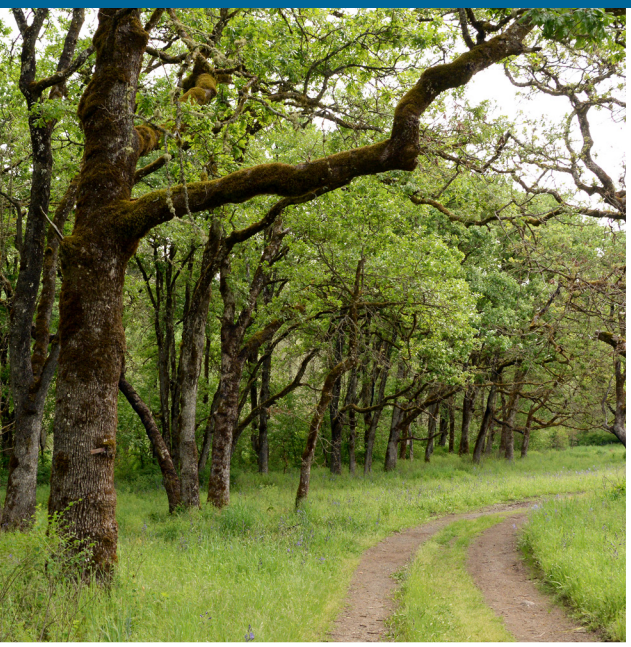
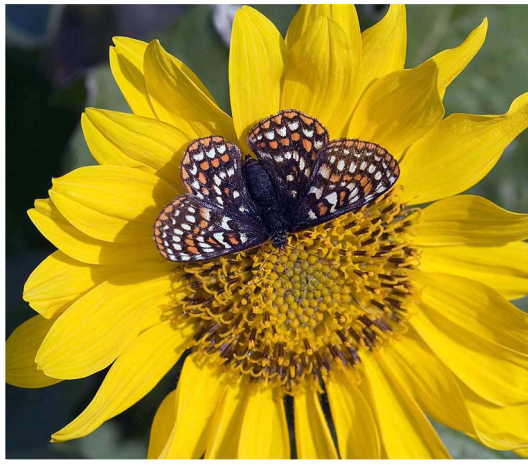
December 2020

Scatter Creek Wildlife Area Management Plan





Washington Department of FISH and WILDLIFE

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Cover Photos: Clockwise from the top right – Scatter Creek South Unit – Mary Linders , Taylor's checkerspot butterfly – Rod Gilbert, elk, Oregon spotted frog – Alan L. Bauer, child with dogs hunting photo – Nick Eisenmann, oak trees – Alan L. Bauer

Wildlife Area Advisory Committee

Scatter Creek Wildlife Area Advisory Committee Roster
Darric Lowery, WDFW Staff Lead

Name	Representing
Bill Brookreson	WA Native Plant Society – South Sound Chapter
Sharron Coontz	Friends of Rocky Prairie
Pat Dunn	Center for Natural Lands Management
Joan Fleming	Back Country Horsemen of Washington – Scatter Creek Riders Chapter
Diane Holbrook	Neighbor
Jim Knowles	Pheasants Forever
Jackie Lovette	Neighbor/dog trainer
Mara Healey	Thurston Conservation District
Cal Palmer	Northwest Field Trial Council
Elizabeth Rodrick	Black Hills Audubon Society
Robert Scott	West Thurston County Regional Fire Authority
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Kurt Snyder	Washington Waterfowl Association – Grays Harbor Chapter
Bill Wamsley	Local citizen
Tim Wilson	Thurston County Weed Board
Thom Woodruff	Capitol Land Trust

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Kelly Susewind, Director, Washington Department of Fish and Wildlife

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Acronyms

CNLM	Center for Natural Lands Management
DAHP	Washington State Department of Archaeology & Historic Preservation
DNR	Washington State Department of Natural Resources
DPS	Distinct Population Segment
EIA	Ecological Integrity Assessment
EIM	Ecological Integrity Monitoring
ESA	Endangered Species Act
ESU	Evolutionary Significant Unit
IPM	Integrated Pest Management
JBLM	Joint Base Lewis McCord
LWCF	Land and Water Conservation Fund
NAWCA	North American Wetland Conservation Act
NPS	National Park Service
NRCS	National Resources Conservation Service
PHS	Priority Habitats and Species
RCW	Revised Code of Washington
RCO	Washington State Recreation and Conservation Office
SEPA	State Environmental Policy Act
SGCN	Species of Greatest Conservation Need
SOP	Standard Operating Procedures
SWAP	State Wildlife Action Plan
SWHMA	Skookumchuck Wildlife Habitat Management Area
USFWS	United States Fish and Wildlife Service
WAC	Washington Administrative Code
WAAC	Wildlife Area Advisory Committee
WDFW	Washington Department of Fish and Wildlife
WLA	Wildlife Area
WWRP	Washington Wildlife and Recreation Program

Part 1: Wildlife Area management planning overview

Introduction and agency mission[1]

Welcome to your fish and wildlife lands!

The Washington Department of Fish and Wildlife (WDFW) provides active management for more than a million acres of publicly-owned land, most of which falls within 33 wildlife areas across the state (https://wdfw.wa.gov/about/wdfw-lands). These diverse lands contain nearly all species and habitats present in Washington. With the loss of natural habitat posing the single greatest threat to native fish and wildlife, these wildlife areas play a critical conservation role. The wildlife area management plan addresses all aspects of resource management, highlights areas for public access, education, and stewardship, and aligns with statewide conservation goals.

In addition to protecting lands and water for habitat and people, WDFW manages land to preserve Washington's natural and cultural heritage, provide access for hunting, fishing, and wildlife-related recreation, and foster outdoor experiences and exploration throughout the state. We do this to support the species and habitats of Washington and ensure they prosper for our collective enjoyment well into the future.

An interdisciplinary team of WDFW staff members, including fish, habitat, and wildlife biologists, as well as enforcement and management, developed the Scatter Creek Wildlife Area Management Plan with significant public involvement. This included input from the local stakeholder-based Scatter Creek Wildlife Area Advisory Committee, public agencies, and interested residents.

Wildlife area management planning framework

Management of wildlife areas is guided by WDFW's mission and strategic plan, as well as by state and federal laws. Each new plan is guided by the Wildlife Area Management Planning Framework (Framework), which summarizes the agency's mission, laws, policies, and approaches to management of fish and wildlife, as well as public use and recreation. To read the framework: (https://wdfw.wa.gov/publications/01810).

[1] Under state law, the Washington State Department of Fish and Wildlife (WDFW) is charged with "preserving, protecting, and perpetuating" the state's fish and wildlife species, while also providing sustainable recreational opportunities that are compatible with fish and wildlife stewardship.

Purpose and organization of the plan

The purpose of the management plan is to guide management activities, including conservation and recreation, occurring on the Scatter Creek Wildlife Area for the next 10 years. Management goals, objectives, and performance measures are defined in the plan and are consistent with WDFW's mission, strategic plan, and requirements associated with the funds used to purchase the wildlife areas. The plan provides a clear vision of how these lands are managed to a variety of audiences, including WDFW staff members and the public. Actions in the plan are dependent on available budget. Budget and staffing changes made during the life of this plan may delay or expedite implementation of some actions.

The plan is organized into four parts. Part I provides an overview of the wildlife area and associated units including size, location, purpose, and other features. It also includes success stories, which showcase conservation, restoration, and partnerships with volunteers.

Parts II and III cover the wildlife area in more depth, including information to guide management activities and document the history, land ownership, stewardship, and recreation activities. Part II concludes with goals and objectives for the planning area, summarizing the priority actions, owners, and timelines for implementation. This section of the plan is reviewed and updated every two years.

Part III focuses on species and habitat management. It also describes the physical setting, such as soils, geology, hydrology and climate, as well as the effects of climate change. This section also describes the importance of the wildlife area as habitat for native game and non-game species.

Part IV is a compendium of appendices that include resources to support different areas of the plan, including species and habitat information, weed and forest management, fire response, research, and other studies.

Pat Dunn remembrance

We dedicate this plan to the memory of Patrick Dunn, a visionary leader in conservation who passed away on July 28, 2020. Pat was the Director of the South Sound Program for the Center for Natural Lands Management and The Nature Conservancy. He worked tirelessly for decades to bring together resources and people from many disciplines to protect South Puget Sound prairie/oak species and ecosystems. As a member of the advisory committee, he made valuable contributions to wildlife area planning that will live on as part of his legacy.

As a key contributor to prairie and oak ecosystem recovery, Pat brought not only science to his work, but also patience and a strong value of collaboration. He was an adept player at the long game of conservation and was particularly gifted at finding untapped connections and opportunities. He always had the bigger picture in mind and he never gave up. Pat was not afraid to challenge others' perspectives and he believed that being questioned not only led to better outcomes, it was essential to success. Pat motivated and inspired countless other conservationists who will continue the work he started, in a shared caring for something precious.

We are grateful to Pat for his work to preserve, protect, and perpetuate Washington's prairie and oak ecosystems. And we will remember him when we're out pulling Scotch broom, collecting seed, and enjoying these unique and magnificent landscapes.

"Prairies are part of Washington's natural and cultural heritage. We value open space and want to protect the land and wildlife so future generations can enjoy these special places, too." – Patrick Dunn

Pat Dunn. Photo by Center of Natural Lands Management.

Welcome to the wildlife area

Vision

We envision resilient prairie, oak woodlands, and wetland habitats that support diverse native flora and fauna unique to the Chehalis Basin and South Puget Sound, while providing quality recreation, education, and research opportunities.

Introduction to the wildlife area

The Scatter Creek Wildlife Area is in Thurston and Grays Harbor counties and is comprised of six units totaling 3,596 acres. The Scatter Creek Wildlife Area lies within the traditional range of the Kwaiailk (Q'^{w}ay'áyiłq') or Upper Chehalis people. For centuries the Upper Chehalis People subsisted on the resource-rich rivers, prairies, and forests, procuring food for daily use and storing for the winter months. The prairies produced numerous berries, roots, and nuts harvested mainly by women and children. Among the resources gathered were camas, wild sunflower and tiger lily roots, wild carrots, acorns and hazelnuts, blackberries, and strawberries (Marr, 7, 9). The Upper Chehalis people enhanced the productivity of the prairies through burning every two to three years. (Suttles v7, 505; Marr, 9).

The Scatter Creek Wildlife Area's six units are mostly located on tributaries that flow into the Chehalis River and contain portions of unique South Sound prairies. The wildlife area is nested in the Puget Sound Trough lowlands with the Cascade Mountain Range to the east, the Willapa Hills to the southwest, and the Black Hills to the northwest. It lies on a glacial outwash plain, rimmed by low-lying hills formed by the last continental ice sheet 12,000 years ago. The primary focus on these units is prairie conservation and restoration, elk habitat enhancement, floodplain conservation, recovery of federal and state listed species, pursuit of game species, and public recreation.

The units support many prairies, forested, riparian, and wetland dependent wildlife species, including some that are federally threatened or endangered. Units are managed for outdoor recreation and protection of specific species and their habitats. Scatter Creek Wildlife Area supports recreational activities such as wildlife viewing, hiking, walking, photography, horseback riding, hunt dog training and trials, hunting, and fishing. Portions of the Scatter Creek Unit north tract is designated for year around dog training.

Success stories at the Scatter Creek Wildlife Area

Taylor's checkerspot butterfly field work. Photo by Mary Linders, WDFW.

Taylor's checkerspot butterfly: Success in the wake of endangerment

Restoration has been vital to protecting common plants and wildlife at Scatter Creek Wildlife Area while preventing the extinction of an at-risk species. Agency staff and partners strive to rescue the native prairie plants that once dominated the site while curtailing exotic, sod-forming grasses and Scotch broom. Grasslands require disturbance to persist, which is customarily provided by deer and elk grazing, drought, and fire.

Today, land managers use a suite of tools to maintain the grassland, which benefits wildlife that rely on the native plants for food, cover, and nest sites. This can be challenging because weather can interfere with the effectiveness of prescribed fire and herbicide treatments, as well as the availability and germination of native seed.

Scatter Creek was the first site restored in the Puget Lowlands to meet the habitat needs of the federally endangered Taylor's checkerspot butterfly, lost from the site in 2000. Reintroduction efforts had mixed results during the first five years, with the population taking hold in 2015, once a low, open vegetation structure and access to food resources was restored.

Now this population is increasing despite the 2017 Scatter Creek Wildfire and by 2021 is expected to meet the criteria for an established population. Checkerspots are also dispersing into surrounding areas of Scatter Creek, further advancing the recovery and conservation of this species. A suite of other plants and animals benefit from this work, including the many birds, bees, flowers, and butterflies that inhabit native prairie. Partners that share in this success include the U.S. Fish and Wildlife Service (USFWS), Joint Base Lewis-McCord (JBLM), Center for Natural Lands Management (CNLM), Department of Natural Resources (DNR), The Oregon Zoo, The Sustainability in Prisons Project (a program of The Evergreen State College and Washington Department of

Corrections), and Wolf Haven International, among others. For more information on the Taylor's checkerspot butterfly see page 105.

Prescribed fire treatments at West Rocky Prairie Unit in 2019. Photo by Alan L. Bauer.

