

Wildlife Area Habitat Conservation Plan Activity Summary Sheets

In support of the NEPA public scoping process for the Wildlife Areas Habitat Conservation Plan (HCP), the Washington Department of Fish and Wildlife has prepared summary descriptions of the activities that will be covered in the plan. Those descriptions have been compiled in this document, specifically for the purpose of providing public access to these summaries through the internet.

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Agriculture

Plant/Harvest Agriculture

Agriculture occurs on Wildlife Areas primarily to produce food and cover for wildlife, and secondarily for commercial purposes in the form of agricultural leases. Food and cover attract target wildlife species and reduce depredation to privately owned croplands that neighbor Wildlife Areas. Agriculture across the covered lands is somewhat diverse and may be planted or harvested in both spring and fall. In addition, some crops are left standing for the benefit of wildlife (a.k.a. food plots). Standard agricultural practices are applied as necessary per site, including plowing, planting, and harvest, as well as irrigation, weed control, and burning to remove crop residue.

WDFW conducts its own agricultural practices (primarily as food plots), and issues agricultural leases to private individuals. WDFW assumes that lessees operate under current agricultural Best Management Practices (BMPs), and monitors for compliance with lease agreements. Currently, approximately 7,344 acres of land are engaged in agriculture.

Conservation Reserve Program

Some WDFW lands are enrolled in the Conservation Reserve Program (CRP). This program is administered by the USDA Farm Service Agency (FSA). The CRP encourages farmers to convert highly erodible or otherwise sensitive land to vegetative cover, including wildlife habitat. A resource-conserving cover of grasses, shrubs and trees is planted, requiring site preparation and planting activities. After year one, vegetation maintenance may be required, including irrigation, limited grazing, mowing and reseeding. Currently, approximately 8,083 acres of covered lands are enrolled in CRP.

Other Activities Associated with Agriculture

- **Irrigation.** All of the agricultural types listed above may be irrigated or non-irrigated. The amount of irrigation water used to support agriculture does not exceed the amounts allotted to WDFW per water rights.
- **Construction, Operation, Maintenance and Removal of Water Control Structures.** Water control structures associated with agriculture include ditches, dikes, and irrigation pipes and pumps.
- **Weed Control.** Weed control is an important component of agriculture. The Wildlife Areas HCP will cover all methods of non-chemical weed control utilized by WDFW, including those applied to agricultural fields.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Soil disturbance commonly occurs during seed-bed preparation, particularly tilling and plowing. This can result in dust and effects to nearby surface waters such as increases in suspended sediment and potential nutrient loading.
- The use of agricultural equipment such as tractors may cause noise, trampling of non-mobile species (or life stages, such as eggs) and fuel or lubricant spills. Effects include disturbance responses, direct physical harm or mortality, and habitat loss or decrease in habitat quality.
- Smoke from field burning may cause avoidance behavior, while fire may directly harm non-mobile species or certain life stages.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of agriculture on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Seasonal restrictions on activities to minimize disturbance of specific species and avoid direct physical harm.
- Riparian setbacks to minimize impacts to riparian habitat and water quality.
- Appropriate crop residue management to reduce erosion.
- Fallow techniques that minimize dust and erosion.

Forest Management

Activity Description

Forestlands within the Wildlife Areas are managed to provide habitat for forest-dwelling wildlife and to protect water quality and aquatic habitat for fish and other aquatic species. All forest management activities on the Wildlife Areas are conducted in compliance with the Washington Forest Practices Act (RCW 76.09) and Forest Practices Rules (WAC 222), which include provisions for the design and performance of timber harvests, maintenance and abandonment of forest roads, and protection of public resources including fish, wildlife, water quality, transportation infrastructure and cultural resources. Commercial timber harvest other than thinning (e.g., clearcutting, seed-tree harvest, shelterwood harvest and selection harvest) is not conducted on the Wildlife Areas unless needed to meet a specific wildlife habitat objective.

