

Draft

Methow Subbasin

Wildlife Assessment and Inventory

Submitted By

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Table of Contents

List of Figures	iii
List of Tables.....	iv
List of Appendices.....	v
1.0 Physical Features.....	1
1.1 Land Area.....	1
1.2 Physiography.....	2
2.0 Socio-Political Features	3
2.1 Land Ownership	3
2.2 Land Use.....	3
2.3 Protection Status.....	6
3.0 Ecological Features.....	6
3.1 Vegetation	6
3.1.1 Rare Plant Communities.....	8
3.1.2 Noxious Weeds	8
3.1.3 Vegetation Zones	8
3.1.4 Wildlife Habitats.....	10
3.1.5 Changes in Wildlife Habitat	11
3.1.6 Focal Habitats.....	16
3.1.7 Focal Habitat Summaries	17
3.1.7.1 Ponderosa pine	17
3.1.7.1.1 Protection Status	18
3.1.7.1.2 Factors Affecting Ponderosa Pine Habitat.....	19
3.1.7.1.3 Recommended Future Condition.....	19
3.1.7.2 Shrubsteppe	20
3.1.7.2.1 Protection Status	22
3.1.7.2.2 Factors Affecting Shrubsteppe Habitat.....	23
3.1.7.2.3 Recommended Future Condition.....	23
3.1.7.3 Eastside (Interior) Riparian Wetlands.....	24
3.1.7.3.1 Protection Status	25
3.1.7.3.2 Factors Affecting Eastside (Interior) Riparian Wetland Habitat	26
3.1.7.3.3 Recommended Future Condition.....	27
3.1.7.4 Agriculture (Habitat of Concern).....	27
3.1.7.4.1 Protection Status	30
3.1.7.5 Changes in Focal Wildlife Habitats (Summary).....	30
3.1.7.6 Summary of Factors Affecting Focal Habitats and Wildlife Species.....	31
3.1.7.6.1 Agricultural Development	32
3.1.7.6.2 Timber Management	32
3.1.7.6.3 Livestock Grazing	32
3.1.7.6.4 Mining	32
3.1.7.6.5 Commercial and Residential Development	32
4.0 Biological Features.....	32
4.1 Focal Species/Assemblages	32
4.1.1 Focal Wildlife Species Assemblage Selection and Rationale.....	32
4.2 Wildlife Species.....	33
5.0 Assessment Synthesis	34
6.0 Inventory	34
6.1 Local Level	34
6.1.1 Conservation Districts.....	34
6.1.1.1 Okanogan Conservation District.....	34

6.1.1.2	Agricultural Community	35
6.1.1.3	County Government	35
6.1.1.3.1	Okanogan County.....	35
6.1.1.4	Non-Governmental Organizations.....	35
6.1.1.4.1	Methow Conservancy	35
6.2	State Level	35
6.2.1	Washington Department of Fish and Wildlife	36
6.2.1.1	Upland Restoration Program.....	36
6.2.1.2	Methow Wildlife Area.....	36
6.2.1.3	Washington Priority Habitats and Species (PHS).....	36
6.2.1.4	Washington Conservation Commission	36
6.2.1.5	Washington Department of Natural Resources.....	37
6.2.1.6	Washington Department of Ecology (WDOE)	37
6.3	Federal Level.....	37
6.3.1	Natural Resource Conservation Service	37
6.3.1.1	Conservation Reserve Program (CRP)	37
6.3.1.2	Continuous Conservation Reserve Program (CCRP)	38
6.3.1.3	Conservation Reserve Enhancement Program (CREP).....	38
6.3.1.4	Wildlife Habitat Incentive Program (WHIP)	38
6.3.1.5	Environmental Quality Incentives Program (EQIP)	38
6.3.1.6	Wetlands Reserve Program (WRP)	39
6.3.1.7	The Public Law 566 Small Watershed Program (PL 566).....	39
6.3.2	Bonneville Power Administration	39
6.3.3	U.S. Forest Service	39
6.4	Native American Tribes	39
6.4.1	Confederated Tribes of the Colville Reservation	39
6.4.2	Yakama Indian Nation	39
7.0	References.....	40
	Appendix A: Rare Plants.....	42
	Appendix B: Wildlife Species	47
	Appendix C: Conservation Reserve Program	75

List of Figures

Figure 1. Methow subbasin, Washington.....	1
Figure 2 Land ownership in the Methow subbasin, Washington (IBIS 2003).	4
Figure 3. Land use and potential vegetation zones in the Methow subbasin, Washington (WDFW 2003).....	5
Figure 4. Protection status and vegetation zones of the Methow subbasin, Washington (Cassidy 1997).....	7
Figure 5. GAP protection status for all Ecoprovince/subbasin habitat types (IBIS 2003).	8
Figure 6. Rare plant occurrence and high-quality plant communities in the Methow subbasin, Washington (Cassidy 1997; WNHP 2003).....	9
Figure 7. Historic wildlife habitat types of the Methow subbasin, Washington (IBIS 2003).	12
Figure 8. Current wildlife habitat types of the Methow subbasin, Washington (IBIS 2003).....	13
Figure 9. Methow subbasin wildlife habitat acreage and associated change (IBIS 2003).	15
Figure 10. Ponderosa pine and shrubsteppe habitat in the Methow subbasin, Washington (Cassidy 1997).....	16
Figure 11. A comparison of the ponderosa pine habitat type in Ecoprovince subbasins (IBIS 2003).....	18
Figure 12. Protection status of ponderosa pine in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).....	19
Figure 13. A comparison of the shrubsteppe habitat type in Ecoprovince subbasins (IBIS 2003).	22
Figure 14. GAP protection status of shrubsteppe habitat in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).....	22
Figure 15. Current extent of riparian wetland habitat in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).....	25
Figure 16. Protection status of riparian wetlands in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).....	26
Figure 20. Agricultural extent in the Methow subbasin, Washington (Cassidy 1997).	29
Figure 21. Current extent of agriculture in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).....	29
Figure 22. Protection status of agriculture in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).....	30
Figure 23. Changes in focal wildlife habitat types in the Columbia Cascade Ecoprovince (IBIS 2003).....	31

List of Tables

Table 1. Subbasin size relative to the Columbia Cascade Ecoprovince and Washington State (IBIS 2003).....	2
Table 2. Land ownership of the Columbia Cascade Ecoprovince, Washington (IBIS 2003).	3
Table 3. Noxious weeds in the Methow subbasin and their origin (Callihan and Miller 1994). ...	10
Table 4. Historic and current extent of GAP vegetation zones in the Methow subbasin, Washington (Cassidy 1997).....	10
Table 5. Wildlife habitat types within the Methow subbasin, Washington (IBIS 2003).....	11
Table 6. Changes in wildlife habitat types in the Methow subbasin from circa 1850 (historic) to 1999 (current) (IBIS 2003).	14
Table 7. A comparison of the amount of current focal habitat types for each subbasin in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).	16
Table 8. Ponderosa pine habitat GAP protection status in the Methow subbasin, Washington (IBIS 2003).....	18
Table 9. Shrubsteppe habitat GAP protection status in the Methow subbasin, Washington (IBIS 2003).....	23
Table 10. Eastside (interior) riparian wetlands GAP protection status in the Methow subbasin, Washington (IBIS 2003).....	26
Table 11. Agriculture GAP protection status/acres in the Methow subbasin, Washington (IBIS 2003).....	30
Table 12. Changes in focal wildlife habitat types in the Methow subbasin from circa 1850 (historic) to 1999 (current) (IBIS 2003).	31
Table 13 Focal species selection matrix for the Columbia Cascade Ecoprovince, Washington.	33
Table 14. Species richness and associations for the Methow subbasin, Washington (IBIS 2003).	34
Table 15. Rare plants in the Methow subbasin, Washington (WNHP 2003).	43
Table 16. Wildlife species occurrence by focal habitat type in the Methow subbasin, Washington (IBIS 2003).....	48
Table 17. Wildlife species occurrence for the Methow subbasin, Washington (IBIS 2003).	55
Table 18. Non-native wildlife species of the Methow subbasin, Washington (IBIS 2003).....	66
Table 19. Threatened and endangered species of the Methow subbasin, Washington (IBIS 2003).....	67
Table 20. Partners in Flight species of the Methow subbasin, Washington (IBIS 2003).....	69
Table 21. Wildlife game species of the Methow subbasin, Washington (IBIS 2003).	73

List of Appendices

[Appendix A: Rare Plants](#).....42
[Appendix B: Wildlife Species](#)47
[Appendix C: Conservation Reserve Program](#)75

1.0 Physical Features

1.1 Land Area

The Methow subbasin (Subbasin) is located in north central Washington and lies entirely within Okanogan County. The Subbasin comprises 12.7 percent of the Columbia Cascade Ecoprovince (Ecoprovince) ([Table 1](#)) and consists of 1,167,764 acres (1,825 mi²) ([Figure 1](#)).

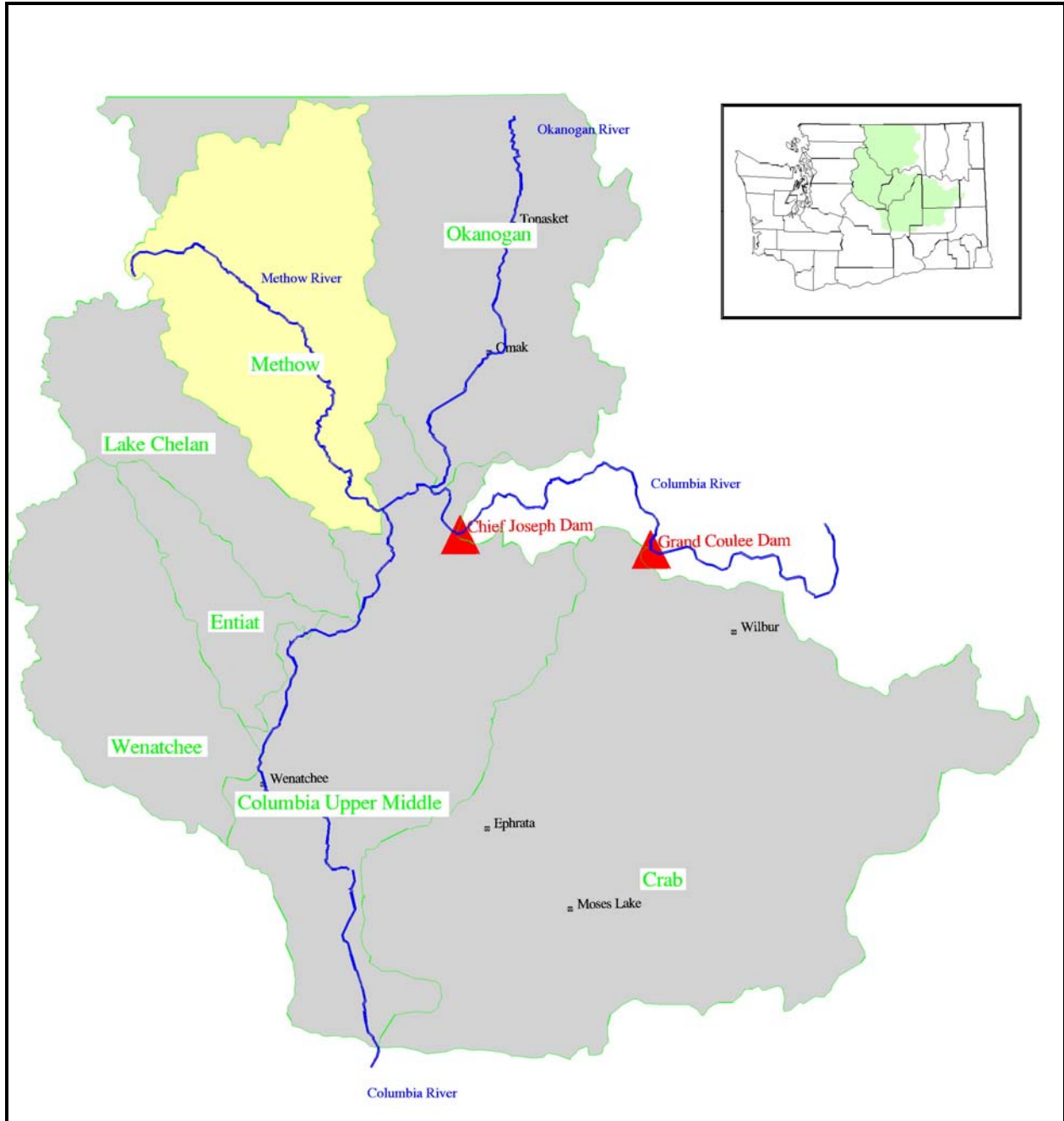


Figure 1. Methow subbasin, Washington.

Table 1. Subbasin size relative to the Columbia Cascade Ecoprovince and Washington State (IBIS 2003).

Subbasin	Size		Percent of Ecoprovince	Percent of State
	Acres	Mi ²		
Enitat	298,363	466	3.2	.7
Lake Chelan	599,925	937	6.5	1.4
Wenatchee	851,894	1,333	9.3	2.0
Methow	1,167,795	1,825	12.7	2.8
Okanogan	1,490,079	2,328	16.2	3.5
Upper Middle Mainstem Columbia River	1,607,740	2,512	17.5	3.8
Crab	3,159,052	4,936	34.4	7.4
Total (Ecoprovince)	9,174,848	14,337	100	21.6

1.2 Physiography

Topography within the Subbasin ranges from mountainous sub-alpine and alpine terrain along the Cascade Crest to the gently sloping wide valley found along the middle reaches of the Methow River. Elevation varies from over 8,500 feet in the headwaters of the basin along the crest of the Cascade Mountains, to approximately 800 feet at the confluence of the Methow and Columbia Rivers. Topographic features in and adjacent to the Methow Valley provide evidence of both alpine and continental ice-sheet types of glaciation (Waitt 1972 in NPPC 2002).

The western upper reaches of the Methow watershed carve deeply into the Cascade Crest's peaks. Avalanche chutes, knife-edge ridges, and cirques typify the upper elevations of the watershed following the crest. The upper Methow River valley is a u-shaped, glaciated intermountain valley. The valley margins are bounded by bedrock uplands which rise steeply, and at some locations nearly vertically, from the valley floor to elevations over 5,000 feet. The elevation of the valley floor within the upper valley varies from approximately 2,600 feet above Lost River to about 1,765 feet at Winthrop, a distance of roughly 21 miles. The valley floor from Lost River to Winthrop ranges between 0.5 mile to 1.5 miles wide and consists of irregular terraces, alluvial fans, and floodplain meadows. From Winthrop downstream to the town of Twisp, the valley opens out and the slope decreases to approximately 17.0 feet/river mile (Okanogan County 1996 in NPPC 2002).

Roughly 50 to 65 million years ago the North Cascade subcontinent docked against the Okanogan subcontinent. As the two continents collided numerous north-to-south faults formed throughout the region that presently includes the Methow subbasin. The dominant tectonic feature distinguishing the area is the Tertiary Methow-Pasayten Graben. Over millions of years, repeated occurrences of folding transformed and redefined the Methow-Pasayten Graben, with at least four distinct episodes culminating in the present geologic composition of the region (Barksdale 1975 in NPPC 2002).

The resulting bedrock geology of the Methow Valley area is characterized by folded Mesozoic sediments and volcanic rocks down faulted between crystalline blocks. The sediment strata include varieties of sandstones, shales, siltstones, conglomerates and andesitic flows, breccias and tuffs. The crystalline rocks include various granitic type igneous intrusive rocks and high-grade metamorphic types, including gneiss, marble, and schist (Barksdale 1975 in NPPC 2002).

The valley's bedrock is overlain with a thick sequence of highly permeable unconsolidated sediment composed of pumice, ash, alluvium and glacial outwash. The majority of the Subbasin's aquifers rests within this unconsolidated sediment layer, confined from below by the

relative impermeability of the underlying bedrock (EMCON 1993 in NPPC 2002). Quartz and feldspar are the dominant minerals in the silt and sand fractions of sediment from the Methow River.

Subbasin soils are generally coarsely textured compositions of glacial till. The primary constituent materials are granitic, volcanic, and sedimentary. Unconsolidated materials including glacial drift, pumice and ash deposits, alluvial plain and fan deposits, are also present (EMCON 1973 in NPPC 2002). Topsoil generally consists of sandy loams. Underneath the topsoil lie alluvium and glacial outwash materials.

2.0 Socio-Political Features

2.1 Land Ownership

Approximately 89 percent of the Subbasin is in federal, state, tribal, and local government ownership ([Figure 2](#)). The Subbasin is comprised of the lowest percentage (11 percent) of privately held lands than any other subbasin in the Ecoprovince ([Table 2](#)).

Table 2. Land ownership of the Columbia Cascade Ecoprovince, Washington (IBIS 2003).

Subbasin	Federal Lands (acres)	Tribal Lands (acres)	State Lands (acres)	Local Gov't Lands (acres)	Private Lands (acres)	Water (acres)	Total (Subbasin) (acres)
Entiat	247,064	0	13,629	0	37,670	0	298,363
Lake Chelan	517,883	0	3,549	0	78,493	0	599,925
Wenatchee	682,295	0	11,836	0	159,182	0	853,313
Methow	985,234	0	55,836	0	126,724	0	1,167,794
Okanogan	400,496	311,826	261,598	0	516,159	0	1,490,079
Upper Middle Mainstem Columbia River	124,492	29,507	284,996	0	1,168,744	0	1,607,739
Crab	303,136	0	13,629	25	2,681,363	16,100	3,014,253
Total (Ecoprovince)	3,260,600	341,333	645,073	25	4,768,335	16,100	9,031,466

2.2 Land Use

Major land uses in the Subbasin include agriculture, forestry, livestock grazing, and residential and recreational development. Orchards and small farms growing alfalfa and other irrigated crops constitute the majority of the Subbasin's agricultural activities. The towns of Carlton, Mazama, Methow, Pateros, Twisp, and Winthrop are distributed throughout the Subbasin.

Irrigated agricultural use since pre-European settlement (circa 1850) was aided by the development of a network of unlined ditches. Numerous irrigation districts were organized in the early 1900s to supply water for agricultural production. Currently, there are at least 27 irrigation canals operated by both public and private entities in the Methow subbasin (NPPC 2002).

Land use within the Subbasin is illustrated in [Figure 3](#). For more information about the effects on wildlife habitat from changes in land use from circa 1850 to today, see section 3.2 (Ashley and Stovall, unpublished report, 2004).

Figure 2 Land ownership in the Methow subbasin, Washington (IBIS 2003).

[Can Chuck provide this map??]

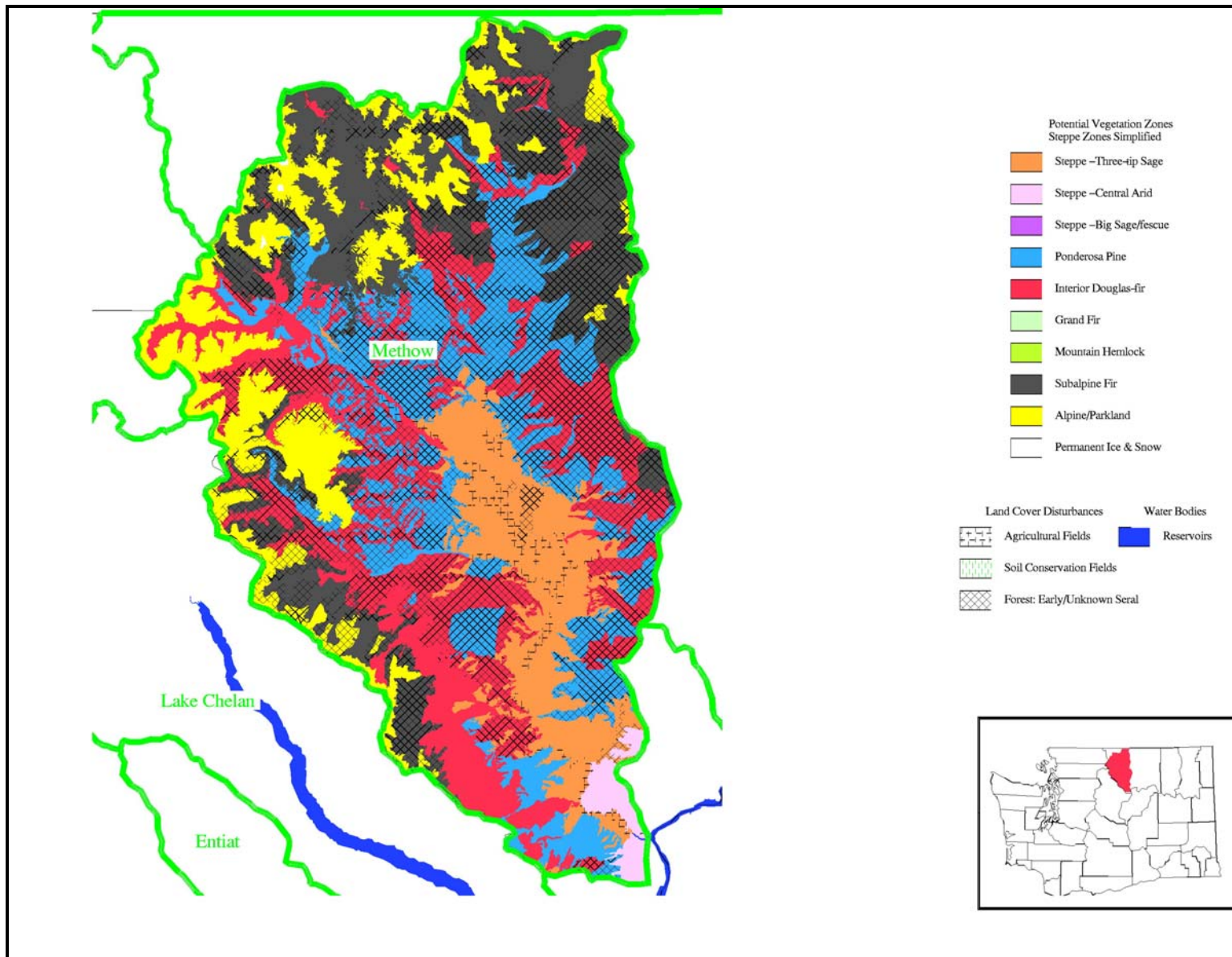


Figure 3. Land use and potential vegetation zones in the Methow subbasin, Washington (WDFW 2003).

2.3 Protection Status

Much of the land within the Subbasin is set aside as protected, particularly in the upper elevations. Protected areas include two wilderness areas: the Pasayten Wilderness Area and the Lake Chelan-Sawtooth Wilderness Area. The WDFW also manages the Methow Valley Wildlife Area.

The Subbasin contains the largest amount (27 percent; 317,865 acres) of permanently protected lands than any other subbasin in the Ecoprovince. The Pasayten Wilderness Area and the Lake Chelan-Sawtooth Wilderness Area have permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a natural state within which disturbance events of natural type are allowed to proceed without interference or are mimicked through management (high protection) ([Figure 4](#)). Approximately 1.2 percent (14,078 acres) of the Subbasin has permanent protection from conversion of natural land cover and a mandated management plan in operation to maintain a primarily natural state (medium protection status). The majority of lands in the Subbasin (706,058 acres; 60 percent) has permanent protection from conversion of natural land cover for the majority of the area, but is subjected to uses of either a broad, low intensity type or localized intense type (low protection status). Approximately 11 percent (129,794 acres) of the lands within the Subbasin lack irrevocable easements or mandates to prevent conversion of natural habitat types to anthropogenic habitat types (no protection). Lands owned by WDFW fall within the medium and low protection status categories.

GAP protection status acreage for each Ecoprovince subbasin is compared in [Figure 5](#). As illustrated, the Upper Middle Mainstem Columbia River subbasin and the Crab subbasin are the only subbasins in the Ecoprovince without high protection status lands (status 1). Medium, low, and no protection status lands (status 2, 3, and 4 respectively) show similar trends as those found in other Ecoprovince subbasins.

Additional habitat protection, primarily on privately owned lands, is provided through the Conservation Reserve Program (CRP) and the Conservation Reserve Enhancement Program (CREP). The CRP is intended to reduce soil erosion on upland habitats through establishment of perennial vegetation on former agriculture lands. Similarly, CREP conservation practices reduce stream sedimentation and provide protection for riparian/riverine habitats using buffer strips comprised of herbaceous and woody vegetation.

Both programs provide short-term (CRP-10 years; CREP-15 years), high protection of habitats enrolled in either program. The U.S. Congress authorizes program funding /renewal, while the USDA determines program criteria. Program enrollment eligibility and sign-up is decentralized to state and local NRCS offices (R. Hamilton, FSA, personal communication, 2003).

