects and programs, and research (Table 7). The rationale behind this flexible approach is to simultaneously employ a variety of non-prioritized conservation “tools” to accomplish subbasin objectives in order to make the most of habitat protection/enhancement opportunities. For example, in addition to using acquisitions as a habitat protection tool, habitat managers will concurrently examine whether habitat objectives can be achieved all or in part on extant public lands, through leases and easements with private landowners, with USDA programs, and/or through cooperative projects/programs.

Subbasin planners also recognized the efficacy of focusing future protection efforts around large blocks of extant public lands and adjacent private lands. Clearly, a multi-tiered, flexible, cooperative approach to protecting wildlife/aquatic habitats and associated species is key to the success of any long-term habitat protection/enhancement plan.

Table 7. Focal habitat strategies.

Habitat Type	Obj.	Strategies (Note-Strategies are not prioritized and will be implemented based upon available opportunities)
Riparian-Riverine Wetland	R1	Strategies listed under riparian function for aquatic species are incorporated herein by reference
	R2	Strategies listed under riparian function for aquatic species are incorporated herein by reference
Ponderosa Pine	P1	1. Identify functioning ponderosa pine habitats, corridors, and linkages classified as ECA Class 1&2 for protection. 2. Provide information, education, and outreach to protect habitats. 3. Use easements, leases, cooperative agreements, and acquisitions to protect habitat (long-term protection strategies are preferred over short-term). 4. Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.). 5. Identify inadequate land and water use regulations. Work to strengthen existing regulations or pass new regulations to improve protection of habitats. 6. Complete a more detailed assessment of focal species, focal species assemblages, and obligate species needs to determine their habitat requirements (quantity and quality). Assessment/research would ultimately determine what acreage and distribution of functional habitat is necessary to achieve habitat recovery in the context of focal species needs.
	P2	1. Identify non-functioning ponderosa pine habitats, corridors, and linkages within ECA Class 1 & 2 areas. 2. Identify sites that are currently not in ponderosa pine habitat that have the potential to be of high ecological value, if restored. 3. Provide information, outreach, and coordination with public and private land managers on the use of prescribed fire and silviculture practices to restore and conserve habitat functionality. 4. Enter into cooperative projects and management agreements with Federal, State, Tribal, and private landowners to restore and conserve habitat function. 5. Assist in long-term development and implementation of a Southeast Washington & Northeast Oregon Comprehensive Weed Control Management Plan in cooperation with local weed boards. 6. Fund noxious weed control projects to improve habitat function. 7. Work with county, state, and federal agencies and private landowners to develop livestock grazing programs on federal and private lands that do not contribute to the invasion of noxious weeds or negatively alter understory vegetation. 8. Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.). 9. Identify inadequate land and water use regulations. Work to strengthen existing regulations or pass new regulations to improve protection of habitats.

Habitat Type	Obj.	Strategies (Note-Strategies are not prioritized and will be implemented based upon available opportunities)
	P3	1. Identify functioning ponderosa pine habitats, corridors and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas See P1 Strategies 2-6.
Ponderosa Pine	P4	1. Identify non functioning ponderosa pine habitats, corridors and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas. See P2 Strategies 2-7.
Grassland	G1	1. Identify functioning interior grassland habitats, corridors, and linkages classified as ECA Class 1&2 for protection. 2. Provide information, education, and outreach to protect habitats. 3. Use easements, leases, cooperative agreements, and acquisitions to protect habitats (long-term protection strategies are preferred over short-term). 4. Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.). 5. Identify inadequate land and water use regulations. Work to strengthen existing regulations or pass new regulations to improve protection of habitats. 6. Complete a more detailed assessment of focal species, focal species assemblages, and obligate species needs to determine their habitat requirements (quantity and quality). Assessment/research would ultimately determine what acreage and distribution of functional habitat is necessary to achieve habitat recovery in the context of focal species needs.