- **Thinning.** Thinning projects are conducted to improve forest health, reduce the risk of wildfire, and restore or enhance habitat. For example, they may be used to reduce total tree density in over-stocked forests, or to accelerate the development of mature and late-seral conditions in young forests. If mature timber is removed, it may be marketed to help fund the project.
- **Salvage logging.** Salvage logging may occur following disturbance (e.g., fire, wind, insects or disease) if it is needed to restore desired habitat conditions and it is consistent with other Wildlife Area objectives. Marketable timber may be sold to help fund the restoration work.
- **Site preparation, tree planting, and brush control.** This occurs as needed following disturbance, or on timberlands harvested prior to WDFW acquisition. Site preparation may involve broadcast burning, slash removal or soil scarification, in preparation for planting.
- **Prescription burning.** Controlled fire is utilized primarily in eastern Washington to reduce the risk of catastrophic wildfire and emulate natural disturbance regimes necessary for ecosystem functioning.
- **Firewood cutting and collection.** Firewood cutting for offsite use and firewood collection for onsite use (camping) are both allowed on a regulated basis in selected locations. Wood must be already downed. Felling of trees for firewood is prohibited.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Removal of woody vegetation during thinning may cause changes in the vegetative community that result in habitat loss or degradation for certain species.
- Thinning and salvage logging operations involve noise, human disturbance, the use of heavy machinery, and possibly the building of roads and landing sites. Effects include disturbance responses, direct physical harm or mortality, and habitat loss or decrease in habitat quality.
- Prescribed fires may create temporary increases in erosion. Effects to nearby surface waters may include increases in suspended sediment and turbidity. Hydrologic cycles may also be altered due to increased runoff after vegetation removal.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of forest management on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Exceeding, or at a minimum meeting, standards established in the State Washington Forest Practices Act and Forest Practices Rules.
- Comprehensive assessment of sites proposed for thinning, salvage logging and prescription burning.
- Employing techniques during logging operations to minimize soil disturbance and reduce erosion.

Gamebird Stocking

Activity Description

WDFW releases game birds in order to increase hunting opportunities or augment existing populations. Birds are generally released along established access roads, but may be released in close proximity to established upland game bird feeders. Stocking occurs primarily in fall and winter.

- **Ring-Necked Pheasant.** WDFW manages annual pheasant release programs in both eastern and western Washington, across public lands of varied ownership. Only those releases that occur on Wildlife Areas will be covered by the Wildlife Areas HCP. Pheasants are currently released on 19 Wildlife Areas.
- **Merriam's Turkey.** Sporadic turkey releases may occur in support of the Washington State Management Plan for Wild Turkey, particularly on the Blue Mountains Complex. In addition, turkeys may be translocated in response to agricultural damage complaints from private landowners.
- **California Quail.** WDFW permits the release of California quail onto Wildlife Areas by recreation organizations and clubs, and also conducts limited translocations to support hunting recreation.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Released birds may compete with protected species for food sources.
- Artificially sustained populations of released birds may influence predator distribution on the landscape, indirectly resulting in predation on covered species.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of bird stocking on covered species, such as the measure listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Prohibitions on the release of game birds where there is a possibility of competition with protected species.

Grazing

Activity Description

Grazing, generally by domestic cattle, is permitted in certain locations if it is determined to be consistent with the desired ecological conditions for the site or with the WDFW Strategic Plan. This policy recognizes the use of grazing as a management tool to manipulate vegetation for wildlife, accomplish specific habitat objectives, and facilitate coordinated resource management.

WDFW currently conducts grazing on approximately 78,456 acres of its 900,000 acres, through 33 permits. Timing and duration of grazing, stocking rates and utilization rates are permit-specific. Grazing permit terms are no greater than five years, but existing permits may be submitted for renewal. Each grazing permit (excluding temporary permits lasting less than 2 weeks) must have a grazing management plan that includes a description of ecological impacts, desired ecological condition, wildlife benefits, a monitoring plan, and an evaluation schedule.

WDFW's grazing permits are designed to achieve specific biological objectives defined by the Wildlife Area manager. Objectives are achieved through manipulation of standard grazing variables, such as intensity (measured both as stocking rate and forage utilization), season of use, and frequency. These variables influence the magnitude of grazing effects on vegetation, soils and water quality.

Activities Associated with Grazing

In addition to livestock grazing, activities in this category include construction, maintenance and removal of associated structures, and cattle management through active herding and salt placement. The purposes of these activities and structures are briefly described.

- **Fences.** Fences are used to contain livestock within desired portions of the permit area and exclude livestock from sensitive areas. WDFW and grazing permit holders share responsibility for the installation and maintenance of fences. Fences may be permanent or temporary.
- **Livestock Troughs.** Troughs are used primarily to improve livestock distribution and increase forage availability. On WDFW lands, water developments are also used to minimize the impact of cattle on water quality and the riparian environment by diverting them way from natural water courses. Water for livestock troughs is generally provided by seep/spring developments (described below), but may occasionally be pumped from creeks or wells or delivered via water truck.
- **Seep and Spring Developments.** WDFW develops seeps and springs as needed to provide additional water for livestock. Water developments improve livestock distribution and increase forage availability by promoting livestock access to areas that were once avoided due to their distance from water. On WDFW lands, water developments are also used to minimize the impact of cattle on water quality and the riparian environment by diverting them way from natural water courses.

