

## 5 Inventory

### 5.1.1 Introduction, Purpose, and Scope

The intent of the Inventory section is to summarize and assess existing programs, plans, policies, and projects designed to protect and/or restore fish and wildlife habitats and populations within the subbasin. It provides guidance to this document and helps illustrate the extent to which current management strategies are consistent with the subbasin assessment and their adequacy in protecting and restoring fish, wildlife, and ecosystem resources. The activities to date are compared to the assessment to identify the gaps between actions already taken or underway, and actions that are needed to achieve desired results.

Following is a summary of the current management strategies, and restoration and protection projects that are complete or ongoing within the subbasin. The first section contains summarized existing protection programs, such as stream buffers, municipal or county ordinances, conservation designations, or water resource protections. The second section examines existing tribal, federal, state, and local programs, plans, and policies that affect fish, wildlife, and ecosystem resources. The third section is an inventory of past and ongoing restoration and conservation projects (Table 42 - Table 48). Existing Plans and Programs are assessed to determine the extent to which they are consistent with the subbasin assessment and their adequacy in protecting and restoring fish, wildlife, and ecosystem resources.

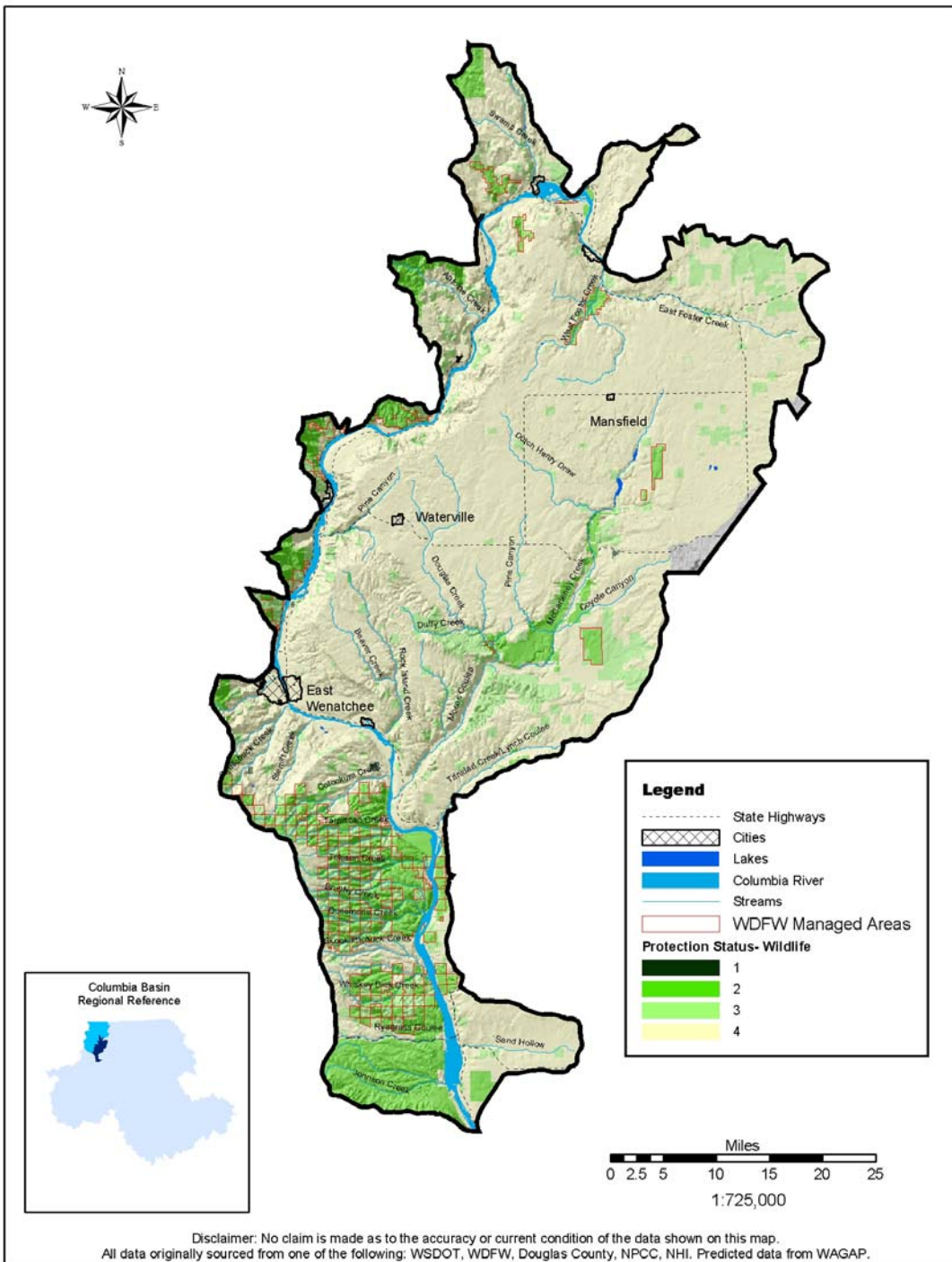
### 5.1.2 Existing Protection

#### Wildlife Areas

(This section taken from Ashley and Stovall, unpub. rpt., 2004)

There are almost no lands in the Subbasin that 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 status – level 1). Approximately 7 % (109,523 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 – level 2) (Figure 51). Approximately 312,766 acres (19 percent) of the Subbasin 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 – level 4). The majority of the Subbasin (74 percent; 1,185,451 acres) has no amount of protection. Lands owned by WDFW fall within the medium and low protection status categories and include six wildlife management areas (Figure 51 Protection status and WDFW managed lands of the UMM Subbasin, WA.

Table 41) The Swakane and Quincy Wildlife Areas have only a small percentage of their lands in the UMM and will be examined in the Entiat and Crab Creek Subbasins, respectively.



(DCTL5 2004)

**Figure 51** Protection status and WDFW managed lands of the UMM Subbasin, WA.

**Table 41** Wildlife areas owned and managed by WDFW in the UMM Subbasin, WA.

<b>Wildlife Area</b>	<b>Size (acres)</b>
Colockum	88,000
Quilomene	17,803
Whiskey Dick	28,549
Chelan Butte	8,200
Wells	8,447
Sagebrush Flats	10,171

### ***Colockum Wildlife Area***

The Colockum Wildlife Area is located in the geographic center of the state in portions of Chelan and Kittitas Counties. The Colockum Wildlife Area was purchased to provide winter and summer range for Rocky Mountain elk and other wildlife species such as mule deer, California bighorn sheep, chukar, California quail, spruce, ruffed and blue grouse, mourning dove and other wildlife.

The ownership pattern of this Wildlife Area is largely every other section, with WDFW owning about 43,000 acres and the WDNR owning about 41,000 acres. Washington Department of Fish and Wildlife also manages 11,023 acres of BLM land through a memorandum of understanding.

Current management of the Colockum Wildlife Area strives to protect a large area of relatively good condition shrubsteppe, riparian, and forest habitats that provide winter and summer range for big game, game bird and other wildlife species. Human disturbance, motorized vehicle use, trespass livestock, and fire-degraded habitats, encourage noxious weeds and displace wildlife. Small and large private land holdings can increase weed and disturbance problems through vehicle use and overgrazing. Future management goals include restoration of native riparian wetlands and shrubsteppe vegetation communities where they have been damaged by overgrazing, fire or disturbance.

The Wildlife Area is managed to protect and maintain the existing, primitive environment. When the Wildlife Area was purchased, over 600 miles of roads existed. In 1972, many miles of roads were closed to improve habitat conditions for fish and wildlife, while still providing recreational opportunities. Existing roads are minimally maintained to keep public use at a reasonable level with wildlife use of the area. About 35 miles of fencing is maintained each year to control trespass livestock. Regulatory, directional, and boundary sign maintenance is needed on approximately 50 miles of boundary and 150 miles of road. Approximately 1,300 acres of agricultural fields are enrolled in CRP, while another 150 acres are actively farmed in grain production for wildlife. All agricultural land, camping areas, and about 20 miles of roadsides are managed to control noxious weeds each year. Artificial feeding of upland and nongame birds is accomplished using 29 feeders. Ten guzzlers are maintained, along with new and existing spring developments. Mountain meadows are being managed to provide elk forage by removal of conifer seedlings, while mature forests are maintained as cover for big game and other wildlife species.

The Colockum Wildlife Area fills an important role in the fish and wildlife management strategy for the Subbasin by addressing the local decline of quantity and quality of shrubsteppe habitat and its associated wildlife species. The thousands of acres of big game winter range also help alleviate damage problems caused by elk and deer to private agricultural crops. This large undeveloped block of habitat also may function as a habitat linkage for threatened species such as sage grouse. Excluding livestock grazing from riparian areas in Colockum Creek, Tekison Creek and Brushy Creek improves habitat for fish, reduces water temperatures and reduces siltation in these tributaries to the Columbia River.

### ***Quilomene/Whiskey Dick Wildlife Area***

The first land acquisition in what would become the Quilomene/Whiskey Dick Wildlife Area was in 1962 when the Washington State Department of Game purchased 11,179 acres of rangeland in the Quilomene area. Subsequent purchases were 17,055 acres in the Whiskey Dick area in 1966, and 343 acres in the Quilomene in 1974. All funding for purchase was made available by the Interagency Committee for Outdoor Recreation (IAC Grant Program). The purpose of these acquisitions was to expand the winter range for the Colockum deer and elk herds and to perpetuate and improve the upland game bird habitat. Additionally, 16,591 acres are leased from the WDNR. The combined acreage under WDFW control for both the Quilomene and Whiskey Dick areas is 45,169.74 acres. This Wildlife Area is managed as part of the L.T. Murray/Wenas Wildlife Area.

The majority of the arid Quilomene/Whiskey Dick Wildlife Area is comprised of shrubsteppe habitat (both the grassland and shrubland cover types) with riparian wetland habitat along stream corridors. Timber resources are confined to small areas along the western boundary of the Quilomene and comprise only about 250 to 300 acres. The Wildlife Area is located approximately 15 miles northeast of the city of Ellensburg in Kittitas County. The Quilomene and Whiskey Dick segments are disjunct, with the privately owned Skookumchuck drainage dividing them.

In addition to being valuable winter and transitional range for deer and elk, the Quilomene/Whiskey Dick Wildlife Area provides habitat for many other species, including bighorn sheep, sage grouse, and a myriad of small mammals, neo-tropical migratory songbirds, upland game birds, raptors, and reptiles. Widespread diversity of shrubs, trees, and grassland vegetation exists, although noxious weeds are an issue along road corridors and in areas heavily impacted by past grazing practices. Weed control is a high priority on the Wildlife Area.

