Draft
Simcoe Mountains Unit Property Management Plan

Coordinated Resource Management

Open views above Dairy Canyon, Simcoe Mountains Unit. Photo by Alan L. Bauer.

Washington Department of FISH & WILDLIFE

October 2024

Table of Contents

Request this information in an alternative format or language at wdfw.wa.gov/accessibility/requests-accommodation, 833-885-1012, TTY (711), or CivilRightsTeam@dfw.wa.gov.

Introduction

Summary

In June 2016, the Eastern Klickitat Conservation District (EKCD), the Central Klickitat Conservation District (CKCD), and the Washington Department of Fish and Wildlife (WDFW) signed a Memorandum of Understanding (MOU) (Appendix B) to facilitate the habitat conservation and stewardship of lands in the Simcoe Mountains, in Klickitat County. One of the agreements in the MOU called for the development of a Simcoe Mountains Unit Property Management Plan using the established guidelines of the Coordinated Resources Management process. The Simcoe Mountains Unit Coordinated Resources Management (CRM) community process was initiated in September 2016 by the EKCD, CKCD, and the WDFW. The CRM planning process was designed to provide a collaborative approach to the development of an adaptive property management plan to include components for each of the Conservation Values within the MOU which are: Recreational Values, Fish Habitat Values, Wildlife Habitat Values, Water Quality, Quantity, and Hydrology Values, and Working Lands Values, including grazing and forestry.

Participants in the CRM and the development of this Property Management Plan includes representatives from: WDFW, EKCD, CKCD, Yakama Nation, Klickitat County, grazing permittees, NRCS, Western Pacific Timber, Columbia Land Trust, neighboring landowners, and the local outdoor recreation community. Anyone is welcome to participate in the CRM process at any time.

All participants in the CRM process agreed to the following Objectives Statement for the Simcoe Mountains Unit management plan:

> *"Collaborative management, habitat stewardship, and conservation for multiple uses – cultural, recreation, working lands, fish and wildlife."*

Bickleton Ridge Star Flower. Photo by Alan L. Bauer.

Participants also agreed to a plan format, which would include chapters addressing forest management, range management, wildlife/and habitat management, recreation management, hydrology, cultural resources, and infrastructure and maintenance. Subgroups from the CRM participants were assigned to write individual chapters, which were each then reviewed by all participants for review and comment. Participants reviewed the plan again together and reached consensus on the final drafts of each chapter. This was accomplished by meeting monthly until all chapters had been completed. The final Simcoe Mountains Unit Management Plan is included as an addendum to the Klickitat Wildlife Area Management Plan, though the process of writing the content of the Simcoe Mountains Unit Management Plan is unique and distinct from the other portions of the Klickitat Wildlife Area Plan. The MOU amongst WDFW, the EKCD, and CKCD was dissolved in March 2023, however the commitment to participate in the on-going and adaptive CRM process for the development and implementation of the Simcoe Mountains Management Plan remains in place.

Property Description

Simcoe Mountains Unit. Photo by Alan L. Bauer.

The 10, 892 -acre Simcoe Mountains Unit is located in the Simcoe Mountains, which define the southeastern extent of the Cascade Range in Washington (Figure 1 and 2). The Simcoe Mountains are the initiation point for the Rock Creek drainage, representing one of the most diverse fish and wildlife habitats in southcentral Washington. The upper riparian zones of the Rock Creek basin are comprised of ponderosa pine, Douglas fir, and Oregon white oak communities, while the mid-elevation riparian areas are made up of a unique, high-quality white alder plant community not found in other areas of eastern Washington. The area within the Simcoe Mountains Unit includes mixed conifer forest, Oregon oak woodlands, white alder, grassland, shrubsteppe, basalt cliffs, talus, riparian, and in-stream habitats. Collectively, these habitats support the life needs of a variety of wildlife and fish species. Priority species protected in this area include federally listed steelhead, Chinook salmon, state-threatened western gray squirrel, and a significant mule deer population. Recreation uses include deer and turkey hunting, hiking, and wildlife and wildflower viewing. The Simcoe Mountains Unit connects lands managed by the Bureau of Land Management (BLM), Yakama Nation, The Nature Conservancy, Washington State Department of Natural Resources (DNR), Washington State Parks and Recreation Commission, and other large private forest and ranch lands.

The management of this Unit presents a unique partnership opportunity between WDFW, East and Central Klickitat County Conservation Districts, and multiple partners organized through the CRM process. Goals for the Simcoe Mountains Unit include long-term protection of riparian and upland fish and wildlife habitat that provide connectivity from the upper Rock Creek watershed to the Columbia River, within a working lands framework of compatible grazing and forestry.

Figure 1. Simcoe Mountains Unit Vicinity Map.

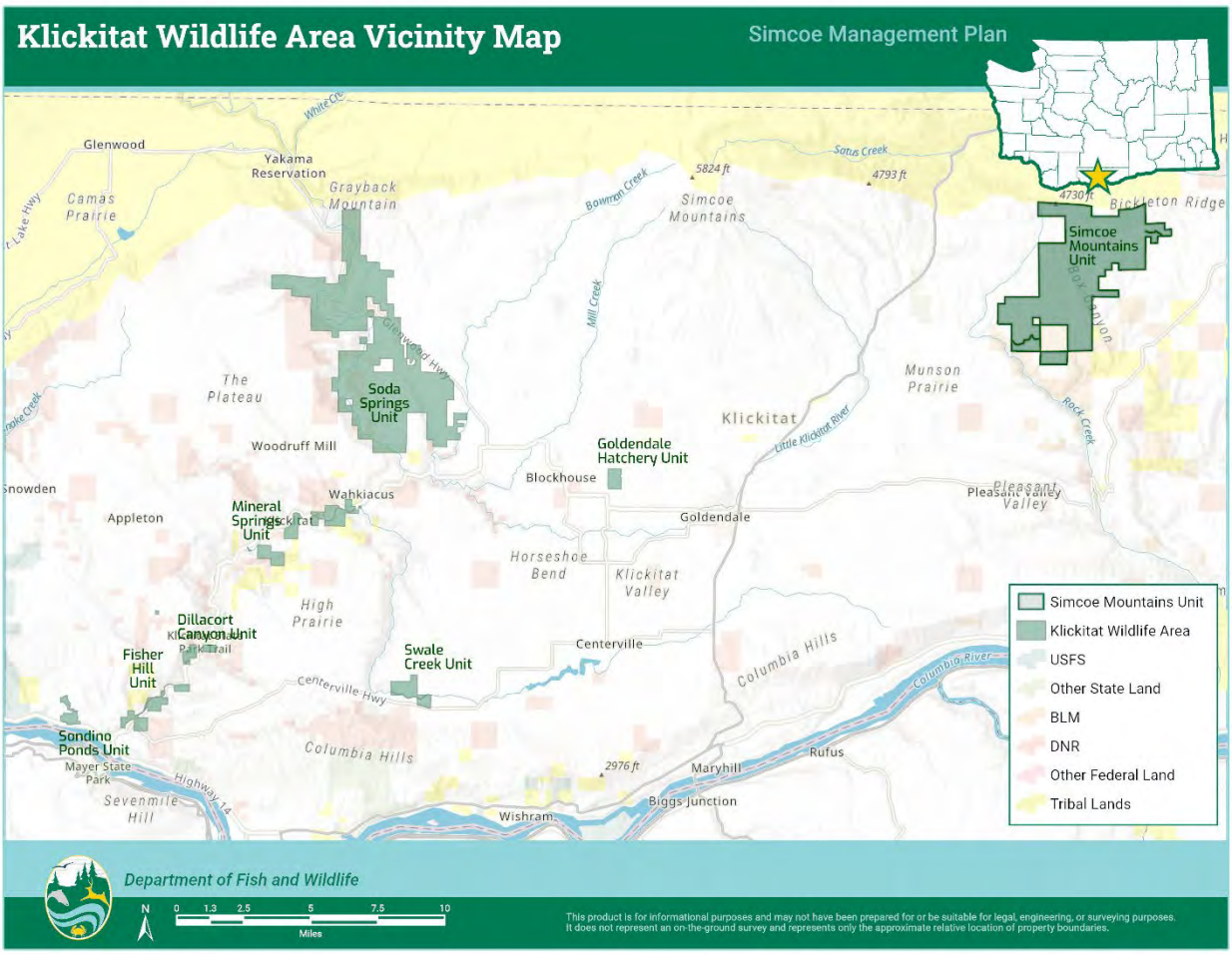
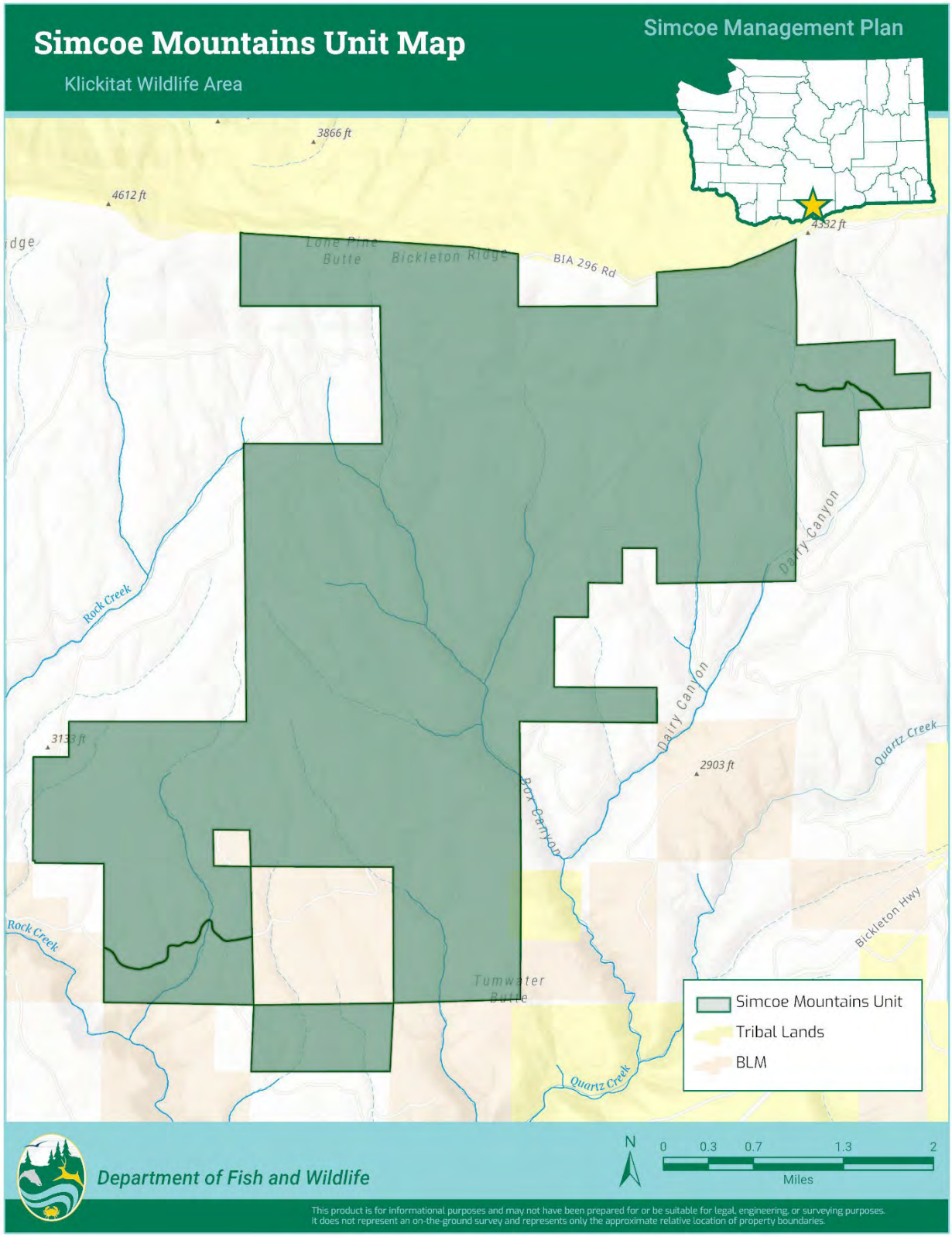


Figure 2. Simcoe Mountains Unit Map.



Manageability and Viability

The Simcoe Mountains and Rock Creek drainage have abundant fish and wildlife resources partially because ownership is in a large intact block. The watershed is either in federal, tribal, state, or private ownership. The CRM process includes state, federal, tribal, county, and private entities to support a long-term partnership within a working lands framework of compatible grazing and forestry. Each entity is committed to continued watershed, wildlife, and habitat management with compatible grazing and forestry, while at the same time ensuring long-term protection of important wildlife habitat through the development of a management plan using the CRM process. While the 2016 MOU among the EKCD, CKCD, and WDFW has been dissolved, all parties remain committed to the CRM process and outcomes.

The Yakama Indian Reservation for the Confederated Tribes and Bands of the Yakama Nation neighbors the Simcoe Mountains Unit. As such, it is important to understand the legal Treaty (June 9, 1855) rights of the Yakama Nation as well as the cultural values that the Simcoe Mountains Unit holds for the Yakama. These include hunting, fishing, gathering, cultural sites, access, and many more, that are all culturally significant. As good neighbors and stewards of the land, it is important to be respectful and ensure management of the Simcoe Mountains Unit acknowledges and is inclusive of these rights and values.

Multiple Benefits

The land ownership and management program for the Simcoe Mountains Unit will reflect the community values of working lands while providing long-term habitat protection and public access to a part of eastern Klickitat County, which has little public land ownership or access.

The Simcoe Mountains Unit offers non-motorized recreational activities including hiking, biking riding, horseback riding, wildlife viewing, hunting, and mushroom and berry picking. This area has significant historical, cultural, and recreational value to the local community.

Established management practices will be used to enhance habitat and species diversity and complexity. A myriad of opportunities for stream and riparian enhancements are possible. Aquatic-related enhancements might include elimination of fish barriers, fencing of key riparian areas, restoration of riparian vegetation, introduction of wood structures into the stream environment, and nutrient enhancement. Habitat enhancements for terrestrial species may include activities such as road maintenance, forest management activities designed to improve forest stand health, weed treatments, restoration of native plant communities, prescribed burns, recovery of previously burned areas, and grazing with the development of a rotational grazing strategy. Long-term monitoring of the habitats associated with these management practices will be conducted. This area protects habitat and species diversity, helps contribute to steelhead recovery, supports working lands with sustainable grazing and forestry, and promotes outdoor recreation and healthy lifestyles by securing public access.

Climate Change

Washington is experiencing the effects of climate change consistent with those observed globally. These changes include higher temperatures, increased drought frequency and severity, a longer frost-free season, decreased spring snowpack, warming stream temperatures, shifts in streamflow

timing and magnitude, and longer and more widespread wildfire seasons. Researchers project these shifts will accelerate in coming years and are expected to fundamentally alter certain ecological processes, creating challenges for the survival of imperiled species and the integrity of vulnerable ecosystems. Despite the uncertainty associated with projecting future landscape conditions, it's important to evaluate risks to climate-sensitive activities and integrate appropriate responses into decision-making, project design, and implementation.

This management plan incorporates climate change considerations into each chapter, with the goal of assessing climate change impacts in the context of other conservation threats or stressors, where relevant, and including appropriate measures to mitigate those risks.

Adaptive Management Process

Each January, WDFW will coordinate a facilitated meeting for Simcoe Mountain Unit CRM participants to evaluate progress toward plan goals. CRM participants will contribute agenda items 30-days prior to the annual meeting date and the facilitator will develop the agenda. The agenda will include all known updates, plans, and issues that may affect the Simcoe CRM for the coming year. This may include any of the objectives, strategies, and tasks listed in the management plan. This review would also include WDFW policy work that may affect the Simcoe Mountains Unit, WDFW and Conservation District project funding opportunities, and an after-action review of previous year's communication and coordination.

The meeting will also provide an opportunity to update and identify projects for the coming year with discussion of goals, objectives, strategies, and tasks. The Goals, Objectives, Strategies, and Tasks list as well as the identified project leads will guide the implementation and timing of the projects. CRM participants will have the opportunity to provide input, recommendations, and participate in project development (either at the meeting or in committees as needed). The Wildlife Area Manager will oversee all the projects and ensure the leads are communicating progress to the CRM participants. As projects arise during the year that need immediate attention, participants can contact the Wildlife Area Manager and then the project lead will communicate with the CRM participants.

In response to non-consensus a participant can request the Wildlife Area Manager to convene the Simcoe Unit CRM for a facilitated discussion. The participants/committee will present the issue to the CRM participants, and will use a variation on basic consensus, as defined below.

In discussing an issue participants agree to:

- Listen with an open mind and be willing to consider perspectives and ideas that come up in the discussion.
- Try to understand the reasoning of the other participants.
- Describe their reasoning briefly so others can understand them.
- Avoid trying to make other people change their minds.
- Resist changing a position simply to reach agreement, while still having significant reservations.
- View differences of opinion as helpful rather than harmful.

- Remember the overarching goal of the property is to balance habitat conservation, non-motorized recreation, and working lands values.
- Consensus does not mean every CRM participant agrees 100% in favor of a given decision. It does mean that at the end of the discussion, when a decision needs to be made, that no participant is willing to stand in the way of the decision moving forward (ideally, all voices and concerns have been fully aired and discussed).