3.0 Ecological Features

3.1 Vegetation

Subbasin vegetation, wildlife habitat descriptions, and changes in habitat quantity, distribution, abundance, and condition are summarized in the following sections. Landscape level vegetation information is derived from the Washington GAP Analysis Project (Cassidy 1997) and IBIS data (2003).

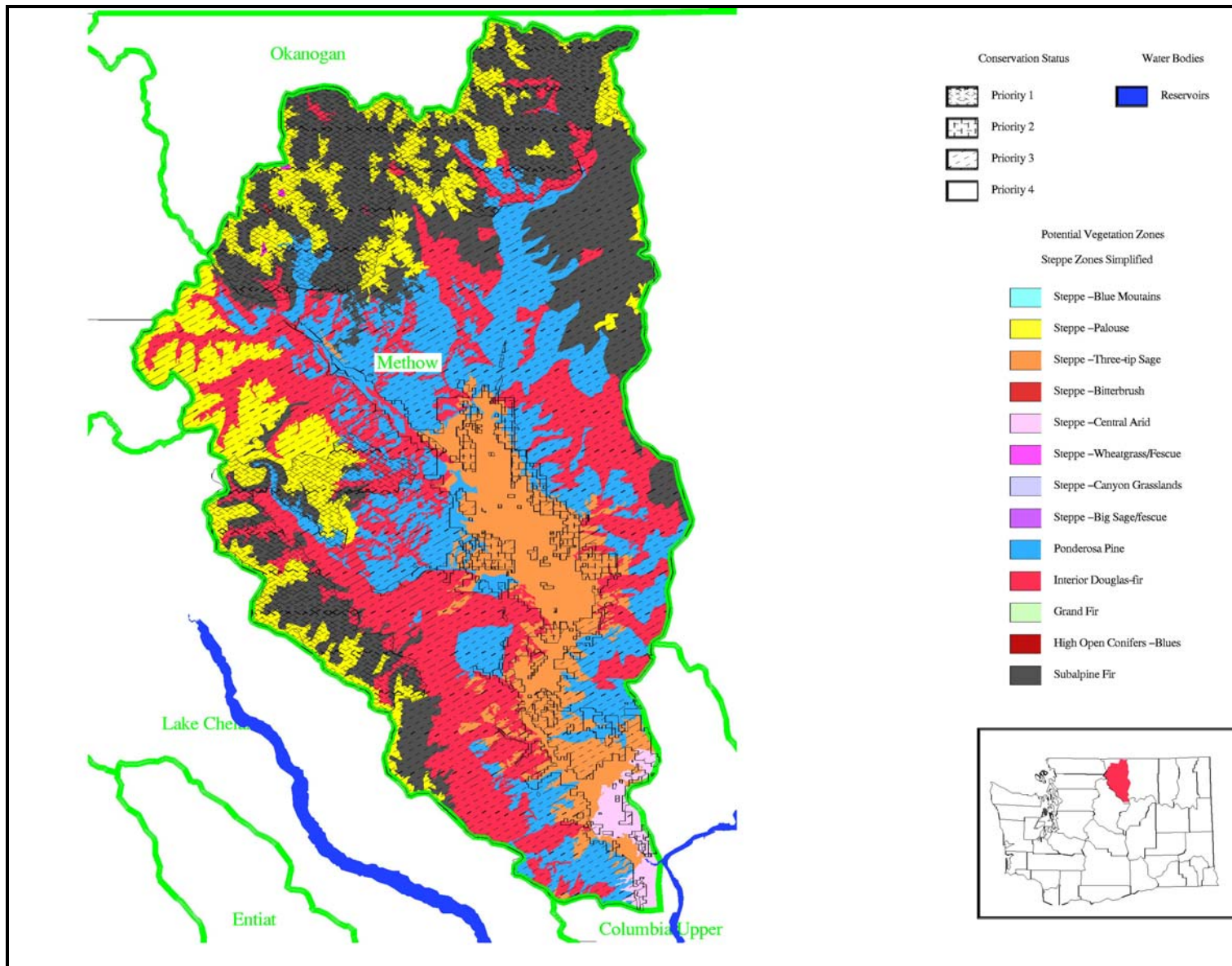


Figure 4. Protection status and vegetation zones of the Methow subbasin, Washington (Cassidy 1997).

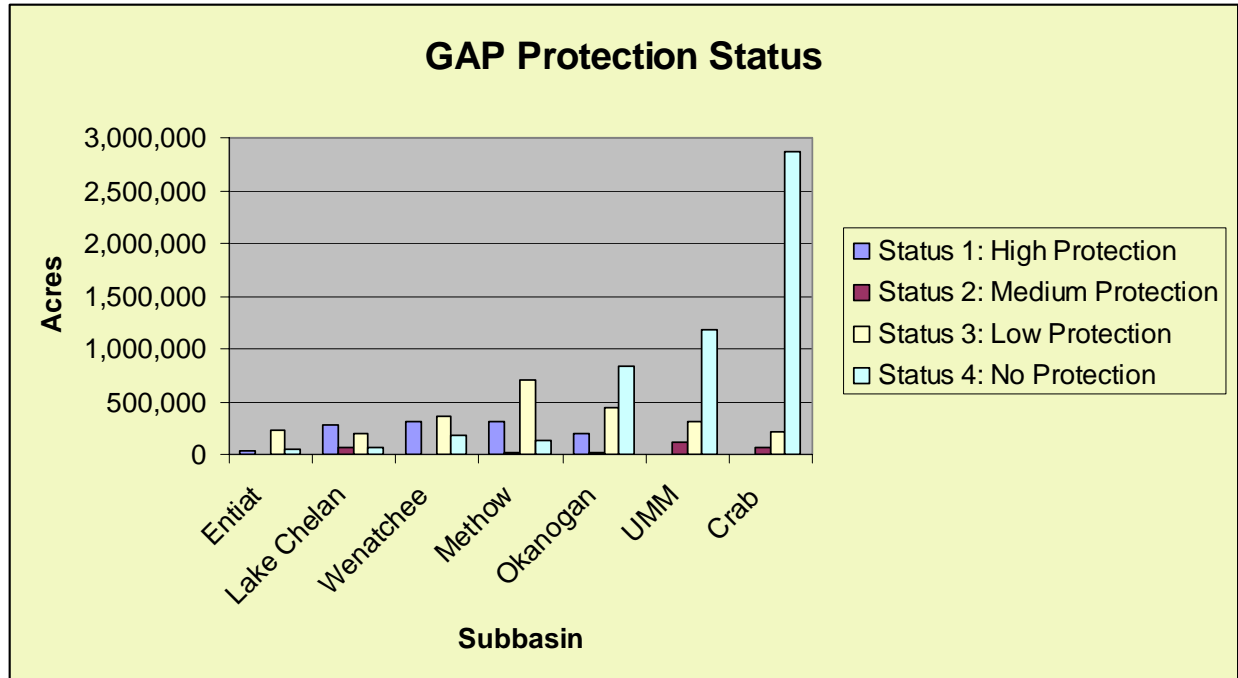


Figure 5. GAP protection status for all Ecoprovince/subbasin habitat types (IBIS 2003).

3.1.1 Rare Plant Communities

The Subbasin contains 50 rare plant communities [Table 15](#) (Appendix A). Approximately 28 percent of the rare plant communities are associated with shrubsteppe habitat, 16 percent with riparian or wetland habitats, and 56 percent with upland forest habitat. Rare/high-quality plant occurrences and communities are illustrated in [Figure 6](#).

3.1.2 Noxious Weeds

Changes in biodiversity have been closely associated with changes in land use. Grazing, agriculture, and accidents have introduced a variety of exotic plants, many of which are vigorous enough to earn the title "noxious weed." Twenty-six species of noxious weeds occur in the Subbasin ([Table 3](#)).

3.1.3 Vegetation Zones

Cassidy (1997) identified six historic (potential) vegetation zones that occur within the Subbasin ([Figure 3](#)). The three-tip sage, central arid steppe, ponderosa pine vegetation zones are described in detail in Ashley and Stovall (unpublished report, 2004). These vegetation zones constitute focal habitat types. Douglas-fir, subalpine fir, and alpine parkland are not focal habitat types, but these vegetation zones occur throughout the Subbasin.

Vegetation zone status is summarized in [Table 4](#). An estimated 1.5 percent of central arid steppe and 5.2 percent of three-tip sage has been lost to agriculture. Similarly, 1.1 percent of the ponderosa pine vegetation zone has been converted to agriculture.

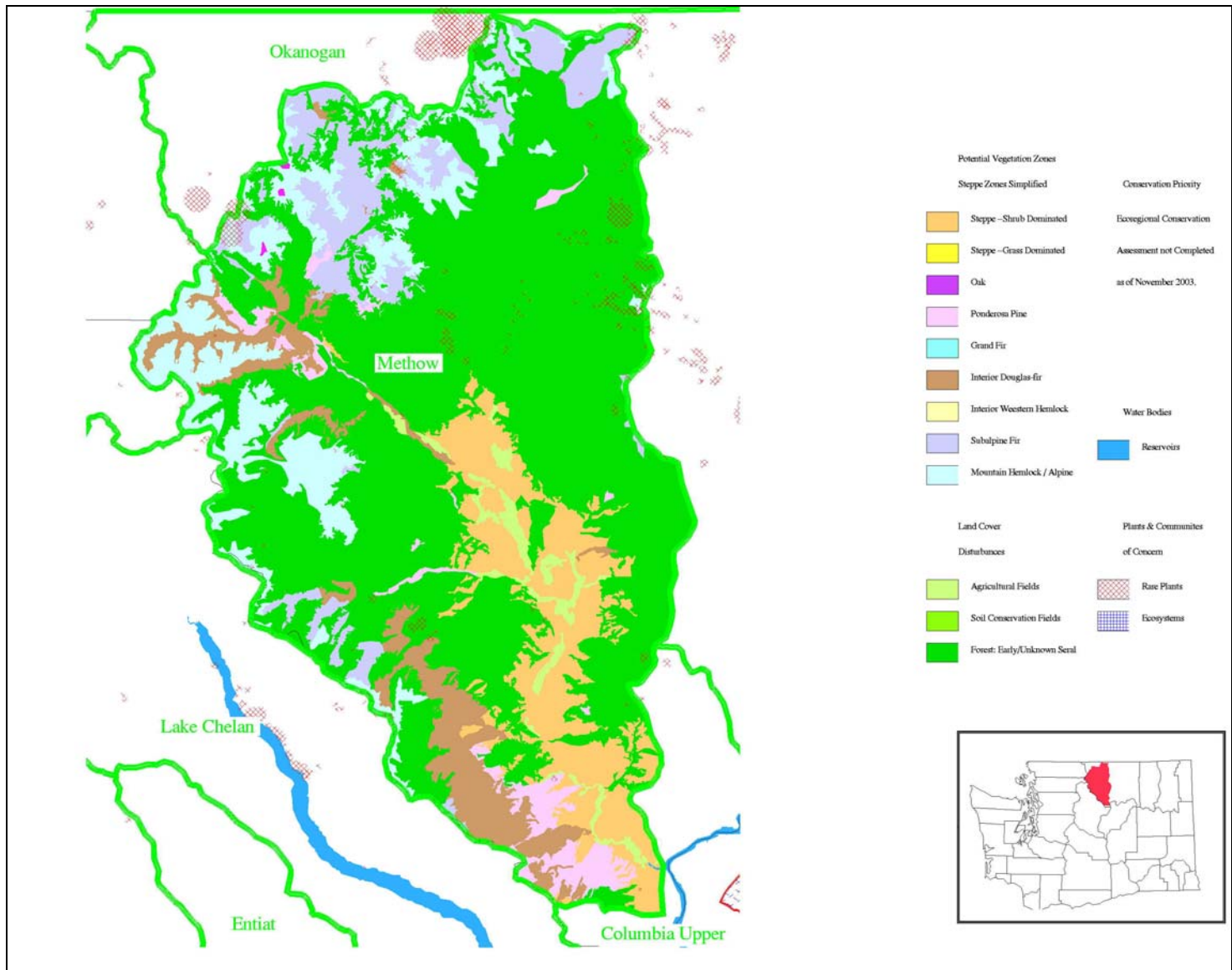


Figure 6. Rare plant occurrence and high-quality plant communities in the Methow subbasin, Washington (Cassidy 1997; WNHP 2003).

Table 3. Noxious weeds in the Methow subbasin and their origin (Callihan and Miller 1994).

Common Name	Scientific Name	Origin
Feld bindweed	<i>Convolvulus arvensis</i>	Eurasia
Scotchbroom	<i>Cytisus scoparius</i>	Europe
Buffalobur nightshade	<i>Solanum rostratum</i>	Native to the Great Plains of the U.S
Pepperweed whitetop	<i>Cardaria draba</i>	Europe
Common crupina	<i>Crupina vulgaris</i>	Eastern Mediterranean region
Jointed goatgrass	<i>Aegilops cylindrica</i>	Southern Europe and western Asia
Meadow hawkweed	<i>Hieracium caespitosum</i>	Europe
Orange hawkweed	<i>Hieracium aurantiacum</i>	Europe
Poison hemlock	<i>Conium maculatum</i>	Europe
Johnsongrass	<i>Sorghum halepense</i>	Mediterranean
White knapweed	<i>Centaurea diffusa</i>	Eurasia
Russian knapweed	<i>Acroptilon repens</i>	Southern Russia and Asia
Spotted knapweed	<i>Centaurea bibersteinii</i>	Europe
Purple loosestrife	<i>Lythrum salicaria</i>	Europe
Mat nardusgrass	<i>Nardus stricta</i>	Eastern Europe
Silverleaf nightshade	<i>Solanum elaeagnifolium</i>	Central United States
Puncturevine	<i>Tribulus terrestris</i>	Europe
Tansy ragwort	<i>Senecio jacobaea</i>	Eurasia
Rush skeletonweed	<i>Chondrilla juncea</i>	Eurasia
Wolf's milk	<i>Euphorbia esula</i>	Eurasia
Yellow star thistle	<i>Centaurea solstitialis</i>	Mediterranean and Asia
Canadian thistle	<i>Cirsium arvense</i>	Eurasia
Musk thistle	<i>Carduus nutans</i>	Eurasia
Scotch cottonthistle	<i>Onopordum acanthium</i>	Europe
Dalmatian toadflax	<i>Linaria dalmatica</i>	Mediterranean
Yellow toadflax	<i>Linaria vulgaris</i>	Europe

Table 4. Historic and current extent of GAP vegetation zones in the Methow subbasin, Washington (Cassidy 1997).

Status	GAP Vegetation Zone (acres)					
	Alpine Parkland	Subalpine Fir	Douglas-fir	Ponderosa pine	Central Arid Steppe	Three-tip Sage
Historic (Potential)	10,598	17,936	31,257	12,136	3,033	8,943
Agriculture	0	0	0	144	46	470
Current	10,598	17,936	31,257	11,992	2,987	8,473

3.1.4 Wildlife Habitats

The Subbasin consists of 15 wildlife habitat types, which are briefly described in [Table 5](#). Detailed descriptions of these habitat types can be found in Appendix B of Ashley and Stovall (unpublished report, 2004).

Table 5. Wildlife habitat types within the Methow subbasin, Washington (IBIS 2003).

Habitat Type	Brief Description
Montane Mixed Conifer Forest	Coniferous forest of mid-to upper montane sites with persistent snowpack; several species of conifer; understory typically shrub-dominated.
Eastside (Interior) Mixed Conifer Forest	Coniferous forests and woodlands; Douglas-fir commonly present, up to 8 other conifer species present; understory shrub and grass/forb layers typical; mid-montane.
Lodgepole Pine Forest and Woodlands	Lodgepole pine dominated woodlands and forests; understory various; mid- to high elevations.
Ponderosa Pine and Interior White Oak Forest and Woodland	Ponderosa pine dominated woodland or savannah, often with Douglas-fir; shrub, forb, or grass understory; lower elevation forest above steppe, shrubsteppe.
Upland Aspen Forest	Quaking aspen (<i>Populus tremuloides</i>) is the characteristic and dominant tree in this habitat. Scattered ponderosa pine (<i>Pinus ponderosa</i>) or Douglas-fir (<i>Pseudotsuga menziesii</i>) may be present.
Subalpine Parkland	Coniferous forest of subalpine fir (<i>Abies lasiocarpa</i>), Engelmann spruce (<i>Picea engelmannii</i>) and lodgepole pine (<i>Pinus contorta</i>).
Alpine Grasslands and Shrublands	This habitat is dominated by grassland, dwarf-shrubland (mostly evergreen microphyllous), or forbs.
Eastside (Interior) Grasslands	Dominated by short to medium height native bunchgrass with forbs, cryptogam crust.
Shrubsteppe	Sagebrush and/or bitterbrush dominated; bunchgrass understory with forbs, cryptogam crust.
Agriculture, Pasture, and Mixed Environs	Cropland, orchards, vineyards, nurseries, pastures, and grasslands modified by heavy grazing; associated structures.
Urban and Mixed Environs	High, medium, and low (10-29 percent impervious ground) density development.
Open Water – Lakes, Rivers, and Streams	Lakes, are typically adjacent to Herbaceous Wetlands, while rivers and streams typically adjoin Eastside Riparian Wetlands and Herbaceous Wetlands
Herbaceous Wetlands	Generally a mix of emergent herbaceous plants with a grass-like life form (graminoids). Various grasses or grass-like plants dominate or co-dominate these habitats.
Montane Coniferous Wetlands	Forest or woodland dominated by evergreen conifers; deciduous trees may be co-dominant; understory dominated by shrubs, forbs, or graminoids; mid- to upper montane.
Eastside (Interior) Riparian Wetlands	Shrublands, woodlands and forest, less commonly grasslands; often multi-layered canopy with shrubs, graminoids, forbs below.

3.1.5 Changes in Wildlife Habitat

Dramatic changes in wildlife habitat have occurred throughout the Subbasin since pre-European settlement (circa 1850) ([Figure 7](#)) and ([Figure 8](#)). The IBIS data indicate that the most significant habitat losses throughout the Subbasin is the loss of 51 percent of ponderosa pine habitat and the loss of 29 percent interior grasslands (steppe dominated shrublands). Quantitative changes in all Subbasin wildlife habitat types are compared in [Table 6](#) and illustrated in [Figure 9](#).

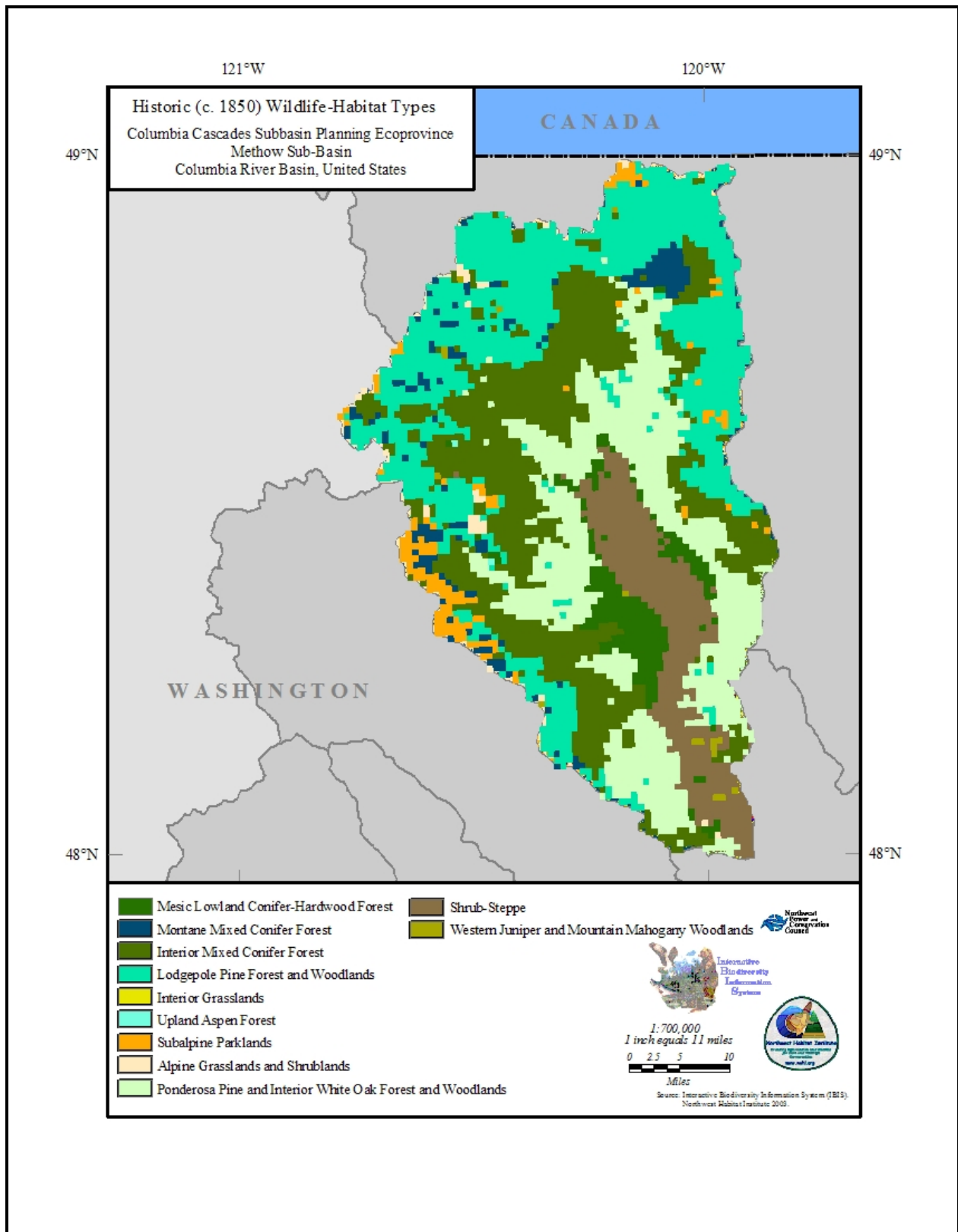


Figure 7. Historic wildlife habitat types of the Methow subbasin, Washington (IBIS 2003).

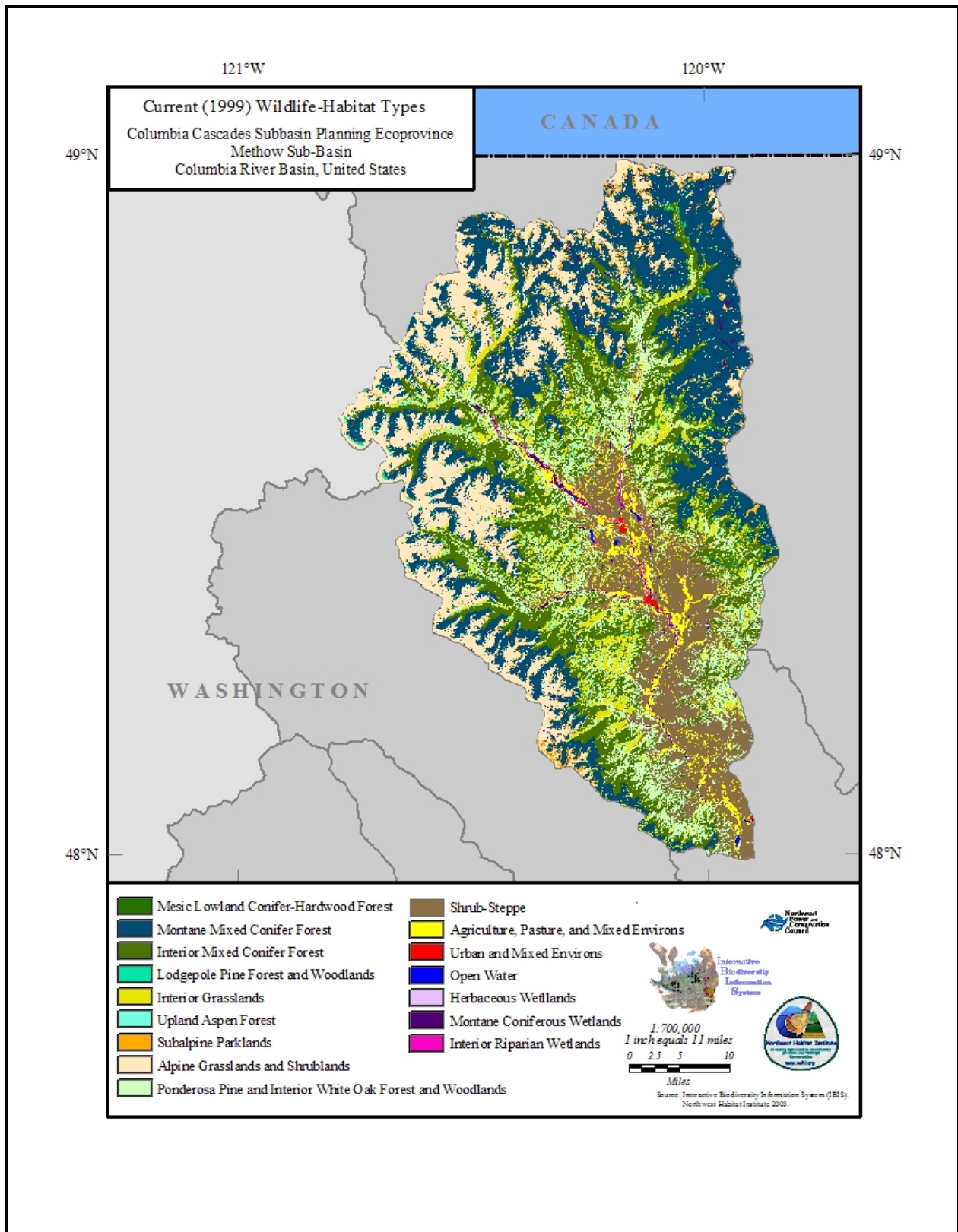


Figure 8. Current wildlife habitat types of the Methow subbasin, Washington (IBIS 2003).

