

CHILIWIST WILDLIFE AREA MANAGEMENT PLAN

Washington Department of Fish and Wildlife



Prepared by Wildlife Area Manager, Dale Swedberg



2006

STATE OF WASHINGTON

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Washington State Wildlife Area Plan

CHILIWIST WILDLIFE AREA

Washington Department of Fish and Wildlife
Wildlife Management Program
600 Capitol Way North
Olympia, WA 98501-1091


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November 2006



Director, Washington Department of Fish and Wildlife

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EXECUTIVE SUMMARY

The Chiliwist Wildlife Area (CWA), approximately 4,889 acres in size, is located in the south-central part of Okanogan County southwest of the town of Malott. There are also approximately 760 acres of federal lands, administered by the Bureau of Land Management (BLM) within and adjacent to the boundaries of the CWA. The majority of the CWA is south facing and ranges in elevation from 1000' ASL to nearly 3100' ASL on the top of Chiliwist Butte.

As part of the Sinlahekin Wildlife Area Complex, Chiliwist and Driscoll Island Wildlife Area are all jointly funded with Federal Aid in Wildlife Restoration Act dollars. The total annual operations budget under the Federal Aid in Wildlife Restoration Act fund is \$24,313 with nonfederal Aid being \$135,827 for a total annual operations and management budget of \$160,140. This amount includes salary and benefits as well as funds for combined management, including weed control, of Chiliwist, Driscoll Island and Sinlahekin Wildlife Areas. The Department will continue to submit grant proposals and applications and identify other strategies to address unfunded management needs on the Chiliwist Wildlife Area.

Identified as a critical wintering area for mule deer, the lands that now make up the CWA were purchased in 1977 using Federal Aid in Wildlife Restoration Funds. It is also a fact that Sharp-tailed grouse were in the area when these lands were purchased. Recent information indicates there may still be a small population of sharp-tailed grouse on the area. Historic land use has been rangeland for livestock grazing with some dryland and irrigated farming.

The Chiliwist Wildlife Area is still managed under a grazing permit and sharecropping agreement as it has been since its purchase. The management of cattle grazing is used as a tool to manipulate vegetation to benefit wildlife under the grazing permit. The object is to crop grasses to reduce competition with browse species and remove residual vegetation, which allows easier access to the new growth to benefit deer. There are about 80 acres of irrigated alfalfa and 80 acres of dryland farming. Presently food plots are maintained in the form of dryland spring grains (about 80 acres) and irrigated alfalfa (about 80 acres). These were being farmed and maintained prior to the purchase of the CWA by WDFW. A sharecropper operating under an agreement maintains these food plots.

Private lands border the Chiliwist Wildlife Area on the south, west, and east sides. On the north it is bordered by State land administered by Department of Natural Resources (DNR). These lands are mostly Shrub-steppe rangelands with forested lands at higher elevations. Historically the DNR lands have been used for livestock grazing and timber harvest. These lands are also open to the general public and are subject to heavy use for hunting and other forest related activities (wildlife watching, mushroom picking, wood-cutting, hiking, snowmobiling, ATV riding, etc). DNR currently has grazing permits on the lands that adjoin the CWA. Private lands are managed predominately for livestock rangeland and for agricultural production. However under heavy development pressure, much of the adjacent private properties are being subdivided and sold in parcels as small as 20 acres.

Primary management emphasis will continue to be mule deer winter range including weed control, vegetation manipulation using grazing and dryland and irrigated crop production. Efforts will continue to get funding for fuels management and prescribed burning to restore the historic fire regime.

Primary management concerns and public issues identified in the Chiliwist Wildlife Area Management Plan include:

- Obtain funding to develop a fuels management and fire regime restoration plan
- Restoring fire as a keystone ecological process by: 1) reducing density of timber stands through fuels treatment, logging, thinning and 2) prescribed burning
- Establish an active sharecropper to care for the irrigated alfalfa fields and use the irrigation water which is going into the 3rd year of non-use
- Survey boundary
- Build new boundary fence
- Install boundary signs on fences
- Continue efforts in revisiting and treating weed infestations and locating and treating new infestations
- Continue efforts to update and develop new GIS layers for the CWA, depicting weed infestations, roads, fences, watering facilities, wells, springs, streams, cover types, etc.
- Install pumping vaults

CHAPTER I. INTRODUCTION

This plan provides management direction for the Chliwist Wildlife Area (CWA). This plan will be updated annually to maintain its value as a flexible working document. It identifies needs and guides activities on the area based on the Washington Department of Fish and Wildlife (WDFW) Agency Mission of “Sound Stewardship of Fish and Wildlife” and its underlying statewide goals and objectives as they apply to local conditions.

1.1 Agency Mission Statement

The Washington Department of Fish and Wildlife serves Washington’s citizens by protecting, restoring and enhancing fish and wildlife and their habitats, while providing sustainable fish and wildlife-related recreational and commercial opportunities.

1.2 Agency Goals and Objectives

The underlined goals and objectives directly apply to the management of WDFW wildlife areas. These goals and objectives are found in the Agency’s Strategic Plan.

Goal I: Healthy and diverse fish and wildlife populations and habitats

- Objective 1: Develop, integrate and disseminate sound fish, wildlife and habitat science.
- Objective 2: Protect, restore and enhance fish and wildlife populations and their habitats.
- Objective 3: Ensure WDFW activities, programs, facilities and lands are consistent with local, state and federal regulations that protect and recover fish, wildlife and their habitats.
- Objective 4: Influence the decisions of others that affect fish, wildlife and their habitats.

Goal II: Sustainable fish and wildlife-related opportunities

- Objective 6: Provide sustainable fish and wildlife-related recreational and commercial opportunities compatible with maintaining healthy fish and wildlife populations and habitats.
- Objective 7: Improve the economic well being of Washington by providing diverse, high quality recreational and commercial opportunities.

Goal III: Operational Excellence and Professional Service

- Objective 11: Provide sound operational management of WDFW lands, facilities and access sites.
- Objective 15: Reconnect with those interested in Washington's fish and wildlife.

1.3 Agency Policies

The following agency policies provide additional guidance for management of agency lands.

- Commission Policy 6003: Domestic Livestock Grazing on Department Lands
- Policy 6010: Acquiring and disposing of real property
- Policy 5211: Protecting and Restoring Wetlands: WDFW Will Accomplish Long-Term Gain of Properly Functioning Wetlands Where Both Ecologically and Financially Feasible on WDFW-Owned or WDFW-Controlled Properties
- Policy 5001: Fish Protection At Water Diversions/Flow Control Structures And Fish Passage Structures
- Policy: Recreation management on WDFW Lands
- Policy: Commercial Use of WDFW Lands
- Policy: Forest Management on WDFW Lands
- Policy: Weed Management on WDFW Lands
- Policy: Fire Management on WDFW Lands
- Other policies/contractual obligations/responsibilities

1.4 Chiliwist Wildlife Area Goals

Management goals for the Chiliwist Wildlife Area are to preserve and restore habitat including the processes that maintain healthy functioning habitat, i.e., fire and flooding, and species diversity for both fish and wildlife resources, maintain healthy populations of game and non-game species, protect and restore native plant communities, and provide diverse educational, recreational and research opportunities for the public to encounter, utilize, and appreciate wildlife and where they live. Specific management goals and objectives for the Chiliwist Wildlife Area can be found in Chapter 3.

1.5 Planning Process

A multifaceted approach has been undertaken to identify strategies proposed for management of the CWA. This process included identifying agency goals and objectives that apply to the area; a review of the purpose for purchasing the area; a review of existing habitat conditions and species present; the formation of a Citizens Advisory Group (CAG); and input and review by the Okanogan County District Team (OCDT) consisting of local WDFW representatives from each WDFW program. The OCDT also helps to identify other species or habitat plans and documents pertinent to the management of the area.

Public participation, through the formation of the CAG, will be used as an ongoing means to identify social, cultural, and economic issues important to the people of Washington and the management of the CWA. The group will also provide input to help resolve current and future management issues and conflicts. CAG participation in planning will add credibility and support for CWA management practices and help build constituencies for the CWA. The CAG is made up of one representative from each major stakeholder group. CAG members are encouraged to be spokespersons for their interest groups.

In Okanogan County a unique opportunity exists to have a single CAG for several Wildlife Areas. This will help reduce numbers of meetings and hopefully encourage sustained participation by CAG members in that they won't have to attend multiple meetings for different wildlife areas. Therefore a single CAG was formed to address management of the Chiliwist, Scotch Creek, Tunk, Chesaw, Driscoll Island, and Sinlahekin Wildlife Areas. This CAG is known as the Eastern Okanogan County CAG (EOC CAG). A list of EOC CAG representatives is in [APPENDIX 8](#). Individuals representing these entities will provide input during the planning process and annual reviews.

Plans will incorporate cross-program input and review at the regional and headquarters level by the habitat program, wildlife program, enforcement program, and fish program. Pertinent information from existing species plans, habitat recommendations, watershed plans, ecoregional assessments, etc will be used to identify local issues and needs and ensure that the specific Wildlife Area Plan is consistent with WDFW statewide and regional priorities.

In addition to periodic meetings, field trips will be conducted either in conjunction with meetings or independent of meetings to better acquaint EOC CAG members and OC DT members with each wildlife area, its plant communities, habitat types, wildlife, visible management activities and topography. This "on-the-ground" time will provide a new dimension regarding each wildlife area for the individuals who participate on the field trips.

The CWA plan will be reviewed annually with additional input from the EOC CAG and OCDDT to monitor performance and desired results. Strategies and activities will be adapted where necessary to accomplish management objectives.

The final CWA plan is intended to be a working document reflecting Adaptive Management, i.e., learning by doing, which provides a basis for taking an action, monitoring the outcome of the action and adapting future management actions to better achieve the desired outcome.

Additionally, the CWA management plan will provide information to the interested public including grazing permittees, sharecroppers and neighbors as well as provide a means of trying to maximize benefits from the limited resources provided for management of the CWA by the Washington State legislature and Federal entities. In short the CWA plan will attempt to assure money is well spent in management, fish and wildlife needs are being met as best can be provided, and the public's needs and expectations are being met as best as possible. While undertaking all of this, management of the CWA is accomplished with the idea of being a good neighbor with adjacent landowners.

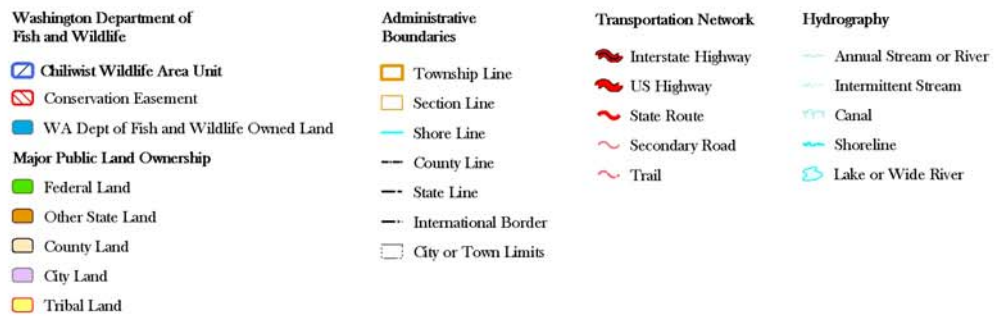
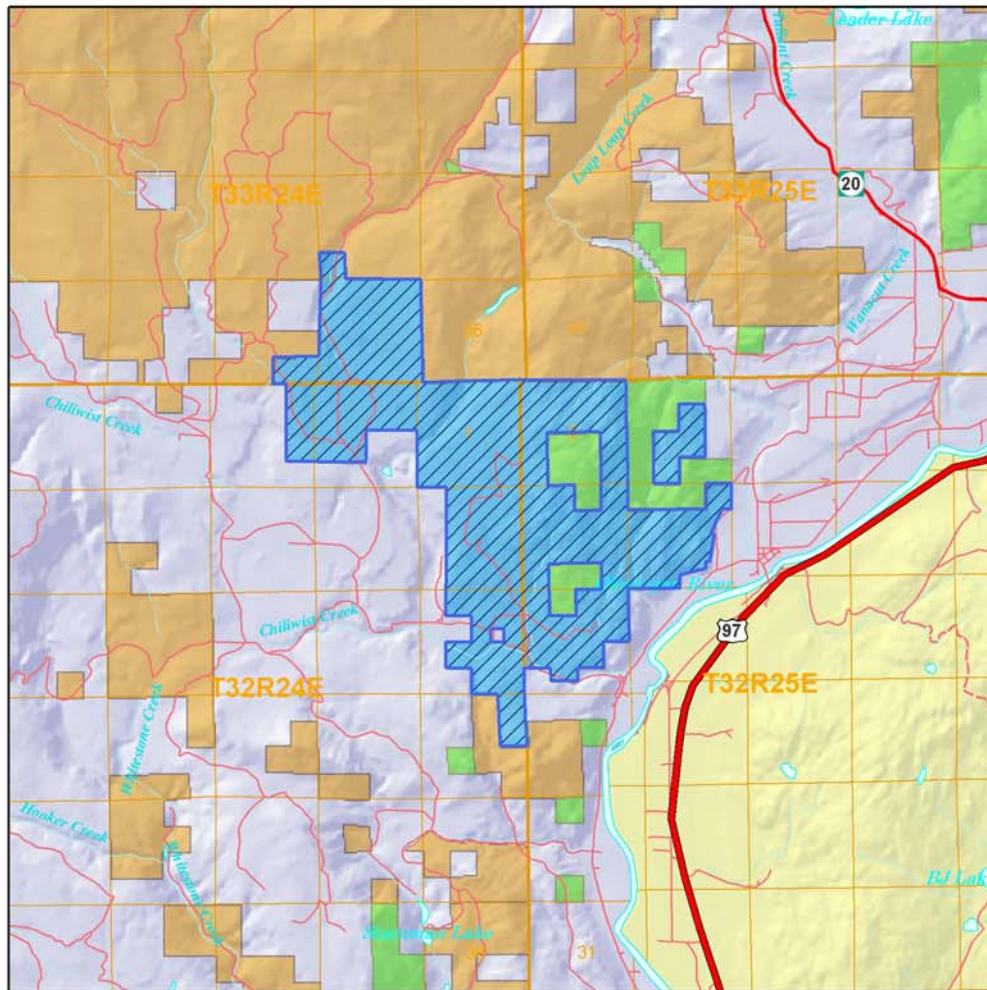
CHAPTER II. AREA DESCRIPTION AND MAP

2.1 Property Location and Size

The Chiliwist Wildlife Area (CWA) is located in the south-central part of Okanogan County near the town of Malott. It is approximately 4,889 acres in size. All lands owned and managed as the Chiliwist Wildlife Area are in T33N R24E Sections 26, 34, 35, T32N R24E Sections 1-3, 12, 13, 24 and T32N R25E Sections 5-8 and 18.

There are also approximately 760 acres of federal lands, administered by the Bureau of Land Management (BLM) within the boundaries of the CWA. The majority of the CWA is south facing and ranges in elevation from 1000' ASL to nearly 3100' ASL on the top of Chiliwist Butte.

Figure 1. Chiliwist Wildlife Area



1:100,000
1 inch equals 1.6 miles

2.2 Purchase History and Purpose

Identified as a critical wintering area for mule deer, the lands that now make up the CWA were purchased in 1977 using Federal Aid in Wildlife Restoration Funds (Pittman-Robertson Act) generated from federal excise taxes on firearms and ammunition. It is also a fact that Sharp-tailed grouse were in the area when these lands were purchased. There are currently no known populations of Sharp-tailed grouse on the area. Historic land use has been rangeland for livestock grazing with some dryland and irrigated farming.

The CWA is still managed under a grazing permit and sharecropping agreement as it has been since its purchase. The management of cattle grazing is used as a tool to manipulate vegetation to benefit wildlife under a grazing permit. The object is to crop grasses to reduce competition with browse species and remove residual vegetation, which allows easier access to the new growth to benefit deer. Additionally, studies have shown that grazing will increase the forbs composition of the plant community, which benefits deer as well (Schneegas and Bumstead 1977).

There are about 80 acres of irrigated alfalfa and 80 acres of dryland farming. Presently food plots are maintained in the form of dryland spring grains (about 80 acres) and irrigated alfalfa (about 80 acres). These were being farmed and maintained prior to the purchase of the CWA by WDFW. A sharecropper operating under an agreement maintains these food plots.

Historically an important mule deer winter range, the CWA remains so today. The CWA was the base for winter-feeding of deer since the time it was purchased in 1977. The winter-feeding operation was being conducted primarily to lure deer onto the CWA, to keep them away from orchards along the Okanogan River east of the CWA, to reduce orchard damage. This program was discontinued as of the fall of 2005, because orchard fencing has been installed. The WDFW also has a new policy regarding winter-feeding that states that feeding will occur only during emergency or exceptional winters.

From the date of purchase until 2003, the CWA was operated as a Satellite Unit under the management of the Methow Wildlife Area Complex. In 2003, it was transferred to the Sinlahekin Wildlife Area Complex for management and operation.

2.3 Ownership and Use of Adjacent Lands

Private lands border the Chiliwist Wildlife Area on the south, west, and east. On the north it is bordered by State land administered by Department of Natural Resources (DNR). These lands are mostly shrub-steppe rangelands with forested lands at higher elevations. Historically the DNR lands have been used for livestock grazing and timber harvest. These lands are also open to the general public and are subject to heavy use for hunting and other forest related activities (wildlife watching, mushroom picking, wood-cutting, hiking, snowmobiling, ATV riding, etc). DNR currently has grazing permits on the lands that adjoin the CWA. Private lands are managed predominately for livestock rangeland and for agricultural production. However much of the adjacent properties are being subdivided and sold in parcels as small as 20 acres. Alfalfa is produced and stored as winter-feed for the local livestock. Most of the lands along the east boundary are orchards, producing mostly apples and soft fruit. The Colville Reservation (1.3 million acres) of the Colville Confederated Tribes is immediately east of the CWA, across the Okanogan River. Although it is the Colville Reservation there are privately owned fee lands within the reservation boundary.

Frequent communication with adjacent landowners regarding the management of WDFW lands and adjacent lands, is essential to developing a good relationship and effectively resolving issues promptly. [APPENDIX 7](#) has contact information for adjacent landowners.

2.4 Funding

The CWA was purchased using Federal Aid in Wildlife Restoration Act (Pittman-Robertson Act) (PR)). Funds generated from a federal excise tax on sporting firearms and ammunition. As part of the Sinlahekin Wildlife Area Complex, CWA, and Driscoll Island Wildlife Area are all jointly funded with Federal Aid in Wildlife Restoration Act dollars. The total annual operations budget under the Federal Aid in Wildlife Restoration Act fund is \$24,313 with nonfederal Aid being \$135,827 for a total annual O&M budget of \$160,140. This amount includes salary and benefits as well as funds for combined management, including weed control, of CWA, Driscoll Island and Sinlahekin Wildlife Areas. The Federal Aid in Wildlife Restoration funds are matched, at a ratio of \$4 Federal Aid funds to \$1 of state funds, by other funds generated by WDFW through license and tag sales. Additionally other funds have been made available to the CWA for equipment acquisition and grant match funds. Income from sharecropping agreements and grazing permits is used for operations and maintenance.

The Department will, as part of the implementation of this plan, continue to submit grant proposals and applications and identify other strategies to address unfunded management needs on the CWA.

2.5 Climate

The CWA is located in the Okanogan Valley just west of the Okanogan River and is surrounded by mountains on all sides that influence the climate. Winds are generally from the south and Southwest. The average rainfall is between 10 to 14 inches and snowfall average is between 1 to 2 feet per year. Most of the precipitation occurs from October to May. Temperatures range from winter lows of near 0 degrees to summer highs near 100+ degrees. Average lows are in the mid 20's and average highs are in the upper 80's. The average growing season is between 153 and 184 days. ([Western Regional Climate Center, wrcc@dri.edu](#)) [APPENDIX 5](#) – Climatic Information

2.6 Physiography

CWA is primarily within the Chiliwist Creek drainage. Most of the CWA is characterized by very rugged terrain. The majority of the CWA is south facing and ranges in elevation from about 1000' ASL to nearly 3100' ASL on the top of Chiliwist Butte.

2.7 Soils and Geology

The soils formed in a mantle of volcanic ash and underlying glacial till. The ridges are gently rounded and the hillsides cut by deep drainages, are steep. The dominating associations in the area are the Rock Outcrop-Nevine-Donavan association and the Kartar-Dinkleman-Spring association.

The Nevine-Donavan association consists of rocky outcrops and deep, well drained soils. Also some parts of the Nevine-Donavan association soil consist of shallow with exposed bedrock. This association makes up approximately 3% of the area. Comprised of 30% granitic Rock outcrop interspersed with very shallow soils, 30% Nevine soils, 25% percent Donovan soils, and 15% Merkel, Molson, Kartar, Karamin, Lithic xerochrepts, and Leader soils. The Nevine soils are well drained. They have a thin gray silt loam surface layer, a brown and yellowish brown silt loam subsoil, and a light brownish gray gravelly sandy loam substratum. They occur mostly on north-

facing slopes. The well-drained Donovan soils have a grayish brown loam surface layer. The subsoil and the upper part of the substratum are pale brown and light gray silt loam. The lower part of the substratum is light gray gravelly sandy loam. This association is used for woodland, grazed woodland, watershed, recreation and wildlife.

The Kartar-Dinkleman-Spring association is deep, well drained and somewhat excessively drained soils. This soil association is on the plains and outwash terraces and steep uplands. The soils formed in glacial till outwash and material weathered from granite, gneiss, and schist. The deeply dissected plains form long, narrow to broad, gently rounded ridges and long, steep side slopes. The terraces and their escarpments are nearly level and strongly sloping. In parts of the association the soil mantle is shallow and intermingled with Rock outcrop. This association makes up 8 percent of the area. It is 50% Kartar soils, 20% Dinkleman soils, 10% Springdale soils and 20% Donovan, Leader, Merkel, Wadams soils and Rock outcrop. The well drained Kartar soils have a light brownish, gray, extremely stony, sandy loam surface layer in most places, a pale brown sandy loam and gravelly sandy loam subsoil, and a very pale brown gravelly sandy loamy sand and very gravelly sand substratum. The Dinkleman soils are well drained. They have a grayish brown sandy loam surface layer and a pale brown fine sandy loam and pale brown gravelly sandy loam and very gravelly sand. The Springdale soils are somewhat excessively drained. They have a dark gray and dark grayish brown sandy loam surface layer over pale brown gravelly sandy loam and very gravelly sand. This association is used mainly for woodland, grazed woodland, and range. Small areas have been cleared and are used for dryland and irrigated crops.

2.8 Hydrology and Watersheds

Over a mile of Chiliwist Creek transects the CWA in a west to easterly direction. There are two manmade irrigation ponds on Chiliwist Creek. A riparian area runs through Frazier Canyon in the northwest corner of CWA to the Delfeld Meadow. There are approximately 20 springs, in varying states of flow, on the CWA. Surface water on the CWA is rare.

2.9 Fire History

The historic fire regime characteristic of the CWA would likely be a frequent low severity. A fire history analysis has not been completed for the CWA, if funding is secured a history analysis will be completed to provide historic information to guide future management direction.

There have been three large fires on the CWA that have occurred since the mid-1980's, resulting in the loss of nearly 2,500 acres of bitterbrush winter range. Many of the shrub species such as wild rose, chokecherry, and snowberry, have come back fairly well, but bitterbrush recovery has been poor. Extensive reseeding of bitterbrush and grass was completed after the last fire in 1999, but drought conditions in 2000 reduced survival and germination. The native bunchgrasses are recovering well and becoming dominant in areas where there was a loss of bitterbrush and other shrubs.

2.10 Vegetation Characterization

Vegetation types found on CWA Shrub-steppe (at least 3 subtypes) characterized by bluebunch wheatgrass, big sage, bitterbrush, needle and thread grass and serviceberry; Wetland (at least 3 subtypes) characterized by hawthorn, water birch, mountain alder, grass/sedges, red osier dogwood, willow and shoreline; Rocks and cliffs; Dry site forest (2 subtypes) characterized by ponderosa

pine, Douglas fir, bluebunch wheatgrass, and serviceberry. When funding becomes available a comprehensive survey will be completed to document the plants of the CWA.

2.11 Important Habitats

Rocks and Cliffs – this “broken terrain” habitat is significant for golden eagle nesting habitat and other diversity species.

Shrub-steppe – this habitat type is significant habitat for sharp-tailed grouse restoration efforts.

Wetland – Areas with surface water present or saturated soils during a portion of the growing season that generally support primarily hydrophytic plants. Like riparian areas, wetlands



Rocks, Cliffs and Shrub-steppe Photo: Caitlin LaBar

generally support a high diversity of fish and wildlife species.

Late Seral Ponderosa Pine – this habitat type is important for a number of wildlife species including late seral ponderosa pine obligates such as the Pygmy nuthatch, White-headed woodpecker and Flammulated owl.

2.12 Fish and Wildlife

Game animals associated with the CWA include mule deer, white-tailed deer, ring-necked pheasants, Hungarian partridge, blue grouse, ruffed grouse, mourning doves, wild turkeys. Additionally there are numerous nongame birds, mammals and herptiles, however a comprehensive list of each class has not been developed at this time. This will need to be completed at some point in the near future. State or Federally listed or Threatened and Endangered species that would occur on the CWA would be sharp-tailed grouse. Comprehensive lists of birds, mammals, reptiles, amphibians, fishes, butterflies, mollusks, and Odonata (dragonflies and damselflies) will be developed in the future and if funding is available comprehensive surveys will be made to determine the presence of species.



Late Seral Stage ponderosa pine forest covertype with heavy second growth and Douglas fire encroachment Photo: Caitlin LaBar

2.13 History of User Groups/Recreation Use

Being an important mule deer winter range, the Chiliwist has provided a great deal of deer hunting opportunities. Also it is well known for being a very productive Mourning Dove hunting site during early September. Other hunting opportunities include forest grouse hunting for blue grouse and roughed grouse, California quail and Wild Turkey. CWA was the first successful Wild Turkey release site in Okanogan County, due to the increasing population turkeys released at the site in 1988. Eventually, the turkeys expanded their range into the Buzzard Lake, the Loup and into the Methow. Some limited opportunity exists for hiking, bird watching and butterfly and wildflower viewing on the CWA. Camping is limited.

2.14 History of Issues

Deer Winter Range Loss

Recognizing the potential loss of critical mule deer winter range to subdivision and development, the CWA was acquired to protect this rapidly disappearing resource.

Sharp-tailed Grouse

Sharp-tailed grouse have historically used the CWA, however, they seem to have been extirpated in the 1980's. However, sharp-tailed grouse have been observed on the CWA as recently as December 2005.

Grazing

With changing philosophies the grazing continues to be a contentious issue. However, managed grazing has been demonstrated to be a useful tool for vegetation manipulation that benefits wildlife.

Weed Management

Weeds, in particular Dalmatian Toadflax, Baby's breath, Scotch Thistle, Russian knapweed and Diffuse knapweed, have been and will continue to be a challenge that requires persistence and dedication to eradicate or keep them under control.

2.15 Cultural Resources.

Cultural, geological, and other non-renewable resources are protected, and may not be removed unless such removal is beneficial to wildlife, habitat, or the Wildlife Area, or for scientific or educational purposes. WDFW will coordinate with the appropriate agency of jurisdiction for the protection of such resources. Past issues have included the removal of various rock formations, Native American artifacts, plants, seeds, and other items by members of the public.