Each January meeting will conclude with clear expectations as to who, what, when, and how information is to be shared throughout the coming year.

Communication for and about the issues/topics will be handled in two ways:

1. Regular updates will be posted to the WDFW website.
2. There will be an internal email listserv including all participants of the CRM. A good faith effort will be made to keep all CRM participants apprised of issues that arise throughout the year.

Simcoe Mountains Unit lupine and pine forest. Photo by Alan L. Bauer.

Forest Management Plan

The Simcoe Mountains Unit includes a diverse mix of forested ecosystems ranging from the relatively dry East Cascades Oak-Ponderosa Pine Forest and Woodland Forest type in the southern portion of the unit to the wetter Northern Rocky Mountain Subalpine Woodland and Parkland Forest type in the northern portion of the unit. Sandwiched in between these two types is the most common forest type on the ownership, the Northern Rocky Mountain dry-mesic montane mixed conifer forest. Previous ownership managed to maximize timber production using a long-term, sustainable business model. The timber management goal for the property, as part of the Klickitat Wildlife Area, is to continue to manage the property as a working forest with an emphasis on providing quality wildlife habitat, resiliency to disease and insects, and a forest that more closely resembles the historic range of variability with high ecological integrity ratings. Any active management will consider strategies for Priority Habitats and Species (PHS).

Forested Uplands Management Strategy

Forested uplands will be managed to preserve, protect, and perpetuate its forests as fish and wildlife habitat while providing sustainable fish and wildlife recreational and commercial opportunities. To ensure that habitat is protected, WDFW forests will generally be managed for high ecological integrity as defined in the mission statement of the *Management Strategy for Washington State Department of Fish and Wildlife's Forests* (Tveten, 2014). Where appropriate, active management will be used to restore stands and accomplish the goal of achieving high ecological integrity. This will be accomplished with small scale projects (pre-commercial thinning, shaded fuel breaks, etc.) and large-scale projects (commercial thinning, oak restoration, etc.) as funding and resources are available. These projects are intended to provide the most favorable habitat conditions for a wide variety of species while making the stands more resilient to insects, disease, and catastrophic fire.

The two forested ecosystems that will substantially benefit from active management are the East Cascades, Oak-Ponderosa Pine Forest, and the Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest.

The following is a summary of stand conditions and management considerations for these two forest types.

East Cascades Oak-Ponderosa Pine Forest

- Forests dominated by Oregon white oak and ponderosa pine or Douglas fir.
- Good candidate for active management.
- Overstory tree stocking levels of approximately 20 to 30 trees per acre.
- A mix of conifer (primarily ponderosa pine with some Douglas-fir) and hardwood species within the historic range of variability.
- Maintain clumps, openings, skips and gaps to create a mosaic stand post-treatment.

- Remove conifer from oak groves exhibiting conifer encroachment.
- Historically had a relatively frequent fire return interval, approximately 20 to 25 years.

Northern rocky mountain dry-mesic montane mixed conifer forest

- Highly variable montane conifer forests on the east slopes of the Cascades and Okanogan Highlands.
- Primary tree species include Douglas fir and ponderosa pine but may include western larch, white pine & lodgepole pine.
- Good candidate for active management (including most of the proposed active management for the East Simcoe acquisition).
- Overstory stocking levels of approximately 25 to 35 trees per acre.
- A mix of conifer (primarily ponderosa pine with some Douglas-fir) and hardwood species within the historic range of variability.
- Maintain clumps, openings, skips and gaps to create a mosaic stand post-treatment.
- Leave unique species (western larch and white pine) when possible.
- Relative frequent historic fire return interval, approximately 20 to 40 years.

Simcoe Mountains Unit Riparian Habitat. Photo by Alan L. Bauer.

Priority Habitat Species

Where PHS species are found on the Simcoe Mountains Unit (western gray squirrel, Oregon white oak, or others), management strategies (using WDFW PHS Guidelines) will be adapted to provide additional protection and/or enhancement measures to maintain or improve habitat quality.

Western Gray Squirrel Management Strategy

The western gray squirrel is a priority species for conservation. The Simcoe Mountains Unit includes suitable habitat for this species. Active management projects will require western gray squirrel nest surveys in advance of layout of proposed projects. Another nest survey will be required just prior to harvest.

Forestry in western gray squirrel habitat that neglects to consider the needs of this species can greatly impact local populations. However, carefully planned forestry can have minimal impacts when the habitat needs of western gray squirrels are accommodated. Forestry projects in squirrel habitat should promote healthy stands by protecting and enhancing key primary and secondary habitat features. Retaining habitat diversity (e.g., variable tree density, small canopy gaps, densely forested patches), rather than creating stand uniformity, is important to maintaining squirrel habitat. Although protecting nest sites is important, it is equally important to conserve foraging areas and escape routes. Forest management plans should also account for the needs of squirrels when planning the harvest of unoccupied stands that have the characteristics of primary and secondary habitat.

Variable-density thinning is the most appropriate method of timber harvest in western gray squirrel habitat. This strategy should include the retention of more densely forested "skip" patches; enhancement of tree growth through thinning and by establishing small gaps; and the retention or creation of variable herbaceous, shrub, and tree canopy cover within a stand. Areas best suited for skip patches will have clusters of nests and/or other characteristics of primary western gray squirrel habitat. Maintaining adequate primary habitat is critical to the continued use of sites by western gray squirrels. Prior to conducting a forest practice, areas of characteristic primary habitat should be identified and designated as limited-entry patches (primarily for fine fuel removal) within harvest units. As we move into the implementation stage of this plan, consultation with habitat biologists will occur to determine if there are any primary habitat areas found within the unit.

A feathered thinning strategy will be used in those areas with nests identified. Trees will be marked in clumps around nest trees, progressing from a no-cut inner zone to a thinning from below in the outer zone to the general upland area marking strategy beyond. Large, open grown trees will be interspersed between clumps to provide a seed source for food and a stopping point when crossing open areas. Natural tree corridors, with tree canopies touching or nearly touching, will be strategically designated as skip areas for travel corridors between high nest density areas. Additionally, no cut Riparian Management Zone (RMZ) buffers will provide not only stream habitat benefits but potential travel corridors between patches of squirrel habitat. Harvest operations proposed within occupied squirrel habitat will not be allowed between March 1 and August 31 to accommodate the squirrel nesting and rearing season. Any activity occurring within this time frame will require written consent of the WDFW district habitat biologist.

Following is a proposed marking strategy for western gray squirrel nest trees and the buffer area surrounding those trees:

- The nest tree shall be marked with orange paint with one complete band at eye level and one butt mark at the base of the tree on the downhill side. The unique nest tree identification number shall be marked in orange paint below the eye level mark on the uphill side of the tree.
- All conifers and hardwoods within a 25-ft. radius of the nest tree shall be retained as leave trees.
- A thinning from below, removing excess suppressed trees in the 6 to 10 inches DBH (Diameter at Breast Hight) class, will be conducted in the zone between a 25-ft. radius and 50-ft. radius of the nest tree.
- Moving away from the 50-ft. radius squirrel management buffer, those trees or clumps of trees providing canopy connectivity to other nest trees (primarily larger trees with full crowns) will be selected to leave.

Oregon White Oak Management Strategy

Oregon white oak habitat on the property is diverse and includes mixed conifer-oak woodlands, pine-oak forests, and pure stands of oak which may grow in shrub or tree form. Oregon white oak is also considered to be a WDFW PHS species. Oak trees exhibit a wide variety of characteristics depending upon growing conditions and age. Larger trees with broader crowns are often found in association with other tree species and are a product of better soils and/or more water. Pure oak stands are usually found in areas where other tree species are unable to survive. The oaks occupying these marginal growing sites are often densely stocked with small but old trees. Some very densely stocked sites developed following wildfires that killed the original trunks and crowns of mature oaks, whose living root systems produced large numbers of sprouts. These sprouts are often utilized as forage by wildlife, and over years of repeated browsing, the regrowth often forms a broom of stunted shrub like oak. Oaks arising from acorns frequently exhibit a shrub form as well if they grow where browsing animals are present. Less common are oak, large and old enough to have developed cavities inside. These trees (or snags) have high value for wildlife shelter.

Probably the most significant negative impact to Oregon white oak on the wildlife area is conifer encroachment. To reduce this impact, most conifers located within oak stands as well as conifers within a tree length of the edge of oak stands may be removed. The exception to this will be squirrel nest trees, conifers that provide habitat connectivity to other nest trees, or trees with unique characteristics that would make suitable wildlife trees.

Thinning of oak stands may be considered to maintain or enhance growth rates and vigor of oak stands. Thinning should target the removal of smaller, suppressed oaks (thinning from below) in dense, even-aged stands. Large diameter, late successional oaks will be selected to leave.

Thinning will be considered with the goal of increasing average stand age and diameters, moving the stand closer to late successional reserve status. In oak woodland stands, 25% to 50% canopy cover will be maintained. Large diameter oaks, generally 10 inches diameter and larger, will not be removed. This will enhance crown development and provide for increased acorn production. The

exception to this would be the rare exception when leave trees in the road right of way could pose a safety hazard.

Low-intensity, prescribed burns, conducted on a regular basis (approximately 20-to-30-year intervals), may be used to exclude Douglas-fir encroachment, stimulate vigorous sprouting, and contribute to multi-aged stands.

Fire has been an integral component of oak ecology. Oaks, beyond the sapling stage, are resistant to fire. Fire targets herbaceous ground cover and Douglas-fir, the latter of which typically encroaches on and competes for light with oaks, which are shade intolerant. Ponderosa pine is a fire-resistant conifer species that also competes with oaks for light and is found throughout the wildlife area. Ponderosa pine stands are generally not negatively affected and can benefit from low-intensity fires. Vigorous restoration, including the use of prescribed fire, may be appropriate in areas with severe Douglas-fir encroachment.

After the thinning operation is completed, follow-up treatments (including prescribed fire) will be necessary to maintain and enhance oak habitat. However, the cost of prescribed fire and smoke management concerns may preclude the use of prescribed fire as a management tool in oak stands. Slashing and/or pre-commercial thinning of undesirable species, particularly conifers, may be a useful tool where prescribed fire is not an option. Regardless of the silvicultural treatment method(s) used, routine maintenance every 10 to 15 years will be necessary to maintain habitat gains from the initial treatment. Over time, oak woodland acreage should remain relatively static with only minimal, if any, increases.

An inventory and delineation of oak stands will be conducted prior to layout of forest restoration thinning projects. Thes oak areas will be excluded from conifer thinning areas. Locating oak stands in conjunction with conifer thinning projects will reduce inventory and delineation costs.

Commercial Forest Management

For those stands where commercial forest management is possible and appropriate, the primary treatment strategy will be to move closer to the Historic Range of Variability (HRV) and improve ecological integrity ratings. PHS management recommendations for all PHS species and habitats will be considered. There are several different definitions of Historical Range of Variability (HRV) but the following definition, found in Oxford Bibliographies, seems to define it quite well. Historical range of variability (HRV) describes the conditions of a natural system prior to intensive human alteration of that system. In this context, a natural system can be an ecosystem or a particular component of an ecosystem (Aplet and Keeton 1999). Targets identified in the forestry objectives reflect HRV.

Resilient Working Forest Adaptive Management Strategy (RWFAMS)

In proposed commercial forest management treatment units, proposed thinning prescriptions will ensure heterogeneity in the stand. This strategy would begin the process of moving stands closer to the HRV. This strategy moves stands closer to pre-settlement conditions regarding stocking levels, species composition, tree size and tree spatial arrangement.

Simcoe Mountains Unit White oak habitat. Photo by Alan L. Bauer.

Management strategies will provide flexibility to adapt to unexpected events such as wildfires or epidemic insect/disease outbreaks. When these events do occur, an assessment will be made to determine the extent of the problem and potential treatment strategies. In the case of epidemic insect or disease outbreaks, the cause of that outbreak is typically stocking levels that are significantly higher than the HRV. Hotter drier summers, expected with the effects of climate change, can also be a catalyst in causing epidemic forest health outbreaks. Maintaining appropriate species composition and stocking levels is the best defense against widespread insect or disease outbreaks. When these events do occur, an assessment will be made, and potential treatment prescriptions presented to the CRM and/or management teams.

Post wildfire treatments are priorities, but the strategy for doing so is a little more complicated. A ground-based fire, typical of a well-managed stand that is close to the HRV, may benefit from the effects of wildfire. Each project is unique and will consider all ecological conservation and working lands parameters that includes internal and external review and vetting.

Stand replacement fires on dry forest types have been occurring on a more frequent basis. Historically, salvage logging operations resulted in the removal of all dead trees except for those trees required to be left by forest practice rules. Nearly all overstory trees were removed to realize salvage value and get the site replanted as soon as possible.

In contrast, WDFW looks at the burned post-fire units to determine whether active restoration is appropriate. Factors to consider include habitat needs, potential for soil erosion, burn intensity and economics. If active post-fire restoration is considered appropriate, a prescription would be developed that includes leave tree densities, size classes and spatial arrangement that would be

appropriate had the units not burned. The decision to move forward or not will be vetted by the CRM and WDFW management teams.

Implementation of the HRV strategy will include leaving individual trees, clumps of trees, openings, and uncut skips. Many refer to this method as the Individual, Clumps and Openings (ICO) thinning strategy. The complexity of this type of prescription will necessitate the need to mark leave trees prior to the actual thinning operation. The following criteria will be used during the leave tree selection process:

- In most stands, the preferred leave tree species will be ponderosa pine. However, Douglas-fir will be left, where appropriate, to maintain species diversity.
- All Oregon white oak will be retained as per contract requirements and will not have to be marked as a leave tree.
- Beyond leaving all Oregon white oak, use Oregon white oak management strategy from above.
- In general, remove all conifer from oak thickets unless they are large diameter trees with unique characteristics.
- Where western gray squirrel nest trees have been identified, follow management guidelines found in the western gray squirrel management strategy.
- Leave large diameter "legacy" trees. In general, those trees over 20 inches diameter at breast height (dbh) will be retained but that diameter limit may be adjusted on a project-by-project basis.
- Leave trees with good growing characteristics (good crown ratios and relatively free of pathogens and/or insect attack).
- Leave defective trees with unique characteristics (trees with cat faces, "wolfy" crowns, large limbs, etc.) for Wildlife Reserve Tree (WRT) recruitment.
- In snag deficient areas (less than 6 snags per acre), mark trees 10 inches dbh and greater for snag (WRT) recruitment. This indicates to the logging contractor that they need to "snip off" the tree as high as can be safely reached to create snags (WRTs).
- In general, attempt to leave a residual stand with a post-treatment stocking level of between 25 (average 42-ft. spacing) and 35 (average 35ft. spacing) tress per acre depending upon stand conditions. The minimum diameter for leave trees is 10 inches dbh. Realize that these stocking/spacing guidelines are only intended as a spatial reference starting point.
- Scatter tree clumps (2 to 10 trees per clump) across the unit (e.g., desirable tree species, legacy trees, unique trees, etc.) where ecologically appropriate
- Create small openings (.5 to 3 acres) across the unit. Take advantage of pre-existing openings with good production of browse species where appropriate.
- Create skips (.5 to 3 acres in size) for western gray squirrel travel corridors, thermal cover, and hiding cover.
- The minimum diameter for regulatory leave trees is 10-inch dbh. However, smaller diameter trees (6" to 9" dbh) will be considered as leave trees in overstocked small diameter thickets.

- In general, leave trees greater than 24 inches dbh unless they pose a safety threat (e. g. tree is at risk of falling over a main line road) or they are a non-preferred species with preferred species surrounding (e.g., late seral grand fir surrounded by early seral ponderosa pine, western larch, or Douglas fir). This strategy will create more resilient stands that are more likely to withstand the impacts of climate change.
- Snags will not be marked as leave trees with orange paint. All snags that do not pose a safety threat, as per Labor and Industries guidelines, are required to be left by the logging contractor. Snags can also be topped to create short snags if that can be accomplished safely. Those snags dropped for safety reasons by the logging contractor will be left in place for down log recruitment.
- Dwarf mistletoe infected trees provide important habitat for a variety of wildlife species and will be left individually or in clumps as appropriate (such as lower hillside, adjacent to tree species that are not subject to mistletoe infection, draw bottoms, etc.). The goal will be to reduce the threat of the mistletoe spreading to adjacent host species and throughout the stand.

It is important to understand that transitioning stands and forests closer to the HRV is a process that will take decades to complete. Follow-up treatments will be a necessity and not an option. These treatments include prescribed fire, slashing or pre-commercial thinning and ongoing commercial thinning.

- **Prescribed Fire** is a tool that may be considered following commercial thinning operations. Dry forest types found on the Simcoe Mountains Unit typically experienced a low intensity fire return interval of 20 years on the driest forest types up to 40 years on the wetter forest types. Returning prescribed fire to the landscape is an important tool in the restoration process if funding is available and conditions will allow.
- **Slashing or Pre-Commercial Thinning** is an important tool to further reduce fuel loading and ladder fuels. This follow-up to commercial thinning is generally considered appropriate where prescribed fire is not an option. Reducing stocking levels will mimic the effects of fire but is generally considered not to be as effective.
- **Commercial Thinning** as an ongoing follow up treatment, should be considered every 25 to 40 years depending on stand conditions or response following the previous thinning cycle. Follow-up commercial thinning entries would be expected to use the ICO strategy from above with an emphasis on thinning from below.