- **Active Herd Management.** Active herding may be used to influence cattle distribution across a pasture.
- **Salt/Mineral Provision.** WDFW and grazing permittees may provide salt or mineral blocks to influence cattle distribution.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Trampling by livestock may directly and indirectly affect soils, vegetation, and wildlife. Trampling of soils may result in soil compaction, which decreases water infiltration and availability to plants, and increases runoff, erosion, and sediment production and transport. Persistent trampling is expected in areas of livestock concentration, particularly around watering and supplement sites, potentially resulting in vegetation loss (denudation) in these areas.
- In riparian ecosystems, the effects of grazing involve vegetative cover removal and interruption of stand regeneration, impacting both fish and wildlife habitat and altering microclimate. Excessive removal of overhanging vegetation in riparian areas decreases allochthonous (vegetative) river inputs, and increases water temperature due to greater solar exposure, which in turn may lead to decreased dissolved oxygen.
- Vegetative changes caused by grazing, including the introduction of invasive plant species, may result in habitat degradation or loss.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of grazing on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Implementation of monitoring and adaptive management to maintain ecological integrity.
- Improved riparian management, including additional use of fencing, water sources, and potential modification of timing and utilization.
- Active management of intensely used areas, to avoid excessive loss of vegetation and soil compaction.

Habitat Restoration

Activity Description

Habitat restoration is a high priority management objective for WDFW. All restoration activities are implemented for the explicit purpose of reestablishing ecological processes or functions within the restored area. The exact nature of an individual project varies depending on scale, site condition, habitat type, adjacent lands, and other factors. WDFW currently conducts restoration activities in several habitat types. They are described below, along with the more common aspects of restoration work.

- **Shrub–Steppe.** Shrub-steppe habitat was historically found in arid areas of eastern Washington and is dominated by a mix of perennial bunchgrasses and shrubs such as rabbit-brush and big sagebrush. Loss of native shrub-steppe communities to agriculture is a principal cause for the decline in a number of wildlife populations in the state. Actions may include the phased implementation of tilling techniques, including summer fallowing, and fall disking or harrowing for site preparation. Seeding typically occurs in late fall. Planting, weed control and erosion control may also occur.
- **Prairie.** The Puget Sound lowlands are the primary home for grasslands and glacial outwash prairies. Restoration is conducted to counteract the loss of prairie to development, forest encroachment and invasive weeds. Planting, seeding, weed control, erosion control, mowing and tree cutting are used to restore prairies.
- **Oak Woodland.** Oregon white oak is Washington’s only native oak. Although limited and declining, the oaks and their associated floras comprise distinct woodland ecosystems. Oregon white oaks occur within the Puget Trough, Washington’s south-central counties, along the Columbia Gorge, and northward along the east side of the Cascade Range. Restoration is conducted to counteract losses due to encroaching coniferous forests and development. Activities may include prescribed burning, weed control, selective thinning of encroaching conifers, vegetation planting, vegetation seeding, mowing and erosion control.
- **Stream Channel.** Streams and rivers throughout the state provide habitat to a spectrum of freshwater organisms, including anadromous fish. Some small stream restoration projects can be constructed with hand labor, but most require the use of heavy equipment. Complete channel reconstruction can involve grading and excavating to reestablish a meandering main channel, side channels and off-channel habitat. Installation of in-stream features can include placement of large woody material, boulder clusters, and salmonid spawning gravel. Channel dewatering, fish relocation and exclusion, and bank stabilization are usually associated with stream channel restoration projects. Dike removal, ditch removal, and riparian restoration may also be part of channel restoration.
- **Riparian.** Riparian habitat occurs throughout the state as a typically narrow band adjacent to rivers, perennial streams, intermittent streams, seeps, and springs. Riparian areas contain elements of both aquatic and terrestrial ecosystems which mutually influence each other and occur as transitions between aquatic and upland habitats. Restoration efforts focus on reestablishing these functional relationships to maintain habitat for both aquatic and terrestrial species. Riparian restoration may include vegetation planting, vegetation seeding, weed management, bank stabilization/restoration and fencing.