CHAPTER III. MANAGEMENT OBJECTIVES, ISSUES & STRATEGIES

Statewide goals and objectives listed in chapter one shape management priorities on wildlife areas. Specific wildlife area information including why the area was purchased, habitat conditions, species present, and public issues and concerns are evaluated to identify wildlife area activities or strategies. *Public issues from the East Okanogan County Citizens Advisory Group (EOC CAG) are noted in italics and are captured in [APPENDIX 1](#).*

Objectives and associated strategies or tasks specific to the CWA are listed where appropriate under applicable agency objectives. Unfunded needs are underlined.

Agency Objective: Develop, Integrate and Disseminate Sound Fish, Wildlife and Habitat Science

1. Inventory and map distribution of all species of fauna

Knowledge of occurrence, distribution, and abundance of fauna including functionality of habitat as it occurs on the CWA provides information needed in making management decisions. In some cases decisions made to enhance conditions for a species or suite of species may be detrimental to other species. Knowledge about all species present will allow for more informed decision-making.

A. Strategy: Conduct systematic baseline inventories of fauna. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., BLM, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

B. Strategy: See Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Objective: 1, 2, 3, 4, 5, 6, 7, 8, and 12.

2. Inventory and map distribution of all species of flora

Knowledge of occurrence, distribution, and abundance of flora on the CWA provides information needed in making management decisions. A complete inventory of flora provide information on presence of exotic species including weed species and exotic species that may not be weeds but need control due to their invasive nature. Additionally knowledge about the presence of TES plant species will allow consideration for them in management plans.

A. Strategy: Conduct systematic baseline inventories of flora. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, assistance from other agencies, i.e., NRCS, BLM, assistance from other WDFW personnel, Agency support. TIMEFRAME: Ongoing grant search and application.

B. Strategy: See Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objectives: 9, 10, 11, 12, 13, 14, and 15.

3. Inventory and map all historic and contemporary plant communities

Knowledge of historic and contemporary plant communities, in particular fire history as determined from fire scars, provides an opportunity for comparative analysis of historic conditions relative to current conditions. Fire history data can then be mapped displaying the area and extent of historic fires on the CWA. Additionally historic stand assessments can be done and mapped on forested areas. Sediment cores can be taken from potholes,

which would reveal additional information about historic plants through pollen deposition in sediment layers. Additional fire history can be examined from charcoal in sediment layers as well. With historic conditions documented, which are often touted as the “future” desired condition, and mapped. Such knowledge, incorporated into CWA management, provides information needed in making management decisions relative to a documented a historic baseline and future desired conditions. This knowledge, in addition to enhancing the understanding of historic disturbance regimes on the plant communities and ultimately influenced the wildlife species, can also be incorporated into site-specific educational material. This information combined with geologic information, aided by computer animation, would help visualize the vegetational changes as they occurred over the landscape, in a very coarse way since the Cordilleran Ice Sheet covered the area. As the more recent information, e.g., 300-400 years BP, is incorporated the vegetational changes depicted would be more refined. This information would be an important element in contributing to the education of the public regarding the dynamics of plants, climate, soils, geology, disturbance regimes and wildlife.

A. Strategy: Conduct a comprehensive fire history analysis. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., USFS, Agency support. TIMEFRAME: Ongoing grant search and application.

B. Strategy: Conduct historic forest stand analysis. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., USFS, Agency support. TIMEFRAME: Ongoing grant search and application.

C. Strategy: Conduct historic fire analysis based on charcoal deposition in sediment layers from potholes. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, interns, assistance from other agencies, i.e., USFS, Agency support. TIMEFRAME: Ongoing grant search and application.

D. Strategy: Conduct historic vegetation presence from pollen deposition in sediment layers from potholes. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., USFS, Agency support. TIMEFRAME: Ongoing grant search and application.

E. Strategy: See Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objectives: 9, 10, 11, 12, 13, 14, and 15.

4. Inventory and map soils

Soils are a fundamental component contributing to plant communities and associations. Knowledge of soils in conjunction with historic fire regimes and historic forest stand conditions will contribute to knowledge about spatial and to some degree temporal relationships of historic vegetation composition and structure. Which will contribute by inference to knowledge about historic quantity and condition of plant communities. Currently soils have been mapped at a coarse scale on the CWA.

A. Strategy: Conduct a complete refined soils survey and map. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., NRCS, Agency support. TIMEFRAME: Ongoing grant search and application.

B. Strategy: See Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 9, 10, 11, 12, 14, and 15

5. Research, document and map historic ecosystem functions and processes

Historic ecosystem functions such as fire and flooding had significant impacts on the plant communities and ultimately the wildlife indigenous to the CWA. To continue to provide conditions necessary for sustaining populations of indigenous wildlife species these significant ecosystem functions need to be sustained. Knowledge about the historic frequency, magnitude and duration of these functions can be used in developing management prescriptions to maintain conditions for sustaining indigenous populations.

A. Strategy: See Agency Objective: Develop, integrate and disseminate sound fish, wildlife and habitat science. Sub-objectives: 3, 4, 5, and 8.

B. Strategy: Conduct historic flood regime assessment. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., NRCS, Agency support. TIMEFRAME: Ongoing grant search and application.

C. Strategy: See Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objectives: 9, 10, 11, 13, 14, and 15.

6. Conduct research relative to management activities and impacts on plant communities and wildlife

Certain management techniques, tools and methods are perpetually contentious, e.g., domestic livestock grazing on rangelands, shrub-steppe; logging after a stand replacing fire; prescribed burning in the spring, summer or fall, etc. Resources devoted to advocating, opposing or defending these management actions can likely be reduced or at least develop prescriptions that use these actions most effectively to meet objectives.

A. Strategy: Design and implement research projects to determine impacts of grazing strategies in different plant communities. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., NRCS, BLM, USFS, Agency support. TIMEFRAME: Ongoing grant search and application.

B. Strategy: Design and implement research projects to determine impacts of logging after stand replacing fires. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., USFS, Agency support. TIMEFRAME: Ongoing grant search and application.

C. Strategy: Acquire old air photos, get them georeferenced and acquire old orthophotos to do comparative analysis of vegetation and plant community changes on the CWA over time for purposes of correlating changes with management or disturbances to better understand the outcomes from management and/or disturbance regimes or lack thereof. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., USFS, Agency support. TIMEFRAME: Ongoing grant search and application.

D. Strategy: See Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objectives: 9, 10, 11, 12, 13, 14, and 15.

7. Establish photo transects and vegetation transects to monitor, over time, vegetation changes in response to management strategies.

Dynamics of plant communities and disturbance regimes are a significant factor in creating the composition and structure of wildlife habitat. Documenting changes, over time, to plant communities as a result of various management strategies allows for determining cause and effect relationships affecting wildlife species dependent on and/or using that particular plant community. Using this knowledge, management strategies can be refined.

A. Strategy: Establish photo transects and begin regularly scheduled visits, e.g., annually, biennially, decadal, etc., to these transects to collect photos. **POTENTIAL FUNDING:** Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., NRCS, BLM, other organizations, Agency support. **TIMEFRAME:** Ongoing grant search and application.

B. Strategy: Establish and begin regularly scheduled readings, e.g., decadal, bidecadal, etc., of these vegetation transects. **POTENTIAL FUNDING:** Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., NRCS, BLM, other organizations, Agency support. **TIMEFRAME:** Ongoing grant search and application.

8. Conduct research on, document and map historic weather patterns

Historic weather patterns have significant influence on plant communities. In particular extremes such as droughts and wet periods of long duration influence plant species, communities and structure as well as influencing fire regimes. This data can be used in evaluating historic plant community dynamics, fire regimes and impacts on wildlife populations.

A. Strategy: Research information on historic weather patterns and/or collect data from tree ring samples and sediment samples from potholes to determine historic weather patterns and their influence on ecosystem functions and ultimately influence on historic plant communities. Create maps of historic weather patterns. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, interns, assistance from other agencies, i.e., USFS, Agency support. **TIMEFRAME:** Ongoing grant search and application.

9. Participate and cooperate with Federal, State, County and local organizations in research efforts to enhance knowledge regarding all aspects of fish, wildlife, habitat and management of all three on the CWA.

Many opportunities exist for participation and cooperation with other governmental and private organizations in research projects that would enhance knowledge about the fish, wildlife, habitat and management of all three. Through cooperative efforts knowledge can be gained which will contribute to an overall more robust program on the CWA.

A. Strategy: Continually seek opportunities to cooperate and participate in research projects with other governmental agencies and private organizations. **FUNDING:** Grants when successful, qualified volunteers, graduate students, interns, assistance

from other agencies, i.e., USFS, USFWS, USGS, BLM, Agency support.

TIMEFRAME: Ongoing grant search and application.

Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats

1. Maintain big game populations

Mule Deer

The CWA was purchased primarily to provide habitat for big game, mule deer in particular, and secondarily for upland bird habitat. Despite the protection of the Chilliwist Valley from development and other winter range destruction, the mule deer habitat in the CWA has declined substantially. This is in large part due to nearly 100 years of fire suppression resulting in poor habitat conditions. As a result of fire suppression; the open ponderosa pine savannah forest in which the Washington mule deer evolved has changed to dense stands of small ponderosa pine and Douglas fir. Ponderosa pine and Douglas fir have invaded areas that once were open steppe or shrub-steppe habitats. And former shrub-steppe habitat has become predominately shrub habitat with the exception of a part of the CWA that has been subjected to wildfire 3 times in the last 10 years. Additionally, the resulting habitat changes, e.g., early successional vegetation types have declined and late successional stages have increased. Habitat changes from fire exclusion include vegetation composition, vigor, nutritional quality, structural and species changes as well as homogenization of habitats, i.e., loss of a mosaic of habitats comprised of early to late successional stages and all the variability of plant community composition, vigor, nutritional quality, structure and species. The historic frequent fire regime of the CWA likely contributed to spatially decreased densities of parasites and diseases of mule deer.

The Game Management Plan Statewide Goals for deer management calls for:

- “1. Preserve, protect, perpetuate, and manage deer and their habitat to ensure healthy, productive populations.
2. Manage deer for a variety of recreational, educational, and aesthetic purposes including hunting, scientific study, cultural, subsistence, and ceremonial uses by Native Americans, wildlife viewing, and photography.
3. Manage statewide deer populations for a sustainable annual harvest.”

Objective 57 under mule deer management states:

“Try to maintain or enhance mule deer habitat including forage and security cover. Direct the Department’s focus toward mule deer habitat improvement and protection.”

The Strategies under Objective 57 are listed as:

- “a. Acquire critical mule deer habitat or conservation easements on critical mule deer habitat.
- b. Work with state, federal, and private land managers to conduct prescribed burns that will benefit mule deer.
- c. Work with county government growth management planners to limit the expansion of human development on mule deer range.”
- d. Work with the Mule Deer Foundation to conduct projects that improve winter range for mule deer.” (Washington Department of Fish and Wildlife Game Management Plan. 2003)

A. Strategy: Conduct, in cooperation with the Mule Deer Foundation and others, prescribed fuels treatment, e.g., thinning and logging on an average of 400 acres per year for 10 years to improve mule deer habitat quality. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, interns, assistance from other agencies, i.e., BLM, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

B. Strategy: Conduct, in cooperation with the Mule Deer Foundation and others, prescribed burning on an average of 400 acres per year for a 10-year rotation to improve mule deer habitat quality. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, graduate students, interns, and assistance from other agencies, i.e., BLM, USFS, DNR, USFWS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

C. Strategy: Work with adjacent landowners and other landowners to acquire conservation easements or use other means to provide long-term protection of mule deer habitat. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, grants when successful. TIMEFRAME: Ongoing grant search and application.

D. Strategy: Work with private, county, state and federal land managers to promote use of prescribed fire, in a coordinated effort on all lands, to improve mule deer habitat, i.e., North Central Washington Prescribed Fire Council. FUNDING: Federal Aid, State Wildlife Account, and Landowner Assistance. TIMEFRAME: Ongoing.

Black Bear

There have been a number of observations a black bear on CWA, indicating that they may use it or pass through periodically. Due to the proximity to a high-density human population area, opportunities to manage for black bear are very limited.

The Game Management Plan Statewide Goals for black bear management call for:

1. Preserve, protect, perpetuate, and manage black bear and their habitats to ensure healthy, productive populations.
2. Minimize threats to public safety and property damage from black bears, while at the same time maintaining a sustainable and viable bear population.
3. Manage black bear for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, cultural and ceremonial uses by Native Americans, wildlife viewing and photography.
4. Manage statewide black bear populations for a sustained yield.”

Habitat Management Issue Statement:

“Black bear distribution and habitat use are influenced by a variety of environmental and human factors. It’s important to understand and predict how these factors influence bears to better manage bear populations for sustainable harvest, as well as minimizing negative human-bear interactions.”

Objective 96 under black bear management states: “Develop a document and map identifying core habitat areas for black bears.”

The strategies under Objective 96 are listed as:

- a. Delineate core habitat areas for black bears using regional staff expertise.
- b. Expand habitat preference results from 2001 black bear study final report to entire state.
- c. Work cooperatively with state, federal, tribal, and private entities to develop relative habitat use probability model for black bears.” (Washington Department of Fish and Wildlife Game Management Plan. 2003).
 - A. Strategy: Assist in efforts to delineate core black bear habitat on and adjacent to the CWA. POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

Cougar

Cougar are known to use parts of the CWA. However, due to the proximity to a high-density human population area, opportunities to manage for cougar are very limited.

The Game Management Plan Statewide Goals for cougar management call for:

- “1. Preserve, protect, perpetuate, and manage cougar and their habitats to ensure healthy, productive populations.
- 2. Minimize threats to public safety and private property from cougars.
- 3. Manage cougar for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, cultural and ceremonial uses by Native Americans, wildlife viewing and photography.
- 4. Manage statewide cougar populations for a sustained yield. “

Habitat Management Issue Statement:

“The density of cougars is not uniform across the landscape. Cougar densities likely vary based on prey abundance, vegetation conditions, human disturbances, and other factors that influence cougar habitat. To properly manage cougar populations (e.g., harvest, public safety), it’s important to identify core and peripheral habitats so management decisions can be adjusted accordingly.”

Objective 106 under cougar management states:

“Develop a map identifying core habitat areas for cougar.

The strategies under Objective 106 are listed as:

- a. Conduct literature review on cougar habitat requirements.
- b. Identify distributions of important prey species.
- c. Develop a model identifying relative habitat suitability for cougar.
- d. Incorporate data from past and current studies.
- e. Identify habitats secured for prey species that also benefit cougar populations.”

(Washington Department of Fish and Wildlife Game Management Plan. 2003)

A. Strategy: Assist in efforts to identify habitats secured for prey species that also benefit cougar populations as related to the CWA. POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

2. Manage for migratory upland game birds

Mourning Dove, Band-tailed Pigeon, Coot, and Snipe

Mourning doves and snipe use the CWA for nesting and brood rearing. Snipe use the CWA year round whereas mourning doves are present during spring summer and fall. However, a small number of mourning doves have been present on the CWA on a year round basis. Mourning dove hunting is a big draw to the CWA due to the large number of doves that can be found on the CWA during early September.

The Game Management Plan Statewide Goals for mourning doves, band-tailed pigeons, coots, and snipe call for:

- “1. Manage statewide populations of mourning doves, band-tailed pigeons, coots, and snipe for a sustained yield consistent with Pacific Flyway management goals.
2. Manage mourning doves, band-tailed pigeons, coots, and snipe for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, cultural and ceremonial uses by Native Americans, wildlife viewing and photography.
3. Preserve, protect, perpetuate, and manage mourning doves, band-tailed pigeons, coots, and snipe and their habitats to ensure healthy, productive populations.”

Habitat Management Issue Statement:

“Habitats for mourning doves, band-tailed pigeons, coots, and snipe are being lost throughout Washington due to development and conversion to other uses.”

Objective 122 under mourning doves, band-tailed pigeons, coots, and snipe management states: “Quantify and reduce habitat loss by developing habitat maps and management guidelines.”

The strategies under Objective 122 are listed as:

- “a. Provide resource information to other agencies and organizations to influence land use decisions (e.g., WDFW Priority Habitats and Species (PHS) management guidelines for band-tails) (ongoing).
- b. In cooperation with other agencies, track critical habitat status and trends (e.g., mineral sites, freshwater wetlands) (ongoing). (Washington Department of Fish and Wildlife Game Management Plan. 2003)

A. Strategy: Assist in efforts to determine and track critical mourning doves and snipe habitat status on the CWA. **POTENTIAL FUNDING:** Agency Support (Federal Aid). **TIMEFRAME:** Ongoing. Objective 123 under mourning doves, band-tailed pigeons, coots, and snipe management states: Provide funding through state migratory bird stamp/print revenues to protect/enhance 50 acres of habitat annually for doves, pigeons, coots, and snipe.

The strategies under Objective 123 are listed as:

- “a. Determine habitat protection and enhancement needs considering literature and regional expertise.
- b. Solicit project proposals from regional staff and external organizations.
- c. Develop expenditure plan before the start of each new biennium, using an evaluation team from a statewide cross-section of Department experts, to fulfill funding requirements for non-waterfowl migratory birds specified in legislation.

d. Monitor effectiveness of habitat projects through focused evaluation projects before and after implementation.” (Washington Department of Fish and Wildlife Game Management Plan. 2003)

B. Strategy: Assist in efforts to determine mourning doves and snipe habitat protection and enhancement needs on the CWA. POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

C. Strategy: Provide opportunities for mourning doves and snipe habitat projects on the CWA. POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

Information and Education Issue Statement: “Members of the general public and recreational users are sometimes uninformed about management issues and hunting opportunities.”

Objective 129 under mourning doves, band-tailed pigeons, coots, and snipe management states: “Generate at least one information and education product each year to improve transfer of information to public.”

The strategies under Objective 129 are listed as:

“a. Increase public awareness about management issues through brochures, news releases, Internet, pamphlets (ongoing).

b. Develop materials describing hunting opportunities for other migratory game birds in Washington (ongoing).” (Washington Department of Fish and Wildlife Game Management Plan. 2003)

D. Strategy: Assist in the transfer of information about mourning doves and snipes and their management by posting information or adding a link to the CWA website. POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

E. Strategy: Assist in developing materials describing hunting opportunities for mourning doves and snipe on the CWA. POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

3. Manage for wild turkey

Releases of wild turkeys have been made on the CWA at least once over in the last 20 years and as a result the wild turkey population in the Chiliwist exploded. The wild turkey population from the plant in the Chiliwist expanded into the Methow watershed and northward into the Loop Loop Pass area and beyond. Turkey hunting on the CWA is very popular.

The Game Management Plan Statewide Goals for wild turkeys call for:

“1. Preserve, protect, perpetuate, and manage wild turkeys and their habitats to ensure healthy, productive populations.

2. Manage wild turkeys for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, wildlife viewing cultural and ceremonial uses by Native Americans, and photography.

3. Manage statewide wild turkey populations for a sustained harvest.” (Washington Department of Fish and Wildlife Game Management Plan. 2003)

A. Strategy: Assist in the transfer of information about wild turkeys and their management by posting information or adding a link to the CWA website.

FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

B. Strategy: Assist in developing materials describing hunting and non-hunting opportunities for wild turkeys on the CWA.

FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

4. Manage for forest grouse

Two species of forest grouse are found in abundance on the CWA. Forest grouse hunting on the CWA is a moderately popular activity throughout September and early October.

The Game Management Plan Statewide Goals for forest grouse call for:

“1. Preserve, protect, perpetuate, and manage forest grouse and their habitats to ensure healthy, productive populations.

2. Manage forest grouse for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, wildlife viewing, cultural and ceremonial uses by tribes, and photography.

3. Manage statewide forest grouse populations for a sustained harvest.”

Habitat Management Issue Statement:

“Forest grouse habitat quality is tied directly to forest management strategies implemented on public and private lands.

As new information about forest grouse management becomes available, it is important to make that information available to forest managers.”

Objective 146 under forest grouse management states:

“Develop one additional habitat management publication by 2008.”

The strategies under Objective 146 are listed as:

“a. Review forest grouse literature concerning forest management techniques.

b. Update existing or create additional forest grouse habitat management guidelines.

c. Make guidelines available to forest landowners and encourage them to incorporate management practices that benefit forest grouse.” (Washington Department of Fish and Wildlife Game Management Plan. 2003)

A. Strategy: Assist in developing forest grouse habitat management techniques and guidelines on the CWA for application on other forestlands. FUNDING: Agency Support (Federal Aid), Grants when successful, Ruffed Grouse Society, graduate students, interns, qualified volunteers. TIMEFRAME: Ongoing grant search and application.

B. Strategy: Experiment with prescribed burning to increase habitat diversity by encouraging early successional vegetation patches in riparian areas on CWA.

POTENTIAL FUNDING: Agency Support (Federal Aid), grants when successful, Ruffed Grouse Society, graduate students, interns, qualified volunteers.

TIMEFRAME: Ongoing grant search and application.

5. Manage for upland game birds

The CWA was purchased in part to provide habitat for upland game birds. Upland game birds found on the CWA include Hungarian partridge, Ring-necked pheasant, California quail, and Chukar partridge. All of these species on the CWA are the progeny of released birds, except Ring-necked pheasants, which have been released throughout the hunting season since 2003. The CWA is a popular place for upland bird hunters.

The Game Management Plan Statewide Goals for upland game birds call for:

1. Preserve, protect, perpetuate, and manage upland game birds and their habitats to ensure healthy, productive populations.
2. Manage upland game birds for a variety of recreational, educational and aesthetic purposes including hunting, scientific study, wildlife viewing cultural and ceremonial uses by Native Americans, and photography.
3. Manage statewide upland game bird populations for a sustained harvest.”

Habitat Management Issue Statement:

“Pheasant habitat in eastern Washington has been lost, altered or degraded over the past 50 years. This is considered to be a major factor in the decline in pheasant populations (Flaherty 1979).”

Objective 153 under upland game bird management states:

“By 2008, increase the quantity and quality of pheasant habitat in select WDFW districts within identified key pheasant management areas.”

The strategies under Objective 153 are listed as:

- a. Inventory current pheasant habitat and identify and prioritize key areas for improvement.
- b. Define quality pheasant habitat.
- c. Develop specific strategies for enhancing pheasant habitat.
- d. Purchase high priority pheasant habitat acreage using funds from the sale of western Washington land holdings identified for that purpose.
- e. Work with public and private landowners and funding agencies (e.g. United States Department of Agriculture (USDA)) to increase quality pheasant habitat acreage through programs like the Conservation Reserve Program (CRP), and the Wildlife Habitat Incentives Program (WHIP).
- f. Improve pheasant habitat quality by funding habitat improvement projects through the Eastern Washington Pheasant Enhancement Program (EWPEP).
- g. Integrate pheasant habitat improvements and priorities with native species needs (e.g. sharp-tailed grouse and salmon).” (Washington Department of Fish and Wildlife Game Management Plan. 2003).

A. Strategy: Assist in development of specific strategies for enhancing upland bird habitat on the CWA. POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

B. Strategy: Seek funding for upland bird habitat enhancement on the CWA. FUNDING: Grants when successful. TIMEFRAME: Ongoing grant search and application.

C. Strategy: Maintain springs and guzzlers to provide water for upland birds and other species. Repair and maintain 6 existing upland game bird guzzlers. Develop new water sources in areas identified with the Area and Field Wildlife Biologists and install new springs and guzzlers. POTENTIAL FUNDING: Agency Support (Federal Aid), Grants when successful, volunteers, students, interns, assistance from other organizations, i.e., Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

D. Strategy: Maintain small grain food plots to provide concentrated food sources for upland game birds. Continue to provide standing grain food plots for upland game bird feed on CWA. FUNDING: Maintain Forage (Federal Aid). TIMEFRAME: Annually, Mar – Oct.

E. Strategy: Maintain upland birds feeders throughout the winter. Continue to maintain and fill a minimum of 2 upland game bird feeders on CWA. FUNDING: Winter Feeding (Federal Aid). TIMEFRAME: Annually, Dec – Mar.

F. Strategy: See also Agency Objective: Protect, Restore & Enhance Fish and Wildlife and Their Habitats. Sub-objective 11.

G. Strategy: Use prescribed burning to provide a mosaic of habitat types from early successional types to late successional types to benefit upland game birds. POTENTIAL FUNDING: Grants when successful, qualified volunteer, Assistance from other Agencies, e.g., USFS, DNR, USWFS. TIMEFRAME: Ongoing grant search and application.

Issue Statement:

“Some upland game birds exist in areas where sharp-tailed grouse and sage grouse can be found. Concerns over misidentification of game birds have been expressed and it is important that hunters know the differences between upland game birds and non-game upland wildlife.”

Objective 158 under upland game bird management states:

“Provide educational materials to hunters that describe the differences between upland game species and non-game upland birds.”

The strategies under Objective 158 are listed as:

“a. Include information describing the differences between pheasants and sharp-tailed grouse and sage grouse and include it in the annual upland bird hunting pamphlet.
b. Post signs notifying hunters of sage or sharp-tailed grouse being present in areas where upland game bird hunting occurs.” (Washington Department of Fish and Wildlife Game Management Plan. 2003)

H. Strategy: Assist in development and distribution of informational brochures informing hunters of the possibility of Sharp-tailed grouse on the CWA.

POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

I. Strategy: Post signs alerting hunters to the possibility of Sharp-tailed grouse being present on the CWA. FUNDING: Signs (Federal Aid). TIMEFRAME: Ongoing.

6. Manage for small game, furbearers, and unclassified species

There are many small game, furbearers and unclassified species on the CWA including bobcats, coyotes, muskrats, mink, long-tailed weasel, etc. Coyote hunting is a popular activity on the CWA. Trapping activity on the CWA is unknown. All of these species also provide wildlife viewing opportunity.

The statewide goals for small game mammals, furbearers, and unclassified wildlife are:

- “1. Preserve, protect, perpetuate, and manage species and their habitats to ensure healthy, productive populations
2. Manage wildlife species for a variety of recreational, educational and aesthetic purposes including hunting, trapping, scientific study, and cultural and ceremonial uses by Native Americans, wildlife viewing and photography.
3. Manage statewide populations for a sustained yield.”

Population Management Issue Statement:

“There is little documentation on the current distribution and relative densities of individual small game and furbearer species in Washington.”

Objective 168 under small game mammals, furbearers, and unclassified wildlife states: “Revise the distribution map for all small game and furbearer species by 2008.”

The strategies under Objective 168 are listed as:

- a. [missing](#) from Game Management Plan
- b. [missing](#) from Game Management Plan
- “c. Revise the distribution maps using Priority Habitats and Species (PHS) protocols.
- d. Revise the distribution maps from harvest and trapping data, sightings, and regional biologist interpretations.
- e. Revise the distribution maps from survey and ground truthing activities.” (Washington Department of Fish and Wildlife Game Management Plan. 2003)
 - A. Strategy:** Assist in revising distribution maps of small game, furbearers and unclassified species on the CWA. POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing
 - B. Strategy:** Provide viewing opportunity of the small game, furbearer and Unclassified wildlife. POTENTIAL FUNDING: Watchable wildlife and other grants when successful. TIMEFRAME: Ongoing, grant search and applications.

7. Improve and maintain fish populations

Portions of Chiliwist Creek on the CWA support populations of Brook trout. The fishery provided in Chiliwist Creek is not significant and only seldom used by local Chiliwist Valley residents. SSHEAR has identified fish passage barrier issues on Chiliwist Creek on the CWA.