Climate Change Considerations

We know that dry forest types, such as those found on the Simcoe Mountains Unit, historically relied on low and mixed severity fires at relatively frequent intervals (Agee, 1996; Perry et al, 2011) to maintain those stands. These fires resulted in ecosystems with large trees that were also large carbon stores (Smithwick et al, 2002; Stephenson et al, 2014). Our ability to effectively suppress wildfires, in combination with intensive grazing and timber harvest, has resulted in a shift in forest composition to overstocked stands with a higher proportion of late seral species such as grand fir and Douglas fir (Miller et al, 2009; Stephens 1998). This has resulted in uncharacteristically large and severe wildfires resulting from the increase in fuel loading and ladder fuels typical of shade tolerant, late seral tree species (Miller et al, 2002; Stephenson et al, 2014). Restoring forests for

carbon sequestration reduces carbon dioxide concentrations in the atmosphere and can be used to mitigate environmental threats of climate change (Brown, 1996; Griscom et al, 2017.; Vitousek, 1991).

Adapting to the expected effects of climate change and promoting ecological resilience be an important management strategy moving forward, particularly on dry forest types prevalent on the Simcoe Mountains Unit (DeMeo et al, 2018; Franklin and Johnson, 2012; Hessburg et al, 2015). Starting the process of moving stands closer to the HRV will make stands more resilient and a better carbon sink over time. This strategy will, over time, result in a higher proportion of large diameter, wildfire resistant ponderosa pine and large diameter Oregon white oak. Managing the Simcoe Mountains Unit as close as possible to the HRV will result in more resilient stands that are more likely to withstand the challenges expected to occur as a result of climate change as well as the threat of epidemic insect outbreaks and stand replacement fires.

Small Scale Forest Management Projects

As resources and funding are available, small scale forest management projects will be considered. These projects will help to achieve our forest management goals in areas where the work might not get done otherwise. Projects might include variable width fuel breaks, small pre-commercial thinning/slashing projects, native tree, or shrub planting, etc. Project work would be conducted by conservation district staff, WDFW staff or both and will be vetted through the CRM process.

Given the ongoing threat of catastrophic stand replacement wildfire, it should be a priority to consider creating effective fuel breaks in strategic locations on the Simcoe Mountains Unit. This would include thinning trees to a stocking level of 20 to 25 acres to compliment natural fuel breaks that already exist (e.g., shrubsteppe, talus slopes, roads, ridge tops, etc.). Additional measures within these fuel breaks would be to reduce ladder fuels and understory vegetation densities.

Management Summary

For all projects, economic reality and budgets will play a major role in implementation of proposed forest management projects. If the funding isn't available to move forward with a project, either from timber sale revenues or grants or both, the CRM will not be moving forward with that project. The CRM recognizes that costs can be lowered by increasing the size of the project. Costs can also be lowered by removing those units with marginal removal volumes and higher operating costs, deferring harvest of these units until a later date.

Revenue from the sale of logs can be maximized by using sound marketing techniques. In areas with marginal or negative return, that means deferring projects until log prices are moving upwards. Additionally, WDFW foresters are also looking for niche markets for products that might not be apparent to other landowners. To take advantage of upward market trends, the CRM can strive to have projects ready to go as much as possible. In other words, complete layout work, permitting and other paperwork to have "shovel ready" projects. Both options meet WDFW forest management objectives without compromising the ability to manage the land as an economically viable working forest.

Current Commercial Project Assumptions

- No harvest or thinning of Oregon white oak, present in most units. Any thinning or slashing in oak pockets will be considered as part of a potential post-harvest pre-commercial thinning/slashing treatment.
- Isolated individual Douglas-fir will be left to increase species diversity in the stand.
- Generally, ponderosa pine will be favored in areas of mixed dry conifer.
- Most of the ponderosa pine harvest volume would come from smaller diameter trees (thinning from below). As such, ponderosa pine will be appraised at "camp run" prices (no top diameter splits).
- Pulp wood (logs less than 5 inches dib and greater than or equal to 2 inches dib) was not cruised. For appraisal purposes, it is assumed that approximately 13 tons/acre (5-7 inches dbh trees and sawlog tops) would be removed.
- Strive for a residual stocking level of 2 to 3 MBF/Acre post-treatment.
- Projects developed using existing inventory (cruise) data and new data yet to be collected.

Commercial Treatment Project Timeline

During the current 10-year planning cycle, it is assumed that all acres, where active management is appropriate, will be treated. Following is the anticipated timeline for layout of commercial projects. As per WDFW forest management guidelines, commercial forest management projects will be vetted using the forest restoration pathway. This pathway or strategy can be found in Table 1. Following is the anticipated timeline for layout of commercial projects.

Table 1. Forest Management Project Timeline

Task	Lead	Days Required*	Timing
Walk through stand exams to determine appropriate management strategy	CD and WDFW Staff	Variable	As funding and resources are available
Present project to Region Management Team	WDFW Staff	2 Hours	TBD
Define project FMU's	CD and WDFW Staff	Variable	Spring before proposed project
Develop Project Map and Preliminary Prescription	Lead Forester	2	Summer or fall before sale date
Present project to District Team	Lead Forester and District Team	1	Winter before sale date
Western Gray Squirrel Survey	Lead Forester and Habitat Staff	20 acres/day	Spring before sale date
Cultural Resources Survey	Lead Forester and Archaeological Staff	20 acres/day	Spring before sale date
Section 7 Consultation***	Archaeological Staff	1	Spring/summer Before sale date
Prescribed Fire Consultation***	Forester and PF Lead	2	Spring/summer Before sale date

Develop Final Prescription	CD, WDFW Bio and Lead Forester	1	Spring/summer Before sale date
Submit Proposal to Wildlife Commission	Forester and Wildlife Staff	2	Spring/summer Before sale date
Type Streams and Wetlands	Foresters and CD Staff	Variable	Spring/summer Before sale date
Unit Boundary Layout	Foresters and CD Staff	Variable	Spring/summer Before sale date
RMZ/WMZ Layout	Foresters and CD Staff	Variable	Spring/summer Before sale date
Mark Trees	Foresters and CD Staff	Variable	Spring/summer Before sale date
Timber Cruise	Foresters and CD Staff	Variable	Spring/summer Before sale date
Complete Paperwork	Lead Forester	5	Spring/summer Before sale date
Schedule/Advertise Sale	Lead Forester and CD Managers	1	Spring/summer Before sale date
Western Gray Squirrel Survey	WDFW Habitat Biologists, Lead Forester and CD Staff	Variable	Spring/summer Before sale date
Begin Mechanical Operations	Lead Forester and Contractor	Variable	Spring/Summer
Assess Follow Up Treatment Needs	Lead Forester and CD Managers	1	Every Spring
Western Gray Squirrel Survey	WDFW Habitat Biologists	Variable	Every Spring**

*Estimate based upon typical restoration project
**Every year until project is deemed successful and then as needed
***If necessary and funding is available

Next Steps

As steps transition into the implementation phase of the forest management plan, the CRM should be looking for ways to better plan for future projects as funding and resources are available. This would include conducting walk-through stand exams and identifying Oregon white oak thickets. The information would be used to develop proposed projects (whether commercial, pre-commercial or prescribed fire) that could then be presented to the CRM group for vetting and approval (Table 2). This would also include development of small restoration projects that might not happen otherwise.

Summary

Juvenile red crossbill. Photo by Alan L. Bauer.

The objective for timbered portions of the Simcoe Mountains Unit is to return stands to historic stand conditions (as best as foresters can determine) using a combination of strategies including commercial thinning, slashing, pre-commercial thinning, prescribed fire and tree planting. This would be accomplished using the resilient working forest adaptive management strategy. After initial forest management treatments, regular maintenance activities, using all the tools described above, will be required to maintain those desired stand conditions and high ecological integrity ratings. In areas with PHS, Species of Greatest Conservation Need (SGCN), or other priority species, prescriptions will be modified using PHS guidelines and advice from WDFW and other agency biologists. Forest management activities will be consistent with policy found in the WDFW Statewide Forest Management Plan in cooperation with the Central and Eastern Klickitat Conservation Districts.

Table 2. Simcoe Unit of the Klickitat Wildlife Area Planned Forest Treatment Projects.

Goal	Draft Objective	Performance Measure	Lead	Tasks
1. Forest Restoration	Restore stand to Historic Range of Variability to improve habitat, stand resiliency and forest health	400 acres	Pfeifle	Commercial thinning
2. Release 6 inches dbh and smaller trees	Reduce tree density favoring dominant fire-resistant trees	250 acres	Pfeifle	Pre-Commercial Thin

Range Management

The purpose of this section is to recognize the value of livestock grazing on the Simcoe Mountains Unit as an important working lands component of an overall mission to preserve, protect and perpetuate wildlife and its habitats. In addition to this broad purpose, specific management goals include maintaining habitat for deer, maintaining Oregon white oak woodlands, and maintaining prescribed grazing intensities with appropriate infrastructure.

For each goal, Appendix A identifies objectives, performance measures, lead entity, and tasks. Active, appropriate livestock management on the unit is a priority of the Central Klickitat and Eastern Klickitat Conservation Districts, and the management goals above are consistent with Fish and Wildlife Commission Policy C-6003, which guides grazing management on WDFW-managed lands and stipulates that ecological integrity will be conserved where grazing is permitted.

Permit Area

The area comprises about 9,700+ acres and includes soil map units predominantly associated with forestland ecological sites. Some rangeland ecological sites are also present. Forestland ecological sites are generally Oregon White Oak/Ponderosa Pine Hot Moderately Dry Shrub or Oregon White Oak/Ponderosa Pine Hot Dry Herb/Shrub. Most rangeland ecological sites are designated as either Very Shallow 16-24" PZ or Loamy 16-24" PZ. Soils on these sites are mapped as a combination of colluvium and residuum derived from basalt, loess, and volcanic ash. Other available mapping layers depict current vegetation communities, which indicate that three ecological systems account for most WDFW-managed acreage: Northern Rocky Mountain Dry-Mesic Montane Mixed Conifer Forest, East Cascades Oak-Ponderosa Pine Forest and Woodland, and Inter-Mountain Basins Big Sagebrush Steppe. Sagebrush itself is probably not present, however, and this latter ecological system is likely mapped due to the widespread occurrence of antelope bitterbrush. Sandberg bluegrass and bulbous bluegrass are also present throughout the unit. Cheatgrass was relatively more abundant in the footprint of the Mile Marker 28 fire, but much of this area has since become dominated by snowbrush ceanothus. Medusahead rye can be found in small, discontinuous depressions in the bottoms of some draws. According to current spatial data from the Washington Natural Heritage Program, and from work supported by the Rare Care program at the University of Washington, several sensitive plant species have been observed on or near the Simcoe Mountains Unit. These include the state-threatened *Juncus hemiendytus* var. *hemiendytus* and the state-sensitive *Boechera atrorubens*, *Crepis bakeri*, *Leptosiphon bolanderi*, *Trichostemma oblongum*, and *Zeltnera muhlenbergii*. Individual grazing management plans will contain additional information about management of grazing to avoid or minimize impacts to rare species. Known incidences of rare plants are addressed in all management activities on the Simcoe Mountains Unit. On a project-by-project basis as part of adaptive management, occurrence of rare plants will be verified.

Water is available from several developed and undeveloped springs as described in the Hydrology chapter, from the area around and downstream of Bear Spring, and (seasonally) from scattered locations along various draw bottoms that generally drain to the south. These draws are typically well-armored, often steep-sided, or inaccessible to livestock, and with little, if any, wetland-obligate vegetation for lengthy stretches. These draws generally receive very light use by livestock because

they typically dry out before livestock drift into the area. The area below Milk Ranch Spring is an exception, having occasionally received heavy use.

Two fence lines are maintained on the Simcoe Mountains Unit, one that separates the two grazing allotments from each other, and another that runs approximately along the border between the Simcoe Mountains Unit and Yakama Tribal Nation land to the north. WDFW constructed new boundary fence along portions of the Simcoe Mountain Unit. Additional boundary fence could be contemplated in the future as fencing can result in disruption to livestock travel and use patterns, and it is expected that the CRM will review fencing proposals prior to fence construction and maintain frequent and effective communication to address any management issues arising from fencing. CRM participants may also need to address culturally significant vegetation communities in the event that livestock use, or other activities, degrade those plant communities. An especially shallow and rocky soil has been a traditional salting location on the property, and tribal representatives have indicated that such soils may support plants such as *Lewisia* and *Lomatium* spp. Disturbance or utilization of these species by livestock or other activities have been low to undetectable, but additional inventory and/or monitoring of such effects may support the identification of alternative salting locations. The following literature review synthesizes a sample of findings on livestock grazing effects on wildlife and vegetation.

Literature Review

Properly managed grazing is compatible with wildlife and may be associated with increased diversity (Vavra 2005). Research has suggested that grazing livestock can lead to increased forage nutritional quality (Anderson and Scherzinger 1975, Pitt 1986, Ganskopp et al. 2007). While Wagoner et al. (2013) failed to document an increase in forage nutritional value for deer in Washington after spring livestock grazing, Yeo et al. (1993) found that wintering deer in Idaho preferred previously-grazed areas to ungrazed locations. Forbs and primary successional species are generally associated with sites disturbed by livestock grazing or logging (Schneegas and Bumstead 1977), so grazing could be expected to benefit deer given that some deer diets may contain prominent forbs in the spring (Hobbs et al. 1983). Taylor et al. (2004) also found that fall cattle grazing could result in increasing abundance of some desirable forbs that are important for deer, and in the spring, mule deer may choose areas subjected to at least moderate fall cattle grazing (Willms et al. 1979). Other literature suggests that nongame wildlife can benefit from the moderate grazing, although proposed monitoring would not directly assess these populations. Johnson et al. (2012) concluded that grasslands managed for livestock in northeastern Oregon were compatible with conserving ground-nesting passerines such as savannah sparrows and horned larks. Livestock utilization of forage is rarely if ever uniform, which can have the effect of increasing vegetation heterogeneity, which is associated with improved avian (Ryder 1980) and invertebrate (DeKeyser et al. 2013) habitat quality.

WDFW acknowledges that there is a level of risk in many grazing regimes for negative impacts to habitat, wildlife, and fish. Where the risk of habitat damage from grazing cannot be safely managed, or where grazing is inconsistent with WDFW's mission, grazing is not permitted. The risk of negative outcomes increases substantially when grazing occurs at levels that are too intense, too lengthy, and/or too frequent for the habitat in which it occurs. Season-long grazing in particular can lead to excessive riparian impacts (Belsky et al. 1999) and long-term perennial grass decline (Reisner et al. 2013). Connelly et al. (2004) indicate that grazing can affect soils, wildlife, and

vegetation. Other studies have shown grazing-related impacts such as reduction of plant cover (Schroeder and Baydack 2001), reduction of food plants and/or insect populations (Hoffman and Thomas 2007), increased invasive weed cover (Anderson and Inouye 2001), and others. WDFW's own State Wildlife Action Plan (2015) also identifies a suite of negative outcomes resulting from inappropriate grazing, including destruction of native vegetation, soil erosion and compaction, and reduced abundance and diversity of wildlife. Other recent studies suggest, however, that grazing can be managed in a way that conserves ecosystem function, even on riparian areas (Roche et al. 2012, Roche et al. 2013, Oles et al. 2017).

Although many cool-season bunchgrasses might tolerate up to 60% use during the dormant season (Laycock 1967), moderate to heavy livestock grazing during the critical growth period for native bunchgrasses can result in reduced vigor, as evidenced by fewer seed stalks, lower vegetative production, and smaller crown size (Mueggler 1972, Pyke 2011). Heavy grazing during the critical growth period for several years can lead to mortality of key species and a concomitant increase in less palatable plants (Wilson et al. 1966). The proposed grazing system mostly avoids critical period use and does not allow heavy use at any time. Light to moderate use, however, can function as a low-severity disturbance. Some plant communities may benefit from such disturbances in order to increase their resilience to more high-severity disturbances (Davies et al. 2009), and Davies et al. (2009) found that after 12+ years, a burned (ungrazed) community supported reduced perennial vegetation and 15-fold greater cheatgrass density relative to other treatments that were either burned (grazed), unburned (grazed), or unburned (ungrazed). They concluded that light to moderate livestock grazing could indirectly inhibit cheatgrass invasion by limiting the amount of litter—litter that could otherwise lead to an increase in the amount of fire-induced mortality of desirable vegetation when a site does burn, and a subsequent increase in cheatgrass.

Collectively, these studies show the importance of conservative grazing plans where habitat requirements of sensitive, threatened, and endangered fish and wildlife intersect with permitted livestock grazing. In addition to conservative grazing prescriptions, GMPs also detail any additional measures that are deemed necessary. Protective measures include restrictions associated with stocking rate, spatial and temporal extent of grazing, and intensity of grazing; requirements for rest and/or other types of grazing rotations; riparian area and streambank protections; and various categories of monitoring, including utilization monitoring and long-term monitoring to assess ecological integrity.