Prairie and oak restoration

Prairie oak restoration has been a management priority on Scatter Creek Wildlife Area for over 24 years. Natural Resources Conservation Service and the State Wildlife Grants Program provided the initial funding in 1996 for prairie restoration and monitoring. Soon after, the Taylor's checkerspot butterfly relocation program began. For over 10 years the Recreation and Conservation Office – State Lands Restoration program has consistently funded restoration (see Table 1).

WDFW owes its success to strong partnerships with the following local conservation organizations and agencies: the USFWS, CNLM, Capital Land Trust, DNR, Recreation and Conservation Office, and JBLM. Partners at CNLM have been especially important in prairie and oak restoration on the wildlife area. They have provided resources for restoration projects, such as native seed production, seed storage, native plants, restoration consultation, equipment, and staffing for both prescribed fire and other enhancement activities. Their proven leadership in the stewardship of natural lands and rare species has a long and successful track record of restoring prairie and oak habitat across the South Puget Sound habitats as part of The Nature Conservancy.

After the 2017 Scatter Creek Wildfire, management immediately switched to post wildfire treatments. Many burnt and encroaching conifers were removed from prairies to allow oaks to grow in ideal open conditions. Burnt brush and downed trees were also removed and snags were left on site for wildlife use. With funding from the Recreation and Conservation Office, revenue from trees harvested on site, and post wildfire capital funding, the Scatter Creek Unit south tract has had 25 acres of oak habitat enhancement, and 24 acres of historic prairie reclaimed. Many of our

partners provided resources (e.g. seed and labor) to help the immediate recovery needs. WDFW staff would have not succeeded in these efforts without the kind and timely assistance of our partners.

Prescribed fire has been an integral component of habitat restoration in Scatter Creek Wildlife Area and is used to improve habitat quality for Taylor's checkerspot butterfly, Mazama pocket gopher, and Mardon skipper butterfly as well as for control of invasive species. Partners from USFWS, WDFW, DNR, and CNLM meet annually to review burn plans prior to the prescribed fire season to discuss habitat enhancement goals and the protection of Taylor's checkerspot, and other Species of Greatest Conservation Need (SGCN) populations. The South Puget Sound Cascadia Prairie-Oak Partnership - South Puget Sound Ecological Fire Program provides prescribed fire training and crews, and qualified staff in partnership with JBLM. For more information on habitat management and restoration see page 114.

Table 1. Scatter Creek Area Restoration summary* from RCO from 2009 – 2019

Activity	Scatter Creek Unit	West Rocky Prairie Unit
Total plant removal (e.g. Scotch broom)	1,150 acres	684 acres
Total prescribed fire	129 acres	119 acres
Total revegetation	447 acres	117 acres

RCO grants included: 16-1859, 14-1697, 12-1527, 10-1440, 08-1535. *This table represents a snapshot in time with one single funding source. Some of the site were treated more than once.

Oregon spotted frog recovery and partnerships

Oregon spotted frogs, a federally threatened species, have benefited from acquisition of approximately 400 acres of habitat in the Scatter Creek Wildlife Area, including surrounding lands (conservation easements). WDFW is now acquiring additional habitat (26 acres as conservation easement and 112 acres as fee-title ownership) including almost three miles of riparian habitat for spotted frogs. Protecting these lands results in a 3,264-acre conservation corridor that directly connects to DNR and USFWS lands.

One factor in their decline is the loss of their unique breeding habitat. Oregon spotted frogs require aquatic habitat (wetlands, lakes, ponds, and slow-moving streams) and breed in low-elevation, seasonally flooded wetland margins connected to perennial water. Conserving active breeding sites such as these is the highest recovery priority. Acquisitions protecting Oregon spotted frogs have also benefitted federally listed Chinook salmon, coho salmon, and steelhead as well as state listed Olympic mudminnows.

The Black River Watershed (West Rocky Prairie and Black River units) is a recent focus of recovery on the wildlife area. The invasive Reed canary grass is the biggest threat, as it threatens habitat due to shading. Approximately 1.5 acres of Reed canary grass breeding habitat is mowed annually on the West Rocky Prairie Unit. In addition, 1 acre of woody vegetation has been removed from prime wetland edge habitat with more areas targeted in the future. These actions provide Oregon spotted frogs with much needed habitat in their breeding areas. Hydrology, soils, precipitation, and other seasonal habitat use data has been collected to guide future restoration efforts.

WDFW is a member of the Oregon Spotted Frog Working Group comprised of biologists from state and federal agencies as well as the private sector. Participants include USFWS, Department of Transportation, Department of Ecology, Joint Base Lewis-McChord, Port Blakely Tree Farms, Center for Natural Lands Management, Whatcom County Amphibian Monitoring Initiative, and Samish Indian Nation. The goal of the working group is to develop and implement conservation actions that recover Oregon spotted frog populations in Washington. The federal Oregon Spotted Frog Action Plan developed by the working group guides conservation actions. Protection assures WDFW and partners manage control of canary grass and other threats to the Oregon spotted frog. The draft USFWS Oregon spotted frog recovery plan is expected by the end of 2020.

Oregon spotted frog surveys. Photo by Julie Tyson, WDFW.

Hunt dog field trials

The Scatter Creek Wildlife Area is considered a northwest destination for dog training and competitive dog events, with participants who travel from as far away as Canada, Montana, Wyoming, California, and Nevada. The Scatter Creek Unit north tract provides year-round hunt dog training, while the Scatter Creek Unit south tract has limited training due to the presence of imperiled prairie species. The Davis Creek Unit was purchased primarily for waterfowl protection and floodplain conservation, and subsequently it has been used as additional lands for hunt dog events to aid in management of imperiled wildlife and habitat at the Scatter Creek Unit. Dog training occurs seasonally and hunt dog events occur nearly year-round on the Davis Creek Unit, but it can be challenging due to wet conditions in the winter. It is closed to field trials from the first week in October to second week in December.

WDFW collaborates with at least 10 field trial/hunt dog organizations, including Northwest Field Trial Council and the Washington Sport Dog Training Association. The wildlife area manager and regional administrative staff conduct field trial/hunt dog coordination meetings annually. Hunt dog activities and events include field trials, hunt tests, club training days, and general hunt dog

training. On average, four to five clubs use the wildlife area units for organized training days annually. This often includes search and rescue as well as detection dog groups. Permitted events, consisting of field trials, hunt tests, and special training days, averaging 12 to15 per year (and rising in popularity) within the wildlife area, with most occurring in early spring to late summer, which are then followed by national competitions in late fall and bird hunting seasons. Most field trials are multiple-day events involving one to four clubs representing 30-80 people, including participants ranging from professional to amateur class levels. Some field trials include mounted participants on horseback, which is regulated through a special use permit.

Hunt dog field trial Scatter Creek North Unit. Photo by Alan L. Bauer.

Fire recovery

On a hot and windy day in August of 2017, a wildfire started near Rochester at a residential area just west of the Scatter Creek Unit south tract and scorched 345 acres, including 35 acres of oak woodland habitat on the unit. The fire destroyed several houses and prompted the temporary evacuation of nearly 100 nearby residences. On the wildlife area, the historic Miller-Brewer homestead built in 1860 and a barn were also destroyed. The house was listed in the National Register of Historic Places and Washington Heritage Register in 1988. The house and barn served as the headquarters for the wildlife area. The Scatter Creek Wildlife Area was closed for several months after the fire due to public safety concerns and protection of fragile habitat. Pheasant release and pheasant hunting was isolated to the north tract for one season.

The West Thurston Regional Fire Authority, DNR, WDFW staff, and members from the community worked collaboratively to minimize impact to critical habitat for endangered and threatened species. Fire suppression and containment support came from across the state. Post fire, WDFW staff immediately identified impacts and requested legislative appropriation funding for restoration/cleanup of the site. The RCO and USFWS also provided funding. As part of recovery, the agency partnered with restoration specialists from several agencies, including CNLM, DNR, and JBLM. Post fire restoration, including restoring forest and prairie continues to this day.

In 2017, WDFW hosted a local community workshop in Rochester to discuss the fire response.

About 62 community members attended. Attendees learned about the impacted resources and infrastructure, as well as ongoing recovery activities and post wildfire response. WDFW provided information on cultural resources and historic sites impacted by the fire, habitat management, and restoration goals, which include prairie and forest restoration work. DNR and the local fire chief provided information about fire prevention, including reducing the risk of fire throughout the region.

Miller-Brewer House. Photo by WDFW staff.

Post 2017 fire. Photo by Mary Linders, WDFW.

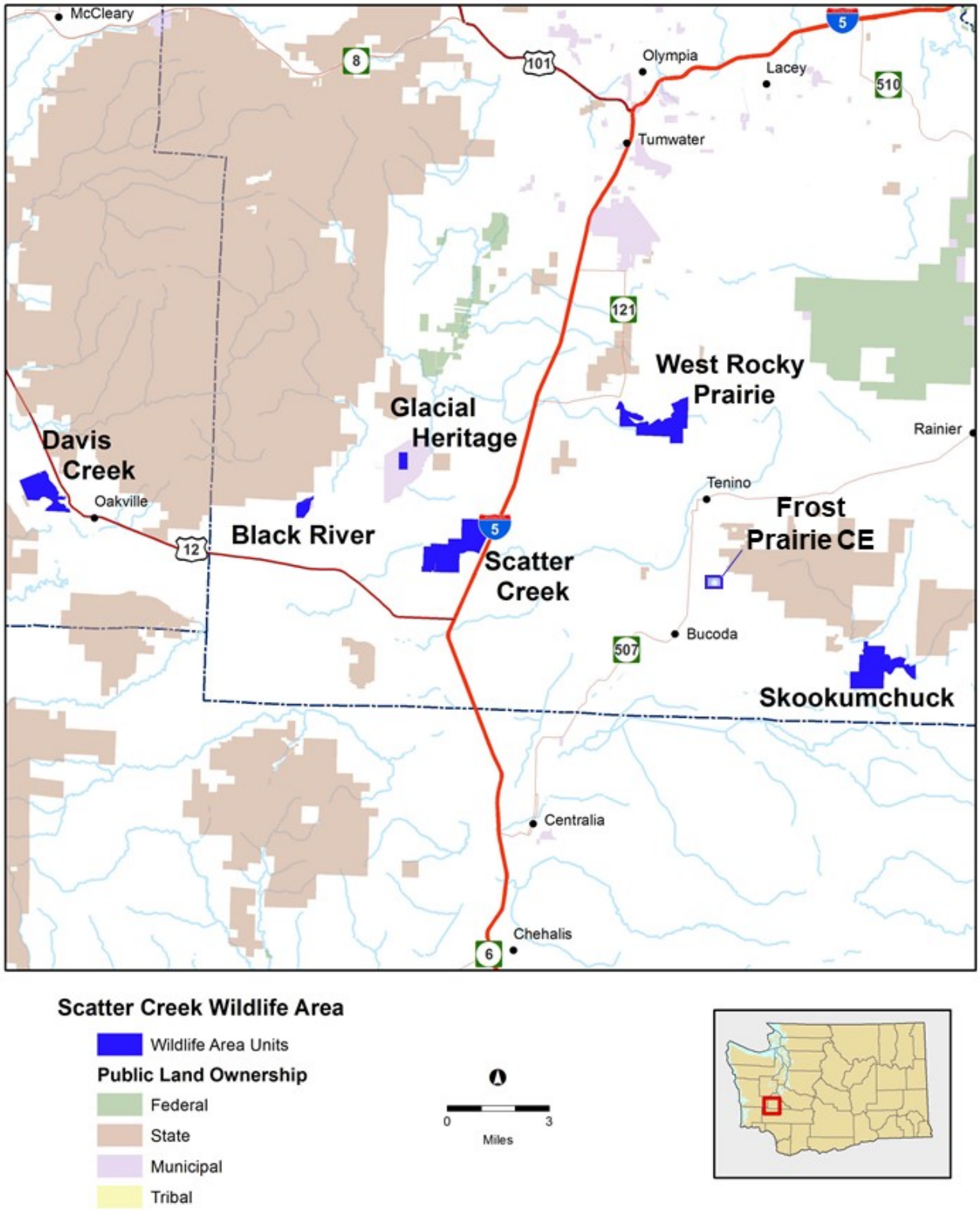
Wildlife Area Description

This section describes each of the six units of the Scatter Creek Wildlife Area: Black River, Davis Creek, Glacial Heritage, Scatter Creek, Skookumchuck, and West Rocky Prairie (Figure 1). The Scatter Creek Unit is split into north and south tracts (see figures 6, 7). Information in this section includes an overview of the size and location of each unit as well as the types of resources, recreational/public use, land ownership and land management that occur in each unit. The Scatter Creek Wildlife Area is in Thurston and Grays Harbor counties and totals 3,596 acres. The units range from 80 to 1,087 acres and vary in elevation from 39 to 625 feet.

Scatter Creek Wildlife Area information

Acres	**3,596**
Acquisition Dates	1964 - 2020
Acquisition Funding	Recreation and Conservation Office – *Washington Wildlife and Recreation Program;* Washington Department of Fish and Wildlife – *Duck Stamp*, *Wildlife Funds;* National Park Service – *Land and Water Conservation Fund;* U.S. Fish and Wildlife Service – *Pittman Robertson, North American Wetland Conservation Act.*
Elevation Range	39 – 625 feet
Recreational Opportunities	Hunting, fishing, hiking, horseback riding, wildlife viewing, hunt dog trials and training, boating, photography, running, mountain biking, swimming, geocaching, and falconry.