- **Floodplain and Estuary.** Floodplain and estuary restoration are conducted to remove man-made impediments to the movement of surface water and restore native vegetation to areas that have been cultivated, developed, or otherwise modified from their natural plant communities. These may be conducted concurrent with stream channel, wetland and riparian restoration. Estuary restoration may employ dike removal, ditch removal, dredging, planting, seeding, noxious weed management, and erosion control.
- **Wetland.** Wetlands throughout Washington have been impacted by filling, draining and/or introduction of non-native plants and animals. Restoration is conducted to restore historic hydrologic regimes and re-establish native plants. Wetland restoration can involve dike removal, ditch removal, plugging of drainage systems, addition of large woody debris, planting and seeding. Stream channel restoration, floodplain/estuary restoration and riparian restoration may occur concurrent with wetland restoration.
- **Agricultural land conversion.** Agricultural land conversion is the removal of agricultural land from production and establishment of a native or “native-like” cover crop, which serves to minimize erosion and provide some forage and cover quality to wildlife. Generally, this does not constitute habitat restoration, but should be considered a step towards restoration. Land may be converted, rather than fully restored, when funding is limited.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Soil disturbance may occur during most restoration activities. Size of disturbance is highly variable. Soil disturbance may cause erosion, resulting in sediment inputs into nearby water bodies. Sediments in water can raise turbidity levels, interrupt fish behavior and cause habitat degradation.
- The use of heavy equipment may cause noise, soil disturbance, vegetation trampling or removal, trampling of non-mobile species (or life stages, such as eggs) and fuel or lubricant spills. Effects include disturbance responses, direct physical harm or mortality.
- Habitat restoration is anticipated to ultimately benefit habitat, and no long-term negative impacts are expected.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effects of habitat restoration on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Comprehensive planning and assessment of sites to ensure that no protected species are present while restoration activities are conducted.
- Erosion control, including revegetation, mulching, and other means, to minimize soil loss and water quality impacts.

Organized Field Trial Events and Organized Horseback Riding Events

Activity Description

Coverage of recreation in the HCP will be limited to group events involving horseback riding and field trials. Group events are organized activities that include more than 30 people, and require a temporary land use permit from the WDFW director. Permits define the terms of each event, including rules and limitations.

- **Organized Horseback Riding.** Common horseback riding events include poker runs, club rides, endurance rides and wagon trains. Horseback parties may camp overnight on Wildlife Areas, usually at sites designated by WDFW. Permittees may be allowed or required to provide route signage and portable toilet structures. Placement and removal of such items may occur on the days immediately prior to and after the event.
- **Field Trials.** Field trials test a dog's ability to perform a series of specific tasks or functions. Field trials permitted on Wildlife Areas may include dog handlers on foot or horseback, and release of game birds for dogs to find and retrieve. Field trials may be associated with both terrestrial and aquatic habitats. Formal field trials are usually organized events that occur over a two- to three-day period (usually on weekends) and can include up to 100 dogs or more. During field trails, permittees may be required to provide portable toilets and refuse bins, and are responsible for removal of these at the end of the event.

Field trials differ from trail rides in that they tend to occur repeatedly at the same locations throughout the spring and summer months, and on some Wildlife Area units may occur every weekend. The Scatter Creek, Shillapoo and Snoqualmie Wildlife Areas have hosted events in recent years.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Human presence may result in noise, trampling of vegetation, and general disturbance. Species responses are highly variable, but may include temporary or permanent avoidance of a specific area.
- Dog presence may result in harm or harassment of wildlife, noise, and coliform contamination of surface waters. Vegetation may also be impacted at heavily used sights. Effects include wildlife disturbance responses, direct physical harm or mortality, and impacts to habitat quality.
- Effects of horseback riding are primarily direct, ground-level damage to soil and vegetation, including displacement of sediments and erosion, loss of vegetation height, and loss of cover

through trampling and browsing. Horses may also act as weed vectors or contribute to contamination of surface waters. These effects may result in habitat degradation or loss.

- Weapon discharge results in noise that may be disturbing to covered species.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of organized recreation on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Seasonal and/or spatial restrictions on activities to minimize disturbance of specific species or habitats.
- Limitations on the number of horses allowed at specific events.
- Waste management measures to reduce impacts to water quality.

Roads, Parking Areas and Trails

Activity Description

The Wildlife Areas HCP covers all aspects of *certain* roads, trails and parking areas. This includes construction, maintenance, use (or presence), and abandonment (removal). Only roads that are owned and maintained by WDFW will be covered in the HCP. Roads crossing WLAs but owned and maintained by other State agencies, counties, federal agencies, or other entities are not covered by the Wildlife Areas HCP.

Roads on the Wildlife Areas are two-lane or single-lane roads designed for light to moderate vehicle use. Many single-lane roads also double as trails for pedestrians and equestrians. Most roads and parking areas are surfaced with gravel or native soils. WDFW maintains control over daily and seasonal use of roads to ensure that vehicle traffic is consistent with road surface design and weather conditions.