Understanding implications of climate change for land management practices and vice versa has become increasingly relevant. In general, livestock producers are accustomed to responding to drought and unusual seasonal conditions due to high year-to-year variability in weather conditions. This is characteristic of semi-arid rangelands. Whether grazing on these rangelands contributes to climate change is a more complicated question. Most greenhouse gas emissions from livestock come from 1) fossil fuel use and fertilizer-associated methane releases involved with producing livestock feed (not including wildland plant communities); 2) land-use changes like deforestation and land degradation; and 3) refrigerating and transporting animal products (Steinfeld et al. 2006**)**. Griscom et al. (2017) also found that conversion of forested land to agricultural land was a strong driver of grazing-related emissions. In the United States, however, grazing is probably more often associated with increasing, not decreasing, prevalence of woody plant biomass (Rummel 1951, Madany and West 1983), although this outcome is more likely under heavy grazing pressure –

which is not proposed here. Globally, the livestock industry does contribute to greenhouse gas emissions, including from rangeland grazing to some extent (Garnett et al. 2017), although Garnett et al. did not account for soil carbon sequestration on grazed rangelands. Studies tend to be inconclusive on rangeland carbon sequestration and probably cannot reliably inform policy at present (Biggs and Huntsinger 2021). Low- to moderate-intensity grazing may actually augment soil organic carbon in dry cool climate zones such as the cold deserts of western North America (Abdalla et al. 2018), but Joyce et al. (2013) found that grazing at recommended rates only had a minor effect on soil carbon, and that other strategies such as moderate stocking rates and alternative pasture when necessary are strategies that help minimize emissions. A precise carbon accounting for range management on the Simcoe Mountains Unit is unknown but would likely be dominated by permittees' unique situations involving winter feed, distance to auction, or other more hypothetical factors (such as potential disposition of the property in the event that WDFW had not acquired it).

Simcoe Mountains Unit shrub-steppe habitat. Photo by Alan L. Bauer.

Management

Prior to WDFW acquisition of the property, Western Pacific Timber administered two grazing leases on the Simcoe Mountains Unit. Site inventory, interaction with permittees, and literature review suggest that continued livestock grazing does not threaten the ecological integrity of the Simcoe Mountains Unit. Therefore, in the spirit of maintaining working lands in a manner that is consistent with community use and with WDFW's statutory mission, WDFW will continue to allot two grazing permits. Grazing permits will follow applicable statute, rule, and policy that requires Ecosystems Standards Assessments and ecological integrity maintenance (Fish and Wildlife Commission Policy C-6003, RCW 79.13.620). Specific grazing prescriptions will be documented in each grazing permit. Per WAC 220.500.200, the duration of any particular grazing permit may be up to five years, after which renewals are expected if grazing objectives are being met.

Identification of appropriate stocking rates for livestock is a process that 1) requires accounting for how range productivity, water availability, and terrain vary throughout the property, and 2) also ensures protection of sensitive areas and sufficient post-grazing biomass for grass physiological needs and wildlife use. Allowable harvest estimates based on ecological site analysis yield an estimated stocking rate of approximately 700 animal unit-months (AUMs) annually. (This is an estimate of total forage, and it does not indicate that the area might support 700 cow-calf pairs for the duration of one grazing season. For example, a herd of 200 cow-calf pairs on the range for 3.5 months would consume 700 AUMs: 200 animal units x 3.5 months = 700 animal unit-months). Allowable harvest estimates based on data available through the Rangeland Analysis Platform (RAP) are some 40% higher. RAP data are often characterized by higher herbaceous biomass estimates. Although forage allotments on WDFW grazing permits are typically conservative by design owing to WDFW's conservation mission, the RAP data suggest some space for flexibility and value in incorporating direct experience of permittees (through the CRM process) that might differ from estimates. This forage allotment is currently divided across two distinct grazing permits. Both permits include provisions for AUM adjustments based on specific timing of grazing and could be subject to change in the event of habitat damage, wildfire, or future land acquisitions. It is expected that any specific adjustments to timing, duration, and frequency of grazing on the area will be the result of consensus decisions by the CRM group considering available monitoring information.

Implementation and effectiveness of these permits will be evaluated by field inspection and monitoring, communication with permittees and CRM participants, and continued literature review. WDFW will monitor grazing permit areas at least twice annually. Appendix A includes timing and methodology of monitoring procedures, summarized here as follows. Utilization monitoring is expected to ensure that the stocking rate is appropriate and that the grazing permits are being implemented as directed. Utilization monitoring will occur during and after seasonal grazing. Long-term monitoring is expected to quantify vegetation community properties and verify that ecological integrity is maintained consistent with Fish and Wildlife Commission policy, thus providing more detailed inventory and a basis on which to evaluate progress toward objectives. This type of monitoring will be conducted every 3-5 years, and recently observed values will be reported in grazing permit renewal plans. Monitoring procedures may be adjusted by the CRM group as long as the resulting data continue to inform ecological integrity.

- Utilization – height-weight or landscape appearance methods (BLM 1999)
- Riparian Monitoring – Multiple Indicator Monitoring (Burton et al. 2011) if applicable
- Long-term Monitoring (Herrick et al. 2009)
    - Photopoints: General range appearance and structure
    - Line-point intercept: Cover and Composition
    - Macroplots: Species Richness
    - Quadrats: Plant Density

Expected Communication from Permittees.

- Annually report timing and number of AUMs consumed upon gathering livestock from the permit area.
- Report any noxious weeds to WDFW.

- Work collaboratively to resolve concerns over fencing, unauthorized use by unpermitted livestock, and any areas of concentrated use that develop.

Adaptive Management Expectations.

- CRM group will be apprised of available monitoring data.
- CRM group will seek relevant new scientific knowledge that becomes available.
- CRM group will seek to anticipate, prevent, and if necessary, respond to adverse outcomes through consensus management decisions.

Simcoe Mountains Unit, views above Dairy Canyon. Photo by Alan L. Bauer.

Wildlife and Habitat Management

Consistent with WDFW's mission, the agency manages species on Wildlife Areas for two primary purposes: 1) conservation and protection to manage sustainable populations; and 2) to provide recreational and commercial opportunities. The Wildlife Area Management Planning Framework describes how species are classified – including species listed at the state or federal level as threatened or endangered, as well as other designations such as Species of Greatest Conservation Need (SGCN). Washington's SGCN species are summarized in the State Wildlife Action Plan, which is part of a nationwide effort to conserve each state's fish, wildlife, and habitat. The Klickitat Wildlife Area Management Plan also incorporates goals from WDFW's Game Management Plan, which includes protecting, sustaining, and managing hunted wildlife, providing stable, regulated recreational hunting to all citizens, protecting and enhancing wildlife habitat, and minimizing adverse impacts to residents, other wildlife, and the environment. The Wildlife Area plan integrates these plans and priorities, and, in the goals and objectives section (Appendix A), defines specific actions to achieve them. In addition, the approach to managing the Simcoe Mountains Unit property is through a long-term partnership between WDFW and both the East and Central Klickitat Conservation Districts within a working lands framework of compatible grazing and forestry. This will be accomplished with a commitment to continued watershed, wildlife, and habitat-compatible grazing and revenue-producing forestry through timber harvest; while at the same time ensuring long-term protection of important wildlife species and habitat.

White-breasted nuthatch. Photo by Alan L. Bauer.

Climate change and its impacts to wildlife on the Simcoe Mountains Unit will be assessed into the future, guided by the scientific literature and WDFW's Policy: Addressing the Risks of Climate Change. Future risks such as large fires, prolonged drought, replacement of conifer forests with oak and shrubsteppe habitats, increased prevalence of disease and invasive species, and range shifts/extirpation will be considered when managing wildlife species and their habitats. The current conditions and species distribution are expected to change with the changing climate and many of the species listed in this chapter will be impacted by these future conditions. The report "Preparing WDFW for a Changing Climate: Assessing Risks and Opportunities for Action" (Shirk et al. 2021) is one of the tools that will be used to understand how climate change will impact the

Department's work managing wildlife on the Simcoe Mountains Unit. This report lists risks that are specific to management of wildlife and their habitats in Washington as well as actions that can be taken to proactively mitigate those risks.

The Simcoe Mountains Unit of the Klickitat Wildlife Area supports a wide variety of both game and non-game species. An inventory of wildlife species has not been conducted, but this task is included in Goal 4 of Appendix A. Some key species that are known to exist on or in the vicinity of the unit include mule deer, black bear, cougar, bobcat, coyote, upland game birds, state threatened western gray squirrel, golden eagle, burrowing owl, Lewis's and white-headed woodpeckers, northern goshawk, Swainson's hawk, grasshopper sparrow, southern alligator lizard, sharp tailed and ring-neck snakes, and western toad. The Simcoe Mountains Unit includes mixed conifer forest, Oregon white oak forest, grassland, shrubsteppe, riparian, and in-stream habitats. Collectively, these habitats provide for the life needs of a variety of wildlife and fish species. By using WDFW's Priority Habitats and Species (PHS) maps, as well as ground-truthing, an inventory of key habitats and ecosystems will also be conducted and will inform habitat management on the Simcoe Mountains Unit (Goal 1, Appendix A).

Game species on the Wildlife Area are generally managed in accordance with their species-specific management plans. For more information reference the WDFW Game Management Plan and the WDFW Mule Deer Management plan. These documents provide more information regarding WDFW's statewide strategy for the management of these game species as well as the herd management strategies for the East Columbia Gorge Mule Deer Management Zone.

Mule deer. Photo by Alan L. Bauer.

Together the Simcoe Mountains and Rock Creek drainage provide year-round deer habitat as well as connectivity to summer range higher in the Cascades and on the Yakama Indian Reservation. Furthermore, the lower elevation habitat is critical for providing winter range for the Klickitat deer that migrate between summer and winter ranges. Mule deer are year-round residents on the Simcoe Mountains Unit, although, depending on snow level, may move to lower elevations during the winter. In game management unit GMU 382 (East Klickitat) mule deer are managed with the common goal of providing recreational hunting opportunities and maintaining the health of the local herd. Currently in GMU 382, buck deer harvest is conducted under a 3-point minimum strategy while antlerless harvest is by permit only. This allows WDFW to meet post-hunt buck to

doe ratio objectives while still offering general season opportunity for all mule deer hunters. A conservative strategy for antlerless harvest increases survival of does and can help to maintain or increase deer populations. On the Simcoe Mountains Unit, the primary goal is to provide year-round habitat to support a healthy deer population by providing both cover and forage (Goal 5, Appendix A).

Deer hunting in the Simcoe Mountains Unit is currently limited to special permit holders only. During the 2024 hunting season setting cycle the size of the Simcoe property will likely have reached its maximum extent and WDFW will propose that deer harvest on the Unit transition from permit-only to the same regulations as the general deer season in GMU 382. GMU 382 is managed for deer; therefore, hunting regulations for elk here are liberal in order to optimize deer populations. Pronghorn antelope were reintroduced on three occasions on Yakama Nation lands between 2011 and 2019. Since the initial release in 2011, pronghorn have dispersed off the Yakama Reservation and have grown slightly in abundance according to aerial surveys conducted biennially from 2015-2021 (Fidorra and Peterson 2021). While pronghorn prefer open, relatively flat grassland and shrubland the Simcoe Mountains Unit has the potential to be a migration corridor as the population expands.

Both bear and cougar can be found on the Simcoe Unit and are managed as game species with the goal of long-term population stability while maximizing recreational opportunity and minimizing conflict with people (Goal 7, Appendix A). Currently, there are no concerns for bear or cougar predation on existing big game populations associated with the Wildlife Area. Black bears on the Simcoe Mountains Unit are managed as part of the East Cascades Hunt Zone, which is open from August 1 – November 15. Most bear harvest takes place in conjunction with the more popular fall general deer seasons.

Cougars on the Simcoe Mountains Unit are part of the GMU 382/388 Hunt Area, which has a harvest guideline of three adult cougars. Similar to bear, most cougar harvest occurs on the Wildlife Area during the general fall deer seasons. Currently, cougars are managed at the maximum harvest level without substantial risk of causing a measurable population decline or breakdown in adult male territoriality. To achieve this, cougars are managed geographically in hunt areas with fall seasons, where specific hunt areas clos to hunting once 12-16% harvest of the estimated adult population is reached. The early hunting season occurs from September 1-December 31 and is followed by a late season that is open January 1- April 30 or until the harvest guideline is reached.

Although no wolf sightings have been reported to date on the Simcoe Mountains Unit, WDFW staff will follow up on reports of wolf sightings from the public and, as needed, will work with grazing permittees on methods to avoid predator-livestock conflict.

The western gray squirrel population in the Simcoe Mountains and Rock Creek area represents the easternmost margin of the core population in Washington. Intact habitat connectivity in the area is critical for perpetuating a link to the remainder of the population in Klickitat County. Western gray squirrels are listed as a state-threatened species and the Simcoe Mountains Unit supports critical habitat. Nests have been observed on the unit (S. Van Leuven, pers. comm.) and further evaluation of their presence and habitat will be conducted in the future (Goal 2, Appendix A). Their populations have declined substantially in Washington primarily due to habitat loss and fragmentation, disease, population isolation, and highway mortality (Wiles 2016). Western gray squirrels favor conifer-dominated forests over mixed Oregon white oak-conifer and pure oak, and

usually occur in areas with an open understory (Linders 2000, Linders et al. 2010). Habitat connectivity is essential for western gray squirrels in order to allow movement between patches and when logging reduces canopy cover it can, in turn, inhibit arboreal travel.

Western gray squirrel. Photo by Alan L. Bauer.

Riparian areas may also serve as travel corridors for squirrels; especially in areas where dry uplands support limited tree cover (Wiles 2016). Some level of thinning harvest may improve forest conditions for squirrels by increasing sunlight to remaining trees, releasing oak and pine from fir encroachment, and increasing mast production. Regular burns of lower intensity can help restore forests to more natural conditions and help prevent large catastrophic fires, thus providing many benefits for western gray squirrel (Wiles 2016). WDFW's document "Management Recommendations for Washington's Priority Species: Western Gray Squirrel" provides guidance on habitat management for this species and will be applied, along with the best available science, on the Simcoe Unit (Goal 2, Appendix A). With climate change scenarios that predict a shift from conifer forest to oak and shrubsteppe, habitat for the western gray squirrel on the Simcoe Mountains Unit will likely decrease in the future requiring careful planning for this species.

A great number of bird species are associated with the variety of habitat types present on the Simcoe Mountains Unit. Game birds include turkey, chukar, California quail, and mourning dove. Lewis's woodpeckers are closely associated with oak habitat and white-headed woodpeckers are found in ponderosa pine habitats in the upper drainage. The area supports a variety of year-round raptors including nesting golden eagles and prairie falcons. The Rock Creek basin has a rich diversity of neotropical bird species and provides habitat for unique species like the yellow breasted chat and Swainson's hawk.

The status of many insects in Washington are unknown although more recently attention has been paid to particular groups like *Bombus* species (bumble bees) and the superfamily Papilionoidea (butterflies). In the recent publication "Strategy to Protect State and Federally Recognized Bumble Bees of Conservation Concern: Washington State" (Martin et al. 2023), the Simcoe Mountains Unit is included in the Yakima Plateau and Slopes Ecoregion which is one of the highest priority ecoregions for conserving imperiled bumble bee species based on modeled species distribution. The habitat

management recommendations outlined in the document are beneficial to all insects and can be used to guide actions on the Simcoe Mountains Unit. When insect surveys are conducted, the Simcoe Mountains Unit should be included when it has the appropriate habitat for the focal species (Goal 4, Appendix A).

Invasive Species and Plants

Invasive species can be detrimental to native wildlife both in terms of predation and competition. Feral horses are known to be present to the north of the Simcoe Mountains Unit and their presence on the Wildlife Area will be minimized. Grazing lessees will be key to alerting staff of fencing in need of repair or feral horses on the unit and will be asked for help if horses do enter the unit. Presence of other invasive wildlife species will be documented, and action taken as needed.

Invasive plant species are also detrimental to native wildlife and are predicted to increase in distribution with climate change. The weed management plan of the Klickitat Wildlife Area Management Plan identifies species, timing, and management practices to control weeds. The goal of weed control in the plan is to maintain or improve habitat for fish and wildlife, meet legal obligations, and protect adjacent private lands. To meet these goals, WDFW uses integrated pest management (IPM), which is defined in RCW 17.15.010 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." The two main weeds on the Simcoe Mountains Unit are the Canada thistle (*Cirsium arvense*) and bull thistle (*Cirsium vulgare*), which are typically found in recently disturbed areas (logging or fire). Knapweed was reported to be on the unit but appears to have been greatly reduced or eradicated by Western Pacific Timber's efforts. Wildlife Area staff will treat known infestations annually and monitor new infestations during their regular work. Grazing permittees are also required to report any new weed sightings on their permit area. Excessive soil disturbance promotes invasive weeds and annual grasses such as medusahead rye and cheat grass, therefore management projects need to consider the risk of invasive species as they are easily introduced and difficult to eradicate.

Hooker's balsam root at Bickleton Ridge. Photo by Alan L. Bauer.