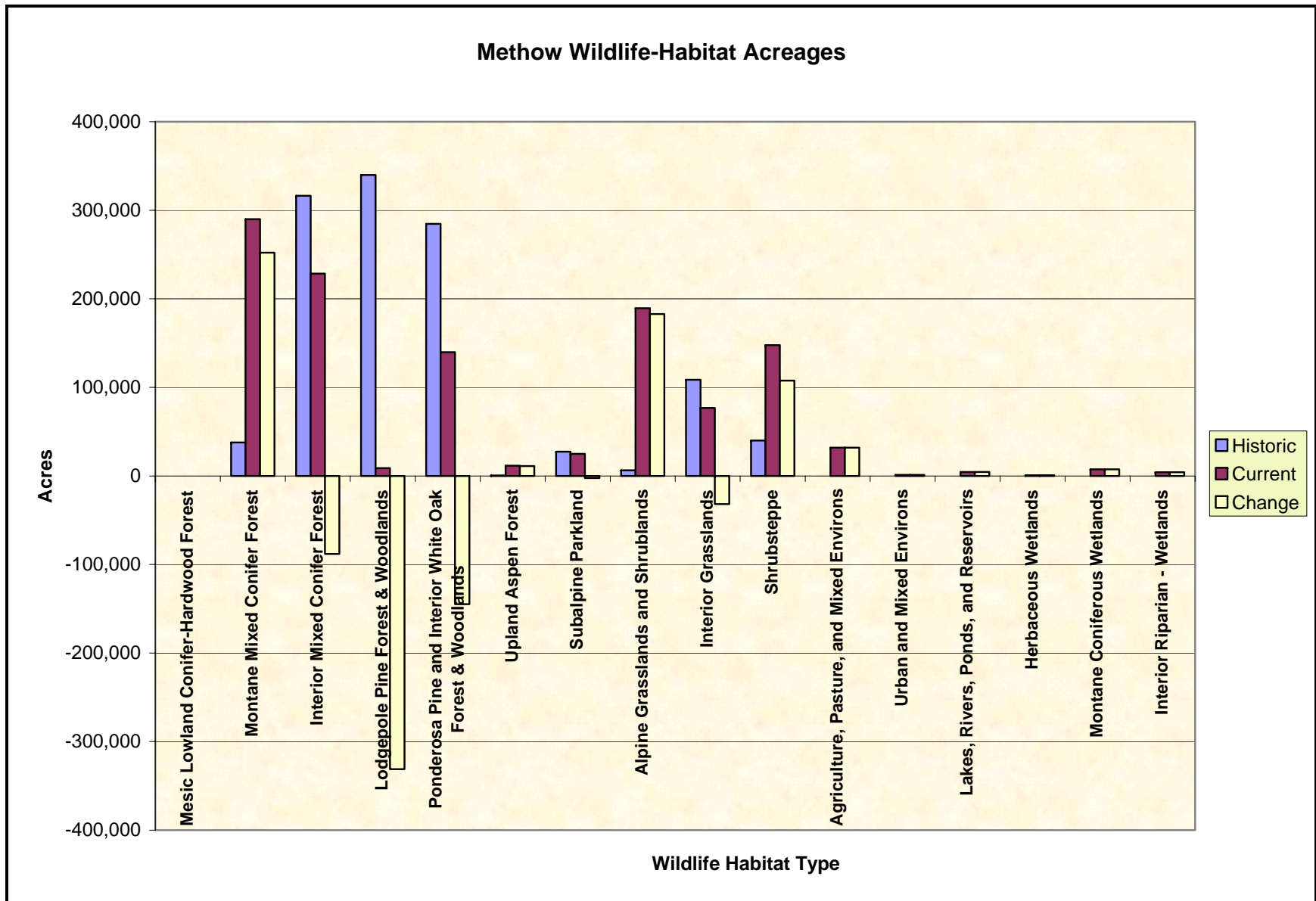


Figure 9. Methow subbasin wildlife habitat acreage and associated change (IBIS 2003).

3.1.6 Focal Habitats

The focal habitat selection and justification process is described in section 4.1.3 (Ashley and Stovall, unpublished report, 2004). Focal habitats selected for the Subbasin include ponderosa pine, shrubsteppe, and riparian wetlands. Neither the IBIS nor the Washington GAP Analysis data recognize the historic presence of riparian wetlands. The current extent of this habitat type as reflected in these databases are suspect at best; however, riparian wetland habitat is a high priority habitat wherever it is found in the Ecoprovince. Ponderosa pine and shrubsteppe habitats are illustrated in [Figure 10](#). Agriculture, a habitat of concern, is not included as a focal habitat type at the subbasin level, nor is it depicted in [Figure 10](#). The amount of extant acres for each focal habitat type is illustrated by subbasin in [Table 7](#).

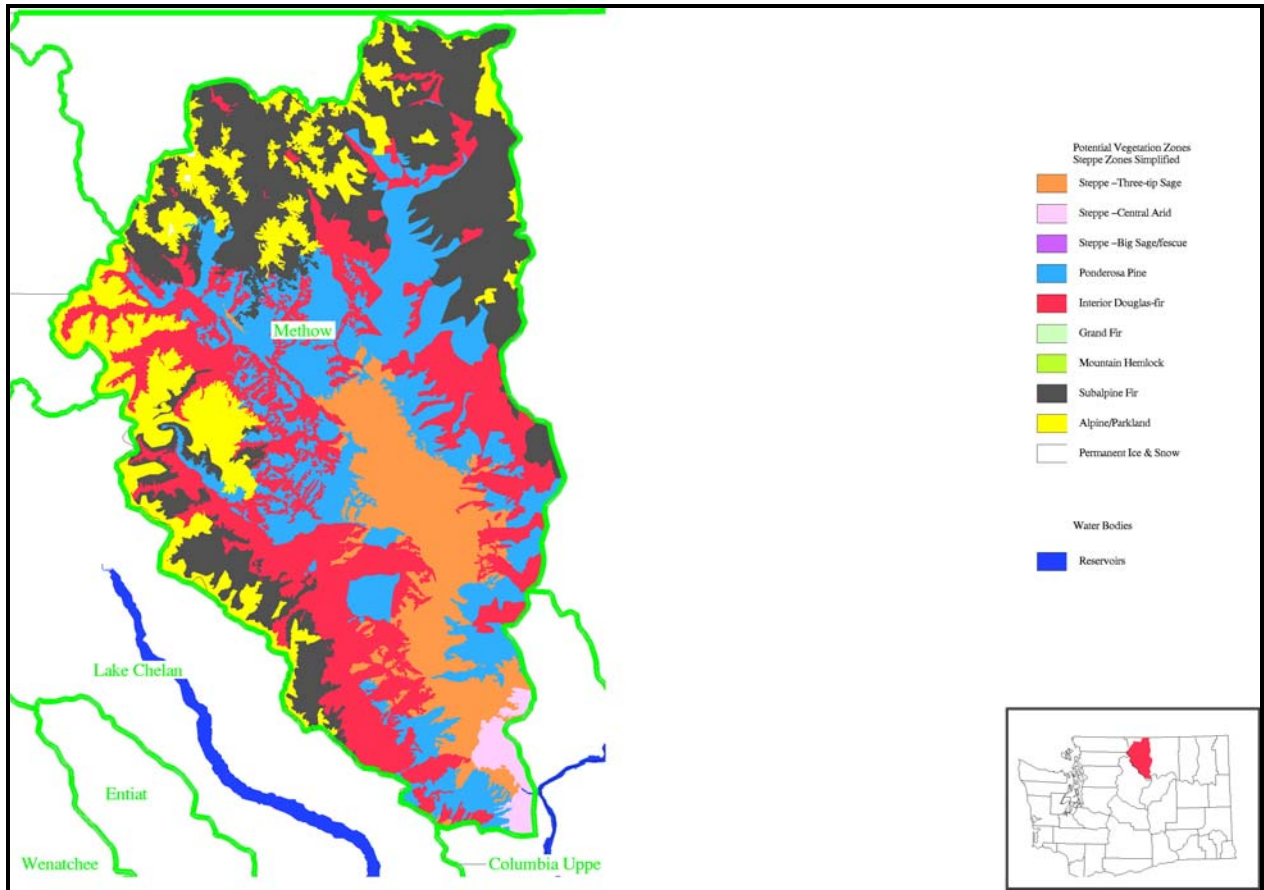


Figure 10. Ponderosa pine and shrubsteppe habitat in the Methow subbasin, Washington (Cassidy 1997).

Table 7. A comparison of the amount of current focal habitat types for each subbasin in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).

Subbasin	Focal Habitat		
	Ponderosa Pine (acres)	Shrubsteppe (acres)	Riparian Wetlands (acres)
Entiat	55,807	32,986	94
Lake Chelan	45,480	45,018	5,079
Wenatchee	51,912	24,248	141

Subbasin	Focal Habitat		
	Ponderosa Pine (acres)	Shrubsteppe (acres)	Riparian Wetlands (acres)
Methow	139,853	107,655	4,232
Okanogan	140,738	562,763	9,920
Upper Middle Mainstem Columbia River	50,843	753,073	3,898
Crab	4,660	991,397	12,227

3.1.7 Focal Habitat Summaries

Focal wildlife habitat types are fully described in section 4.1.7 of Ashley and Stovall (unpublished report, 2004). Only subbasin-specific focal habitat type anomalies and differences are described in this section.

3.1.7.1 Ponderosa pine

The shrubsteppe habitat type is described in section 4.1.7.1 of Ashley and Stovall (unpublished report, 2004). Changes in shrubsteppe distribution in the Subbasin from circa 1850 to 1999 are illustrated in [Figure 7](#) and [Figure 8](#).

Historically in the Subbasin, old-growth ponderosa pine forests occupied large areas between the shrubsteppe zone and moister forest types at higher elevations. Large, widely spaced, fire-resistant trees and an understory of forbs, grasses, and shrubs characterized these forests. Periodic fires maintained this habitat type. With the settlement of the Subbasin, most of the old pines were harvested for timber, and frequent fires have been suppressed. As a result, much of the original forest has been replaced by dense second growth of Douglas fir and ponderosa pine with little understory.

Extant ponderosa pine habitat within the 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

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 (*Centaurea* spp.) are spreading rapidly through the ponderosa pine zone and threatening to replace cheatgrass as the dominant increaser after grazing (Roche and Roche 1988). 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.

Current and historic acreages and percent change for the ponderosa pine habitat type are compared by subbasin in [Figure 11](#). All subbasins in the Ecoprovince experienced a significant loss (25-75 percent) of ponderosa pine habitat from historic (circa 1850) amounts (IBIS 2003).

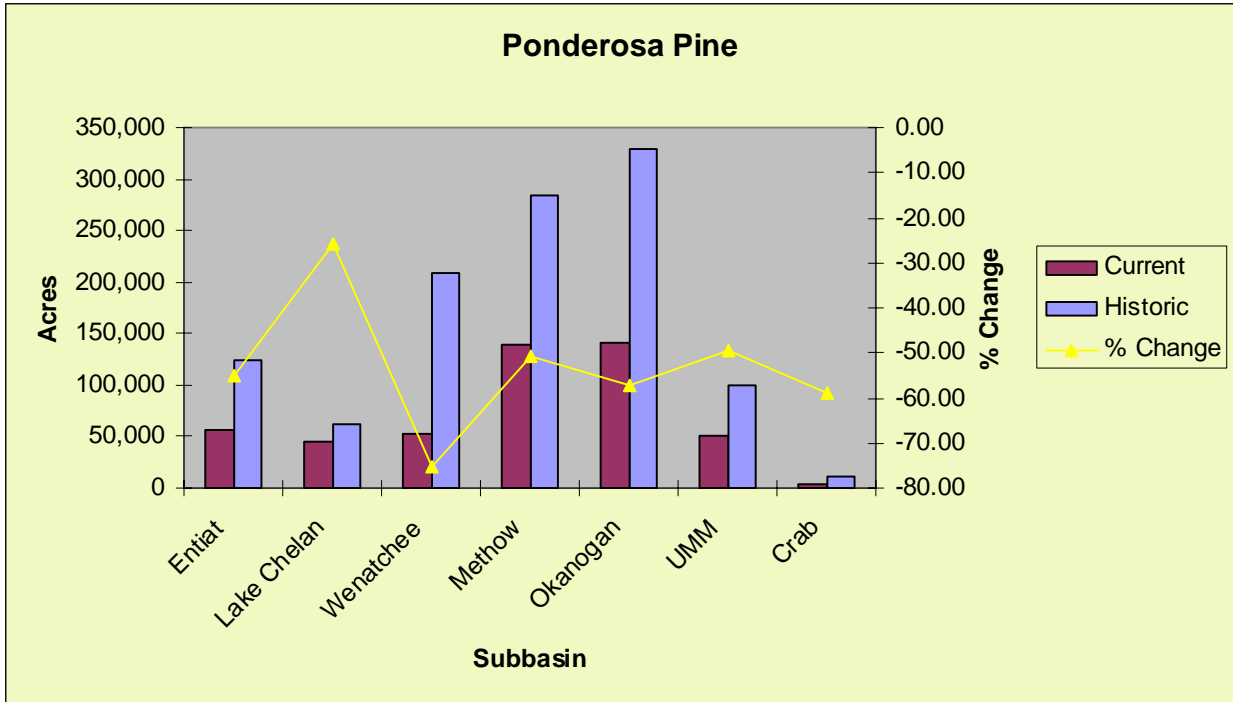


Figure 11. A comparison of the ponderosa pine habitat type in Ecoprovince subbasins (IBIS 2003).

[\[Add data if available\]](#)

3.1.7.1.1 Protection Status

The protection status of ponderosa pine habitat for Ecoprovince subbasins is compared in [Figure 12](#). The protection status of remaining ponderosa pine habitat in all subbasins fall primarily within the “low” to “no protection” status categories. As a result, this habitat type will likely suffer further degradation, disturbance, and/or loss in all Ecoprovince subbasins. Protection status of ponderosa pine habitat within the Methow subbasin is illustrated in [Table 8](#).

Table 8. Ponderosa pine habitat GAP protection status in the Methow subbasin, Washington (IBIS 2003).

GAP Protection Status	Acres
High Protection	5,151
Medium Protection	1,381
Low Protection	119,451
No Protection	13,851

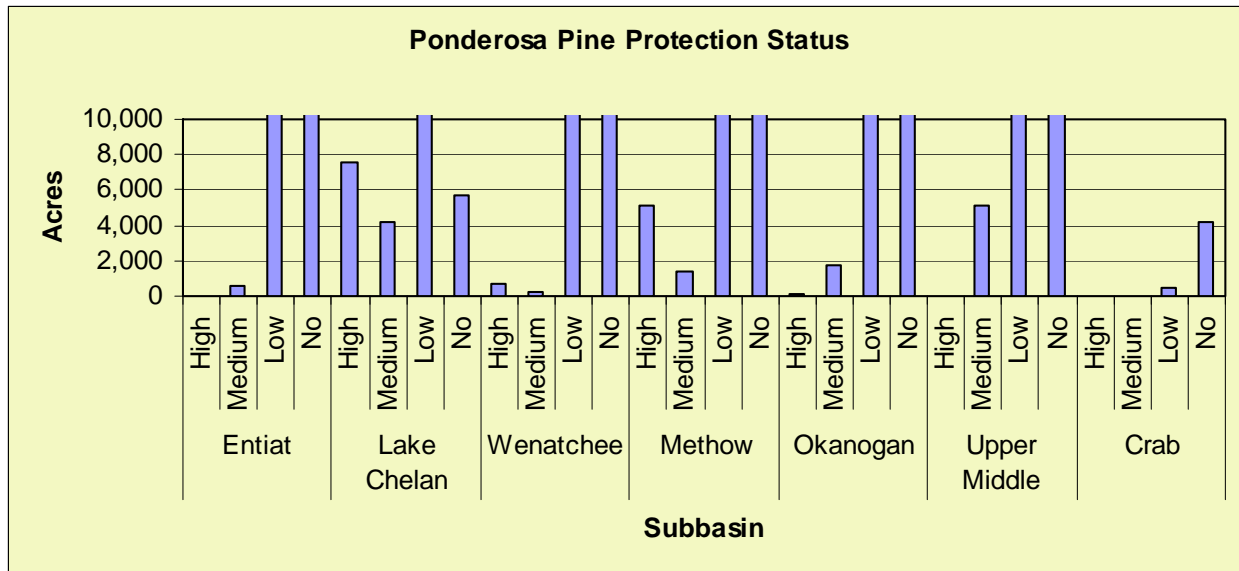


Figure 12. Protection status of ponderosa pine in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).

3.1.7.1.2 Factors Affecting Ponderosa Pine Habitat

Factors affecting ponderosa pine habitat are explained in detail in section 4.2.10.1 (Ashley and Stovall (unpublished report, 2004) and are summarized below:

- Timber harvesting, particularly at low elevations, has reduced the amount of old growth forest and associated large diameter trees and snags.
- Urban and residential development has 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 lack of recruitment of sapling trees, particularly pines.
- Invasion of exotic plants has altered understory conditions and increased fuel loads.
- Fragmentation of remaining tracts has negatively impacted species with large area requirements.
- Hostile landscapes, particularly those in proximity to agricultural and residential areas, may have high density of nest parasites (brown-headed cowbird), exotic nest competitors (European starling), and domestic predators (cats), and may be subject to high levels of human disturbance.
- The timing (spring/summer versus fall) of restoration/silviculture practices such as mowing, thinning, and burning of understory removal may be especially detrimental to single-clutch species.
- Spraying insects that are detrimental to forest health may have negative ramifications on lepidopterans and other non-target avian species.

3.1.7.1.3 Recommended Future Condition

Recommended future conditions are described in section 4.1.7.1.3 in Ashley and Stovall (unpublished report, 2004). Recommended conditions for ponderosa pine habitat are summarized in the ensuing paragraphs.

Condition 1a – 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). Abundant white-headed woodpecker populations can be present on burned or cut forest with residual large diameter live and dead trees and understory vegetation that is usually very sparse. Openness however, is not as important as the presence of mature or veteran cone producing pines within a stand (Milne and Hejl 1989).

Condition 1b – mature ponderosa pine forest: The pygmy nuthatch represents species that require heterogeneous stands of ponderosa pine with a mixture of well-spaced, old pines and vigorous trees of intermediate age and those species that depend on snags for nesting and roosting, high canopy density, and large diameter (greater than 18 inches DBH) trees characteristic of mature undisturbed forests. Connectivity between suitable habitats is important for species, such as pygmy nuthatch, whose movement and dispersal patterns are limited to their natal territories.

Condition 2 – 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 (Zeiner *et al.* 1990), two layered canopies, tree density of 508 trees/acre (9-foot spacing), basal area of 250 ft.²/acre (McCallum 1994), and snags greater than 20 inches DBH 3-39 feet tall (Zeiner *et al.* 1990). 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.

Condition 3 – *Pine/shrubsteppe interface*: Gray flycatchers represent wildlife species that occupy the pine/shrubsteppe interface (pine savannah) with a shrub/bunchgrass understory. Gray flycatchers require nest trees 18 inches DBH and a tree height of 52 feet for their reproductive life requisites.

3.1.7.2 Shrubsteppe

The shrubsteppe habitat type is described in section 4.1.7.2 of Ashley and Stovall (unpublished report, 2004). Changes in shrubsteppe distribution in the Subbasin from circa 1850 to 1999 are illustrated in [Figure 7](#) and [Figure 8](#).

Historically, sage dominated steppe vegetation occurred throughout the majority of the lower elevations in the Subbasin, and variations of shrubsteppe habitat once occupied most of the non-forested land in eastern Washington. The moister draws and permanent stream courses imbedded in the shrubsteppe landscape supported strands of riparian vegetation dominated by moisture loving shrubs and small trees, including thick stands of water birch, a major component of the winter diet of sharp-tailed grouse. The drastic reduction of water birch in the Subbasin by early settlers is likely a major factor in the decline of sharp-tailed grouse (NPPC 2002).

The greatest changes in shrubsteppe habitat from historic conditions are the reduction of bunchgrass cover in the understory and an increase in sagebrush cover. Soil compaction is also a significant factor in heavily grazed lands affecting water percolation, runoff and soil nutrient content. A long history of grazing, fire, and invasion by exotic vegetation has altered the composition of the plant community within much of the extant shrubsteppe in this region (Quigley and Arbelbide 1997; Knick 1999), and it is difficult to find stands which are still in relatively natural condition.

Fire has relatively little effect on native vegetation in the three-tip sagebrush zone, since three-tip sagebrush and the dominant graminoids resprout after burning. Three-tip sagebrush does not appear to be much affected by grazing, but the perennial graminoids decrease and are eventually replaced by cheatgrass (*Bromus tectorum*), plantain (*Plantago* spp.), big bluegrass (*Poa secunda*), and/or gray rabbitbrush (*Chrysothamnus nauseosus*). In recent years, diffuse knapweed (*Centaurea diffusa*) has spread through this zone and threatens to replace other exotics as the chief increaser after grazing (Roche and Roche 1998).

In areas of central arid steppe with a history of heavy grazing and fire suppression, true shrublands are common and may even be the predominant cover on non-agricultural land. Most of the native grasses and forbs are poorly adapted to heavy grazing and trampling by livestock. Grazing eventually leads to replacement of the bunchgrasses with cheatgrass, Nuttall's fescue (*Festuca microstachys*), eight flowered fescue (*F. octoflora*), and Indian wheat (*Plantago patagonica*) (Harris and Chaney 1984). In recent years, several knapweeds (*Centaurea* spp.), have become increasingly widespread. Russian star thistle (*Centaurea repens*) is particularly widespread, especially along and near major watercourses (Roche and Roche 1988 in Cassidy 1997).

Sizable areas of healthy shrubsteppe still remain. These areas occur primarily on public lands and the few remaining large private ranches in the Methow valley. Much of the deeper soil shrubsteppe habitat on flat bench lands has been converted to agriculture or developed as home sites. As agriculture increasingly gives way to subdivision and housing developments in the valley, private land parcels containing healthy shrubsteppe habitat may be lost (NPPC 2002). Currently, the largest block of undeveloped shrubsteppe in private ownership is located north of Twisp just south of WDFW land in the vicinity of the last known active sharp-tailed grouse lek in the Subbasin.

Current and historic acreages and percent change for the shrubsteppe habitat type are compared by subbasin in [Figure 13](#). The Upper Middle Mainstem Columbia River and Crab subbasins have experienced considerable losses (39 percent and 67 percent, respectively), while the remaining subbasins show increases in shrubsteppe habitat ranging from 165 to 462 percent over historic (circa 1850) amounts (IBIS 2003).