Trails, paths and walkways are built and maintained for a variety of recreational activities, including foot travel and non-motorized travel (e.g., mountain biking, horseback riding). Trails are classified as either standard or American with Disabilities Act (ADA) compliant. No public use of motorized vehicles is allowed on trails. Most trails are constructed entirely of native materials, although some are graveled. Trails designed to ADA standards may be paved with asphalt.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Road presence may cause mortality of covered species through vehicle collisions. It also may limit movement patterns and cause avoidance or abandonment of certain habitat areas.
- Soil disturbance occurs during most maintenance, construction or removal activities. Soil disturbance may result in erosion and sediment inputs into nearby water bodies. Sediments in water can raise turbidity levels, interrupt fish behavior and cause habitat degradation or loss.
- The use of heavy equipment may cause noise, soil disturbance, vegetation trampling or removal, and fuel or lubricant spills. Effects include disturbance responses, direct physical harm or mortality, and habitat loss or decrease in habitat quality.
- Human presence on roads, trails and at parking areas may result in noise, trampling of vegetation, and general disturbance. Species responses are highly variable, but may include temporary or permanent avoidance of a specific area.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of activities related to roads, parking areas and trails on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Maintenance standards for power tools and heavy equipment to minimize impacts to water quality.
- Erosion control, including revegetation, mulching, and other means, to minimize soil loss and water quality impacts.
- Exceeding, or at a minimum meeting, applicable laws such as the Washington Forest Practices Rules.
- Seasonal restrictions on activities to minimize disturbance of specific species.
- Abandoning or obliterating roads which are no longer needed or contribute to water quality problems due to poor design.

Routine Habitat Management

Activity Description

Routine habitat management includes the spectrum of activities described below. In general, these activities are conducted to achieve or maintain a specific habitat objective, which includes keeping a site in a native or semi-native state and controlling the spread of invasive weeds.

- **Mowing.** Mowing is conducted to achieve objectives such as improving forage conditions for priority species or to control invasive weeds at a site (thereby maintaining habitat). Mowing may occur year round, but is most likely to occur in summer and fall.
- **Tilling.** Outside of agricultural applications, tilling may be conducted to prepare soil for vegetation seeding or planting, to enhance the growth of desired vegetation, to control weeds, or to provide a disturbance to perennial dominated vegetation communities.
- **Vegetation Planting.** Vegetation planting includes manual and mechanical planting of grass, forbs, shrubs and tree starts. It is conducted to enhance or restore native vegetation and ecological function in an area, and control the spread of invasive weeds and erosion.
- **Vegetation Seeding.** In the context of habitat management, WDFW seeds grasses, forbs and shrubs to enhance or restore native vegetation and ecological function in an area, and control the spread of invasive weeds. It may be also conducted in association with habitat restoration projects, to speed recovery after disturbance, and to control erosion.
- **Pruning.** WDFW generally prunes woody vegetation to reduce competition (such as shading) when establishing restoration plantings. Pruning occurs as needed and may be conducted year-round.
- **Moist Soil Management.** This practice is a traditional wetland management technique that is used to benefit wildlife, particularly waterfowl and shorebirds. Moist soil management is used to establish a desired hydrologic regime and may mimic the seasonal water fluctuations of an undisturbed wetland. It includes serial timed water level manipulations coupled with soil disturbance and vegetation management, for the creation of saturated, exposed soil, surface water, and emergent vegetation. Moist soil management may include water drawdown from, or irrigation of, wetlands, as well as mowing and tilling for vegetation removal. Moist soil management relies on the use of water control structures such as irrigation pumps, floodgates, dikes and ditches.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Human presence may result in noise, trampling of vegetation, and general disturbance. Species responses are highly variable, but may include temporary or permanent avoidance of a specific area.
- The use of power tools may result in noise, vegetation removal, and the risk of fuel or lubricant spills. This may result in wildlife disturbance responses and a decrease in habitat quality.
- The use of heavy equipment such as tractors may cause noise, soil disturbance, vegetation trampling or removal, trampling of non-mobile species (or life stages, such as eggs) and fuel or lubricant spills. Effects include disturbance responses, direct physical harm or mortality, and habitat loss or decrease in habitat quality.
- Soil disturbance occurs during tilling. Soil disturbance may result in erosion and sediment inputs into nearby surface waters. Sediments in water can raise turbidity levels, interrupt fish behavior and cause habitat degradation.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of routine habitat management on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Seasonal restrictions on activities to minimize disturbance to specific species.
- Maintenance standards for power tools and heavy equipment to protect water quality.
- Restrictions on vegetation removal and soil disturbance in previously undisturbed areas.