Project work on the Quilomene/Whiskey Dick Wildlife Area addresses declining quantity and quality of shrubsteppe habitat and subsequent negative impacts on the distribution and populations of shrubsteppe obligate species such as sage grouse, Washington ground squirrels, sage thrashers, sage sparrows, Brewer's sparrows, loggerhead shrikes, and ferruginous hawks within a portion of the Subbasin (Vander Haegen et al. 2000, WDFW 2000). Many of these species have been adversely impacted by habitat conversion to alternate uses, such as livestock grazing, and both irrigated and dry land agriculture; water conversion to alternate uses; water impoundments associated with dams; and urban/residential development resulting in current distributions that are dramatically reduced from their historic ranges.

Wildlife Area management activities address the following habitat/landscape concerns:

*Habitat Fragmentation:* The Quilomene/Whiskey Dick Wildlife Area is made up of the 11,522-acre Quilomene portion to the north and the 17,055-acre Whiskey Dick portion to the south. They are separated by a 1 to 2 ½-mile-wide strip of private land known as the Skookumchuck, and interspersed throughout both portions are 16,591 acres of WDNR ownership.

*Loss of Deep Soil Communities:* Planning is being done to re-establish native vegetation on approximately 50 acres of deep soils formerly used as agricultural fields or for intensive livestock grazing. This will take place beginning in Fall 2003 and continue through 2005.

*Livestock Grazing:* Grazing on the Wildlife Area was discontinued in 1980 and will only be used as a management tool to accomplish specific habitat objectives in accordance with WDFW guidelines. The majority of the boundary of the Wildlife Area is fenced with stock fence, protecting habitats from trespass livestock grazing, and controlling off-road vehicle access.

*Exotic Plant Species:* Approximately 500 acres are treated annually to reduce non-native weedy vegetation, including a minimum of 35 miles of roadside treatment. Treatments include herbicides, mechanical measures, and biological agents. Where needed, native grasses are planted in treated areas to supplant weedy vegetation.

*Increased Fire Frequency:* Uncontrolled wildfires can significantly alter the landscape by eradicating sagebrush, which shrubsteppe obligate species, such as sage grouse, depend on for both food and cover. The Wildlife Area is outside of the fire district, and fire-fighting contracts to ensure timely response to wildfires by local fire districts or WDNR are not currently in place. Negotiations are underway to address that need, and it is hoped that contracts will be in place by the 2004 fire season.

Shrubsteppe, the predominant habitat type found on the Wildlife Area, includes both the grassland and shrubland cover types. Wildlife and habitat management activities focus primarily on improvement of shrubsteppe habitat to aid in the recovery of sage grouse. Sage grouse were historically found in shrubsteppe habitats throughout eastern Washington, but have declined 77 percent between 1960 and 1999. The current population in Washington is estimated to be about 1,000 (Schroeder et al. 2000b).

Approximately 25 miles of stock fence has been maintained to guard against livestock trespass, protect shrubsteppe habitat, and restrict vehicular access into sensitive areas, thereby maintaining critical shrubsteppe habitat for obligate species. Approximately 5 miles of interior fencing has been removed to reduce potential wildlife injury/mortality because of entanglement and collision with unneeded barbed wire. Fencing protects habitat against damage that reduces herbaceous cover used for nesting and foraging. The restriction of vehicle access, and livestock trespass also reduces the spread of undesirable weedy vegetation.

Weed control on the Wildlife Area has been an increasingly successful endeavor with the yearly improvement to spray equipment, use of GPS data for locating new sites and relocating past areas of treatment, and cooperative efforts with Kittitas County. Russian knapweed has been nearly eradicated in several areas, and treatment to whitetop, Dalmatian toadflax, several species of thistle, diffuse knapweed, pepperweed, and other noxious weed species is meeting with success as well.

When livestock grazing was practiced on the Wildlife Area, numerous springs were developed to promote the dispersal of stock throughout the area and avoid concentrated use in the riparian

corridors, those being the only places in which stock water was in abundance. Eleven of those springs have been maintained for use by wildlife. This allows the expanded use of the Wildlife Area by deer and elk for winter and transitional range, as well as use by other small mammals and a variety of birds and game birds.

Photo monitoring within the Wildlife Area began in the early 1980s, and is still ongoing to document the changes associated with the removal of livestock grazing. Photo monitoring began in 2003 on treated noxious weed sites, particularly those under consideration for being replanted with native or native-like seed to ensure that new weeds are not introduced.

The Wildlife Area contains approximately 65 miles of Green Dot designated roads managed through a cooperative agreement with WDFW, WDNR, USFS, and other agencies. These roads are open for vehicle travel. All other roads are closed, and cross-country vehicle travel is prohibited year-round.

### ***Chelan Butte Wildlife Area***

*Restoration and Weed Control:* Wildlife Area managers have conducted weed control activities on approximately 370 acres of agricultural fields in an attempt to restore permanent cover for shrubsteppe obligate wildlife species. Heavy infestation of weeds hampered restoration efforts and weed control eliminated some potential for shrub and forb establishment. The initial helicopter seeding was successful in establishing 150 of 300 acres. Approximately 150 acres were missed in the first seeding and an additional 7 acres were re-seeded in the fall of 2002.

*Fence Construction and Maintenance:* Wildlife Area managers surveyed property boundaries and constructed about 2.5 miles of fence in the Entiat area. This project was designed to establish Wildlife Area boundaries and protect shrubsteppe and riparian wetland communities from trespass livestock. This project will reduce the extent of livestock trespass and minimize disturbance, which facilitates weed encroachment and native habitat deterioration.

### ***Wells Wildlife Area***

*Riparian Habitat Restoration:* Wildlife Area managers are restoring woody riparian habitat by establishing an average of 5,500 native shrubs and trees annually. This project is designed to address the loss of woody cover by increasing ecological diversity. Beaver, deer and small mammals damaged some woody plantings. Much of the 2002 plantings were overwhelmed by weeds and about 25 percent had to be replaced in 2003.

*Wildlife Food Plots:* Wildlife Area managers plant, irrigate and maintain approximately 80 acres of grain crops, including 10 to 15 acres of corn annually. This project is designed to provide food for waterfowl during critical periods and increase hunting opportunity on and off the Wildlife Area.

*Canada Goose Nesting Surveys:* The WDFW conducts annual goose nesting surveys on Wells Pool. Estimated production for the years 1998 through 2002 were 494, 565, 680, 877 and 653. Approximately 40 percent of the production originates from artificial nesting structures provided and maintained by WDFW. This project is designed to address the lack of goose nesting habitat.

*Kestrel Nesting Box Project:* Wildlife Area managers maintain approximately 50 kestrel nesting boxes to increase nesting habitat and reduce rodents. Recorded annual production between 1998 and 2001 was 113, 66, 149 and 90 young (about 4.5 young per nest surveyed).

*Pond Construction:* Wildlife Area managers constructed 10 small impoundments to increase wetland habitat and ecological diversity. Managers successfully created temporary ponds and increased wetland habitat and “sub-irrigated” areas.

*Integrated Noxious Weed Management:* Wildlife Area managers implement integrated weed control activities, including the annual treatment of 80 acres of noxious weeds with herbicide; annual mowing of about 25 acres; the release of 9,550 bio-control agents between 1998 and 2002; and seeding disturbed areas to permanent cover. These activities are designed to reduce competition with native plant species and increase ecological diversity. Managers have successfully reduced noxious weeds and prevented their spread to adjacent areas. Bio-control shows promises for weed control without the loss of plant diversity associated with some herbicide treatments. It also appears to be the most cost-effective method in the long-term in hard-to-reach areas.

*Upland Habitat Restoration:* Wildlife Area managers reseeded 65 acres of burned areas and associated firebreaks with a native seed mixture that includes bitterbrush. This project is designed to restore shrubsteppe plant communities and deer browse. To date, the success of bitterbrush seeding has been very low.

### ***Sagebrush Flats Wildlife Area***

The 8,775-acre Sagebrush Flat Wildlife Area (SFWA) is located in Douglas County, Washington and is comprised of four disjunct parcels (Units) owned and/or managed by WDFW. The SFWA includes the 3,740-acre Sagebrush Flat Unit, the 320-acre Dormaier Unit, the 2,206-acre Chester Butte Unit, and the 2,509-acre West Foster Creek Unit. The SFWA is predominantly shrubsteppe habitat and was acquired to promote recovery of pygmy rabbits, sage grouse, and sharp-tailed grouse as well as to protect/provide habitat for other shrubsteppe obligate species. The Sagebrush Flat, Dormaier, and Chester Butte Units are managed primarily for pygmy rabbits, sage grouse, and mule deer while the West Foster Creek Unit was acquired to protect sharp-tailed grouse, sage grouse, and mule deer habitat.

Since 1998, 400 acres of agricultural land have been converted to permanent habitat through the use of CRP. An additional 120 acres of low quality crested wheatgrass fields are currently being converted to high quality permanent habitat. The benefits of this project are unknown until these areas reach maturity in 7-15 years.

Using Bonneville Power Administration funding, WDFW implemented a pygmy rabbit enhancement project within the SFWA. The project is designed to enhance conditions for pygmy rabbit burrow sites and duplicate the habitat features favored by the pygmy rabbits on the Sagebrush Flat unit and surrounding areas. Results are unknown at this time.

Since 1998, SFWA staff and WSCC crews have planted approximately 10,500 trees and shrubs to enhance riparian areas of the West Foster Creek unit and to increase winter habitat for sharp-tailed grouse (Peterson, pers. comm., 2003). Planting results are unknown at this time.

Biologists have been successful at reducing the size and distribution of weed infestations on the SFWA. In the last two years 6,200 bio-agents (*Mecinus janthinus*) have been released to treat infestations of Dalmatian toadflax and provide long term, cost effective treatment of this weed (Peterson, pers. comm., 2003).

Fire protection contracts have been secured with 4 local fire districts to prevent the catastrophic loss of habitat because of wildfire (Peterson, pers. comm., 2003). A fire in the Sagebrush Flat unit would eliminate the last remaining wild population of pygmy rabbits in the state. On the Sagebrush Flat unit, 17 miles of firebreaks have been built around and within the area. Additionally, a water reservoir was constructed on the unit for fire fighting crews and helicopters.