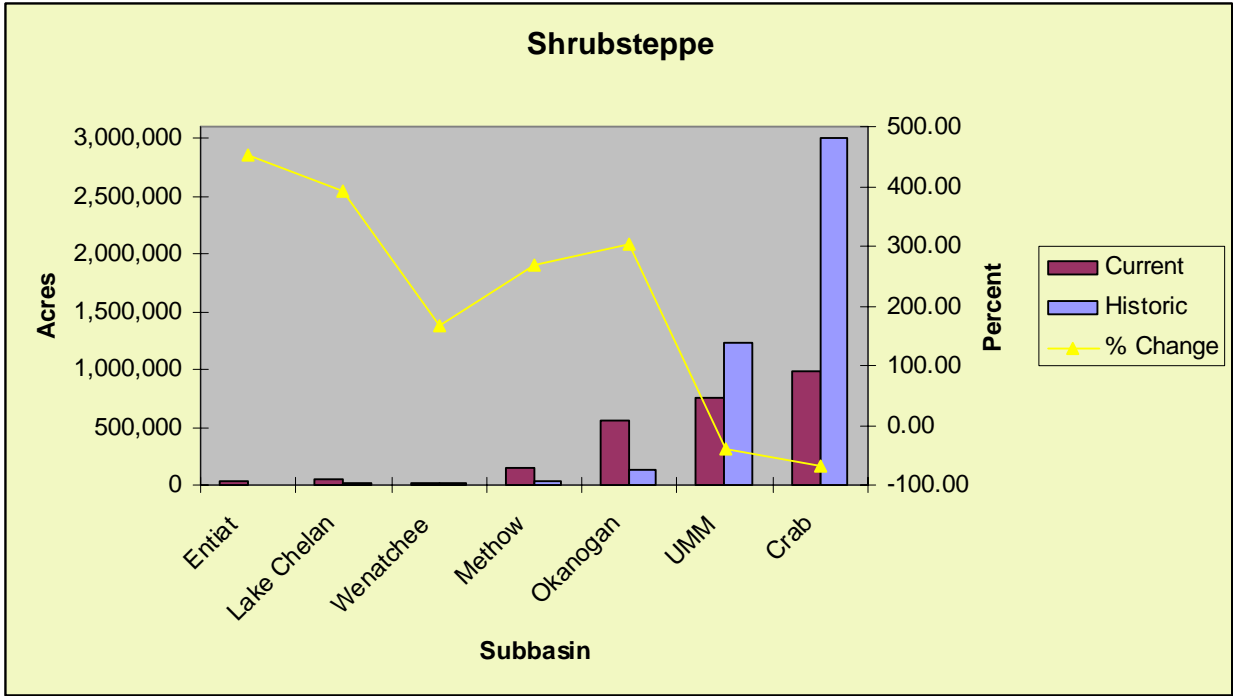


Figure 13. A comparison of the shrubsteppe habitat type in Ecoprovince subbasins (IBIS 2003).

[Add data if available]

3.1.7.2.1 Protection Status

The protection status of shrubsteppe habitat for Ecoprovince subbasins is compared in [Figure 14](#). The protection status of remaining shrubsteppe habitats in all subbasins fall primarily within the “low” to “no protection” status categories. As a result, this habitat type will likely suffer further degradation, disturbance, and/or loss in all Ecoprovince subbasins. Protection status of shrubsteppe habitat within the Methow subbasin is illustrated in [Table 9](#).

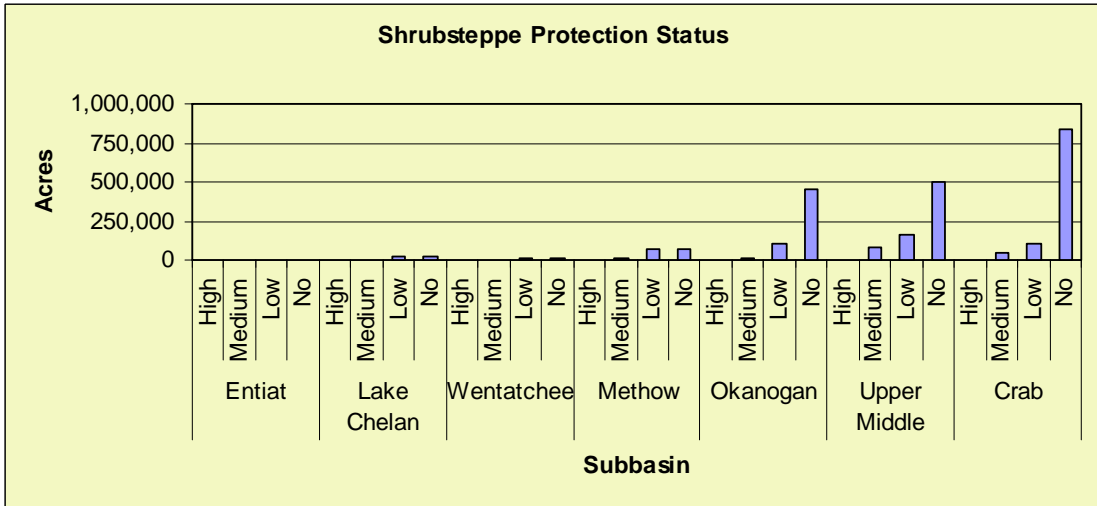


Figure 14. GAP protection status of shrubsteppe habitat in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).

Table 9. Shrubsteppe habitat GAP protection status in the Methow subbasin, Washington (IBIS 2003).

GAP Protection Status	Acres
High Protection	42
Medium Protection	8,274
Low Protection	65,670
No Protection	73,647

3.1.7.2.2 Factors Affecting Shrubsteppe Habitat

Factors affecting shrubsteppe habitat are explained in detail in section 4.2.10.2 (Ashley and Stovall (unpublished report, 2004) and are summarized below:

- Permanent habitat conversions of shrubsteppe/grassland habitats (e.g., approximately 60 percent of shrubsteppe in Washington [Dobler *et al.* 1996]) to other uses (e.g., agriculture, urbanization).
- Fragmentation of remaining tracts of moderate to good quality shrubsteppe habitat.
- Degradation of habitat from intensive grazing and invasion of exotic plant species, particularly annual grasses such as cheatgrass and woody vegetation such as Russian olive.
- Degradation and loss of properly functioning shrubsteppe/grassland ecosystems resulting from the encroachment of urban and residential development and conversion to agriculture. Best sites for healthy sagebrush communities (deep soils, relatively mesic conditions) are also best for agricultural productivity; thus, past losses and potential future losses are great. Most of the remaining shrubsteppe in Washington is in private ownership with little long-term protection (57 percent).
- Loss of big sagebrush communities to brush control (may not be detrimental relative to interior grassland habitats).
- Conversion of CRP lands back to cropland.
- Loss and reduction of cryptogamic crusts, which help maintain the ecological integrity of shrubsteppe/grassland communities.
- High density of nest parasites (brown-headed cowbird) and domestic predators (cats) may be present in hostile/altered landscapes, particularly those in proximity to agricultural and residential areas subject to high levels of human disturbance.
- Agricultural practices that cause direct or indirect mortality and/or reduce wildlife productivity. There are a substantial number of obligate and semi-obligate avian/mammal species; thus, threats to the habitat jeopardize the persistence of these species.
- Fire management, either suppression or over-use.
- Invasion and seeding of crested wheatgrass and other introduced plant species which reduces wildlife habitat quality and/or availability.

3.1.7.2.3 Recommended Future Condition

Recommended future conditions are described in section 4.1.7.2.3 in Ashley and Stovall (unpublished report, 2004). Recommended conditions for shrubsteppe habitat are summarized in the ensuing paragraphs.

3.1.7.2.3.1 Sagebrush-dominated Shrubsteppe:

Condition 1 – Diverse shrubsteppe habitat. Mule deer were selected to represent species that require and prefer diverse, dense (30 to 60 percent shrub cover less than 5 feet tall) shrubsteppe habitats (Ashley and Berger 1999) comprised of bitterbrush, big sagebrush, rabbitbrush, and other shrub species (Leckenby 1969; Kufeld *et al.* 1973; Sheehy 1975;

Jackson 1990) with a palatable herbaceous understory exceeding 30 percent cover (Ashley and Berger 1999).

Condition 2 – Sagebrush dominated shrubsteppe habitat: Brewer's sparrow was selected to represent wildlife species that require sagebrush dominated sites. Brewer's sparrow prefers a patchy distribution of sagebrush clumps, 10-30 percent cover (Altman and Holmes 2000), lower sagebrush height (between 20 and 28 inches), (Wiens and Rotenberry 1981), 10 to 20 percent native grass cover (Dobler 1994), less than 10 percent non-native herbaceous cover, and bare ground greater than 20 percent (Altman and Holmes 2000). It should be noted, however, that Johnsgard and Rickard (1957) reported that shrublands comprised of snowberry, hawthorne, chokecherry, serviceberry, bitterbrush, and rabbitbrush were also used by Brewer's sparrows for nesting in southeast Washington. Specific, quantifiable habitat attribute information for this mixed shrub landscape could not be found.

3.1.7.2.3.2 Steppe/Grassland-dominated Shrubsteppe:

Condition 1 – Shrubsteppe habitat with multi-structured deciduous trees and shrubs: Sharp-tailed grouse was selected to represent species that require multi-structured fruit/bud/catkin producing deciduous trees and shrubs dispersed throughout the landscape (10 to 40 percent of the total area). Other habitat conditions include:

- Native bunchgrass greater than 40 percent cover
- Native forbs at least 30 percent cover
- Visual obstruction readings (VOR) at least 6 inches
- At least 75 percent cover deciduous shrubs and trees
- Exotic vegetation/noxious weeds less than 5 percent cover

Condition 2 – Shrubsteppe habitat with native bunch grasses: Grasshopper sparrow was selected to represent species that require healthy steppe habitat dominated by native bunch grasses. Grasshopper sparrow require native bunchgrass cover greater than 15 percent and comprising greater than 60 percent of the total grass cover.

3.1.7.3 Eastside (Interior) Riparian Wetlands

The eastside (interior) riparian wetlands habitat type refers only to riverine and adjacent wetland habitats in both the Ecoprovince and individual subbasins. Historic (circa 1850) and, to a lesser degree, current data concerning the extent and distribution of riparian wetland habitat are a significant data gap at both the Ecoprovince and subbasin level. The lack of data is a major challenge as Ecoprovince and subbasin planners attempt to quantify habitat changes from historic conditions and develop strategies that address limiting factors and management goals and objectives.

Due to the lack of historic riparian wetland data, the IBIS database cannot be relied upon for comparisons in the Ecoprovince and individual subbasins between the historic and current extent of riparian wetlands. According to the IBIS database (2003), there are an estimated 3,898 acres of riparian wetland habitat currently in the Subbasin. Although there are no historic data, the actual number of acres or absolute magnitude of the change is less important than recognizing the loss of riparian habitat and the lack of permanent protection continues to place this habitat type at further risk.

Historically, riparian wetland habitat was characterized by a mosaic of plant communities occurring at irregular intervals along streams and dominated singularly or in some 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 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. However, the Subbasin is still host to some of eastern Washington's best remaining tracts of cottonwood gallery forests, found in the wide floodplain portions of the Methow Valley and its major tributaries. Significant riparian habitat remains along the Methow River between Winthrop and Lost River. Additional stands are located along the Twisp and Chewuch rivers and more fragmented pockets can be found along the Methow between Winthrop and Carlton. Large areas once dominated by cottonwoods, which contribute considerable structure to riparian habitats, are being lost. Because of its proximity to roads and other developed areas, much of the remaining riparian/floodplain habitat may be at risk of conversion to housing development.

[\[Add data if available\]](#)

The current extent of riparian wetland habitat throughout the Columbia Cascade Ecoprovince is illustrated in [Figure 15](#).

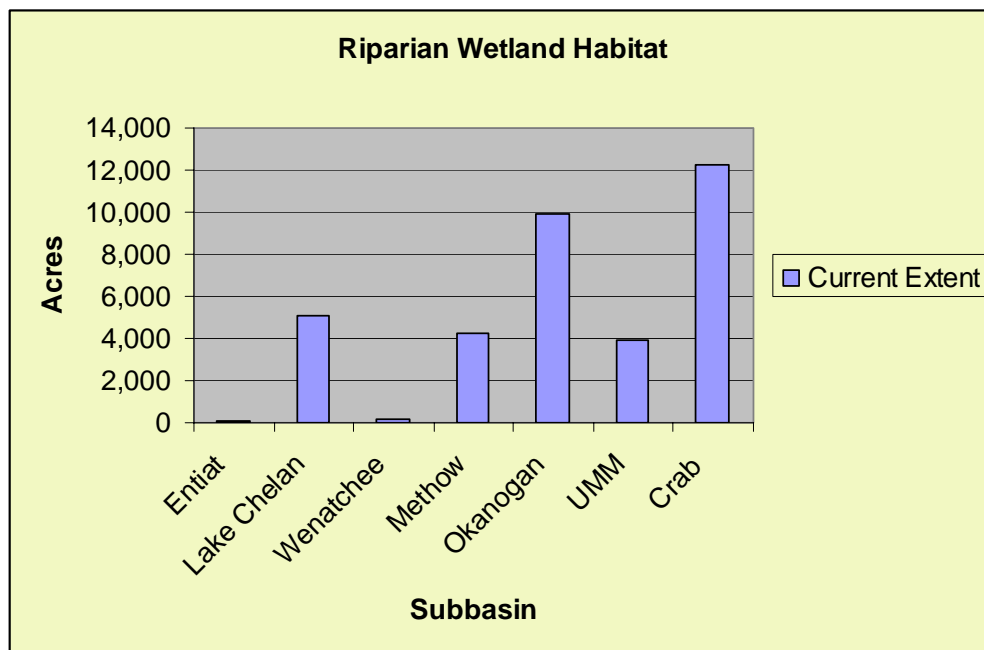


Figure 15. Current extent of riparian wetland habitat in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).

3.1.7.3.1 Protection Status

The protection status of riparian habitat is compared by subbasin in [Figure 16](#). Riparian habitats are provided high protection status predominantly in the Lake Chelan subbasin. The vast majority of Ecoprovince riparian habitat is designated low or no protection status and is at risk for further degradation and/or conversion to other uses. The GAP protection status of riparian wetland habitat in the Methow subbasin is depicted in [Table 10](#).

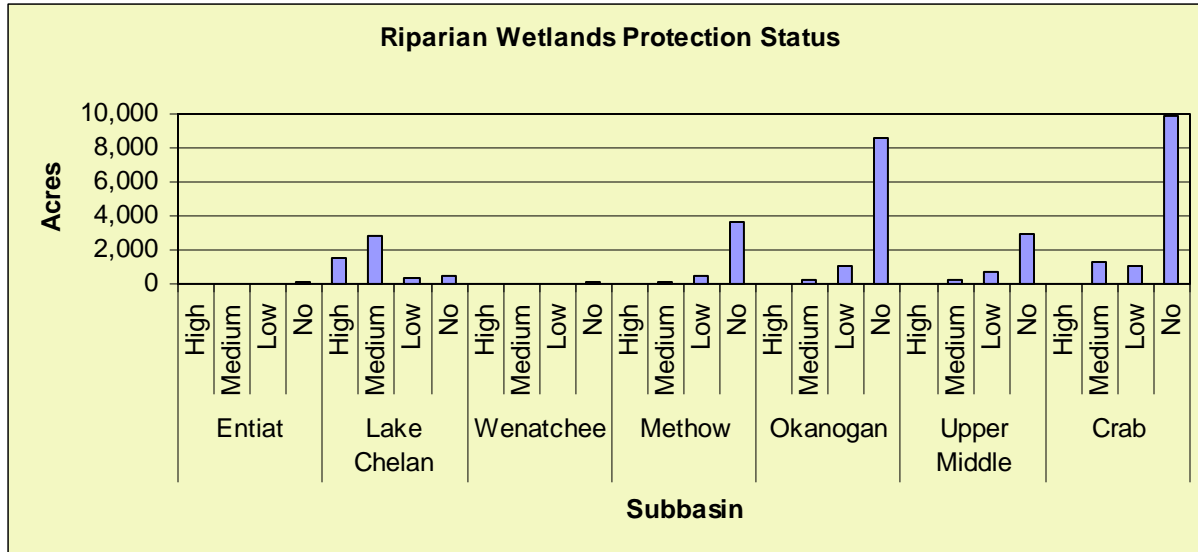


Figure 16. Protection status of riparian wetlands in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).

Table 10. Eastside (interior) riparian wetlands GAP protection status in the Methow subbasin, Washington (IBIS 2003).

GAP Protection Status	Acres
High Protection	0
Medium Protection	168
Low Protection	434
No Protection	3,632

3.1.7.3.2 Factors Affecting Eastside (Interior) Riparian Wetland Habitat

Factors affecting grassland habitat are described in section 4.2.10.3 in Ashley and Stovall (unpublished report, 2004) and summarized below:

- Loss of habitat due to numerous factors including riverine recreational developments, inundation from impoundments, cutting and spraying of riparian vegetation for eased access to water courses, gravel mining, etc.
- Habitat alteration from 1) hydrological diversions and control of natural flooding regimes (e.g., dams) resulting in reduced stream flows and reduction of overall area of riparian habitat, loss of vertical stratification in riparian vegetation, 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, and reduce understory cover.
- Habitat degradation from conversion of native riparian shrub and herbaceous vegetation to invasive exotics such as reed canary grass, purple loosestrife, perennial pepperweed, salt cedar, indigo bush, and Russian olive.
- Fragmentation and loss of large tracts necessary for area-sensitive species such as yellow-billed cuckoo.
- Hostile landscapes, particularly those in proximity to agricultural and residential areas, may have high density of nest parasites (brown-headed cowbird), exotic nest competitors (European starling), and domestic predators (cats), and be subject to high levels of human disturbance.

- High energetic costs associated with high rates of competitive interactions with European starlings for cavities may reduce reproductive success of cavity-nesting species such as Lewis' woodpecker, downy woodpecker, and tree swallow, even when outcome of the competition is successful for these species.
- Recreational disturbances (e.g., ORVs), particularly during nesting season, and particularly in high-use recreation areas.

3.1.7.3.3 Recommended Future Condition

Recommended future conditions are described in detail in section 4.1.7.3.3 in Ashley and Stovall (unpublished report, 2004). Recommended conditions for riparian wetland habitat are summarized in the following paragraphs.

Condition 1a – Cottonwood gallery forests with healthy canopy cover: Red-eyed vireo was selected to represent species that require greater than 60 percent canopy closure. For their food and reproductive requirements red-eyed vireo require mature deciduous trees greater than 160 feet tall, and greater than 10 percent of the shrub layer should be young cottonwoods.

Condition 1b – Deciduous riparian zone with high canopy closure: Beaver was selected to represent species that require 40-60 percent tree/shrub canopy closure and shrub height greater than 6.6 feet. Beavers also require trees less than 6 inches DBH.

Condition 2 – Riparian habitat with a dense shrub layer: Yellow-breasted chat was selected to represent species that require riparian habitat with a shrub layer 1-4m tall, 30-80 percent shrub cover, scattered herbaceous openings, and less than 20 percent tree cover.

The Change in extent of the riparian wetland habitat type from circa 1850 to 1999 is not included because of inaccurate IBIS (2003) data/GIS products.

3.1.7.4 Agriculture (Habitat of Concern)

Agricultural habitat varies substantially in composition among the cover types it includes. Cultivated cropland includes at least 50 species of annual and perennial plants, and hundreds of varieties ranging from vegetables such as carrots, onions, and peas to annual grains such as wheat, oats, barley, and rye. Row crops of vegetables and herbs are characterized by bare soil, plants, and plant debris along bottomland areas of streams and rivers and areas having sufficient water for irrigation. Annual grains, such as barley, oats, and wheat are typically produced in almost continuous stands of vegetation on upland and rolling hill terrain without irrigation.

Improved pastures are used to produce perennial herbaceous plants for grass seed and hay. Alfalfa and several species of fescue and bluegrass, orchardgrass (*Dactylis glomerata*), and timothy (*Phleum pratensis*) are commonly seeded in improved pastures. Grass seed fields are single-species stands, whereas pastures maintained for haying are typically composed of several species.

The improved pasture cover type is one of the most common agricultural uses in and is produced with and without irrigation. Unimproved pastures are predominantly grassland sites often abandoned fields that have little or no active management such as irrigation, fertilization, or herbicide applications. These sites may or may not be grazed by livestock. Unimproved pastures include rangelands planted to exotic grasses that are found on private land, state wildlife areas, federal wildlife refuges, and CRP sites. Grasses commonly planted on CRP sites

include crested wheatgrass (*Agropyron cristatum*), tall fescue (*F. arundinacea*), perennial bromes (*Bromus* spp.), and wheatgrasses.

Intensively grazed rangelands have been seeded to intermediate wheatgrass (*Elytrigia intermedia*), crested wheatgrass to boost forage production, or are dominated by increaser exotics such as Kentucky wheatgrass or tall oatgrass (*Arrhenatherum elatius*). Other unimproved pastures have been cleared and intensively farmed in the past, but are allowed to convert to other vegetation. These sites may be composed of uncut hay, litter from previous seasons, standing dead grass and herbaceous material, invasive exotic plants including tansy ragwort (*Senecio jacobea*), thistle (*Cirsium* spp.), Himalaya blackberry (*Rubus discolor*), and Scot's broom (*Cytisus scoparius*) with patches of native black hawthorn, snowberry, spirea (*Spirea* spp.), poison oak (*Toxicodendron diversilobum*), and various tree species, depending on seed source and environment.

Because agriculture is not a focal wildlife habitat type and there is little opportunity to effect change in agricultural land use at the landscape scale, Ecoprovince and subbasin planners did not conduct a full-scale analysis of agricultural conditions. However, agricultural lands converted to CRP can significantly contribute toward benefits to wildlife habitat and other species that utilize agricultural lands.

Agricultural extent in the Methow subbasin is illustrated in [Figure 20](#) and [Figure 21](#).

[The above is taken straight out of the write-up (broad) for the Ecoprovince...need to add/substitute appropriate specifics for this subbasin]

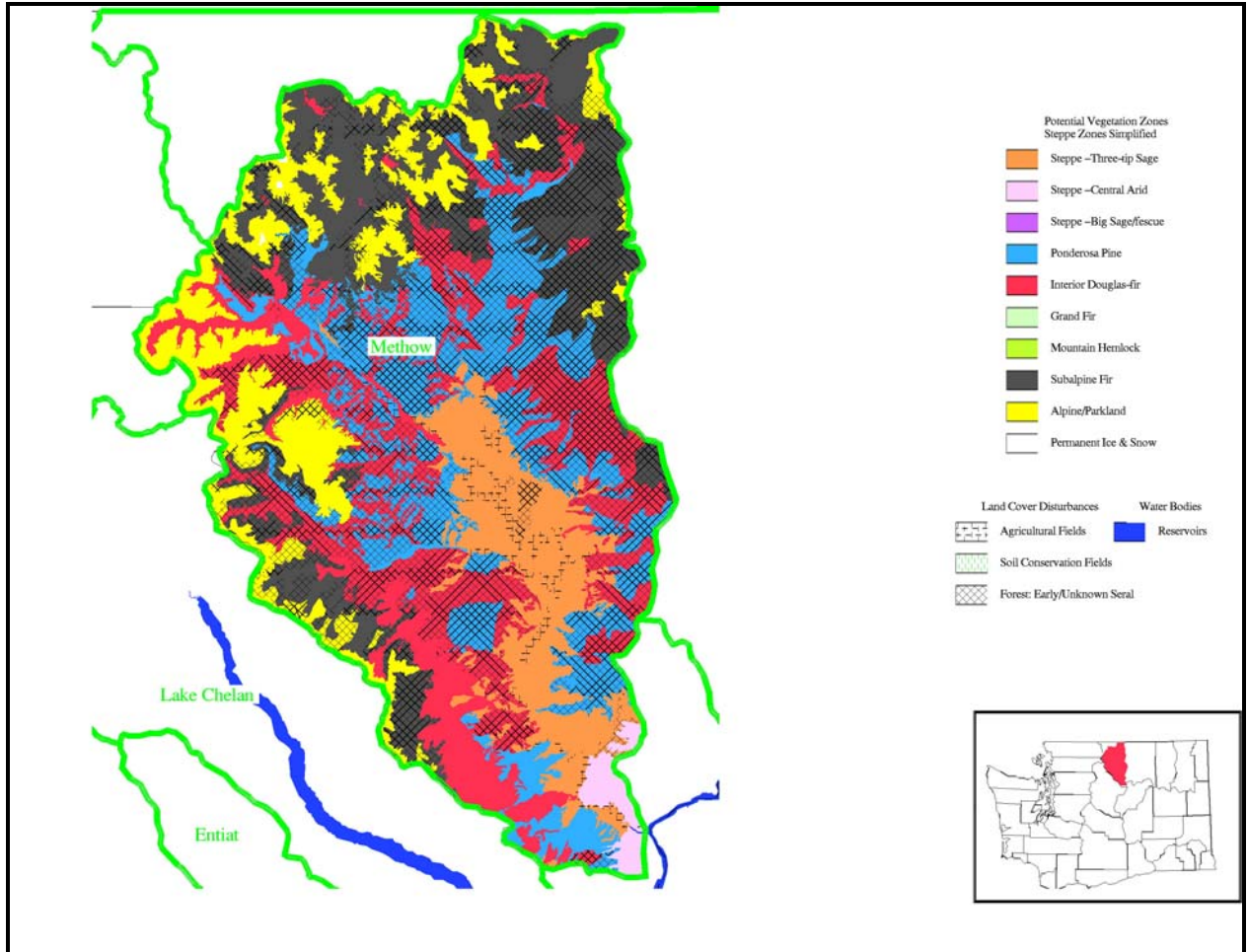


Figure 17. Agricultural extent in the Methow subbasin, Washington (Cassidy 1997).