Upland Infrastructure

Activity Description

Covered activities in this category include the construction, maintenance, removal and use of structures classified as upland infrastructure.

- **Buildings.** Most buildings on the covered lands are offices, barns, sheds, and houses.
- **Restrooms.** Restrooms include both vault and portable toilets.
- **Campgrounds.** Campsites typically include a parking area, fire ring, and a graded surface for tent or RV. Campgrounds may also contain toilet facilities.
- **Kiosks and Reader Boards.** Permanent and temporary kiosks provide information to the public and are often posted at trail heads, access sites, and in parking lots.
- **Wildlife Hunting/Viewing Blinds.** Blinds are permanent or temporary structures that may be used for hunting, wildlife viewing, and photography.
- **Fences.** Fences range from four to eight feet tall. They are used to protect sensitive habitat or vegetation from disturbance, mark property lines, restrict public access, and prevent cattle trespass.
- **Artificial Nest and Roost Structures.** Artificial nesting and roosting structures (platforms, nest boxes, bat boxes, goose tubs) increase nesting and roosting opportunities for specific wildlife species.
- **Guzzlers.** Guzzlers are structures that provide water for wildlife by catching and storing snow and rain. They are used almost exclusively in arid portions of eastern Washington.

Construction of structures involves varying levels of effort, but frequently includes use of hand and power tools, operation of heavy equipment, vegetation removal, soil disturbance, and erosion control. Maintenance of structures is always expected to include use of hand and power tools. Removal of structures typically has components similar to construction.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Human presence may result in noise, trampling of vegetation, and general disturbance. Species responses are highly variable, but may include temporary or permanent avoidance of a specific area.
- The use of power tools may involve noise, vegetation removal, and the risk of fuel or lubricant spills. This may result in wildlife disturbance responses and a decrease in habitat quality.
- The use of heavy equipment may cause noise, soil disturbance, vegetation trampling or removal, trampling of non-mobile species (or life stages, such as eggs) and fuel or lubricant spills. Effects

include disturbance responses, direct physical harm or mortality, and habitat loss or decrease in habitat quality.

- Soil disturbance may occur during most maintenance, construction or removal activities. Soil disturbance may result in erosion and sediment inputs into nearby water bodies. Sediments in water can raise turbidity levels, interrupt fish behavior and cause habitat degradation or loss.
- Vegetation removal during construction may result in the temporary or permanent loss of habitat. Riparian vegetation removal near streams and rivers may negatively affect water quality parameters such as temperature and turbidity, as well as bank stability.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of upland infrastructure management on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Maintenance standards for power tools or heavy equipment to minimize impacts to water quality.
- Erosion control, including revegetation, mulching, and other means, to minimize soil loss and water quality impacts.
- Riparian setbacks on new infrastructure, to minimize impacts to riparian habitat and water quality.
- Seasonal restrictions on activities to minimize disturbance of specific species.

Water Control Structures

Activity Description

Several different types of structures are included in this category. They are all subject to construction, maintenance, removal and use. The purposes of these structures are briefly described.

- **Dikes.** Dikes are embankments constructed of earth or other materials to regulate the flow of water and prevent inundation of lands. Dikes on Wildlife Areas are used to prevent overflow and promote drainage to protect natural areas, agricultural land, and property. Many dikes located on Wildlife Areas are owned and maintained by local dike districts, and WDFW does not seek coverage for activities conducted by these entities.
- **Ditches.** Ditches may be used for irrigation, drainage for habitat management, and along roads. Some ditches on Wildlife Areas are owned and maintained by local irrigation districts, and WDFW does not seek coverage for activities conducted by these entities.
- **Fish Screens.** Fish protection screens are devices installed at surface water diversions to prevent harm to fish around the intake, and to prevent fish entry into a water intake.
- **Irrigation equipment.** Irrigation equipment includes water intake and diversion structures used to divert water from a stream and deliver it to off stream locations, all pipelines and sprinklers that deliver and distribute water, and pumps used to move water through the system. The infrastructure supports irrigation for agriculture, irrigation for habitat restoration and maintenance, and stock watering. Water sources for irrigation may include streams, water impoundments, and wells.
- **Tide Gates.** Tide gates are one-way check valves or gated culverts used to control the direction of water flow between salt water and fresh water systems. They are used to prevent landward inundation caused by high streamflows or tidal fluctuations, and are often employed to aid in the draining and conversion of floodplains for agricultural use. Tide gates are often associated with dikes.
- **Miscellaneous water control structures.** This category includes structures that function similarly to tide gates but generally regulate the flow of fresh water. These structures include screw gates, flashboard risers, and slide gates, as well as stand pipes and outflow pipes that moderate impoundment depths. These structures are used to control water levels in impoundments and facilitated flooding of moist soil management cells. The majority of these structures are physically integrated into dike structures (including dams/berms).
- **Water Impoundments.** Water impoundments are developed principally to provide fresh water habitat for fisheries, wildlife, recreation, and/or irrigation. The water impoundments addressed here are limited to ponds and reservoirs. Impoundments vary in water depth and seasonal cycling, depending on habitat management objectives. They may be subject to periodic dredging for maintenance.