Figure 1. Scatter Creek wildlife area vicinity



Black River Unit

Black River. Photo by Alan L. Bauer.

Acres	**109**
Acquisition Date	1982
Acquisition Funding	U.S. Fish and Wildlife Service – *Pittman Robertson*
Elevation Range	93-128 ft
Recreational Opportunities	Waterfowl hunting, fishing, wildlife viewing, kayaking, and canoeing.
Access	https://wdfw.wa.gov/places-to-go/wildlife-areas/black-river-wildlife-area-unit

The Black River Unit is 109 acres, located 1.5 miles north of Rochester in Thurston County. The unit can be accessed from Gate Road off Mima Road SW, from The Nature Conservancy's Black River Preserve southeast, and Department of Natural Resources lands to the north. The land was purchased in 1982 with U.S. Fish and Wildlife Pittman Robertson funding.

The Black River meanders through a large, impenetrable swamp before becoming a free-flowing river. Riparian habitat features include red alder, Oregon ash, Pacific ninebark, red-osier dogwood, and willow. The property provides habitat for river otters, beaver, mink, American bittern, great

blue heron, yellow warbler, cedar waxwings, migratory birds; upland birds, including mourning dove, grouse, and occasionally wild turkey; as well as waterfowl, Chinook, chum, and coho salmon.

Thurston County's railroad right-of-way bisects the property. The unit offers opportunities for hunting, fishing, kayaking, and canoeing, as well as wildlife viewing along a trail leading from the parking area to the river.

Management opportunities in this unit include surveys for the presence of Oregon spotted frog, and potential wetland/riparian restoration. Potential improvements in recreation include a rails-to-trails project in collaboration with the county, and installation of duck blinds, and improved river access.

Great blue heron. Photo by WDFW staff.

Figure 2. Black River Unit

Davis Creek Unit

Oxbow Lake - Davis Creek Unit. Photo by Alan L. Bauer.

Acres	**537**
Acquisition Date	1992 - 2007
Acquisition Funding	U.S. Fish and Wildlife Service – *North American Wetland Conservation Act, Pittman Robertson;* WDFW – *Duck Stamp,* Donation
Elevation Range	39 – 83 ft
Recreational Opportunities	Hunting for waterfowl, deer, elk and doves; horseback riding, dog training.
Access	https://wdfw.wa.gov/places-to-go/wildlife-areas/davis-creek-wildlife-area-unit

The Davis Creek Unit is 537 acres, located just outside of the town of Oakville near State Highway 12 in Grays Harbor County. Davis Creek is a tributary to the Chehalis River. There is one designated parking area at the unit located on South Bank Road, including a parking area at the water access site off Elma Gate Road southwest. The unit is the newest addition to the wildlife area, acquired in 2007 with U.S. Fish and Wildlife and state Duck Stamp funding, along with a private donation in 1992.

The unit supports a variety of unique habitat types including extensive freshwater emergent wetlands, riparian shrub habitat, off channel sloughs, meadows, open agriculture fields, and Oregon

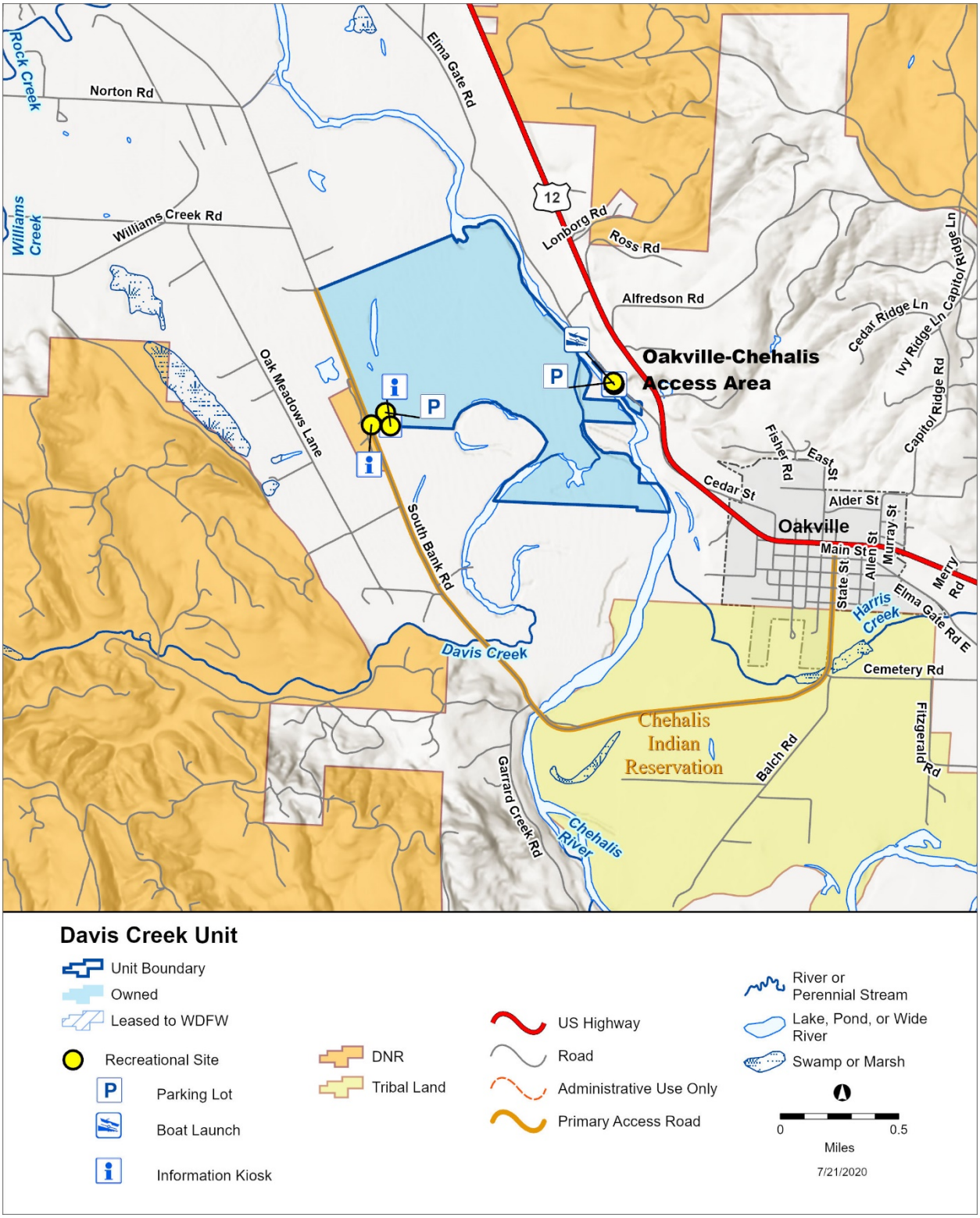
white oak woodlands. The oak community is a valuable resource for wildlife because of the acorn crop it produces and the nesting opportunities. Species known to exist on the unit include Olympic mudminnows, mink, shorebirds, elk, deer, bear, fox, coyote, bobcat, bald eagle, grouse, waterfowl, trumpeter swans, and a variety of salmon species.

A portion of the unit is actively farmed through an agricultural lease (280 acres). The unit hosts a number of recreation activities including hunting for waterfowl, deer, elk, bear, pigeon and doves, as well as horseback riding. This site also provides special permit opportunities for hunting dog events and training. Additionally, the Chehalis River provides access for fishing on the east side of the unit. Finally, this is an excellent birding area, recognized by the Puget Lowlands Riparian Bird Conservation Area as a priority habitat (https://nawmp.org/node/304).

Management opportunities identified in this plan include oak habitat management and riparian restoration; waterfowl forage enhancement; improvements for waterfowl hunting (ADA access and blinds), water access, hunt dog opportunities; and assessing existing buildings (e.g. home, barns, loafing shelters) to determine if they may have value to retain or repurpose or should be removed. A new 416-acre acquisition to enlarge the unit is proposed and will solicit funding in 2020-23.

Northern pintails. Photo by Alan L. Bauer.

Figure 3. Davis Creek Unit



Glacial Heritage Unit

Prairie Appreciation Day 2019. Photo by Lauri Vigue, WDFW.

Acres	**80**
Acquisition Dates	2005
Acquisition Funding	Recreation and Conservation Office – *Washington Wildlife and Recreation Program*
Elevation Range	125 – 154 ft
Recreational Opportunities	Wildlife viewing – Accessible one day a year at the Prairie Appreciation Day in May
Access	https://wdfw.wa.gov/places-to-go/wildlife-areas/glacial-heritage-wildlife-area-unit

The Glacial Heritage Unit is 80 acres and located southwest of Littlerock in Thurston County. It is one of the premier prairie conservation sites in the South Puget Sound Region. The unit is part of a larger 1,100-acre Black River-Mima Prairie-Glacial Heritage Preserve and is cooperatively managed with neighboring landowners and prairie restoration partners. The unit is surrounded by Thurston County conservation land and is only open to the public once a year on Prairie Appreciation Day in May.

The unit was acquired in 2005 with Recreation and Conservation Office funding for the purpose of perpetuating the South Puget Sound prairie ecosystem. The Glacial Heritage Preserve is a key component in the network of nature preserves helping to conserve one of the rarest ecosystems in Washington. Habitat includes prairie grassland, Mima mounds, oak woodlands, riparian woodlands, and conifer forests. Glacial Heritage Preserve is among the largest remaining protected prairies of South Puget Sound, and contains several rare species including white-topped aster, zerene fritillary, western bluebird, western meadowlark, and Oregon vesper sparrow. The site was home to the Taylor's checkerspot until a population decline in 1998.

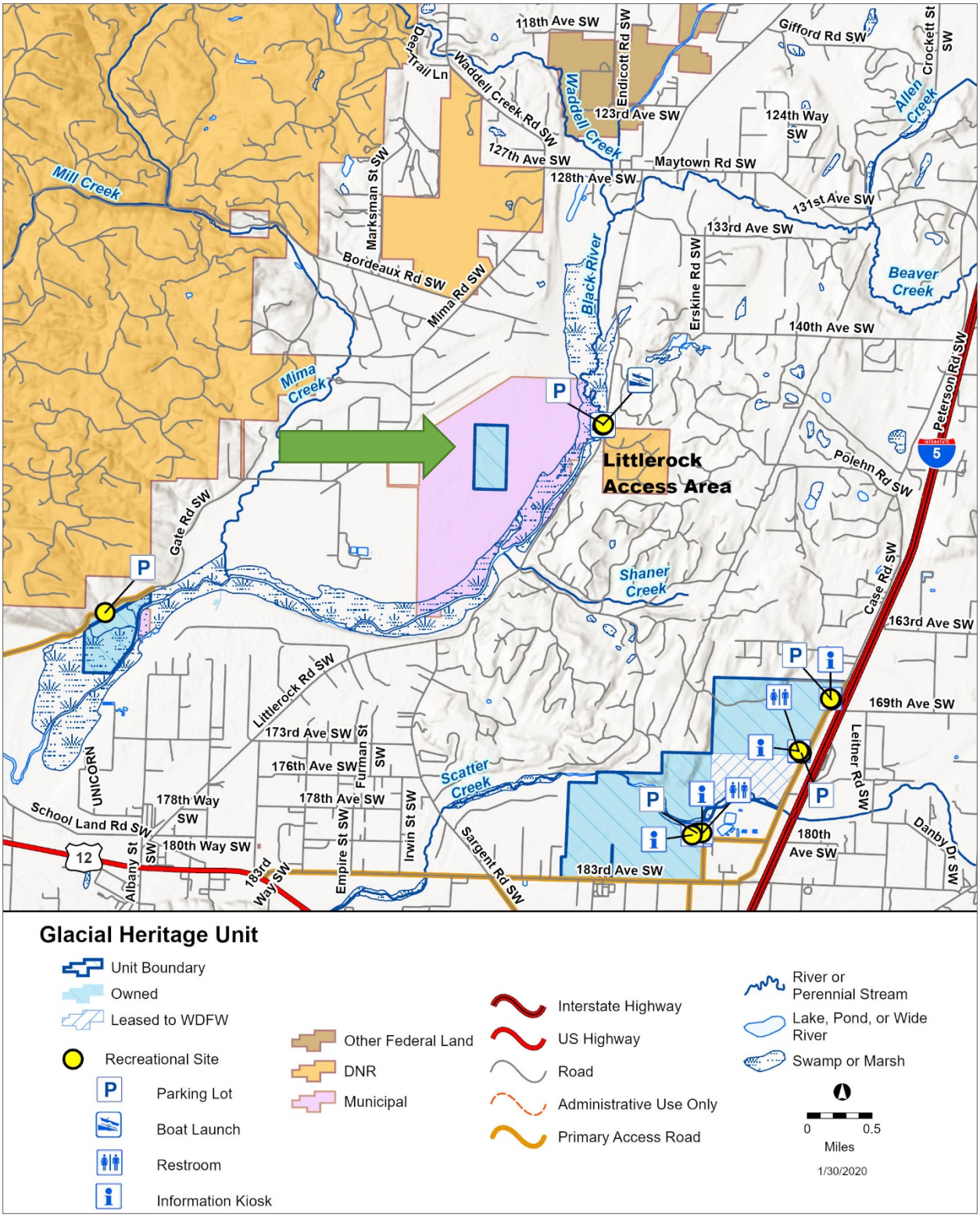
The Nature Conservancy's South Puget Sound office (now the Center for Natural Lands Management), in cooperation with Thurston County, has conducted restoration efforts since 1996.