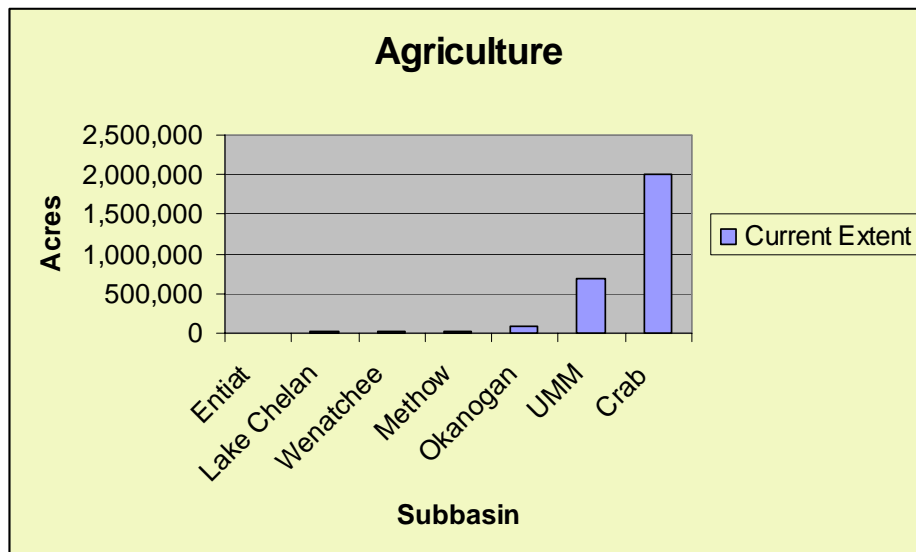


Figure 18. Current extent of agriculture in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).

3.1.7.4.1 Protection Status

The protection status of agricultural habitat is compared by subbasin in [Figure 22](#). IBIS (2003) data clearly indicate that nearly all of this cover type has no protection status across the Ecoprovince. Small amounts of agricultural lands, however, are given low and medium protection status. Low and medium protection is limited to lands enrolled in conservation easements, or those that are under other development restrictions such as county planning ordinances. The GAP protection status of agricultural habitat in the Subbasin is illustrated in [Table 11](#).

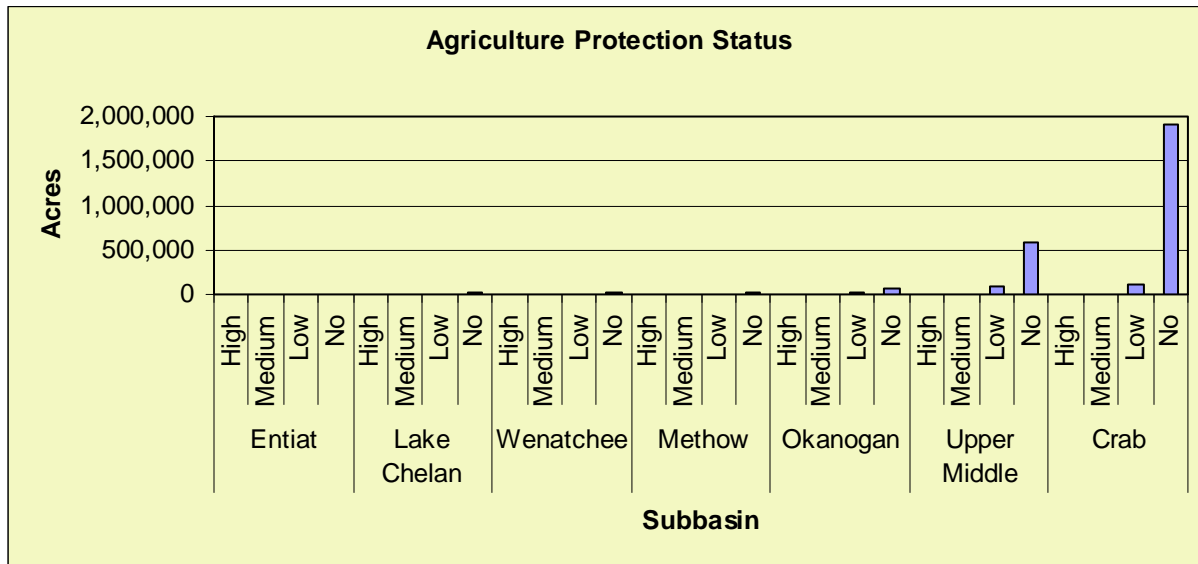


Figure 19. Protection status of agriculture in the Columbia Cascade Ecoprovince, Washington (IBIS 2003).

Table 11. Agriculture GAP protection status/acres in the Methow subbasin, Washington (IBIS 2003).

GAP Protection Status	Acres
High Protection	412
Medium Protection	710
Low Protection	8,004
No Protection	22,873

3.1.7.5 Changes in Focal Wildlife Habitats (Summary)

Changes in the extent of focal habitats within the Subbasin are summarized in [Table 12](#) and compared to other Ecoprovince subbasins in [Figure 23](#). Ponderosa pine and wetland habitats within the Subbasin have decreased significantly since 1850¹. Only the Upper Middle Mainstem Columbia River and Crab subbasins show a decrease in the extent of shrubsteppe habitat.

¹ Ecoprovince and subbasin planners assume that all wetland habitats have decreased since European settlement (circa 1850) (see Ashley and Stovall, unpublished report, 2004).

Table 12. Changes in focal wildlife habitat types in the Methow subbasin from circa 1850 (historic) to 1999 (current) (IBIS 2003).

Focal Habitat Type	Historic Acres	Current Acres	Acre Change	Percent Change
Ponderosa pine	284,593	139,853	-144,740	-51
Shrubsteppe	40,056	107,655	112,603	268
Eastside (Interior) Riparian Wetlands	0	4,232	4,232	100
Agriculture	0	31,997	31,997	100

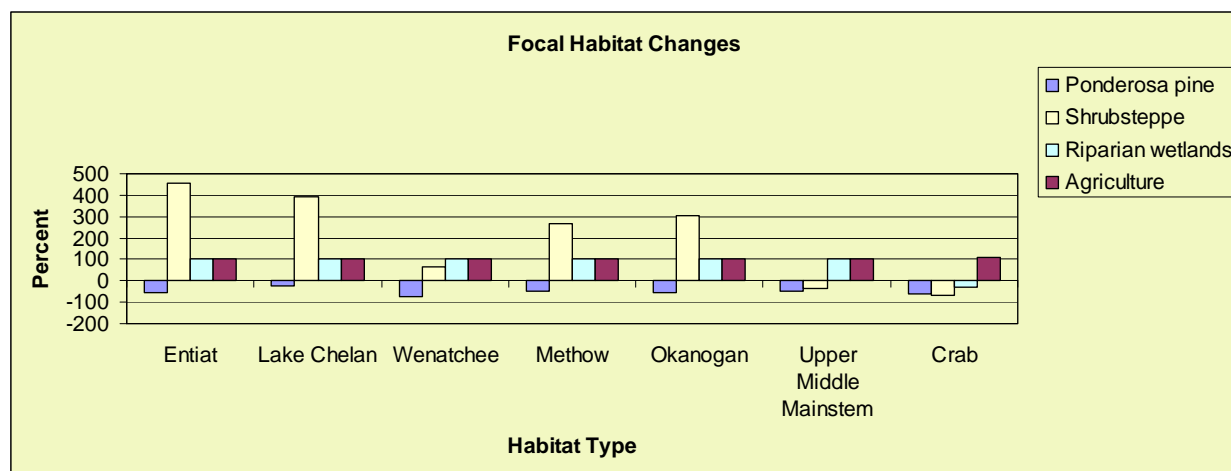


Figure 20. Changes in focal wildlife habitat types in the Columbia Cascade Ecoprovince (IBIS 2003).

It is highly unlikely that the extent of riparian wetland and herbaceous habitats is now greater than what occurred historically in the Ecoprovince. Ecoprovince planners have little confidence in IBIS historic riparian wetland data. For additional information regarding focal habitat changes throughout the Ecoregion, see section 4.1.7 in Ashley and Stovall (unpublished report, 2004).

Grazing largely accounts for the increase in shrubsteppe habitat (IBIS 2003). Wetland habitat data are incomplete and limited in value. As a result, riparian and herbaceous wetland habitats are not well represented in IBIS maps (accurate habitat type maps, especially those detailing riparian and herbaceous wetland habitats, are needed to improve assessment quality and support management strategies/actions). Subbasin wildlife managers, however, believe that significant physical and functional losses have occurred to these important wetland habitats from hydroelectric facility construction and inundation, agricultural development, and livestock grazing.

3.1.7.6 Summary of Factors Affecting Focal Habitats and Wildlife Species

The presence, distribution, and abundance of wildlife species in the Methow subbasin have been affected by habitat losses due primarily to:

- Agricultural development
- Timber management
- Livestock grazing
- Mining
- Commercial and residential development

3.1.7.6.1 Agricultural Development

Agricultural development in the Methow subbasin has altered or destroyed vast amounts of native shrubsteppe habitat and fragmented riparian/floodplain habitat. Agricultural operations have increased sediment loads and introduced herbicides and pesticides into streams. Conversion to agriculture has decreased the overall quantity of habitat for many native species, but the loss of specific communities may be particularly critical for habitat specialists.

3.1.7.6.2 Timber Management

Timber management activities, including extensive timber harvest in sections of the Methow subbasin, have negatively impacted wildlife habitat, particularly in the Chewuch River and Beaver Creek drainages (NPPC 2002). Logging has contributed to fragmentation of habitat, soil erosion **[how much and at what rate?]**, sediment delivery to creeks and streams, and changes to upland and riparian vegetative communities, including displacement of native plant communities with exotic species (NPPC 2002).

3.1.7.6.3 Livestock Grazing

Livestock grazing have negatively impacted wildlife habitat in the Subbasin, particularly in the Chewuch River and Beaver Creek drainages. Mismanaged grazing has contributed to increased soil erosion and displaced native plant communities.

3.1.7.6.4 Mining

[No write-up was provided by the Subbasin Summary. Please provide information if this is a limiting factor for wildlife]

3.1.7.6.5 Commercial and Residential Development

While urban areas comprise only a small percentage of the land base within the Subbasin (0.1 percent), their habitat impacts are significant. Residential growth within the Subbasin is largely occurring along creeks and rivers. Channelization and development along water courses has eliminated riparian and wetland habitats. Expansion of residential areas affects drainage, and homes built along streams have affected both water quality and the ability of the floodplain to function normally. Residential development has resulted in the loss of large areas of all focal habitat types. Disturbance by humans in the form of highway traffic, noise and light pollution, and various recreational activities have the potential to displace wildlife and force them out of their native areas or forces them to use less desirable habitat.

The conversion of forested uplands and riparian habitat to residential use has negatively affected wildlife habitat connectivity and composition. Road construction and dispersed residential development have impeded stream access and changed vegetative communities, resulting in the reduction of wildlife range and quality. Human activities have increased the number of fire starts, but historic fire control policies have kept the size of fires small, resulting in a buildup of fuel in the forested uplands of the Subbasin. This absence of fire has resulted in changes to the composition of the forest and plant communities, and the related capacity to store and transport water.

4.0 Biological Features

4.1 Focal Species/Assemblages

4.1.1 Focal Wildlife Species Assemblage Selection and Rationale

The focal species selection process is described in section 5.1 in Ashley and Stovall (unpublished report, 2004) while important habitat attributes are summarized in Table 20 (Ashley and Stovall, unpublished report, 2004). Ecoprovince and subbasin planners identified

focal species assemblages for each focal habitat type ([Table 13](#)). Focal species selected for the Methow subbasin are highlighted in bold text.

Table 13 Focal species selection matrix for the Columbia Cascade Ecoprovince, Washington.

Common Name	Focal Habitat ¹	Status ²		Native Species	PHS	Partners in Flight	Game Species
		Federal	State				
Sage thrasher	SS	n/a	C	Yes	Yes	Yes	No
Brewer's sparrow		n/a	n/a	Yes	No	Yes	No
Grasshopper sparrow		n/a	n/a	Yes	No	Yes	No
Sharp-tailed grouse		SC	T	Yes	Yes	Yes	No
Sage grouse		C	T	Yes	Yes	No	No
Pygmy rabbit		E	E	Yes	Yes	No	No
Mule deer		n/a	n/a	Yes	Yes	No	Yes
Willow flycatcher	RW	SC	n/a	Yes	No	Yes	No
Lewis woodpecker		n/a	C	Yes	Yes	Yes	No
Red-eyed vireo		n/a	n/a	Yes	No	No	No
Yellow-breasted chat		n/a	n/a	Yes	No	No	No
American beaver		n/a	n/a	Yes	No	No	Yes
Pygmy nuthatch	PP	n/a	n/a	Yes	No	No	No
Gray flycatcher		n/a	n/a	Yes	No	No	No
White-headed woodpecker		n/a	C	Yes	Yes	Yes	No
Flammulated owl		n/a	C	Yes	Yes	Yes	No
Red-winged blackbird	HW	n/a	n/a	Yes	No	No	No

¹ SS = Shrubsteppe; RW = Riparian Wetlands; PP = Ponderosa pine; HW = Herbaceous Wetlands
² C = Candidate; SC = Species of Concern; T = Threatened; E = Endangered

Nine bird species and two mammalian species were selected to represent three priority habitats in the Subbasin. Life requisite habitat attributes for each species assemblage were pooled to characterize a “range of management conditions”, to guide planners in development of future habitat management strategies, goals, and objectives.

General habitat requirements, limiting factors, distribution, population trends, and analyses of structural conditions, key ecological functions, and key ecological correlates for individual focal species are included in Ashley and Stovall (unpublished report, 2004). The reader is further encouraged to review additional focal species life history information in Appendix F in Ashley and Stovall (unpublished report, 2004).

Establishment of conditions favorable to focal species will benefit a wider group of species with similar habitat requirements. Wildlife species associated with focal habitats including agriculture are listed in [Table 16](#) (Appendix B).

4.2 Wildlife Species

There are an estimated 341 wildlife species that occur in the Methow subbasin ([Table 17](#)) (Appendix B). Of these species, 105 (91 percent) are closely associated with riparian and wetland habitat and 75 (90 percent) consume salmonids during some portion of their life cycle. Seventeen wildlife species are non-native ([Table 18](#)) (Appendix B). Eight wildlife species that occur in the Subbasin are listed federally and 42 species are listed in Washington and Idaho as Threatened, Endangered, or Candidate species ([Table 19](#)). A total of 98 bird species are listed as Washington or Idaho State Partners in Flight priority and focal species ([Table 20](#)). A total of 57 wildlife species are managed as game species in Washington ([Table 21](#)).

Ninety-three percent of the wildlife species that occur in the Ecoprovince occur in the Methow subbasin (Table 14). In addition, 65 percent of the amphibian species and 84 percent of the reptile species that occur in the Ecoprovince occur in the Subbasin.

Table 14. Species richness and associations for the Methow subbasin, Washington (IBIS 2003).

Class	Methow	% of Total	Total (Ecoprovince)
Amphibians	11	65	17
Birds	221	94	234
Mammals	93	96	97
Reptiles	16	84	19
Total	341	93	367
Association			
Riparian Wetlands	73	94	78
Other Wetlands (Herbaceous and Montane Coniferous)	32	86	38
All Wetlands	105	91	116
Salmonids	75	90	82

5.0 Assessment Synthesis

Subbasin assessment conclusions are identical to those found at the Ecoprovince level for focal habitat types and species. An assessment synthesis is included in section 6 in Ashley and Stovall (unpublished report 2004).

6.0 Inventory

[Considerably more development of this section is needed by local biologists. Please provide summaries of projects that affect focal habitats/species and describe how they address limiting factors.]

This section includes information on current management activities, programs, regulatory measures, and plans designed to protect and/or restore wildlife habitats and populations within the Subbasin. Although many government agencies and non-governmental organizations (NGOs) have a keen interest in the Subbasin, the focus of this section will be on the organizations and programs that have the greatest impact on addressing factors that affect wildlife habitats, limiting wildlife populations, and supporting subbasin strategies, goals, and objectives. Additional inventory information is provided in the *Methow Subbasin Summary* (NPPC 2002).

6.1 Local Level

Local groups involved in fish and wildlife protection projects within the Subbasin include:

- Conservation Districts
- Agricultural Community
- County Government
- Non-Governmental Organizations
- **[Modify or add to this list...]**

6.1.1 Conservation Districts

6.1.1.1 Okanogan Conservation District

The Okanogan Conservation District is responsible for identifying natural resource concerns and developing programs that bring voluntary technical and financial assistance to landowners and land occupiers in the District.

6.1.1.2 Agricultural Community

Private landowners manage the vast majority of ponderosa pine, shrubsteppe, and riparian wetland habitats in the Subbasin. Many landowners protect, enhance, and maintain privately owned/controlled steppe communities and riparian habitats through active participation in the USDA's CRP and CREP programs.

Agriculturalists apply Best Management Practices (BMPs) to croplands to reduce the amount of soil leaving these areas. The BMPs include: upland sediment basins designed to catch sediment; terraces to direct runoff to sediment basins or grassed waterways and filter strips; strip cropping; and direct seeding of crops reducing summer-fallow acres and reducing erosion by 95 percent on those acres. Landowners also control noxious weeds, which severely affect wildlife habitats and populations.

6.1.1.3 County Government

6.1.1.3.1 Okanogan County

[Need information]

6.1.1.4 Non-Governmental Organizations

6.1.1.4.1 Methow Conservancy

The Methow Conservancy was awarded a \$500,000 grant in 1997 to purchase perpetual conservation easements that would protect riparian habitat in the Methow subbasin. By 2001, nine property owners completed these voluntary conservation restrictions on approximately 526 acres. The areas include riparian and agricultural lands on the mainstem Methow River and the Little Cub Creek (Rendezvous) complex, an important, upland watershed of the Chewuch River, a tributary of the Methow. Landowners created protective buffer zones along critical riparian areas near the river and creeks, and they also agreed to forest management and land use plans to promote watershed values and wildlife enhancement.

The Methow Conservancy was also awarded a \$1,290,000 grant in 2001 for new conservation easements on private properties that border the Methow River north of the town of Winthrop, and for the Twisp, and Chewuch rivers. As of September 2001, seventeen property owners signed letters of understanding to begin the easement process on approximately 870 acres and over four miles of riverfront in the Methow subbasin.

The Methow Conservancy, together with the USFS, and WDFW, conducted landscape-level mapping and analysis of songbird habitat in the Methow Valley and on-the-ground surveys for Partners in Flight habitat prioritization.

6.2 State Level

At the state level, many agencies are involved in protection of fish and wildlife habitats within the Subbasin, including:

- Washington Department of Fish and Wildlife
- Washington Priority Habitat and Species Program
- Washington State Conservation Commission
- Washington Department of Natural Resources
- Washington Department of Ecology
- **[Modify or add to this list...]**

6.2.1 Washington Department of Fish and Wildlife

6.2.1.1 Upland Restoration Program

The WDFW has worked with private landowners to restore habitat within the Subbasin. The Habitat Development Program established small (0.5 to 3 acres) habitat plots primarily for upland game birds on unfarmed areas usually on poor or rocky soils. In the 1980s, partnerships between WDFW, NRCS, conservation districts, and private landowners made possible habitat restoration projects at the watershed scale. Today, this multi-agency/private landowner partnership continues to enhance, protect, maintain, and increase wildlife habitat throughout the Subbasin.

Through cooperative agreements with private landowners, Upland Restoration Program biologists improve and restore riparian, upland, and shrubsteppe habitats used by both resident and migratory wildlife species within the Subbasin. Projects typically include establishing riparian grass buffers, planting shrubs and trees (for thermal and escapement cover), seeding wildlife food plots, developing water sources (e.g., guzzlers, ponds, spring developments), and maintaining winter game bird feeders.

The CRP has provided WDFW with another opportunity to work with local conservation agencies and landowners to improve wildlife habitat throughout the subbasin. Washington Department of Fish and Wildlife biologists assist landowners with selecting and/or planting herbaceous seed mixes, trees, and shrubs.

While habitat restoration is WDFW's main priority within the Subbasin, the Upland Restoration Program requires all cooperators to sign public access agreements in conjunction with habitat projects. Landowners voluntarily open their land to hunting, fishing, and/or wildlife viewing in return for habitat enhancements. The Upland Restoration Program, in conjunction with CREP and CRP, has increased the extent and/or protection and enhancement of riparian wetlands and shrubsteppe habitats within the Subbasin.

6.2.1.2 Methow Wildlife Area

[\[Need information\]](#)

6.2.1.3 Washington Priority Habitats and Species (PHS)

The Washington PHS Program is a guide to management of fish and wildlife "critical areas" on all state and private lands as they relate to the Growth Management Act of 1990. The recommendations address upland as well as riparian habitat and place emphasis on managing for the most critical species and their habitats.

6.2.1.4 Washington Conservation Commission

The Washington State Conservation Commission (WCC) supports conservation districts in Washington; promoting conservation stewardship by funding natural resource projects. The WCC provides basic funding to conservation districts as well as implementation funds, professional engineering grants, and Dairy Program grants and loans to prevent the degradation of surface and ground waters. The Agriculture Fish and Wildlife Program (AFWP) is a collaborative process aimed at voluntary compliance. The AFWP involves negotiating changes to the existing NRCS Field Office Technical Guide and the development of guidelines for irrigation districts to enhance, restore, and protect habitat for endangered fish and wildlife species, and address state water quality needs. This two-pronged approach has developed into two processes, one involving agricultural interests and the second concerning irrigation districts across the state.

6.2.1.5 Washington Department of Natural Resources

The Washington Department of Natural Resources (WDNR) manages state land throughout the Subbasin. These lands are located in sections 16 and 36 within each township. The main goal of the WDNR is to maximize monetary returns from state lands in order to fund schools. The WDNR also enforces and monitors logging practice regulations on private lands.

6.2.1.6 Washington Department of Ecology (WDOE)

The WDOE's mission is to protect, preserve, and enhance Washington's environment and promote the wise management of air, land, and water for the benefit of current and future generations. The agency monitors and sets regulatory standards for water quality within the subbasin. The WDOE is also responsible for water resource management, instream flow rule development, shoreline management, floodplain management, wetland management, and provides support for watershed management in the Subbasin.

6.3 Federal Level

At the federal level, many agencies are involved in protection of fish and wildlife habitats within the Subbasin including:

- Natural Resources Conservation Service
- Bonneville Power Administration
- U.S Forest Service
- [\[Modify or add to this list...\]](#)

6.3.1 Natural Resource Conservation Service

One of the purposes of the NRCS is to provide consistent technical assistance to private land users, tribes, communities, government agencies, and conservation districts. The NRCS assists in developing conservation plans, provides technical field-based assistance including project design, and encourages the implementation of conservation practices to improve water quality and fisheries habitat. Programs include the CRP, River Basin Studies, Forestry Incentive Program, Wildlife Habitat Improvement Program, the Environmental Quality Incentives Program, and Wetlands Reserve Program. The USDA Farm Services Administration (FSA) and the NRCS administer and implement the federal CRP and Continuous CRP.

6.3.1.1 Conservation Reserve Program (CRP)

The enrollment of agricultural land with a previous cropping history into CRP has removed highly erodible land from commodity production. The land is converted into permanent herbaceous or woody vegetation to reduce soil and water erosion. Conservation Reserve Program contracts are for a maximum of 10 years per sign-up period (the contracts may be extended) and have resulted in an increase in wildlife habitat. Cover Practices (CP) that occur under CRP include planting introduced or native grasses, wildlife cover, conifers, filter strips, grassed waterways, riparian forest buffers, and field windbreaks.