- A. Strategy:** Restore riparian habitat with shrub and tree plantings along Chiliwist Creek. POTENTIAL FUNDING: WHIP and other grants sources & Fences (Federal Aid). TIMEFRAME: Ongoing and grant search and application.
- B. Strategy:** In areas subject to grazing by domestic stock, permitted or trespass, fence riparian habitat along Chiliwist Creek to protect from unmanaged grazing

impacts. POTENTIAL FUNDING: WHIP and other grants sources & Fences (Federal Aid). TIMEFRAME: Ongoing and grant search and application.

C. Strategy: When requested work with the SSHEAR Section to address fish passage barrier issues. FUNDING: Agency support (Federal Aid). TIMEFRAME: Ongoing.

D. Strategy: When requested, work with Area Fish Biologist to identify habitat improvement or maintenance activities that would benefit fish on the CWA.

POTENTIAL FUNDING: Agency Support (Federal Aid). TIMEFRAME: Ongoing.

8. Manage for species diversity

To manage for species diversity it is necessary to know what species are present and where they are in order to provide maximal consideration for them. Lists of birds, mammals, herptiles, fishes, butterflies and other species are under construction for the CWA, [APPENDIX 6](#). These lists will include species known to occur on the CWA as well as species that may occur, but have not been verified. Anecdotal presence/absence surveys have been ongoing on the CWA for the last 2 years. Once comprehensive surveys have been completed, develop and/or maintain quality habitat that will provide life requisites for the species present. Fire suppression has reduced the habitat diversity needed to sustain high species diversity. Nearly all activities on the wildlife area benefit a diversity of species. *Birds in general – people have an interest in seeing a variety of birds – bird watching can provide positive economic benefits.*

A. Strategy: Determine Diversity Species use by performing surveys for breeding nongame birds, reptiles and amphibians, small mammals, aquatic and terrestrial mollusks, Odonata and butterflies or explain what general rules will apply so as not to indirectly create threats to intrinsic species. POTENTIAL FUNDING: Agency Support (Federal Aid), Grants when successful, volunteers, graduate students, students, interns, assistance from other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

B. Strategy: Obtain funding to conduct extensive inventories of small mammals, birds, herptiles, fishes, mollusks, lichens, mosses, Odonata and butterflies prior to fuels treatment and prescribed burning. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, interns, assistance from other agencies, i.e., BLM, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

C. Strategy: Develop GIS layers depicting distribution of species on the CWA. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, interns, assistance from other agencies, i.e., BLM, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

D. Strategy: Assess timber-thinning project to reduce potential insect and catastrophic fire danger and create forest conditions more suitable to a diversity of species. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, interns, assistance from other agencies, i.e., USFS, BLM, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

E. Strategy: Conduct prescribed fuels treatment, e.g., thinning and logging on an average of 400 acres per year for 10 years in preparation to re-introduce fire back

into the ecosystem to restore the ecological processes that fire initiates which result in habitat diversity that supports a maximal number of species. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, interns, assistance from other agencies, i.e., BLM, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

F. Strategy: Conduct prescribed burning on an average of 400 acres per year for a 10-year rotation to improve habitat diversity and quality. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, interns, assistance from other agencies, i.e., BLM, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

9. Protect, restore and maintain riparian habitat

The agency has prioritized riparian habitat management and protection. Riparian areas provide habitat for a large diversity of fish and wildlife species, for high densities of animals, for important breeding areas and movement corridors. Fire exclusion in riparian areas has resulted in a stagnation of vegetative succession and reduced the mosaic effect that contributes to increased diversity necessary for sustaining a variety of species.

A. Strategy: See also Agency Objective: Influence the decisions of others that affect fish, wildlife and their habitats. Sub-objective 8.

B. Strategy: Plant Water Birch along Chiliwist Creek riparian area to enhance Sharp-tailed grouse winter forage. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

C. Strategy: Work with Area and Field Wildlife Biologists to identify riparian areas for additional restoration or protection. POTENTIAL FUNDING: assistance from other WDFW personnel. TIMEFRAME: Ongoing.

D. Strategy: Use prescribed fire to return the fire effects component to riparian ecosystem to increase diversity of plant communities and wildlife. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., USFS, BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

E. Strategy: Fence springs and riparian areas from overuse by permitted and trespass livestock. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

10. Protect, restore and maintain shrub steppe habitat

The agency has prioritized shrub-steppe habitat management and protection. Shrub steppe areas provide habitat for a diversity of fish and wildlife species and for comparatively high densities of animals. Shrub steppe is also very vulnerable to habitat conversion and alteration practices. Shrub-steppe on the CWA is being converted to predominantly shrub with encroaching ponderosa pine and Douglas fir stands due to fire exclusion.

A. Strategy: Using historical aerial photos develop a map of historic shrub-steppe habitats and determine the number of acres converted to shrub and forest encroachment. POTENTIAL FUNDING: Grants when successful, volunteers,

students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

B. Strategy: Perform shrub steppe condition surveys to assess habitat quality issues.

POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

C. Strategy: Restore old agriculture fields to native shrub steppe habitat. Utilize CPR funding if possible. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

D. Strategy: Conduct prescribed fuels treatment, e.g., thinning and logging to restore shrub-steppe on an average of TBD acres per year for 10 years in preparation to re-introduce fire back into the ecosystem to restore the ecological processes fire initiates that results in the habitat diversity which supports a high diversity of species. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

E. Strategy: Conduct prescribed burning on an average of TBD acres per year for a 10-year rotation to improve shrub-steppe habitat diversity and quality.

POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

F. Strategy: Convert fields of non-native vegetation to native shrub-steppe including grasses, forbs and shrubs, e.g., pure stands of sheep fescue need to sprayed, worked up and reseeded to native vegetation.

POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

G. Strategy: Inventory and develop GIS layers depicting fields of non-native vegetation with accompanying acreage and type of non-native vegetation in each field. FUNDING: Grants when successful, volunteers, students, interns, and assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

H. Strategy: Convert present food plots/agricultural fields that are impractical to maintain due to size or sandy soils to native shrub-steppe vegetation. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: ongoing grant search and application.

I. Strategy: Collect seeds of native plant species on the CWA and have them commercially grown to provide larger quantities for shrub-steppe restoration purposes. POTENTIAL FUNDING: grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

11. Protect and maintain prescriptive grazing, agricultural and forest practices as tools for manipulating and managing vegetation and cover-types to benefit fish and wildlife

Washington Department of Fish and Wildlife, as owner and manager of lands is in a position and has a unique opportunity to demonstrate through responsible management, how lands can be managed to benefit fish and wildlife using prescriptive grazing, logging and agricultural practices as part of the management program to maintaining healthy fish and wildlife populations and habitat. WDFW can lead the way in this endeavor. *Timber management – fuels management and prescribed (Rx) burning, Income can help program. Grazing – restore economically and environmentally sustainable grazing using grazing plans, fencing, water, supplements, etc.*

A. Strategy: Continue to provide opportunities for prescribed grazing as a tool to manage vegetation to benefit wildlife. **FUNDING:** Federal Aid, State Wildlife Account, grants when successful, qualified volunteers, assistance from other agencies, i.e., USFS, BLM, USFWS, other organizations, assistance from other qualified WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

B. Strategy: Continue to provide agricultural lease opportunities for sharecroppers where crops will provide diversity and concentrations of feed for wildlife species. **FUNDING:** Forage (Federal Aid), State Wildlife Account, grants when successful, interns, assistance from other agencies, i.e., USFS, NRCS, BLM, USFWS and other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

12. Protect and manage other species

A primary management effort in “protecting” habitat involves recognition and perpetuation of historic disturbance regimes that were the engines, which influenced the conditions in which indigenous fauna and flora evolved. By assuring that fire will continue to be a part of the ecosystem as it historically was for thousands of years until about 100 years ago, the fire dependent plant communities and wildlife dependent thereon will continue to exist. It is assumed that most other habitat management activities and efforts will benefit. Sharp-tailed grouse, a State Threatened species* and a Federal Species of Concern*, were regularly present in certain areas of the CWA prior to 1980 and thereafter observed intermittently. The area where they once were is successional converting from shrub-steppe to dense strands of bitterbrush, ponderosa pine and Douglas fir forest.

***At the Federal level the Endangered Species Act of 1973 defines "endangered" as "any species which is in danger of extinction throughout all or a significant portion of its range." "Threatened" is defined as "any species, which is likely to become endangered within the foreseeable future throughout all or a significant portion of its range." What is the Federal Endangered Species Act (ESA)?**

The Endangered Species Act is a law that was enacted in 1973 for this purpose:

- 1. To identify animals and plants that are in trouble.**
- 2. To protect these plants and animal and their habitat.**

What is the difference between a State listed species and a Federally listed species?

States determine standards for listing species that live within the borders of their state regardless of how rare or common they are outside those borders. A Federally

listed species must be threatened or endangered throughout all or a significant portion of the geographic range in which it lives.

At the State level the definitions are essentially the same, but apply to species, as they exist within the boundaries of a state regardless of the population status outside the state. A species, after scientific review, may be designated as Threatened, Endangered or Sensitive Species of Concern (T,E,S) at the state level.

A. Strategy: Specifically, in the areas where Sharp-tailed grouse use to occur, conduct fuels treatment and prescribed burning to restore shrub-steppe habitat.

POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., USFS, USFWS, BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

B. Strategy: Work with Area and Field Wildlife Biologists and Area Fish Biologist determine what species may be of special significance and develop management plans to address them. POTENTIAL FUNDING: Assistance from other WDFW personnel. TIMEFRAME: Ongoing.

C. Strategy: Protect nesting and foraging habitat for several woodpecker species. Protect and create snags. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., USFS, USFWS, BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

D. Strategy: Conduct prescribed fuels treatment, e.g., thinning and logging on an average of 400 acres per year for 10 years in preparation to re-introduce fire back into the ecosystem to restore the ecological processes that fire initiates which result in the habitat diversity that supports a maximal number of species. POTENTIAL FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., USFS, BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application

E. Strategy: Conduct prescribed burning on an average of 400 acres per year for a 10-year rotation to improve habitat diversity and quality. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

13. Protect, restore and maintain ecosystem functions and processes

Historic ecosystem functions and processes, e.g., fire and flooding, have been impacted, e.g., fire suppression, creation of impoundments, on the SWA and thus impacted flora and fauna. In some instances the impacts have been beneficial to species and in other cases the impacts have been negative. For thousands of years these processes acted in concert with succession, herbivory and climate to create conditions that sustained the historic plant communities, hydrology and the fish and wildlife dependent thereon. In particular unmitigated fire suppression and resultant fire exclusion has had profound impacts on the plant communities, wildlife habitat and landscape hydrology. As a result of fire suppression plants and plant communities have become dysfunctional and conditions have been created that will result in extremely severe fires.

A. Strategy: Conduct prescribed fuels treatment, e.g., thinning and logging on an average of 600 acres per year for 10 years in preparation to re-introduce fire back into the ecosystem to restore the ecological processes that fire initiates which result

in the habitat diversity that supports a maximal number of species. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., USFS, USFWS, BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

B. Strategy: Conduct prescribed burning on an average of 1400 acres per year for a 10-year rotation to improve habitat diversity and quality. POTENTIAL FUNDING: Grants when successful, volunteers, students, interns, assistance from other agencies, i.e., USFS, USFWS, BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

C. Strategy: Work with private, county, state and federal land managers to promote use of prescribed fire, in a coordinated effort on all lands, to reintroduce fire to the fire-deprived fire-dependent ecosystem, i.e., North Central Washington Prescribed Fire Council. FUNDING: Landowner assistance. TIMEFRAME: Ongoing

14. Conduct research to determine management strategy 1) Impacts to other resources, 2 effectiveness relative to objectives, 3 costs and 4) benefits

Wildlife Area managers are “Disturbance Managers” in that they can use disturbance agents, i.e., fire, chainsaws, domestic livestock, etc., to influence plant communities in a manner to meet defined objectives to influence wildlife use or make environmental modifications (disturbances) to influence wildlife use, i.e., water impoundments, artificial nest structures, food plots, etc. Management strategies may benefit one species while negatively impacting another, i.e., species dependent primarily on late successional plant communities won’t benefit from management strategies designed to convert plant communities to early successional stages. In some cases management strategies don’t meet objectives or provide little benefit, i.e., upland bird guzzlers. Research is needed to identify relationships of wildlife with various habitat disturbance regimes including the class, the duration, the frequency, the spatial relationships and the magnitude/severity of the disturbance, e.g., fire, domestic livestock grazing, logging, recreational activities, roads, etc. Domestic livestock grazing is often a contentious issue that needs scientific scrutiny to support the use of grazing. Alteration of historic disturbance regimes, e.g., fire, flooding, resulting in changes to habitat dynamics needs to be addressed. To begin, an assessment of what the historic disturbance regimes were, their dynamics and what the plant communities likely existed under those regimes will provide “target” plant communities and plant community spatial and temporal dynamics. Using these target plant communities adaptive management strategies can be developed, implemented and changed according to measured responses of wildlife to the changes. Additionally there is a need for: 1) more information on what wildlife species use the CWA, 2) what their habitat requirements are, 3) a complete updated detailed soil survey of the CWA.

A. Strategy: See Agency Objective: Develop, integrate and disseminate sound fish, wildlife and habitat science.

B. Strategy: Coordinate with the Wildlife Program and Habitat Science Divisions to develop, design and prioritize research projects, and find funding and researchers to meet research needs. POTENTIAL FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., USFS, USFWS, BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

C. Strategy: Seek funding to research impacts, positive or negative, of domestic livestock grazing so that undisputable facts are known when making decisions to use or not use, how much, when and where, domestic livestock grazing. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

D. Strategy: Continue to seek funding for conducting research on historic disturbance regimes to determine the frequency, spatial relationships and the magnitude/severity of the disturbances and how they maintained habitat features and attributes needed by indigenous wildlife species. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., BLM, NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

E. Strategy: Seek funding to determine cost and benefits of environmental modification, e.g., artificial nest structures, upland bird guzzlers, and etc. strategies. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., BLM, USFWS, other organizations, e.g., Ducks Unlimited, Blue Bird Society, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

F. Strategy: Seek funding to inventory all species of wildlife on the CWA including generalized habitat requirements. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., BLM, USFWS assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

G. Strategy: Seek funding and/or provide encouragement to the NRCS soil survey shop to complete an updated soil survey for the CWA. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

H. Strategy: Maintain contact with educational institutions, i.e., Colleges, Universities and Community Colleges, High Schools, to provide opportunities for students and interns to conduct research on the CWA that will increase knowledge about the CWA and contribute to management of the CWA. FUNDING: Ongoing. TIMEFRAME: Ongoing.

Agency Objective: Influence the Decisions of Others that Affect Fish, Wildlife and Their Habitats.

Washington Department of Fish and Wildlife, as owner and manager of lands is in a position and has a unique opportunity to demonstrate through responsible management, how lands can be managed to benefit fish and wildlife and have grazing, logging and agricultural activities as part of the management program. WDFW can lead the way in this endeavor. While at the same time maintaining healthy fish and wildlife populations and habitat and providing diverse, high quality recreational and commercial opportunities. WDFW can lead the way in this endeavor. *Timber management – fuels management and prescribed (Rx) burning, income can help program. Grazing – restore economically and environmentally sustainable grazing using grazing plans, fencing, water, supplements, etc*

1. Provide the CWA as a model, demonstrating cost effective responsible land management practices that benefit fish and wildlife, for other private, county, state and federal land managers to follow.

A. Strategy: Work with other local private, county, state and federal land managers to share knowledge about cost effective responsible management practices that benefit fish and wildlife. FUNDING: Ongoing. TIMEFRAME: Ongoing.

B. Strategy: Continue to seek ways to be more cost effective in implementing land management practices that benefit fish and wildlife. FUNDING: Ongoing. TIMEFRAME: Ongoing.

C. Strategy: Continue to strive to be a good model of cost effective responsible land management that benefits fish and wildlife. FUNDING: Ongoing. TIMEFRAME: Ongoing.

D. Strategy: Develop and provide educational “Field Day” opportunities demonstrating land/vegetation management techniques that are fish and wildlife friendly. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, other organizations Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

E. Strategy: Continue to participate in Coordinated Resource Management process. FUNDING: Ongoing. TIMEFRAME: Ongoing.

Agency Objective: Provide Sustainable Fish and Wildlife-Related Recreational and Commercial Opportunities Compatible With Maintaining Healthy Fish and Wildlife Populations and Habitats. Improve the Economic Well-Being of Washington by Providing Diverse, High Quality Recreational and Commercial Opportunities.

Washington Department of Fish and Wildlife, as owner and manager of lands is in a position to provide a diversity of wildlife-oriented experiences in a manner that is not detrimental to management of or the protection of the fish and wildlife or the habitat.

1. Provide public access compatible with fish, wildlife and habitat protection.

Access for hunting, fishing, wildlife viewing and other activities is an agency priority. However, access and recreation must be controlled to protect fish and wildlife resources and to comply with federal and state regulations. *Public input clearly emphasizes the importance of providing recreational access with protections for the resource.*

A. Strategy: Provide open roads where no resource issues exist and when there are sufficient resources to maintain them. Address requirements in Road Management and Abandonment Plans (RMAP). FUNDING: Grants when successful, assistance from other agencies, i.e., Okanogan County, DNR, assistance from other WDFW personnel, e.g., construction shop. TIMEFRAME: Ongoing, ongoing grant search and application.

B. Strategy: Close road access where road conditions are not safe or where conditions have a significant negative impact on fish and wildlife. FUNDING: Signs (Federal Aid), RMAP, grants when successful, assistance from other agencies, i.e., Okanogan County, DNR, assistance from other WDFW personnel, e.g., construction shop. TIMEFRAME: Ongoing, ongoing grant search and application.

C. Strategy: Sign all CWA entry roads with rules on road use and vehicle use and sign all roads with limited access. POTENTIAL FUNDING: Signs (Federal Aid),

grants when successful, assistance from other WDFW personnel, e.g., WCC.

TIMEFRAME: Ongoing grant search and application.

D. Strategy: Sign all entry roads with rules on use and recreational use on the CWA.

POTENTIAL FUNDING: Signs (Federal Aid), grants when successful, volunteers, students, interns, assistance from other WDFW personnel, e.g. WCC.

TIMEFRAME: Ongoing grant search and application.

E. Strategy: Provide camping opportunity in all existing camping areas where no resource issues exist.

POTENTIAL FUNDING: Grants when successful, qualified volunteers, interns, assistance from other agencies, other organizations assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

F. Strategy: Work with Access Area Maintenance to provide “Designated” campsites to reduce camping outside of normal camping areas. POTENTIAL

FUNDING: Campsites, grants when successful, qualified volunteers, interns, assistance from other agencies and other organizations assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

G. Strategy: Provide fishing and wildlife viewing opportunities for persons with disabilities. POTENTIAL FUNDING: Grants when successful, qualified

volunteers, interns, assistance from other agencies and other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

H. Strategy: Provide trails for hunting, fishing, hiking, walking, horseback riding, bird watching, wildflower viewing, butterfly watching, and interpretive and

sightseeing opportunities. POTENTIAL FUNDING: Grants when successful, qualified volunteers, interns, assistance from other agencies and other organizations assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

I. Strategy: Provide self guided interpretive tours, including kiosks, reader boards, pamphlets and brochures, on the CWA to help the public better understand fish and wildlife habitat management including farming, domestic stock grazing, fuels

treatments and prescribed burning, and the ecological processes that sustain fish and wildlife habitat. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, USFS, DNR, etc. other organizations TNC, Audubon Society, Okanogan Wildlife Council, Okanogan County Tourism Council, Okanogan County Cattlemen’s Association, etc., assistance from other WDFW personnel.

TIMEFRAME: Ongoing, ongoing grant search and application.

J. Strategy: Develop maps, brochures and pamphlets of the CWA for issuance to the public. POTENTIAL FUNDING: Grants when successful, qualified volunteers,

graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, USFS, DNR, etc. other organizations TNC, Audubon Society, Okanogan Wildlife Council, Okanogan County Tourism Council, etc., assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

K. Strategy: Develop a GIS layer depicting all roads, on the CWA indicating their ownership, use status and condition. FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies and

other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

L. Strategy: Develop a GIS layer depicting all trails on the CWA indicating their use status and condition. FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies and other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

M. Strategy: Develop GIS layer(s) depicting all campgrounds with facilities, toilets, fire pits, parking areas and boat launches indicating their use status and condition. FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies and other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

2. Provide commercial opportunities compatible with fish, wildlife protection and habitat management.

A. Strategy: Use proven contractors to implement fuels treatment prescriptions, e.g., thinning, logging. POTENTIAL FUNDING: Grants when successful, assistance from other agencies, i.e., USFS, BLM, and other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

B. Strategy: Use proven contractors to implement prescribed burns. POTENTIAL FUNDING: Grants when successful, qualified volunteers, assistance from other agencies, i.e., USFS, BLM, USFWS and other organizations, assistance from other qualified WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

C. Strategy: Use proven contractors to develop silvicultural prescription plans, fuels treatment prescription plans and prescribed burning plans. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., USFS, NRCS, BLM, USFWS and other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

Agency Objective: Ensure WDFW Activities, Programs, Facilities and Lands are Consistent With Local, State and Federal Regulations that Protect and Recover Fish, Wildlife and Their Habitats.

Federal, State, County and local laws protecting fish, wildlife and their habitat govern WDFW activities. As a leader in enforcing and seeking compliance with laws for protecting fish, wildlife and their habitat it is imperative WDFW ensure that its own activities are not contrary to its stated mission.

1. Manage weeds consistent with state and county rules and to protect and recover fish and wildlife and their habitats

Weed control is required by state law to protect public economic and natural resources.

Invasive weeds are one of the greatest threats to fish and wildlife habitat quality.

Cooperative weed efforts are encouraged to improve efficacy and to minimize impacts on adjacent landowners as part of the agencies good-neighbor priority.

A. Strategy: Produce and implement weed management plan to include weed identification and inventory, risk/threat, control priorities, and monitoring (**APPENDIX 2**). POTENTIAL FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., NRCS, BLM, other organizations Okanogan County Noxious Weed Office/Board, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

B. Strategy: Coordinate weed efforts with federal, state and local entities to improve efficacy and minimize costs. FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., USFS, DNR, NRCS, BLM, and other organizations Renton Fish and Game Club, Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, participation in the Okanogan County Coordinated Weed Management Area (OC CWMA), ongoing grant search and application

C. Strategy: Continue to use Integrated Pest Management strategies, including biological control, chemicals, mechanical and cultural methods, to control invasive weeds. FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., USFS, NRCS, BLM, other organizations Quad County Weed Control Initiative, Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

D. Strategy: Continue to control weeds along all roads on the CWA - TBD miles of roads to reduce the spread of weeds. FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., DNR, BLM, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

E. Strategy: Map all weed locations using GPS to create GIS layers showing all locations of weeds and to assist in monitoring weed control efforts. FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies and other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

F. Strategy: Continue to use volunteers and volunteer work parties, e.g., Americorp, Okanogan Wildlife Council, Renton Fish and Game Club, for cutting and pulling weeds. FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies and other organizations Okanogan Wildlife Council, assistance from other WDFW personnel, Advanced Hunter Education Candidates. TIMEFRAME: Ongoing, ongoing grant search and application.

G. Strategy: Work with the Contracts Office to obtain a contract with Okanogan County jail to allow use of trustee work crews to cut and pull weeds. FUNDING: Program Administration, Grants when successful. TIMEFRAME: **COMPLETED**

H. Strategy: Continue to seek funding to assure a 9-month FTE dedicated to weed control on the CWA, SWA and DIWA. FUNDING: Grants when successful, assistance from other agencies, i.e., NRCS, BLM, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

I. Strategy: Continue to use WCC crews to grid for and control weeds. FUNDING: Grants when successful, assistance from other agencies, i.e., DNR, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

J. Strategy: Use Okanogan County Jail Trustees for weed control and fence maintenance efforts. **FUNDING:** Grants when successful, assistance from other agencies, and assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

2. Manage species and habitats in compliance with the Endangered Species Act and Washington State fish passage, road management and forest practice rules

Federal law requires the protection and management of threatened and endangered species*. State law requires fish passage and screening issues and forest road sedimentation issues to be addressed on state public lands. Forest thinning operations on agency lands must follow state forest practice law.

A. Strategy: Map all ESA species and their habitats on the CWA and develop GIS layers depicting the location, species and habitat. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies and other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

B. Strategy: List specific management practices associated with ESA species present or likely present. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., USFS, USFWS, NRCS, BLM, and other organizations, e.g., TNC, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

C. Strategy: Inventory all roads and fish passage structures to identify sedimentation and passage issues. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies and other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

D. Strategy: Complete a forest Road Management and Abandonment Plan. **TIMEFRAME:** **Completed**

E. Strategy: Work with SSHEAR Section to correct known fish passage barriers to allow fish movement. **FUNDING:** Grants when successful, qualified volunteers, students, interns, assistance from other agencies and other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

F. Strategy: Develop fuels treatment, e.g., logging and thinning prescriptions and prescribed burn, plans with considerations for ESA species present or likely present. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., USFS, USFWS, NRCS, BLM, other organizations, e.g., TNC, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

G. Strategy: Protect buffers adjacent to wetlands and riparian habitat. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, other organizations Okanogan Wildlife Council, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

3. Provide fire management on agency lands ([APPENDIX 3](#))

Fire suppression agreements must exist for all agency lands to protect the people of Washington and to protect natural and economic resources of the agency and adjacent landowners from wildfire. Prescribed burning must be integrated into routine habitat management of the CWA to ensure continued habitat dynamics associated with fire and sustenance of fire-dependent species as well as fuels reduction.

A. Strategy: Contract with local, state or federal entities to provide wildfire suppression support on the CWA. **POTENTIAL FUNDING:** Grants when successful, assistance from other agencies, i.e., USFS, NRCS, BLM, other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing grant search and application.

B. Strategy: Provide fire training for wildlife area manager and assistant manager. Develop a list of fire responsible individuals. **FUNDING:** Grants when successful, assistance from other agencies, i.e., USFS, DNR, BLM, other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

C. Strategy: Develop a GIS layer depicting fuels treatment and prescribed burn units. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., USFS, USFWS, NRCS, BLM, other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing grant search and application.

D. Strategy: Develop and implement fuels treatment prescriptions and prescribed burn plans to reduce potential severity of wildfires. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., USFS, USFWS, NRCS, BLM, DNR other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing grant search and application.

E. Strategy: Develop protocol and mechanisms necessary to conduct and/or contract for prescribed burning to reduce time and effort spent in unnecessary bureaucratic exercises. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, assistance from other agencies, i.e., USFS, USFWS, NRCS, BLM, other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

4. Protect cultural resources consistent with state and federal law

Federal and state law requires an assessment of cultural resources on agency lands prior to activities that may impact those resources.

A. Strategy: Assess cultural resource value of all structures before renovation or removal. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., Okanogan County Historical Society, OAHP, NRCS, BLM, USFS, Colville Confederated Tribes, other organizations, assistance from other WDFW personnel. **TIMEFRAME:** Ongoing, ongoing grant search and application.