Recreation Management

The overall recreation management objective is to provide sustainable fishing, hunting, and other recreational experiences compatible with conservation of high-quality habitat and protection of sensitive resources. Our goal is to manage recreational uses to maximize benefits to the public while minimizing negative impacts to natural resources and meeting management objectives for fish, wildlife, habitat, and working lands. This can be accomplished using various strategies for managing recreational use through space and time in conjunction with natural resource management practices on the landscape. One of the deliverables in the recently published "10-year Recreation Strategy for WDFW Managed Lands" (WDFW 2022) is that WDFW will develop and implement a recreation plan for the Klickitat Wildlife Area (including the Simcoe Mountains Unit). When this module is available it will be implemented into this plan.

The agency is committed to maintaining conservation values and nonmotorized access on the Simcoe Mountains Unit to ensure use is compatible with the purpose for which the property was purchased. A foundation-level element of the management of the Simcoe Mountains Unit plan is to provide nonmotorized public access only behind the road gates and signs with the message, "No Unauthorized Vehicles Beyond This Point".

Climate change is expected to lead to longer drier summers with extended periods of high fire danger. Activities like camping and target shooting, which pose high fire risk, are likely to become more restricted for longer periods of time in the future.

Big-headed clover, Bickleton Ridge. Photo by Alan L. Bauer.

Neighboring Public Lands

Klickitat Wildlife Area managers and other WDFW staff will communicate with neighboring BLM and Conservation District managers regarding potential recreational uses and develop collaborative actions when applicable (e.g., trails).

Hunting

The Simcoe Mountains Unit is identified as Deer Area 5382 Simcoe (Klickitat County) and is defined as "the area within GMU 382 designated as WDFW-managed lands managed as the Simcoe Mountains Unit of the Klickitat Wildlife Area". Deer harvest in Deer Area 5382 is by permit only with a limited number of permits issued annually. For the 2024 hunting season WDFW will propose that deer harvest transition to the same regulations as the general deer season in GMU 382 (East Klickitat) thus eliminating Deer Area 5382. As for all harvest regulations across the state, deer harvest regulations for Deer Area 5382 and GMU 382 will be proposed by WDFW staff, go through the public comment process, and be approved by the Fish and Wildlife Commission.

WDFW will continue to evaluate and monitor hunting seasons, survey the special permit holders, conduct population estimates, and adjust harvest recommendations as needed in the future. The hunting of other game species within the Simcoe Mountains Unit will follow the existing regulations for GMU 382 (East Klickitat).

Compatible Recreational Uses

In addition to hunting, other recreational opportunities are available on the Simcoe Mountains Unit. Recreational activities should be compatible with conservation of important habitats and protection of locations of sensitive wildlife, for example, raptor nests, wetlands, western gray squirrel nest concentration sites and rare plants. Impacts to and on resources should be monitored and evaluated (e.g., water quality, vegetation community, and wildlife and fish populations). Additional recreational activities include:

Mountain Biking

Mountain biking is allowed on existing roads provided the activity does not degrade road surfaces, harm wildlife and plant communities, interfere with permitted livestock grazing, or contribute to the spread of invasive plants and animals. Cyclists must yield to horses and hikers when using shared trails. E-bikes are currently allowed on all motorized roads and motorized trails on WDFW-managed lands. When the statewide e-bike rules for WDFW and DNR lands are finalized, they will apply to the Simcoe Mountains Unit.

Horseback Riding

Horseback riding within the Simcoe Mountains Unit is allowed provided the activity does not degrade road surfaces, harm wildlife and plant communities, interfere with livestock grazing, and visitors take measures to prevent the spread of invasive species (e.g., use weed free hay). Recreational riders should anticipate encountering grazing permitees moving cattle using horses and dogs.

Hiking

Hiking on the Simcoe Mountains Unit is permitted throughout the Unit and may be on or off roads. Hikers must yield to horses when using a shared trail.

Collection of Incidentals

The collection of mushrooms, berries, or other edible or medicinal plant parts is allowed for tribal members for subsistence and ceremonial purposes. Collection of these items by the general public for personal use is allowed on a small scale. (Please contact the Klickitat Wildlife Area for the most current regulations). Collecting plant parts for commercial purposes will not be permitted. Per WAC 220-500-210**,** it is unlawful to remove petrified wood, minerals, fossils, wood products or artifacts from WDFW-managed lands unless such removal is authorized by a permit issued by the WDFW Director.

Dogs

Per WAC 220-500-170, between April 1 and July 31, all dogs must be on leash to protect nesting wildlife (except when used for grazing management purposes). Outside of that time frame, dogs must always either be on leash or under voice control. Unattended pets of any type are not permitted. Additionally, dog owners are responsible for ensuring that their pets do not harass wildlife or livestock. Anyone planning to hold field trials for hunting dogs within the Wildlife Area must first secure a permit from WDFW. Field trials are not allowed during the months of April, May, June or July.

Overnight Use

Camping is permitted on the Simcoe Mountains Unit. Campers may stay for up to 14 days during any 30-day time period.

Visitors may camp in RVs or tents along Box Spring Road and Box Canyon Road outside of the road closure gates. These two roads are county roads, and it is important to keep the road rights-of-way clear of obstructions. Offroad driving has negative impacts on wildlife habitat, so WDFW restricts how far vehicles may be driven off the road. Therefore, camps must be set up at least 20 feet from the edge of the road to keep the right-of-way clear, but no more than 50 feet from the edge of the road to limit impacts on wildlife habitat. There are some designated camping areas where camps may be farther from the road so long as they are within the perimeter marked with fencing or signs. Clearing trees or shrubs to create new camping or parking spots is prohibited. Vehicles must have either a Discover Pass or a Vehicle Use Permit (which comes with a Washington hunting or fishing license) on display while on WDFW-managed lands. Do not park or camp in a way that blocks use of a road gate as this could hinder public services by law enforcement or authorized workers.

Camping in the interior of the unit is allowed, provided camps are located:

- At least one-half mile from the road closure gates on WDFW-managed land. (This does not apply to the gate on Box Canyon Road, which is on BLM land.)
- At least one-half mile south of the crest of Bickleton Ridge.
- At least 1000 feet from a property boundary with an adjacent private landowner.

Whether camping along an access road open to vehicle use or within the nonmotorized access area, camps must be at least 200 feet from water sources, which include water troughs, springs, streams, and ponds.

Visitors should be aware that campfires are allowed only part of the year. Campfires are permitted from November 1 to May 15, unless the county government establishes a burn ban earlier than May 15 in east Klickitat County. Klickitat County usually initiates a seasonal burn ban on May 1 of each year. Please reference the county burn ban dates for Zone 1. Campfires should not be left unattended and must be completely extinguished prior to human departure. Firewood in the form of dead, downed trees may be used for fuel. Trash is not to be disposed of in campfires and standing trees (dead or alive) may not be cut down on the wildlife area. Incendiary devices such as fireworks and exploding targets are never permitted on the Simcoe Mountains Unit.

During the seasonal burn ban

- No wood or charcoal fires are allowed. This includes portable grills and fire pits.
- Gas fueled cooking grills and fire pits are permitted if they are used in areas free of vegetation or litter that could catch fire.
- WDFW may implement emergency restrictions during periods of high fire danger that affect other activities besides use of campfires. Such emergency restrictions will be announced via signs and on WDFW's website.

Visitors are expected to remove all garbage that has accumulated during their stay, and all camp structures must be dismantled and removed at the conclusion of the trip.

Target Shooting: Target shooting is allowed when certain safety requirements are met. Reference the WDFW website for more information.

Other Uses: Uses such as technical rock climbing, bouldering, hang gliding, and others, will need to be evaluated and possibly restricted to ensure they do not pose a conflict with WDFW's land management objectives and responsibilities, or interfere with other existing uses.

Fishing: Rock Creek is closed to sport fishing from the Army Corps Park upstream to the headwaters to protect threatened summer steelhead. Since Rock Creek and its tributaries are the only streams on the Simcoe Mountains Unit, the property is closed to fishing.

Non-Compatible Recreational Uses

The use of snowmobiles, ATV's, dirt bikes, and other motorized vehicles (except as authorized by special permit or for administrative purposes) will not be allowed within the Simcoe Mountains Unit, as the area is designated as nonmotorized only (motor vehicles are defined in WAC 220-500-020). In addition, the Department will not develop a shooting range within the unit.

Other proposed uses will be evaluated for compatibility with natural and cultural resource protection as well as other existing uses.

Photo by Alan L. Bauer. Non-motorized road/trail.

Hydrology

The Simcoe Mountains Unit occurs in the westernmost portion of Water Resource Inventory Area 31, Rock-Glade Watershed, in Klickitat County. The unit contains numerous headwater tributaries to the Rock Creek subbasin, which drains 226 square miles. Outside of the unit boundaries, Rock Creek flows into the Columbia River at river mile 230, roughly 12 miles upstream from the John Day Dam. Rock Creek watershed elevations range from 4,700 ft. in headwater areas to 266 ft. at its confluence with the Columbia River.

The Simcoe Mountains Unit contains about 30 total stream miles ranging between 2,400-4,700 ft. in elevation. A few streams in the unit feed directly into Rock Creek, while most unit streams, including Box Canyon and Dairy Canyon Creek, flow into Quartz Creek, a major Rock Creek tributary. Drainages are predominantly southerly facing and exhibit steep topography.

Table 3. The Washington State Department of Natural Resources gives the following stream type breakdown:

DNR Stream Type*	Stream Miles
3 - Moderate fish, wildlife, or human use	1.18
4 - Perennial (no fish)	6.18
5 - Seasonal (no fish)	12.56
9 - Unclassified	10.12
Total	30.03

There are 10 springs mapped on the Unit. Four springs are developed and used as a water source for livestock and wildlife water, including Milk Ranch Spring, Stump Spring, and two unnamed springs in the northeastern part of the unit.

Hydrologic soil group characterizations in the Rock Creek Basin vary. Most soils (56%) are classified as Group B (moderate infiltration rates) or Group C (slow infiltration rates). The Rock Creek Basin also has a relatively large proportion (36%) of Group D soils (very slow infiltration, high runoff). This contributes to higher rates of runoff versus infiltration in the basin.

Streamflow

No existing streamflow data for the Simcoe Mountains Unit is available. Streamflow information is available for lower Rock Creek, just outside the Simcoe Mountains Unit boundary. Eastern Klickitat Conservation District maintains a gage at Bickleton Bridge and at Walaluuks Creek. The U. S. Geological Service (USGS) maintains a gage at Old Highway 8 Bridge. More streamflow information specific to the Unit is needed to guide management. Appendix A includes monitoring recommendations.

Streamflow in the Simcoe Mountains Unit is derived from a mixture of snowmelt, rain, and groundwater discharge. Many of the Unit streams are seasonal/intermittent, with high flows in winter and spring in response to precipitation and snowmelt and little to no flow during the dry

season. In general, Rock Creek and its tributaries lack dry season flow but still support instream aquatic habitat (reference the fisheries discussion, below). One management priority for the unit is to evaluate opportunities to improve water storage to benefit late season flow (e.g., through timber management, beaver mimicry/reintroduction).

Mean annual precipitation in the unit is between 20-24 inches, decreasing from west to east (Aspect and WPN 2004; Figure 2-9, based on PRISM data 1961-1990). Most of the precipitation occurs between October and April, with some precipitation occurring as snow, particularly at higher elevations.

The majority of the Simcoe Mountains Unit acreage is classified as rain-on-snow dominated (Aspect and WPN 2004; Figure 2-13, based on DNR Precipitation Zones). Peak runoff occurs when warm rainstorms occur on a snowpack causing rapid melt. Large rain-on-snow events typically occur in November and December. Snowmelt from the highest elevations also contributes to peak flows in spring. Maximizing snowpack development and persistence into the late season to support streamflows is a high priority and should be integrated with other unit management objectives and activities (e.g., timber management).

Groundwater in the basin principally stems from bedrock of the Columbia River Basalt Group. Spring discharge in the Rock Creek basin demonstrates some hydraulic continuity between shallow groundwater and streams, but there is typically not enough discharge to sustain late season instream flows except in localized reaches. Incised stream valleys contribute to discontinuous aquifer systems within the unit.

Tumwater Canyon Corral Springs. Photo by Alan L. Bauer.

Water Quality

No water quality data exists within the Simcoe Mountains Unit. Water quality is influenced by streamflow, riparian condition, southerly exposure, wildfires, and human activity (e.g., roads,

grazing, forestry practices, recreation), but more water quality information is needed to guide management. Appendix A includes monitoring recommendations.

In general, Rock Creek is challenged with warm water temperatures, largely stemming from intermittent streamflow and low flow conditions. Several sections of lower Rock Creek outside of the unit boundary are on the state 303(d) list as having Category 5 water quality impairments for temperature.

Additionally, very little is documented about riparian conditions. Some higher elevation riparian areas were burned in the 2013 Mile Marker 28 fire; recovery of these areas need to be evaluated.

The unit contains 33.25 miles of roads, including primary and secondary roads, all with native surface. Prior to WDFW management, roads have been maintained in accordance with Forest Practices Act and associated road construction standards. Culvert outlets were assessed for scour and any outlet showing signs of scour was armored and brought up to standard. One priority is to evaluate opportunities for road decommissioning in areas that may not be used for future timber harvest or other activities. Priority roads for decommissioning include those with multiple stream crossings or that contribute to negative riparian, hydrological, floodplain, or sediment impacts.

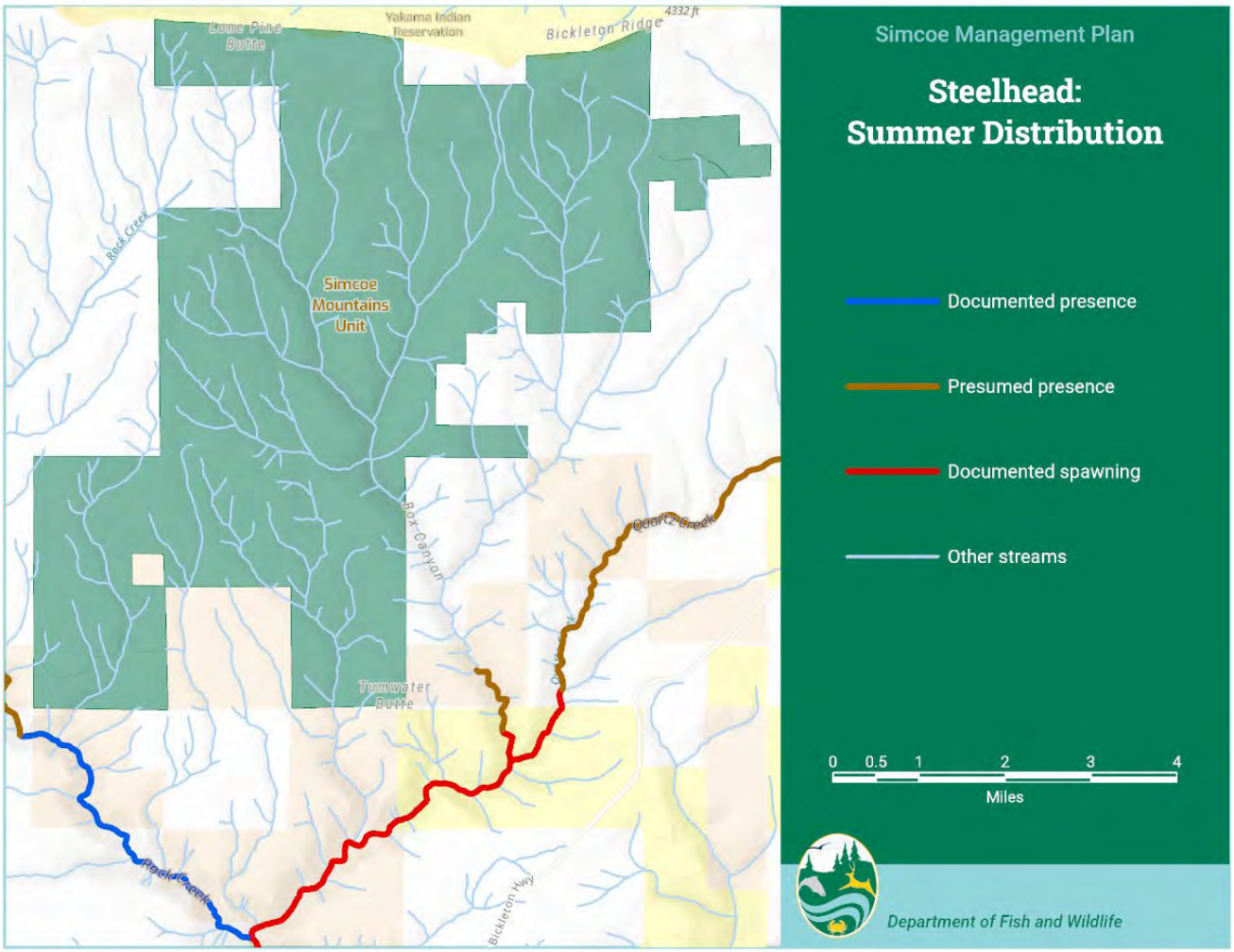
Fisheries

There have been no formal fish surveys within the unit to date. DNR stream type modeling reports some streams on the unit as type "F". This indicates the waterbody may be used by fish or that the stream meets physical criteria to be potentially used by fish. Fish use on the unit needs to be verified and is a monitoring recommendation outlined in Appendix A.