Habitat Type	Obj.	Strategies (Note-Strategies are not prioritized and will be implemented based upon available opportunities)
	G2	1. Identify non-functioning interior grassland habitats, corridors, and linkages within ECA Class 1 & 2 areas. 2. Identify sites that are currently not in grassland habitat that have the potential to be of high ecological value, if restored. 3. Provide information, outreach and-coordination with public and private land managers on management practices and the use of prescribed fire to restore and conserve habitat function. 4. Enter into cooperative projects and management agreements with Federal, State, Tribal, and private landowners to restore and conserve habitat function. 5. Assist in long-term development and implementation of a Southeast Washington & Northeast Oregon Comprehensive Weed Control Management Plan in cooperation with local weed boards. 6. Fund noxious weed control projects to improve habitat function. 7. Work with county, state, and federal agencies and private landowners to develop livestock grazing programs on public and private lands that do not contribute to the invasion of noxious weeds or negatively alter habitats. 8. Restore viable populations of obligate wildlife species where possible. 9. Work with USDA programs (e.g. CRP) to maintain and enhance habitat quality. 10. Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.). 11. Identify inadequate land and water use regulations. Work to strengthen existing regulations or pass new regulations to improve protection of habitats.
	G3	1. Identify functioning interior grassland habitats, corridors, and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas. See G1 Strategies 2-6.
Grassland	G4	1. Identify non functioning interior grassland habitats, corridors, and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas. See G2 Strategies 2-8.

Habitat Type	Obj.	Strategies (Note-Strategies are not prioritized and will be implemented based upon available opportunities)
	G5	1. Increase landowner participation in federal, state, tribal, and local programs that enhance watershed health (e.g. CRP, CREP, Wetlands Reserve Program, EQIP, Partners for Fish & Wildlife, WDFW Landowner Incentive Program, , Conservation Security Program, Oregon State equivalents of these programs, etc.) 2. Seek additional funding sources consistent with current CRP and CREP guidelines to increase individual landowner enrollment in programs that achieve similar goals, including prioritization of landowners who have already reached their payment limitations. 3. Seek funding sources to develop programs consistent with the goals of CRP, EQIP, and CREP in those areas where such programs are not available. 4. During re-enrollment, convert CRP land to more functional plant communities. 5. Enroll areas with documented wildlife damage and areas directly adjacent to high-quality wildlife habitat into CRP using cover practices 2, 3, and/or 4.
Shrubsteppe	S1	1. Identify functioning interior shrubsteppe habitats, corridors, and linkages classified as ECA Class 1&2 for protection. 2. Provide information, education, and outreach to protect habitats. 3. Use easements, leases, cooperative agreements, and acquisitions to protect habitats (long-term protection strategies are preferred over short-term). 4. Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.). 5. Identify inadequate land and water use regulations. Work to strengthen existing regulations or pass new regulations to improve protection of habitats. 6. Complete a more detailed assessment of focal species, focal species assemblages, and obligate species needs to determine their habitat requirements (quantity and quality). Assessment/research would ultimately determine what acreage and distribution of functional habitat is necessary to achieve habitat recovery in the context of focal species needs.
	S2	1. Identify non-functioning shrubsteppe habitats, corridors, and linkages within ECA Class 1 & 2 areas. 2. Identify sites that are currently not in shrubsteppe habitat that have the potential to be of high ecological value, if restored. 3. Provide information, outreach and-coordination with public and private land managers on management practices and the use of prescribed fire to restore and conserve habitat function. 4. Enter into cooperative projects and management agreements with Federal, State, Tribal, and private landowners to restore and conserve habitat function.

Habitat Type	Obj.	Strategies (Note-Strategies are not prioritized and will be implemented based upon available opportunities)
Shrubsteppe		5. Assist in long-term development and implementation of a Southeast Washington & Northeast Oregon Comprehensive Weed Control Management Plan in cooperation with local weed boards. 6. Fund noxious weed control projects to improve habitat function. 7. Work with county, state, federal agencies, and private landowners to develop livestock grazing programs on public and private lands that do not contribute to the invasion of noxious weeds or negatively alter the habitat. 8. Restore viable populations of obligate wildlife species where possible. 9. Work with USDA programs (e.g. CRP) to maintain and enhance habitat quality. 10. Uphold existing land use and environmental regulations (e.g. critical area ordinances, etc.). 11. Identify inadequate land and water use regulations. Work to strengthen existing regulations or pass new regulations to improve protection of habitats.
	S3	1. Identify functioning shrubsteppe habitats, corridors, and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas. See G1 Strategies 2-6.
	S4	1. Identify non functioning shrubsteppe habitats, corridors, and linkages within protected areas (GAP) and areas of private land that meet one or more of the following conditions: directly contribute to the restoration of aquatic focal species, have high ecological function, are adjacent to public or other protected land, contain rare or unique plant communities, have threatened, endangered, or sensitive species habitat or populations, or provide connectivity between high quality habitat areas. See G2 Strategies 2-8.
	S5	1. Increase landowner participation in federal, state, tribal, and local programs that enhance watershed health (e.g. CRP, CREP, Wetlands Reserve Program, EQIP, Partners for Fish & Wildlife, WDFW Landowner Incentive Program, Conservation Security Program, etc.) 2. Seek additional funding sources consistent with current CRP and CREP guidelines to increase individual landowner enrollment in programs that achieve similar goals, including prioritization of landowners who have already reached their payment limitations. 3. Seek funding sources to develop programs consistent with the goals of CRP, EQIP, and CREP in those areas where such programs are not available. 4. During re-enrollment, convert CRP land to more functional plant communities. 5. Enroll areas with documented wildlife damage and areas directly adjacent to high-quality wildlife habitat into CRP using cover practices 2, 3, and/or 4.