B. Strategy: Perform cultural resource survey and assessment before digging- including posts for new fence line, parking lots, toilets, buildings, new agricultural fields, etc. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., OAHP,

NRCS, BLM, USFS, Colville Confederated Tribes, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

C. Strategy: Obtain funding to initiate a complete and comprehensive cultural resources survey for the CWA. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., Okanogan County Historical Society, NRCS, BLM, USFS, Colville Confederated Tribes, OHAP, other organizations assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

D. Strategy: Map all cultural resources on the CWA and develop a GIS layer depicting the location and type of cultural resources. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., OHAP, NRCS, BLM, USFS, Colville Confederated Tribes, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

E. Strategy: Assess cultural resources for wildlife values, i.e., bats, Vaux's swifts, for wildlife values before renovation or removal. FUNDING: Federal Aid
TIMEFRAME: **Completed**

F. Strategy: Work with Okanogan County Historical Society and others to develop plans and obtain funding for cultural resources to be preserved and protected. POTENTIAL FUNDING: Federal Aid. TIMEFRAME: 2007, Ongoing, ongoing grant search and application.

5. Pay county PILT and assessment obligations

State law requires the agency to pay PILT and county assessments.

A. Strategy: Pay PILT and assessments to counties. FUNDING: State Wildlife Account. TIMEFRAME: Annually.

Agency Objective: Provide Sound Operational Management of WDFW Lands, Facilities and Access Sites.

Good business practices maximizing accomplishments with the limited funds available for managing the CWA is expected and demanded by the public, WDFW Administration, Legislature and the Governor's office. It is essential to: 1) provide a safe working conditions for employees, 2) know where the property lines are for jurisdictional and management purposes and 3) know what facilities exist with their location for planning future maintenance needs.

1. Maintain facilities to achieve safe, efficient and effective management of the wildlife area.

A. Strategy: Obtain funding to get all boundary lines of the CWA surveyed, marked and/or fenced. POTENTIAL FUNDING: State Wildlife Account, Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., BLM, USFS, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

B. Strategy: Collect GPS data and develop GIS data layers for all facilities and features including fences, gates, buildings, water control structures, guzzlers, photo points, old garbage dumps, signs, cultural resources, springs, watering troughs, cattleguards, water pumps, wells, etc. FUNDING: Grants when successful,

qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., Okanogan County Planning, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

C. Strategy: Develop a monthly, quarterly, semi-annual, annual or biennial routine maintenance schedule for fences, signs, water control structures, buildings, guzzlers, watering troughs, cattleguards, etc. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, students, interns, and assistance from other agencies, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

D. Strategy: Maintain all fences to prevent trespass livestock and to keep permitted livestock where they are suppose to be, thereby precluding unplanned habitat disturbances. FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., NRCS, BLM, USFS, grazing permittees, other organizations Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

E. Strategy: Remove old unnecessary fences and downed fences. POTENTIAL FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., Okanogan County Jail, other organizations, Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

F. Strategy: Remove all old garbage dumps and scrap metal piles on the CWA. POTENTIAL FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., DOE, BLM, other organizations Okanogan Wildlife Council, assistance from other WDFW personnel, e.g., WCC. TIMEFRAME: Ongoing, ongoing grant search and application.

G. Strategy: Maintain roads to prevent resource damage and provide access. POTENTIAL FUNDING: Grants when successful, qualified volunteers, assistance from other agencies, e.g., Okanogan County Road Dept., other organizations, assistance from other WDFW personnel, e.g., Lacey Construction crew. TIMEFRAME: Ongoing, ongoing grant search and application.

H. Strategy: Work with Access Maintenance to maintain campgrounds and parking areas to prevent resource damage and provide access. Barriers need to be placed in camping areas to limit access by vehicles to wildlife trees and riparian habitat. Sign all campgrounds and parking lots. POTENTIAL FUNDING: Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., IAC, other organizations, e.g., Okanogan Wildlife Council, assistance from other WDFW personnel, WCC, Lacey Construction crew. TIMEFRAME: Ongoing, ongoing grant search and application.

I. Strategy: Using the CWA Facility/Building Inventory Assessment, identify the five highest priority structures that need to be addressed based on safety issues. Work with engineering staff to schedule and complete work. Engineering should include a cultural resource and wildlife habitat value assessment for historic structures. Surplus any materials/structures to generate revenue prior to demolition or removal. POTENTIAL FUNDING: For demolition: Bid out to wood used lumber salvage companies, grants when successful, qualified volunteers. For cultural resource and wildlife value habitat assessment: grants when successful, graduate students, students, interns, assistance from other agencies, i.e., USFWS,

BLM, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

J. Strategy: Acquire wheel line or pivot irrigation system for irrigated alfalfa fields.

POTENTIAL FUNDING: Federal Aid, State Wildlife Account, Capitol projects.

TIMEFRAME: Ongoing grant search and application.

K. Strategy: Identify and explain other capital needs. FUNDING: Federal Aid, State Wildlife Account, Capitol projects. TIMEFRAME: Annually.

2. Maintain other structures and physical improvements

A. Strategy: In coordination with the Engineering Division, Construction Crew and Dam Maintenance Crew, maintain all bridges, gates, culverts, water control

structures, wells, irrigation systems to perform operation and maintenance of area.

POTENTIAL FUNDING: State Wildlife Account, Grants when successful, qualified volunteers, assistance from other agencies, i.e., DNR, BLM, other organizations Okanogan Wildlife Council, assistance from other WDFW personnel.

TIMEFRAME: Ongoing grant search and application.

B. Strategy: Replace/install new boundary and unit signs. FUNDING: State

Wildlife Account, Grants when successful, qualified volunteers, students, interns, assistance from other agencies, i.e., USFS, BLM, DNR, other organizations, e.g., Okanogan Wildlife Council, assistance from other WDFW personnel, e.g., WCC.

TIMEFRAME: Ongoing, ongoing grant search and application.

3. Maintain equipment

A. Strategy: Service all equipment including trucks, tractor and implements, weed sprayers, trailers, etc. Request replacement equipment when needed. FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, students, interns, assistance from other agencies, other organizations, e.g., Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME:

Ongoing, ongoing grant search and application.

B. Strategy: Rent equipment when it is more efficient to do so or when needed.

FUNDING: Federal Aid, State Wildlife Account, Grants when successful, and assistance from other agencies, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

4. Pursue funding opportunities

A. Strategy: Apply for grants and other funding opportunities consistent with planned priorities to supplement funding, e.g., Mule Deer Foundation; NRCS – WHIP, CRMP, CCRMP, etc; National Fire Plan; WDFW Mule Deer funds.

FUNDING: Federal Aid, State Wildlife Account, qualified volunteers, graduate students, students, interns, assistance from other agencies, other organizations Okanogan Wildlife Council, assistance from other WDFW personnel.

TIMEFRAME: Ongoing, ongoing grant search and application.

B. Strategy: Enroll lands in CRP and other federal programs to generate revenue

and accomplish desired habitat conditions. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, students, interns, and assistance from other agencies, i.e., NRCS, ASCS, other organizations,

assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

C. Strategy: Establish sharecropping agreements with neighbors to address artificial cultivation needs and generate additional revenue to support enhanced O&M.

FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, assistance from other agencies, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

D. Strategy: Establish and maintain prescribed grazing permits with benefits being income, fences maintained and weeds controlled. **FUNDING:** Federal Aid, State Wildlife Account, qualified volunteers, assistance from other agencies, i.e., NRCS, BLM, assistance from other WDFW personnel. TIMEFRAME: Ongoing.

E. Strategy: Use “goods-for-services” contracts to implement and complete fuels treatments, e.g., thinning and logging. **POTENTIAL FUNDING:** Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, assistance from other agencies, i.e., NRCS, BLM, USFS, DNR other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

F. Strategy: Continue “Internship” program for student volunteers. **POTENTIAL FUNDING:** Grants when successful, qualified volunteers, graduate students, students, assistance from other agencies, i.e., NRCS, BLM, USFS, USGS, USFWS, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

G. Strategy: Seek out and develop partnerships with other government entities, e.g., federal, state, county and local agencies, e.g., USFWS, USFS, USGS, BLM, Wa DNR, Okanogan County Noxious Weed Control Board, Okanogan County Sheriff’s Office Jail to maximize use of resources for completing projects. **FUNDING:** Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, students, interns, assistance from other agencies, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

H. Strategy: Seek out and develop partnerships with non-government organizations (NGO’s), e.g., The Nature Conservancy, Okanogan Valley Land Council, FNAWS, Washington Native Plant Society, Mule Deer Foundation, etc., to maximize use of resources for completing projects. **FUNDING:** Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, other organizations, e.g., Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

I. Strategy: Seek out and develop partnerships with National, Regional and local sports groups, e.g., Washington State Bow Hunters, Inland Empire Wildlife Council, Omak Fish and Game Club, etc., to maximize use of resources for completing projects. **FUNDING:** Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, students, interns, assistance from other agencies, other organizations, Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

5. Assess all plant communities and habitats in regards to fire suppression

The history of fire suppression has resulted in changed habitat conditions, e.g., forest tree densities far greater than historic levels, forest is encroaching into shrub-steppe, shrub-steppe shrub component has increased over historic levels, early and mid successional plant communities are a very small part of all of the habitat, many fire dependent plants species are dying out, fire effects from the frequent fire regime have been absent for nearly 100 years. Additionally these changed conditions lead to other conditions symptomatic of a dysfunctional fire dependent ecosystem, e.g., increased risk of stand replacing fire events, increased levels of forest insects and diseases.

A. Strategy: Conduct a comprehensive fire history analysis of the CWA with a report on the historic fire regime and GIS layer maps depicting acreages and areas of each of the historic fires detected. This will provide a better understanding of the historic fire regime on the CWA to enable development of management plans for fuels treatment and mimicking the historic fire regime. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, USFS, USGS, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

B. Strategy: Conduct a historic timber stand analysis on the CWA with a report detailing the composition and structure of historic timber stands. This will provide a clearer picture and better understanding of what the historic stands looked like and provide better information to incorporate in managing the forest component on the CWA. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, USFS, USGS, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

C. Strategy: Determine and develop GIS layers, from historic aerial photos and historic timber stand analysis the amount of Shrub-steppe habitat type that has been invaded and encroached by ponderosas pine and Douglas fir. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

D. Strategy: Develop plans to address “restoration” of the fire-dependent Ecosystem on the CWA to benefit all species of wildlife dependent on a fire-dependent ecosystem. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, USGS, USFS, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

E. Strategy: Assess timber-thinning project to reduce potential insect and fire danger and create forest conditions more suitable to a diversity of species. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, USFS, USGS, other organizations, e.g., Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

6. Perform administrative responsibilities

Administrative responsibilities and duties are important business functions necessary for efficient use of resources in order to accomplish identified goals and objectives according to plans. Record keeping and monitoring are necessary to know where activities are in relation to the beginning and the end of plans or subparts of plans and what remains to be done as well as providing a basis for adaptive management, e.g., making changes to a plan based on undesired/unplanned outcome from a management practice.

- A.** Strategy: Identify goals, objectives and tasks. FUNDING: Federal Aid, State Wildlife Account, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, USFS, other organizations, e.g., EOCCAG, TNC, Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.
- B.** Strategy: Develop and write plans based on identified goals and objectives. FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, USFS other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.
- C.** Strategy: Develop and monitor budgets based on plans. FUNDING: Federal Aid, State Wildlife Account. TIMEFRAME: Ongoing.
- D.** Strategy: Supervise employees and provide ongoing training opportunity to staff. FUNDING: Federal Aid, State Wildlife Account. TIMEFRAME: Ongoing.
- E.** Strategy: Maintain files and records. FUNDING: Federal Aid, State Wildlife Account, Grants when successful, students, interns, and assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.
- F.** Strategy: Monitor outcomes of tasks and projects in relation to stated objectives and goals. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.
- G.** Strategy: Write weekly, monthly and annual reports. FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, graduate students, students, interns, and assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.
- H.** Strategy: Monitor compliance, renew grazing permits and agricultural leases. FUNDING: Federal Aid, State Wildlife Accounts, Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.
- I.** Strategy: Attend and participate in CRM meetings involving grazing permits on the CWA or adjacent lands that could impact management on the CWA. FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, assistance from other agencies, i.e., NRCS, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.
- J.** Strategy: Write, update and implement wildlife area management plan, weed control plan and fire management plan. FUNDING: Federal Aid, State Wildlife

Account, Grants when successful, and assistance from other WDFW personnel.

TIMEFRAME: Ongoing, ongoing grant search and application.

K. Strategy: Conduct wildlife and habitat surveys. Identify and prioritize information and survey needs. FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, interns, students, graduate students, assistance from other agencies, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

L. Strategy: Manage an extensive equipment inventory used for habitat maintenance, enhancement, and restoration. FUNDING: Federal Aid, State Wildlife Account, and Grants when successful. TIMEFRAME: Ongoing.

M. Strategy: Plan for and purchase supplies, tools and equipment. FUNDING: Federal Aid, State Wildlife Account, and Grants when successful. TIMEFRAME: Ongoing.

N. Strategy: Attend meetings and meet with private individuals and agency representatives as needed. FUNDING: Federal Aid, State Wildlife Account, and Grants when successful. TIMEFRAME: Ongoing.

7. Protect and apply water rights for best use

Water rights can impact wildlife area operations including food plots, restoration projects, etc. Water use can also reduce instream volumes for fish and other animals.

A. Strategy: Identify and record all water rights and uses of water ([APPENDIX 4](#)). FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., DOE, other organizations, e.g., Washington Water Trust, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

B. Strategy: Move all unneeded water rights permanently or temporarily into the State Trust Water Rights Program. FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, assistance from other agencies, i.e., DOE, other organizations Washington Water Trust, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

Agency Objective: Reconnect with Those Interested in Washington's Fish and Wildlife.

The knowledge and experience of visitors to the CWA could be enhanced regarding fish and wildlife habitat management by providing onsite interpretive trails and signs. When people visit the CWA they may have questions about why certain things are being done or about the fish and wildlife and habitats on the CWA. Other means of reconnecting with those interested can be through a Website and demonstration field days in conjunction with other agencies or organizations, i.e., USDA-FS, USDA-NRCS, USDI-BLM, USGS, WaDNR, FNAWS, Mule Deer Foundation, Okanogan Valley Land Council. *Route maps for wildlife watching with places to stop for rests and meals. Pullouts along roads in Wildlife areas. Interpretive trails on Wildlife Areas. Develop Informational fliers and have available at local businesses, agency offices or reader boards. More signs – interpretive signs, e.g., wildlife to see, explaining management activities.*

1. Develop opportunities to educate and involve people interested in fish and wildlife habitat management.

A. Strategy: See also Agency Objective: Provide Sustainable Fish and Wildlife-Related Recreational and Commercial Opportunities Compatible With Maintaining Healthy Fish and Wildlife Populations and Habitats. Improve the Economic Well-Being of Washington by Providing Diverse, High Quality Recreational and Commercial Opportunities. Sub-objective 2.

B. Strategy: See also Agency Objective: Ensure WDFW Activities, Programs, Facilities and Lands are Consistent With Local, State and Federal Regulations that Protect and Recover Fish, Wildlife and Their Habitats. Sub-objective: 1.

C. Strategy: Develop informational and educational materials, e.g., maps, pamphlets, brochures, self guided tours, birding and interpretive trails, interpretive center to educate people about the fish and wildlife of the CWA and the processes that sustain the habitat that the fish and wildlife depend on. POTENTIAL

FUNDING: Federal Aid, State Wildlife Account, Watchable Wildlife Account, Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., NRCS, BLM, USFWS, USFS, USGS, other organizations TNC, Audubon, Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

B. Strategy: Develop programs and opportunities for college interns and other volunteers to work on the CWA. POTENTIAL FUNDING: Federal Aid, State Wildlife Account, Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., WSU, EWU, CWU, UW, USU, other organizations TNC, Audubon, Okanogan Wildlife Council, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

C. Strategy: Develop educational opportunities for local K-12 students and classes to be involved in projects on the CWA. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., local and regional schools and colleges, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing grant search and application.

D. Strategy: Develop opportunities for teachers and instructors to bring students, learning groups and others to visit the CWA to learn about and experience fish and wildlife habitat management and observe fish and wildlife. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., local and regional schools and colleges, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

E. Strategy: Coordinate with Project WILD, Project Learning Tree, Adopt-A-Stream efforts. POTENTIAL FUNDING: Grants when successful, qualified volunteers, graduate students, students, interns, assistance from other agencies, i.e., local and regional schools and colleges, other organizations, assistance from other WDFW personnel. TIMEFRAME: Ongoing, ongoing grant search and application.

CHAPTER IV: PERFORMANCE MEASURES, EVALUATION AND UPDATES TO THE CWA PLAN

Wildlife area plan performance measures are listed below. Accomplishments and desired outcomes will be evaluated to produce an annual performance report. The wildlife area plan is a working document that will evolve as habitat and species conditions change, as new regulations are enacted, and as public issues and concerns change. Plan updates will address these changes.

1. The CWA Performance Measures:

- Meet requirements of Federal Aid contract
- Renew grazing leases and agricultural leases expiring on or before December 31, 2006
- Complete Fire Regime Condition Classification mapping
- Oversee completion of 2 pumping vaults for pumping irrigation water from on Chiliwist Creek
- Survey and/or mark/sign a minimum of 10 miles of CWA boundary
- Rebuild or repair a minimum of 5 miles of fence
- Apply for at least one fuels planning and treatment implementation grant through the National Fire Plan
- Develop protocol and procedures to facilitate implementation of prescribed burns
- Apply for at least one grant through Mule Deer Foundation for habitat work
- Build and install reader boards at 5 entrances to the CWA
- Map with GPS and GIS all weed infestations on the CWA, such that a layer depicting a map of each weed species is included in the CWA GIS project
- Grid, GPS and map Dalmatian Toadflax, Russian knapweed, and other weeds
- Complete and/or review and update plans including WA plan, weed plan, and fire management plan
- 14 miles (includes both sides of road) of weed control adjacent to roads
- Prepare and plant approximately 80 acres of dryland Triticale fields
- Complete performance evaluations

2. Annual Evaluation of Performance.

Evaluate performance measures and produce an annual report. At the beginning of each calendar year, the manager will convene the CAG and district team to assess wildlife area specific performance measures and accomplishments that will be used to develop the annual plan update. This update will be an attachment to the plan.

3. Annual Plan Update.

As projects are completed and new issues arise, this plan will be updated, without needing to be re-written. With CAG and District Team input, the plan will continually reflect the strategies, goals and objectives of the current year.

APPENDIX 1. Public Issues

East Okanogan County Citizens Advisory Group (EOC CAG) and Okanogan District Team (ODT)
Issues and Concerns

Chiliwist Wildlife Area

March 9, 2005

The purpose of meeting with the EOC CAG and OODT was to obtain input to help guide management actions on the Chiliwist Wildlife Area. A draft of the introduction and history of the Chiliwist Wildlife Area and copies of the Agency's goals and objectives were distributed for review and discussion. Below is a list of issues and concerns (I&C) identified by the EOC CAG and OODT. These issues were categorized. Issues specific to a particular Wildlife Area were deleted from the list for the areas they did not apply. Issues related to Wildlife Areas outside of the East Okanogan County Citizen's Advisory Group were passed on to the appropriate Wildlife Areas. Other issues related to Wildlife Management or General Agency issues were passed on to the appropriate program or person. The complete list of EOC CAG and OODT I&C is in Appendix 1.

This input will assist in developing strategies to implement management goals and objectives. Underlined statements below indicate that the input was received from the OODT. Issues that are not underlined originated from the EOC CAG.

Issue A. Access/Recreation

- Birds in general – people have an interest in seeing a variety of birds – bird watching can provide positive economic benefits.
- Route maps for wildlife watching with places to stop for rests and meals.
- Pull outs along roads in Wildlife areas.
- Develop Informational fliers and have available at local businesses, agency offices or reader boards.
- Interpretive trails on Wildlife Areas.
- Develop a plan for trails on the wildlife areas and limiting them to the abandoned roadbeds. Reasoning would include managing public impact, noxious weeds, and erosion, which all can cause damage if poorly designed or user built trails start being allowed. The two old roadbeds are more than adequate trail access and are (or could easily be made) handicapped accessible. These old roadbeds will not create erosion, but would facilitate noxious weed management as part of the management plan. The County envisions a time when they would talk a trail from Fish Lake through Scotch Creek to the Conconully highway. It is an excellent chance to do educational kiosks on weed management, public impact etc.
- Planting more dumb pheasants as the natives are too hard to collect.
- Trails? Do they think we are state parks?
- ATV use policy needs to be consistent agency wide.
- USFS trying to close all areas to ATV use unless designated open – WDFW should do the same.
- Trails: balance recreation opportunities with wildlife concerns (winter range, raptor nest, etc.). Active involvement in placement and management by WDFW staff.
- Define recreational uses and timing.

Issue B. Wildlife Area Management

- Include language for long range plans, not only specific projects, i.e., whenever culverts wash out, not specific locations.
- Aspen stands need regeneration/restoration by logging, fire and other disturbances.
- Timber management – fuels management and prescribed (Rx) burning Income can help program.
- Grazing – restore economically and environmentally sustainable grazing using grazing plans, fencing, water, supplements, etc.
- Concern for keeping disturbance out of parcels permanently, i.e., fencing out riparian area and not grazing or burning it.
- Grazing management techniques, i.e., fall trees over streams to make access to riparian areas difficult vs. fencing out riparian areas.
- Specify what habitat objectives are in plan.
- Water rights – keep them up-to-date so don't lose them..
- Consider all species of grouse in management plans.
- Need augmentation of indigenous S-T grouse populations with birds from other areas.
- More signs – interpretive signs, e.g., wildlife to see, explaining management activities.
- Strategies 3.3 is important to remember.
- Can justify grazing through good Coordinated Resource Management (CRM) – apply and influence good stewardship on other lands, e.g., federal and private lands.
- Include in the Wildlife Area goals a broadened approach to preserve, protect and manage for fish and wildlife species diversity (including habitat diversity) not just game species.
- Protect and preserve sensitive wildlife sites such as Sharp-tailed and Sage grouse lek sites, all snake dens (during spring emergence), active Bald and Golden eagle nests, state and federal listed plant species, big game wintering areas, etc. from human disturbance.
- As a priority, protect and enhance any state and federal listed species and associated habitat found on the Wildlife Area.
- Where management conflicts with as listed species preserve and protect the listed species.
- Improve and manage wildlife viewing opportunities in a manner that is not detrimental to the wildlife resource.
- IAC acquired property – need to be aware that some uses may not be compatible on property purchased for critical habitat with IAC dollars. On the other hand, micromanagement by the IAC can be counterproductive.
- Need to provide access to publicly held lands, especially in Okanogan County.
- Broaden wildlife area management to include multiple species management.

Issue C. Habitat

- Plant food plots to pull deer off of private ground and feed for sharp-tailed grouse.
- Need more restoration planting of native grasses for S-T grouse.
- Noxious weeds is the concern that comes to mind right off... as if that is news to you.
- Reintroduction of fire to Driscoll Island was a good idea. I recommend that be used in other locations as well. It appears to stimulate growth for a wider variety of plants, which in turn benefits wildlife. It adds to the diversity of the ecosystem.

- Are the "goose tubs" being used by wildlife? If so they should be maintained or enhanced. If not they should be picked up and discarded.
- I'm also in favor of planting blackberry as I've seen them utilized extensively by wildlife, especially in the winter. However such planting would be conditional upon the reintroduction of fire to control the blackberry plants. My dog prefers thornless blackberry please.
- Manage for native habitats and the processes that sustain them.

Issue D. Weeds

- Weeds – there have been successes, but there are other weeds present and a sustained effort at eradication and control needs to be maintained.
- Keep weed management in plan when planning management activities that may create weed habitat, e.g., logging.

Issue E. Livestock Use

- WDFW grazing leases create co-dependence for lessee and limit management flexibility.
- Assess the need for livestock fencing and remove all un-needed fences particularly where they are a hazard and/or barrier for humans and wildlife.

Issue F. Roads

- Culverts – Plan needs to address road systems. Public roads vs. management roads. Weed management along roads. Maintenance of roads.

Issue G. Enforcement

- Complete review of WDFW codes for lands.
- Law enforcement action can be taken regarding trespass livestock..
- Need to get regulations on the books to standardize camping limits to be the same as other public agencies.

Issue H. Public Information, Education and Involvement

- Wildlife Areas can be an educational opportunity to all levels of education.
- Informational signs and brochures for each wildlife area stating reason for purchase, funding source, funding resources, management funding, in lue of taxes, etc.
- Need a better photograph/picture on the "No ATV Allowed" signs.
- Law enforcement needs specific regulations to enforce social behavior on WDFW property – camping length of stay, removal of property, noise etc.
- Need informational boards at each end of wildlife areas stating what is allowed and not allowed to get away from signing each individual site. Marc Hallet has signs "Vehicular Travel Limited to County Roads".
- All wildlife areas should have maps like the Sinlahekin map.

Issue I. Monitor, Survey and Inventory

- Provide bird, mammal, butterfly, reptile and amphibian lists.

Issue J. Other

- DFW lands important for local economies. Concerned that DFW is using CAGS – credibility issue.
- CAG needs to be familiar with lands we are talking about.
- Citizen supported group is important.
- Water developments – regulations and policies regarding springs and intermittent streams.
- Employees on Eastern Okanogan County Wildlife Areas are appreciated.

APPENDIX 2. Chiliwist Wildlife Area Weed Management Plan

Weed Control Goals on WDFW Lands

The goal of weed control on Department lands is to maintain and improve habitat for wildlife, meet legal obligations, provide good stewardship and protect adjacent private lands.

Weed control activities and restoration projects that protect and enhance fish and wildlife populations and their habitats on Department lands are a high priority. When managing for specific wildlife species on our lands weed densities that trigger control are sometimes different than on lands managed for other purposes (e.g. agricultural, etc.). For example, if a weed, with low invasiveness potential, is present at low densities and does not diminish the overall habitat value, nor pose an immediate threat to adjacent lands, control may not be warranted. WDFW focuses land management activities on desired plant species and communities, rather than on simply eliminating weeds.

Control for certain, listed species is mandated by state law (RCW 17.10 and 17.26) and enforced by the County Noxious Weed Boards. WDFW will strive to meet its legal obligation to control noxious weeds listed according to state law (Class A, B, B-Designate, C and Monitor, and county listed weeds, e.g., Class A, B-designate, B&C reduction, B&C suppression).

Importantly, WDFW will continue to be a good neighbor and partner regarding weed control issues on adjacent lands. Weeds do not respect property boundaries. The agency believes the best way to gain long-term control is to work cooperatively on a regional scale. As funding and mutual management objectives allow, WDFW will find solutions to collective weed control problems.

Weed Management Approach

State law (RCW 17.15) requires that WDFW use integrated pest management (IPM), defined as a coordinated decision-making and action process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet agency programmatic pest management objectives, to accomplish weed control. The elements of IPM include:

Prevention- Prevention programs are implemented to keep the management area free of species that are not yet established but which are known to be pests elsewhere in the area.

Preventing weed establishment and aggravation of existing weed problems is the most cost effective part of a weed management program and therefore a priority. This includes:

- Minimizing soil disturbance.
- Restoring disturbed sites by planting desirable vegetation.
- Minimize risk of new weed infestations by encouraging/requiring “weed free” equipment, vehicles, people and domestic animals.
- Managing livestock use on the area.
- Managing public use.
- Coordinating weed prevention and control efforts with federal, state, county, local and private entities to improve efficacy and minimize costs.
- Establishing and requiring use of vehicle and equipment wash stations.