Maintenance and improvement of water quality and streamflow from the unit's headwater tributaries is critical for fish survival in the lower Rock Creek watershed. Outside of the unit boundaries, the Rock Creek Subbasin is known to host several fish species including resident rainbow trout, bridgelip suckers, large scale suckers, coho salmon, and ESA-listed Mid-Columbia steelhead (listed as threatened). Many of these species are culturally important to the Yakama Nation.

Steelhead are not present within the unit (Figure 6). However, unit tributaries directly feed areas with documented steelhead spawning (lower Box Canyon Creek, Quartz Creek) and steelhead presence (Rock Creek). The current range of steelhead in the Rock Creek watershed resembles the historical condition, although some stream sections that probably once supported spawning and rearing may now serve only as migration corridors. Recently completed genetic analyses identify a unique population of steelhead in Rock Creek and further investigations are underway to understand within subbasin genetic structure and potential use by out of basin stocks.

Figure 6. Steelhead Distribution adjacent to the Simcoe Mountains Unit (Data: WDFW SalmonScape).



Water Use and Water Rights

Water uses on the Simcoe Mountains Unit include wildlife, stockwater, fire protection, road maintenance, and domestic. There are 17 water-right claims on the property, varying from 3 to 10 gallons per minute (0.006 to 0.02 CFS) and collectively totaling 39.38 acre-feet. Prior owners maintained water rights through beneficial use of water by livestock managed by leases and wildlife as well as for road dust abatement and fire protection.

Water use supports working land values including timber and grazing. One management priority for the unit is to confirm and document water right locations and conditions on the property and to preserve these rights into the future to sustain working lands.

Climate Change

Climate change is likely to impact Simcoe Mountain Unit hydrology. Drought, reduced snowpack, and earlier snowmelt will likely contribute to earlier delivery of spring flows, reduced water storage, and reduced summer/fall streamflow. Earlier snowmelt and more frequent rain-on-snow events may increase the magnitude of peak flows. The basin may also experience reduced water quality as higher air temperatures contribute to elevated water temperatures, particularly if summer baseflows decline. Increasing wildfire severity and/or frequency can also impair water quality by contributing high sediment levels post-fire and reducing riparian shading.

Hydrology Management Goal and Objectives

The overarching goal is to use best management practices to maintain or improve hydrologic processes on the Simcoe Mountains Unit to support habitat conservation, recreation, and working land values, including forestry and grazing. In turn, this will increase climate resiliency. There are a variety of data gaps that need to be answered to inform the best management of the property. Monitoring and better understanding of current hydrological conditions on the unit can help inform future management direction. Filling these data gaps is a priority for the first several years of unit management.

Oak pines and open meadow views. Photo by Alan L. Bauer.

The Washington Department of Fish and Wildlife recently published *Riparian Ecosystem, Volume 2: Management Recommendations* (Rentz et al. 2020) and should be considered when establishing riparian setbacks. In *Riparian Ecosystems, Volume 2: Management Recommendations* (Rentz et al. 2020), the science supports using Site Potential Tree Height at 200-years ($SPTH_{200}$) instead of fixed-width riparian buffers based on fish use within the stream. Using $SPTH_{200}$ protects the area needed for a healthy riparian area that supports natural ecological processes, including but not limited to: stream morphology, erosion and sedimentation process, fish and wildlife habitat availability, wood recruitment, stream temperature, shading, pollutant removal, and nutrient cycling. If the $SPTH_{200}$ distance along a given stream is unknown, current science recommends a riparian zone of no less than 100ft to help minimize pollutant runoff into streams and rivers.

Cultural Resources

The Simcoe Mountains have a rich cultural history spanning thousands of years and continuing into modern times. The Kah-miltpah Band, which is one of the signatory bands to the Yakama Nation Treaty of 1855, have inhabited and used natural resources for subsistence and ceremonial purposes since long before Euro-American settlement and these traditional activities continue to be practiced today. The Simcoe Mountains, also known as 'Waxshpum' to the Kah-miltpah, are sacred mountains because they provide many of the traditional foods and medicines to their people that are a necessity for everyday living and a part of ceremonies.

Since the 1860s cattle ranching has been a staple of regional agriculture and harvest of forest products has been a significant industry since the early 1900s. Structures and other artifacts of these regionally important activities have strong cultural significance and warrant respect. Forestry and ranching are considered part of the fabric of local community character, and future management of the property will seek to ensure that these activities continue on a level that is compatible with WDFW's commitments to fish and wildlife management and other human uses.

As the Simcoe Mountains are known to have a long history of human presence, culturally significant sites may be discovered as land management projects and recreation activities result in more exploration of the landscape. Culturally significant sites may be broken into two categories: archeological sites where features or artifacts exist; and areas where natural resources useful in culturally important practices may be harvested or collected.

Visitors should be aware that it is unlawful to remove or disturb any artifact or feature that is more than 50 years old. Additionally, foraging for edible items or other natural materials is allowed only on a small scale for personal use. No commercial collecting of materials is (please reference Recreation Management Chapter).

WDFW staff will adhere to internal policy to promote preservation and management of cultural resources. This policy complements any existing laws, rules, statutes, regulations, executive orders, and policies that guide cultural resources management, cultural resources protection, and consultation processes.

Cultural Resources Inadvertent Discovery Plan

The cultural and historic features and artifacts of the area tell the story of its past and can provide a link to ancient traditions. The Inadvertent Discovery Plan described in this section was developed to protect resources encountered during forest management. This plan also provides important guidance applicable to other projects and, except for notifications to DNR, the same measures should be followed. WDFW will not disclose the locations of culturally sensitive sites to persons other than qualified professional archeologists and staff working within the immediate vicinity of the artifact(s) or feature(s) so that protection will be more effective.

A Cultural Resources Inadvertent Discovery Plan (IDP) has been developed for the Simcoe Mountains Unit to inform employees and contractors of the procedures to follow if archaeological and/or historic artifacts or features are discovered during management activities on the Simcoe Mountains Unit. The objective of the IDP is to ensure that archaeological and historic resources as

well as human remains are appropriately treated until responsible officials can investigate the discovery and determine protection measures. Archaeological and historic resources and burials are protected under state laws, RCW 27.44, 27.53 and 68.60.

Archaeological resources include the artifacts and features left in the landscape of early American Indian activities and the historic activities of early settlers. Artifacts are human manufactured items and waste material from manufacture. Features are the human alterations in the landscape. Artifacts include arrowheads and the stone waste flakes from making them and historic cans, bottles, ceramics, and wooden and metal objects left in dumps or scattered in the landscape. Features include human-made pits in talus slopes, stacked rocks, rock walls, blazed and scarred trees, ditches, railroad grades, wagon roads, cabin foundations and other human modifications of the natural landscape.

The Forest Practices Rules, WAC 222-16-050 (1)(f)(iv), provide for exemptions from class IV-special designation when there is a known site within a forest practices application (FPA) and a protection plan is agreed to by the Department of Archaeology and Historic Preservation (DAHP) and the affected tribe(s) prior to submitting the FPA. The IDP is for archaeological and historic resources that are unknown at the time a FPA is submitted to the DNR. The Cultural Resources Protection and Management Plan (CRPMP) was produced as partial fulfillment of commitments made in the 1987 Timber, Fish and Wildlife Agreement (TFW) and the 1999 Forests and Fish Report (FFR). It provides a framework for landowners and land managers to communicate and cooperate with Indian tribes whose traditional lands include their managed timberlands. The CRPMP encourages mutual respect for the goals and objectives of both land managers and tribes.

(A) Procedures for Archaeological or Historic Resources Discovery

1. If anyone working on the Simcoe Mountains Unit (e.g., WDFW staff, contractor) believes they have discovered an archaeological or historic resource, they are authorized and directed under the IDP to halt work in the immediate vicinity of the discovery and to promptly report the find to the operations supervisor.
2. The Operations Supervisor is responsible for ensuring the work in the vicinity of the find remains halted and is responsible for establishing a protective buffer around the site prohibiting machinery, vehicles, and unauthorized individuals from coming within at least ten meters (33 ft.) of the discovery.
3. The Operations Supervisor will notify the Simcoe Mountains Unit Manager of the discovery and the Yakama Nation Tribal Historic Preservation Officer (THPO) and/or the TFW Archaeologist. If neither the Yakama Nation THPO nor the TFW Archaeologist is available to visit the site to assess the discovery, the services of another professional archaeologist will be secured. The professional archaeologist shall meet the qualifications defined in RCW 27.53.030(11).
4. The Operations Supervisor or other Simcoe Mountains representative will accompany the THPO and/or the TFW Archaeologist or other qualified professional archaeologist to the discovery. If the discovery is determined to be a protected archaeological site or historic archaeological resource as defined in RCW 27.53.030 it will be professionally documented and protection measures will be developed in

consultation with DAHP and the Yakama Nation (if Yakama Nation personnel are not participating in the documentation).

5. The Operations Supervisor will notify DNR (if this is a forest practice activity) of the discovery if it is a protected resource when there is a protection plan agreed to by Simcoe Mountains personnel, DAHP and the Yakama Nation.

(B) Procedures for Discovery of Human Remains (see RCW 68.60.050 and 055)

1. If anyone working on the Simcoe Mountains Unit (e.g., WDFW staff, contractor) believes they have encountered human remains they are authorized and directed under the IDP to halt work in the immediate vicinity of the discovery and to promptly report the find to the Operations Supervisor.
2. The Operations Supervisor is responsible for ensuring the work in the vicinity of the discovery remains halted and is responsible for establishing a protective buffer and securing the area around the human remains prohibiting machinery, vehicles and unauthorized individuals from coming within at least ten meters (33 ft.) of the discovery.
3. The Operations Supervisor will immediately notify the appropriate Coroner and Sheriff's offices and report the location of the human remains. The Operations Supervisor will notify the Simcoe Mountains Unit Manager, the Yakama Nation Tribal Historic Preservation Officer (THPO) and the Washington State Physical Anthropologist.
4. The coroner's office will assume jurisdiction over the human remains and must make a determination whether they are forensic or non-forensic. The coroner will retain jurisdiction over forensic remains.
5. Upon determination that the remains are non-forensic, the coroner must notify DAHP within two business days. DAHP will have jurisdiction over the remains until the source of the remains is determined. DAHP will notify local cemeteries and the Yakama Nation office of Cultural Resources Committee Chairperson by phone (509) 865-5121/email as well as via certified mail.
6. The State physical anthropologist must make a determination of whether the human remains are Indian or non-Indian within two business days. If the remains are determined to be Indian, DAHP must notify the Yakama Nation via certified mail within two business days.
7. If the remains are determined to be Indian, the Operations Supervisor or other Simcoe Mountains representative will assist the THPO and/or other Yakama Nation representatives to the discovery. The THPO or other Yakama Nation representatives will work with Simcoe Mountains personnel to determine appropriate buffers and treatment of the human remains.

Contacts

Yakama Nation

Tribal Historic Preservation Officer
P. O. Box 151
Toppenish, WA 98948
509-985-7596

TFW Archaeologist
P. O. Box 151
Toppenish, WA 98948
509-945-4925

Cultural Resources Program Manager
P.O. Box 151
Toppenish, WA 98948
509-865-5121

Department of Archaeology and Historic Preservation

State Physical Anthropologist
1063 South Capitol Way, Suite 106
Olympia, WA 98501
360-586-3534

State Assistant Archaeologist
1063 South Capitol Way, Suite 106
Olympia, WA 98501
360-586-3088

Klickitat County

Sheriff
205 S. Columbus Ave.
MS-CH-7, Room 108
Goldendale, WA 98620
509-773-4455
Fax: 509-773-6575

Coroner

205 S. Columbus Ave., MS-CH-18
Goldendale, WA 98620
509-773-5838
Ext: 509-773-6696

Culturally Important Natural Resources

The property hosts a variety of plant and animal species that have cultural significance. Some of these resources were (or are) used as food, while certain species may have been used in medicine, for fiber, or other routine or ceremonial uses. WDFW aspires to manage native plant and animal populations for long-term sustainability. This commitment mirrors that of the Yakama Nation, as both entities wish to ensure that the resources can be enjoyed in perpetuity.

Fish and wildlife resources will be managed using commonly employed methods. These include surveys for species presence where needed; protection of listed species; thoughtful structure of hunting seasons; and enhancement of key habitats, where it may be helpful. The Yakama Nation will provide information on culturally important plant population locations, at its discretion. WDFW will attempt to limit negative impacts to these areas, provided that the specific causes of impacts to the resource are understood. Observations of overutilization of important resources should be reported to the Klickitat Wildlife Area Manager so that the issue can be evaluated and addressed.

Commercial uses and activities are not allowed on WDFW-managed lands except under permit or other formal agreement. This includes any enterprise intended to generate income. Common uses that may be authorized by WDFW are pasturing of livestock and timber harvest. WDFW does not issue commercial permits for berry picking, mushroom collection, or collection of other plant materials. For people who are not enrolled members of the Yakama Nation, foraging for edible items or other natural materials is allowed only on a small scale for personal use. Small scale is considered to be one gallon by volume per adult on the property, with children's harvest being combined with the adult harvest. The quantity limit does not apply to members of the Yakama Nation.

Oak pines and open meadow view. Photo by Alan L. Bauer.

Infrastructure and Maintenance

The property now known as the Simcoe Mountains Unit of the Klickitat Wildlife Area has been managed primarily for timber production and secondarily as livestock pasture for many decades. Nearly all the existing infrastructure was constructed to support those enterprises.

Western Pacific Timber, LLC, the most recent past owner of the property, entered into a road maintenance and abandonment plan agreement with DNR to ensure that the company's roads meet forest practice standards under current law. All the planned work was accomplished by the time the property was purchased by WDFW. Western Pacific Timber provided a map of the road inventory, showing which roads received improvements, which roads were left as-is, and which roads were formally abandoned (closed to all vehicle use).

Most of the existing fences on the property have been in place for a long time. Newer fences were constructed by a grazing permit holder in 2013 and by WDFW in 2022. Information on fencing and other improvements for livestock was offered by grazing permit holders and/or observed independently by WDFW staff while working on the property.

This property was closed to public entry until it was purchased by WDFW. Until that time, signage was minimal and mainly served to advise the public of the closure. Now that the property is available for public use, WDFW has erected reader boards and placed other signs to provide information about the property and advise visitors of rules.

Infrastructure Inventory

Roads

Primary roads: 23.45 miles

Secondary roads: 9.8 miles

Primary roads are the roads that serve as the main access routes to the property or connect between other important roads (Figure 7). These receive the most use and are to be maintained in passable condition during the dry seasons when most management activity occurs.

Secondary roads are generally dead-end spur roads that reach areas that require periodic inspection or some level of management. These roads are to be maintained on an as-needed basis.

Road gates

Main gates controlling vehicle access: 3

This count includes only heavy-duty hinged gates on WDFW-managed lands. There are two gates along Box Spring Road, and one along Box Canyon Road. There is an additional gate on Box Canyon Road, on BLM property.

There are at least eight wire gates and four panel gates across roads on the land WDFW manages or on property lines. Most of these are to control livestock movement. A few are also to manage vehicle use.

Cattleguards

County road: 2

Spurs road off secondary road: 2

These structures are designed to limit livestock movement along a road while permitting convenient passage for vehicles. There are two cattleguards on Box Spring Road. One was installed by a grazing permit holder and the other was installed by WDFW. The other cattleguards are on spur roads that intersects the 3000 Road (also known as the Bickleton Ridge Rd.) on the WDFW-managed land boundary. These cattleguards were installed by a grazing permit holder due to a persistent issue with a gate being left open, allowing cattle to escape.

Fences

Serviceable fences: 16.1 miles, total.

Fences in disrepair that may be rebuilt: .5 to 1 mile, estimated.

Fences serve primarily to manage livestock movement, and so are constructed to specifications appropriate for cattle (Figure 7). WDFW does not anticipate a need for construction of fences for control of wildlife on the Simcoe Mountains Unit. The agency prefers that fences allow for wildlife passage, and new fences are to be built in a way that allows for that.

Fences also serve to mark the boundaries of public land, helping to maintain good relations with neighboring landowners by minimizing trespass by the public on private property.

There are old fences on the Simcoe Mountains Unit that currently serve no purpose. WDFW recognizes that old fencing that is no longer maintained often presents a safety hazard to wildlife and prefers that such fencing be removed. The locations of old, unneeded fences will be noted by WDFW and added to a list for removal. The length of unmaintained fences is unknown but is estimated to be more than a mile.

Developed Stock Watering Points

Serviceable water troughs: 4

There are two water sources that used to have improvements for livestock but have fallen into disrepair, one or both may be rebuilt in the future.

Signs

Reader Boards: 2

Signs: Approx. 16 metal or plastic signs and 2 wooden signs

The reader boards feature several signs, some of which are changed seasonally, as well as small boxes for informational material distributed to visitors by WDFW. WDFW endeavors to keep the boxes stocked with maps of the Simcoe Mountains Unit and hunting regulations pamphlets.

WDFW also posts paper signs on the property boundaries marking the area as Deer Management Area 5382. These inform visitors that this special deer management area is open to deer hunting by permit only. There are many of these signs and they are replaced or added as needed. If and when

deer hunting on the Simcoe Mountains Unit changes to the same rules as for East Klickitat GMU 382, the Deer Management Area 5382 signs will be removed.