The control of Scotch broom and invasive pasture grasses has been the historic focus of restoration effort on Glacial Heritage. Now the work is transitioning to prairie restoration and preparation of the preserve for the potential reintroduction of prairie species, including rare prairie butterflies. The preserve serves as a focal site for prairie restoration activities including projects using citizen science. When open to the public, the unit offers a great opportunity to view wildlife and enjoy nature. There is a network of maintained trails and roads that lets visitors become surrounded by the beautiful Mima Prairie. The Glacial Heritage Unit could be a showcase in the region for public learning and observation.

An opportunity identified in this plan is to develop a legal agreement with Thurston County and CNLM to formalize management and allow greater public access to the site.

Golden paintbrush – Glacial Heritage. Photo by Lauri Vigue, WDFW.

Figure 4. Glacial Heritage Unit (see green arrow)



Scatter Creek Unit

Scatter Creek Unit – Oak prairie habitat. Photo by Alan L. Bauer.

Acres	**1,087**
Acquisition Date	1964 – 2020
Acquisition Funding	National Park Service – *Land and Water Conservation Fund*; Recreation and Conservation Office – *Washington Wildlife Recreation Program*; WDFW – *Wildlife Funds*
Elevation	180 –312 ft
Recreational Opportunities	Pheasant, deer, bear, cougar, coyote, dove, and waterfowl hunting; wildlife viewing, horseback riding, fishing, competitive hunt dog events and training; hiking and botanical studies.
Access	https://wdfw.wa.gov/places-to-go/wildlife-areas/scatter-creek-wildlife-area-unit

Scatter Creek Unit is in Thurston County located on the Grand Mound Prairie, 18 miles south of Olympia and almost directly bordering Interstate 5 to the west. The unit was purchased in 1964, with one additional acquisition added in 2001. The Scatter Creek Unit is divided into a south tract (493 acres), and the north tract (435 acres) (see figure 6 and 7). WDFW leases approximately 159 acres from a private landowner for public hunting, recreation, and critical habitat conservation.

The Scatter Creek Unit supports many imperiled species, including State and Federal threatened and endangered species such as the Taylor's checkerspot butterfly, Mazama pocket gopher, and the golden paintbrush. The unit is one of the last remnants of the South Puget Sound prairie ecosystem. It contains the unique dry and wet prairie ecosystems, which supports a variety of imperiled plants and animals. Also found are Mima mounds[2], riparian, wetland, mixed conifer forest, and Oregon white oak woodlands. For the past 24 years habitat management has primarily focused on restoration and maintenance of prairie and oak habitats using prescribed fire, weed control, and the re-establishment of native plants. The management actions also benefit game species and associated recreation. The Scatter Creek Unit is a spectacular showcase of prairie wildflowers in the springtime.

The wildlife area unit is best known for hunt dog field trials and training, pheasant hunting, waterfowl hunting, fishing, wildlife viewing, horseback riding, and walking. The Scatter Creek Unit is one of three designated pheasant release sites in Thurston County. Facilities include three parking areas and two restrooms onsite. The wildlife area Headquarters (expected completion 2021) is situated on the north tract following the 2017 wildfire that destroyed the previous Headquarters. The area is the subject of numerous scientific studies including wildlife and botanical monitoring, and research (see Appendix F).

Management opportunities identified in this plan include developing a strategy to address recreational use conflicts among different user groups in addition to conserving sensitive species and habitat locations at the multiuse site. Due to its proximity to Olympia, the Scatter Creek Unit is a very popular recreation site for dog walking and wildlife viewing, two uses that can sometimes be conflicting. The objective of this plan is to improve the user's recreational experience by improving public access, facilities, and trails. WDFW is committed to improved public communication regarding recreation and restoration activities at the wildlife area. Prairie oak woodland restoration activities will continue, as well as important and ongoing work for Taylor's checkerspot, Mardon skipper, Mazama pocket gopher, and other Species of Greatest Conservation Need.

[2] Mima mounds are a natural feature of prairie landscapes that have baffled scientists and geologists for years. They are low, flattened, and circular to oval, domelike, natural mounds composed of loose, unstratified, often gravelly sediment.

Figure 5. Scatter Creek Unit – North Tract

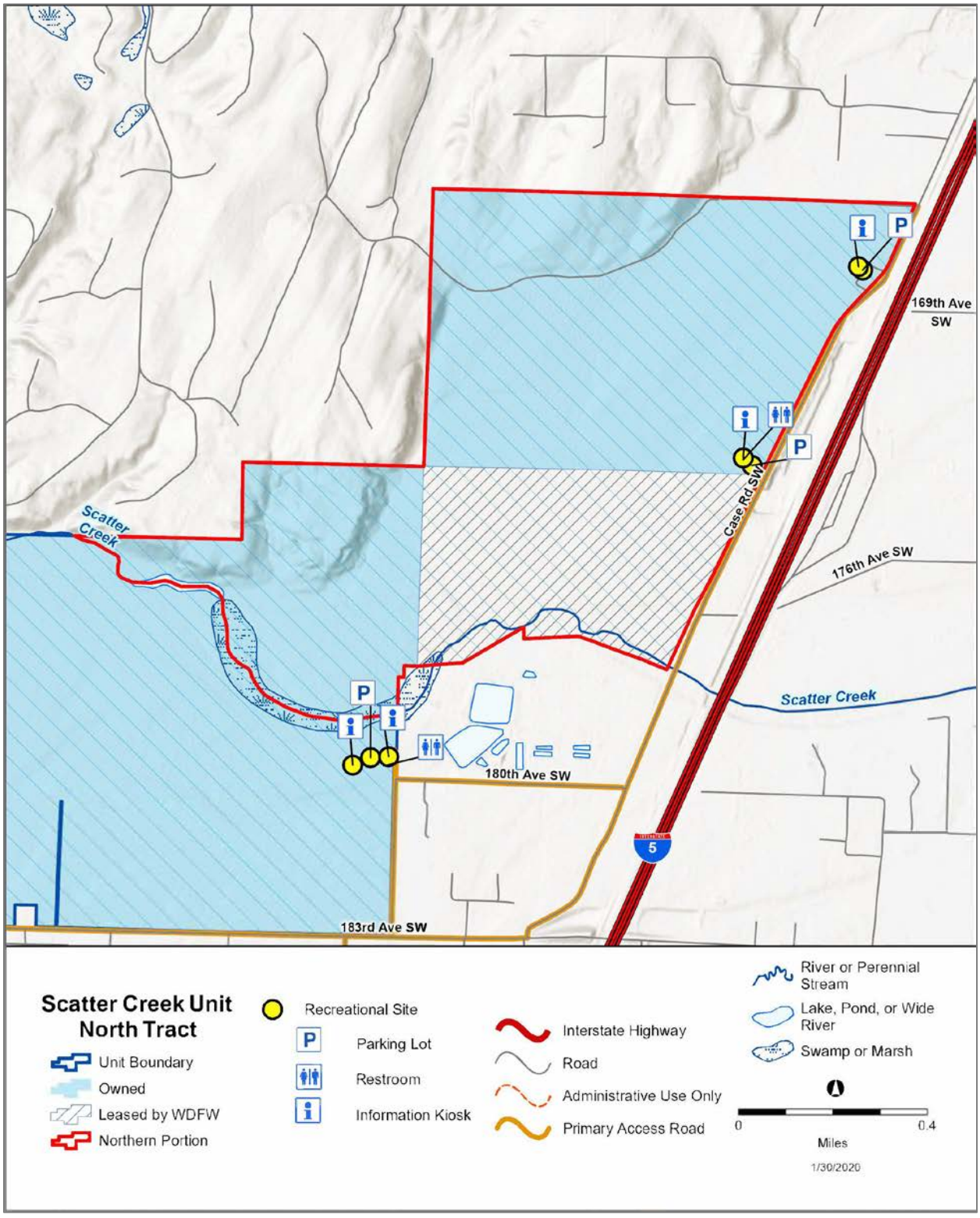
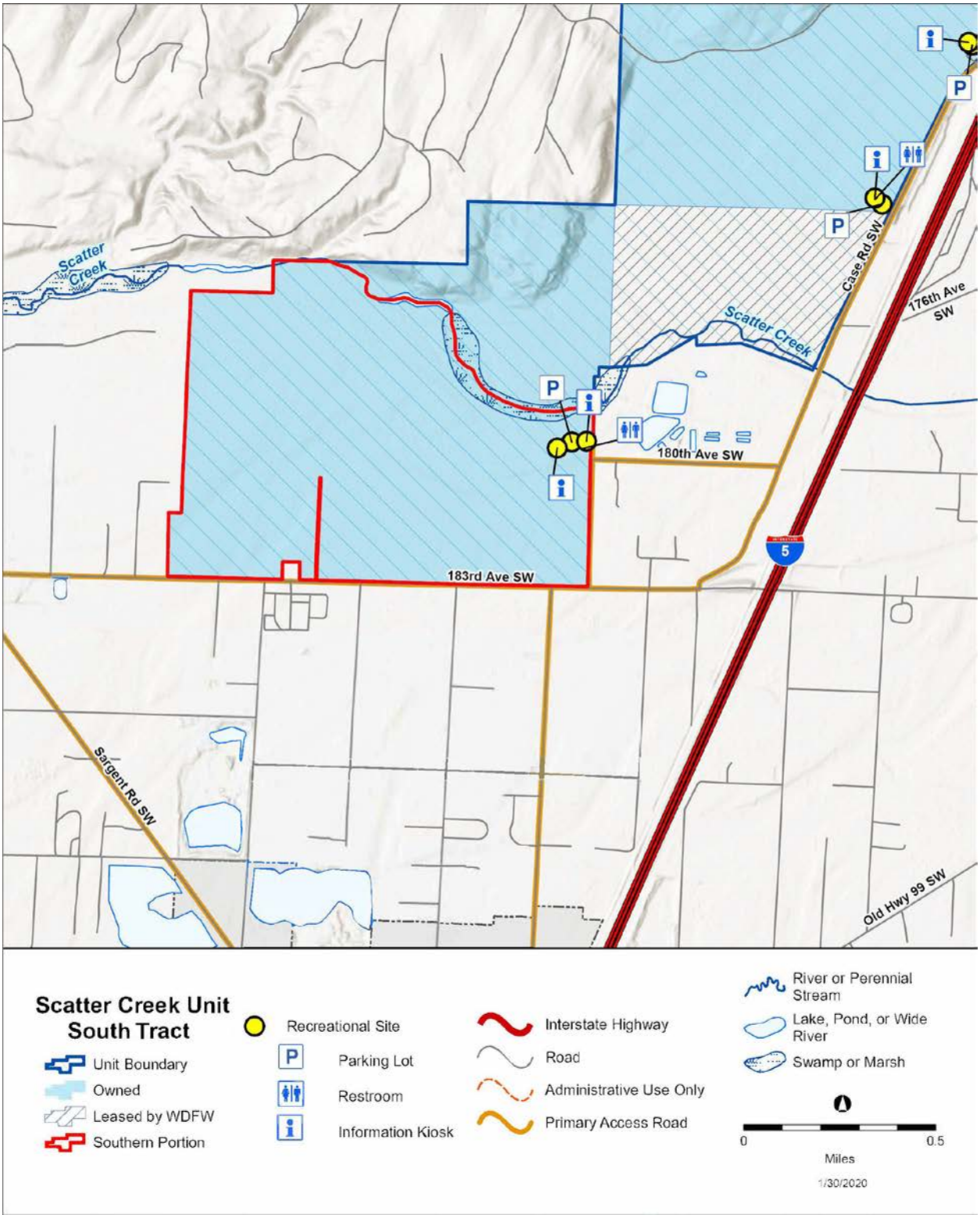


Figure 6. Scatter Creek Unit – South Tract



Skookumchuck Unit

Skookumchuck River. Photo by Alan L. Bauer.

Acres	966 agreement/ WDFW owns 8 acres
Acquisition Dates	1979
Acquisition Funding	TransAlta Agreement
Elevation Range	299 – 625 ft
Recreational Opportunities	Steelhead and salmon fishing; pheasant, deer and elk hunting; horseback riding, wildlife viewing, and hiking
Access	https://wdfw.wa.gov/places-to-go/wildlife-areas/skookumchuck-wildlife-area-unit

The 974-acre Skookumchuck Unit is located 16 miles northeast of Centralia and is downstream from the Skookumchuck Dam in Thurston County. The property is owned and managed by TransAlta for wildlife habitat in accordance with a 1979 mitigation and management agreement with the State of Washington, and WDFW provides oversight.