Monitoring- Monitoring is necessary to locate new infestations, determine effectiveness of control efforts, implement prevention and to document the weed species, the distribution and the relative density on the wildlife area. Monitoring will include systematic gridding of the wildlife area, mapping weed infestation and documenting treatment effectiveness.

Prioritizing- Prioritizing weed control is based on many factors such as monitoring data, the invasiveness of the species, management objectives for the infested area, the value of invaded habitat, the feasibility of control, the legal status of the weed, past control efforts, and available budget. Several organizations have developed protocol for weed assessment and control prioritization including Nature Serve and The Nature Conservancy.

Treatment- Treatment of a weeds using biological, cultural, mechanical, and chemical control serves to eradicate pioneering infestations, reduce established weed populations below densities that impact management objectives for the site, or otherwise diminish their impacts. The method used for control considers human health, ecological impact, feasibility, and cost-effectiveness. Singularly or in combination, treatment methods will be used to obtain maximum effect for control of the target weeds, while minimizing detrimental impacts to other vegetation if possible and maximizing weed control resources.

Adaptive Management- Adaptive management evaluates the effects and efficacy of weed treatments and makes adjustments to improve the desired outcome for the management area. Adaptive management will be the underlying principle for the CWA weed management program.

The premise behind a weed management plan is that a structured, logical approach to weed management, based on the best available information, is cheaper and more effective than an ad-hoc approach where one only deals with weed problems as they arise.

Weed Species of Concern on the Chiliwist Wildlife Area:

A vascular plant survey has not been completed for the Chiliwist Wildlife Area. Therefore all exotic, species let alone, weed species that may be present have not been identified or detected. However, there are known to be at least 10 species of classified weed species by Washington State and/or Okanogan County Weed Board. These 10 species include 3 State Class B weeds, 5 State Class C weeds and 1 State Monitor specie. Additional exotic species exist on the CWA that are not Classified as weed species by the State or County, however, based on observations of the current CWA manager these species warrant eradication and/or control due to their demonstrated ability to spread.

State Class B Weeds present on the CWA include: Dalmatian toadflax (*Linaria dalmatica ssp. dalmatica*), kochia (*Kochia scoparia*), Russian knapweed (*Acroptilon repens*).

State Class B – Designate (Bd) Weeds present on the CWA include: Dalmatian toadflax (*Linaria dalmatica ssp. dalmatica*) and Scotch thistle (*Onopordum acanthium*).

State Class C Weeds present on the CWA include: Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), baby's breath (*Gypsophila paniculata*), puncturevine (*Tribulus terrestris*), and reed canarygrass (*Phalaris arundinacea*).

State Monitor List Weeds present on the CWA include: common mullein (*Verbascum thapsus*).

County Class B – Designate (Bd)Weeds present on the CWA include: Dalmatian toadflax (*Linaria dalmatICA ssp. dalmatICA*) and Scotch thistle (*Onopordum acanthium*).

County Class B & C - Reduction (B&Cr)Weeds present on the CWA include: diffuse knapweed (*Centaurea diffusa*), Russian knapweed (*Acroptilon repens*).

County Class B & C – Suppression (B&Cs) Weeds present on the CWA include: diffuse knapweed (*Centaurea diffusa*), Canada thistle (*Cirsium arvense*), baby’s breath (*Gypsophila paniculata*), kochia (*Kochia scoparia*), Russian thistle (*Salsola kali*), and common mullein (*Verbascum thapsus*).

Table 1. Chiliwist Wildlife Area State Class B & C & Monitor weeds including Okanogan County class B & C weeds with abundance and approximate number of acres treated.

<u>Weed Species Common Name</u>	<u>Weed Species Latin Name</u>	<u>2006 State Weed Class</u>	<u>2006 County Weed Class</u>	<u>Abundance As of 2005</u>	<u>2005 Treated Acres</u>
Dalmatian Toadflax	<i>Linaria dalmatICA ssp dalmatICA</i>	Bd	Bd		
Diffuse knapweed	<i>Centaurea diffusa</i>	B	B&Cr/B&Cs		
Kochia	<i>Kochia scoparia</i>	B	B&Cs		
Puncturevine	<i>Tribulus terrestris</i>	B	B&Cs		
Russian knapweed	<i>Acroptilon repens</i>	B	B&Cr		
Scotch thistle	<i>Onopordum acanthium</i>	Bd	Bd		
Baby’s breath	<i>Gypsophila paniculata</i>	C	B&Cs		
Bull thistle	<i>Cirsium vulgare</i>	C			
Canada thistle	<i>Cirsium arvense</i>	C	B&Cs		
Reed canarygrass	<i>Phalaris arundinacea</i>	C			
Common mullein	<i>Verbascum thapsus</i>	M	B&Cs		
Russian thistle	<i>Salsola kali</i>		B&Cs		

B-Designate are state-listed and mandatory for control to prevent seed production/spread.

B&Cr – Reduction Weeds are too widespread to be immediately controlled or eradicated countywide. Landowners are encouraged to concentrate initial reduction efforts in high priority areas such as roadways, driveways and property boundaries.

B&Cs – Suppression Weeds are so widely disseminated that prevention of seed production within a single season is not practical. Landowners are encouraged to control them.

Management for individual weed species can be found in the following “Weed Species Control Plan” (WSCP) sections. The following description and management information was taken from the Washington State Weed Board web site (http://www.nwcb.wa.gov/weed_list/weed_listhome.html) and the TNC Invasive Species Initiative web site (<http://tncweeds.ucdavis.edu>)

DALMATION TOADFLAX CONTROL PLAN

Scientific name: *Linaria dalmatica* ssp. *dalmatica*
Updated: 2005

Common name: Dalmatian toadflax

DESCRIPTION: The genus name *Linaria* is derived from the Latin word *linon* or *linum* which means flax. The specific name *genistifolia* refers to the leaves which resemble those in the genus *Genista* in the Fabaceae (legume family), and the specific name *dalmatica* refers to Dalmatia in eastern Europe where the plant is a native. *Linaria genistifolia* ssp. *dalmatica* is most common in the western United States and has a tolerance to low temperatures and coarse soils. The worst-infested states are California, Idaho, Montana, Oregon, Washington, and Wyoming. Dalmatian toadflax is listed as a noxious weed in Colorado, Arizona, Washington and New Mexico.

Dalmatian toadflax is an erect, short-lived, perennial herb, 0.8 to 1.5 m tall. Dalmatian toadflax is a perennial species that spreads by horizontal or creeping rootstocks and by seed. Leaves are broad, 2-5 cm long, ovate to ovate-lanceolate, 1-2.5 cm long and are alternate, generally clasping but crowded. Flowers are born in loose, elongate, terminal racemes. The pedicels are 2-4 mm long when the flowers are mature and releasing pollen. The calyx is 5-7.5 mm long, the segments subequal, broadly lanceolate to ovate, sharply acute, and rigid. The corolla is strongly two-lipped and 14-24 mm long, excluding the 9-17 mm spur. The upper lip is 10-15 mm long. The lower lip is 5-11 mm long with a well-developed palate closing off the throat. The palate is densely white to orange bearded. Flowers are bright yellow. *Linaria genistifolia* ssp. *dalmatica* typically flowers from May to August. It produces egg-shaped to nearly round capsulate fruits 4-10 mm long by 4-8 mm wide. Seeds are sharply angular, slightly winged, and 1-2 mm long. A mature plant can produce up to 500,000 seeds annually, and they can remain dormant for up to ten years. Dalmatian toadflax produces seed from July to October. Dalmatian toadflax rapidly colonizes open sites. It is most commonly found along roadsides, fences, range lands, croplands, clear cuts, and pastures. Disturbed or cultivated ground is a prime candidate for colonization. Toadflax can significantly reduce crop yields and stress native communities. Dalmatian toadflax is a persistent, aggressive invader capable of forming colonies through adventitious buds from creeping root systems. These colonies can push out native grasses and other perennials, thereby altering the species composition of natural communities. In North America toadflax is considered a strong competitor. It is quick to colonize open sites, and are capable of adapting growth to a wide range of environmental conditions (4)¹. It is listed as weeds in North America, and is on noxious weed lists of several states and Canadian provinces.

Dalmatian toadflax is a native of the Mediterranean region from the coast of Croatia northeastward to Transylvania and Moldavia in northern Romania, southward and eastward around the Black Sea in the countries of Bulgaria, Albania, Greece, Crete, Turkey, Syria, Iran, and Iraq (Alex 1962). It generally grows in open, sunny places, from sea level up to 2,800 meters (roughly 9,200 feet). It was first reported in North America in 1894 by T. D. Hatfield. He was a gardener in Massachusetts who was growing it as a perennial herbaceous ornamental (Alex 1962). In North America, it primarily occurs on sandy or gravelly soil on roadsides, railroads, pastures, cultivated fields, range lands, and clear cuts (Saner *et al.* 1995). It can adapt its growth to fit a range of habitats, and have

a tolerance for low temperatures and coarse textured soils. It has a northern limit of 55° to 65° latitude.

Dalmatian toadflax is most common in the western United States. In northeastern Washington, it is spread throughout open, low-elevation, coniferous forests and adjacent shrub-steppe. In Colorado, it is commonly found between 1,524 to 1,981 meters (5,000 to 6,500 feet) in oak, aspen, sagebrush, mountain brush, and riparian communities. Once established, high seed production and the ability for vegetative reproduction allow for rapid spread and high persistence (Saner *et al.* 1995). It relies upon insects for pollination. The two most important pollinators are bumblebees and halictid bees (Zimmerman 1996). Spring emergence occurs about mid-April and depends primarily on temperature. The stems of seedling plants seldom exceed 40 cm. First leaves are 1 cm long. Prostrate stems emerge in September and produce leaves that are ovate, 3.8 cm by 2.2 cm in size. Prostrate stems are tolerant to freezing and are associated with floral stem production the following year (Robocker 1974).

The strong upright floral stems that characterize mature toadflax plants develop after a winter's dormancy, and emerge about the same time as new seedlings in mid-April. The ultimate survival of the stand, and probability of re-establishment, depends heavily on the number of floral stems and their seed production (Robocker 1974). Flowering occurs from May-August and seeds mature from July-September. It can reproduce vegetatively. Stems develop from adventitious buds on primary and lateral roots. Vegetative reproduction from root buds can occur as early as 2-3 weeks after germination, and is possible from root fragments as short as 1 cm in length (Zimmerman 1996). These buds can grow their own root and shoot systems, and become independent plants the next year. Vegetative propagation can allow a stand of toadflax to spread rapidly. In addition to promoting growth, the large, deep, root system exploits water efficiently. The tap root may penetrate 1 meter into the soil and lateral roots may be several meters long. The deep root system prevents grazing and shallow cultivation methods from dislodging or destroying plants (Saner *et al.* 1995).

MANAGEMENT INFORMATION:

The key to managing Dalmatian toadflax is to: 1) eliminate or greatly reduce seed production from established individuals (by cutting or pulling seed stalks prior to seed set, or by using insects to destroy flowers, seeds, or damage plants sufficiently so that no or few seeds are produced); and 2) destroy toadflax seedlings that arise from the soil seed bank before these plants become established.

Herbicides

Permanent, long-term control cannot be achieved with herbicide treatment alone (Saner *et al.* 1995). Herbicides should be applied during flowering when carbohydrate reserves in the root of the plants are at their lowest. At the latest, herbicide treatment should be applied before seed dispersal, if it is to be effective. The herbicides glyphosate, dicamba and picloram are considered effective for controlling toadflax. A six-year study found that phenoxypropionic herbicides such as diclorprop were more effective at controlling toadflax than phenoxyacetic herbicides such as 2,4-D (Robocker 1968). 2,4-D, MCPA, MCPB, and mecoprop do not control toadflax. Telar or Escort also provides good control of DT. The best time to treat (with any herbicide) would be prior to seed dispersal as seedlings and first year growth or into fall as the plants are going dormant for the year (Okanogan County Noxious Weed Office 2006).

Herbicide can be an effective tool for control and applicators should refer to the PNW Weed Management Handbook, or other reputable resources, for product recommendations and timing.

Biological agents

A bioagent, *Mecinus janthinus*, a stem-boring weevil, has been shown to be effective in controlling Dalmatian toadflax. *Calophasia lunula*, a defoliating moth, is well established in Washington and reportedly provides good control (William et al. 1996) and *M. janthinus*, a recently introduced stem-boring weevil, shows promise. *M. janthinus* is present on the CWA. *M. janthinus* releases have been made on Dalmatian Toadflax infestations in the area north and east of the north end of Taylor Canyon and on the ridge, south end of Chiliwist Butte ridge, north and west of Taylor Canyon. *Brachypterolus pulicarius*, although usually associated with yellow toadflax, can survive and may reduce seed production of Dalmatian toadflax.

Cultivation

Intensive clean cultivation can effectively control Dalmatian toadflax. A successful approach includes at least a two year effort, with eight to ten cultivations in the first year and four to five cultivations in the second year (Morishita 1991; Butler and Burrill 1994). Cultivation should begin in early June and be repeated so that there are never more than seven to ten days with green growth visible (Butler and Burrill 1994). Since Dalmatian toadflax seedlings do not compete well for soil moisture against established winter annuals and perennials, control efforts should include attempting to establish and manage desirable species that will compete with toadflax (Morishita 1991; Butler and Burrill 1994).

CURRENT DISTRIBUTION ON THE SITE:

There are several known sites where DT occurs ranging from small patches of several plants to areas encompassing 50+ acres. These areas are restricted to the area south of Chiliwist Butte extending to the cutbank on the north side of the Chiliwist Road just before entering the CWA.

ACRES AFFECTED BY WEED: consolidated in the Chiliwist Valley it would be ~ 100 acres.

WEED DENSITY: Low to high

GOALS

Contain, control and eliminate present infestations
Prevent new occurrences

OBJECTIVES

Continue to actively search for new infestations by gridding with WCC, volunteers and employees
GPS new infestations and add to the GIS weed layer for mapping
Revisit infestations twice per year for a minimum of 10 years until site is declared weed free, i.e., it has been at least 10 years since Dalmatian toadflax seed was produced at the site and or live Dalmatian toadflax plants have been observed at the site.
Treat infestations according to protocol, i.e., cut, bag and mature plants that have formed seed if present, spray remaining plants.
More accurately calculate and delineate, on maps, the acres affected by Dalmatian toadflax.
Release biological control agents on infestations that are wide spread and relatively inaccessible

Establish regulations and procedures for assuring off road equipment is washed clean of soil and plant material before entering the CWA.

Develop posters to place on reader boards to educate the public about Dalmatian toadflax identification and control.

Develop brochures to hand out to the public regarding Dalmatian toadflax identification and control.

Develop informational material to include on the CWA website regarding Dalmatian toadflax identification and control

ACTIONS PLANNED

In 2006 systematic gridding for Dalmatian Toadflax will begin with data gathered regarding density and presence of biological agents.

GPS and map all infestations.

Begin containment actions by chemically treating outlying infestations with all mature seed heads collected, bagged and burned.

All known Dalmatian toadflax infestations will be visited twice during the growing season with appropriate action being taken based on findings, e.g., hand pulling, cutting and bagging and/or spraying.

The biological agent, *M. janthinus*, will be released in areas where the infestation size makes it impractical to treat with herbicides.

CONTROL SUMMARY AND TREND

2000- Unknown

2001- Unknown

2002- Unknown

2003- Chiliwist became part of the Sinlahekin Complex

2004- Bioagent, *M. janthinus*, releases were made. A total of over 2000 beetles were released

2005- Scattered patches totaling approximately one acre of Dalmatian Toadflax in easily accessible areas were cut and bagged if seed have been formed and sprayed. There was evidence that *M. janthinus* was becoming established.

Trend analysis of Dalmatian Toadflax on the Chiliwist Wildlife Area indicates that it has been and is increasing in density and distribution. The first efforts to control DT on the Chiliwist occurred in 2004 with the release of the bioagent *Mecinus janthinus*. In 2005 a limited amount of spraying was done.

RUSSIAN KNAPWEED CONTROL PLAN

Scientific name: *Acroptilon repens*
Updated: 2005

Common name: Russian Knapweed

DESCRIPTION: *Acroptilon repens* is a perennial herbaceous plant of the aster (sunflower) family (Asteraceae). It is characterized by its extensive root system, low seed production, and persistence. Russian knapweed spreads through creeping horizontal roots and seed.

The stems of *Acroptilon repens* are erect, thin, stiff, corymbosely branched, 45-90 cm (18 to 36 in) tall, and when young are covered with soft, short, gray hair. Lower stem leaves are narrowly oblong to linear-lanceolate, and deeply lobed. The upper leaves are oblong, toothed, and become progressively smaller. Rosette leaves are oblanceolate, irregularly pinnately lobed or almost entire, 5-10 cm long, and 1-2.5 cm broad. The flower heads of Russian knapweed are urn-shaped, solitary, 15-17 mm high, and composed of disk flowers only (Zimmerman 1996). Involucres are 12-14 mm high, 5-7 mm broad, ovoid, entire, and greenish at the base with a papery, finely hairy tip. Flowers are numerous, all tubular. The petals are 12.5-13 mm, pink or purple, turning straw colored at maturity. Anthers are 4.5-5.5 mm long, tails absent. The stigma is 3.5 mm long. The pollen diameter is 48-51 μm , spherical, 3-pored, thin-walled, about 2 μm thick and finely granular.

Achenes (seeds) are 2-3 mm long, oval and compressed, 2 mm broad and 1 mm thick (Watson 1980). Achenes are grayish or ivory, with long white bristles (pappus); 6-11 mm long at the tip when young, but these fall from the seed as it matures (Allred and Lee 1996). Achenes are slightly ridged longitudinally with a sub-basal scar immediately lateral to the tip of the base of the seed (Watson 1980).

Acroptilon repens has a well-developed root system, which functions as the major means of propagation and spreading. The roots of *Acroptilon repens* can extend more than 7 meters below the soil surface with 2-2.5 meters of growth occurring the first year and 5-7 meters in the second year (Zimmerman 1996). The roots are easily recognizable by their black or dark brown color and presence of small alternately arranged, scale leaves which support buds in their axils (Zimmerman 1996). These buds develop into adventitious shoots, enabling the plant to spread rapidly, and form dense colonies.

Acroptilon repens is native to Mongolia, western Turkestan, Iran, Turkish Armenia, and Asia Minor. It is now found on every continent, except Antarctica. Russian knapweed is listed as a serious noxious weed of dryland crops in the southern former Soviet Republics (Watson 1980).

Russian knapweed was first introduced into Canada around 1900 as a contaminant of Turkestan alfalfa seed (Watson and Harris 1984). It did not become a serious weed in Canada until 1928, and its spread is linked to the distribution of knapweed-infested hay (Maddox *et al.* 1985). It is now widespread in the southern portions of the four western provinces and southern Ontario.

The introduction of Russian knapweed into the United States is also thought to be the result of impure Turkestan alfalfa seed, and possibly sugarbeet seed (Maddox *et al.* 1985). It was first introduced in California between 1910-1914. Since then, it has become widespread in the United States and is currently found in at least 412 counties in 21 states (Maddox *et al.* 1985). It is most common in the semi-arid portions of the western U.S. and adjacent Canada, but infestations have also been reported in South Dakota, Minnesota, and Virginia (Maddox *et al.* 1985). The worst infested states are California, Idaho, Montana, Oregon, and Washington.

MANAGEMENT INFORMATION:

A. repens is a strong competitor and can form dense colonies in disturbed areas. Dense patches of Russian knapweed may have up to 100-300 shoots/m² (Watson 1980). The plant extends radially in all directions and can cover an area of 12 m² within two years (Watson 1980).

Russian knapweed invades many disturbed western grassland and shrubland communities, as well as riparian forests. Once established, Russian knapweed can dominate an area and significantly reduce desirable vegetation (e.g. perennial grasses). *A. repens* contains an allelopathic polyacetylene compound which inhibits the growth of competing plants (Watson 1980). Tests conducted with alfalfa (*Medicago sativa*), barnyard grass (*Echinochloa crusgalli*), and red millet (*Panicum miliaceum*) indicated Russian knapweed effectively inhibits root length elongation of grasses as well as broad-leaved plants by 30% when the polyacetylene compound is at a soil concentration of 4 parts per million (Stevens 1986). This allelopathic effect, combined with dense vegetative reproduction, allows for Russian knapweed to quickly colonize and dominate new sites. Infestations of Russian knapweed can survive indefinitely through their root system (Watson 1980). A stand in Saskatchewan has survived for almost 100 years (Allred and Lee 1996), and Watson (1980) reported that stands of Russian knapweed have been reported to survive for more than 75 years.

There is no single “silver bullet” control method for Russian knapweed. Lasting control requires an integration of mechanical control, chemical control, biological control, proper land management, and vegetative suppression. An effective management program must first control existing infestations, and then promote repopulation by native plants. Continued monitoring and follow-up treatments should be conducted annually to eliminate any re-infestation of knapweed.

The keys to controlling Russian knapweed are to 1) stress the weed and cause it to expend nutrient reserves in its root system, 2) eliminate new seed production, and 3) control its vegetative spread.

Cultivation

If sufficient human resources are available, mechanical control is good place to start. Pulling Russian knapweed plants two to three times annually contained, but did not eliminate, an infestation in Washington (Youtie 1998). Cutting, mowing or disking several times annually will also control the existing topgrowth. Often, the plants that do re-emerge are smaller in size and lower in vigor. This is a good indication that the plants are under stress and that their nutrient reserves are declining.

Herbicides

If an infestation is too large to be treated mechanically, herbicides can be applied for effective control. TordonTM (picloram), TranslineTM (clopyralid), CurtailTM (clopyralid + 2,4-D), and Roundup® (glyphosate) are herbicides that have been shown to be effective (Beck 1996, Duncan 1994). Timing the application of herbicides can be critical and is dependent upon the particular herbicide and surrounding environmental conditions.

Biological Agents

Biological control agents can place additional stress on Russian knapweed plants. Two biological agents for Russian knapweed have been released in the United States; *Subanguina picridis*, a gall forming nematode, and *Aceria acroptiloni*, a seed gall mite. However, neither species shows much promise of reducing populations of Russian knapweed. Once the initial infestation has been controlled, native species should be replanted to act as a vegetative suppressant. Suppressor species must remove a significant amount of moisture from the soil during the seedling stage, when

knapweeds are most vulnerable. Early emergence, rapid dense growth, and maintenance of high vigor until frost are attributes required by plant species to suppress Russian knapweed.

CURRENT DISTRIBUTION ON THE SITE:

Found in varying degrees of density throughout the CWA.

ACRES AFFECTED BY WEED: To be determined

WEED DENSITY: Low to high

GOALS

Contain, control and eliminate present infestations

Prevent new occurrences

OBJECTIVES

Continue to actively search for new infestations by gridding with WCC, volunteers and employees
GPS new infestations and add to the GIS weed layer for mapping

Revisit infestations twice per year for a minimum of 10 years until site is declared weed free, i.e., it has been at least 10 years since Russian knapweed seed was produced at the site and or live Russian knapweed plants have been observed at the site.

Treat infestations according to protocol, i.e., spray plants.

More accurately calculate and delineate, on maps, the acres affected by Russian knapweed.

Establish regulations and procedures for assuring off road equipment is washed clean of soil and plant material before entering the CWA.

Develop posters to place on reader boards to educate the public about Russian knapweed identification and control.

Develop brochures to hand out to the public regarding Russian knapweed identification and control.

Develop informational material to include on the CWA website regarding Russian knapweed identification and control.

ACTIONS PLANNED

In 2006 known Russian knapweed infestations will be sprayed in the spring and again in the fall after the first frost, per finding the most effective means of control.

Continue gridding for Russian knapweed infestations.

Continue systematic gridding for Russian knapweed on the CWA.

GPS and map newly located infestations.

Russian knapweed is relatively easy to control using herbicides but the timing is critical. Spraying in early spring has the second greatest degree of effectiveness. Spraying in the fall after the first frost has the highest degree of effectiveness. In both cases follow-up is crucial to successful eradication of Russian knapweed infestations.

CONTROL SUMMARY AND TREND

2000- Unknown

2001- Unknown

2002- Unknown

2003- 0

2004- 0

2005-

DIFFUSE KNAPWEED CONTROL PLAN

Scientific name: *Centaurea diffusa*

Common name: Diffuse knapweed

Updated: 2005

DESCRIPTION: The genus name *Centaurea* commemorates the centaur, the mythical creature of Hippocrates, half horse and half man (Allred and Lee 1996). The specific epithet *diffusa* refers to the open branching pattern of mature plants (Allred and Lee 1996). *Centaurea diffusa* is a highly competitive herb of the aster (sunflower) family (*Asteraceae*). The plants first form low rosettes and may remain in this form for one to several years. After they reach a threshold size they will bolt, flower, set seed, and then die. Thus they may behave as annuals, biennials or short-lived perennials, bolting in their first, second, third, or later summer, respectively. Plants of this type are often called semelparous perennials or short-lived monocarpic perennials.

Stems are upright, 10-60 cm (4-24 in) tall from a deep taproot, highly branched, angled with short stiff hairs on the angles (Allred and Lee 1996). There are two types of leaves. The long, deciduous basal leaves, which form the rosette, are stalked and divided into narrow, hairy segments, 3-8 cm (1-3 in) long, and 1-3 cm (0.4-1 in) wide (Zimmerman 1997, Allred and Lee 1996). The stem, or cauline, leaves, which are alternately arranged on the stems, are smaller, less divided, stalkless, and become bract-like near the flower clusters (Zimmerman 1997, Allred and Lee 1996). Flower heads are broadly urn-shaped, 1.5-2.0 cm (0.6-0.8 in) tall, solitary or in clusters of 2-3 at the ends of the branches (Allred and Lee 1996, Watson and Renney 1974). The heads contain two types of flowers, ray flowers around the edges surrounding tubular disk flowers. The petals are white, rose-purple, to lavender (Allred and Lee 1996, Watson and Renney 1974). Mature seeds are formed by mid-August (Watson and Renney 1974). A single diffuse knapweed plant can produce up to 18,000 seeds (Harris and Cranston 1979) and a stand of diffuse knapweed can produce up to 40,000 seeds per square meter (Watson and Renney 1974). In one study, open-pollinated, purple-flowered plants set significantly more seed than white-flowered plants (Harrod and Taylor 1995). Schirman (1981) determined that diffuse knapweed seed production was 1,000 fold that necessary to maintain observed levels of infestation. Laboratory germination tests showed up to and sometimes greater than 95% seed viability (Zimmerman 1997, Schirman 1981). These two observations indicate that an extreme reduction of seed production would be needed to control diffuse knapweed.

Centaurea diffusa is a native of Asia Minor, the Balkans, and the southern portion of the former Soviet Union, especially the Ukraine and Crimea (Zimmerman 1997). Diffuse knapweed is also common in Romania, the former Yugoslavia, northern Italy, Turkey, Greece, Bulgaria, Syria, and the eastern shore of the Mediterranean (Zimmerman 1997). Diffuse knapweed is found on plains, rangelands, and forested benchlands, particularly on rugged terrain that is not well suited for cultivation. In the United States, *Centaurea diffusa* is generally found on light, dry, porous soils (6). Diffuse knapweed has a northern limit of 53°N Latitude (Watson and Renney 1974), and has been observed at elevations up to 7,000 feet (Zimmerman 1997).