Generally, construction, removal and major maintenance of water control structures are similar and may include: site preparation, including any vegetation removal necessary as well as grading and dredging; work area isolation through dewatering; erosion control and debris containment; structure installation or construction; rewatering of the site; and site restoration. In many cases, these activities are not associated with a water body, and require no dewatering, dredging, and other in-water components listed above (such as installation of a center-pivot irrigation system). Minor maintenance may include annual visual inspection, debris removal, vegetation management, and other activities that are of relatively small scale.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Construction, removal and major maintenance projects have the potential to be very disruptive, including noise, the use of heavy equipment and human presence. Effects include disturbance responses, direct physical harm or mortality, and habitat loss or decrease in habitat quality.
- Soil disturbance may occur during most maintenance, construction or removal activities. Soil disturbance may result in erosion and sediment inputs into water bodies. Sediments in water can raise turbidity levels, interrupt fish behavior and cause habitat degradation or loss.
- The presences of water control structures alters the hydrology of an area and may reduce hydrologic connectivity, change channel geometry, increase peak flows, alter sediment transport and flow regimes, and restrict fish passage. Effects may include habitat degradation or loss, and interruption of fish behavior.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effects of water control structures on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Exceeding, or at a minimum meeting, standards established in the State Hydraulic Code Rules.
- Comprehensive assessment of proposed construction sites and potentially affected areas, including solutions to all potential fish passage issues.
- Timing restrictions to minimize impacts, such as working during low tide rather than high tide to minimize suspended sediments.

Water Crossing Structures

Activity Description

Water crossing structures facilitate the movement of people, animals, or materials across water from bank to bank. On Wildlife Areas, these structures include bridges, culverts, and fords. Water crossing structures on the covered lands may or may not be associated with roads. Activities include construction, maintenance and removal.

- **Culverts.** Culverts are used for conveying water through a fill. In the HCP Activity Inventory, WDFW has included culverts on both fish- and non-fish bearing waters in this designation.
- **Bridges.** Bridges are used for conveying goods or materials from one side of a water body to another. The covered lands currently have both vehicle accessible bridges and elevated walkways or footbridges. Some of these may be closed to public use.
- **Fords.** Fords are used for conveying goods or materials from one side of a water body to another by passing through, rather than over, the water body. Most fords on the covered lands were present at the time of property acquisition and were not constructed by WDFW. Generally, fords on Wildlife Areas are open to the public and public use is not regulated.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Construction and removal of water crossing structures may include activities such as dewatering and temporary diversion of flows, vegetation removal, grading above and below the water line, dredging, bank armoring and pile driving. These activities have the potential for a variety of impacts, including but not limited to direct mortality of fish and macroinvertebrates, altered flow regime, destabilization of river beds, and altered temperature regime.
- Soil disturbance may occur during most maintenance, construction or removal activities. Soil disturbance may result in erosion and sediment inputs into water bodies. Sediments in water can raise turbidity levels, interrupt fish behavior and cause habitat degradation or loss.
- Vegetation removal during construction may result in the temporary or permanent loss of habitat. Riparian vegetation removal along streams and rivers may negatively affect water quality parameters such as temperature and turbidity, as well as bank stability.
- Over time, a crossing may alter flow patterns or become a barrier to fish passage.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effects of water crossing structures on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Avoiding construction of new water crossings whenever an alternative is available.
- Comprehensive assessment of proposed crossing sites, including solutions to all potential fish passage issues.
- Exceeding, or at a minimum meeting, standards established in the State Hydraulic Code Rules.
- Evaluating and fixing problematic crossings and maintaining new ones to prevent habitat impacts.

Weed Control

Activity Description

The goals of weed control are to 1) maintain and improve habitat for wildlife; 2) meet legal obligations; 3) provide good stewardship; and 4) protect adjacent private lands. Weed control activities that protect and enhance fish and wildlife populations and their habitats are a high priority.