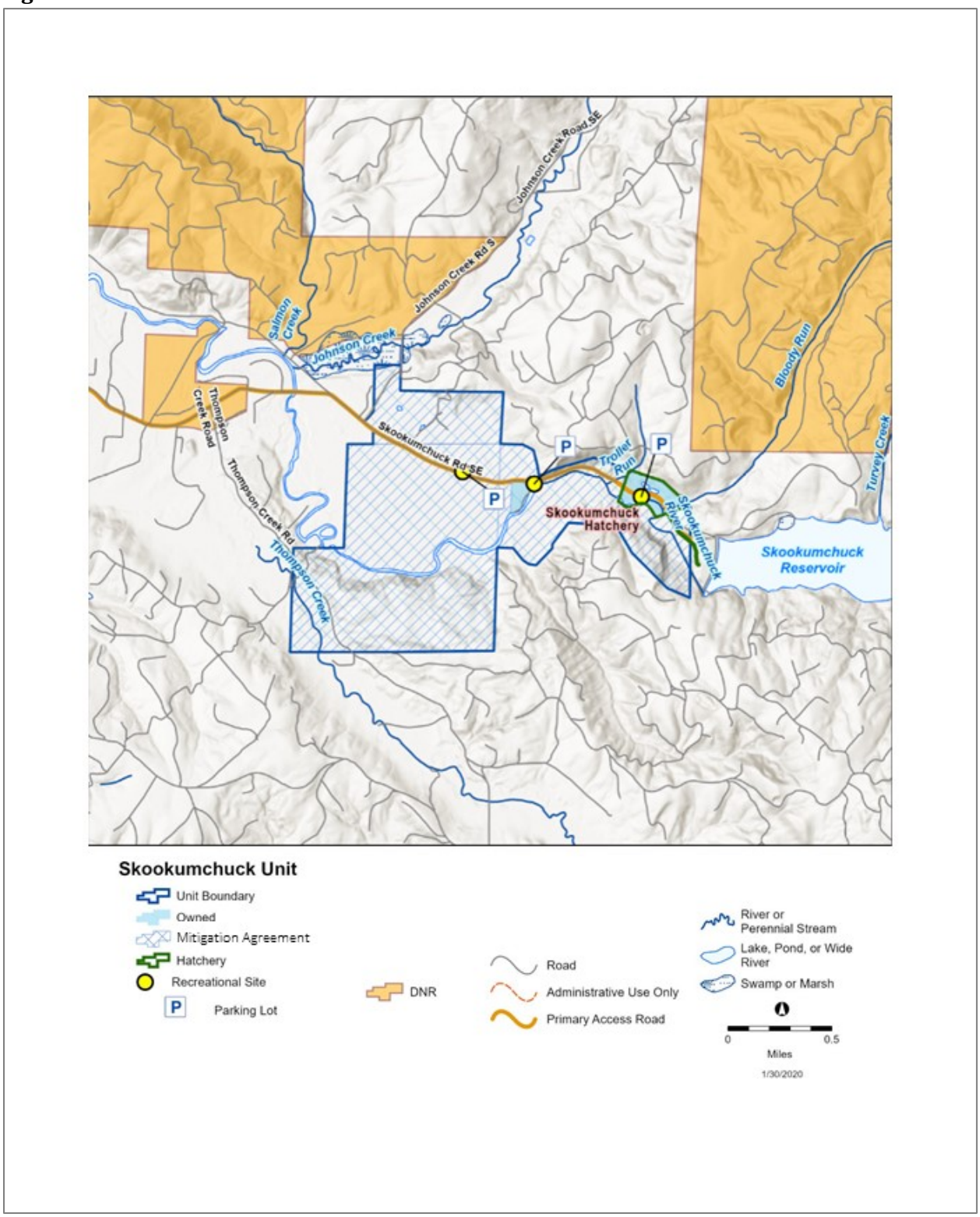
The Skookumchuck Unit protects important habitat for winter steelhead, fall Chinook, coho, Pacific lamprey, and cutthroat trout. The unit is also adjacent to a WDFW salmon and steelhead hatchery. The unit contains grassland, wetland, farmland, meadow, orchard, and forest habitats for a wide variety of species, including deer, elk, upland birds, including pheasant and grouse, harlequin duck, peregrine falcon, great blue heron, purple martin, pileated woodpecker, western bluebird, American dipper, bald eagle, and a variety of amphibians and bats, salmon and steelhead. Additionally, the unit is one of three designated pheasant release sites in Thurston County, and provides good opportunities to view elk. There are several parking areas that contain kiosks with information about the unit. This unit is a prime location for salmon and steelhead fishing, and elk viewing and hunting. Other recreation activities include wildlife viewing, horseback riding, and hiking.

TransAlta manages food resources (e.g. elk food plots) for wildlife to mitigate for the loss of inundated wildlife habitat following the construction of the Skookumchuck Dam. Elk management on the unit includes winter forage and management for escape cover.

Management priorities for this unit include assisting in developing, overseeing implementation of the standard operating procedures, and collaborating with TransAlta on habitat projects where possible. Other management objectives include developing and implementing a strategy to address hunting conflicts and to continue the pheasant release program.

Skookumchuck Unit hay bales. Photo by Alan L. Bauer.

Figure 7. Skookumchuck Unit



West Rocky Prairie Unit

West Rocky Prairie Unit. Photo by Alan L. Bauer.

Acres	**809**
Acquisition Dates	2006
Acquisition Funding	U.S. Fish and Wildlife Service – *Section 6*, *North American Wetland Conservation Act*; Recreation and Conservation Office – *Washington Wildlife and Recreation Program*
Elevation	213 – 349 ft
Recreational Opportunities	Hunting, wildlife viewing, hiking and botanical studies.
Access	https://wdfw.wa.gov/places-to-go/wildlife-areas/west-rocky-prairie-wildlife-area-unit

The 809-acre West Rocky Prairie Unit is two miles northwest of Tenino. WDFW purchased the unit 2006 with USFWS and RCO funds.

This unit supports several imperiled species such as the Mazama pocket gopher, Oregon spotted frog, Sonora skipper, and water howellia. Olympic mudminnow is also widespread. The property has one of the last remnants of high quality South Puget Sound Prairie.

The unit supports the unique Mima mounded land features as well as oak woodland, wet and dry prairie, riparian, wetland, and forested habitats. Waters within the unit include a large wetland complex and Beaver and Allen creeks, which both have connections to the wetland. Beaver and Allen creeks are considered fish bearing streams, and coho, Olympic mudminnow, and steelhead are present. Both creeks can occupy a common portion of the wetland during high water years. The hydrology on this unit is altered from past agricultural use. The wetlands consist partly of seasonally flooded former pasture dominated by Reed canary grass, and mixed Reed canary grass/willow habitat.

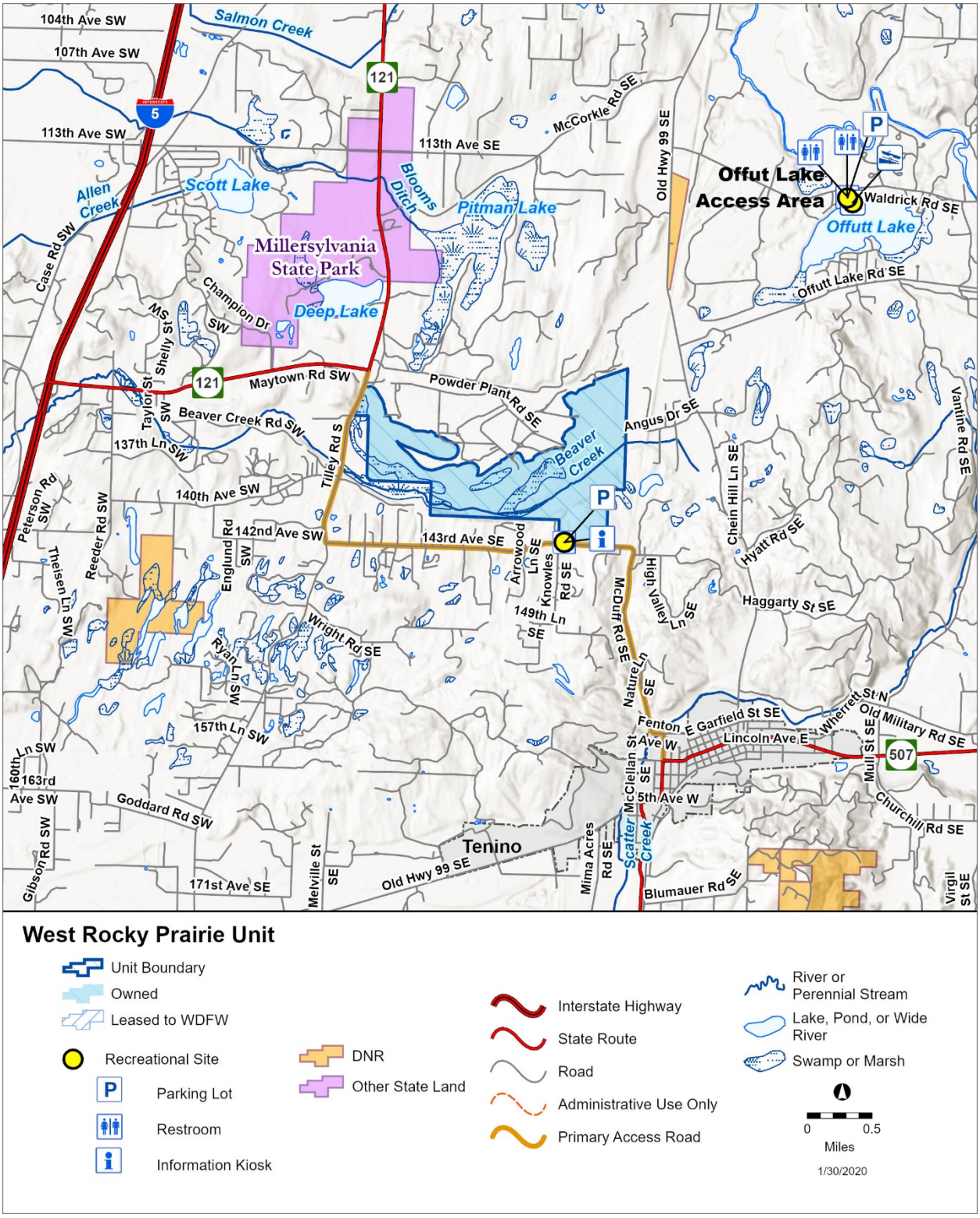
Popular recreational activities include wildlife viewing, hunting (small and big game), hiking, photography, and botanical studies. One small parking area is near the southeast corner of the unit along 143rd Avenue.

The primary habitat management focus is prairie restoration and maintenance of wetlands and prairie habitat using prescribed fire, weed control/maintenance, and the re-establishment of native plants.

One opportunity outlined in this plan includes a collaboration with Washington State University, CNLM, University of Washington, and Black Hills Audubon to continue, important research and species/habitat monitoring on the site for Oregon spotted frogs, pocket gopher, birds, butterflies, reptiles, and plants.

Ochre ringlet. Photo by Alan L. Bauer.

Figure 8. West Rocky Prairie



Part II: Wildlife Area Management and Planning

Land ownership and management

Acquisition history, funding, and purpose

WDFW used funding from the following state and federal agencies to acquire properties in the wildlife area: Recreation and Conservation Office (RCO) – Washington Wildlife and Recreation Program (WWRP); U.S. Fish and Wildlife Service (USFWS) – Pittman Robertson, North American Wetland Conservation Act, Section 6; National Park Service (NPS) – Land and Water Conservation Fund; Washington Department of Fish and Wildlife - State Wildlife Fund and Duck Stamp.

As opportunities arise, WDFW is adding more lands to the wildlife area, e.g. Mima Creek Unit in 2021. Consistent with the agency mission, the department looks for opportunities to acquire lands where it is consistent with the agency's land acquisition policy. WDFW only purchases lands from willing landowners. Table 2 describes the wildlife area purchase history for each unit of the wildlife area.

Table 2. Acquisition history for the Scatter Creek Wildlife Area

Unit	Acres	Purchase Date	Grant Source	Purpose
Black River	109	1982	USFWS - Pittman Robertson	Fishing and hunting access
Davis Creek	537	2007	USFWS – North American Wetland Conservation Act, Pittman Robertson; WDFW – Duck Stamp	Fishing and hunting access
Glacial Heritage	80	2005	RCO – Washington Wildlife and Recreation Program	Endangered species and protection South Puget Sound prairies
Scatter Creek	1,087	1964-2001	NPS – Land and Water Conservation Fund; WDFW – Wildlife Funds	Small game hunting
Skookumchuck	974	1979*	Agreement with TransAlta	Mitigation lands for the Skookumchuck Dam. Hunting and fishing.

Unit	Acres	Purchase Date	Grant Source	Purpose
West Rocky Prairie	809	2006	USFWS – Section 6, North American Wetlands Conservation Act; RCO – Washington Wildlife and Recreation Program	Threatened and endangered species* wildlife viewing, and hunting.