Diffuse knapweed can thrive in semi-arid and arid conditions, which allows it to be a serious problem in the western United States and the arid southwestern interior of Canada, especially British Columbia (Zimmerman 1997). The density of a diffuse knapweed stand is often correlated with the level of soil disturbance. Additionally, diffuse knapweed prefers open habitats to shaded areas (Watson and Renney 1974). *Centaurea diffusa* is not common on cultivated lands or irrigated pasture because it cannot tolerate cultivation or excessive moisture (Watson and Renney 1974).

Diffuse knapweed was first collected in the U.S. in a Washington state alfalfa field in 1907 and is thought to have been introduced through impure Turkestan alfalfa or possibly hybrid alfalfa seed from Germany (Zimmerman 1997). Diffuse knapweed is now widespread throughout nineteen states, including all of the contiguous states west of the Rocky Mountains (Zimmerman 1997). Idaho, Montana, Oregon, and Washington report the worst infestations (Zimmerman 1997). In western Canada, levels of diffuse knapweed are increasing and roughly 7.5 million hectares appear to be susceptible to knapweed invasion (Harris and Cranston 1979).

MANAGEMENT INFORMATION:

An effective management program needs to first control existing infestations, and then develop a land management plan to deter re-infestation. Since diffuse knapweed reproduces entirely by seed, the key to controlling existing infestations is to eliminate new seed production and deplete the existing seed bank. Since diffuse knapweed tends to grow in dense patches, it is relatively easy to locate and conduct spot treatments. If adequate labor is available, and the infested area is relatively small, hand pulling before seed set may be an effective method of control. Tordon (picloram) is the most widely recommended herbicide for treatment of diffuse knapweed (Harris and Cranston 1979, Watson and Renney 1974). 2,4-D, dicamba, and glyphosate are also considered effective (Muller-Scharer and Shroeder 1993, Watson and Renney 1974). Effective, long-term control will be extremely difficult without development of effective biocontrols for diffuse knapweed (Harris and Cranston 1979).

Once the existing infestation has been controlled, steps should be taken to deter any new infestations of diffuse knapweed. Walk through hand pulling or spot herbicide treatment programs should be conducted three times annually for several years to eliminate any seedlings that germinate from seeds that break out of dormancy. In the fall, the number of rosettes can indicate the quantity of diffuse knapweed plants that will bolt the following spring and help determine what type of management effort will be required. A successful management program should set a goal of < 5% knapweed cover. This is the assumed density of the weed in its native range (Muller-Scharer and Shroeder 1993). Lasting control will require a combination of proper land management, biological control, physical control, chemical control, and suppression by desirable vegetation. This “cumulative stress” method will keep the plant constantly under stress, reducing its ability to flourish and spread. Also, a cumulative stress approach provides a level of redundancy in case one type of control treatment is missed or ineffective. Additionally, since diffuse knapweed has the ability to travel and spread seeds over relatively long distances as a tumble weed, an effort should be made to analyze prevailing winds and infestations on neighboring lands to identify any populations that may pose a threat. Finally, public awareness should be included in any management program. Diffuse knapweed does not respect boundaries and maintaining a high level of public awareness is important for successful control (Muller-Scharer and Shroeder 1993).

Herbicides

Several herbicides are relatively effective at controlling diffuse knapweed. Tordon (picloram) is the most widely recommended (Harris and Cranston 1979, Watson and Renney 1974). Other effective herbicides include dicamba, 2,4-D, and glyphosate (Beck 1997, Youtie 1997, Watson and Renney 1974). To save money and reduce grass injury resulting from higher use rates of a single herbicide, several of these herbicides can be combined (Beck 1997). Tank-mixes of picloram and dicamba (0.25 to 0.5 lb./acre + 0.125 to 0.25 lb./acre), picloram plus 2,4-D (0.188 lb./acre + 1.0 lb./acre), and dicamba plus 2,4-D (0.5 lb./acre + 1.0 lb./acre) all control diffuse knapweed (Beck 1997). A backpack sprayer or a wick is highly recommended in small areas to minimize damage to

non-target plants. Herbicides should be applied before the mature plants set seed to maximize effectiveness.

Biological Agents

Currently, there is no single biological control agent that effectively controls diffuse knapweed populations. The biological control of weeds is based on the premise that insect feeding kills and/or stresses plants, or reduces seed production, and eventually causes a reduction in weed density (Berube and Myers 1982). Biological controls, which lower the competitive ability of weeds, could also enhance the effectiveness of other control methods. Biological agents rarely completely eliminate the target pest from an area. Complete elimination of the pest would be self-defeating to long-term control as it would lead to the starvation of the agent and leave the area wide open to re-infestation. WDFW has had some success releasing *Larinus minutus*. *Larinus minutus*, a seed-eating weevil native to Greece, and now is established in Montana, Oregon, and Washington. Adult weevils are 4 to 5 mm (0.16 to 0.2 in) long, black, and have a large snout. They deposit eggs in the unopened seed-heads between the pappus hairs from June to September. The larvae feed on pappus hairs and move downward to the seeds. Each larva constructs a cocoon and pupates within it. Adults are active in the field from May until August and will feed on leaves and flowers prior to laying eggs. Adults generally live up to fourteen weeks. *L. minutus* has been released on the CWA, but it is too early to determine effectiveness. Other diffuse knapweed biological agents present on the CWA include: bronze knapweed root-borer (*sphenoptera jugoslovica*) and banded gall fly (*Urophora affinis*) and UV knapweed seed head fly (*U. quadrifasciata*).

CURRENT DISTRIBUTION ON THE SITE

Found in varying degrees of density throughout the CWA

ACRES AFFECTED BY WEED: To be determined

WEED DENSITY: Low to high

GOALS

Contain, control, suppress and/or reduce present infestations
Prevent new occurrences

OBJECTIVES

Continue to actively search for new infestations by gridding with WCC, volunteers and employees
GPS new infestations and add to the GIS weed layer for mapping.

Revisit infestations twice per year for a minimum of 10 years until site is declared weed free, i.e., it has been at least 10 years since diffuse knapweed seed was produced at the site and or live Diffuse knapweed plants have been observed at the site.

Treat infestations according to protocol, i.e., release/redistribute biological agents, or spray.

Continue to treat roadsides, field perimeters, campgrounds, parking and other high use areas with herbicides

More accurately calculate and delineate, on maps, the acres affected by diffuse knapweed.

Continue to monitor biological control agents' presence and effectiveness

Collect/purchase and redistribute/release biological control agents on infestations that are wide spread and relatively inaccessible

Establish regulations and procedures for assuring off road equipment is washed clean of soil and plant material before entering the CWA.

Develop posters to place on reader boards to educate the public about diffuse knapweed identification and control.

Develop brochures to hand out to the public regarding diffuse knapweed identification and control.

Develop informational material to include on the CWA website regarding Diffuse knapweed identification and control

ACTIONS PLANNED

In 2006 all known diffuse knapweed infestations will be visited twice during the growing season with appropriate action being taken based on findings, e.g., release of bioagents, collection of bioagents or spraying.

The biological agent, *L. minutus*, will be released in areas where the infestation size or location makes it impractical to treat with herbicides.

Note and map infestations observed during systematic gridding for weeds on the CWA.

GPS and map newly located infestations.

Continue to monitor diffuse knapweed infestations and bioagents present and their effects

Purchase and/or collect bioagents and release/redistribution.

Develop and post information at entrances, parking, camping, hiking, hunting and fishing areas advising visitors of diffuse knapweed and control.

CONTROL SUMMARY AND TREND

1999- Unknown

2000- Unknown

2001- Unknown

2002- Unknown

2003-

2004- *L. minutus* were released

2005- *L. minutus* were released

KOCHIA CONTROL PLAN

Scientific name: *Kochia scoparia*
Updated: 2005

Common name: Kochia

DESCRIPTION: Kochia is an annual plant that reproduces from seeds. It has a deep taproot. The erect, much-branched stems are three to seven feet long, smooth below but usually hairy above. The alternate, simple leaves are pubescent to nearly glabrous, one to two inches long, lanceolate to linear with hairy margins, and without petioles. The small green flowers lack petals and are found in clusters in the axils of the upper leaves and in terminal spikes. The brown flattened seeds are about 1/16 inch long and grooved on each side. The species typically produces around 14,600 seeds per plant. Seeds are dispersed in the fall when the plant becomes a tumbleweed. The plant tumbles with the wind, dropping seeds as it is blown about. Laboratory studies report germination rates of 76 percent or better over a temperature range of 39-106 degrees F. Seeds buried in the soil have five percent viability after one year and zero percent after two years. Kochia reproduces by seed only. Like many other species of the Chenopodiaceae, it becomes a tumbleweed when mature. An abscission zone develops at the base of the stem in autumn. When winds reach velocities of 25 miles per hour, the stem breaks and the plants tumble. Kochia overwinters as seeds. The seeds germinate very early in spring because of their frost tolerance. Kochia grows very rapidly through spring and summer and sends down a very long taproot (up to 16 feet). It flowers in late summer and sets seed. Kochia is able to spread long distances very rapidly. Its ability to tolerate drought also enables it to spread quickly. It was considered a rare plant in North Dakota and Kansas in the late 1920's, but with the drought during the 1930's it became abundant. Native to southern and eastern Russia, kochia was introduced to North America from Europe. It was grown as an ornamental hedge around gardens, or used as a backdrop planting because of its dense, conical shape and attractive red color in the late fall. It has since escaped cultivation and spread westward.

MANAGEMENT INFORMATION:

Early tillage in the spring gives good control of the kochia seedlings. Mowing or slashing the plants before flowering is effective in reducing seed production. Infestations of triazine resistant kochia have been found along railroad lines in eleven states. Research has shown that triazine resistant biotypes were more susceptible to 2,4-D ester than triazine susceptible biotypes. There are also biotypes resistant to 2,4-D or Banvel (dicamba). It is suggested that rotating herbicides would reduce the possibility of an increase in the proportion of plants tolerant to 2,4-D or Banvel.

CURRENT DISTRIBUTION ON THE SITE

Found predominately in highly disturbed areas, e.g., agricultural fields/foodplots, roadsides that were treated with chemical sterilant, high use areas where vegetation has difficulty growing.

ACRES AFFECTED BY WEED: to be determined

WEED DENSITY: to be determined

GOALS

Contain, control, suppress and/or reduce present infestations
Prevent new occurrences

OBJECTIVES

Continue to actively search for new infestations by gridding with WCC, volunteers and employees GPS new infestations and add to the GIS weed layer for mapping.

Revisit infestations twice per year for a minimum of 10 years until site is declared weed free, i.e., it has been at least 10 years since diffuse kochia was produced at the site and or live kochia plants have been observed at the site.

Treat infestations according to protocol, i.e., spray.

Continue to treat roadsides, field perimeters, campgrounds, parking and other high use areas with herbicides.

More accurately calculate and delineate, on maps, the acres affected by kochia.

Establish regulations and procedures for assuring off road equipment is washed clean of soil and plant material before entering the CWA.

Develop posters to place on reader boards to educate the public about kochia identification and control.

Develop brochures to hand out to the public regarding kochia identification and control.

Develop informational material to include on the CWA website regarding kochia identification and control.

ACTIONS PLANNED

In 2006 an effort to locate, document, map and begin containment and control of kochia will begin.

Develop and post information at entrances, parking, camping, hiking, hunting and fishing areas advising visitors of kochia and control.

CONTROL SUMMARY AND TREND

Kochia has not been a priority target weed on CWA thus it was controlled inadvertently during efforts to control other weeds that it may have been growing with.

CANADA THISTLE CONTROL PLAN

Scientific name: *Cirsium arvense*

Common name: Canada thistle

Updated: 2005

DESCRIPTION: *Cirsium arvense* is an erect perennial rhizomatous thistle, usually 0.5 - 1.0 m tall, distinguished from all other thistles by 1) creeping horizontal lateral roots; 2) dense clonal growth; and 3) small dioecious (male and female flowers on separate plants) flowerheads. Four varieties are recognized: var. *vestitum* Wimm. & Grab. (leaves gray-tomentose below); var. *integrifolium* Wimm. & Grab. (leaves glabrous below, thin, flat, and entire or shallowly pinnatifid); var. *arvense* (leaves glabrous below, thin, flat, and shallowly to deeply pinnatifid); var. *horridum* Wimm. and Grab. (leaves glabrous below, thick and wavy, with many marginal spines) (Moore 1975). The most common variety of the species in North America is *horridum*. All varieties are interfertile, and one plant of var. *integrifolium* produced seedlings of all four varieties (Detmers 1927). Within each variety there are numerous genotypes, which vary in appearance and in response to management activities. Additionally, *Cirsium arvense* changes morphology in response to environmental conditions (Nadeau and Vanden Born 1989).

Phenology of *Cirsium arvense* varies with ecotype, but follows a general pattern. In Washington state, overwintering Canada thistle roots develop new underground roots and shoots in January and begin to elongate in February (Rogers 1928). Shoots emerge March - May when mean weekly temperatures reach 5° C. Rosette formation follows, with a period of active vertical growth (about 3 cm/day) in mid-to-late June. Flowering is from June to August in the U.S., and June to September in Canada, when days are 14 to 18 hours long (Hodgson 1968, Van Bruggan 1976, Moore 1975): *Cirsium arvense* is a long-day plant (Linck and Kommedal 1958, Hunter and Smith 1972). Natural areas invaded by *Cirsium arvense* include prairies and other grasslands in the midwest and Great Plains and riparian areas in the intermountain west. *Cirsium arvense* threatens natural communities by directly competing with and displacing native vegetation, decreasing species diversity, and changing the structure and composition of some habitats. Canada thistle invades natural communities primarily through vegetative expansion, and secondarily through seedling establishment. *Cirsium arvense* spreads primarily by vegetative growth of its roots. The root system can be extensive, growing horizontally as much as 6 m in one season (Rogers 1928). Most patches spread at the rate of 1-2 m/year (Amor and Harris 1975). Most *Cirsium arvense* roots can be found directly below the above-ground shoots, with little extension beyond the border of a patch (Donald 1994). Apparently, the horizontal roots give rise to shoots frequently as they expand the range of a patch. Horizontal roots grow within 15-30 cm of the soil surface, and typically grow in a straight line for 60-90 cm, then bend down and grow vertically. Another horizontal root system is usually initiated at the downward bend (Rogers 1928). Vertical roots can grow as deep as 6.8 m (Rogers 1928) but most roots are in the upper 60 cm of soil (Haderlie et al. 1987). *Cirsium arvense* roots commonly reach a depth of 1.5 m in one-year old plants, and 2 m in 2-10 year old plants (Nadeau 1988). *Cirsium arvense* spreads vegetatively through horizontal growth of the root system, which can extend 4-5 m radially in one season (Bakker 1960). Individual clones can reach 35 m in diameter (Donald 1994).

Cirsium arvense readily propagates from stem and root fragments and thus plowing or other soil disturbance can increase thistle densities (Nadeau and Vanden Born 1989). Small root fragments (2 cm) can survive and produce clones up to 2.8 m across within one year (Rogers 1928). Hayden (1934) reported plants developing from root fragments as small as 0.5 cm, and 95% establishment from 1 cm

long root fragments. Root fragments are able to produce new shoots, independent of the presence of root buds (Nadeau 1988). Rogers (1928) stated that a six week old root fragment can still regenerate a plant. Partially buried stem fragments have much higher survival than fully buried fragments, as the cut stems remain photosynthetically active (Magnusson *et al.* 1987). Regrowth from stem fragments is highest in mid-June (>70%) and lower thereafter (0-55%) (Magnusson *et al.* 1987). *Cirsium arvense* is native to southeastern Europe and the eastern Mediterranean (Moore 1975) and possibly to northern Europe, western Asia and northern Africa (Detmers 1927, Amor and Harris 1974). It now has a near global distribution between 37 and 58-59 degrees N in the northern hemisphere (Moore 1975), and at latitudes greater than 37 degrees S in the southern hemisphere exclusive of Antarctica (Amor and Harris 1974). *Cirsium arvense* occurs throughout Europe, northern Africa, western and central Asia, northern India, Japan, China, and northern North America, South Africa, New Zealand, Tasmania, and southeastern Australia (Dewey 1901, Rogers 1928, Hayden 1934, Amor and Harris 1974).

MANAGEMENT INFORMATION:

Where possible it is best to kill all *Cirsium arvense* plants within a site. Where resources are limited two strategies are recommended: 1) Target *Cirsium arvense* clones based on location, controlling plants in high quality areas first, then in low quality areas. Treat entire clones to prevent resprouting from undamaged roots: 2) Target female clones to reduce seed production and additional spread of *Cirsium arvense*. However, some apparently "male" clones are self-fertile. Control techniques for natural areas are constrained by the need to minimize damage to native species. The best option in prairies and other grasslands is to first enhance growth of native herbaceous species by spring burning, and then cut or spot treat Canada thistle with glyphosate when it is in late bud or early bloom (usually June). It is necessary to prevent shoot growth for at least two years to deplete roots and kill Canada thistle. *Cirsium arvense* management programs should be designed to kill established clones since the species spreads primarily by vegetative expansion of the root system. Prevention of seed production is a secondary consideration since spread by seeds is relatively rare. On the other hand, seedlings are the most susceptible growth stage (Bakker 1960). In areas that are susceptible to thistle invasion but which have not yet been invaded, management programs should be implemented to prevent the species from becoming established. It is important to understand the biology of *Cirsium arvense* as control is greatly influenced by clonal structure (Donald 1994), growth stage (Tworkoski 1992), season of treatment, weather conditions, ecotype (Hodgson 1964), soil type, and control method(s) used. A single control method is rarely effective and it is often necessary to use two or more methods at any given site (Lee 1952, Donald 1992, Diamond 1993). In addition, treatments or combinations that are effective at one site may be ineffective at others (Frank and Tworkoski 1994).

Canada thistle's deep, well-developed root systems make it resilient to most control methods including herbicides. However, *Cirsium arvense* undergoes several growth stages during the growing season and during certain stages root carbohydrates are depleted. Root carbohydrate depletion is related to growth stage and is greatest when flowering occurs, but replenishment is related only to environmental conditions, and generally occurs in late summer and fall. Younger growth stages (spring) are likely more susceptible to herbicide, but the root system is larger and more difficult to kill in spring before the flower stalk emerges; older growth stages (fall) are somewhat less susceptible, but the root system is depleted and smaller, and assimilates are naturally moving from the leaf tissues to the root system (Tworkoski 1992). More assimilate (and hence herbicide) moves into the roots under short days and low temperatures (fall) than long days and warm temperatures (summer; McAllister 1982).

Herbicide effect is enhanced when 1) *Cirsium arvense* roots are weakened during the growing season by herbicide treatment, crop competition, or frequent mowing or tilling; and 2) new shoots are stimulated to grow. Suitable herbicides (e.g. glyphosate) should be applied to new growth when leaves are green (September or October). Avoid applying herbicide to old leaves (thick cuticle limits absorption) or to drought-stressed leaves. Hunter (1996) found that control is improved if thistles are cut in late July and the resprouts treated with glyphosate about 4 weeks later in late August (the August rosette stage'). Second best treatment time is at flower-bud stage, when root reserves are lowest, particularly under droughty conditions (Haderlie *et al.* 1987). However, native species can be damaged by growing season herbicide application.

Mowing temporarily reduces aboveground biomass, but does not kill *Cirsium arvense* unless repeated at 7-28 day intervals for up to 4 years. This intensity of mowing is not recommended in natural areas, where it would likely damage native vegetation. Mowing just twice a year, in mid-June and September may reduce or contain Canada thistle. When mowing, cut high enough to leave > 9 leaves/stem, or >20 cm of bare stem tissue, as mature Canada thistle leaves and stems independently inhibit development of shoots from rootbuds. When the primary stem is removed, rootbuds are stimulated to produce new shoots that might otherwise be suppressed, especially under low humidity.

Early studies recommended mowing at frequent intervals to starve Canada thistle's root systems and remove *it* from farm fields and pastures (Cox 1913, Johnson 1912, Hansen 1918, Detmers 1929). Mowing monthly for a four-year period eliminated practically all thistles (Welton *et al.* 1929) and mowing at 21-day intervals weakened roots and prevented seed production (Seely 1952). Hodgson (1968) found that mowing alfalfa fields twice annually, at Canada thistle's early-bud to pre-flowering stage (early to mid-June in Montana) and early fall (September) reduced Canada thistle to 1% of its initial value in four years. Mowing two to three times a year can prevent seed set (Hansen 1913, Rogers 1928) but mowing once a year is ineffective (Donald 1990). In order to prevent production of viable seeds, stems must be mown before the flowers open when they have been open for only a few days. Stems with flowers that have been open 8-10 days can develop viable seeds (Derscheid and Schultz 1960).

It is not known if there any biological control agents that attack Canada thistle present on CWA.

CURRENT DISTRIBUTION ON THE SITE

Canada thistle is widely scattered throughout CWA with infestation of greatest density in moister sites, e.g., riparian areas along streams, bodies of water and springs.

ACRES AFFECTED BY WEED: To be determined **WEED DENSITY:** Low to high

GOALS

Contain, control, suppress and/or reduce present infestations
Prevent new occurrences

OBJECTIVES

Continue to actively search for infestations by gridding with WCC, volunteers and employees
GPS infestations and add to the GIS weed layer for mapping.
Revisit infestations twice per year for a minimum of 10 years until site is declared weed free, i.e., it has been at least 10 years since Canada thistle seed was produced at the site and or live Canada thistle plants have been observed at the site.

Treat infestations according to protocol, i.e., purchase/collect biological control agents and release/redistribute, spray.

Continue to treat roadsides, field perimeters, campgrounds, parking and other high use areas with herbicides.

More accurately calculate and delineate, on maps, the acres affected by Canada thistle.

Establish regulations and procedures for assuring off road equipment is washed clean of soil and plant material before entering the CWA.

Develop posters to place on reader boards to educate the public about Canada thistle identification and control.

Develop brochures to hand out to the public regarding Canada thistle identification and control.

Develop informational material to include on the CWA website regarding Canada thistle identification and control.

ACTIONS PLANNED

In 2006 an effort to locate, document, map and begin systematic containment of Canada thistle will begin.

Determine presence, abundance and effectiveness of biological control agents.

Document presence and map locations of biological control agents.

Develop and post information at entrances, parking, camping, hiking, hunting and fishing areas advising visitors of Canada thistle and control.

Use mechanical, biological and chemical methods to begin containment of Canada thistle infestations.

CONTROL SUMMARY AND TREND

Canada thistle has not been a priority target weed on the CWA. Control activities have been incidental to other weed control activities where Canada thistle was with other weeds or near other weeds subject to chemical or mechanical control.

GENERAL WEEDS CONTROL PLAN

Scientific name: *Many*
Updated: 2005

Common name: General Weeds

DESCRIPTION: General weeds describe mixed vegetation that interferes with maintenance, agricultural, or restoration activities. Examples of general weeds may include vegetation occurring along roadsides, parking areas, trails, structures agricultural fields/foodplots and include species like shepherd's purse, cheatgrass, lambsquarters, pigweed, quackgrass, wild tarragon, common burdock, Jim Hill mustard, etc.

MANAGEMENT INFORMATION

Herbicide can be an effective tool for control and applicators should refer to the PNW Weed Management Handbook, or other reputable resources, for product recommendations and timing depending on the weed and desired management objectives.

Mechanical weed control may include mowing, burning, to the plowing and disking entire fields.

CURRENT DISTRIBUTION ON THE SITE

CWA has general weeds scattered throughout with heaviest infestations in areas subject to frequent prolonged disturbance that creates bare soil.

ACRES AFFECTED BY WEED: ~400 **WEED DENSITY:** Low to moderate depending on site and weed.

GOALS

Contain, control, suppress and/or reduce present infestations.
Prevent new occurrences.
Restore desirable vegetation to site as soon as possible.

OBJECTIVES

GPS sites with high probability of becoming or are infested with general weeds and add to the GIS weed layer for mapping.

Treat infestations according to protocol, i.e., mow, disc, release biological agents, hand pull and bag, spray.

More accurately calculate and delineate, on maps, the acres affected by or potentially infested by general weeds.

Establish regulations and procedures for assuring off road equipment is washed clean of soil and plant material before entering the CWA.

Develop posters to place on reader boards to educate the public about general weed identification and control.

Develop brochures to hand out to the public regarding general weed identification and control.

Develop informational material to include on the CWA website regarding general identification and control.

ACTIONS PLANNED

Through 2006 continue summer fallow agricultural fields and foodplots until they have been planted. Continue roadside spraying and areas of high public use.

CONTROL SUMMARY AND TREND

General weeds have been treated as part of the foodplot preparation and maintenance program, by spraying, summer fallowing and replanting. Also general weed control is accomplished in conjunction with chemical weed control of other “target species”.

In some cases exotic grasses constitute “weed species” where they have been planted in former foodplots and agricultural fields. In these instances the “weeds” infesting the former foodplots and agricultural fields need to be worked up and replanted to a mix of native vegetation that will contribute to the indigenous diversity of the site.

Other weed species that control plan sheets will be developed for in the future include:

Bull thistle (*Cirsium vulgare*)

Baby’s breath (*Gypsophila paniculata*)

Common mullein (*Verbascum thapsus*)

Puncture vine (*Tribulus terrestris*)

Reed canarygrass (*Phalaris arundinacea*)

Russian thistle (*Salsola kali*)

Scotch thistle (*Onopordum acanthium*)

In addition to the foregoing, the following actions will be pursued over the long term. In some cases, actions in this list may be redundant to previous actions listed.

WEED MANAGEMENT ACTIONS

Prevention: Preventive actions to be used on the CWA include:

- 1) Perform regular inventories, gridding with groups of volunteers, e.g., Backcountry Horsemen or paid employees, e.g., WCC crews, of the CWA looking for new weed species or new infestations of weeds already present, documenting findings and areas searched in GIS database and on maps.
- 2) Reseed bare ground to establish desirable vegetation and reduce ability of weeds to become established.
- 3) Use farming methods that reduce weed establishment.
- 4) Use livestock management techniques, e.g., graze heavy cheatgrass infestations early to reduce competition with later vegetation growth, to reduce weed establishment.
- 5) Maintain current records and maps of newfound areas of established hounds tongue, Dalmatian toadflax, diffuse knapweed and Russian knapweed infestations.
- 6) CWA personnel will learn to identify all weed species in all phenological stages and weed species with potential of infesting the CWA.
- 7) Additional weed prevention actions will include:

Wildlife Feeding – All wildlife feeding on CWA shall be done with certified “weed free” hay and grain.