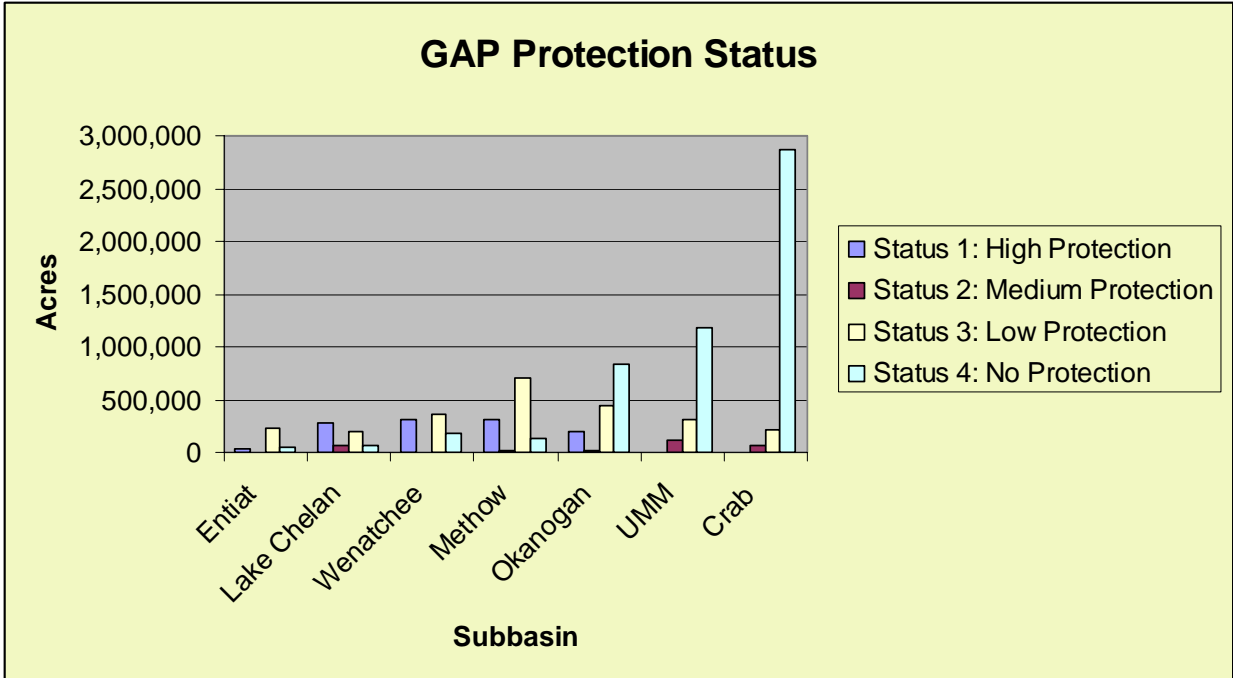
Washington State University (WSU) conducted a three-year study designed to evaluate the effects of four grazing treatments on vegetation and pygmy rabbit behavior. Results of the study showed 1) pygmy rabbits ate more grasses and forbs in the ungrazed areas than in grazed areas; 2) there was a clear movement by rabbits from grazed areas to ungrazed areas; 3) nutritional quality of pygmy rabbit forage was greater on the ungrazed areas than the grazed; and 4) cattle grazing caused the collapse of burrows built and used by the pygmy rabbit (Peterson, pers. comm., 2003). Study results will be used to prioritize areas within the Subbasin that are suitable for pygmy rabbit reintroduction as well make sound, science based management decisions regarding the use of cattle grazing in pygmy rabbit habitat.

The WDFW, WSU and the FWS implemented a pygmy rabbit captive breeding program to address a rapidly declining and genetically depressed wild population of pygmy rabbits. In the last three years, the program has established breeding and rearing facilities located at WSU, Northwest Trek, and the Oregon Zoo. All the animals captured for the program were taken from the Sagebrush Flat unit – the last known location in Washington where pygmy rabbits are known to occur. The WDFW has conducted an assessment of the genetics and interrelatedness of the local population and populations in Idaho and Montana. The captive breeding facilities have had some success in breeding Washington pygmy rabbits, however, complications because of the inbred nature of the population and disease are serious challenges within the Program (Peterson, pers. comm., 2003).

### **GAP Protection**

GAP protection status acreage for each CCP subbasin is compared in Figure 52. As illustrated, the UMM Subbasin and the Crab Subbasin are the only subbasins in the CCP 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 CCP subbasins.





(IBIS 2003)

**Figure 52** GAP protection status for all CCP/subbasin habitat types

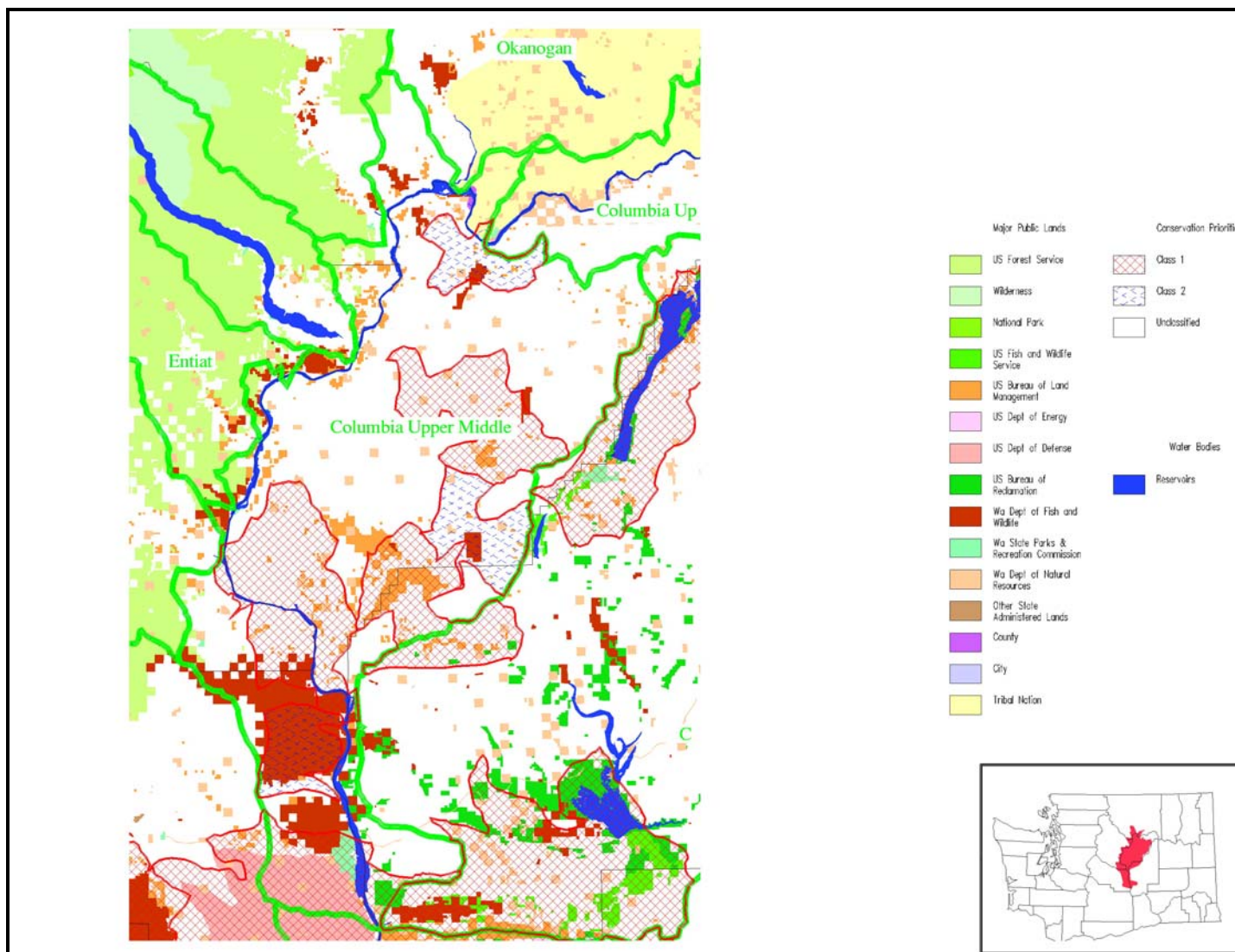
### **Conservation Reserve Program**

Additional habitat protection, primarily on privately owned lands, is provided through the Conservation Reserve Program (CRP). The CRP is intended to reduce soil erosion on upland habitats through establishment of perennial vegetation on cropland. This program provides short-term (10 years), high protection of habitats enrolled. 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 (Hamilton, pers. comm., 2003).

### **Ecoregion Conservation Assessment Priorities**

Subbasin ECA priorities and public land ownership are illustrated in Figure 53. The Ecoregion Conservation Assessment is further discussed in section 4.2 of Ashley and Stovall (unpub. rpt., 2004). An extensive area of shrubsteppe in the central portion of the Subbasin is comprised of ECA class 1 lands. Three areas in the Subbasin, comprised largely of shrubsteppe habitat owned and managed by WDFW, are designated ECA class 2. The majority of these class 2 lands are provided some threat protection primarily through public ownership. WDFW ECA planners, with local input, may identify additional shrubsteppe habitats as ECA priority areas when ECA data are updated (TNC 1999).

Subbasin planners can use ECA data, in conjunction with other tools such as IBIS and Streamnet, to identify areas in which to focus protection strategies and conservation efforts. Protection of critical habitats on private lands, located adjacent to existing public lands, within ECA designated areas is a high priority within the Subbasin and CCP (TNC 1999).



(TNC 1999)

**Figure 53** ECA and publicly owned lands in the UMM Subbasin, WA.

### 5.1.3 Existing Programs, Plans, and Policies

(This section taken from Ashley and Stovall, unpub. rpt., 2004 except as noted)

#### **Tribal Programs, Plans, and Policies**

##### *Confederated Tribes of the Colville Reservation (Colville Tribes)*

Approximately 30,000 acres of the Subbasin lies within the exterior boundaries of the Reservation of the Colville Tribes. The Colville Tribes Natural Resource Department, Fish and Wildlife Program, has grown and evolved considerably since 1975. This has allowed the Tribes to broaden their management objectives and participate more effectively with other government entities both on and off the Colville Reservation. A common element limiting the effective management of Tribal resources is the need for clear and developed habitat and species management plans. All programs within the Colville Tribes Natural Resource Department have recognized this need, and the Department is currently in the process of developing program wide management plans. The intent of these plans is to aid in integrating natural resource management with other land use practices such as timber harvest, grazing, and development.

##### Game Management Program

Big game management on the Colville Reservation and throughout the Subbasin is a priority to tribal members. Management and harvest is conducted for the purpose of subsistence. Big game meat is a primary component of many traditional and cultural activities.

Big game helicopter survey flights have been conducted annually since 1985, depending on funding. Deer and elk populations are the primary focus of these surveys, but moose and wild horse information is collected incidentally. The Colville Tribes have used a sightability model since 2000 to estimate deer and elk populations. Not only have the sightability surveys produced reliable deer and elk numbers, but species locations are also entered into the global positioning system. The information has been helpful for identifying critical ranges; prioritizing land acquisitions; and providing input into timber harvests, road construction and other land management operations.

##### Hellsgate Mitigation Program

The Hellsgate Mitigation Program was established to address habitat and species losses on the Colville Reservation as the result of hydropower development. Under the auspices of this program, the Colville Tribes acquire degraded agricultural lands with the intent of restoring them to functioning native plant communities to meet the habitat and species desires of the tribal membership. Once acreages are identified for potential of acquisition, a Habitat Evaluation Procedure is conducted to assess habitat condition for selected species. Operations and maintenance is conducted to eliminate livestock grazing and control noxious weeds (Priest, pers. comm., 2004).