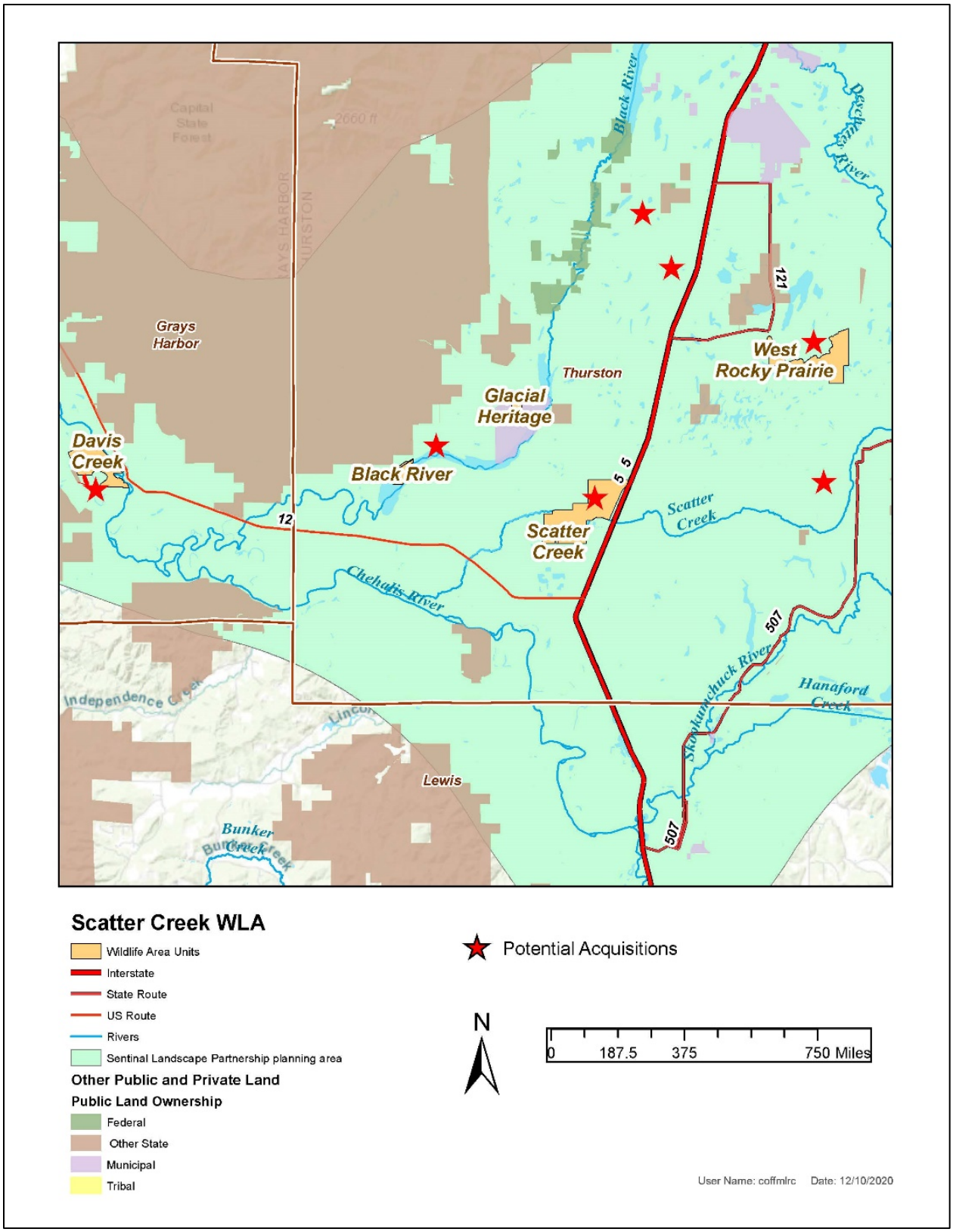
*Agreement with TransAlta (see below). **USFWS covered species include: Mazama pocket gopher, Taylor's checkerspot butterfly, Oregon spotted frog, golden paintbrush, water howllia.

Future Acquisitions

Upland prairies are one of the rarest habitats in the United States and native outwash prairie is extremely rare. WDFW is committed to working with our partners on the long-term conservation and protection of a South Puget Sound Prairie habitat network and the recovery of the species that rely on this habitat type. Much of this work is facilitated, collaboratively, through the Sentinel Landscape Partnership, which brings together federal, state, and local governments, non-governmental organizations, and landowners in the South Puget Sound region. One of the goals of this partnership is to protect and enhance rare species and their habitats, specifically to sustain Joint Base Lewis-McChord's military mission and readiness; by conserving and restoring habitats and species populations off base so that impacts from ESA-listings to on-base training activities are minimized.

Permanent protection of additional conservation lands is an essential component of the overall conservation strategy for prairies and associated species and meeting the goals of the Sentinel Landscape Partnership. As part of this critical conservation effort, WDFW is actively pursuing acquisition of properties that contribute to the overall conservation needs for this habitat type that are a good fit for WDFW management. With partners, these properties were collaboratively identified as having high conservation value, and they have been approved in WDFW's internal land acquisition process, which includes public comment and formal commitment by the director to pursue funding. The properties identified in Figure 9 are in different stages of the acquisition process. This process includes efforts to secure funding and initiation of the market appraisal process which may result in negotiations with the landowner to finalize the real estate transaction. The acquisition ultimately must be approved by the Fish and Wildlife Commission. If our acquisitions are successful, these properties will be added to the Scatter Creek Wildlife Area. WDFW may seek to secure long-term protection of additional properties in the future as opportunities become available. WDFW only purchases land from willing sellers at appraised market value.

Figure 9. Future Acquisitions



Leases

There are two active leases on the Scatter Creek Wildlife Area. One is on Scatter Creek north tract (159 acres, WDFW is the lessee), and one is on Davis Creek (280 acres, WDFW is the lessor). The Scatter Creek lease is primarily for hunting and prairie management. WDFW is in negotiations for the acquisition of this leased land and anticipates completing the transaction in 2021. The Davis Creek Unit agricultural lease provides forage for waterfowl (hay/silage). The three-year lease is with one lessee and includes an option to extend the term of the lease.

Easements

In 2019, a conservation easement (CE) was established on a 71-acre parcel situated between the Skookumchuck, West Rocky Prairie and Scatter Creek units (see Figure 1). The Frost Prairie CE is managed by the WDFW Region 6 for the protection of the Mazama pocket gopher. The acquisition is funded by the USFWS Section 6 program.

There are two easements on the Scatter Creek Unit. One is held by Bonneville Power Administration (BPA) for the powerline right-of-way on the Scatter Creek Unit. The second easement is a road easement on the north tract unit benefitting the adjacent Port Blakley lands. In 1974, the State of Washington provided an access easement agreement to Puget Sound Energy for use on the same road.

The West Rocky Prairie Unit has several easements associated with it. Between 1923 and 1959, five easements were granted to Puget Sound Power & Light for electrical transmission and distribution lines. Thurston County also has an easement for providing and maintaining public utilities and services over an area of the property as well as rights to maintain slopes in and along roads in areas of the property.

Agreements

In 1979, WDFW and Centralia Plant Owners (at that time, Pacific Power & Light Co., Washington Water Power Company, Seattle City Light, Snohomish County Public Utility District, Tacoma City Light, Puget Sound Power & Light Company, Grays Harbor PUD, and Portland General Electric Company) signed an agreement to compensate for the loss of inundated wildlife habitat by the Skookumchuck Reservoir. This agreement established the approximately 960-acre Skookumchuck Wildlife Habitat Management Area. A Wildlife Management Plan was cooperatively developed in 1982 by WDFW and Owners to manage the area for wildlife, farming, and forestry.

In October 2004, TransAlta purchased the Skookumchuck Dam and Reservoir from PacifiCorp and the seven other Owners. The management plan will remain in effect until the Skookumchuck Dam is removed and the impounded portion of the river is restored to its natural condition, or until WDFW and TransAlta mutually agree that the March 1979 Agreement and the SOPs are no longer necessary.

Water rights

The Scatter Creek Wildlife Area has seven water rights. The typical purpose of use for these water rights includes general domestic use, and irrigation. Some water use is known and is largely undocumented throughout the wildlife area.

Management setting

Administration and staffing

The Scatter Creek Wildlife Area is located within WDFW's Region 6, which is headquartered in Montesano. The WDFW Lands Division operates all wildlife areas and access areas. Supervision at the regional level is provided by the Regional Wildlife Program Manager. The wildlife area has a full-time permanent wildlife area manager (covers two additional WLAs), one full-time project-based Prairie Restoration Specialist funded by grants, and one 4-month career seasonal Natural Resource Technician. The Olympic Wildlife Area provides additional staff and equipment support as needed, as well as the Wildlife Program's Diversity Division.

Facilities and maintenance

Wildlife area staff members manage public use and recreation on the units, restore and maintain habitat (including weed control), maintaining equipment, and repair and improve facilities and other wildlife area infrastructure to support fish and wildlife management consistent with agency objectives.

A new Scatter Creek Headquarters office is being constructed on the Scatter Creek Unit north tract and is expected to be completed early 2021. Most of the administration and maintenance facilities for the wildlife area will be located at the headquarters office. Two permanent public bathrooms – one each on the north and south tracts – and four kiosks are located on the Scatter Creek Unit.

On the Davis Creek Unit, a 3-story farmhouse, abandoned dairy (including milking parlor, dairy house, three small loafing shelters, and one large loafing shelter), equipment barn, and shop are present. There is a portable bathroom for public use on the unit as well as one kiosk. On the Skookumchuck Unit a large barn is used for storing lessee's equipment. There is a total of four kiosks (two on WDFW lands and two managed by TransAlta) on the Skookumchuck Unit. The West Rocky Prairie Unit has two kiosks and structures associated with an old homestead site.

Every unit on the wildlife area has limited fencing except for Glacial Heritage, which is gated from the public. This unit is inaccessible to the general public except for Prairie Appreciation Day. Fencing and gates on all units, except for Glacial Heritage, needs to be assessed for repairs, removal, and/or replacement.

Road management

Access to the Scatter Creek Wildlife Area units includes county, state, and privately-owned roads. Each entity maintains their roads consistent with their respective operations and rules. Roads on the wildlife area units are closed to motorized access and opened on a as needed basis via permit, easement right, or with the wildlife area mangers approval. Access to most roads are limited in order to minimize disturbance to wildlife and their habitats, as well as reduce road maintenance issues. The closed roads are open to non-motorized users year-round except when inundated by water or seasonally closed due to wildlife species protection periods (Scatter Creek unit south tract April 1-July 31st) or for management activities such as prescribed fires. Horseback riding at Davis Creek, Scatter Creek north tract, and Skookumchuck units are limited to the roads and trails designated for horseback riding only. Public roads provide access to parking, and the unit roads are

administrative use only for motorized vehicles unless permitted only by proper authorization from WDFW lands staff.

Trails

The Scatter Creek Unit is the only unit with formally designated trails (6.25 miles). Most designated trails are on unimproved roads primarily used for habitat and species management located on the unit. WDFW manages and maintains their roads and trails on a as needed basis.

West Rocky Prairie Unit has an unimproved and gravel road system also used as a trail (2.5 miles) accessed from 143rd Road, and a 1.5-mile trail is located on the west side of the unit, accessed off Tilly Road (dirt tract road). The Glacial Heritage Unit has many trails/roads that bisect the unit and continue onto Thurston County Parks property which are primarily used for management. On the Davis Creek Unit, most trails are grassy roads along the perimeter of the agricultural fields. The Black River Unit has one primitive trail that accesses the Black River, but is presently overgrown, and ongoing maintenance is an objective in this plan.

Local land use compliance

The Scatter Creek Wildlife Area falls under the jurisdiction of Thurston and Grays Harbor counties, and land use must be consistent with county Comprehensive Plans, Natural Resource Ordinances, Critical Areas Ordinances, and Shoreline Master Plans. Table 3 describes the relationship of these land use regulations to the wildlife area land.

Table 3. Land use designations by wildlife area unit

Wildlife Area Unit	Comprehensive Plan Land Use Designation and Zoning*	Shoreline Management Plan Designation
Thurston County		
Black River	Public Preserves (107 ac.); Rural 1/20 (10 ac.)	Natural
Glacial Heritage	Public Preserves	None
Scatter Creek	Public Preserves (804 ac.) and Rural 1/20 (258 ac.)	Conservancy
Skookumchuck	Rural Residential/Resource (RRR) 1/5 and Long-Term Ag (LTA) (362 ac.); LTA (88); RRR 1/5 (109.7); Long Term Forestry (LTF) (320 ac.)	Conservancy
West Rocky Prairie	Public Preserves	Proposed Natural
Grays Harbor County		
Davis Creek	A2 Long-Term Agriculture use	Conservancy

* Thurston County: https://www.thurstoncountywa.gov/planning

Grays Harbor County: http://www.co.grays-harbor.wa.us/departments/public_services/planning_division/index.php

Cultural resources

State and federal law requires the protection of cultural, geological, and other non-renewable resources. Such resources may not be removed unless determined to be beneficial to wildlife, habitat, or scientific or educational purposes. WDFW coordinates with appropriate agencies and tribes for the protection of such resources if any activity affects cultural, archaeological, or historic resources. This includes the removal of various rock formations, Native American artifacts, plants, seeds, and other items.

In 1852 George Washington Miller made the overland journey to Oregon, then later in Washington taking a claim on Grand Mound Prairie in 1859. George W. Miller became active in local politics, elected as a Thurston County commissioner in 1861. The historic Millers-Brewer house was built in 1860, and subsequently loss during the 2017 fire. The house was listed in the National Register of Historic Places and Washington Heritage Register in 1988. The Miller-Brewer House was significant as being one of only a few surviving examples in southwest Washington of vernacular Greek Revival style of architecture and plank construction dating to the Territorial era. More information is found in the Cultural Resources Appendix D.

Enforcement

Enforcement on the wildlife areas is provided by WDFW enforcement officers who are general authority peace officers for the State of Washington. The Mission for WDFW enforcement officers is, "To protect our natural resources and the public we serve." WDFW's enforcement officers perform a wide range of duties that protect natural resources, the communities and economies that rely on them, and those who recreate outdoors. WDFW Officers approach enforcement in four ways: enforcement, education, partnerships, and community involvement.