Grazing Permits – All livestock entering, crossing or using the Chiliwist Wildlife Area will be fed weed free forage for 3 days prior to entry on the CWA. Additionally all livestock will be free of weed seeds in their hooves and hair. All persons and livestock, e.g., horses and dogs, and equipment including, but not limited to, cars, jeeps, ORV’s, SUV’s, trailers, pickups, trucks, semi-trucks, trailers, stock trailers, 4-wheelers, etc., used in moving livestock onto or across the CWA will be free of weed seeds. All equipment will be power washed and free of plant materials and soil before entering the CWA; all livestock will be inspected before entering the CWA. All grazing permittees shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Agricultural Leases – All persons and equipment and accessories including, but not limited to, cars, 4-wheelers, pickups, trucks, semi-trucks, tractors, balers, swathers, mowers associated with agricultural leases will be weed free. All equipment will be washed and free of plant materials and soil before entering the CWA. All agricultural lessees shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Logging operations, fuels thinning and wood cutting contracts– All persons and equipment and accessories including, but not limited to, cars, 4-wheelers, pickups, trucks, semi-trucks, tractors, skidders, caterpillar tractors, feller bunchers, feller processors, forwarders and loaders associated with fuels thinning and wood cutting contracts will be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. All fuels thinning and wood cutting contractors shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Road Maintenance and Construction – All persons and road maintenance and construction equipment including, but not limited to, caterpillar tractors, graders, groomers, pickups, cars, dump trucks, semi-trucks, belly dumps shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. All road maintenance and construction personnel and/or their supervisor shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Fence Maintenance and construction – All persons and fence maintenance and construction equipment including, but not limited to, caterpillar tractors, pickups, cars, and 4-wheelers, ORVs, 4-wheel drives, backhoes shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. All fence maintenance and construction personnel and/or their supervisor shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Culvert Maintenance and Installation – All persons and culvert maintenance and installation equipment including, but not limited to, backhoes, caterpillar tractors, pickups, cars, and 4-wheelers, ORVs, 4-wheel drives shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. All fence maintenance and construction personnel and/or their supervisor shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Infrastructure Maintenance and Construction – All persons and infrastructure maintenance and construction equipment including, but not limited to, backhoes, caterpillar tractors, pickups, cars, and 4-wheelers, ORVs, 4-wheel drives shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. All building maintenance and construction personnel and/or their supervisor shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Dump and Garbage Cleanup – All persons and dump and garbage cleanup equipment including, but not limited to, backhoes, caterpillar tractors, pickups, cars, and 4-wheelers, ORVs, 4-wheel drives, trailers, shovels, rakes, hoes shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. All dump and garbage cleanup personnel or their supervisor shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Weed Control Operations: Spraying, Mowing and Handpulling – All persons and weed control operations equipment including, but not limited to, sprayers, mowers, pickups, cars, 4-wheelers, ORVs, 4-wheel drives, trailers, shovels, rakes, hoes shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA or being moved to a new area on the CWA. All weed control operations personnel and their supervisor shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further

they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Fire Management: Prescribed burn operations, Wildfire Control – All persons and fire management equipment including, but not limited to, caterpillar tractors, pickups, cars, and 4-wheelers, ORVs, 4-wheel drives, pumpers, tenders, engines, helicopters, trailers, shovels, rakes, hoes, pulaskis shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. All dump and garbage cleanup personnel or their supervisor shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

All Offroad Travel – Unauthorized off road travel is strictly prohibited on the CWA. All persons participating in and equipment used in travel off road or capable of traveling off road including, but not limited to, caterpillar tractors, pickups, cars, and 4-wheelers, ORVs, 4-wheel drives shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. All offroad travel personnel shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Neighbors – All personnel officially affiliated with the CWA and associated equipment will be weed free before leaving the CWA and/or entering neighbors' property.

CWA Equipment and Personnel – All CWA equipment entering the CWA including, but not limited, to pickups, 4-wheelers, ORVs, 4-wheel drives shall be weed free. All CWA equipment will be power washed and free of plant materials and soil before entering the CWA. All CWA personnel and their supervisor shall demonstrate the ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities.

Hunters - All persons participating in and equipment used for hunting including, but not limited to, dogs, horses, pickups, cars, 4-wheel drives and horse trailers shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. Weed identification information will be provided to and/or posted for hunters in order to increase their ability to identify weed species in all stages of growth and their seeds as well as increasing their understanding of weed dispersal mechanics and weed enhancing activities.

Dog owners- All persons participating in activities, hiking, hunting, fishing, walking, etc., on the CWA with a dog shall make sure that their dog(s) are weed free before letting the dog loose on CWA. Additionally they shall make sure that their dog is weed free before moving to a new site on the CWA or leaving the CWA.

Fisherpersons - All persons participating in and equipment used for fishing including boats, horses, pickups, cars, 4-wheel drives shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. Weed identification information will be provided to and/or posted for fisherpersons in order to increase their ability to identify weed species in all stages of growth and their seeds as well as increasing their understanding of weed dispersal mechanics and weed enhancing activities.

Birdwatchers - All persons participating in and equipment used in birdwatching including, but not limited to pickups, cars, 4-wheel drives shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. Weed identification information will be provided to and/or posted for birdwatchers in order to increase their ability to identify weed species in all stages of growth and their seeds as well as increasing their understanding of weed dispersal mechanics and weed enhancing activities.

Hikers - All persons participating in and equipment used for hiking including, but not limited to, dogs, horses, pickups, cars, 4-wheel drives shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. Weed identification information will be provided to and/or posted for hikers in order to increase their ability to identify weed species in all stages of growth and their seeds as well as increasing their understanding of weed dispersal mechanics and weed enhancing activities.

Horseback Riders – All horses, persons participating in and equipment used in horseback riding including, but not limited to, pickups, cars, 4-wheel drives and horse trailers shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. Weed identification information will be provided to and/or posted for horseback riders in order to increase their ability to identify weed species in all stages of growth and their seeds. Further they shall demonstrate an understanding of weed dispersal mechanics and weed enhancing activities. All feed brought to the CWA for feeding riding stock, e.g., hay, grain, etc., shall be certified, “Weed free”.

Campers - All persons participating in and equipment used for butterfly and wildflower observation, but not limited to, dogs, horses, pickups, cars, 4-wheel drives shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. Weed identification information will be provided to and/or posted for hikers in order to increase their ability to identify weed species in all stages of growth and their seeds as well as increasing their understanding of weed dispersal mechanics and weed enhancing activities.

WDFW publications including, but not limited to, hunting and fishing pamphlets, wildlife area maps, informational brochures, carry information about weeds, weed identification, weed dispersal mechanics and weed enhancing activities.

Butterfly and Wildflower observers - All persons participating in and equipment used for butterfly and wildflower observation, but not limited to, dogs, horses, pickups, cars, 4-wheel drives shall be weed free. All equipment will be power washed and free of plant materials and soil before entering the CWA. Weed identification information will be provided to and/or posted for hikers in order to increase their ability to identify weed species in all stages of growth and their seeds as well as increasing their understanding of weed dispersal mechanics and weed enhancing activities.

In addition to all of the foregoing all persons will be encouraged to report observations of weeds and provided information to facilitate reporting weeds and weed infestations.

Clothing - Lace up boots, wool shirts and pants, cotton shirts and pants, and fleece clothing readily collect weed seed and can contribute to dispersal of weed seeds.

HELP PREVENT THE SPREAD OF WEED SEEDS

Carry a small strong plastic bag with you when visiting CWA and place all weed seeds you find attached to yourself, associates, dogs or horses in the bag, take it home and burn the seeds or burn them in a campfire during the season campfires are allowed and where campfires are allowed.

APPENDIX 3 Fire Management

Part I - Wildfire Control and Suppression

Responsible Fire-Suppression Entities: Depending upon where a fire occurs, the appropriate entity must be contacted first, followed by an immediate call to other jurisdictions adjacent to the fire. In some cases, where there are multiple landowners or fire responders, fire suppression activities may involve two or more fire fighting entities. The majority of the Chliwist Wildlife Area (CWA) falls within the jurisdiction of the Washington Department of Natural Resources (DNR), with about 360 acres under jurisdiction of Okanogan County Rural Fire Districts (OCRFD) #3 – Malott, and about 80 acres under OCRFD #5 - Brewster. Additionally the USDI BLM administers about 800 acres within and adjacent to the CWA. The BLM has a fire management program out of Spokane thus making timely response to fires an impossibility.

Payment In Lieu of Taxes (PILT) is paid to the county and is based on the assessed value of the Wildlife Area. Suppression on all WDFW lands within the State Fire Protection Boundary is performed by DNR. WDFW pays an assessment fee for each acre within the fire protection boundary for these services. DNR will respond to all fires on the CWA, as a preventive measure to protect DNR lands, since much of the CWA is surrounded by DNR lands.

Department Fire Management Policy: It is the Department's policy that wildlife area staffs are not firefighters and should not fight fires. Wildlife Area staff are trained in fire fighting and fire behavior, however, staff will only provide logistical support and information regarding critical habitat values to the Incident Commander of the responding fire entity.

Wildlife Habitat Concerns: Although CWA habitat is fire dependent and fire is needed to maintain healthy habitat, a wildfire will, in all probability, result in too much fire or extreme fire behavior due to extreme fuel conditions. Therefore initial attack on all wildfires on the CWA should be aggressive. As more prescribed fire is applied to CWA lands, fire severity potential will decrease substantially resulting in easier wildfire suppression and management.

Other Concerns: A major concern is soil disturbance caused by heavy equipment used in fire suppression activities that result in increased noxious weed proliferation. Another concern is that fire fighting equipment, e.g., dozers, engines, semi-trucks, trailers, etc., brought to the area is not weed free. Thus new weeds can become established and result in many years and thousands of dollars spent on weed control.

Of primary concern during a wildfire on the CWA are structures, e.g., buildings, bird feeders, guzzlers, power poles, etc.

Additionally the preferred strategy for ground based fire suppression on the CWA is to use existing roads and trails for holding and burnouts to minimize dozer trail construction. With the foregoing concerns in mind WDFW requests that the Incident Commander (IC) or other fire fighting personnel on site notify WDFW personnel immediately in the order listed below. A WDFW Advisor will provide information to the IC regarding plant community and vegetation concerns, maps of access roads and trails to the fire site. GIS maps of all existing, orphaned and abandoned roads and trails will be provided, if necessary, to a scale of ¼ Section per 8" or 1" = 330'.

Aerial Support: The WDFW recommends that fire-fighting entities suppress fires on the wildlife area as rapidly as possible. WDFW requests the IC to seek aerial support if needed to extinguish a

fire on its land promptly. If, in the professional judgment of the IC, a fire on lands adjacent to the Sinlahekin Wildlife Area causes an immediate threat to the area, WDFW requests that the IC seek aerial support as soon possible.

Reporting: Report any wildfire on or adjacent to the CWA by contacting the Okanogan County Sheriff's Office, local RFD and/or the DNR Dispatch Office in Colville (See contacts below). It is absolutely critical that any wildfire on the area is attacked as aggressively as possible during the initial attack given the expressed concerns stated previously. The importance of aerial support cannot be overstated.

Rural Fire Districts – DIAL 911

NAME	TELEPHONE	CELL
Okanogan Co. District #3, Malott (Mike Hinger, Chief)	509.422.4161	509.322.1394
Okanogan Co. District #9, Brewster (Mike Webster, Chief)	509. 689.9408	509.733.1836

DNR- contact in order listed and request Operations or Staff Coordinator

NAME	TELEPHONE
DNR – For Fires Only	1.800.562.6010
DNR Dispatch (Colville)	509.684.7474
DNR Omak District Office	509.826.7316

The following table provides telephone numbers in priority order of Department of Fish and Wildlife staff to be contacted in the event of a fire.

Department of Fish and Wildlife - contact in order listed

NAME	TELEPHONE	PRIVATE TELEPHONE	CELL
Dale Swedberg, SWA Manager	509.223.3358	509.223.3059	
Don Garrett, SWA Assistant Manager	509.826.4626	509.826.0427	509.322.3966
Marc Hallett, Wells Manager	509.686.4305	509.	509.679.4780
Troy McCormick, F&W Officer	509.422.7232 (Ok. Co Sheriff (Dispatch))		
Dan Christenson, F&W Officer	509.422.7232 (Ok. Co Sheriff (Dispatch))		
Jim Brown – Sergeant, Omak Office	509.422.7232		
Regional Office – Ephrata	509.754.4624		
Regional Program Manager – Matt Monda	509.754.4624 (16)		

Part II Prescribed (Rx) Fire

Prescribed (Rx) fire is defined as any fire that is set or allowed to burn with predetermined goals, e.g., fuels reduction, reinitiate vegetation succession, initiate fire effects, enhance nutrient cycle, enhance water cycle, increase fire dependent vegetation habitat component, decrease fire sensitive habitat component. However, when a prescribed fire exceeds certain parameters, e.g., escapes predetermined boundaries, and it will be declared a wildfire and suppression action will be taken.

Background

Fire has evolved with life forms through millennia, life forms provide the fuels that allow fire to exist. Thus fire regimes have developed, generally categorized as frequent low severity, mixed severity and infrequent high severity, as a result of topographic characteristics, weather patterns and fuels. Based on the long-term relationship with fire many life forms and ecosystems have become fire adapted if not out-right fire dependent to complete their life cycle and/or to maintain environmental conditions needed for survival. Fire's most obvious and primary influence is upon the vegetation component of wildlife habitat. Vegetation dynamics, composition and structure in the historic frequent fire regime zones, specifically dry site forest types and shrub-steppe, has changed dramatically under current and historic fire policies, i.e., total fire suppression for the past 80 years. The upshot being degraded habitat for the wildlife dependent on those vegetation types and plant associations.

Policy

WDFW recognizes the integral part historic fire has had in creation and maintenance of fish and wildlife habitat. Further WDFW recognizes the benefits to wildlife through application of fire and encourages prescribed burning to benefit fish and wildlife on WDFW owned and managed lands as well as other lands under state, federal and private ownership.

Procedure

Prescribed (Rx) burning shall be conducted in accordance with WDFW policies and procedures (in preparation) and all Federal and State laws, rules and regulations. All required permits or waivers shall be obtained prior to implementation of any Rx burn.

A Rx burn plan will be written and approved by the Wildlife Area Manager, District Team, Washington Department of Natural Resources and any other entity that will be directly involved in implementing the Rx burn. All Rx burn plans will have, at minimum, the following elements – see outline or example (in preparation).

All personnel and equipment participating in implementing a Rx burn shall have all necessary credentials and certifications required to participate in the implementation in their respective capacities. Prior to implementation of any Rx burn all credentials and certificates will be inspected and verified that the holder is qualified for the duties and responsibilities assigned to them during implementation.

WDFW can enter into agreements with other State, Federal or private entities to conduct Rx burning on WDFW lands independently or as part of a larger Rx burn that includes multiple ownerships.

To conduct a Rx burn all the following steps will need to be completed:

1) Pre-burn preparation

- Selection of area(s) for Rx burn
- Prescriptions and Justification for Rx burn
- Development and writing Rx burn plan
- Develop contracts and agreements
- Obtain permits and/waivers
- Secure/hire qualified personnel to implement burn
 - Verification of credentials and certificates
- Secure qualified equipment and operators to implement burn
 - Verification of credentials and certificates of equipment and operators
 - Assure that all equipment will be free of soil and plant material
- Fire/control line location and marking
- Identify fire sensitive resources, e.g., certain species of trees or shrubs, snags, legacy trees and mark them for protective action such as pulling burnable debris (duff and branches) back from the base of trees or snags, putting in fire line around shrubs or trees, e.g., Rocky Mountain Juniper, subAlpine fire, Engleman spruce
- Make sure all fire sensitive resources have been properly addressed.
- Advise Burn Boss, Ignition Specialist and Holding Specialist of sensitive resources so they can use ignition techniques to reduce risk of losing sensitive resources
- Fire/control line creation
- Get daily weather readings, e.g., Relative Humidity (RH), wind direction, speed and gusts, etc. for a week prior to planned ignition
- Get fuel moisture readings (10 hr and 100 hr) in open and under canopy
- Blackline
- Determine burn date and unit(s) to burn
- Get fire weather forecast
- Request smoke management
- Document progress and observations

2) Burn implementation

- All required personnel and equipment onsite
 - There will be portable radios for no less than half of the personnel participating in implementation
- All equipment inspected for condition and proper operation
 - Verification of credentials and certificates of equipment and operators
 - Verify all equipment it is free of soil and plant material
- All hands meeting with Burn Boss. Complete review of burn plan, safety considerations and all details relevant to conducting a safe Rx burn
- Verify fuel moisture (10 hr and 100 hr) in open and under canopy
- Test burn
- Verify that **all parameters** are within prescription
- If **ALL parameters** are within prescription, then begin ignition
- Fire/control lines will be patrolled until there is NO chance that fire will escape the line and no spot fires have started
- Patrol all lines of previously burned units before beginning ignition of new units
- Document progress and observations

3) Post-burn

- Patrol fire/control line twice a day minimum (once before conditions, i.e., RH goes down, allow fire behavior to become active and once after conditions, i.e., RH goes up, suppress fire behavior) looking for escaped fire or spot fires
- Control and extinguish all escaped or spot fires
- Continue to patrol until all “smokes” are out that are within 30 feet of the fire/control line, keeping in mind that strong gusty winds could spread sparks from a “smoke”
- Be aware of fire burning underground following a root or underground fuels and permitting fire outside the fire/control line
- Be aware of a tree or snag that could burn and fall outside the fire/control line permitting fire outside the fire/control line
- Immediately, after the fire has died down, patrol area within burn perimeter to check on resources that were to be protected from burning, e.g., shrubs, plant communities, legacy trees, structures, and take necessary action if these resources are still at risk, e.g., fire got into base of legacy tree, fire crossed fire line around shrub, etc. During this time personnel must always be aware of the potential danger of trees that may fall, burned out stumps or roots holes that a person can step or fall into, etc.
- Document observations

APPENDIX 4. Water Rights

Okanogan County WRIA: 49														
File #	Cert #	Stat	Doc	Priority Date	Purpose	Qi	UOM	Qa	Irrig Acres	TRS	QQ/Q	Src's	1stSource	Comments
G4- *09724ALC WRIS	0679A	A	Cert	9/5/1968	DS, IR	256.00	GPM	74.00	28.00	32.0N25.0E 08		3	Well	
G4- *09724ALC WRIS	0679A	A	Cert	9/5/1968	DS, IR		GPM			32.0N25.0E 17			Well	
G4- *09724ALC WRIS	0679A	A	Cert	9/5/1968	DS, IR		GPM			32.0N25.0E 17			Well	
G4- 01209CWRIS	G4- 01209C	A	Cert	10/11/1966	IR	160.00	GPM	100.00	44.00	32.0N24.0E 13	SE/NE	1	Well	Supplemental to S4- *13846ALCWRIS
S4- *13846ALC WRIS	0633A	A	Cert	8/29/1955	IR	1.62	CFS	336.00	91.00	32.0N24.0E 13	NE/SW	3	Chiliwist Creek	
S4- *13846ALC WRIS	0633A	A	Cert	8/29/1955	IR	1.50	CFS	336.00	84	32.0N24.0E 13	NE/SW	3	Chiliwist Creek	
S4- *13846ALC WRIS	0633A	A	Cert	8/29/1955	IR		CFS			32.0N24.0E 13	NW/SE		Chiliwist Creek	
S4- *13846ALC WRIS	0633A	A	Cert	8/29/1955	IR		CFS			32.0N24.0E 14	SW/NW		Chiliwist Creek	
S4- 004825CL		A	Claim L	1/1/1909	ST	10.00	CFS	2.00		32.0N25.0E 08			Unnamed spring	
S4- 004826CL		A	Claim L	4/1/1908	ST	10.00	CFS	2.00		32.0N24.0E 12	NW/NE	1	Unnamed stream	
S4- 004826CL		A	Claim L	4/1/1908	ST	10.00	CFS	2.00		32.0N24.0E 12	NW/NE	1	Unnamed spring	
S4- 044339CL		A	Claim L	5/1/1916	ST	15.00	CFS	2.00		33.0N24.0E 35		1	Spring	
S4- 047711CL		A	Claim S	5/1/1916	ST	20.00	CFS	3.00		32.0N24.0E 02	NE/NE	1	Spring	
S4- 047711CL		A	Claim S	4/1/1916	ST	20.00	CFS	3.00		32.0N24.0E 02	NE/NE	1	Spring	
S4- 121882CL		A	Claim L	5/1/1940	ST	10.00	CFS	1.00		33.0N24.0E 35		1	Spring	
S4- 121882CL		A	Claim L	5/1/1940	ST	10.00	CFS	1.00		33.0N24.0E 35		1	Spring	
S4- 67018JWRIS	S4- 67018J	A	Adj Cert	1/1/1906	DS, ST	0.10	CFS			33.0N24.0E 35	SW/SW	2	Frazier Canyon	
S4- 67018JWRIS	S4- 67018J	A	Adj Cert	1/1/1906	DS, ST		CFS			33.0N24.0E 35	SW/SW		Smith Canyon	

S4-67009JWRI S	S4-67009 J A	Adj Cert	1/1/189 5	DS, IR, ST	1.22	CFS	276.00	69.00	32.0N 24.0E 13	NE/ SW	2	Mdl Chiliwist Cr	
S4-67009JWRI S	S4-67009 J A	Adj Cert	1/1/189 5	DS, IR, ST		CFS			32.0N 24.0E 13	NW/ SE		Mdl Chiliwist Cr	
S4-67011JWRI S	S4-67011 J A	Adj Cert	8/29/19 55	IR	1.62	CFS	364.00	91.00	32.0N 24.0E 14		1	Mdl Chiliwist Cr	Part WDFW/superce des S4- 67014JC

Abbreviations

CI - Commercial Industrial; **DS** - Single Domestic; **FR** - Fire Protection; **IR** - Irrigation; **Qa** – allowed Annual Quantity in acre feet per year; **Qi** – Allowed Instantaneous Quantity in GPM (ground water) or CFS (surface water); **SR** - Storage; **ST** - Stock; **WL** – Wildlife; **DG** - General Domestic - defined as “use of water for all domestic uses not specifically defined in the water right record or not defined by the other specific domestic use categories. Includes sewage treatment, farm supply and laboratory use.” **UOM** – Unit of measure: **GPM** – gallons per minute, **CFS** – cubic feet per second; **Stat** – status: **A**=Active, **I**=Inactive and therefore conveys no right to divert water; **TRS** - Township, Range, Section – location of point of diversion. See document for description of the point of use. *Paired color rows have discrepancies that need reviewed – Only one line is correct, the incorrect line needs ID’ed and deleted. **Note:** Copies of original documents in file.

APPENDIX 5. Management Plan Comments & Responses

Washington State Department of Fish and Wildlife, February 2007

The following individuals commented during the management plans public comment period.

Comment Author	Organization	Location
Dick Finch	Citizen	

Comments received on the Chiliwist Wildlife Area Plan are presented below. A response for each comment is included. Where appropriate, changes were incorporated into the management plan to address public comments.

Commenter	Comment	Response
	General	
Dick Finch	Page 5: Be real careful with maps. Folks will think since the State made this map it must be right. This map shows lands east of the Okanogan River as "Tribal Lands". Lots of fee lands in area shown. Should note that land lying east of the Okanogan River are on the Colville Indian Reservation.	So noted. This comment will be passed on to the cartographer to make the necessary changes.
Dick Finch	Page 45: Public Issues: Preamble states issues specific to a particular wildlife area were deleted from areas that they did not apply---You have some more deletions to do here.	So noted. Relevant items have been deleted.

APPENDIX 6. Climatic Information

OMAK 2 NW, WASHINGTON (456123)

Period of Record Monthly Climate Summary

Period of Record: 1/ 1/1931 to 9/30/2004

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	30.3	38.2	51.2	63.4	72.7	79.7	87.1	85.6	76.3	61.5	43.0	33.5	60.2
Average Min. Temperature (F)	17.0	21.7	28.8	36.1	43.5	50.4	55.4	54.1	45.6	35.4	27.4	21.4	36.4
Average Total Precipitation (in.)	1.31	1.17	0.88	0.95	0.96	1.15	0.58	0.51	0.55	0.89	1.39	1.82	12.17
Average Total SnowFall (in.)	7.8	4.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	9.1	24.4
Average Snow Depth (in.)	7	4	1	0	0	0	0	0	0	0	0	3	1

Percent of possible observations for period of record.

Max. Temp.: 79.7% Min. Temp.: 79.4% Precipitation: 81% Snowfall: 69.4% Snow Depth: 74.4%

Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

APPENDIX 7. CWA Species and Habitat Information and lists

6a – Birds

Under Construction

6b – Mammals

Under Construction

6c - Herptiles – reptiles and amphibians

Under Construction

6d – Fishes

Under Construction

6e – Butterflies

Under Construction

6f – Mollusks

Under Construction

6g - Odonata – dragonflies and damselflies

Under Construction

6h – Spider

Under Construction

6i - Vascular plants

Under Construction

6j - Rare vascular plants

Under Construction

6k - Non-native (alien) vascular plants

Under Construction

6l - Noxious weeds – See 6k Table 1

Under Construction

6m - Club mosses, mosses, lichens

Under Construction

6n - Priority Species List:

Invertebrates:

MOLLUSCS						
For information on state listed or candidate species, see the SOC List .						
COMMON NAME	SCIENTIFIC NAME	SPECIES CRITERIA	WASHINGTON STATUS	PRIORITY AREA	PRESENCE CONFIRMED IN CWA	
ARTHROPODS						
Butterflies (Lepidoptera)						
Silver-bordered fritillary	<i>Boloria selene atrocotalis</i>	1		State Listed or Candidate Species	Any occurrence	Yes
Yuma skipper	<i>Ochlodes yuma</i>	1		State Listed or Candidate Species	Any occurrence	

Vertebrates:

FISH						
For information on state listed or candidate species, see the SOC List .						
COMMON NAME	SCIENTIFIC NAME	SPECIES CRITERIA	WASHINGTON STATUS	PRIORITY AREA		PRESENCE CONFIRMED IN CWA
Trout, Salmon, & Whitefishes (Salmonidae)						
Westslope cutthroat	<i>Oncorhynchus clarki lewisi</i>		3	Game	Any occurrence	
Sunfishes (Centrarchidae)						
Largemouth bass	<i>Micropterus salmoides</i>		3	Game	Any occurrence	
AMPHIBIANS						
For information on state listed or candidate species, see the SOC List .						
Frogs (Anura)						
Western toad	<i>Bufo boreas</i>	1		State Listed or Candidate Species	Any occurrence	
Columbia spotted frog	<i>Rana luteiventris</i>	1		State Listed or Candidate Species	Any occurrence	
REPTILES						
For information on state listed or candidate species, see the SOC List .						