Conservation Reserve Program contract approval is based, in part, on the types of vegetation landowners are willing to plant. Cover Practice planting combinations are assigned points based on the potential value to wildlife. For example, cover types more beneficial to wildlife are awarded higher scores. Seed mixes containing diverse native species generally receive the highest scores (FSA 2003).

There are currently an estimated 4,064 acres enrolled in CRP in Okanogan County ([Appendix C](#)). Conservation Reserve Program and associated cover practices that emphasize wildlife habitat increase the extent of shrubsteppe habitat, provide connectivity/corridors between extant native shrubsteppe and other habitat types, reduce habitat fragmentation,

contribute towards control of noxious weeds, increase landscape habitat diversity and edge effect, reduce soil erosion and stream sedimentation, and provide habitat for a myriad of wildlife species.

6.3.1.2 Continuous Conservation Reserve Program (CCRP)

The CCRP focuses on the improvement of water quality and riparian areas. Practices include shallow water areas with associated wetland and upland wildlife habitat, riparian forest buffers, filter strips, grassed waterways and field windbreaks. Enrollment for these practices is not limited to highly erodible land, as is required for the CRP, and carries a longer contract period (10 - 15 years), higher installation reimbursement rate, and higher annual annuity rate.

6.3.1.3 Conservation Reserve Enhancement Program (CREP)

The CREP, established in 1998, is a partnership between USDA and the State of Washington, and is administered by FSA and the WCC. The CREP provides incentives to restore and improve salmon and steelhead habitat on private land. Program participation is voluntary. Under 10 or 15-year contracts, landowners remove fields from production, remove grazing, and plant trees and shrubs to stabilize stream banks. This also provides wildlife habitat, reduces sedimentation, shades stream corridors, and improves riparian wetland function. Landowners receive annual rent, incentive and maintenance payments, and cost share for practice installations. Payments made by FSA and WCC, can result in no cost to the landowner for participation. Both the CRP and CREP utilize herbaceous seedings, shrubs, and trees to accomplish conservation measures that provide short-term high protection for wildlife habitats. It is unknown how many acres in the Subbasin are protected by CREP.

6.3.1.4 Wildlife Habitat Incentive Program (WHIP)

The WHIP is administered and implemented by NRCS and provides financial incentives to develop wildlife habitat on private lands. Participants agree to implement a wildlife habitat development plan and NRCS agrees to provide cost-share assistance for the initial implementation of wildlife habitat development practices. The NRCS and program participants enter into a cost-share agreement for wildlife habitat development. This agreement generally lasts a minimum of 10 years. It is unknown how many acres in the Subbasin are protected by WHIP.

6.3.1.5 Environmental Quality Incentives Program (EQIP)

The EQIP is administered and implemented by the NRCS and provides technical, educational, and financial assistance to eligible farmers and ranchers to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program assists farmers and ranchers with federal, state, and tribal environmental compliance, and encourages environmental stewardship. The program is funded through the Commodity Credit Corporation.

Program goals and objectives are achieved through the implementation of a conservation plan that incorporates structural, vegetative, and land management practices on eligible land. Eligible producers commit to 5 to 10-year contracts. Cost-share payments are paid for implementation of one or more eligible structural or vegetative practices such as animal waste management facilities, terraces, filter strips, tree planting, and permanent wildlife habitat. Furthermore, incentive payments are made for implementation of one or more land management practices such as nutrient management, pest management, and grazing land management. It is unknown how many acres in the Subbasin are protected by EQIP.

6.3.1.6 Wetlands Reserve Program (WRP)

The WRP is also administered and implemented by the NRCS. This voluntary program is designed to restore wetlands. Participating landowners can establish permanent or 30-year conservation easements, or they can enter into restoration cost-share agreements where no easement is involved. In exchange for establishing a permanent easement, the landowner receives payment up to the agricultural value of the land and 100 percent of the restoration costs for restoring the wetlands. The 30-year easement payment is 75 percent of what would be provided for a permanent easement on the same site and 75 percent of the restoration cost. The voluntary agreements are a minimum of 10 years in duration and provide for 75 percent of the cost of restoring the involved wetlands. Easements and restoration cost-share agreements establish wetland protection and restoration as the primary land use for the duration of the easement or agreement. It is unknown how many acres in the Subbasin are protected by WRP.

6.3.1.7 The Public Law 566 Small Watershed Program (PL 566)

The Public Law 566 Small Watershed Program can be leveraged with other federal, state, or local program funds to provide wildlife and fisheries protection. Soil and water conservation districts using other project funding sources leverage NRCS program resources in combination to concentrate conservation within watersheds of concern.

6.3.2 Bonneville Power Administration

The BPA is a federal agency established to market power produced by the federal dams in the Columbia River basin. The BPA provides funding for fish and wildlife protection and enhancement to mitigate for the loss of habitat resulting from hydroelectric construction and operations.

6.3.3 U.S. Forest Service

[Need information]

6.4 Native American Tribes

- Confederated Tribes of the Colville Reservation
- Yakama Indian Nation

6.4.1 Confederated Tribes of the Colville Reservation

[Need information]

6.4.2 Yakama Indian Nation

[Need information]

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Appendix A: Rare Plants

Table 15. Rare plants in the Methow subbasin, Washington (WNHP 2003).

SCIENTIFIC NAME	COMMON NAME
ABIES AMABILIS / ACHLYS TRIPHYLLA FOREST	PACIFIC SILVER FIR / VANILLALEAF
ABIES AMABILIS COVER TYPE	PACIFIC SILVER FIR FOREST
ABIES LASIOCARPA / CALAMAGROSTIS RUBESCENS FOREST	SUBALPINE FIR / PINEGRASS
ABIES LASIOCARPA / LEDUM GLANDULOSUM FOREST	SUBALPINE FIR / GLANDULAR LABRADOR-TEA
ABIES LASIOCARPA / RHODODENDRON ALBIFLORUM WOODLAND	SUBALPINE FIR / CASCADE AZALEA
ABIES LASIOCARPA / VACCINIUM SCOPARIUM FOREST	SUBALPINE FIR / GROUSEBERRY
ABIES LASIOCARPA COVER TYPE	SUBALPINE FIR FOREST
ALNUS VIRIDIS SSP. SINUATA SHRUBLAND (PROVISIONAL)	SITKA ALDER
ARTEMISIA TRIDENTATA SSP. WYOMINGENSIS / PSEUDOROEGNERIA SPICATA SHRUB HERBACEOUS VEGETATION	WYOMING BIG SAGEBRUSH / BLUEBUNCH WHEATGRASS
ARTEMISIA TRIDENTATA SSP. WYOMINGENSIS / STIPA COMATA SHRUBLAND	WYOMING BIG SAGEBRUSH / NEEDLE-AND-THREAD
ARTEMISIA TRIPARTITA / FESTUCA IDAHOENSIS SHRUB HERBACEOUS VEGETATION	THREETIP SAGEBRUSH / IDAHO FESCUE
ARTEMISIA TRIPARTITA / PSEUDOROEGNERIA SPICATA SHRUB HERBACEOUS VEGETATION	THREETIP SAGEBRUSH / BLUEBUNCH WHEATGRASS
ARTEMISIA TRIPARTITA / STIPA COMATA SHRUB HERBACEOUS VEGETATION	THREETIP SAGEBRUSH / NEEDLE-AND-THREAD
CAREX COVER TYPE	SEDGE SPP. GRASSLAND
CAREX SCOPULORUM HERBACEOUS VEGETATION	HOLM'S ROCKY MOUNTAIN SEDGE
CAREX UTRICULATA HERBACEOUS	NORTHWEST TERRITORY SEDGE

VEGETATION	
DANTHONIA INTERMEDIA HERBACEOUS VEGETATION	TIMBER OATGRASS
DRYAS OCTOPETALA DWARF-SHRUB HERBACEOUS VEGETATION	EIGHT PETAL MOUNTAIN-AVENS
FESTUCA IDAHOENSIS - ERIOGONUM HERACLEOIDES HERBACEOUS VEGETATION	IDAHO FESCUE - PARSNIP-FLOWER BUCKWHEAT
INLAND SALINE WETLAND CB	INLAND SALINE WETLAND CB
LARIX LYALLII ASSOCIATION	SUBALPINE LARCH COMMUNITY
LARIX OCCIDENTALIS COVER TYPE	WESTERN LARCH FOREST
PICEA ENGELMANNII - ABIES LASIOCARPA COVER TYPE	ENGELMANN SPRUCE - SUBALPINE FIR FOREST
PICEA ENGELMANNII / EQUISETUM ARVENSE FOREST	ENGELMANN SPRUCE / FIELD HORSETAIL
PINUS ALBICAULIS - ABIES LASIOCARPA COVER TYPE	WHITE-BARK PINE - SUBALPINE FIR FOREST
PINUS ALBICAULIS COVER TYPE	WHITE-BARK PINE FOREST
PINUS CONTORTA COVER TYPE	LOGEPOLE PINE FOREST
PINUS PONDEROSA - PSEUDOTSUGA MENZIESII / PSEUDOROEGNERIA SPICATA SSP. INERMIS WOODLAND	PONDEROSA PINE - DOUGLAS-FIR / BLUEBUNCH WHEATGRASS
PINUS PONDEROSA - PSEUDOTSUGA MENZIESII / PURSHIA TRIDENTATA WOODLAND	PONDEROSA PINE - DOUGLAS-FIR / BITTERBRUSH
PINUS PONDEROSA - PSEUDOTSUGA MENZIESII COVER TYPE	PONDEROSA PINE - DOUGLAS-FIR FOREST
PINUS PONDEROSA / CALAMAGROSTIS RUBESCENS FOREST	PONDEROSA PINE / PINEGRASS
PINUS PONDEROSA / PURSHIA TRIDENTATA WOODLAND	PONDEROSA PINE / BITTERBRUSH
PINUS PONDEROSA COVER TYPE	PONDEROSA PINE FOREST

POPULUS TREMULOIDES / SYMPHORICARPOS ALBUS FOREST	QUAKING ASPEN / COMMON SNOWBERRY
POPULUS TREMULOIDES COVER TYPE	QUAKING ASPEN FOREST
PSEUDOROEGNERIA SPICATA COVER TYPE	BLUEBUNCH WHEATGRASS GRASSLAND
PSEUDOTSUGA MENZIESII / ARCTOSTAPHYLOS UVA-URSI - PURSHIA TRIDENTATA FOREST	DOUGLAS-FIR / KINIKINNICK - BITTERBRUSH
PSEUDOTSUGA MENZIESII / ARCTOSTAPHYLOS UVA-URSI CASCADIAN FOREST	DOUGLAS-FIR / KINIKINNICK CASCADIAN FOREST
PSEUDOTSUGA MENZIESII / CALAMAGROSTIS RUBESCENS FOREST	DOUGLAS-FIR / PINEGRASS
PSEUDOTSUGA MENZIESII / SYMPHORICARPOS ALBUS FOREST	DOUGLAS-FIR / COMMON SNOWBERRY
PURSHIA TRIDENTATA / FESTUCA IDAHOENSIS SHRUB HERBACEOUS VEGETATION	BITTERBRUSH / IDAHO FESCUE
PURSHIA TRIDENTATA / PSEUDOROEGNERIA SPICATA SHRUB HERBACEOUS VEGETATION	BITTERBRUSH / BLUEBUNCH WHEATGRASS
PURSHIA TRIDENTATA / STIPA COMATA SHRUB HERBACEOUS VEGETATION	BITTERBRUSH / NEEDLE-AND-THREAD
RHUS GLABRA / PSEUDOROEGNERIA SPICATA SHRUB HERBACEOUS VEGETATION	SMOOTH SUMAC / BLUEBUNCH WHEATGRASS
SALIX DRUMMONDIANA / CAREX SCOPULORUM VAR. PRIONOPHYLLA SHRUBLAND	DRUMMOND'S WILLOW / HOLM'S ROCKY MOUNTAIN SEDGE
SALIX PLANIFOLIA / CAREX SCOPULORUM SHRUBLAND	TEA-LEAF WILLOW / HOLM'S ROCKY MOUNTAIN SEDGE
SCIRPUS MARITIMUS HERBACEOUS VEGETATION	SEACOAST BULRUSH
STIPA COMATA COVER TYPE	NEEDLE-AND-THREAD GRASSLAND
SUBALPINE FRESHWATER WETLAND EC	SUBALPINE FRESHWATER WETLAND EC
SUBALPINE RIPARIAN WETLAND EC	SUBALPINE RIPARIAN WETLAND EC

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Appendix B: Wildlife Species

Table 16. Wildlife species occurrence by focal habitat type in the Methow subbasin, Washington (IBIS 2003).

Ponderosa Pine	Shrubsteppe	Riparian Wetlands	Agriculture
American Badger	American Avocet	American Badger	Great Blue Heron
American Beaver	American Badger	American Beaver	Tundra Swan
American Crow	American Crow	American Crow	American Wigeon
American Goldfinch	American Goldfinch	American Dipper	Blue-winged Teal
American Kestrel	American Kestrel	American Goldfinch	Cinnamon Teal
American Marten	American Robin	American Kestrel	Swainson's Hawk
American Robin	Bank Swallow	American Marten	Red-tailed Hawk
Bank Swallow	Barn Owl	American Redstart	Gray Partridge
Barn Swallow	Barn Swallow	American Robin	Ring-necked Pheasant
Barred Owl	Barrow's Goldeneye	American Tree Sparrow	Killdeer
Big Brown Bat	Big Brown Bat	American Wigeon	Solitary Sandpiper
Black Bear	Black Bear	Bank Swallow	Long-billed Curlew
Black Swift	Black-billed Magpie	Barn Owl	Long-billed Dowitcher
Black-backed Woodpecker	Black-chinned Hummingbird	Barn Swallow	Wilson's Snipe
Black-billed Magpie	Black-tailed Jackrabbit	Barred Owl	Rock Dove
Black-capped Chickadee	Black-throated Sparrow	Belted Kingfisher	Mourning Dove
Black-chinned Hummingbird	Blue Grouse	Big Brown Bat	Barn Owl
Black-headed Grosbeak	Bobcat	Black Bear	Short-eared Owl
Black-throated Gray Warbler	Brewer's Blackbird	Black Swift	Loggerhead Shrike
Blue Grouse	Brewer's Sparrow	Black-backed Woodpecker	Northern Shrike
Bobcat	Brown-headed Cowbird	Black-billed Magpie	Black-billed Magpie
Brewer's Blackbird	Bullfrog	Black-capped Chickadee	American Crow
Brewer's Sparrow	Burrowing Owl	Black-chinned Hummingbird	Barn Swallow
Brown Creeper	Bushy-tailed Woodrat	Black-crowned Night-heron	European Starling
Brown-headed Cowbird	California Myotis	Black-headed Grosbeak	American Pipit
Bullfrog	California Quail	Black-throated Gray Warbler	Vesper Sparrow
Bushy-tailed Woodrat	Canada Goose	Blue Grouse	Savannah Sparrow
California Myotis	Canyon Wren	Bobcat	Grasshopper Sparrow
California Quail	Chipping Sparrow	Bobolink	Lazuli Bunting
Calliope Hummingbird	Chukar	Bohemian Waxwing	Bobolink
Canyon Wren	Cliff Swallow	Brewer's Blackbird	Western Meadowlark
Cascade Golden-mantled Ground	Columbia Spotted Frog	Brown Creeper	Brewer's Blackbird

Ponderosa Pine	Shrubsteppe	Riparian Wetlands	Agriculture
Squirrel			
Cassin's Finch	Columbian Ground Squirrel	Brown-headed Cowbird	Brown-headed Cowbird
Cassin's Vireo	Common Garter Snake	Bullfrog	House Finch
Cedar Waxwing	Common Nighthawk	Bullock's Oriole	House Sparrow
Chipping Sparrow	Common Poorwill	Bushy-tailed Woodrat	Virginia Opossum
Clark's Nutcracker	Common Porcupine	California Myotis	Big Brown Bat
Cliff Swallow	Common Raven	California Quail	Eastern Fox Squirrel
Coast Mole	Cooper's Hawk	Calliope Hummingbird	Northern Pocket Gopher
Columbia Spotted Frog	Coyote	Canada Goose	Deer Mouse
Columbian Ground Squirrel	Deer Mouse	Canyon Wren	Bushy-tailed Woodrat
Common Garter Snake	Eastern Kingbird	Cascades Frog	Montane Vole
Common Nighthawk	European Starling	Cassin's Finch	House Mouse
Common Poorwill	Fringed Myotis	Cassin's Vireo	Raccoon
Common Porcupine	Golden Eagle	Cedar Waxwing	
Common Raven	Golden-mantled Ground Squirrel	Chipping Sparrow	
Cooper's Hawk	Gopher Snake	Chukar	
Coyote	Grasshopper Sparrow	Cliff Swallow	
Dark-eyed Junco	Gray Flycatcher	Coast Mole	
Deer Mouse	Gray Partridge	Columbia Spotted Frog	
Douglas' Squirrel	Great Basin Pocket Mouse	Columbian Ground Squirrel	
Downy Woodpecker	Great Basin Spadefoot	Columbian Mouse	
Dusky Flycatcher	Great Horned Owl	Common Garter Snake	
Eastern Kingbird	Greater Yellowlegs	Common Merganser	
Ermine	Hoary Bat	Common Nighthawk	
European Starling	Horned Lark	Common Porcupine	
Evening Grosbeak	Killdeer	Common Raven	
Fisher	Lark Sparrow	Common Redpoll	
Flammulated Owl	Least Chipmunk	Common Yellowthroat	
Fox Sparrow	Lesser Yellowlegs	Cooper's Hawk	
Fringed Myotis	Little Brown Myotis	Cordilleran Flycatcher	
Golden Eagle	Loggerhead Shrike	Coyote	
Golden-crowned Kinglet	Long-billed Curlew	Creeping Vole	
Golden-mantled Ground Squirrel	Long-eared Myotis	Dark-eyed Junco	
Gopher Snake	Long-eared Owl	Deer Mouse	
Gray Flycatcher	Long-legged Myotis	Downy Woodpecker	
Gray Jay	Long-tailed Vole	Dusky Flycatcher	

Ponderosa Pine	Shrubsteppe	Riparian Wetlands	Agriculture
Gray Wolf	Long-tailed Weasel	Eastern Fox Squirrel	
Great Basin Spadefoot	Long-toed Salamander	Eastern Kingbird	
Great Gray Owl	Mallard	Ermine	
Great Horned Owl	Merriam's Shrew	European Starling	
Grizzly Bear	Mink	Evening Grosbeak	
Hairy Woodpecker	Montane Vole	Fisher	
Hammond's Flycatcher	Mountain Bluebird	Flammulated Owl	
Hermit Thrush	Mourning Dove	Fox Sparrow	
Hoary Bat	Mule Deer	Fringed Myotis	
House Finch	Nashville Warbler	Golden Eagle	
House Wren	Night Snake	Golden-crowned Kinglet	
Killdeer	Northern Flicker	Golden-mantled Ground Squirrel	
Lark Sparrow	Northern Goshawk	Gopher Snake	
Lazuli Bunting	Northern Grasshopper Mouse	Gray Catbird	
Least Chipmunk	Northern Harrier	Gray Jay	
Lewis's Woodpecker	Northern Pocket Gopher	Great Basin Spadefoot	
Little Brown Myotis	Northern Rough-winged Swallow	Great Blue Heron	
Long-eared Myotis	Northern Shrike	Great Horned Owl	
Long-eared Owl	Nuttall's (Mountain) Cottontail	Greater Yellowlegs	
Long-legged Myotis	Orange-crowned Warbler	Green-winged Teal	
Long-tailed Vole	Osprey	Grizzly Bear	
Long-tailed Weasel	Pacific Chorus (Tree) Frog	Hairy Woodpecker	
Long-toed Salamander	Painted Turtle	Harlequin Duck	
Macgillivray's Warbler	Pallid Bat	Heather Vole	
Masked Shrew	Prairie Falcon	Hermit Thrush	
Mink	Racer	Hoary Bat	
Montane Vole	Red-tailed Hawk	Hooded Merganser	
Mountain Bluebird	Ring-necked Pheasant	House Finch	
Mountain Chickadee	Rock Dove	House Wren	
Mountain Lion	Rock Wren	Killdeer	
Mourning Dove	Rocky Mountain Elk	Lazuli Bunting	
Mule Deer	Rough-legged Hawk	Least Chipmunk	
Nashville Warbler	Rough-skinned Newt	Lesser Yellowlegs	
Night Snake	Rubber Boa	Lewis's Woodpecker	
Northern Alligator Lizard	Sage Sparrow	Lincoln's Sparrow	

Ponderosa Pine	Shrubsteppe	Riparian Wetlands	Agriculture
Northern Flicker	Sage Thrasher	Little Brown Myotis	
Northern Flying Squirrel	Sagebrush Lizard	Long-eared Myotis	
Northern Goshawk	Sagebrush Vole	Long-eared Owl	
Northern Pocket Gopher	Savannah Sparrow	Long-legged Myotis	
Northern Pygmy-owl	Say's Phoebe	Long-tailed Vole	
Northern Rough-winged Swallow	Sharp-shinned Hawk	Long-tailed Weasel	
Northern Saw-whet Owl	Sharp-tailed Grouse	Long-toed Salamander	
Olive-sided Flycatcher	Short-eared Owl	Macgillivray's Warbler	
Orange-crowned Warbler	Short-horned Lizard	Mallard	
Osprey	Side-blotched Lizard	Masked Shrew	
Pacific Chorus (Tree) Frog	Snow Bunting	Meadow Vole	
Pacific Jumping Mouse	Solitary Sandpiper	Mink	
Painted Turtle	Spotted Bat	Montane Shrew	
Pallid Bat	Spotted Sandpiper	Montane Vole	
Pileated Woodpecker	Striped Whipsnake	Moose	
Pine Siskin	Swainson's Hawk	Mountain Bluebird	
Prairie Falcon	Tiger Salamander	Mountain Chickadee	
Pygmy Nuthatch	Townsend's Big-eared Bat	Mountain Lion	
Racer	Townsend's Solitaire	Mourning Dove	
Red Crossbill	Turkey Vulture	Mule Deer	
Red Fox	Vagrant Shrew	Muskrat	
Red Squirrel	Vesper Sparrow	Nashville Warbler	
Red-breasted Nuthatch	Washington Ground Squirrel	Northern Alligator Lizard	
Red-breasted Sapsucker	Western Fence Lizard	Northern Flicker	
Red-naped Sapsucker	Western Harvest Mouse	Northern Flying Squirrel	
Red-tailed Hawk	Western Kingbird	Northern Goshawk	
Ring-necked Pheasant	Western Meadowlark	Northern Harrier	
Rock Wren	Western Pipistrelle	Northern Pocket Gopher	
Rocky Mountain Elk	Western Rattlesnake	Northern Pygmy-owl	
Rough-legged Hawk	Western Skink	Northern River Otter	
Rough-skinned Newt	Western Small-footed Myotis	Northern Rough-winged Swallow	
Rubber Boa	Western Terrestrial Garter Snake	Northern Saw-whet Owl	
Ruby-crowned Kinglet	Western Toad	Northern Waterthrush	
Ruffed Grouse	White-crowned Sparrow	Olive-sided Flycatcher	

Ponderosa Pine	Shrubsteppe	Riparian Wetlands	Agriculture
Rufous Hummingbird	White-tailed Jackrabbit	Orange-crowned Warbler	
Sagebrush Lizard	White-throated Swift	Osprey	
Say's Phoebe	Yellow-bellied Marmot	Pacific Chorus (Tree) Frog	
Sharp-shinned Hawk	Yuma Myotis	Pacific Jumping Mouse	
Sharptail Snake		Pacific Water Shrew	
Short-horned Lizard		Painted Turtle	
Silver-haired Bat		Pallid Bat	
Snowshoe Hare		Pied-billed Grebe	
Song Sparrow		Pileated Woodpecker	
Spotted Bat		Pine Siskin	
Spotted Owl		Prairie Falcon	
Spotted Towhee		Pygmy Nuthatch	
Steller's Jay		Raccoon	
Striped Skunk		Racer	
Striped Whipsnake		Red Crossbill	
Tailed Frog		Red Fox	
Three-toed Woodpecker		Red-breasted Nuthatch	
Tiger Salamander		Red-breasted Sapsucker	
Townsend's Big-eared Bat		Red-eyed Vireo	
Townsend's Solitaire		Red-naped Sapsucker	
Townsend's Warbler		Red-tailed Hawk	
Tree Swallow		Red-winged Blackbird	
Trowbridge's Shrew		Ring-necked Duck	
Turkey Vulture		Ring-necked Pheasant	
Vagrant Shrew		Rocky Mountain Elk	
Varied Thrush		Rough-legged Hawk	
Vaux's Swift		Rough-skinned Newt	
Violet-green Swallow		Rubber Boa	
Warbling Vireo		Ruby-crowned Kinglet	
Western Bluebird		Ruffed Grouse	
Western Fence Lizard		Rufous Hummingbird	
Western Gray Squirrel		Savannah Sparrow	
Western Jumping Mouse		Say's Phoebe	
Western Kingbird		Sharptail Snake	
Western Pipistrelle		Sharp-tailed Grouse	
Western Rattlesnake		Shrew-mole	
Western Screech-owl		Silver-haired Bat	
Western Skink		Snowshoe Hare	

Ponderosa Pine	Shrubsteppe	Riparian Wetlands	Agriculture
Western Small-footed Myotis		Solitary Sandpiper	
Western Tanager		Song Sparrow	
Western Terrestrial Garter Snake		Southern Red-backed Vole	
Western Toad		Spotted Bat	
Western Wood-pewee		Spotted Sandpiper	
White-breasted Nuthatch		Spotted Towhee	
White-crowned Sparrow		Steller's Jay	
White-headed Woodpecker		Striped Skunk	
White-throated Swift		Swainson's Hawk	
Wild Turkey		Swainson's Thrush	
Williamson's Sapsucker		Tailed Frog	
Willow Flycatcher		Three-toed Woodpecker	
Wilson's Warbler		Tiger Salamander	
Yellow-bellied Marmot		Townsend's Big-eared Bat	
Yellow-pine Chipmunk		Townsend's Solitaire	
Yellow-rumped Warbler		Townsend's Warbler	
Yuma Myotis		Tree Swallow	
		Trowbridge's Shrew	
		Turkey Vulture	
		Vagrant Shrew	
		Vaux's Swift	
		Veery	
		Violet-green Swallow	
		Virginia Opossum	
		Warbling Vireo	
		Water Shrew	
		Water Vole	
		Western Bluebird	
		Western Harvest Mouse	
		Western Jumping Mouse	
		Western Pipistrelle	
		Western Rattlesnake	
		Western Screech-owl	
		Western Small-footed Myotis	
		Western Tanager	
		Western Terrestrial Garter Snake	

Table 17. Wildlife species occurrence for the Methow subbasin, Washington (IBIS 2003).