##### Hunting Seasons: Tribal Member and Non-Tribal Member

The Colville Tribe's Fish and Wildlife Department develops hunting regulations for tribal and non-tribal members. The Colville Business Council ratifies seasons, bag limits and possession limits.

Deer, elk, and forest grouse are the most highly pursued species by Colville Tribal members. Other game and predators such as cougar, bobcat, and beaver are either hunted or trapped. Ceremonial harvest for deer and elk occurs year round for cultural activities such as winter dances, funerals, blessings and subsistence.

Non-tribal hunting seasons are established in designated areas for upland game birds, waterfowl and migratory birds. Non-tribal members may also harvest rabbits. Non-tribal members must possess a non-tribal hunting permit before hunting.

#### Integrated Resource Management Plan

The IRMP was developed in 1999 to guide in the management of natural resources on the Colville Reservation. Indian people's well-being is tied to the well-being of the natural resources (mother earth and all her children) (Colville Tribes 1999). The scope of the IRMP covers the management of the resources that the Tribes used in the past and in the present, while ensuring the management of future resources based on Tribal values, desires, and needs. The IRMP established standards and guidelines in the management of wildlife, fisheries, water, forest and range habitats, and populations.

#### Timber, Fish and Wildlife Program

The Timber, Fish and Wildlife Program is a consensus based, stakeholder group that grew from the Bolt Decision. This program focuses primarily on forest practices on state and private lands. Some of the representative caucuses include the Colville Tribes, large industries, small landowners, state agencies, federal services and environmental groups. The Colville Tribes are a leader in the development of the Forest and Fish Report (1999) and in designing forest practice standards and guidelines for eastern Washington. Activities include participating on interdisciplinary teams and conducting research to test the effectiveness of the harvest prescriptions in meeting clean water, fish and species diversity.

#### ***Columbia River Inter-Tribal Fish Commission (CRITFC)***

##### Columbia River Anadromous Fish Restoration Plan: Wy-Kan Ush-Mi-Wa-Kish-Wit

The CRITFC represents the combined interests for the Nez Perce, Umatilla, Warm Springs, and Yakama Tribes. The tribal Columbia River Anadromous Fish Restoration Plan, or Wy-Kan-Ush-Mi Wa-Kish-Wit, was developed by CRITFC in 1995. Recommendations set forth in this plan for salmon recovery address three types of actions: institutional, technical, and watershed, with the over-riding goal of simply putting fish back in the river (gravel to gravel management) (Kaputa and Woodward 2002).

#### **Federal Programs, Plans, and Policies**

##### ***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.

## ***Bureau of Land Management***

The Bureau of Land Management (BLM) manages lands in Douglas, Grant, Chelan and Kittitas Counties. The lands are managed for multiple uses including habitat for native wildlife.

### **Riparian Habitat Protection and Enhancement**

The BLM continues to protect and manage riparian habitat in the Subbasin to enhance riparian habitat and water quality from season-long livestock grazing. Protection allows for proper functioning of healthy riparian systems including silt and sediment entrapment, aquifer recharge, erosion abatement, and fish and wildlife habitat.

Among the accomplishments of the riparian protection project, BLM has constructed multiple riparian exclosures to protect 8 miles of riparian habitat. Monitoring Avian Survivorship and Productivity (MAPS) for nine years has documented 65 breeding birds within the Douglas Creek exclosure. Proper Functioning Condition (PFC) surveys, water quality monitoring, and macro-invertebrate studies have recorded high quality watershed and riparian conditions.

### **Upland Shrubsteppe Restoration and Management**

The BLM acquires and manages shrubsteppe habitat for shrubsteppe obligate species including Washington ground squirrel and sage grouse. This project is meant to improve the condition of shrubsteppe habitat and restore degraded and converted cropland. Restoration and management activities include improving grazing management practices through rotational grazing and reduced stocking rates; controlling weeds through spraying and vehicle management (road closures); collecting native grass seeds to create commercially available seed sources; and developing and testing land treatment methods (e.g., mowing, herbicide application, plowing, seeding) to establish native shrubsteppe plant communities on degraded and converted lands. Project accomplishments include: collection of six native grasses and 20 forbs for commercial grow-out; development of grazing plans for three major allotments affecting over 20,000 acres of shrubsteppe habitat; annual herbicide applications to noxious weeds along roads and trails; mowing of 160 acres as a first step in converting CRP to native shrubsteppe; and seeding of 160 acres of acquired agricultural land.

### **Wildlife Habitat/Population Monitoring and Evaluation**

The BLM is currently implementing monitoring and evaluation activities in the Subbasin, including a MAPS study in Douglas Creek; the effects of CRP restoration on songbirds, small mammals and sage grouse habitat; sensitive species inventories for Washington ground squirrel and pygmy rabbit; an evaluation of bighorn sheep habitat for reintroduction; and bald eagle winter roost monitoring.

The BLM monitoring and evaluation project addresses the long-term population trends of neotropical birds; the effects of CRP restoration on songbird and small mammal composition and abundance; the structure and quality of sage grouse habitat; the distribution of Washington ground squirrels and presence of pygmy rabbits on or near BLM lands; and the feasibility of bighorn sheep reintroduction.

Project accomplishments include nine years of bird monitoring; location of Washington ground squirrels in 20 sections of land; and 18 years of roost monitoring.

### *National Marine Fisheries Service*

NMFS administers the ESA as it pertains to anadromous fish. Two listed ESUs migrate through the Columbia River: upper Columbia River spring Chinook salmon and upper Columbia River steelhead.

Under Sections 7 and 10 of the ESA, “take” of listed species is prohibited and permits are required for handling. Special permit applications have been pursued for research and management activities in the UMM. Recovery actions for listed species also require Fisheries Management and Evaluation Plans.

The FCRPS BiOp and the Basinwide Salmon Recovery Strategy (All-H Paper) contain actions and strategies that are specific to the UMM. Other aspects of hatchery and harvest management apply as well. Action agencies are identified that will lead fast-start efforts in specific aspects of restoration on nonfederal lands. BiOps, recovery plans, and habitat conservation plans for federally listed fish and aquatic species help target and identify appropriate watershed protection and restoration measures (Kaputa and Woodward 2002).

### *Natural Resource Conservation Service (NRCS)*

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.

#### Conservation Innovation Grants (CIG)

CIG is a voluntary program intended to stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection, in conjunction with agricultural production. Under CIG, EQIP funds are used to award competitive grants to non-federal governmental or non-governmental organizations, Tribes, or individuals. CIG enables NRCS to work with other public and private entities to accelerate technology transfer and adoption of promising technologies and approaches to address some of the Nation's most pressing natural resource concerns. CIG will benefit agricultural producers by providing more options for environmental enhancement and compliance with federal, state, and local regulations. The USDA oversees CIG and the NRCS administers the program.

#### Conservation Reserve Program (CRP)

The CRP provides technical and financial assistance to eligible farmers and ranchers to comply with federal, state, and tribal environmental laws and to address soil, water, and related natural resource concerns on their lands in an environmentally beneficial and cost-effective manner. The program is funded through the Commodity Credit Corporation. CRP is administered by the Farm Service Agency, with NRCS providing technical land eligibility determinations, Environmental Benefit Index Scoring, and conservation planning (Bareither, pers. comm., 2004).

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. Farmers receive an annual rental payment for the term of the contract (Bareither, pers. comm., 2004), a maximum of 10 years (the contracts may be extended). Cover Practices that occur under CRP include planting introduced or native grasses, wildlife cover, conifers, filter strips, grassed waterways, riparian forest buffers, and field windbreaks. There are 177,910 acres of CRP in the Subbasin.

CRP 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).

CRP and associated cover practices that emphasize wildlife habitat increase the extent of shrubsteppe-like habitat, provide connectivity/corridors between extant native shrubsteppe and other habitat types, reduce habitat fragmentation, increase landscape habitat diversity and edge effect, reduce soil erosion and stream sedimentation, and provide habitat for wildlife species.

#### 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.

#### Environmental Quality Incentives Program (EQIP)

The EQIP was established in the 1996 Farm Bill and was reauthorized in the Farm Security and Rural Investment Act of 2002 (Bareither, pers. comm., 2004). 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.

#### Public Law 566 Small Watershed Program (PL 566)

PL 566 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.



### Wetlands Reserve Program (WRP)

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. The goal of NRCS is to achieve the greatest wetland functions and values, along with optimum wildlife habitat, on every acre enrolled in the program (Bareither, pers. comm., 2004). This program establishes wetland protection and restoration as the primary land use for the duration of the easement or agreement (Ashley and Stovall 2004) and establishes long-term conservation and wildlife practices and protection (Bareither, pers. comm., 2004). There are no Wetland Reserve Program projects within the Subbasin.

### 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.

### *U. S. Army Corps of Engineers*

#### Chief Joseph Dam/Rufus Woods Lake Wildlife Mitigation Project

In the mid-1970s, Congress authorized additional hydropower generating units and a pool raise at Chief Joseph Dam. This construction was complete in 1981 and the pool raise occurred that year. Prior to the pool raise, the Corps worked with the FWS, WDFW, and the Colville Tribes to determine specific habitat losses that would occur as a direct result of inundation from the new pool level. Congress approved a habitat mitigation plan in 1980 and implementation was initiated the following year.

The project included development of 16 mitigation sites on Rufus Woods Lake. Six sites include approximately 105 acres of planted and irrigated trees and shrubs. Over 200,000 plants have been placed to date. Other sites (totaling about 1400 acres) include goose nesting structures, raptor perching/nesting structures, goose brooding pastures, and cattle exclusion fences. The program manages approximately 1,500 acres. Research projects onsite include breeding bird, small mammal, and bat surveys, wetland inventory, and plant studies. Several habitat evaluation studies to determine success of habitat creation/management have also occurred. The sites are on a combination of public, tribal, and private lands.

Many aspects of the mitigation plan have been evaluated either casually or through formal surveys. Success has been accomplished in developing quality wildlife habitat through planting and elimination from grazing at specific areas. Enhancement projects include over 10 miles of cattle exclusion fencing, 35 goose nesting structures and over 100 additional nesting areas (e.g.,

rock cribs on haystack rock islands), 25 duck nesting tunnels, 49 raptor perching/nesting poles, and 6 acres of mowed goose brooding area. A major focus of the program is noxious weed control with primary species being knapweeds and toadflax with sporadic areas of hounds tongue (Ashley and Stovall, unpub. rpt., 2004).

### ***U. S. Department of Agriculture (USDA)***

This section provided by M. Bareither, pers. comm., 2004

The USDA oversees several conservation programs to help solve natural resource concerns. In addition to those listed below, the USDA oversees the following programs administered by the NRCS: CIG, CRP, EQIP, WHIP, WRP (See NRCS above).