In addition to objectives and strategies based on assessment hypotheses, subbasin planners identified objectives/strategies of special interest to stakeholders. Special interest objectives and strategies are listed in Table 8.

Table 8. Objectives and strategies of special interest to stakeholders.

Cover Type of Interest	Objective	Strategies
Agriculture	A1: Limit elk and deer damage on private agricultural land	1-Improve quality of focal habitats on public and private lands e.g. prescribed burns, CRP, and other focal habitat strategies 2-Implement strategies in Washington elk and mule deer management plans*, including the following: • Salting in backcountry • Manage recreation activities during calving season • Limit road densities • Quantify & fund mitigation for damages • Maintain existing wildlife fences • Build new wildlife fences • Utilize radio collars to track herds for direct movement back to public land • Forage plot development 3- Limit the impacts of urban, rural residential, and agricultural development in elk and deer habitat uses that result in increased conflicts 4- Implement additional strategies to attract and retain elk and deer on public lands.
	A2: Protect alkali bee nesting sites (important pollinator of agriculture crops)	1- Identify and protect nesting sites (prefers moist alkali soils with a layer of hardpan). 2- Construct artificial nesting areas that simulate natural nesting sites. 3- Use insecticides sparingly in areas occupied by alkali bees. 4- Provide public outreach and education.
Canyon Grasslands	C1: Increase protection status on ≥4000 acres of core canyon grassland habitat.	1- See strategies 1 through 6 for Objective G1.
	C2: Improve canyon grassland habitat.	1- Convert introduced herbaceous vegetation to native perennial grasses (Idaho fescue percent cover ≥ 20%). 2- Increase Idaho fescue component of native bunchgrass communities to ≥ 20% cover. 3- Control noxious weeds 4- See strategies 2 through 7 for objective G2.
	C3: Create buffers to eliminate conflicts with domestic sheep.	1- See strategies 1 through 6 for Objective G1.

* Not all strategies apply in every area.

APPENDIX A

Focal Habitat Descriptions/Review

Eastside (Interior) Riparian Wetlands

The eastside (interior) riparian wetlands habitat type refers only to riverine and adjacent wetland habitats throughout the Ecoregion. Although extremely important to both terrestrial and aquatic wildlife species, other wetland habitat types that occur within the subbasin were not included as focal habitat types because of limited extent and planning resources.

Ecoregion technical staff estimate at least 22,238 acres of riparian/riverine wetland habitat historically occurred in the subbasin. The change in extent of riparian habitat is significant (Table 9).

Table 9. Historic and current extent of riparian/riverine wetlands and percent change.

Historic Acres	Current Acres	Change Acres	Percent Change
22,238	15,217	-7,021	-32%
Note: Current acreage does not include riparian/riverine habitats re-established through CREP. FSA reports CREP acreage by county only making extrapolation to subbasins extremely time consuming and difficult.			

Historically, riparian/riverine wetland habitats supported a mosaic of plant communities occurring at irregular intervals along streams and dominated singularly or in combination by grass-forbs, shrub thickets, and mature forests with tall deciduous trees. Beaver activity and natural flooding are two ecological processes that affected the quality and distribution of riparian/riverine wetlands.

Today, agricultural conversion, altered stream channel morphology, and water withdrawal have played significant roles in changing the character of streams and associated riparian areas. Grazing in some areas has extensively suppressed woody vegetation. Herbaceous vegetation has also been highly altered with the introduction of Kentucky bluegrass and reed canarygrass, which has spread throughout many riparian areas.

CREP/CP22

Additional short-term high protection of riparian habitat is provided by the USDA's CREP program (CP22). The number of acres enrolled in the CREP program is compared by county in Table 10.

Table 2. The number of acres protected under CREP/CP22 by county.