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
Amphibians					
	Tiger Salamander	<i>Ambystoma tigrinum</i>		1	
	Long-toed Salamander	<i>Ambystoma macrodactylum</i>		1	
	Pacific Giant Salamander	<i>Dicamptodon tenebrosus</i>	1		
	Rough-skinned Newt	<i>Taricha granulosa</i>			1
	Tailed Frog	<i>Ascaphus truei</i>		1	
	Great Basin Spadefoot	<i>Scaphiopus intermontanus</i>		1	
	Western Toad	<i>Bufo boreas</i>		1	
	Pacific Chorus (Tree) Frog	<i>Pseudacris regilla</i>		1	
	Cascades Frog	<i>Rana cascadae</i>			
	Columbia Spotted Frog	<i>Rana luteiventris</i>		1	
	Bullfrog	<i>Rana catesbeiana</i>		1	
	Total Amphibians:	11	Total:	1	8
Birds					
	Common Loon	<i>Gavia immer</i>	1		1
	Pied-billed Grebe	<i>Podilymbus podiceps</i>	1		1
	Red-necked Grebe	<i>Podiceps grisegena</i>	1		1
	Eared Grebe	<i>Podiceps nigricollis</i>			1
	American Bittern	<i>Botaurus lentiginosus</i>			1
	Great Blue Heron	<i>Ardea herodias</i>	1	1	
	Black-crowned Night-heron	<i>Nycticorax nycticorax</i>	1	1	
	Turkey Vulture	<i>Cathartes aura</i>	1		
	Canada Goose	<i>Branta canadensis</i>			1
	Tundra Swan	<i>Cygnus columbianus</i>			
	Wood Duck	<i>Aix sponsa</i>		1	
	Gadwall	<i>Anas strepera</i>			1
	American Wigeon	<i>Anas americana</i>			1
	Mallard	<i>Anas platyrhynchos</i>	1	1	
	Blue-winged Teal	<i>Anas discors</i>			1
	Cinnamon Teal	<i>Anas cyanoptera</i>			1
	Northern Shoveler	<i>Anas clypeata</i>			1
	Northern Pintail	<i>Anas acuta</i>			1
	Green-winged Teal	<i>Anas crecca</i>	1		1
	Canvasback	<i>Aythya valisineria</i>	1		1
	Redhead	<i>Aythya americana</i>			1
	Ring-necked Duck	<i>Aythya collaris</i>			

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Greater Scaup	<i>Aythya marila</i>	1		
	Harlequin Duck	<i>Histrionicus histrionicus</i>	1	1	
	Barrow's Goldeneye	<i>Bucephala islandica</i>	1		
	Hooded Merganser	<i>Lophodytes cucullatus</i>	1	1	
	Common Merganser	<i>Mergus merganser</i>	1	1	
	Ruddy Duck	<i>Oxyura jamaicensis</i>			1
	Osprey	<i>Pandion haliaetus</i>	1		
	Northern Harrier	<i>Circus cyaneus</i>			
	Sharp-shinned Hawk	<i>Accipiter striatus</i>			
	Cooper's Hawk	<i>Accipiter cooperii</i>			
	Northern Goshawk	<i>Accipiter gentilis</i>			
	Swainson's Hawk	<i>Buteo swainsoni</i>			
	Red-tailed Hawk	<i>Buteo jamaicensis</i>	1		
	Rough-legged Hawk	<i>Buteo lagopus</i>			
	Golden Eagle	<i>Aquila chrysaetos</i>	1		
	American Kestrel	<i>Falco sparverius</i>			
	Gyrfalcon	<i>Falco rusticolus</i>	1		
	Prairie Falcon	<i>Falco mexicanus</i>			
	Chukar	<i>Alectoris chukar</i>			
	Gray Partridge	<i>Perdix perdix</i>			
	Ring-necked Pheasant	<i>Phasianus colchicus</i>		1	
	Ruffed Grouse	<i>Bonasa umbellus</i>		1	
	Spruce Grouse	<i>Falcapennis canadensis</i>			
	White-tailed Ptarmigan	<i>Lagopus leucurus</i>			
	Blue Grouse	<i>Dendragapus obscurus</i>		1	
	Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>		1	
	Wild Turkey	<i>Meleagris gallopavo</i>			
	California Quail	<i>Callipepla californica</i>			
	Virginia Rail	<i>Rallus limicola</i>			1
	Sora	<i>Porzana carolina</i>			1
	American Coot	<i>Fulica americana</i>			1
	Killdeer	<i>Charadrius vociferus</i>	1		
	American Avocet	<i>Recurvirostra americana</i>			1
	Greater Yellowlegs	<i>Tringa melanoleuca</i>	1		
	Lesser Yellowlegs	<i>Tringa flavipes</i>			
	Solitary Sandpiper	<i>Tringa solitaria</i>		1	
	Spotted Sandpiper	<i>Actitis macularia</i>	1		

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Long-billed Curlew	<i>Numenius americanus</i>			
	Semipalmated Sandpiper	<i>Calidris pusilla</i>			
	Western Sandpiper	<i>Calidris mauri</i>			
	Least Sandpiper	<i>Calidris minutilla</i>			
	Baird's Sandpiper	<i>Calidris bairdii</i>			
	Pectoral Sandpiper	<i>Calidris melanotos</i>			
	Stilt Sandpiper	<i>Calidris himantopus</i>			
	Long-billed Dowitcher	<i>Limnodromus scolopaceus</i>			
	Common Snipe	<i>Gallinago gallinago</i>			1
	Wilson's Phalarope	<i>Phalaropus tricolor</i>			1
	Red-necked Phalarope	<i>Phalaropus lobatus</i>			
	Ring-billed Gull	<i>Larus delawarensis</i>	1		
	California Gull	<i>Larus californicus</i>	1		
	Herring Gull	<i>Larus argentatus</i>	1		
	Thayer's Gull	<i>Larus thayeri</i>	1		
	Glaucous Gull	<i>Larus hyperboreus</i>	1		
	Black Tern	<i>Chlidonias niger</i>			1
	Rock Dove	<i>Columba livia</i>			
	Mourning Dove	<i>Zenaida macroura</i>		1	
	Barn Owl	<i>Tyto alba</i>			
	Flammulated Owl	<i>Otus flammeolus</i>			
	Western Screech-owl	<i>Otus kennicottii</i>		1	
	Great Horned Owl	<i>Bubo virginianus</i>			
	Snowy Owl	<i>Nyctea scandiaca</i>	1		
	Northern Pygmy-owl	<i>Glaucidium gnoma</i>			
	Burrowing Owl	<i>Athene cunicularia</i>			
	Barred Owl	<i>Strix varia</i>			
	Great Gray Owl	<i>Strix nebulosa</i>			
	Long-eared Owl	<i>Asio otus</i>		1	
	Short-eared Owl	<i>Asio flammeus</i>			1
	Boreal Owl	<i>Aegolius funereus</i>			
	Northern Saw-whet Owl	<i>Aegolius acadicus</i>			
	Common Nighthawk	<i>Chordeiles minor</i>			
	Common Poorwill	<i>Phalaenoptilus nuttallii</i>			
	Black Swift	<i>Cypseloides niger</i>			
	Vaux's Swift	<i>Chaetura vauxi</i>			
	White-throated Swift	<i>Aeronautes saxatalis</i>			
	Black-chinned Hummingbird	<i>Archilochus alexandri</i>			

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Calliope Hummingbird	<i>Stellula calliope</i>			
	Rufous Hummingbird	<i>Selasphorus rufus</i>			
	Belted Kingfisher	<i>Ceryle alcyon</i>	1	1	
	Lewis's Woodpecker	<i>Melanerpes lewis</i>			
	Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>			
	Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>		1	
	Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>			
	Downy Woodpecker	<i>Picoides pubescens</i>			
	Hairy Woodpecker	<i>Picoides villosus</i>			
	White-headed Woodpecker	<i>Picoides albolarvatus</i>			
	Three-toed Woodpecker	<i>Picoides tridactylus</i>			
	Black-backed Woodpecker	<i>Picoides arcticus</i>			
	Northern Flicker	<i>Colaptes auratus</i>			
	Pileated Woodpecker	<i>Dryocopus pileatus</i>			
	Olive-sided Flycatcher	<i>Contopus cooperi</i>			
	Western Wood-pewee	<i>Contopus sordidulus</i>			
	Willow Flycatcher	<i>Empidonax traillii</i>	1	1	
	Hammond's Flycatcher	<i>Empidonax hammondii</i>			
	Gray Flycatcher	<i>Empidonax wrightii</i>			
	Dusky Flycatcher	<i>Empidonax oberholseri</i>			
	Pacific-slope Flycatcher	<i>Empidonax difficilis</i>			
	Cordilleran Flycatcher	<i>Empidonax occidentalis</i>		1	
	Say's Phoebe	<i>Sayornis saya</i>			
	Western Kingbird	<i>Tyrannus verticalis</i>			
	Eastern Kingbird	<i>Tyrannus tyrannus</i>			
	Loggerhead Shrike	<i>Lanius ludovicianus</i>			
	Northern Shrike	<i>Lanius excubitor</i>			
	Cassin's Vireo	<i>Vireo cassinii</i>			
	Warbling Vireo	<i>Vireo gilvus</i>		1	
	Red-eyed Vireo	<i>Vireo olivaceus</i>		1	
	Gray Jay	<i>Perisoreus canadensis</i>	1		
	Steller's Jay	<i>Cyanocitta stelleri</i>	1		

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Clark's Nutcracker	<i>Nucifraga columbiana</i>			
	Black-billed Magpie	<i>Pica pica</i>	1	1	
	American Crow	<i>Corvus brachyrhynchos</i>	1		
	Northwestern Crow	<i>Corvus caurinus</i>	1		
	Common Raven	<i>Corvus corax</i>	1		
	Horned Lark	<i>Eremophila alpestris</i>			
	Tree Swallow	<i>Tachycineta bicolor</i>	1	1	
	Violet-green Swallow	<i>Tachycineta thalassina</i>	1		
	Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	1	1	
	Bank Swallow	<i>Riparia riparia</i>	1	1	
	Cliff Swallow	<i>Petrochelidon pyrrhonota</i>	1	1	
	Barn Swallow	<i>Hirundo rustica</i>	1	1	
	Black-capped Chickadee	<i>Poecile atricapillus</i>			
	Mountain Chickadee	<i>Poecile gambeli</i>			
	Chestnut-backed Chickadee	<i>Poecile rufescens</i>			
	Boreal Chickadee	<i>Poecile hudsonicus</i>			
	Red-breasted Nuthatch	<i>Sitta canadensis</i>			
	White-breasted Nuthatch	<i>Sitta carolinensis</i>			
	Pygmy Nuthatch	<i>Sitta pygmaea</i>		1	
	Brown Creeper	<i>Certhia americana</i>			
	Rock Wren	<i>Salpinctes obsoletus</i>			
	Canyon Wren	<i>Catherpes mexicanus</i>			
	House Wren	<i>Troglodytes aedon</i>			
	Winter Wren	<i>Troglodytes troglodytes</i>	1		
	Marsh Wren	<i>Cistothorus palustris</i>			1
	American Dipper	<i>Cinclus mexicanus</i>	1	1	
	Golden-crowned Kinglet	<i>Regulus satrapa</i>			
	Ruby-crowned Kinglet	<i>Regulus calendula</i>			
	Western Bluebird	<i>Sialia mexicana</i>			
	Mountain Bluebird	<i>Sialia currucoides</i>			
	Townsend's Solitaire	<i>Myadestes townsendi</i>			
	Veery	<i>Catharus fuscescens</i>		1	
	Swainson's Thrush	<i>Catharus ustulatus</i>			

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Hermit Thrush	<i>Catharus guttatus</i>			
	American Robin	<i>Turdus migratorius</i>	1		
	Varied Thrush	<i>Ixoreus naevius</i>	1		
	Gray Catbird	<i>Dumetella carolinensis</i>		1	
	Sage Thrasher	<i>Oreoscoptes montanus</i>			
	European Starling	<i>Sturnus vulgaris</i>		1	
	American Pipit	<i>Anthus rubescens</i>			
	Bohemian Waxwing	<i>Bombycilla garrulus</i>			
	Cedar Waxwing	<i>Bombycilla cedrorum</i>		1	
	Orange-crowned Warbler	<i>Vermivora celata</i>			
	Nashville Warbler	<i>Vermivora ruficapilla</i>			
	Yellow Warbler	<i>Dendroica petechia</i>		1	
	Yellow-rumped Warbler	<i>Dendroica coronata</i>			
	Black-throated Gray Warbler	<i>Dendroica nigrescens</i>			
	Townsend's Warbler	<i>Dendroica townsendi</i>			
	American Redstart	<i>Setophaga ruticilla</i>		1	
	Northern Waterthrush	<i>Seiurus noveboracensis</i>		1	
	Macgillivray's Warbler	<i>Oporornis tolmiei</i>			
	Common Yellowthroat	<i>Geothlypis trichas</i>		1	
	Wilson's Warbler	<i>Wilsonia pusilla</i>			
	Yellow-breasted Chat	<i>Icteria virens</i>		1	
	Western Tanager	<i>Piranga ludoviciana</i>			
	Spotted Towhee	<i>Pipilo maculatus</i>	1		
	American Tree Sparrow	<i>Spizella arborea</i>			
	Chipping Sparrow	<i>Spizella passerina</i>			
	Brewer's Sparrow	<i>Spizella breweri</i>			
	Vesper Sparrow	<i>Pooecetes gramineus</i>			
	Lark Sparrow	<i>Chondestes grammacus</i>			
	Black-throated Sparrow	<i>Amphispiza bilineata</i>			
	Sage Sparrow	<i>Amphispiza belli</i>			
	Savannah Sparrow	<i>Passerculus sandwichensis</i>			
	Grasshopper Sparrow	<i>Ammodramus savannarum</i>			

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Fox Sparrow	<i>Passerella iliaca</i>		1	
	Song Sparrow	<i>Melospiza melodia</i>	1		
	Lincoln's Sparrow	<i>Melospiza lincolni</i>		1	
	White-crowned Sparrow	<i>Zonotrichia leucophrys</i>			
	Dark-eyed Junco	<i>Junco hyemalis</i>			
	Lapland Longspur	<i>Calcarius lapponicus</i>			
	Snow Bunting	<i>Plectrophenax nivalis</i>			
	Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>			
	Lazuli Bunting	<i>Passerina amoena</i>		1	
	Bobolink	<i>Dolichonyx oryzivorus</i>			
	Red-winged Blackbird	<i>Agelaius phoeniceus</i>			1
	Western Meadowlark	<i>Sturnella neglecta</i>			
	Yellow-headed Blackbird	<i>Xanthocephalus xanthocephalus</i>			1
	Brewer's Blackbird	<i>Euphagus cyanocephalus</i>			
	Brown-headed Cowbird	<i>Molothrus ater</i>			
	Bullock's Oriole	<i>Icterus bullockii</i>		1	
	Gray-crowned Rosy-Finch	<i>Leucosticte tephrocotis</i>			
	Pine Grosbeak	<i>Pinicola enucleator</i>			
	Cassin's Finch	<i>Carpodacus cassinii</i>			
	House Finch	<i>Carpodacus mexicanus</i>			
	Red Crossbill	<i>Loxia curvirostra</i>			
	White-winged Crossbill	<i>Loxia leucoptera</i>			
	Common Redpoll	<i>Carduelis flammea</i>			
	Pine Siskin	<i>Carduelis pinus</i>			
	American Goldfinch	<i>Carduelis tristis</i>			
	Evening Grosbeak	<i>Coccothraustes vespertinus</i>			
	House Sparrow	<i>Passer domesticus</i>			1
	Total Birds:	221	Total:	47	42
Mammals					28
	Virginia Opossum	<i>Didelphis virginiana</i>	1		
	Masked Shrew	<i>Sorex cinereus</i>	1		
	Vagrant Shrew	<i>Sorex vagrans</i>	1		
	Montane Shrew	<i>Sorex monticolus</i>	1		
	Water Shrew	<i>Sorex palustris</i>	1	1	
	Pacific Water Shrew	<i>Sorex bendirii</i>	1		

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Trowbridge's Shrew	<i>Sorex trowbridgii</i>	1		
	Merriam's Shrew	<i>Sorex merriami</i>			
	Shrew-mole	<i>Neurotrichus gibbsii</i>			
	Coast Mole	<i>Scapanus orarius</i>			
	California Myotis	<i>Myotis californicus</i>			
	Western Small-footed Myotis	<i>Myotis ciliolabrum</i>		1	
	Yuma Myotis	<i>Myotis yumanensis</i>		1	
	Little Brown Myotis	<i>Myotis lucifugus</i>			
	Long-legged Myotis	<i>Myotis volans</i>		1	
	Fringed Myotis	<i>Myotis thysanodes</i>			
	Long-eared Myotis	<i>Myotis evotis</i>			
	Silver-haired Bat	<i>Lasionycteris noctivagans</i>			
	Western Pipistrelle	<i>Pipistrellus hesperus</i>		1	
	Big Brown Bat	<i>Eptesicus fuscus</i>		1	
	Hoary Bat	<i>Lasiurus cinereus</i>			
	Spotted Bat	<i>Euderma maculatum</i>			
	Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>			
	Pallid Bat	<i>Antrozous pallidus</i>		1	
	American Pika	<i>Ochotona princeps</i>			
	Nuttall's (Mountain) Cottontail	<i>Sylvilagus nuttallii</i>			
	Snowshoe Hare	<i>Lepus americanus</i>		1	
	White-tailed Jackrabbit	<i>Lepus townsendii</i>			
	Black-tailed Jackrabbit	<i>Lepus californicus</i>			
	Mountain Beaver	<i>Aplodontia rufa</i>			
	Least Chipmunk	<i>Tamias minimus</i>			
	Yellow-pine Chipmunk	<i>Tamias amoenus</i>			
	Townsend's Chipmunk	<i>Tamias townsendii</i>			
	Yellow-bellied Marmot	<i>Marmota flaviventris</i>			
	Hoary Marmot	<i>Marmota caligata</i>			
	Washington Ground Squirrel	<i>Spermophilus washingtoni</i>			
	Columbian Ground Squirrel	<i>Spermophilus columbianus</i>			
	Golden-mantled Ground Squirrel	<i>Spermophilus lateralis</i>			
	Cascade Golden-mantled Ground Squirrel	<i>Spermophilus saturatus</i>			

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Eastern Fox Squirrel	<i>Sciurus niger</i>			
	Western Gray Squirrel	<i>Sciurus griseus</i>			
	Red Squirrel	<i>Tamiasciurus hudsonicus</i>			
	Douglas' Squirrel	<i>Tamiasciurus douglasii</i>	1		
	Northern Flying Squirrel	<i>Glaucomys sabrinus</i>	1		
	Northern Pocket Gopher	<i>Thomomys talpoides</i>			
	Great Basin Pocket Mouse	<i>Perognathus parvus</i>			
	American Beaver	<i>Castor canadensis</i>		1	
	Western Harvest Mouse	<i>Reithrodontomys megalotis</i>		1	
	Deer Mouse	<i>Peromyscus maniculatus</i>	1	1	
	Columbian Mouse	<i>Peromyscus keeni</i>			
	Northern Grasshopper Mouse	<i>Onychomys leucogaster</i>			
	Bushy-tailed Woodrat	<i>Neotoma cinerea</i>		1	
	Southern Red-backed Vole	<i>Clethrionomys gapperi</i>		1	
	Heather Vole	<i>Phenacomys intermedius</i>			
	Meadow Vole	<i>Microtus pennsylvanicus</i>		1	
	Montane Vole	<i>Microtus montanus</i>			1
	Long-tailed Vole	<i>Microtus longicaudus</i>		1	
	Creeping Vole	<i>Microtus oregoni</i>			
	Water Vole	<i>Microtus richardsoni</i>		1	
	Sagebrush Vole	<i>Lemmiscus curtatus</i>			
	Muskrat	<i>Ondatra zibethicus</i>		1	
	Northern Bog Lemming	<i>Synaptomys borealis</i>			1
	Black Rat	<i>Rattus rattus</i>			
	Norway Rat	<i>Rattus norvegicus</i>			
	House Mouse	<i>Mus musculus</i>			
	Western Jumping Mouse	<i>Zapus princeps</i>		1	
	Pacific Jumping Mouse	<i>Zapus trinotatus</i>		1	
	Common Porcupine	<i>Erethizon dorsatum</i>			
	Nutria	<i>Myocastor coypus</i>			1
	Coyote	<i>Canis latrans</i>	1		
	Gray Wolf	<i>Canis lupus</i>	1		

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Red Fox	<i>Vulpes vulpes</i>	1		
	Black Bear	<i>Ursus americanus</i>	1		
	Grizzly Bear	<i>Ursus arctos</i>	1		
	Raccoon	<i>Procyon lotor</i>	1	1	
	American Marten	<i>Martes americana</i>	1		
	Fisher	<i>Martes pennanti</i>	1		
	Ermine	<i>Mustela erminea</i>			
	Long-tailed Weasel	<i>Mustela frenata</i>	1		
	Mink	<i>Mustela vison</i>	1	1	
	Wolverine	<i>Gulo gulo</i>	1		
	American Badger	<i>Taxidea taxus</i>			
	Striped Skunk	<i>Mephitis mephitis</i>	1		
	Northern River Otter	<i>Lutra canadensis</i>	1	1	
	Mountain Lion	<i>Puma concolor</i>	1		
	Lynx	<i>Lynx canadensis</i>			
	Bobcat	<i>Lynx rufus</i>	1		
	Elk	<i>Cervus elaphus</i>			
	Mule Deer	<i>Odocoileus hemionus</i>			
	White-tailed Deer	<i>Odocoileus virginianus</i>			
	Moose	<i>Alces alces</i>			
	Mountain Goat	<i>Oreamnos americanus</i>			
	Bighorn Sheep	<i>Ovis canadensis</i>			
	Total Mammals:	93	Total:	25	22
Reptiles					3
	Painted Turtle	<i>Chrysemys picta</i>			
	Northern Alligator Lizard	<i>Elgaria coerulea</i>			
	Short-horned Lizard	<i>Phrynosoma douglassii</i>			
	Sagebrush Lizard	<i>Sceloporus graciosus</i>			
	Western Fence Lizard	<i>Sceloporus occidentalis</i>			
	Side-blotched Lizard	<i>Uta stansburiana</i>			
	Western Skink	<i>Eumeces skiltonianus</i>			
	Rubber Boa	<i>Charina bottae</i>			
	Racer	<i>Coluber constrictor</i>			
	Sharptail Snake	<i>Contia tenuis</i>			
	Night Snake	<i>Hypsiglena torquata</i>			
	Striped Whipsnake	<i>Masticophis taeniatus</i>			
	Gopher Snake	<i>Pituophis catenifer</i>			

	Common Name	Scientific Name	Salmonid Relationship	Closely Associated with Riparian Wetland	Closely Associated with Other Wetlands
	Western Terrestrial Garter Snake	<i>Thamnophis elegans</i>	1		
	Common Garter Snake	<i>Thamnophis sirtalis</i>	1	1	
	Western Rattlesnake	<i>Crotalus viridis</i>			
	Total Reptiles:	16	Total:	2	1
					0
	Total Species:	341	Total:	75	73
					32

Table 18. Non-native wildlife species of the Methow subbasin, Washington (IBIS 2003).