Infrastructure Maintenance

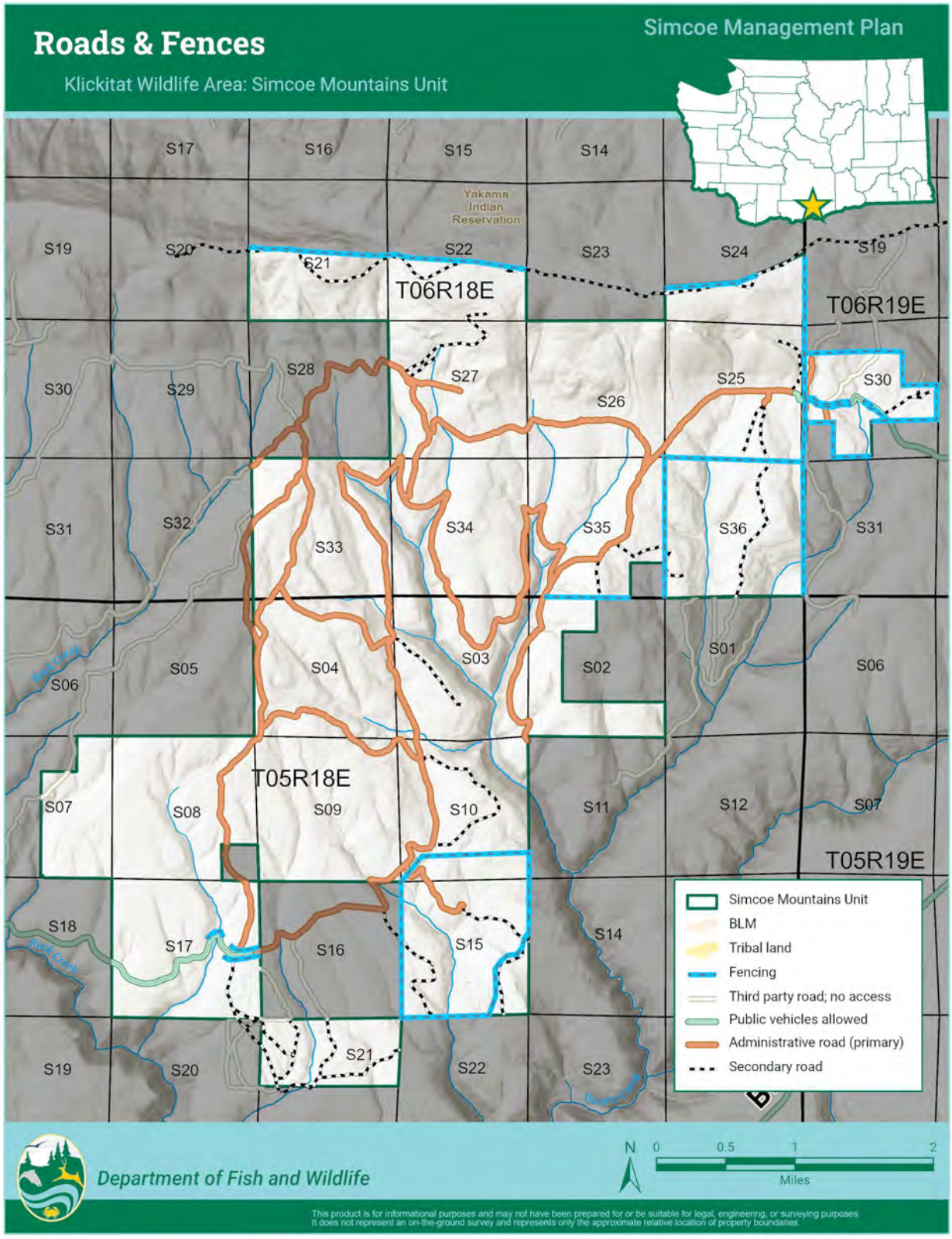
Maintenance of improvements on the property will be performed by parties according to legal responsibility and/or customary practices, unless another agreement is made regarding these roles. In general, signs and other assets designed to inform the public and enhance recreational experience will be installed and maintained by WDFW. Road maintenance and road use will also be managed by WDFW. Livestock watering facilities will be maintained by grazing permit holders. Fences and livestock gates are important to grazing permit holders as well as WDFW, and parties will coordinate to ensure that fencing is in serviceable condition.

Roads on the Simcoe Mountains Unit are constructed to meet seasonal needs, and the past and current practice has been to drive on the roads when they are firm enough to support vehicles. By deferring driving on the roads until the soil is firm, costly damage is avoided. WDFW plans to limit its own use and use by others to the dry seasons. The road surfaces were in good condition when WDFW purchased the property, and the most advantageous approach is to keep them that way. Most of the work currently associated with maintaining the road system is removing fallen trees and cutting back encroaching vegetation. Trees fall across the roads regularly, and employees and grazing permit holders both work to clear these obstacles from the primary roads. Fallen trees are removed from secondary roads as needed for access to work sites.

The Goals and Objectives Table (Appendix A) provides more detail regarding specific tasks and responsibilities.

Old fence gate. Photo by Alan L. Bauer.

Figure 7. Simcoe Mountains Unit Road and Fences.



References

Abdalla, M., A. Hastings, D. R. Chadwick, D. L. Jones, C. D. Evans, M. B. Jones, R. M. Rees, and P. Smith. 2018. Critical review of the impacts of grazing intensity on soil organic carbon storage and other soil quality indicators in extensively managed grasslands.

Agee, J.K., 1996. Fire Ecology of Pacific Northwest Forests. Island Press.

Anderson, E. W., and R. J. Scherzinger. 1975. Improving quality of winter forage by elk by cattle grazing. Journal of Range Management **28**:120-125

Anderson, J. E., and R. S. Inouye. 2001. Landscape-scale changes in plant species abundance and biodiversity of a sagebrush steppe over 45 years. Ecological Monographs **71**:531-556.

Aspect Consulting LLC and Watershed Professionals Network 2004, Level 1 Watershed Assessment WRIA 31 (Rock-Glade Watershed): http://klickitatcounty.org/241/WRIA-31---Rock-Glade-Planning-Documents

Beausoleil, R. A. and C. Lackey. 2015. Responding to human-bear conflict and capture-handling of black bears: a field techniques guide for agency biologists and officers.

Belsky, A. J., A. Matzke, and S. Uselman. 1999. Survey of livestock influences on stream and riparian ecosystems in the western United States. Journal of Soil and Water Conservation **54**:419-431.

Biggs, N. B., and L. Huntsinger. 2021. Managed grazing on Californnia annual rangelands in the context of state climate policy. Rangeland Ecology and Management **76**:56-68.

BLM. 1999. Interagency technical reference: utilization studies and residual measurements. Page 174. USDA-Cooperative Extension Service, USDA-Forest Service, Natural Resources Conservation Service, USDI Bureau of Land Management.

Brown, S., 1996. Mitigation of Carbon Dioxide Emissions by Management of Forests in Asia. Ambio 25, 273-278.

Burton, T. A., S. J. Smith, and E. R. Cowley. 2011. Riparian area management: multiple indicator monitoring (MIM) of stream channels and streamside vegetation. Technical reference 1737-23. BLM/OC/ST-10/003+1737+REV. USDI, Bureau of Land Management, National Operations Center, Denver, CO.

Davies, K. W., T. J. Svejcar, and J. D. Bates. 2009. Interaction of historical and nonhistorical disturbances maintains native plant communities. Ecological Appliations **19**:1536-1545.

DeKeyser, E. S., M. Meehan, G. Clambey, and K. Krabbenhoft. 2013. Cool season invasive grasses in northern Great Plains natural areas. Natural Areas Journal **33**:81-90.

Fidorra, J. and T. C. Peterson. 2021. Pronghorn antelope abundance survey in south-central Washington. Yakama Nation Wildlife and Washington Department of Fish and Wildlife. Unpublished report.

Fleischner, T. L. 1994. Ecological costs of livestock grazing in North America. Conservation Biology **8**:629-644.

Ganskopp, D., L. Aguilera, and M. Vavra. 2007. Livestock forage conditioning among six northern Great Basin grasses. Rangeland Ecology and Management **60**:71-78.

Garnett, T., c. Godde, A. Muller, E. Roos, P. Smith, I. J. M. de Boer, E. zu Ermgasses, M. Herrero, c. van Middelaar, C. Schader, and H. van Zanten. 2017. Grazed and confused? Ruminating on cattle, grazing systems, methane, nitrous oxide, the soil carbon sequestration question - and what it all means for greenhouse gas emissions. Food Climate Research Network, University of Oxford.

Glass 2009, WRIA 31 Instream Habitat Assessment: https://www.klickitatcounty.org/DocumentCenter/View/5094/Instream-Habitat-Assessment-PDF

Griscom et al, 2017. Natural Climate Solutions. Proc. Natural Climate Solutions. Proc. Natl. Acad. Sci. 114, 11645-11650.

Griscom, B. W., J. Adams, P. W. Ellis, R. A. Houghton, G. Lomax, D. A. Mitevad, W. H. Schlesinger, d. Shoch, J. V. Siikamakig, P. Smith, P. Woodbury, C. Zganjara, A. Blackmang, J. Campari, R. T. Conant, C. Delgadol, P. Elias, T. Gopalakrishna, M. R. Hamsik, M. Herrero, J. Kiesecker, E. Landis, L. Laestadius, S. M. Leavitt, S. Minnemeyer, S. Polasky, P. Potapov, F. E. Putz, J. Sanderman, M. Silvius, E. Wollenberg, and J. Fargione. 2017. Natural climate solutions. PNAS **114**:11645-11650.

Herrick, J. E., J. W. Van Zee, K. M. Havstad, L. M. Burkett, and W. G. Whitford. 2009. Monitoring manual for grassland, shrubland, and savanna ecosystems. Volume 1: Quick start. USDA-ARS Jornada Experimental Range, Las Cruces, New Mexico.

Hobbs, N. T., D. L. Baker, and R. B. Gill. 1983. Comparative nutritional ecology of montane ungulates during winter. Journal of Wildlife Management **47**:1-15.

Hoffman, R. W., and A. E. Thomas. 2007. Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*): a technical conservation assessment. [Online]. USDA Forest Service, Rocky Mountain Region. Available: https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5181954.pdf [accessed 2/4/2020].

Johnson, T. N., P. L. Kennedy, and M. A. Etterson. 2012. Nest success and cause-specific nest failure of grassland passerines breeding in prairie grazed by livestock. Journal of Wildlife Management **76**:1607-1616.

Joyce, L. A., D. D. Briske, J. R. Brown, H. W. Polley, B. A. McCarl, and D. W. Bailey. 2013. Climate change and North American rangelands: assessment of mitigation and adaptation strategies. Rangeland Ecology and Management **66**:512-528.

Laycock, W. A. 1967. How heavy grazing and protection affect sagebrush-grass ranges. Journal of Range Management **34**:52-58.

Linders, M. J. 2000. Spatial ecology of the western gray squirrel, (Sciurus griseus) in Washington: the interaction of season, habitat and home range. M.S. thesis, University of Washington, Seattle, Washington.

Linders, M. J., W. M. Vander Haegen, J. M. Azerrad, R. Dobson, and T. Labbe. 2010. Management Recommendations for Washington's Priority Species: Western Gray Squirrel. Washington Department of Fish and Wildlife, Olympia, Washington.

Macfarlane WM, Gilbert JD, Meier MD, Hafen C, Shahverdian SM, Albonico MT, and Wheaton JM. 2018 Yakama Nation Beaver Restoration Assessment Tool: Building Realistic Expectations for Partnering with Beaver in Restoration and Conservation. Prepared for the Yakama Nation. Logan, UT. 68 pages. Data available from: https://brat.riverscapes.net/data.html

Madany, M. H., and N. E. West. 1983. Livestock grazing-fire regime interactions within montane forests of Zion National Park, Utah. Ecology **64**:661-667.

Mainer, D. J., and N. T. Hobbs. 2006. Large herbivores influence the composition and diversity of shrub-steppe communities in the Rocky Mountains, USA. Oecologia **146**:641-651.

Management Strategy for the Washington State Department of Fish and Wildlife Forests (Tveten 2014)

Martin, M., R. Hatfield, E. May, L. Richardson, and S. Jepsen. 2023. "Strategy to Protect State and Federally Recognized Bumble Bees of Conservation Concern: Washington State." Portland, OR. The Xerxes Society for Invertebrate Conservation with the Interagency Special Status and Sensitive Species Program USDA Forest Service Region 6 and USDI Oregon/Washington Bureau of Land Management.

Miller et al, 2009. Quantitative Evidence for Increasing Forest Fire Severity in the Sierra Nevada and Southern Cascade Mountains, California and Nevada, USA. Ecosystems 12, 16-32.

Mueggler, W. F. 1972. Influence of competition on the response of bluebunch wheatgrass to clipping. Journal of Range Management **25**:88-92.

Perry, D.A. et al, 2011. The Ecology of Mixed Severity Fire Regimes in Washington, Oregon and Northern California. For. Ecol. Manage. 262, 703-717.

Pitt, M. D. 1986. Assessment of spring defoliation to improve fall forage quality of bluebunch wheatgrass (*Agropyrum spicatum*). Journal of Range Management **39**:175-181.

Pyke, D. A. 2011. Restoring and rehabilitating sagebrush habitats. Pages 531-548 *in* S. T. Knick and J. W. Connelly, editors. Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. University of California Press, Berkeley, CA.

Reisner, M. D., J. B. Grace, D. A. Pyke, and P. S. Doescher. 2013. Conditions favouring *Bromus tectorum* dominance of endangered sagebrush steppe ecosystems. Journal of Applied Ecology **50**:1039-1049.

Rentz, R., A. Windrope, K. Folkerts, and J. Azerrad. 2020. Riparian Ecosystems, Volume 2: Management Recommendations. Habitat Program, Washington Department of Fish and Wildlife, Olympia.

Rummel, R. S. 1951. Some effects of livestock grazing on ponderosa pine forests and range in central Washington. Ecology **32**:594-607.

Ryder, R. A. 1980. Effects of grazing on bird habitats. Pages 51-56 Management of western forests and grasslands for nongame birds. USDA Forest Service general technical report INT-86.

Schneegas, E. R., and R. S. Bumstead. 1977. Decline of western mule deer populations: probable cause, tentative solution. 57th annual conference of the Western Association of State Game and Fish Commissioners, Tucson, AZ.

Schroeder, M. A., and R. K. Baydack. 2001. Predation and the management of prairie grouse. Wildlife Society Bulletin **29**:24-32.

Shirk, A., H. Morgan, M. Krosby, C. Raymond, G. S. Mauger, and L. Helbrecht. 2021. Preparing Washington Department of Fish and Wildlife for a

changing climate: assessing risks and opportunities for action. A collaboration of the Washington Department of Fish and Wildlife and University of Washington Climate Impacts Group. Unpublished report.

Smithwick et al, 2002. Potential Upper Bounds of Carbon Stores in Forests of the Pacific Northwest. Ecol. Appl. 12, 1303-1317.

State Water Quality Assessment 2018: https://apps.ecology.wa.gov/waterqualityatlas/wqa/proposedassessment

Steinfeld, H., P. Gerber, T. Wassenaar, V. Castel, M. Rosales, and C. de Haan. 2006. Livestock's Long Shadow. Environmental Issues and Options. Food and Agriculture Organization of the United Nations. 408 pages.

Stephens, S.L., 1998. Evaluation of the Effects of Silvicultural and Fuels Treatments on Potential Fires Behavior in Sierra Nevada Mixed-Conifer Forests. For. Ecol. Manage. 105, 21-35.

Stephenson, N.L. et al, 2014. Rate of Tree Carbon Accumulation Increases Continuously with Tree Size. Nature 507, 90-93.

Taylor, N., J. E. Knight, and J. J. Short. 2004. Fall cattle grazing versus mowing to increase big-game forage. Wildlife Society Bulletin **32**:449-455.

Tveten, Richard, 2014. Management Strategy for the Washington State Department of Fish and Wildlife's Forests.

Vavra, M. 2005. Livestock grazing and wildlife: developing compatibilities. Rangeland Ecology and Management **58**:128-134.

Vitousek, P.M., 1991. Can Planted Forests Counteract Increasing Atmospheric Carbon Dioxide? J. Environ. Qual. 20, 348-354.

Wagoner, S. J., L. A. Shipley, R. C. Cook, and L. Hardesty. 2013. Spring cattle grazing and mule deer nutrition in a bluebunch wheatgrass community. Journal of Wildlife Management **77**:897-907.

Washington Department of Fish and Wildlife. 2010. Cougar Outreach and Education in Washington State. Washington Department of Fish and Wildlife, Olympia, Washington.

Washington Department of Fish and Wildlife. 2015. Game Management Plan July 2015-June 2021. Washington Department of Fish and Wildlife, Olympia, Washington.

WDFW. 2015. Washington's State Wildlife Action Plan: 2015 Update. Washington Department of Fish and Wildilfe, Olympia, Washington, USA.

Washington Department of Fish and Wildlife. 2016. Washington State Mule Deer Management Plan, Wildlife Program, Washington Department of Fish and Wildlife, Olympia, WA.

Washington Department of Fish and Wildlife. 2016. Klickitat Wildlife Area Management Plan, Wildlife Program, Washington Department of Fish and Wildlife, Olympia, WA.