County	CREP Acres
Asotin	1,339
Columbia	19,723
Garfield	2,535
Umatilla	52
Walla Walla	1,922
Whitman	1,052

Ponderosa pine

Extant ponderosa pine habitat within the Walla Walla subbasin currently covers a wide range of seral conditions. Forest management and fire suppression have led to the replacement of old-growth ponderosa pine forests by younger forests with a greater proportion of Douglas-fir than ponderosa pine. Clear-cut logging and subsequent reforestation have converted many older stands of ponderosa pine/Douglas-fir forest to young structurally simple ponderosa pine stands.

Currently, much of this habitat has a younger tree cohort of more shade-tolerant species that gives the habitat a more closed, multi-layered canopy. For example, this habitat includes previously natural fire-maintained stands in which grand fir can eventually become the canopy dominant. Large late-seral ponderosa pine and Douglas-fir are harvested in much of this habitat type. Under most management regimes, typical tree size decreases and tree density increases. In some areas, patchy tree establishment at forest-steppe ecotones has created new woodlands.

Introduced annuals, especially cheatgrass, and invading shrubs under heavy grazing pressure have replaced native herbaceous understory species. Four exotic knapweed species are spreading rapidly through the ponderosa pine zone and threatening to replace cheatgrass as the dominant increaser after grazing. Dense cheatgrass stands eventually change the fire regime of these stands often resulting in stand replacing, catastrophic fires. Bark beetles, primarily of the genus *Dendroctonus* and *Ips*, kill thousands of pines annually and are the major mortality factor in commercial saw timber stands.

Eastside (Interior) Grassland

Dominant perennial grasses on undisturbed sites include Idaho fescue, bluebunch wheatgrass, June grass, and Sandberg bluegrass. A large number of forbs are also present. Balsamroot, cinquefoil, and old man's whiskers are among those with the highest mean cover.

Throughout much of the subbasin, however, agricultural crops have replaced native perennial grasslands while competition from introduced weed species such as cheatgrass, knapweed, and yellow-star thistle severely altered grassland plant communities. Over-grazing also leads to replacement of native vegetation by exotic annuals. Though much of the steppe vegetation zone is grazed, a 1981 survey rated most of the rangeland in fair to good range condition; however, ecological condition is usually worse than range condition.

USDA's Conservation Reserve Program provides significant amounts of grassland habitat that varies greatly in habitat quality and function. Habitat quality on these short-term/high protection grasslands is based largely on the cover practice (CP) selected by the land operator. CPs 2 through 4 provides the most habitat diversity and greatest benefits to wildlife. The number of acres protected through CRP by cover practice is shown in Table 11 for all counties that border the subbasin (CRP acres are listed by county, not the subbasin).

Table 3. CRP acreage by county by cover practice.

County	Introduced Grasses (CP1)	Native Grasses (CP2)	Tree Plantings (CP3)	Wildlife Habitat (CP4)	Established Grass (CP10)	Established Trees (CP11)	Contour Grass (CP15)	Total Acres
Asotin	7,812	9,591	35	7,450	3,367	19	0	28,274
Columbia	5,991	20,162	581	5,929	10,839	355	28	43,885
Garfield	4,545	13,328	0	19,911	7,428	0	2,414	47,626
Umatilla	4,501	3,989	777	1,219	3,276	385	0	14,147
Walla Walla	44,955	95,555	129	0	11,735	166	0	152,540
Whitman	25,616	62,594	36	19,781	15,932	11	24,791	148,761

Shrubsteppe

Shrubsteppe habitat is comprised of Central Arid Steppe vegetation. Historically (circa 1850), approximately 12,252 acres of Central Arid Steppe occurred in the Washington portion of the Walla Walla Subbasin, while another 30,923 acres extended into the Lower Snake Subbasin.

Big sagebrush, bluebunch wheatgrass, and Sandberg bluegrass dominate shrubsteppe climax vegetation within the subbasin. Other grass species occur in much smaller amounts including needle-and-thread, Thurbers needlegrass, Cusick's bluegrass, and/or bottlebrush squirreltail grass. Forbs play a minor role. A cryptogamic crust of lichens and mosses grows between the dominant bunchgrasses and shrubs. Without disturbance, particularly trampling by livestock, the cryptogamic crust often completely covers the space between vascular plants.

Most of the native grasses and forbs are poorly adapted to heavy grazing and trampling by livestock. Overgrazing eventually leads to replacement of the bunchgrasses with cheatgrass, Nuttall's fescue, eight flowered fescue, and Indian wheat. Several highly invasive knapweeds have become increasingly widespread. Yellow-star thistle is particularly widespread, especially along and near major watercourses.