Fish and Wildlife Officers are responsible for law enforcement on all six units of the Scatter Creek Wildlife Area. Officers routinely patrol the wildlife area and regularly check for compliance to land use, hunting, and fishing rules. Officers spend most of their time within these units enforcing laws related to pheasant hunting, waterfowl hunting, big game hunting, litter, and land use. While workings these units, officers also answer questions related to fish and wildlife rules and laws, animal species within the area, feeding patterns, best areas to hunt, and suspicious activity. Constituents often provide feedback that they appreciate the presence of the WDFW officers on the wildlife area and would like to see them more often. While patrolling this wildlife area, officers have addressed malicious activities, dogs off leash, public safety, hunting/entering the area before hours, off-road travel, litter, land use rule violations, and poaching. Officers address these issues to help maintain an orderly wildlife area so that it may fully be enjoyed by all user groups. Fish and wildlife officers spend much of their time educating and informing the public about the reasons for the laws in addition to enforcing them. They also work closely with WDFW biologists and local land stewards in order to anticipate where and when a problem may occur.

Stewardship and volunteerism

The Scatter Creek Wildlife Area offers a wide variety of volunteer opportunities, including scientific data collection, facility maintenance, and restoration activities (Table 4). The work provided by these volunteers is greatly appreciated and essential to the ability of the wildlife area to provide critical services. Please contact the wildlife area manger directly for more information about how you can be involved.

Table 4. Stewardship and volunteerism information for Scatter Creek Wildlife Area

Activity	Units	Time of year
Planting	Davis Creek, Scatter Creek, West Rocky Prairie, Glacial Heritage,	Fall/Winter
Butterfly, bird, herptile, and rare plant surveys.	All	Spring/Summer
Vegetation management/ brush removal	All	Year-round
Oak protection	Davis Creek, Scatter Creek, West Rocky Prairie	Year-round
Trail maintenance	All	Spring/Fall/Winter
Facility maintenance	All	Year-round
Species reintroduction	As needed	As needed
Litter pick-up	All	Year-round

Recreation

The Scatter Creek Wildlife Area offers a wide variety of recreational opportunities (see Table 6). With Washington's growing population, more pressures are placed on the wildlife areas, including Scatter Creek. With more people comes a more diverse range of recreation interests, which can lead to conflicts between users (e.g. hunters and bird watchers). Recreation use can impact natural resources, which in turn can affect the opportunity for and quality of recreational experiences. WDFW is developing a Statewide Recreation Strategy to address these issues, which will provide detailed guidance on how to balance recreational use and wildlife and habitat protections. In the meantime, public use is dictated by the public conduct rules (see https://wdfw.wa.gov/about/wdfw-lands/public-conduct).

Scatter Creek Unit: The Scatter Creek Unit is popular for wildlife viewing, pheasant hunting, waterfowl hunting, fishing, hunt dog trials and training, horseback riding, walking, and photography. This unit is one of three designated pheasant release sites in Thurston County. The unit contains over 6.25 miles of trails on the north and south tract for hiking, wildlife viewing, walking, dog walking, and running. The unit is also a premier site for spring prairie wildflower and butterfly viewing, with May being the peak time for this activity. Three parking areas and two restrooms are available on the unit. The outer loop trail is closed annually on the south tract from April 1 – July 31 in order to protect imperiled prairie species and ground-nesting birds. No dog training is allowed during the same period on the south tract. Horseback riding is allowed on the north tract horse trail and road only.

The Scatter Creek Wildlife Area is a northwest destination for dog training and competitive hunt dog events. Portions of the north tract provides year-round training. Hunt dog activities and events include hunt dog field trials, hunt tests, and general training. Permitted competitive events, consisting of field trials and hunt tests, mostly occur in early spring to late summer. Most field trials include mounted participants, which is regulated through the special use permit. For general dog training, multiple individuals or small groups are allowed on the wildlife area at one time without a permit. All hunt dog training groups over 30 individuals are required to obtain a permit and coordinate with the wildlife area manager. The wildlife area is open to all other recreation during these events. On the Scatter Creek Unit south tract, no trials occur from April 1 until July 31. Hunt dog events are not allowed during the pheasant release period which is the third weekend in September until Dec. 15. More information including Field Trial Rules and the Field Trial/Dog Event Calendar can be found at https://wdfw.wa.gov/places-to-go/wildlife-areas/scatter-creek-wildlife-area-unit.

All hunt dog training groups should coordinate with the wildlife area manager prior to the training day in order to help minimize use conflicts and to increase the quality of the training experience. Dog trainers provide their own birds for the training days and events. The birds must come from an approved bird farm, be marked per hunting regulations standards, and have appropriate documentation before they are used on WDFW lands. Dog trainers must keep in mind during the events that the wildlife area is open to all other recreation activities. Dog trials and training also occur on the Snoqualmie and Shillapoo wildlife areas in western Washington.

***Black River Unit**:* The Black River Unit provides opportunities for waterfowl hunting and limited fishing. Most of the unit is freshwater marsh and is accessible by boat with minimal walk-in access. One small parking area is found on Gate Road on the unit's western edge.

Davis Creek Unit: On the Davis Creek Unit popular activities include horseback riding, as well as hunting for waterfowl, deer, elk, and doves. The site also hosts numerous specially permitted hunt dog events and training. Dog training on the unit occurs year-round on portions of the unit. Training can be challenging due to moist conditions in the fall, winter, and spring. Davis Creek – closes to dog trials and training Oct. 1 through the second weekend in December during the waterfowl hunting season. There is one designated parking area at the unit located on South Bank Road and an access area on the east bank of the Chehalis River which provides fishing and boating access.

The Davis Creek Unit provides public bank fishing access to the mainstem Chehalis River in an area where bank access is limited. This provides hard-to-find bank fishing opportunities for hatchery coho and steelhead in the fall and winter months.

Wildflower viewing Prairie Appreciation Day 2019. Photo by Lauri Vigue, WDFW.

Glacial Heritage Unit: The Glacial Heritage Unit is surrounded by Thurston County conservation land and is only accessible to the public once a year on Prairie Appreciation Day (usually the second Saturday in May). The site is primarily managed by local partners to enhance habitat, provide education opportunities, and conduct scientific research. Extensive habitat restoration began on the unit in 2005 and is ongoing. When accessible to the public, the unit offers a great opportunity to view spectacular wildflowers and enjoy nature on the network of maintained trails and roads that let visitors become surrounded by the beautiful Mima Prairie.

Skookumchuck Unit: The Skookumchuck Unit is most popular for fishing and hunting. These include fishing for winter steelhead from Jan. 1 until April 30, fall big game hunts, and hunting pheasant from Sept. 21 to Dec. 15. The WDFW Pheasant Release Program on the unit consists of pheasant releases along farmland area hedgerows and gravel borrow meadows three days a week. Turkey hunters use the unit in the spring. Most of these activities are concentrated in the riparian forest and farmland areas. Minor forest product harvesting (e.g. mushrooms, salal, berries) is allowed by the public for personal use. At the discretion of TransAlta, commercial harvesting of forest products may be allowed as well. The public also participates in activities such as wildlife viewing, picnicking, and horseback riding.

WDFW operates a hatchery on the Skookumchuck River on lands adjacent to the Skookumchuck Unit. Both late-winter steelhead and coho are produced as mitigation for the loss of fishing opportunities caused by the construction and operation of the Skookumchuck Dam. These fish are most likely to be encountered in the fall and winter months on the Davis Creek and Skookumchuck units during adult return migrations.

An extremely popular steelhead fishery occurs on the Skookumchuck Unit starting in December and continues through the end of April. Hundreds of recreational anglers line the banks of the Skookumchuck River targeting returning hatchery-origin steelhead. This fishery provides an annual harvest of about 1,600 steelhead during a 10-year time period from 2007-2016.

West Rocky Prairie Unit: On the West Rocky Prairie Unit, popular recreational activities include wildlife viewing, hunting (small/big game), hiking, and photography. One small parking area is located near the southeast corner of the unit along 143rd Avenue.

Bird hunter on Scatter Creek Unit. Photo by Alan L. Bauer.

Water access areas

The department manages more than 500 water access areas throughout the state for recreation associated primarily with fishing and boating. Seventeen access areas are in the Scatter Creek Wildlife Area planning area. Thirteen provide access to lakes and four to the Black and Chehalis rivers, and all have concrete or gravel ramps for launching trailered boats. Only the Oakville-Chehalis River Access Area is within the wildlife area. Forming the eastern extreme of the Davis Creek Unit on the right bank of the Chehalis River, this access area is used predominantly for launching motorized boats for salmon and steelhead fishing and for accessing nearby wetlands for waterfowl hunting. Bank fishing is also possible near the ramp.

Table 5 provides information on water access areas within the Scatter Creek Wildlife Area planning area.

Davis Creek Water Access site. Photo by Shane Belson, WDFW.

Table 5. Water access areas on and near the Scatter Creek Wildlife Area

				Fishing and Boating Opportunities		Access Facilities		
County	Waterbody	Access Area	Unit	Fishing*	Trailered boat launch	Boat Ramp Surface	Toilet ^ = ADA	Parking ^ = ADA
Grays Harbor	Black River	Oakville - Black River		•	•	Concrete		•
	Chehalis River	Oakville - Chehalis River	Davis Creek	•	•	Concrete		•
Thurston	Black Lake	Black Lake		•	•	Concrete	•^	•^
	Black River	Gate		•	•	Gravel		•
	Black River	Littlerock		•	•	Gravel		•
	Chambers Lake	Chambers Lake		•	•	Concrete	•	•^
	Clear Lake	Clear Lake		•	•	Concrete	•^	•^
	Hicks Lake	Hicks Lake		•	•	Concrete	•	•
	Lake Lawrence	Lake Lawrence		•	•	Concrete	•	•
	Lake St Clair	Lake St Clair		•	•	Concrete	•^	•^
	Long Lake	Long Lake		•	•	Concrete	•	•
	McIntosh Lake	McIntosh Lake		•	•	Concrete	•	•
	Munn Lake	Munn Lake		•	•	Concrete	•	•
	Offutt Lake	Offutt Lake		•	•	Concrete	•	•
	Pattison Lake	Pattison Lake		•	•	Concrete	•	•
	Summit Lake	Summit Lake		•	•	Concrete	•^	•^
	Ward Lake	Ward Lake		•	•	Concrete	•^	•^

*** Fishing opportunities *on department land.*** **Refer to current WDFW sport fishing rules, as fishing seasons change and may not occur at all sites.**

Table 6. Recreation opportunities on the Scatter Creek Wildlife Area

Wildlife Area Unit	Hunting and Fishing Opportunities	Other Recreation	Restrictions	Education/ Interpretation	Parking and other facilities
Black River	Hunting - waterfowl, deer, and bear Fishing	Wildlife viewing, WDFW Littlerock Access Area for boating (kayak and canoeing); berry picking, and fruit trees harvesting	None	None	1 parking area, parking for four vehicles
Davis Creek	Hunting - waterfowl, deer, elk, bear, and dove Fishing	Horseback riding, wildlife viewing, hiking, boating, dog trials, dog training, falconry hunting, running, wildflower viewing, photography, and swimming	No public access to agriculture buildings. Big game firearm restriction area Nontoxic shot is required for all upland bird hunting	Kiosk	Boat ramp at water access area Parking for 5 vehicles WLA parking – 40+ vehicles Portable bathroom
Glacial Heritage	--	Prairie Appreciation Day – wildflower viewing, and photography	Inaccessible to public except on Prairie Appreciation Day	Kiosks and ongoing research signs Education groups can arrange field trips with Thurston County Parks and WDFW	Parking outside the unit
Scatter Creek	Hunting- Pheasant, waterfowl, deer, bear, coyote, and small game	Wildlife and wildflower viewing, horseback riding, hiking/	Shotgun only South tract trail closure outer loop	Ed kiosk 3; Ongoing research	Parking – one on the south tract – 60 vehicles; 2 - north tract – 40; 20 vehicles; pull off 2 vehicles

Wildlife Area Unit	Hunting and Fishing Opportunities	Other Recreation	Restrictions	Education/ Interpretation	Parking and other facilities
	Fishing Falconry hunting	walking, botanical studies, hunt dog trials and training Geocaching, target shooting, picnic, botanical studies, running, and wildflower viewing photography, and swimming	April 1 – July 31st The inner loop trail is open when the outer loop is closed No dog training same time period Scatter Creek south tract: Dogs on leash April 1 – July 31st. Horseback riding on north tract trail only Nontoxic shot is required for all upland bird hunting	**Safety zone –** located on south and north tracts, and around the parking areas and office, also along county roads and neighboring homes Dogs on leash	
Skookumchuck	Salmon and steelhead fishing Hunting - turkey, elk, small game, deer, bear, coyote, and pheasant releases Falconry hunting	Wildlife viewing, horseback riding, hiking, walking, picnic, and swimming Orchard is open to the public	(TransAlta regulations) Motorized vehicle use permitted only on county roads and designated parking areas Overnight camping/ parking is prohibited Day use only	Kiosk at Bloody run Creek Parking area Multiple kiosks	Four parking areas: Orchard parking, USGS parking, Fenton Memorial Parking, Bloody Run Creek.