Wiles, G. J., H. L. Allen, and G. E. Hayes. 2011. Wolf conservation and management plan for Washington. Washington Department of Fish and Wildlife, Olympia, Washington.

Wiles, G. J. 2016. Periodic status review for the western gray squirrel in Washington. Washington Department of Fish and Wildlife, Olympia, Washington.

Willms, W., A. McLean, R. Tucker, and R. Ritchey. 1979. Interactions between mule deer and cattle on big sagebrush range in British Columbia. Journal of Range Management **32**:299-304.

Wilson, A. M., G. A. Harris, and D. H. Gates. 1966. Cumulative effects of clipping on yield of bluebunch wheatgrass. Journal of Range Management **9**:90-91.

Aplet, G. H., and W. S. Keeton. 1999. Application of historical range of variability concepts to biodiversity conservation. In *Practical approaches to the conservation of biological diversity*. Edited by R. K. Baydack, H. Campa, and J. B. Haufler, 71–86. Washington, DC: Island

WRIA 31 Management Plan 2008:
https://www.klickitatcounty.org/DocumentCenter/View/234/WRIA-31-Rock-Glade-Watershed-Management-Plan-PDF\

WRIA 31 Detailed Implementation Plan 2010:
https://www.klickitatcounty.org/DocumentCenter/View/11699/WRIA-31-Detailed-Implementation-Plan-PDF

Yeo, J. J., J. M. Peek, W. T. Wittinger, and C. T. Kvale. 1993. Influence of rest-rotation cattle grazing on mule deer and elk habitat use in east-central Idaho. Journal of Range Management **46**:245-250.

Appendices

a) Simcoe Mountains Unit Goals, Objectives, and Performance Measures

Appendix A. Simcoe Mountains Unit Goals, Objectives, and Performance Measures

Goal		Objective	Performance Measure	Lead *Support*	Tasks
1.	Identify key wildlife habitats. Also reference Goal 1 of the KWA Management Plan.	A. Use PHS and ground-truthing to map and document priority habitats, i.e. wetlands, white alder/riparian, aspen stands, and key grassland/steppe areas.	1. In 5 years provide draft map of inventoried sites to CRM group.	WLA Manager	Survey and map priority sites. Use PHS Management Recommendations to develop site specific plans. Include risks from climate change in those plans.
		B. Implement Weed Management Plan.	1. # acres inspected. 2. # acres treated. 3. Produce annual weed control report, documenting work completed.	Range Ecologist/Conservation District, District Wildlife & Habitat Biologists	Inspect wildlife area lands for weed infestations as time permits focusing efforts on high priority areas. Note new infestations for active control efforts and track population trends and ongoing needs at known infestation sites. Maintain records of weed control efforts. Submit annual weed control report, documenting work completed.
2.	Support western gray squirrel populations in and around the Wildlife Area in accordance with the western gray squirrel statewide recovery plan. Also reference Goal 5 of the KWA Management Plan.	A. Evaluate western gray squirrel locations, past and current, across the landscape.	1. Review existing records & conduct surveys over the next three years.	WLA Manager	Map all known data for western gray squirrel locations.
		B. Implement PHS western gray squirrel management recommendations in forest treatments. Manage toward recommended stand characteristics (primary/secondary habitat).	1. Complete WGS surveys prior to silvicultural treatments and incorporate them into forest harvest plan. 2. Monitor WGS presence within 5 years of timber harvest to determine continued occupancy	District Biologists/ WDFW Forester	Utilize PHS guidelines for planning management of WGS habitat. Conduct follow-up ground surveys to compare pre-treatment and post-treatment WGS nest presence.

Goal		Objective	Performance Measure	Lead *Support*	Tasks
3.	Maintain and enhance the Oregon white oak woodlands. Also reference Goal 4A of the KWA Management Plan.	A. Address oak habitat protection when implementing KWA forest management and grazing plans. (Manage for oak savannah, pure oak woodlands, oak/conifer woodlands, and oak snags.)	1. Perform annual grazing permit monitoring. 2. Conduct review of pine-oak habitats by Forestry Program to map oak stands that need conifer release via forest management.	Range Ecologists/ WLA Manager, WDFW Forester	Map distribution of oak habitats on the property Identify pine-oak stands that would be good candidates for oak release projects.
		B. Address oak habitat protection when implementing KWLA forest management and grazing plans. (Manage for oak savannah, pure oak, oak/conifer and oak snags.)	Oregon white oak cover and stem density reported by height class at approximately 5-year intervals.	WDFW Range Ecologist, WLA Manager, WDFW Forester.	Monitor oak cover and height classes to ensure that oak recruitment is occurring over appropriate time scales.
4.	Inventory wildlife species to assess diversity and health of ecosystem.	A. Assess occupancy of wildlife species in the Unit.	1. Prioritize species surveys for a 10-year period.	District Biologist	Coordinate district priorities with Headquarters Wildlife Program Staff annually.
			2. Conduct surveys for selected priority wildlife species such as state or federally listed species or species that have a pending 5-year Periodic Status Review or species that are part of a statewide or rangewide survey effort.	WDFW Citizen Science Program volunteers, Conservation District Staff	Conduct wildlife surveys according to prioritized list established by Headquarters Wildlife Program Staff. Gather local knowledge from Western Pacific Timber staff. Address overabundance/competition issues as needed.

Goal		Objective	Performance Measure	Lead *Support*	Tasks
5.	Provide for healthy stable or increasing mule deer and upland game bird populations. Also reference Goal 8 of the KWA Management Plan.	A. Monitor deer population.	1. One seasonal deer survey conducted per year.	District Biologist	Conduct post season buck surveys in December as part of GMU 382 aerial survey.
		B. Maintain or enhance shrub, browse and grassland forage.	1. Monitor livestock grazing utilization and plant community response	WLA Manager/ Range Ecologists, Conservation District, Grazing permit holders	Conduct annual range evaluation.
		C. Monitor deer hunting season to evaluate permit allocation number and season distribution.	1. Complete hunter harvest reports annually. Evaluate permit hunt success.	District Biologist	Conduct phone interviews with all permit hunters to determine hunt quality, success, and recommendations for improvement.
		D. Maintain or improve access to water for wildlife species.	1. Evaluate need for additional water sources, what type of water development, and location of such sources.	WLA Manager/ Conservation District Staff, Range Ecologists, Grazing permit holders	Schedule site visits to evaluate habitat condition in relation to limiting factors such as water availability. Survey and map sites and develop recommendations. If needed, design and construct developments.
6.	Manage elk population to optimize resident and migratory mule deer population.	A. Minimize elk population increases per GMU 382 hunting objectives. (Managed for elk suppression.)	1. Complete hunter harvest reports annually.	District Biologist	Monitor annual hunter elk harvest numbers. Make recommendations annually to change hunting season regulations as needed.
7.	Manage bear and cougar for sustainable healthy populations. Manage cougar/bear-livestock conflicts to minimize livestock losses.	A. Implement carnivore management as per state guidelines (e.g., cougar and bear population objectives and harvest strategy, human-wildlife conflict avoidance measures).	1. Complete hunter harvest reports annually. 2. Implement human-wildlife conflict avoidance measures.	District Biologist/ Wildlife Conflict Specialist, WDFW Law Enforcement	Provide bear and cougar harvest recommendations to Headquarters Game Division Staff via hunting season recommendations. Follow WDFW protocols for bear/cougar depredations.

Goal		Objective	Performance Measure	Lead *Support*	Tasks
8.	Manage wolf-livestock conflicts to minimize livestock losses. Also reference Goal 9 of the KWA Management Plan	A. Follow statewide guidelines for wolf management. Once a pack is established around the WLA, evaluate adaptive management as per statewide planning.	1. Document sightings, conduct follow-ups as needed. 2. Implement WDFW wolf conflict avoidance measures.	District Biologist/ Wildlife Conflict Specialist	Work with Wildlife Conflict Staff to document probable wolf sightings as per public and WDFW reports. Set cameras as needed to verify individual and wolf pack presence based on sightings/reports. Follow WDFW protocols in cases of wolf-livestock conflict.
9.	Manage Simcoe Mountains Unit for absence of feral horses and pigs.	A. Monitor for feral horse and pig presence on the unit and adjacent ownerships.	1. Document observations, conduct follow-ups as needed to determine presence. 2. Develop and implement a plan for removing feral horses and pigs from WDFW land, if present.	WLA Manager/ Conservation District Staff, District Biologist	WLA Manager and Grazing permit holder work together to document points of entry and repair fences ASAP to minimize access for feral horses across WDFW property lines.
10.	Forest Restoration	A. Restore stand to Historic Range of Variability to improve habitat, stand resiliency and forest health B. Release 6” dbh & smaller trees C. Reduce tree density favoring dominant fire-resistant trees	1. 400 acres commercial thin 2. 250 acres pre-commercial thin 3. 250 acres pre-commercial thin	Forester Forester Forester	

Goal		Objective	Performance Measure	Lead *Support*	Tasks
11.	Maintain or improve hydrologic processes through best management practices to increase climate resiliency.	A. Maintain or improve winter/spring season water storage to sustain summer/fall base flow. B. Maintain or improve floodplain connectivity. C. Maintain or improve wet meadow conditions.	1. Data collected over 5 initial management years (surveys, streamflow monitoring) 2. Identify future project sites and management opportunities	WLA Manager/ Conservation District Staff, WDFW Wildlife and Habitat Biologists, Yakama Nation Fisheries Staff	Conduct streamflow monitoring and survey stream reaches to develop baseline conditions and guide future work Confirm spring locations and condition; make improvements as needed Confirm fish presence and distribution to guide future work Evaluate suitability for beaver reintroduction to support upper watershed restoration (groundtruth Beaver Restoration Assessment Tool outputs) Evaluate opportunities to maximize snowpack development and persistence into the late season Evaluate opportunities for constructed water storage and subsequent release to support late season base flows for water quality and fish Evaluate opportunities for road decommissioning to restore floodplain connectivity and promote natural hydrological processes Evaluate opportunities to use materials from forest management projects for stream/floodplain enhancement
12.	Maintain or improve water quality through best management practices.	A. Maintain or improve riparian condition. B. Maintain or improve instream temperatures. C. Minimize sediment input from roads, timber harvest, grazing, and burned areas.	1. Data collected over 5 initial management years (e.g., surveys, stream temperature monitoring) 2. Identify future project sites and management opportunities	WLA Manager/ Conservation District Staff, WDFW Wildlife and Habitat Biologists, Yakama Nation Fisheries Staff	Conduct riparian assessments, including in burned areas, to develop baseline conditions and guide future work Conduct stream temperature monitoring to develop baseline conditions and guide future work Confirm spring locations, condition, and contribution to base flow Protect sensitive areas from livestock and wildlife and provide alternative watering sources

Goal		Objective	Performance Measure	Lead *Support*	Tasks
					Evaluate opportunities for road decommissioning and/or upgrades to limit sedimentation
13.	Maintain or improve hydrological processes that support recreation and working lands.	A. Maintain water right claims to support working lands.	1. Review existing water right information and develop water use tracking system within 2 years 2. Visit mapped springs and document conditions within 2 years	WDFW Staff/, Conservation District Staff, Yakama Nation	Confirm water right locations and conditions Document historic use and develop ongoing ways to document current use to preserve water rights into the future Confirm spring locations and condition; make improvements as needed
		B. Maintain and develop or renovate springs with available funding.			
14.	Support and maintain appropriate recreational opportunities. Also reference Goal 11 of the KWA Management Plan	A. Monitor deer hunting season to evaluate permit allocation number and season distribution.	1. Complete hunter harvest reports annually. 2. Evaluate permit hunt success.	District Wildlife Biologist	Conduct phone interviews with all permit hunters to determine hunt quality, success, and recommendations for improvement.
		B. Follow existing harvest regulations for GMU 382	1. Complete hunter harvest reports annually.	District Wildlife Biologist	Evaluate and monitor resource impacts. Use adaptive management to respond.
		C. Communicate with neighboring landowners	1. Contact BLM, CDs, and private landowners regarding recreation.	WLA Manager	Develop collaborative actions as applicable (trails, etc.).
		D. Implement area or trail closures annually during critical times of the year for wildlife species, as needed.	1. Document conflicts between wildlife and recreational activities. 2. Implement closures on a case-by-case basis.	WLA Manager/ District Wildlife Biologist, Enforcement	Use scientific literature to determine best practices for size and timing of recreational closures.
		E. Add information at reader boards on important wildlife and habitat protection issues.	1. Provide appropriate information on all reader boards.	WLA Manager/ District Wildlife and Habitat Biologists	Perform maintenance and updates to information and reader boards as necessary.

Goal		Objective	Performance Measure	Lead *Support*	Tasks
			2. Update as necessary.		
		F. Explore options for camping and parking areas.	1. Place signs advising visitors of where camping and parking are allowed or restricted.	WLA Manager	Develop handouts, post signs, and update information on WDFW website. Identify suitable areas and need. Identify costs to develop and maintain these areas and accompanying facilities like restrooms.
		G. Maintain recreational uses that are compatible with nonmotorized access.	2. Restrict uses that are not compatible with nonmotorized access.	WLA Manager	Establish list of restricted activities and list of restrictions for acceptable uses. Develop handouts, post signs, and update WDFW website as needed.
15.	Collaboratively maintain the traditional working landscape of the Simcoe Unit.	A. Issue WDFW 5-year grazing permits for the property consistent with WDFW Policy C-6003. B. Evaluate and renew grazing permits upon expiration, with any adjustments based on condition of maintained habitat values and ecological integrity. C. Manage additional adjoining WDFW land acquisitions and Conservation District land acquisitions in an integrated manner with the existing Simcoe Unit, which may include amending existing grazing	1. Issued permits 2. Coordination meetings attended.	WDFW Range Ecologist/ WLA Manager, Permittees, Conservation District Staff.	Produce grazing management plans reviewed by Simcoe CRM and WDFW District 9 Team, Wildlife Area Advisory Committee Conduct Ecosystem Standards assessments for each permit/renewal. Report monitoring results associated with Goal 1 and Goal 2 in grazing permit renewals. Attend coordination meetings to assess progress toward objectives, adjustments, and the management of new land acquisitions at least annually.

Goal		Objective	Performance Measure	Lead *Support*	Tasks
		permits to include newly acquired acreage. Explore Conservation Easement for grazing to E&CKCDs			
16.	Maintain or improve habitat conditions for deer through grazing.	A. Allow only conservative stocking rates that do not result in utilization of more than 50% of herbaceous or woody plant species. B. Allow light to moderate livestock grazing that should favor shrub growth.	1. Utilization measurements reported annually. 2. Shrub cover reported at approximately 5-year intervals. 3. Forage estimates conducted based on existing vegetation/ condition and ecological sites and allot animal unit months accordingly.	WLA Manager/ WDFW Range Ecologist, Permittees.	Use data from field visits, ecological site descriptions, forest management, and principles of range management as described in technical literature to calculate a stocking rate consistent with conservation of wildlife habitat. Conduct utilization measurements on selected herbaceous and woody plant species/groups at locations accessible to livestock.
17.	Maintain and improve range infrastructure.	A. Maintain northern boundary fence along Yakama Indian Nation and interior fence between grazing permits. B. Maintain existing water developments. C. Assess need, capacity for, and resources to maintain additional fencing, water developments, signage, and cattle guards, including costs for any necessary surveys.	1. Fence constructed or maintained (miles), water developments infrastructure functioning properly (y/n). 2. assessments completed (y/n). 3. Strategies agreed upon (y/n).	WLA manager/ Conservation District staff, Permittees	Prepare contracts. Perform annual maintenance as needed. Evaluate need, suitable locations, and potential funding sources for the listed infrastructure items.

Goal		Objective	Performance Measure	Lead *Support*	Tasks
		D. Identify strategies for rebuilding infrastructure damaged in the event of fire.			
18.	Preserve and protect culturally significant sites on the property.	A. Comply with all current laws and WDFW policies applicable to culturally important sites and relics.	1. Avoid disturbance of sites and relics. 2. Ensure that an adequate survey is conducted to identify any sites or relics that may be present within the footprint of a planned project.	WLA manager/ Project specific lead, Leader of any construction or forest management project, or other project resulting in ground disturbance	Define the boundaries of the any proposed project that might disturb visible relics or soil. Ensure that the project site is surveyed to identify sites or relics requiring protection. Control the work being performed so that necessary site protection is achieved. Inspect known sites and increase surveillance when judged necessary for protection.
19.	Culturally important resources are managed sustainably.	A. Harvest of wildlife and fish are managed at a sustainable level.	1. Evaluate implications of management actions with respect to wildlife, fish, and plant resources. 2. Adjust policies as needed to achieve the objectives.	WLA Manager/ District Wildlife and Fish Biologists	Survey streams for presence of fish. Identify areas occupied by game wildlife species. Develop a set of game, fish, and habitat management practices designed to promote sustainable populations and incorporate them into the property management plan.
		B. Harvest of plant materials is managed at a sustainable level.			Delineate boundaries around specific areas containing culturally significant resources such as plants used in medicine or subsistence.
		C. Other activities that may negatively impact these resources are mitigated to minimize impacts to the greatest degree feasible.			Consider possible negative impacts to sensitive areas when managing uses of the property. Take steps to minimize impacts. Enforce laws pertaining to commercial exploitation of resources on WDFW lands.