State law requires WDFW to use integrated pest management (IPM). The elements of IPM include prevention, monitoring, prioritization, treatment and adaptive management. The treatment phase may be broken into two categories: chemical and non-chemical. Chemical weed control will not be covered under the HCP. Several methods of non-chemical treatment are available to WDFW, and are described below.

- **Cultural Weed Control.** Cultural weed control is the application of agricultural or habitat restoration practices to control weeds. Cultural weed control methods may include planting crops or native vegetation that competes against weeds; rotating crops to disrupt weed life cycles; planting competitive crops; planting winter cover or fallow crops in rotation to improve soils; altering planting dates; fertilization; and mulching.
- **Manual Weed Control.** Manual weed control is the manual cutting, pruning, grubbing, and/or removal of unwanted herbaceous and woody species. This is often accomplished using work crews with hand tools and hand-operated power tools. Manual techniques can be highly selective and are useful in sensitive habitats, or when weed populations are extremely low or dispersed.
- **Mechanical Weed Control.** Mechanical weed control is the use of tractors, mowers, or other vehicles with implements designed to cut, uproot, or chop existing vegetation, as well as the use of prescribed burning. Mechanical control is generally timed to achieve a certain level of control based on specific weed phenology (e.g., mowing annual weeds before they produce seeds).
- **Biological Weed Control.** Biological weed control involves the intentional use of insects, nematodes, mites, or pathogens to weaken or destroy vegetation. Organisms are released on Wildlife Areas to target specific plant species.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- Soil disturbance created during cultural or mechanical treatments may cause erosion, resulting in sediment inputs into nearby water bodies. Sediments in water can raise turbidity levels, interrupt fish behavior and cause habitat degradation or loss.

- The use of heavy equipment such as tractors may cause noise, trampling of non-mobile species (or life stages, such as eggs) and fuel or lubricant spills. Effects include disturbance responses, direct physical harm or mortality, and habitat loss or decrease in habitat quality.
- Weed control is anticipated to ultimately benefit habitat, and no long-term negative impacts are expected.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of weed control on covered species, such as the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Aquatic weed control will exceed, or at a minimum meet, standards established in the State Hydraulic Code Rules.
- Requiring erosion control or revegetation whenever soil disturbance exceeds a given area.
- Seasonal limitations on cultural or mechanical treatments to avoid disturbance of individual covered species.

Wildlife Feeding

Activity Description

WDFW provides supplemental food and resources to some wildlife species, generally to improve seasonal survival.

- **Wildlife Mineral Stations.** WDFW provides salt and mineral licks to improve mineral balance in big game species. Mineral licks provide the elements important for antler development and lactation, including calcium, phosphorus, magnesium and sodium. Mineral licks may be provided year round.
- **Wildlife Feed Sites.** In accordance with WDFW Policy 5302, WDFW provides supplemental winter feed to deer and elk to increase overwinter survival, to allow for the regeneration of winter habitat that has been severely damaged or destroyed by disaster, to reduce wildlife damage to neighboring private property (agricultural and horticultural crops), and for agency approved research. WDFW currently provides feed annually on five wildlife area units: Cowiche, Oak Creek, L. T. Murray, and Wenas. Feed is generally provided from December 15 to March 15.
- **Upland Bird Feeders.** WDFW provides upland bird feeders to improve the health and survival of upland game birds, primarily California quail, over winter. Upland bird feeders are constructed and maintained adjacent to areas where food is a limiting factor for upland game bird populations.

Potential Impacts on Covered Species

The following are examples of anticipated impacts, based on current scientific knowledge and preliminary analysis of activities conducted on Wildlife Areas. Further analysis and scientific review will generate detailed information on specific impacts.

- The concentration of elk or deer at feeding sites and salt stations may create impacts similar to grazing by domestic cattle. Potential impacts include vegetation trampling, soil disturbance, soil compaction, nutrient loading in surface waters, and decrease in native vegetation. These impacts can result in habitat loss or decrease in habitat quality.
- Minor impacts related to the maintenance and filling of feeders may be related to short, infrequent periods of human presence and the use of power tools and off-road vehicles. These may result in noise and general disturbance. Species responses are highly variable, but may include temporary avoidance of a specific area.

Potential Conservation Measures

WDFW will consider various conservation measures to avoid, minimize and mitigate the effect of wildlife feeding on covered species, including the measures listed below. Selection of conservation measures will be based on effectiveness and practicability, and will occur later in the HCP development process.

- Selection criteria for new feed and mineral station locations, to avoid impacts to sensitive habitat and covered species.
- Mitigating measures to avoid impacts to water quality at existing feed site locations.