#### **Conservation Security Program (CSP)**

CSP is a voluntary conservation program to support ongoing conservation stewardship of agricultural lands by providing payments to producers who maintain and enhance the condition of natural resources. CSP will identify and reward those enrolled farmers and ranchers who are meeting the highest standards of conservation and environmental management.

#### **Grassland Reserve Program (GRP)**

The GRP is a voluntary program offering landowners the opportunity to protect, restore, and enhance grasslands on their property. Section 2401 of the Farm Security and Rural Investment Act of 2002 (Pub. L. 107-171) amended the Food Security Act of 1985 to authorize this program. The NRCS, FSA, and USFS are coordinating implementation of GRP, which helps landowners restore and protect grassland, rangeland, pastureland, shrubland and certain other lands and provides assistance for rehabilitating grasslands. The program will conserve vulnerable grasslands from conversion to cropland or other uses and conserve valuable grasslands by helping maintain viable ranching operations.

#### **Resource Conservation & Development Program (RC&D)**

The purpose of the RC&D program is to accelerate the conservation, development, and utilization of natural resources, improve the general level of economic activity, and to enhance the environment and standard of living in designated RC&D areas. It improves the capability of state, tribal and local units of government and local nonprofit organizations in rural areas to plan, develop, and carry out programs for resource conservation and development. The program also establishes or improves coordination systems in rural areas. Current program objectives focus on improvement of quality of life achieved through natural resources conservation and community development, which leads to sustainable communities, prudent use (development), and the management and conservation of natural resources. RC&D areas are locally sponsored areas designated by the Secretary of Agriculture for RC&D technical and financial assistance program funds.

### ***U.S. Fish and Wildlife Service (FWS)***

The FWS administers the ESA as it pertains to resident fish and wildlife. In June 1997, the FWS listed bull trout as threatened in the upper Columbia River. The biological opinion for bull trout specifies needed actions for their recovery. On March 5, 2003, the FWS listed the Columbian Basin distinct population segment of the pygmy rabbit as endangered. Recovery planning for

pygmy rabbits is currently underway. The FWS reviews and comments on land use activities that affect fish and wildlife resources such as timber harvest, hydroelectric projects, flow alterations, and dredging and filling wetlands. The federal Migratory Bird Act also protects migratory birds and their habitats.

### ***U.S. Forest Service (USFS)***

The USFS manages land in the Entiat Ranger District in the Wenatchee portion of the Wenatchee National Forest. The land is managed according to the Wenatchee National Forest Land and Resource Management Plan (Forest Plan) (USDA 1990). The Forest Plan divides the land into management areas, each with a management prescription based on unique habitat conditions. The majority of National Forest land in the Subbasin is managed for multiple uses, including deer and elk winter range, timber production, livestock grazing, recreation, and research.

### **State Programs, Plans, and Policies**

#### ***Washington Department of Ecology (Ecology)***

Ecology'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 is responsible to set and monitor regulatory standards for water quality within the subbasin. Ecology provides support for watershed management in the subbasin, and is responsible for instream flow rule development and shoreline, floodplain, wetland, and water resource management.

Ecology and partner governments and agencies are monitoring many water quality attributes on the Columbia River Columbia River. Region 10 of the U.S. Environmental Protection Agency is leading efforts to address temperature listings under section 303-d of the CWA through a TMDL process. Ecology and ODEQ are leading the efforts to address TDG on the Columbia River through a total TMDL.

#### **Watershed Management Act (WMA, ESHB 2514)**

The 1998 Washington State Legislature passed the WMA (Chapter 90.82 RCW) to provide a framework for local citizens, interest groups, and government organizations to collaboratively identify and solve water-related issues in each of the 62 Water Resource Inventory Areas (WRIAs) in the state. The WMA enables local groups called "Planning Units" to form for the purpose of conducting watershed planning. Under the law, citizens, local governments, tribes, and other members of the Planning Unit must assess water resources and needs and recommend management strategies for the watershed. The Planning Unit may also assess habitat, water quality and instream flow requirements. Ecology oversees the WMA (Kaputa and Woodward 2002).

#### ***Washington Department of Fish and Wildlife (WDFW, RCW77.04.055)***

The Washington Fish and Wildlife Commission is directed by the Washington State Legislature to establish policies to preserve, protect and perpetuate fin fish, shellfish, and wildlife and their habitats to maximize fish and wildlife recreational opportunities compatible with healthy and diverse fish and wildlife populations. The Mission of WDFW is: "Sound stewardship of fish and wildlife". In pursuit of this mission, WDFW strives to maximize fishing, hunting and non-

consumptive recreational opportunities compatible with healthy, diverse fish and wildlife populations. A few of the important policies, plans, and guidelines that drive WDFW management in the UMM include a statewide strategy to recover salmon, a wild salmonid policy, management plans for steelhead and bull trout, and salmon, steelhead, and bull trout stock inventories, and wildlife management plans (e.g., pygmy rabbit, sage grouse, sharp-tailed grouse).

#### Elk Herd Plans

Washington state elk herd plans summarize historic and current distribution and abundance. The Department recognizes ten, distinct elk herds in the state. Five of the ten elk herd management plans have been completed. The plans address the major factors affecting abundance and persistence. Population management objectives, spending priorities, and management strategies are spelled out. Priorities for habitat enhancement are identified. The Colockum Elk Herd Plan is currently in development.

#### Game Management Plan

The game management plan guides WDFW's management of hunted wildlife through June 2009. The plan focuses on scientific and harvest management of game, and other factors affecting game populations. The overall goals of the plan are to protect, sustain, and manage hunted wildlife; provide stable, regulated recreational hunting opportunity to all citizens; protect and enhance wildlife habitat; and minimize adverse impact to residents, other wildlife, and the environment. The plan outlines management strategies for the following species or groups of species: Elk, Deer, Bighorn Sheep, Mountain Goat, Moose, Black Bear, Cougar, Waterfowl, Migratory Birds (e.g., Mourning Dove), Wild Turkey, Mountain Quail, Forest Grouse, Upland Game Birds, Small game (e.g., rabbits), Furbearers (e.g., beaver), Unclassified Species (e.g., coyote).

#### **Bighorn Sheep Plan**

The Washington State management plan for bighorn sheep describes the geographical range, natural history, habitat requirements and status, population dynamics and status, and management activities and implementation for 16 herds statewide. The plan identifies goals and objections for managing bighorn sheep and addresses specific issues related to monitoring, recreation, enforcement, reintroductions, research, and disease. The plan was adopted in 1995 and fits within the umbrella of the Game Management Plan for 2003-2009.

#### **Black Bear Plan**

The Washington State management plan for black bear describes the geographical range, life history, habitat, population dynamics, and management direction for bears. The plan identifies goals and objectives for managing black bear and addresses specific issues related to nuisance activity, recreation, enforcement, habitat protection, and education. The plan was adopted in 1997 and fits within the umbrella of the Game Management Plan for 2003-2009.

#### Interagency Waterfowl Management Plans

WDFW is a member of the Pacific Flyway Council, an organization of 11 western states that develops management recommendations for migratory waterfowl. Management plans developed by the Council include population objectives, harvest strategies, habitat recommendations, and

basic biological information. The Council also participates in the development of nationwide management plans for waterfowl. The following is a list of interagency plans that deal with Washington's waterfowl resources: Pacific Flyway Management Plans - Canada Geese, Western Tundra, Sandhill Cranes, Pacific Coast, Central Valley, Mourning Doves; Related plans - North American Waterfowl Management Plan, National Mourning Dove Plan.

#### Joint Venture habitat plans

WDFW is an active participant in two joint ventures under the North American Waterfowl Management Plan, the Pacific Coast and the Intermountain West joint ventures. The joint ventures include representatives of agencies from all levels of government and nonprofit organizations, who are interested in conservation and enhancement of habitat for migratory birds and related fish and wildlife resources. The joint ventures have developed strategic plans to guide conservation efforts of all the partners: Pacific Coast Joint Venture Strategic Plan and Intermountain West Joint Venture Strategic Plan.

#### Management Recommendations (PHS)

Each species account provides information on the species' geographic distribution and the rationale for its inclusion on the PHS list. The habitat requirements and limiting factors for each species are discussed, and management recommendations addressing the issues in these sections are based on the best available science. Each species document includes a bibliography of the literature used for its development, and each has a key points section that summarizes the habitat requirements and management recommendations for the species. Management Recommendations for Washington's Priority Habitats and Species (WDFW 1999, 1997, and 1995) are detailed as follows: Volume I – Invertebrates, 1995; Volume II – Fish and Marine Invertebrates (currently in development); Volume III – Amphibians and Reptiles, 1997; Volume IV – Birds, 1999 (Updated 2004); Volume V – Mammals (currently in development).

#### Recovery/Management Plans

Recovery/management plans summarize the historic and current distribution and abundance of a species in Washington and describe factors affecting the population and its habitat. It prescribes strategies to recover the species, such as protecting the population, evaluating and managing habitat, and initiating research and education programs. Target population objectives and other criteria for reclassification are identified and an implementation schedule is presented. Recovery / Management Plans have been prepared for the following species or groups of species: Bald eagle, 1990, federal 1986; Bighorn sheep, 1995; Black bear, 1997; Cougar, 1997; Deer, 1997; Elk, 1997; Ferruginous hawk, 1996; Furbearers, 1987-93; Mountain quail, 1993; Pygmy rabbit, 1995; 2003; Sage grouse, 1995; 2004; Sandhill crane, 2000; Sharp-tailed grouse, 1995; Western gray squirrel, 1993; draft 2004; Waterfowl, 1997; Upland birds, 1997; and upper Columbia Steelhead Management Conservation Plan, 2001.

#### Status Reports

A status report includes a review of information relevant to the species' status in Washington and addresses factors affecting its status including, but not limited to: historic, current, and future population trends, natural history including ecological relationships, historic and current habitat trends, population demographics and their relationship to long-term sustainability, known and potential threats to populations, and historic and current species management activities. Status

reports have been prepared for the following species: Bald eagle, 2001; Burrowing owl, draft, 2004; Common loon, 2000; Northern leopard frog, 1999; Peregrine falcon, 2002; Pygmy rabbit, 1993; Sage grouse, 1998; Sharp-tailed grouse, 1998; Streaked horned lark, draft, 2004; Washington ground squirrel, draft, 2004; and Western gray squirrel, 1993.