Sagebrush lizard	<i>Sceloporus graciosus</i>	1			State Listed or Candidate Species	Any occurrence	
BIRDS							
For information on state listed or candidate species, see the SOC List .							
Marine Birds							
Herons (Ciconiiformes)							
Great blue heron	<i>Ardea herodias</i>		2			Breeding areas	
Black-crowned night heron	<i>Nycticorax nycticorax</i>		2			Breeding areas	
Waterfowl (Anseriformes)							
Wood duck	<i>Aix sponsa</i>			3	Game	Breeding areas	
Hawks, Falcons, Eagles (Falconiformes)							
Northern goshawk	<i>Accipiter gentilis</i>	1			State Listed or Candidate Species	Breeding areas, including alternate nest sites, post-fledging foraging areas	
Golden eagle	<i>Aquila chrysaetos</i>	1			State Listed or Candidate Species	Breeding and foraging areas	
Merlin	<i>Falco columbarius</i>	1			State Listed or Candidate Species	Breeding sites	
Prairie falcon	<i>Falco mexicanus</i>			3		Breeding areas	
Peregrine falcon	<i>Falco peregrinus</i>	1			State Listed or Candidate Species	Breeding areas, regular occurrences, hack sites	
Bald eagle	<i>Haliaeetus leucocephalus</i>	1			State Listed or Candidate Species	Breeding areas, communal roosts, regular and regular large concentrations, regularly-used perch trees in breeding areas	
Upland Game Birds (Galliformes)							
Chukar	<i>Alectoris chukar</i>			3	Game	Regular and regular large concentrations in WDFW's Primary Management Zones for chukar	
Blue grouse	<i>Dendragapus obscurus</i>			3	Game	Breeding areas, regular concentrations	Yes

Wild turkey	<i>Meleagris gallopavo</i>			3	Game	Regular and regular large concentrations and roosts in WDFW's Primary Management Zones for wild turkeys	Yes
Ring-necked pheasant	<i>Phasianus colchicus</i>			3	Game	Self-sustaining birds observed in regular or regular large concentrations in WDFW's eastern Washington Primary Management Zone for pheasant	
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	1		3	State Listed or Candidate Species Game	Breeding areas, leks, regular and regular large concentrations, critical wintering habitat (riparian zones)	
Cranes (Gruiformes)							
Sandhill crane	<i>Grus canadensis</i>	1			State Listed or Candidate Species	Breeding areas, regular large concentrations, migration staging areas	
Pigeons (Columbiformes)							
Band-tailed pigeon	<i>Columba fasciata</i>			3	Game	Breeding areas, regular concentrations, occupied mineral springs	
Cuckoos (Cuculiformes)							
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	1			State Listed or Candidate Species	Any occurrence	
Owls (Strigiformes)							
Burrowing owl	<i>Athene cunicularia</i>	1			State Listed or Candidate Species	Breeding areas, foraging areas, regular concentrations	
Flammulated owl	<i>Otus flammeolus</i>	1			State Listed or Candidate Species	Breeding sites, regular occurrences	
Swifts (Apodiformes)							
Vaux's swift	<i>Chaetura vauxi</i>	1			State Listed or Candidate Species	Breeding areas, communal roosts	
Woodpeckers (Piciformes)							
Pileated woodpecker	<i>Dryocopus pileatus</i>	1			State Listed or Candidate Species	Breeding areas	
Lewis' woodpecker	<i>Melanerpes lewis</i>	1			State Listed or Candidate Species	Breeding areas	

White-headed woodpecker	<i>Picoides albolarvatus</i>	1			State Listed or Candidate Species	Breeding sites, regular occurrences	
Black-backed woodpecker	<i>Picoides arcticus</i>	1			State Listed or Candidate Species	Breeding areas and regular occurrences	
Perching Birds (Passeriformes)							
Sage sparrow	<i>Amphispiza belli</i>	1			State Listed or Candidate Species	Breeding areas, regular occurrences in suitable habitat during breeding season	
Loggerhead shrike	<i>Lanius ludovicianus</i>	1			State Listed or Candidate Species	Regular occurrences in breeding areas, regular and regular large concentrations	
Sage thrasher	<i>Oreoscoptes montanus</i>	1			State Listed or Candidate Species	Breeding areas, regular occurrences in suitable habitat during breeding season	
MAMMALS							
For information on state listed or candidate species, see the SOC List .							
Shrews (Insectivora)							
Merriam's shrew	<i>Sorex merriami</i>	1			State Listed or Candidate Species	Any occurrence	
Bats (Chiroptera)							
Roosting concentrations of: Pallid bat	<i>Antrozous pallidus</i>		2			Regular large concentrations in naturally occurring breeding areas and other communal roosts	
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	1	2		State Listed or Candidate Species	Any occurrence	
Roosting concentrations of: Big brown bat	<i>Eptesicus fuscus</i>		2			Regular large concentrations in naturally occurring breeding areas and other communal roosts	
Roosting concentrations of: Myotis bats	<i>Myotis spp.</i>		2			Regular large concentrations in naturally occurring breeding areas and other communal roosts	
Rabbits (Lagomorpha)							
White-tailed jack rabbit	<i>Lepus townsendii</i>	1		3	State Listed or Candidate Species; Game	Regular and regular large concentrations Any occurrence	

Rodents (Rodentia)							
Western gray squirrel	<i>Sciurus griseus</i>	1			State Listed or Candidate Species	Any occurrence	
Terrestrial Carnivores (Carnivora)							
Gray wolf	<i>Canis lupus</i>	1			State Listed or Candidate Species	Any occurrence	
Wolverine	<i>Gulo gulo</i>	1			State Listed or Candidate Species	Any occurrence	Yes
Lynx	<i>Lynx canadensis</i>	1			State Listed or Candidate Species	Any occurrence	
Marten	<i>Martes americana</i>			3	Game	Regular occurrences	
Fisher	<i>Martes pennanti</i>	1			State Listed or Candidate Species	Any occurrence	
Mink	<i>Mustela vison</i>			3	Game	Regular occurrences	
Ursus arctos	<i>Grizzly bear</i>	1			State Listed or Candidate Species	Any occurrence	
Big Game Ungulates (Artiodactyla)							
Moose	<i>Alces alces</i>			3	Game	Regular concentrations	
Rocky Mountain mule deer	<i>Odocoileus hemionus hemionus</i>			3	Game	Breeding areas, migration corridors, regular and regular large concentrations in winter	Yes
Northwest white-tailed deer	<i>Odocoileus virginianus ochrourus</i>			3	Game	Breeding areas, migration corridors, regular and regular large concentrations in winter	Yes

60 - Federal and State listed and candidate species

(Federal and State Endangered, Threatened, Sensitive and Candidates)

NOTE: Not all species on this list have been documented as occurring on the CWA, but the habitat characteristics of the undocumented species occur on the CWA and it is possible that they do occur, and for some this may be rarely. Based on results from formal surveys species may be deleted from this list. See Appendices 6a – 6e for complete lists of the birds, mammals, reptiles, amphibians, fishes and butterflies of the CWA. (See internet sites

<http://www.wdfw.wa.gov/wlm/diversity/soc/soc.htm>, <http://wdfw.wa.gov/hab/phsinvrt.htm>, <http://wdfw.wa.gov/hab/phsvert.htm>, and <http://www.wdfw.wa.gov/hab/phspage.htm>).

COMMON NAME	SCIENTIFIC NAME	ANIMAL TYPE	FEDERAL STATUS	STATE STATUS	Confirmed on CWA	PHS Criteria
BALD EAGLE	<i>HALIAEETUS LEUCOCEPHALUS</i>	Bird	FT	ST	Yes	B, RSC, CR
BLACK-BACKED WOODPECKER	<i>PICOIDES ARCTICUS</i>	Bird	none	SC	Yes	B, RI
BURROWING OWL	<i>ATHENE CUNICULARIA</i>	Bird	FSC	SC		B
COLUMBIA SPOTTED FROG	<i>RANA LUTEIVENTRIS</i>	Amphibian	FSC	SC	Yes	IO
FISHER	<i>MARTES PENNANTI</i>	Mammal	FC	SE		IO
FLAMMULATED OWL	<i>OTUS FLAMMEOLUS</i>	Bird	none	SC		B, RI
GOLDEN EAGLE	<i>AQUILA CHRYSAETOS</i>	Bird	none	SC	Yes	B
GRAY WOLF	<i>CANIS LUPUS</i>	Mammal	FT	SE		IO
GREAT ARCTIC	<i>OENEIS NEVADENSIS GIGAS</i>	Butterfly	none	SC		IO
GRIZZLY BEAR	<i>URSUS ARCTOS</i>	Mammal	FT	SE		IO
LEWIS' WOODPECKER	<i>MELANERPES LEWIS</i>	Bird	none	SC	Yes	B
LOGGERHEAD SHRIKE	<i>LANIUS LUDOVICIANUS</i>	Bird	FSC	SC		B
LYNX	<i>LYNX CANADENSIS</i>	Mammal	FT	ST		IO
MERLIN	<i>FALCO COLUMBARIUS</i>	Bird	none	SC	Yes	B
MERRIAM'S SHREW	<i>SOREX MERRIAMI</i>	Mammal	none	SC		IO
NORTHERN GOSHAWK	<i>ACCIPITER GENTILIS</i>	Bird	FSC	SC	Yes	B
PEREGRINE FALCON	<i>FALCO PEREGRINUS</i>	Bird	FSC	SS		B, RI
PILEATED WOODPECKER	<i>DRYOCOPUS PILEATUS</i>	Bird	none	SC	Yes	B
SAGE SPARROW	<i>AMPHISPIZA BELLI</i>	Bird	none	SC		B
SAGE THRASHER	<i>OREOSCOPTES MONTANUS</i>	Bird	none	SC		B
SAGEBRUSH LIZARD	<i>SCELOPORUS GRACIOSUS</i>	Reptile	none	SC		IO
SANDHILL CRANE	<i>GRUS CANADENSIS</i>	Bird	none	SE	Yes	B, RLC
SHARP-TAILED GROUSE	<i>TYMPANUCHUS PHASIANELLUS</i>	Bird	FSC	ST	Yes	B, RSC
SILVER-BORDERED FRITILLARY	<i>BOLORIA SELENE ATROCOSTALIS</i>	Butterfly	none	SC	Yes	IO
TOWNSEND'S BIG-EARED BAT	<i>CORYHORHINUS TOWNSENDII</i>	Mammal	FSC	SC	Yes	B, CR
VAUX'S SWIFT	<i>CHAETURA VAUXI</i>	Bird	none	SC	Yes	B, CR
WESTERN GRAY SQUIRREL	<i>SCIURUS GRISEUS</i>	Mammal	FSC	ST		IO
WESTERN TOAD	<i>BUFO BOREAS</i>	Amphibian	FSC	SC	Yes	None
WHITE-HEADED WOODPECKER	<i>PICOIDES ALBOLARVATUS</i>	Bird	none	SC		B, RI
WHITE-TAILED JACK RABBIT	<i>LEPUS TOWNSENDII</i>	Mammal	none	SC		IO
WOLVERINE	<i>GULO GULO</i>	Mammal	FSC	SC		IO
YELLOW-BILLED CUCKOO	<i>COCCYZUS AMERICANUS</i>	Bird	FC	SC		B, RI

Federal Endangered (FE), Federal Proposed Endangered (FPE), Federal Threatened (FT), Proposed Federal Threatened (FPT), Federal Candidate (FC), Federal Species of Concern (FSC), State Endangered (SE), State Threatened (ST), State Sensitive (SS), State Candidate (SC).

State Endangered Species - A species native to the State of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state. As designated in Washington Administrative Code 232-12-014.

State Threatened - A species native to the state of Washington that is likely to become endangered within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats. As designated in Washington Administrative Code 232-12-011.

State Sensitive - A species native to the state of Washington that is vulnerable or declining and is likely to become endangered or threatened in a significant portion of its range within the state without cooperative management or removal of threats. As designated in Washington Administrative Code 232-12-011.

State Candidate - Species that the Department will review for listing as State Endangered, Threatened, or Sensitive. The Department reviews species for listing following procedures in Washington Administrative Code 232-12-297. Public comment is solicited before the Department takes its listing recommendation to the Washington Fish and Wildlife Commission, which makes listing decisions. Listing is based solely on the biological status of the species.

PHS Criteria:

B: Breeding Location (Nest or Den) Roost	CR: Communal
RC,RLC,RSC: Regular (Large or Small) Concentration Individual	RI: Regular
IO: Individual Occurrence	

6p - State species of concern

Under Construction

6q - Priority habitats

Habitat Type or Element	Priority Area
Aspen stands	Pure or mixed stands of aspen greater than 0.8 ha (2 acres). Criteria: High fish and wildlife species diversity, limited availability, high vulnerability to habitat alteration.
Caves	A naturally occurring cavity, recess, void, or system of interconnected passages (including associated dendritic tubes, cracks, and fissures) which occurs under the earth in soils, rock, ice, or other geological formations, and is large enough to contain a human. Mine shafts may mimic caves, and those abandoned mine shafts with actual or suspected occurrences of priority species should be treated in a manner similar to caves. A mine is a man-made excavation in the earth usually used to extract minerals. Criteria: Comparatively high wildlife density, important wildlife breeding habitat and seasonal ranges, limited availability, vulnerability to human disturbance, dependent species.
Cliffs	Greater than 7.6 m (25 ft) high and occurring below 1524 m (5000 ft). Criteria: Significant wildlife breeding habitat, limited availability, dependent species.
Freshwater Wetlands and Deep Freshwater	<u>Freshwater Wetlands:</u> Lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Wetlands must have one or more of the following attributes: the land supports, at least periodically, predominantly hydrophytic plants; substrate is predominantly undrained hydric soils; and/or the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year. <u>Fresh Deepwater:</u> Permanently flooded lands lying below the deepwater boundary of wetlands. Deepwater habitats include environments where surface water is permanent and often deep, so that water, rather than air, is the principal medium within which the dominant organisms live. The dominant plants are hydrophytes; however, the substrates are considered nonsoil because the water is too deep to support emergent vegetation. These habitats include all underwater structures and features (e.g., woody debris, rock piles, caverns). Criteria: Comparatively high fish and wildlife density and species diversity, important fish and wildlife breeding habitat, important fish and wildlife seasonal ranges, limited availability, high vulnerability to habitat alteration
Instream	The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. Criteria: Comparatively high fish and wildlife density and species diversity, important fish and wildlife seasonal ranges, limited availability, high vulnerability to habitat alteration, dependent species.

Old-growth/Mature Forest	<p>Old-growth east of Cascade crest: Stands are highly variable in tree species composition and structural characteristics due to the influence of fire, climate, and soils. In general, stands will be >150 years of age, with 25 trees/ha (10 trees/acre) > 53 cm (21 in) dbh, and 2.5-7.5 snags/ha (1 - 3 snags/acre) > 30-35 cm (12-14 in) diameter. Downed logs may vary from abundant to absent. Canopies may be single or multi-layered. Evidence of human caused alterations to the stand will be absent or so slight as to not affect the ecosystem's essential structures and functions.</p> <p>Mature forests: Stands with average tree diameters exceeding 53 cm (21 in) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west and 80 - 160 years old east of the Cascade crest.</p>
Riparian	<p>Criteria: High fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important fish and wildlife seasonal ranges, limited and declining availability, high vulnerability to habitat alteration.</p> <p>The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems, which mutually influence each other. In riparian systems, the vegetation, water tables, soils, microclimate, and wildlife inhabitants of terrestrial ecosystems are influenced by perennial or intermittent water. Simultaneously, the biological and physical properties of the aquatic ecosystems are influenced by adjacent vegetation, nutrient and sediment loading, terrestrial wildlife, and organic and inorganic debris. Riparian habitat encompasses the area beginning at the ordinary high water mark and extends to that portion of the terrestrial landscape that is influenced by, or that directly influences, the aquatic ecosystem. Riparian habitat includes the entire extent of the floodplain and riparian areas of wetlands that are directly connected to stream courses.</p> <p>Criteria: High fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important wildlife seasonal ranges, important fish and wildlife movement corridors, high vulnerability to habitat alteration, unique or dependent species.</p>
Rural natural open space	<p>priority species resides within or is adjacent to the open space and uses it for breeding or regular feeding; and/or the open space functions as a corridor connecting other <i>priority habitats</i>, especially areas that would otherwise be isolated; and/or the open space is an isolated remnant of natural habitat larger than 4 ha (10 acres) and surrounded by agricultural developments. Local consideration may be given to open space areas smaller than 4 ha (10 acres).</p> <p>Criteria: Comparatively high fish and wildlife density, high fish and wildlife species diversity, important fish and wildlife breeding habitat, important fish and wildlife seasonal ranges, important fish and wildlife movement corridors, high vulnerability to habitat alteration, unique species assemblages in agricultural areas.</p>
Shrub-steppe	<p>Large Tracts: Tracts of land >259 ha (640 ac) consisting of plant communities with one or more layers of perennial grasses and a conspicuous but discontinuous layer of shrubs. Large tracts of shrub-steppe contribute to the overall continuity of the habitat type throughout the region because they are relatively unfragmented, contain a substantial amount of interior habitat, and are in close proximity to other tracts of shrub-steppe. These tracts should contain a variety of habitat features (e.g., variety of topography, riparian areas, canyons, habitat edges, plant communities). Another important component is habitat quality based on the degree with which a tract resembles a site potential natural community, which may include factors such as soil condition and degree of erosion; and distribution, coverage, and vigor of native shrubs, forbs, grasses, and cryptogams.</p> <p>Small Tracts: Tracts of land <259 ha (640 ac) with a habitat type consisting of plant communities with one or more layers of perennial grasses and a conspicuous but discontinuous layer of shrubs. Although smaller in size and possibly more isolated from other tracts of shrub-steppe these areas are still important to shrub-steppe obligate and other state-listed wildlife species. Also, important are the variety of habitat features and habitat quality aspects as listed above.</p>

	<p>Criteria: Comparatively high fish and wildlife density and species diversity; important fish and wildlife breeding habitat and seasonal ranges, limited availability, high vulnerability to habitat alteration, unique and dependent species.</p>
<p>Snags and logs</p>	<p>Snags and logs occur within a variety of habitat types that support trees. Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of ≥ 51 cm (20 in) in western Washington and ≥ 30 cm (12 in) in eastern Washington, and are ≥ 2 m (6.5 ft) in height. Priority logs are ≥ 30 cm (12 in) in diameter at the largest end, and ≥ 6 m (20 ft) long. Abundant snags and logs can be found in old-growth and mature forests or unmanaged forests of any age, in damaged, burned, or diseased forests, and in riparian areas. Priority snag and log habitat includes individual snags and/or logs, or groups of snags and/or logs of exceptional value to wildlife due to their scarcity or location in a particular landscape. Areas with abundant, well distributed snags and logs are also considered priority snag and log habitat. Examples include large, sturdy snags adjacent to open water, remnant snags in developed or urbanized settings, and areas with a relatively high density of snags.</p> <p>Criteria: Comparatively high fish and wildlife density and species diversity, important fish and wildlife breeding habitat and seasonal ranges, limited availability, high vulnerability to habitat alteration, large number of cavity-dependent species.</p>
<p>Talus</p>	<p>Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.</p> <p>Criteria: Limited availability, unique and dependent species, high vulnerability to habitat alteration.</p>

APPENDIX 9. Adjacent Landowners

Under Construction

APPENDIX 10. Eastern Okanogan County Citizen Advisory Group

Anna Lyon, Supervisor, Okanogan County Noxious Weed Office, P.O. Box 791, Okanogan, WA. 98840,

alyon@co.okanogan.wa.us

Jerry Barnes, Okanogan Co. Cattleman and Okanogan County Concerned Citizens (OC3), P.O. Box D, Loomis, WA. 98827

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Bob Gillespie, Wenatchee Valley College, 116 West Apple, Omak, WA. 98841

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Lee Root, Okanogan Valley Land Council, P.O. Box 405, Oroville, WA. 98855

lroot@nvinet.com

Joe Berney, Land Owner, 1751 Conconully Hwy, Okanogan, WA. 98840

Vacant, Okanogan Trails Coalition, , Omak, WA. 98841

Jere Gillespie, Chesaw resident, P.O. Box 792 Omak, WA. 98841

columbiana@televar.com

Brian Derting, WDNR, P.O. Box 190, Colville, WA. 99114

Brian.derting@wadnr.gov

Dick Finch, Okanogan Wildlife Council, 23 Black Rd, Omak, WA. 98841

finch@ncidata.com

Rick Lind, private individual, 885 Hwy 7, Tonasket, WA 98855

rickl@televar.com

George Wooten, Conservation Northwest, P.O. Box 501, Twisp, WA 98856

gwooten@mymethow.com

Tom Scott, Oroville-Tonasket Irrigation District & Oroville Sportsmen's Club; P.O. Box 1, Oroville, WA 98844; ot5id@nvinet.com

APPENDIX 11. Grant Sources, Supporting Agencies and Organizations

Mule Deer Foundation	http://www.muledeer.org/
Ruffed Grouse Society	http://www.ruffedgrousesociety.org/index.asp
Foundation for North American Wild Sheep	http://www.fnaws.org/
Ducks Unlimited	http://www.ducks.org/
United States Department of Agriculture (USDA)	
Forest Service (FS)	http://www.fs.fed.us/
Natural Resource Conservation Service (NRCS)	http://www.nrcs.usda.gov/
United States Department of the Interior (USDI)	
Bureau of Land Management (BLM)	http://www.blm.gov/nhp/index.htm
Fish and Wildlife Service (F&WS)	http://www.fws.gov/
Bureau of Indian Affairs (BIA)	http://www.doi.gov/bureau-indian-affairs.html
Oroville Sportsmen's Club	
Okanogan Valley Land Council	http://www.ovlandcouncil.org/
The Nature Conservancy	http://www.nature.org/

REFERENCES

- Demarchi, D. A. 1975. Report and recommendations of the workshop on California bighorn sheep *in: The Wild Sheep in Modern North America*, pp. 143-163. Winchester Press. New York. 302 pp.
- Gray, R.W. 2001. The effect of stand structure and fire regime alterations on Bighorn sheep habitat. Unpublished Report. 39pp.
- Johnson, R. 1983. Mountain goats and mountain sheep of Washington. i-vii + 196 pp.
- Smith, T. S., P.J. Hardin, and J.T. Flinders. 1999. Response of bighorn sheep to clear-cut logging and prescribed burning. *Wildlife Society Bulletin* 27:840-845
- Schneegas, E.R., R.S. Bumstead. 1977. Decline of western mule deer populations: probable cause, tentative solution. A presentation at the fifty-seventh Annual Conference of the Western Association of State Game and Fish Commissioners in Tucson, Arizona. July 12, 1977.
- Soil Survey of Okanogan County Area, Washington. 1980. United States Department of Agriculture Soil Conservation Service in cooperation with Washington State University Agricultural Research Center. i-vi + 153 pp. + 107 maps.
- Visalli, D. 2003. Vascular plants of the Sinlahekin Wildlife Area. 35 pp.
- Washington Department of Fish and Wildlife. 2003. Game Management Plan, (<http://wdfw.wa.gov/wlm/game/management>)
Washington Department of Fish and Wildlife, Olympia, Washington, USA
- Wiley, J.K. 2004. Feds, volunteers help sheep spot predators. AP news release

Literature Cited

Concepts, Ideas and Discussions

1. Disturbance Processes and Ecosystem Management (<http://www.fs.fed.us/research/publications/disturb.htm>)
2. Landscape Ecology and Natural Disturbances: Relationships to Biodiversity (<http://www.for.gov.bc.ca/hfd/pubs/docs/en/en10.htm>)
3. Wetlands in Washington - Volume 1: A Synthesis of the Science (Publication #05-06-006) (http://www.ecy.wa.gov/programs/sea/bas_wetlands/volume1final.html)

Data and Records

4. Western Regional Climate Center (wrcc@dri.edu)

Policies, Procedures, Permitting and Planning

5. Comprehensive Wildlife Conservation Strategy (<http://wdfw.wa.gov/wlm/cwcs>)
6. Hydraulic Code Chapter 77.55 RCW (<http://www.leg.wa.gov/RCW/index.cfm?fuseaction=chapterdigest&chapter=77.55>)

7. State Environmental Policy Act (SEPA) Chapter 43.21C RCW
(<http://www.leg.wa.gov/pub/rcw/RCW%20%2043%20%20TITLE/RCW%20%2043%20.%2021C%20CHAPTER/RCW%20%2043%20.%2021C%20CHAPTER.htm>)
8. State Environmental Policy Act (SEPA) WDFW (<http://wdfw.wa.gov/hab/sepa/sepa.htm>)
9. Washington State Comprehensive Outdoor Recreation Plan
10. Wildlife Viewing Activities in Washington – A Strategic Plan
11. Wildlife Area Statewide Plan (<http://wdfw.wa.gov/lands/lands2020>)
12. Wildlife Status Reports (as they relate to species found or potentially found on the CWA)
 - Bald eagle
 - Burrowing owl
 - Common loon
 - Fisher
 - Lynx
 - Peregrine Falcon
 - Sharp-tailed grouse
 - Western gray squirrel
13. Wildlife Recovery Plans (as they relate to species found or potentially found on the CWA)
 - Bald eagle
 - Band-tailed pigeon
 - Bighorn sheep
 - Black bear
 - Cougar
 - Deer
 - Fisher
 - Furbearers
 - Gray wolf
 - Grizzly bear
 - Lynx
 - Moose
 - Mountain goat
 - Sandhill crane
 - Sharp-tailed grouse
 - Upland birds
 - Western gray squirrel
 - Waterfowl
14. WDFW Goals and Objectives (http://wdfw.wa.gov/depinfo/strat_goals_obj.htm)
15. WDFW Habitat Conservation and Recreation Plan 2004 – 2010
16. WDFW Policies and Procedures
17. WDFW Strategic Plan (http://wdfw.wa.gov/depinfo/strat_goals_obj.htm)
18. Washington Forest Practices Act - Title 76.09 RCW
(<http://www.dnr.wa.gov/forestpractices/rules/>)
19. Washington Forest Practices Rules – Title 222 WAC
(<http://www.dnr.wa.gov/forestpractices/rules/>)

Management and Techniques

20. Species of Concern (<http://www.wdfw.wa.gov/wlm/diversity/soc/soc.htm>)
21. Priority Habitats and Species List (<http://wdfw.wa.gov/hab/phslist.htm>)

22. Priority Habitats and Species – Invertebrates (<http://wdfw.wa.gov/hab/phsinvrt.htm>) Priority

23. Habitats and Species – Vertebrates (<http://wdfw.wa.gov/hab/phsvert.htm>)

24. Priority Habitats and Species – General Information

(<http://www.wdfw.wa.gov/hab/phspage.htm>)

25. Priority Habitats and Species Recommendations (<http://wdfw.wa.gov/hab/phsrecs.htm>)

As they relate to species found or potentially found on the CWA

Volume I – Invertebrates (<http://wdfw.wa.gov/hab/vol1.htm>)

Silver-bordered bog fritillary

Volume II – Fish and Marine Invertebrates (In development by Agency)

Volume III – Amphibians and Reptiles

Columbia spotted frog

Volume IV – Birds

Bald eagle

Band-tailed pigeon

Black-backed woodpecker

Blue grouse

Burrowing owl

Cavity-nesting ducks

Chukar

Flammulated owl

Golden eagle

Great blue heron

Lewis' woodpecker

Loggerhead shrike

Northern goshawk

Peregrine falcon

Pileated woodpecker

Prairie falcon

Ring-necked pheasant

Sage sparrow

Sage thrasher

Sandhill crane

Sharp-tailed grouse

Shorebirds

Vaux's swift

Wild turkey

White-headed woodpecker

Volume V – Mammal (In development by Agency)

Merriam's shrew

Pallid bat

26. Design of Road Culverts for Fish Passage

(http://wdfw.wa.gov/hab/engineer/cm/culvert_manual_final.pdf)

27. Stream Habitat Restoration Guidelines (SHRG) (<http://wdfw.wa.gov/hab/ahg/shrg/index.htm>)

28. Integrated Streambank Protection Guidelines (ISPG) (<http://wdfw.wa.gov/hab/ahg/ispgdoc.htm>)

29. Wetlands in Washington - Volume 2: Guidance for Protecting and Managing Wetlands

(Publication #05-06-008) (http://www.ecy.wa.gov/programs/sea/bas_wetlands/volume2final.html)

30. Woodland Fish and Wildlife Project Publications (<http://www.woodlandfishandwildlife.org/>)
31. Salmon and Steelhead Habitat Inventorizing and Assessment Program (SSHIAP) (<http://wdfw.wa.gov/hab/sshiap/>)
32. Information Related to Growth Management Act (<http://www.wdfw.wa.gov/hab/gmapage.htm>)
33. Aquatic Habitat Guidelines (AHG) Program Information (<http://wdfw.wa.gov/hab/ahg/>)