Common Name	Scientific Name
Bullfrog	<i>Rana catesbeiana</i>
Chukar	<i>Alectoris chukar</i>
Gray Partridge	<i>Perdix perdix</i>
Ring-necked Pheasant	<i>Phasianus colchicus</i>
Wild Turkey	<i>Meleagris gallopavo</i>
California Quail	<i>Callipepla californica</i>
Rock Dove	<i>Columba livia</i>
European Starling	<i>Sturnus vulgaris</i>
House Sparrow	<i>Passer domesticus</i>
Virginia Opossum	<i>Didelphis virginiana</i>
Eastern Cottontail	<i>Sylvilagus floridanus</i>
Cascade Golden-mantled Ground Squirrel	<i>Spermophilus</i>
Eastern Gray Squirrel	<i>Sciurus carolinensis</i>
Black Rat	<i>Rattus rattus</i>
Norway Rat	<i>Rattus norvegicus</i>
House Mouse	<i>Mus musculus</i>
Nutria	<i>Myocastor coypus</i>

Table 19. Threatened and endangered species of the Methow subbasin, Washington (IBIS 2003).

	Common Name	Scientific Name	State Status		Federal Status
Amphibians					
	Dunn's Salamander	<i>Plethodon dunni</i>	WA	Candidate Species	
	Western Toad	<i>Bufo boreas</i>	WA	Candidate Species	
	Columbia Spotted Frog	<i>Rana luteiventris</i>	WA	Candidate Species	
	Northern Leopard Frog	<i>Rana pipiens</i>	WA	Endangered	
	Total Listed Amphibians:	4			
Birds					
	Common Loon	<i>Gavia immer</i>	WA	Sensitive	
	Western Grebe	<i>Aechmophorus occidentalis</i>	WA	Candidate Species	
	Northern Goshawk	<i>Accipiter gentilis</i>	WA	Candidate Species	
	Ferruginous Hawk	<i>Buteo regalis</i>	WA	Threatened	
	Golden Eagle	<i>Aquila chrysaetos</i>	WA	Candidate Species	
	Sage Grouse	<i>Centrocercus urophasianus</i>	WA	Threatened	Anticipated Candidate
	Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>	WA	Threatened	
	Marbled Murrelet	<i>Brachyramphus marmoratus</i>	WA	Threatened	Threatened
	Flammulated Owl	<i>Otus flammeolus</i>	WA	Candidate Species	
	Burrowing Owl	<i>Athene cunicularia</i>	WA	Candidate Species	
	Spotted Owl	<i>Strix occidentalis</i>	WA	Endangered	Threatened
	Vaux's Swift	<i>Chaetura vauxi</i>	WA	Candidate Species	
	Lewis's Woodpecker	<i>Melanerpes lewis</i>	WA	Candidate Species	
	White-headed Woodpecker	<i>Picoides albolarvatus</i>	WA	Candidate Species	
	Black-backed Woodpecker	<i>Picoides arcticus</i>	WA	Candidate Species	
	Pileated Woodpecker	<i>Dryocopus pileatus</i>	WA	Candidate Species	
	Loggerhead Shrike	<i>Lanius ludovicianus</i>	WA	Candidate Species	
	Horned Lark	<i>Eremophila alpestris</i>	WA	Candidate Species	Candidate
	White-breasted Nuthatch	<i>Sitta carolinensis</i>	WA	Candidate Species	
	Sage Thrasher	<i>Oreoscoptes montanus</i>	WA	Candidate Species	
	Vesper Sparrow	<i>Poocetes gramineus</i>	WA	Candidate Species	

	Common Name	Scientific Name	State Status		Federal Status
	Sage Sparrow	<i>Amphispiza belli</i>	WA	Candidate Species	
Total Listed Birds:		22			
Mammals					
	Merriam's Shrew	<i>Sorex merriami</i>	WA	Candidate Species	
	Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	WA	Candidate Species	
	Pygmy Rabbit	<i>Brachylagus idahoensis</i>	WA	Endangered	Endangered
	White-tailed Jackrabbit	<i>Lepus townsendii</i>	WA	Candidate Species	
	Black-tailed Jackrabbit	<i>Lepus californicus</i>	WA	Candidate Species	
	Washington Ground Squirrel	<i>Spermophilus washingtoni</i>	WA	Candidate Species	Anticipated Candidate
	Western Gray Squirrel	<i>Sciurus griseus</i>	WA	Threatened	
	Northern Pocket Gopher	<i>Thomomys talpoides</i>	WA	Candidate Species	
	Gray Wolf	<i>Canis lupus</i>	WA	Endangered	Endangered
	Grizzly Bear	<i>Ursus arctos</i>	WA	Endangered	Threatened
	Fisher	<i>Martes pennanti</i>	WA	Endangered	
	Wolverine	<i>Gulo gulo</i>	WA	Candidate Species	
	Lynx	<i>Lynx canadensis</i>	WA	Threatened	Threatened
	White-tailed Deer	<i>Odocoileus virginianus</i>	WA	Endangered	Endangered
Total Listed Mammals:		14			
Reptiles					
	Sharptail Snake	<i>Contia tenuis</i>	WA	Candidate Species	
	Striped Whipsnake	<i>Masticophis taeniatus</i>	WA	Candidate Species	
Total Listed Reptiles:		2			
Total Listed Species:		42			

Table 20. Partners in Flight species of the Methow subbasin, Washington (IBIS 2003).

Common Name	Scientific Name	PIF 1998-1999 Continental	PIF Ranking by Super Region Draft 2002	WA PIF Priority & Focal Species
Northern Harrier	<i>Circus cyaneus</i>			Yes
Swainson's Hawk	<i>Buteo swainsoni</i>		MO (Intermountain West, Prairies)	Yes
Ferruginous Hawk	<i>Buteo regalis</i>			Yes
Rough-legged Hawk	<i>Buteo lagopus</i>		PR (Arctic)	
American Kestrel	<i>Falco sparverius</i>			Yes
Gyrfalcon	<i>Falco rusticolus</i>		PR (Arctic)	
Sage Grouse	<i>Centrocercus urophasianus</i>		MA (Intermountain West, Prairies)	
Spruce Grouse	<i>Falcapennis canadensis</i>		PR (Northern Forests)	
White-tailed Ptarmigan	<i>Lagopus leucurus</i>		MO (Arctic)	
Blue Grouse	<i>Dendragapus obscurus</i>		MA (Pacific, Intermountain West)	
Sharp-tailed Grouse	<i>Tympanuchus phasianellus</i>		MO (Prairies)	Yes
Long-billed Curlew	<i>Numenius americanus</i>	Yes		
Stilt Sandpiper	<i>Calidris himantopus</i>	Yes		
Flammulated Owl	<i>Otus flammeolus</i>		MO (Pacific, Intermountain West, Southwest)	Yes
Snowy Owl	<i>Nyctea scandiaca</i>		PR (Arctic)	
Northern Pygmy-owl	<i>Glaucidium gnoma</i>		PR (Pacific)	
Burrowing Owl	<i>Athene cucularia</i>			Yes
Spotted Owl	<i>Strix occidentalis</i>		IM (Pacific, Intermountain West, Southwest)	
Great Gray Owl	<i>Strix nebulosa</i>			Yes
Short-eared Owl	<i>Asio flammeus</i>	Yes	MA (Arctic, Northern Forests, Intermountain West, Prairies)	Yes
Common Poorwill	<i>Phalaenoptilus nuttallii</i>			Yes
Black Swift	<i>Cypseloides niger</i>	Yes	IM (Pacific, Intermountain West)	Yes
Vaux's Swift	<i>Chaetura vauxi</i>			Yes
White-throated Swift	<i>Aeronautes saxatalis</i>		MA (Intermountain West, Southwest)	Yes

Common Name	Scientific Name	PIF 1998-1999 Continental	PIF Ranking by Super Region Draft 2002	WA PIF Priority & Focal Species
Calliope Hummingbird	<i>Stellula calliope</i>		MO (Intermountain West)	Yes
Rufous Hummingbird	<i>Selasphorus rufus</i>	Yes	MA (Pacific, Intermountain West)	Yes
Lewis's Woodpecker	<i>Melanerpes lewis</i>	Yes	MO (Intermountain West, Prairies)	Yes
Williamson's Sapsucker	<i>Sphyrapicus thyroideus</i>		MO (Intermountain West)	Yes
Red-naped Sapsucker	<i>Sphyrapicus nuchalis</i>		MO (Intermountain West)	Yes
Red-breasted Sapsucker	<i>Sphyrapicus ruber</i>		MO (Pacific)	Yes
Downy Woodpecker	<i>Picoides pubescens</i>			Yes
White-headed Woodpecker	<i>Picoides albolarvatus</i>	Yes	PR (Pacific, Intermountain West)	Yes
Three-toed Woodpecker	<i>Picoides tridactylus</i>		PR (Northern Forests)	
Black-backed Woodpecker	<i>Picoides arcticus</i>		PR (Northern Forests)	Yes
Pileated Woodpecker	<i>Dryocopus pileatus</i>			Yes
Olive-sided Flycatcher	<i>Contopus cooperi</i>		MA (Pacific, Northern Forests, Intermountain West)	Yes
Western Wood-pewee	<i>Contopus sordidulus</i>			Yes
Willow Flycatcher	<i>Empidonax traillii</i>		MA (Prairies, East)	Yes
Hammond's Flycatcher	<i>Empidonax hammondii</i>			Yes
Gray Flycatcher	<i>Empidonax wrightii</i>		PR (Intermountain West)	Yes
Dusky Flycatcher	<i>Empidonax oberholseri</i>		MA (Intermountain West)	Yes
Pacific-slope Flycatcher	<i>Empidonax difficilis</i>		PR (Pacific)	Yes
Loggerhead Shrike	<i>Lanius ludovicianus</i>			Yes
Northern Shrike	<i>Lanius excubitor</i>		PR (Northern Forests)	
Warbling Vireo	<i>Vireo gilvus</i>			Yes
Red-eyed Vireo	<i>Vireo olivaceus</i>			Yes
Gray Jay	<i>Perisoreus canadensis</i>		PR (Northern Forests)	
Clark's Nutcracker	<i>Nucifraga columbiana</i>		PR (Intermountain)	Yes

Common Name	Scientific Name	PIF 1998-1999 Continental	PIF Ranking by Super Region Draft 2002	WA PIF Priority & Focal Species
			West)	
Horned Lark	<i>Eremophila alpestris</i>			Yes
Bank Swallow	<i>Riparia riparia</i>			Yes
Chestnut-backed Chickadee	<i>Poecile rufescens</i>		PR (Pacific)	
Boreal Chickadee	<i>Poecile hudsonicus</i>		MA (Northern Forests)	
White-breasted Nuthatch	<i>Sitta carolinensis</i>			Yes
Brown Creeper	<i>Certhia americana</i>			Yes
House Wren	<i>Troglodytes aedon</i>			Yes
Winter Wren	<i>Troglodytes troglodytes</i>			Yes
American Dipper	<i>Cinclus mexicanus</i>			Yes
Western Bluebird	<i>Sialia mexicana</i>			Yes
Mountain Bluebird	<i>Sialia currucoides</i>		PR (Intermountain West)	
Townsend's Solitaire	<i>Myadestes townsendi</i>			Yes
Veery	<i>Catharus fuscescens</i>			Yes
Swainson's Thrush	<i>Catharus ustulatus</i>			Yes
Hermit Thrush	<i>Catharus guttatus</i>			Yes
Varied Thrush	<i>Ixoreus naevius</i>			Yes
Sage Thrasher	<i>Oreoscoptes montanus</i>		PR (Intermountain West)	Yes
American Pipit	<i>Anthus rubescens</i>		PR (Arctic)	Yes
Bohemian Waxwing	<i>Bombycilla garrulus</i>		MA (Northern Forests)	
Orange-crowned Warbler	<i>Vermivora celata</i>			Yes
Nashville Warbler	<i>Vermivora ruficapilla</i>		PR (Northern Forests)	Yes
Yellow Warbler	<i>Dendroica petechia</i>			Yes
Yellow-rumped Warbler	<i>Dendroica coronata</i>			Yes
Black-throated Gray Warbler	<i>Dendroica nigrescens</i>		MO (Pacific)	Yes
Townsend's Warbler	<i>Dendroica townsendi</i>			Yes
Hermit Warbler	<i>Dendroica occidentalis</i>	Yes	MO (Pacific)	Yes
Macgillivray's Warbler	<i>Oporornis tolmiei</i>			Yes
Wilson's Warbler	<i>Wilsonia pusilla</i>			Yes
Yellow-breasted Chat	<i>Icteria virens</i>			Yes
Western Tanager	<i>Piranga ludoviciana</i>			Yes
Chipping Sparrow	<i>Spizella passerina</i>			Yes
Brewer's Sparrow	<i>Spizella breweri</i>	Yes	MA (Intermountain West)	Yes
Vesper Sparrow	<i>Pooecetes gramineus</i>			Yes
Lark Sparrow	<i>Chondestes grammacus</i>			Yes

Common Name	Scientific Name	PIF 1998-1999 Continental	PIF Ranking by Super Region Draft 2002	WA PIF Priority & Focal Species
Black-throated Sparrow	<i>Amphispiza bilineata</i>			Yes
Sage Sparrow	<i>Amphispiza belli</i>	Yes	PR (Intermountain West)	Yes
Grasshopper Sparrow	<i>Ammodramus savannarum</i>		MA (Prairies)	Yes
Fox Sparrow	<i>Passerella iliaca</i>			Yes
Lincoln's Sparrow	<i>Melospiza lincolni</i>		PR (Northern Forests)	Yes
Lapland Longspur	<i>Calcarius lapponicus</i>		PR (Arctic)	
Snow Bunting	<i>Plectrophenax nivalis</i>		PR (Arctic)	
Black-headed Grosbeak	<i>Pheucticus melanocephalus</i>			Yes
Bobolink	<i>Dolichonyx oryzivorus</i>	Yes		
Western Meadowlark	<i>Sturnella neglecta</i>			Yes
Bullock's Oriole	<i>Icterus bullockii</i>			Yes
Pine Grosbeak	<i>Pinicola enucleator</i>		MO (Northern Forests)	
Purple Finch	<i>Carpodacus purpureus</i>			Yes
Cassin's Finch	<i>Carpodacus cassinii</i>		MA (Intermountain West)	
Red Crossbill	<i>Loxia curvirostra</i>			Yes
White-winged Crossbill	<i>Loxia leucoptera</i>		PR (Northern Forests)	
Total Species:	98			

Table 21. Wildlife game species of the Methow subbasin, Washington (IBIS 2003).

	Common Name	Scientific Name	WA
Amphibians			
	Bullfrog	<i>Rana catesbeiana</i>	Game Species
	Total Game Amphibians:	1	
Birds			
	Canada Goose	<i>Branta canadensis</i>	Game Bird
	Wood Duck	<i>Aix sponsa</i>	Game Bird
	Gadwall	<i>Anas strepera</i>	Game Bird
	American Wigeon	<i>Anas americana</i>	Game Bird
	Mallard	<i>Anas platyrhynchos</i>	Game Bird
	Blue-winged Teal	<i>Anas discors</i>	Game Bird
	Cinnamon Teal	<i>Anas cyanoptera</i>	Game Bird
	Northern Shoveler	<i>Anas clypeata</i>	Game Bird
	Northern Pintail	<i>Anas acuta</i>	Game Bird
	Green-winged Teal	<i>Anas crecca</i>	Game Bird
	Canvasback	<i>Aythya valisineria</i>	Game Bird
	Redhead	<i>Aythya americana</i>	Game Bird
	Ring-necked Duck	<i>Aythya collaris</i>	Game Bird
	Greater Scaup	<i>Aythya marila</i>	Game Bird
	Harlequin Duck	<i>Histrionicus histrionicus</i>	Game Bird
	Barrow's Goldeneye	<i>Bucephala islandica</i>	Game Bird
	Hooded Merganser	<i>Lophodytes cucullatus</i>	Game Bird
	Common Merganser	<i>Mergus merganser</i>	Game Bird
	Ruddy Duck	<i>Oxyura jamaicensis</i>	Game Bird
	Chukar	<i>Alectoris chukar</i>	Game Bird
	Gray Partridge	<i>Perdix perdix</i>	Game Bird
	Ring-necked Pheasant	<i>Phasianus colchicus</i>	Game Bird
	Ruffed Grouse	<i>Bonasa umbellus</i>	Game Bird
	Spruce Grouse	<i>Falcapennis canadensis</i>	Game Bird
	White-tailed Ptarmigan	<i>Lagopus leucurus</i>	Game Bird
	Blue Grouse	<i>Dendragapus obscurus</i>	Game Bird
	Wild Turkey	<i>Meleagris gallopavo</i>	Game Bird
	California Quail	<i>Callipepla californica</i>	Game Bird
	American Coot	<i>Fulica americana</i>	Game Bird
	Common Snipe	<i>Gallinago gallinago</i>	Game Bird
	Mourning Dove	<i>Zenaida macroura</i>	Game Bird
	Total Game Birds:	31	
Mammals			
	Eastern Cottontail	<i>Sylvilagus floridanus</i>	Game Mammal
	Nuttall's (Mountain) Cottontail	<i>Sylvilagus nuttallii</i>	Game Mammal
	Snowshoe Hare	<i>Lepus americanus</i>	Game Mammal
	White-tailed Jackrabbit	<i>Lepus townsendii</i>	Game Mammal
	Black-tailed Jackrabbit	<i>Lepus californicus</i>	Game

			Mammal
	American Beaver	<i>Castor canadensis</i>	Game Mammal
	Muskrat	<i>Ondatra zibethicus</i>	Game Mammal
	Red Fox	<i>Vulpes vulpes</i>	Game Mammal
	Black Bear	<i>Ursus americanus</i>	Game Mammal
	Raccoon	<i>Procyon lotor</i>	Game Mammal
	American Marten	<i>Martes americana</i>	Game Mammal
	Ermine	<i>Mustela erminea</i>	Game Mammal
	Long-tailed Weasel	<i>Mustela frenata</i>	Game Mammal
	Mink	<i>Mustela vison</i>	Game Mammal
	American Badger	<i>Taxidea taxus</i>	Game Mammal
	Northern River Otter	<i>Lutra canadensis</i>	Game Mammal
	Mountain Lion	<i>Puma concolor</i>	Game Mammal
	Bobcat	<i>Lynx rufus</i>	Game Mammal
	Elk	<i>Cervus elaphus</i>	Game Mammal
	Rocky Mountain Elk	<i>Cervus elaphus nelsoni</i>	Game Mammal
	Mule Deer	<i>Odocoileus hemionus</i>	Game Mammal
	Black-tailed Deer (westside)	<i>Odocoileus hemionus columbianus</i>	Game Mammal
	Moose	<i>Alces alces</i>	Game Mammal
	Mountain Goat	<i>Oreamnos americanus</i>	Game Mammal
	Bighorn Sheep	<i>Ovis canadensis</i>	Game Mammal
	Total Game Mammals:	25	
	Total Game Species:	57	

Appendix C: Conservation Reserve Program

U. S. DEPARTMENT OF AGRICULTURE -- FARM SERVICE AGENCY
CONSERVATION RESERVE PROGRAM - MONTHLY CONTRACT REPORT
SUMMARY FOR ACTIVE CONTRACTS FOR ALL PROGRAM YEARS (1986-2004)

COUNTY NAME	TOTAL NO. OF CONTRACTS	TOTAL CRP ACRES	AVERAGE RENTAL RATE	CONTINUOUS CREP ACRES	CONTINUOUS NON-CREP ACRES	WETLAND SYSTEMS ACREAGE	MARGN PASTRLND ACRES	TREE PRACTICE ACRES	AVERAGE EROSION INDEX
ADAMS	1,696	212,463.9	\$50.17	.0	17,206.1	207.0	.0	54.0	5
ASOTIN	144	29,145.6	\$54.28	760.5	111.6	.0	852.3	907.1	11
BENTON	402	74,265.9	\$39.93	.0	5,896.3	.0	.0	.0	9
CHELAN	8	1,372.7	\$47.01	4.5	.0	.0	.0	4.5	6
CLALLAM	6	34.3	\$159.03	34.3	.0	.0	33.3	34.3	3
CLARK	7	76.7	\$145.65	62.3	14.4	.0	76.7	76.7	76
COLUMBIA	306	38,583.8	\$61.87	1,424.9	507.1	.0	1,714.0	2,841.2	15
COWLITZ	2	14.8	\$163.96	14.8	.0	.0	14.8	14.8	1
DOUGLAS	1,076	187,711.0	\$45.36	.0	747.5	533.7	60.5	150.0	5
FERRY	17	1,090.7	\$55.01	.0	25.4	.0	.0	14.5	13
FRANKLIN	776	104,426.7	\$50.35	.0	12,727.8	.0	4.6	8.1	5
GARFIELD	464	44,655.1	\$65.80	650.9	2,493.9	89.9	2,027.8	2,225.2	14
GRANT	405	60,715.5	\$43.85	.0	1,117.8	.0	.0	.0	7
GRAYS HARBOR	11	105.0	\$183.46	74.7	30.3	.0	77.2	105.0	1
JEFFERSON	9	97.2	\$220.10	97.2	.0	.0	76.5	97.2	15
KING	1	5.3	\$204.40	5.3	.0	.0	5.3	5.3	1
KITSAP	1	5.0	\$199.60	5.0	.0	.0	5.0	5.0	243
KITTITAS	19	3,294.2	\$50.62	.0	.0	.0	.0	.0	18
KLICKITAT	360	58,407.9	\$44.03	47.5	4,598.3	.0	4,130.4	4,378.0	9
LEWIS	24	515.8	\$188.17	436.4	79.4	.0	449.5	498.9	1
LINCOLN	955	86,270.7	\$46.18	.0	1,644.1	857.7	16.9	388.4	8
MASON	6	37.3	\$191.68	37.3	.0	.0	37.3	37.3	1
OKANOGAN	50	4,064.6	\$49.11	33.9	50.0	2,737.3	.0	83.9	4
PACIFIC	3	41.4	\$211.16	41.4	.0	.0	41.4	41.4	1
PIERCE	4	18.5	\$164.94	3.0	15.5	.0	5.5	18.5	10
SKAGIT	66	443.4	\$268.69	443.4	.0	.0	203.8	443.4	2
SNOHOMISH	12	135.6	\$229.49	111.8	23.8	.0	127.0	135.6	5
SPOKANE	459	31,768.2	\$56.76	.0	758.2	2,239.6	268.6	746.0	11
STEVENS	40	3,516.4	\$48.84	.0	.0	784.4	.0	184.9	10
THURSTON	5	33.4	\$215.55	33.4	.0	.0	33.4	33.4	8
WAHKIACUM	13	374.4	\$158.56	87.6	286.8	.0	273.8	374.4	40
WALLA WALLA	539	149,966.2	\$53.06	1,501.2	2,573.0	.0	1,496.9	1,728.1	10
WHATCOM	87	1,021.5	\$347.06	1,021.5	.0	.0	858.3	1,021.5	1
WHITMAN	1,720	138,802.3	\$74.16	.0	32,203.6	456.5	754.0	1,061.7	12
YAKIMA	185	53,341.3	\$39.58	147.2	497.7	.0	235.0	235.0	10
STATE TOTAL:	9,878	1,286,822.3	\$52.14	7,080.0	83,608.6	7,906.1	13,879.8	17,953.3	8

TOTAL NUMBER OF COUNTIES WITH CONTRACTS: 35