#### Upland Restoration Program (URP)

The WDFW has worked with private landowners to restore habitat within the Subbasin since 1991. The Habitat Development Program established small (0.5 to 3 acres) habitat plots primarily for upland game birds. In the 1990s, partnerships between WDFW, NRCS, conservation districts, and private landowners made possible habitat restoration projects at the watershed scale through participation in farm programs such as CRP. 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, URP biologists improve and restore riparian, upland, and shrubsteppe habitats used by both resident and migratory wildlife species within the Subbasin. Projects typically include planting shrubs and trees (for thermal and escapement cover), restoring riparian habitat, developing water sources (e.g., guzzlers, ponds, spring developments), and maintaining winter game bird feeders. WDFW works with over 190 cooperating landowners that own or control over 500,000 acres. Agreements are in place to protect or restore shrubsteppe or riparian wetland habitat on 682 sites covering over 9,000 acres. An additional 144 water source developments have been completed (R. Fox, pers. comm., 2004).

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

All private landowner cooperators are required 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 URP, in conjunction with CREP and CRP, has increased the extent and/or protection and enhancement of riparian wetlands and shrubsteppe habitats within the Subbasin.

#### Washington Conservation Commission

The WSCC supports conservation districts in Washington, promoting conservation stewardship by funding natural resource projects. The WSCC 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 Water 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.

## **Washington Department of Natural Resources (WDNR)**

The WDNR manages state land throughout the Subbasin. These lands are generally located in sections 16 and 36 within each township. Larger blocks and scattered tracts occur in the northern portion of the Subbasin and a checkerboard ownership pattern occurs in the Colockum and Quilomene areas. 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.

### ***Multiple Agencies***

(This section taken from Kaputa and Woodward 2002)

#### **Salmon Recovery Planning Act (SRPA, ESHB 2496)**

The SRPA provides the framework for developing restoration projects. It requires a limiting factors analysis and establishes a funding program for local habitat restoration projects. It also creates the Governor's Salmon Recovery Office. As a result of this bill, an Independent Scientific Panel was created to provide scientific review for salmon recovery projects.

#### **Washington State Growth Management Act**

Various provisions of the Washington State Growth Management Act (GMA) require local comprehensive plans to address planning issues of statewide importance. It is a characteristic of GMA that, depending upon the issue, the state purposes for local plans can be either general or very specific. Relative to natural resource lands (mineral, agricultural and forestry lands), and "critical areas" (wetlands and fish and wildlife conservation, frequently flooded, critical aquifer recharge, and geologically hazardous areas), the expression of state interest is clear and specific. These must be designated and "protected" (critical areas) or "conserved" (agriculture, minerals and forestry) by regulation (36.70A.060). Currently, all five counties and the major municipalities in the Subbasin have growth management plans that include provisions for areas along the Columbia River in their respective jurisdictions.

The "Goals, Policies, and Actions," within the plan are the primary directives for land use decision-making and long range planning. They are also the principal directives to county decision-makers and staff relative to what planning and public works actions, studies, and other projects, have to be undertaken during the plan's 20 year horizon in order to address current and future growth and development, and resource issues.

#### **Wild Stock Restoration Initiative (WSRI), ESHB 1309**

In 1993, Washington State adopted the WSRI and initiated a commitment to salmonid protection and recovery that has led to more recent salmon recovery legislation. Recently enacted state legislation (1998-1999) designed to guide salmon recovery in the state of Washington includes the SRPA (ESHB 2496), Watershed Planning Act (ESHB 2514), and Salmon Recovery Funding Act (2E2SSB 5595). Stock inventories were the initial commitment of state and tribal fishery managers to the WSRI that complemented and strengthened ongoing programs to protect salmonid stocks and habitats. The Salmon and Steelhead Inventory and Assessment Program (SSHAP), an integral part of WSRI, is a partnership-based information system that characterizes freshwater and estuary habitat conditions and distribution of salmonid stocks in Washington.

SSHIAP is designed to support regulatory, conservation, and analysis efforts such as Washington State Watershed Analysis, State Salmon Recovery, Habitat Conservation Planning, and EDT.

### **Local Programs, Plans, and Policies**

Local groups involved in fish and wildlife protection within the Subbasin include Conservation Districts, the agricultural community, County government and non-governmental organizations.

#### ***Agricultural Community***

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

Most of the sediment delivered to Douglas and Foster Creeks and their tributaries comes from upland agricultural areas. 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.

#### ***Foster Creek Conservation District (FCCD)***

##### **Foster Creek Habitat Conservation Plan (FCHCP)**

The FCCD in northern Douglas County is preparing a multi-species HCP (FCHCP) and Draft EIS for privately owned and/or operated agricultural lands in the county. The FCHCP will offer potential coverage to all privately owned or operated agricultural land in Douglas County. Type and ownership of land is comprised of a mix of agricultural and sagebrush-steppe ecosystems.

A Best Management Practices matrix, adaptive management plan, and monitoring and implementation plan are being created, with input from the farming, ranching, and orcharding community, and a technical advisory committee, to analyze all potential agricultural land-use actions for 20 covered species in the FCHCP. The FCHCP will minimize and mitigate the incidental take of threatened and endangered species as a result of typical agricultural activities in Douglas County.

The FCHCP has been in development for the past four years and is currently reaching its final draft form. The final FCHCP is several years from final implementation, but research and analysis have identified land use practices beneficial to wildlife as well as the local agricultural economy. FCHCP development relied on stakeholder input from citizens involved in the ESHB 2514 Watershed Planning and ESHB 2496 Limiting Factors Analysis groups, and planning expertise from NRCS and FSA in conjunction with CRP and EQIP.

##### **Public Utility District No. 1 of Chelan County (Chelan PUD)**

Chelan PUD owns and operates the Rocky Reach and Rock Island dams and associated reservoirs and project works. The project was authorized by Congress under Public Law 83-544 and is regulated by the Federal Energy Regulatory Commission under License Numbers 2145



and 943, respectively. The Rocky Reach license is up for renewal in 2006. The Rock Island license is up for renewal in 2029 (CCPUD 2002a,b).

Presently, protection for anadromous salmonids through the Rock Island and Rocky Reach reservoirs is guided by the proposed Anadromous Fish Agreement and Habitat Conservation Plans, Rocky Reach Hydroelectric Project (FERC License No. 2145) and Rock Island Hydroelectric Project (FERC License No. 943) dated March 26, 2002. The plan has an outcome-based approach and is designed to protect spring Chinook salmon, summer/fall Chinook salmon, sockeye salmon, steelhead, and coho salmon (after naturally spawning populations are reestablished) (CCPUD 2002a,b).

Wildlife habitat management along the Rock Island Reservoir has been addressed in the FERC operating license for Rock Island Dam. The FERC document, Revised Exhibit S Fish and Wildlife Plan 1984, lists the actions that Chelan PUD will carry out to mitigate for any potential losses to wildlife or associated habitats with regards to the operation of Rock Island Dam (FERC 1984).

Chelan County PUD has begun the process of obtaining a new license to operate the Rocky Reach Hydroelectric Project. Efforts center on developing a balance between the many resources associated with the Rocky Reach Hydro Project, such as fish and wildlife, water quality, recreation, aesthetics, land use and power production. The final license application and applicant prepared environmental assessment will be submitted to FERC in June 2004 (CCPUD 2004).

#### Public Utility District No.1 of Douglas County (Douglas PUD)

Douglas PUD owns and operates the Wells Dam and associated reservoir and project works. The project was authorized by the Federal Energy Regulatory Commission under License No. 2149. The FERC license provides the terms and operating conditions for the project. The license is up for renewal in 2012.

Presently, protection for anadromous salmonids through the Wells reservoir is guided by the 1990 Long-term Fisheries Settlement Agreement and proposed Anadromous Fish Agreement and Habitat Conservation Plans, The Wells Hydroelectric Project (FERC License No. 2149), dated March 26, 2002. The plan has an outcome-based approach and is designed to protect spring Chinook salmon, summer/fall Chinook salmon, sockeye salmon, steelhead, and coho salmon (after naturally spawning populations are reestablished). Protection, mitigation, and enhancement measures include operation of adult fish ladders, operation of a highly effective juvenile fish bypass system, operation of supplementation hatchery programs, implementation of a sockeye spawning protection program, and continued funding for predator harassment and control measures (DCPUD 2002).

The Wells Hydroelectric Project wildlife mitigation program is funded by the Douglas County PUD and administered by the Washington Department of Fish and Wildlife. The Wells Wildlife Area consists of six Habitat Management Units with a combined area of over 8,200 acres. Additional land is managed by leases or easements. Development of wildlife habitat and provisions for public wildlife-oriented recreation are features of this program. Additional wildlife mitigation is provided by the Cassimer Bar wildlife area within the boundaries of the Colville Reservation provided as a result of a cooperative program between the Colville Confederated Tribes and Douglas PUD. Douglas PUD's ongoing habitat projects on District owned land

include fencing to exclude livestock from riparian areas, shoreline erosion control, new riparian shrub plantings and habitat restoration on disturbed areas (DCPUD 2002).

#### Public Utility District No. 2 of Grant County (Grant PUD)

Grant PUD owns, operates, and manages the Priest Rapids Project (PRP), which consists of two developments, only one (Wanapum Dam) is included in this subbasin. The project was authorized by Congress under Public Law 83-544 and is regulated by the Federal Energy Regulatory Commission under License No. 2114, which expires on October 31, 2005. The FERC license provides the terms and operating conditions for the project. Requirements related to fish and wildlife include Article 39, which requires that Grant PUD construct, operate, and maintain fish ladders, fish traps, fish hatcheries, or other fish facilities or fish protective devices for the purpose of conserving the fishery resources (Kaputa and Woodward 2002).

Grant PUD is applying for a new 50-yr license for the Project and submitted its Final License application for the Priest Rapids Project to FERC in October 2003. Future fish and wildlife protection, mitigation, and enhancement measures were proposed for the Wanapum Development and Priest Rapids Project. Fish programs are as follows: construction and improvements to fishways; spill; video fish counting; enhanced downstream bypass; gateway exclusion screens; predator control; anadromous fish monitoring and evaluation studies; fish hatchery, acclimation, and broodstock facilities; habitat mitigation fund; spawning habitat enhancements; and other fish protection, restoration, enhancement and feasibility programs. Wildlife programs include a land acquisition fund, protection from transmission lines, plant research and monitoring, fire suppression, avian perch / roosting and nesting enhancements, and other management, enhancement, and conservation programs. The annual and operating cost for the fish and wildlife programs is estimated at \$41,782,362, and \$288,500, respectively, with total capital expenditures estimated at \$119,889,832 and \$10,700. More detailed information on the PRP is available in the Priest Rapids Project License Application FERC No. 2114 (GCPUD 2003a).

#### *The Nature Conservancy*

The Nature Conservancy is a nation-wide non-profit agency with the goal of protecting biological diversity. Protection and restoration of healthy shrubsteppe ecosystems is a priority for TNC of Washington. Some of the largest and highest quality examples of this habitat type remain in the North Central portion of the state. The Conservancy has been purchasing land within Grant and Douglas County to help meet this conservation goal. TNC began acquiring property in Douglas County's Jameson Lake area in 1999 when it purchased what has become the 3,500-acre Moses Coulee Preserve. Since then TNC has purchased 16,000 acres along McCartney Creek, and a conservation easement on 2,800 acres near the Sagebrush Flat Wildlife Area. The Nature Conservancy also has a management agreement on 900 acres immediately east of Jameson Lake. In the northern Grant County portion of the complex, TNC owns approximately 5,500 acres in the Beezley Hills, and acquired an additional 1,400 acres in September of 2003.

All TNC land in the Moses Coulee area is managed for the protection and restoration of the shrubsteppe ecosystem, with special focus on a suite of shrubsteppe community types, seeps and springs, stream and riparian systems, cliffs and talus slopes, pygmy rabbits, and sage grouse.

### ***Upper Columbia Salmon Recovery Board (UCSRB)***

The Upper Columbia Salmon Recovery Board (UCSRB), a regional cooperative comprised of Chelan, Douglas, and Okanogan Counties, the Yakama Nation, and the Colville Tribes, formed in early 1999 to address regional fish and wildlife recovery issues. The UCSRB is currently developing a “Coordinated Regional Strategy” that will integrate federal, state, and local salmon recovery planning and project implementation.

### ***Yakima Training Center, DOD (YTC)***

The United States Department of the Army owns and occupies 500 sq. mi. (323,651 acres) in Kittitas and Yakima counties. Acquired in 1942, the YTC is bounded by I 82 on the east, the Columbia River to the west, Boylston Mountains to the north and the Yakima Ridge to the south. The Army’s primary use of the installation is for state-of-the-art live fire training for infantry, tanks, and helicopters. This area also represents one of the two largest unaltered portions of shrub-steppe habitats in Washington, with 27 plant, 37 wildlife and 2 fish species listed as sensitive by the state. Over the last 20 years, the Army has increased its role as land steward of this diminishing shrubsteppe habitat. YTC biologists manage the natural resources of the military installation in coordination with the Army's primary role of troop training. The installation’s Cultural and Natural Resource Management Plan is an integrated comprehensive five-year plan that details management strategies undertaken for cultural and natural resources on YTC. The training center must comply with the Endangered Species Act, the Clean Water Act and other federal laws. Erosion, water pollution, denuded vegetation and compacted soil are a few of the problems the training center is attempting to tackle with its Integrated Area 5-Year Management Plan that was adopted in 1998. Some of the anticipated projects included reseeded, road realignments, and closures and stream crossing improvements (Fast and Berg 2001).

### 5.1.4 Fish and Wildlife Conservation, Restoration, and Research Projects

The section summarizes the fish and wildlife restoration and conservation activities that have occurred over the last five years, or will be implemented in the near future. These activities are compared to the assessment to identify the gaps between actions already taken or underway, and actions that are needed to achieve desired results. Projects are grouped by assessment unit: wildlife – shrubsteppe, eastside (interior) riparian, herbaceous wetland, and agriculture; fish – Columbia River, small tributaries, and projects affecting both the Columbia River and its tributaries. See Table 42 - Table 48.

#### Wildlife

##### *Shrubsteppe Assessment Unit*

**Table 42** Ongoing projects within the shrubsteppe assessment unit related to conservation, restoration, and research activities

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
Colville Tribes & WDFW		2001	Sharp-tailed Grouse Restoration	<p><b>Project Description:</b> Established a 7,000 acre block of high quality grasslands and embarked on a project to collect habitat (e.g., lek surveys) and biological information on sharp-tailed grouse on the Colville Reservation</p> <p><b>Rationale &amp; Results:</b> To develop a Sharp-tailed Grouse Restoration Plan and protect a core population on the Reservation</p>
FCCD, Ferry County Washington State University Cooperative Extension office, WDFW, & TNC		2002-2003	Biological Weed Control	<p><b>Project Description:</b> Insects were released in Douglas county on private land to control the invasion of noxious weed species: Stem-boring weevil (<i>Mecinus janthinus</i>) to control Dalmatian toadflax; <i>Gymnetron tertrum</i> to suppress mullein; <i>Larinus minutus</i> for diffuse knapweed; and <i>Rhinocyllus conicus</i> to suppress Canada thistle</p> <p><b>Rationale &amp; Results:</b> Protect and restore native ecosystems for threatened and endangered species by controlling the invasion of noxious weeds</p>
WDFW	CCPUD	1999-2002	Mule Deer Winter Habitat Use Study	<p><b>Project Description:</b> Provided information on winter habitat use by mule deer</p> <p><b>Rationale &amp; Results:</b> To enhance winter habitat use areas</p>

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
WDFW		Completed in 1999	Shrubsteppe Bird Response to Habitat and Landscape Variables in Eastern WA	<p><b>Project Description:</b> Studied bird responses to shrubsteppe habitat and landscape variables in Eastern Washington.</p> <p><b>Rationale &amp; Results:</b> Results suggest that fragmentation of shrubsteppe and the pattern of agricultural conversion among soil types have had detrimental effects on numerous shrubsteppe species.</p>
WDFW		Ongoing	Sage and Sharp-tailed Grouse Lek Surveys	<p><b>Project Description:</b> Annual counts of bird attendance on leks and survey for new leks.</p> <p><b>Rationale &amp; Results:</b> Document population trend.</p>
WDFW & WSU			Pygmy rabbit habitat evaluation	<p><b>Project Description:</b></p> <p><b>Rationale &amp; Results:</b></p>
WDFW, WSU, & TNC		Ongoing	Pygmy Rabbit Burrow Survey	<p><b>Project Description:</b> Locate new burrows and used as index for population trend.</p> <p><b>Rationale &amp; Results:</b> Ongoing project.</p>
WDFW, WSU, BPA, & DNR,			Sagebrush Flat Unit Vegetation Analysis: Pygmy Rabbit	<p><b>Project Description:</b> Examined vegetation differences between grazed and ungrazed areas.</p> <p><b>Rationale &amp; Results:</b></p>
WDFW		2003-2004	Wildlife communities in shrubsteppe and Conservation Reserve Program lands in eastern Washington	<p><b>Project Description:</b> Compare wildlife communities in CRP fields and nearby native shrubsteppe</p> <p><b>Rationale &amp; Results:</b> Study is not complete.</p>
WDFW			Parasitism by Brown-Headed Cowbirds in the Shrubsteppe of Eastern Washington	<p><b>Project Description:</b> Studied parasitism by brown-headed cowbirds.</p> <p><b>Rationale &amp; Results:</b> Only the Brewer's Sparrow, Sage Sparrow, and Vesper Sparrow showed evidence of parasitism. Overall parasitism rates were lower than those reported for other bird communities in fragmented landscapes and for other bird communities in shrubsteppe. Low parasitism levels (&lt;10 %) in the study area partly resulted from arrival of cowbirds after initiation of first nests by hosts.</p>

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
WDFW		Ongoing	Changes in the Distribution and Abundance of Columbian Sharp-Tailed Grouse in Washington	<b>Project Description:</b> Document distribution and abundance of Columbian sharp-tailed grouse. <b>Rationale &amp; Results:</b> Historic and recent declines of sharp-tailed grouse appear linked to dramatic declines in quantity and quality of native habitat.
WDFW		Ongoing	Distribution and Abundance of Sage Grouse in Washington	<b>Project Description:</b> Document distribution and abundance of sage grouse. <b>Rationale &amp; Results:</b> The decline in distribution has been dramatic; 71% of 69 lek complexes documented since 1960 are currently vacant. Historic and recent declines of greater sage-grouse are linked to conversion of native habitat for production of crops and degradation of the remaining native habitat.
WDFW		Completed in 2002	Predation on Real and Artificial Nests in Shrubsteppe Landscapes Fragmented by Agriculture	<b>Project Description:</b> Artificial nests were monitored by cameras to examine relative effects of fragmentation, distance to edge, and vegetation cover on nest predation rates and to identify predators of shrubsteppe nesting passerines and grouse. <b>Rationale &amp; Results:</b> Fragmentation had a strong influence on predation rates for artificial nests, with nests in fragmented landscapes about 9 times more likely to be depredated as those in continuous landscapes.

*Riparian Assessment Unit*

**Table 43** Ongoing projects within the Riparian Wetland assessment unit related to conservation, restoration, and research activities in the UMM Subbasin, WA.

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
CCPUD		1975–ongoing	Wildlife Studies: Bald Eagles, wood ducks, and geese.	<b>Project Description:</b> Study perch site use, winter abundance, and effects of recreational use on bald eagles in eastern WA. Annual wood duck & goose nesting (rocky reach & rock Island) surveys. <b>Rationale &amp; Results:</b>

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
USFWS & Colville Tribes			Morning Dove & Waterfowl Surveys	<b>Project Description:</b> Conducted every fall (funding permitting) on the ponds & lakes of the Plateau (western Colville Reservation) <b>Rationale &amp; Results:</b> Used to track species occurrences and to set waterfowl hunting dates and harvest.

*Herbaceous Wetland Assessment Unit*

**Table 44** Ongoing projects within the Herbaceous Wetland assessment unit related to conservation, restoration, and research activities in the UMM Subbasin, WA.

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
No information available				

*Agriculture Assessment Unit*

**Table 45** Ongoing projects within the Agriculture assessment unit related to conservation, restoration, and research activities in the UMM Subbasin, WA.

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
WDFW		2003-2004	Wildlife communities in shrubsteppe and Conservation Reserve Program lands in eastern Washington	<b>Project Description:</b> Compare wildlife communities in CRP fields and nearby native shrubsteppe <b>Rationale &amp; Results:</b> Study is not complete.
WDFW		Completed in 2002	Predation on Real and Artificial Nests in Shrubsteppe Landscapes Fragmented by Agriculture	<b>Project Description:</b> Artificial nests were monitored by cameras to examine relative effects of fragmentation, distance to edge, and vegetation cover on nest predation rates and to identify predators of shrubsteppe nesting passerines and grouse. <b>Rationale &amp; Results:</b> Fragmentation had a strong influence on predation rates for artificial nests, with nests in fragmented landscapes about 9 times more likely to be depredated as those in continuous landscapes.

## Fish

### *Columbia River Assessment Unit*

**Table 46** Ongoing projects related to conservation, restoration, and research activities in the UMM Columbia River, WA.

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
CCPUD		1933-2028	Rock Island Hydro Project	<p><b>Project Description:</b> Tested turbine intake screens and shallow spills, Installed notched spillgates, fish ladders, and prototype flow deflector, &amp; monitored TDG</p> <p><b>Rationale &amp; Results:</b> Hydro project does not delay return trip of adult salmon to spawning grounds</p>
CCPUD		1985-2001	Rocky Reach Fish Passage/Guidance	<p><b>Project Description:</b> Studied feasibility of using diversion screens to guide fish away from turbines and around dam</p> <p><b>Rationale &amp; Results:</b> Passage improvements achieved with surface and gateway collectors</p>
CCPUD		2000	Pacific Lamprey	<p><b>Project Description:</b> Summarized biological and dam passage info on Pacific Lamprey</p> <p><b>Rationale &amp; Results:</b> Status report for Pacific Lamprey in the Mid-Columbia</p>
CCPUD		2000	Rocky Reach Fish Species Assemblages	<p><b>Project Description:</b> Reviewed &amp; summarized existing info on fish species assemblages and effects of resident predators</p> <p><b>Rationale &amp; Results:</b> Report (Bioanalysts 2000b)</p>
CCPUD		1997-2000	Gas Bubble Trauma - Rocky Reach Dam	<p><b>Project Description:</b> Monitored GBT</p> <p>Rationale &amp; Results:</p>
CCCPUD		1994-99	Resident Fish Projects	<p><b>Project Description:</b> Tracked movements of northern pikeminnow up- &amp; down-stream of Rock Island and Rocky Reach</p> <p><b>Rationale &amp; Results:</b> Determined where fish congregate &amp; reduced their size &amp; numbers</p>



Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
CCPUD		1997	Turbine Survival Testing - Rock Island Dam	<b>Project Description:</b> Estimated survival of hatchery Chinook salmon passing through turbines <b>Rationale &amp; Results:</b> Provided comparison of salmonids fate in different turbine types to develop mitigations strategies
CCPUD		1994-96	Turbine Survival Testing - Rocky Reach Dam	<b>Project Description:</b> Assessed fish survival and condition differences between new and old turbine blade designs <b>Rationale &amp; Results:</b> Overall average fish survival the same between turbines; 48 hour Survival probabilities varied
CCPUD		1995 - Ongoing	Gas Bubble Trauma - Rock Island Dam	<b>Project Description:</b> Monitored GBT <b>Rationale &amp; Results:</b>
CCPUD		1988	Rock Island Fish Passage/Guidance	<b>Project Description:</b> Tested efficiency of fish guidance equipment & installed notched spill gates <b>Rationale &amp; Results:</b> Most efficient method of fish passage was spill
CCPUD		1985- Ongoing	Rock Island Trap	<b>Project Description:</b> Smolt-monitoring and PIT tagging programs <b>Rationale &amp; Results:</b> To compare and evaluate annual migration timing, magnitude, & travel time of juvenile salmonids
CCPUD		1982 – Ongoing	Total Dissolved Gas Monitoring	<b>Project Description:</b> TDG monitoring at Rocky Reach and Rock Island dams <b>Rationale &amp; Results:</b>
CCPUD			Fish Behavioral Studies	<b>Project Description:</b> Used acoustic tags to track fish 3-dimensionally (within 1 meter of actual location) <b>Rationale &amp; Results:</b> Gained better understanding of fish distribution & behavior at Rocky Reach & Rock Island dams & more efficient bypass systems

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
CCPUD & DCPUD		1998-2001	Survival Studies	<b>Project Description:</b> Used PIT and radio tags to estimate survival of hatchery and run-of-river Chinook & steelhead at Rock Island & Rocky Reach <b>Rationale &amp; Results:</b>
CCPUD, DCPUD, & GCPUD		1990s	Bull Trout Movement/Migration	<b>Project Description:</b> Tracked movements & migrations of bull trout from Priest Rapids to Chief Joseph tailraces & rearing basins using radio telemetry <b>Rationale &amp; Results:</b> Correlated movements & distribution with operations of PUD hydro projects
CCPUD & WDFW		2000	Gas Abatement at Rock Island	<b>Project Description:</b> Installed & tested prototype spill deflector ramp <b>Rationale &amp; Results:</b> Safe for passage Moderately effective in gas abatement Decided to reduce submergence of prototype
Colville Tribes & Battelle			Assessment of Potential Fall Chinook Spawning Habitat in the Upper Columbia River	<b>Project Description:</b> Estimated location and quantity of potential spawning habitat and determined redd capacity of upper section of Chief Joseph Reservoir (Grand Coulee Dam tailrace [rkm 956] downstream to Coyote Creek [rkm 928]) <b>Rationale &amp; Results:</b> Report (Hanrahan et al. 2001)
DCPUD	DCPUD		Wells Hydroelectric Project Fish Counts	<b>Project Description:</b> Salmon & Steelhead counts taken 24 hours a day, May 1 <sup>st</sup> to Nov 15 <sup>th</sup> , at Wells Dam fish ladders <b>Rationale &amp; Results:</b>
DNR	Aquatic Lands Enhancement Account \$200,000 (ALEA share)	1995-97	Rocky Reach Trailway	<b>Project Description:</b> Developed 1st phase of multi-use paved trail <b>Rationale &amp; Results:</b> Developed half mile trail from Lincoln Rock State Park to Rocky Reach Dam

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
DNR	Aquatic Lands Enhancement Account \$72,477 (ALEA share)	1991-93	Porter's Pond Shoreline Trail	<b>Project Description:</b> Developed 2,600 ft pedestrian-bicycle trail, trail head, parking, & interpretive points <b>Rationale &amp; Results:</b> Completed Apple Capital Loop along Wenatchee & East Wenatchee, Columbia River shoreline
DNR	Aquatic Lands Enhancement Account \$29,120 (ALEA share)	1991-93	Porter's Pond Interpretive Area	<b>Project Description:</b> Created interpretive elements along trail / viewpoints <b>Rationale &amp; Results:</b> Promoted awareness and appreciation
DNR	Aquatic Lands Enhancement Account, \$31,673	1987-89	Brewster Waterfront Pathway	<b>Project Description:</b> Developed a pedestrian path along 2,300 ft of Lake Pateros shoreline <b>Rationale &amp; Results:</b> New pedestrian pathway
Ecology	Environmental Assessment	2001	Chinet Intake Toxicity Investigation	<b>Project Description:</b> Conducted Daphnia pulex (water flea) acute bioassays on samples of Columbia River intake water from Chinet Co , Wenatchee <b>Rationale &amp; Results:</b> No evidence of toxicity
GCPUD			Wanapum Dam	<b>Project Description:</b> Provided spill, installed flow deflectors, monitored TDG, alleviated predation, and operated & maintained fishways <b>Rationale &amp; Results:</b> Improved fish passage, and reduced predation & TDG levels
GCPUD			Priest Rapids Hydroelectric Project, FERC No P-2114, Draft Application for New License (GCPUD 2003a)	<b>Project Description:</b> Identified resource issues & impacts in project vicinity & developed potential solutions and protective measures <b>Rationale &amp; Results:</b> Multiple reports on natural resources

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
USACOE			Preliminary Investigation of Fish Passage Alternatives	<p><b>Project Description:</b> Reconnaissance level evaluation of possible fish passage concepts at Chief Joseph Dam</p> <p><b>Rationale &amp; Results:</b> Report (Corps 1999)</p>

*Small Tributaries Assessment Unit*

**Table 47** Ongoing projects related to conservation, restoration, and research activities in tributaries to the UMM Subbasin, WA.

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
Ecology	Environmental Assessment	2002	Stream Biological Monitoring: Foster Creek at Highway 17	<p><b>Project Description:</b> Collected freshwater invertebrates and monitored other site conditions</p> <p><b>Rationale &amp; Results:</b> Indicates health of WA streams and helps detect degradation because of forest and agricultural practices, urbanization, or other controllable sources of impact</p>
Ecology	Environmental Assessment	1993-96	Stream Biological Monitoring: Douglas Creek at Alstown	<p><b>Project Description:</b> Collected freshwater invertebrates and monitored other site conditions</p> <p><b>Rationale &amp; Results:</b> Indicated health of WA streams and helped detect degradation because of forest and agricultural practices, urbanization, or other controllable sources of impact</p>
Ecology	EILS	1994 Ongoing since 1991-diff waterbodies ea Yr - Only "94" had area near/in UMM	WSPMP 1993 Pesticides in Surface Water	<p><b>Project Description:</b> The WSRP analyzed surface water for pesticide residues</p> <p><b>Rationale &amp; Results:</b> Provided info on pesticide distribution &amp; pattern changes over time</p>

***Projects affecting both the Columbia River and Tributaries***

**Table 48** Ongoing projects affecting both the Columbia River and Tributaries related to conservation, restoration, and research activities in the UMM Subbasin, WA.

<b>Responsible Agency</b>	<b>BPA Project # or Other Funder</b>	<b>Project Duration</b>	<b>Project Title</b>	<b>Project Description, Rationale, and Results</b>
CCPUD, DCPUD, GCPUD, & Don Chapman Consultants		1990s	Status Reports for Anadromous Salmon	<b>Project Description:</b> Prepared status reports for summer steelhead, sockeye & summer, fall, & spring Chinook salmon <b>Rationale &amp; Results:</b> Reports on biology, ecology, & status of each species
DNR & Douglas County	DNR Aquatic Lands Enhancement Account \$7,737 (ALEA share)	1993-95	Countywide Shoreline Access Plan	<b>Project Description:</b> Douglas County survey, inventoried, and prioritized sites for future acquisition as public access <b>Rationale &amp; Results:</b> Results in County Shoreline Plan & Handbook
Ecology	1997-98 EILS-IFU, 1998-99 Environmental Assessment	1998-99 & 1997-98,	Measured Streamflow	<b>Project Description:</b> Measured streamflow <b>Rationale &amp; Results:</b> Measured flows used to create rating curves in support of Ambient Streamflow water quality monitoring
Ecology	EILS	Fall, 1998	Central Columbia Basin GWMA - Nitrate Characterization Study	<b>Project Description:</b> Characterized the concentration & distribution of nitrate in groundwater in Grant County <b>Rationale &amp; Results:</b> USGS Water Resources Invest Rpt 99-4288
Ecology	EILS / Environmental Assessment	Before 1959- Ongoing	Statewide River and Stream Ambient Monitoring	<b>Project Description:</b> Collected water quality data monthly Since 1988, at 82 stations statewide; three in UMM (near Entiat, Wenatchee, & Pateros, WA) <b>Rationale &amp; Results:</b> Measured thirteen constituents (since 1988)
WDFW (Operating Agency)	DCPUD, Total operating costs exceed \$700,000 annually		Wells Hatchery	<b>Project Description:</b> To enhance summer/fall Chinook and steelhead stocks; release 1,300,000 annually in Columbia River and tributaries above Wells Dam <b>Rationale &amp; Results:</b>

Responsible Agency	BPA Project # or Other Funder	Project Duration	Project Title	Project Description, Rationale, and Results
			Mid-Columbia Coho Feasibility Reintroduction Study #9604000 (BPA et al. 2002)	<p><b>Project Description:</b>  Determining feasibility of reestablishing a naturally spawning coho population in Mid-Col tribs (esp Wenatchee &amp; Methow subbasins) and Columbia River (migration, etc )</p> <p><b>Rationale &amp; Results:</b></p>