Wildlife Area Unit	Hunting and Fishing Opportunities	Other Recreation	Restrictions	Education/ Interpretation	Parking and other facilities
			All fires are prohibited from July 15 - Oct 31st Target shooting is prohibited Nontoxic shot is required for all upland bird hunting		
West Rocky Prairie	Hunting – waterfowl, deer, elk, bear, and small game	Wildlife viewing, hiking/ walking, mt biking, running, wildflower viewing, photography	No horseback riding Dogs on leash April 1 – July 31st	Kiosk 1	Parking – off 143rd street – 2-3 vehicles

Youth hunter during the Upland Bird Clinic at Davis Creek Unit. Photo by WDFW staff.

Research and other studies

Consistent with WDFW's mission to preserve, protect, and perpetuate fish, wildlife, and habitat, WDFW supports independent studies to achieve wildlife area objectives. Appendix F describes studies that have occurred on the wildlife area.

Scatter Creek Unit, South Tract Unit– bumble bee on Nuttall's larkspur. Photo by Alan L. Bauer.

Wildlife area goals, objectives, and monitoring

Goals, objectives, and performance measures

This plan sets management priorities for the Scatter Creek Wildlife Area for the next 10 years. Regional and headquarters staff members, with input from the Scatter Creek Wildlife Area Advisory Committee and the public developed goals, objectives, and performance measures in this plan (Table 7). The objectives in this plan may or may not be fully funded, and in many cases successful outcomes is dependent on additional funding.

Management priorities outlined in this plan include prairie, oak woodland, wetland, and riparian restoration; species protection, restoration, and monitoring; improvement in recreational opportunities; and improved outreach to recreationists and the local community. Protection through acquiring land is an important component of this plan. Whenever new lands are acquired, the objectives up will be updated to reflect the management activities on those lands.

Monitoring and adaptive management

Wildlife area objectives are evaluated and updated annually with input from the wildlife area advisory committee and regional district team. On a biennial planning cycle basis, the Scatter Creek Wildlife Area manager will lead the review, reporting, and revision, of objectives and performance measures as appropriate. Staff members will develop recommendations for each two-year update with help from the wildlife area advisory committee and regional district team. Such reporting will allow the manager, staff, and regional office to modify tasks and timelines as necessary to meet the associated objective. Further, over the term of the plan (10 years), performance will illustrate the funding level required to maintain the capacity needed to successfully manage the wildlife area.

Scatter Creek South Tract Unit. Photo by Alan L. Bauer.

Table 7. Scatter Creek Wildlife Area goals, objectives and performance measures

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
1.	Improve ecological integrity (EI) of South Puget Sound prairie, oak woodlands, forests, and wetlands and riparian habitats by protecting, restoring and/or maintaining these critical habitats.	A. Establish an ecological integrity baseline and associated goals for ecological systems of concern/priority systems by 2025.	All	1. Baseline established (y/n); 2. EI goals established (y/n).	Ecological integrity Monitoring Team/ *Wildlife Lands cultural resource specialists/ WLA manager*	- Work with WLA manager to design monitoring plan to achieve objective A over 10-year planning term. - Conduct data collection to determine baseline within 5-year planning term. - Provide EI baseline report to WLA manager prior to start of subsequent 10-year planning term. - Work with WLA manager to establish EI goals. - Include species of cultural value or concern to normal ecosystem monitoring. <u>Action to address climate change impacts:</u> Consider adding a metric for climate change, e.g. soil moisture, and compare different habitat types. Continue collecting plant phenology data. Start a volunteer emergence scheme (monitor changes over time).
		B. Implement weed management plan annually.	All	1. # acres inspected; 2. # acres treated (per species, method, unit); 3. produce annual weed control report.	WLA Manager	- Annually develop work plan in coordination with wildlife area staff. - Coordinate the use of herbicides with Wildlife Program Lands cultural resource specialists. Conduct weed management actions. - Complete annual reporting requirements. - Examine feasibility of setting aside portions of the wildlife area for non-chemical management. - Consider Integrated Vegetation Management.
		C. Utilize forest health and fuel reduction actions to restore prairie and oak woodland habitat on Scatter Creek by 2030.	Scatter Creek	1. # of acres of commercial treatment; 2. # acres of prescribed broadcast burning completed;	Forester/*WLA Manager/District Team/ Diversity Species leads*	- Coordinate with District Team and species experts in Diversity, Game Divisions on project development. - Layout, permitting, implementation, and oversight of contract and WDFW crews for planned projects.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
				3. # of acres of non-commercial treatment.		- Draft and submit grant applications to fund projects. - Submit requests for other state funding as available to fund projects. - Include understory vegetation management activities.
		D. Utilize forest health and fuel reduction actions to restore prairie and oak woodlands, and conifer /hardwood forest on West Rocky Prairie by 2030.	West Rocky Prairie	1. # of acres of commercial treatment; 2. # acres of prescribed broadcast burning completed; 3. # of acres of non-commercial treatment.	Forester/*WLA Manager/District Team/ Wildlife Lands cultural resource specialists*	- Coordinate with District Team on project development. - Layout, permitting, implementation, and oversight of contract and WDFW crews for planned projects. - Draft and submit grant applications to fund projects. - Submit requests for other state funding as available to fund projects. - Include within the timber harvest a test plot to study post-canopy emergents of culturally valuable species. - Include understory vegetation management activities.
		E. Restore forests and oak woodlands in anticipation of western gray squirrel occupancy consistent with PHS guidelines by 2030.	Scatter Creek, West Rocky Prairie	1. # of projects implemented.	Prairie/Oak Species Recovery Biologist	- Staff will keep up to date on current science and incorporate new information into snag creation treatments, if feasible. - Forest treatments and understory vegetation management
		F. Create and maintain snags - 4 per acre within riparian or non-prairie habitats.	All units except Glacial Heritage	1. # of snags per acre; 2. # of acres monitored (presence/absence snags).	WLA Manager	- Focus on snag trees that benefit wood ducks and cavity nesting birds. - Utilize volunteers and local organizations to create, maintain, and monitor snags.
		G. Maintain and seek funding to create conditions for natural oak recruitment and expansion on the Davis Creek Unit by 2025.	Davis Creek	1. # of grant applications funded; 2. # of acres of oaks maintained 3. # of trees planted; 4. Restoration area cleaned up (y/n); 5. # of oaks protected.	WLA Manager	- Apply for grants (e.g. WWRP). - Protect mature oaks being damaged by beavers. - Clean up, inventory, and maintain the past oak planting area, e.g. plastic tubes, removal/replacement, weed barriers. - Remove competing vegetation. - Encourage oak seedling recruitment and plant oaks.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		H. In coordination with partners, continue to seek funding to acquire available high-quality oak-prairie habitat and riparian habitat and include public access.	All	1. # of grants applications funded; 2. Lands acquired - # of acres acquired per habitat.	WLA Manager*/District Team/Lands Agent*	- Apply for grants (e.g. RCO- WWRP, USFWS Section 6). - Purchase suitable lands for habitat and species conservation, recreation, hunting and pheasant releases. - Priorities include: South Puget Sound prairies, Black River/Chehalis River watershed. <u>Action to address climate change impacts:</u> Consider selecting parcels that are well suited to future climate - where species can adapt to climate change. Consider cost of maintaining habitat with climate future.
		I. Continue to conduct prairie and oak restoration on the wildlife area annually and pursue consistent funding sources for oak-prairie restoration activities by 2022.	Units with prairie/oak habitat	1. # of funding requests submitted and/or received; 2. # of units with improvement actions taken; 3. # of acres improved; 4. # of new projects.	WLA Manager/*Prairie Restoration Team*	- Gain funding for a restoration team. - Utilize volunteers and implement a long-term volunteer program to support. - Improve prescribed fire program and partnership. - Develop native plant/seed nursery. - Secure dedicated ongoing funding.
		J. Develop and implement the Scatter Creek Wildlife Area Habitat Restoration Management Plan by 2023.	All	1. Plan developed (y/n); 2. Plan implemented (y/n)	WLA Manager/*Prairie Oak Species Recovery Biologist*	- Establish a work group to develop the habitat management and restoration plan. - Implement and monitor management strategies resulting from the plan.
		K. Designate areas critical for the protection of sensitive habitat from recreation use on the wildlife area by December 2021.	All	1. Sensitive habitat core areas identified (y/n); 2. # of protection areas establish on each unit. 3. # of protection areas maintained on each unit.	WLA Manager/ District Team/*Diversity Division/Recreation Strategy staff*	- Maintain consistency with objective 7P - Assess appropriate recreation opportunities on the West Rocky Prairie Unit by 2022. - Prior to the Scatter Creek WLA recreation plan being completed. - Consistent with the Recreation Strategy (in development).

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		L. Monitor and conserve rare native prairie and riparian plants on the wildlife area annually.	All	1. Locations of rare plants identified (y/n); 2. # of sites monitored annually; 3. Annual reporting completed.	WLA Manager/ *Diversity Division*	- Focus on protecting rare populations. - Monitor conditions of rare native plants - including water howellia - Report to DNR Natural Heritage Program.
2.	Achieve species diversity at levels consistent with healthy ecosystems.	A. Annually integrate new Diversity or Game priorities on the wildlife area into district biologist work plan.	All	1. Annual coordination occurs (y/n).	WL District Biologist/ *WLA Manager*	- District biologist coordinates priorities with wildlife area manager.
		B. Maintain and restore Mazama pocket gopher habitat with prairie management and habitat expansion.	Scatter Creek, West Rocky Prairie	1. # of acres treated; 2. # of acres of trees/brush removed; 3. Monitoring conducted (y/n).	WLA Manager/*WL Program Research/ Habitat Program*	- Restoration includes prescribed fire, mowing and treating weeds. - Monitoring will be conducted for gophers and habitat. - Prairie management (tree and brush removal). - Support from Thurston County HCP. (Overlaps with timber enhancement objective)
		C. Protect, restore, maintain, and create habitat for Oregon spotted frog.	Black River, West Rocky Prairie	1. # of acres of weed control; 2. # of new acres protected via acquisition and/or easement; 3. # of acres maintained; 4. # of acres restored/created; 5. Monitoring conducted (y/n); 6. Surveys conducted at Black River Unit (y/n)	Aquatic Research Section – *Habitat Program /WLA Manager*	- Survey at the Black River Unit to determine Oregon spotted frog (OSF) presence. If OSF are present, management includes Reed canary grass and shrub control. - Annual egg mass surveys maintained at oviposition sites - Control Reed canary grass - Removal of willow and spirea - Restore create habitat Black River. - Control bull frog habitat manipulation and direct control. If detected some level of bull frog control should occur. - Hydrologic impoundment considerations - Pursue new strategic protection via funding and real estate work for conservation easements and fee-title acquisition.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
						<u>Action to address climate change impacts:</u> Maintain "appropriate" water levels on the landscape for oviposition and connectivity.
		D. Support development of a feasibility plan for reintroduction of the western gray squirrel by 2025.	Scatter Creek, West Rocky Prairie	1. Feasibility plan completed (y/n).	Prairie/oak species recovery biologist/*WLA Manager/ Diversity Division*	- Follow PHS and recovery plan recommendations. - Use SW Connectivity model as a reference. - Update the recovery plan. - Informs item 1E.
		E. Acquire one site to support western pond turtle reintroductions.	All	1. # of grant applications completed; 2. Land acquired (y/n).	WL District Biologist/*WLA Manager/ Lands Agent*	- Coordinate with lands staff if site is intended to be on WDFW lands. - Implement reintroduction strategies and maintain site.
		F. Develop a survey plan to document the presence and distribution of the Olympic mudminnow by 2023.	All	1. Survey plan developed (y/n); 2. # of surveys conducted; 3. # sites surveyed; 4. # sites mudminnows present.	Fish Program	- Follow mudminnow survey protocol. - Conduct presence/ absence surveys. - Work with USFWS and UW to update distribution databases. - Map known occupied habitats.
		G. Investigate bat use of WDFW lands and monitor for white nose syndrome and surveillance, as needed.	All	1. # of surveys conducted; 2. # colonies confirmed; 3. # samples collected and submitted.	WL District Biologists	- Investigate all buildings at Davis Creek and Skookumchuck for signs of bat colonies. - Conduct acoustic monitoring at sites when it conforms to conduct a bat monitoring scheme (e.g. NABat Acoustic Monitoring). - Conduct non-acoustic monitoring and sample collection for white nose syndrome surveillance as assigned by the Wildlife Program.
		H. Maintain beaver presence on the West Rocky Prairie Unit including maintaining riparian habitat.	West Rocky Prairie	1. # of dams maintained; 2. # of beaver; 3. presence of beaver activity (y/n).	WLA Manager/*Aquatic Research Team Habitat*	- Beaver maintenance needed along Tilly Road. - Access rule for the WLA – beaver trapping rules – trappers association – Discuss with Game Division. - More important for climate nexus. - Install pond levelers and beaver dam analogs. - Maintain suitable abundant food source - willows, cottonwood, alder (hardwoods).

	Goal	Objective	Unit	Performance Measure	WDFW Lead ***Support***	Tasks
		I. Develop a feasibility strategy for assessing beaver translocation to help restore ecological functions and enhance restoration efforts for the Oregon spotted frog on the West Rocky Prairie Unit.	West Rocky Prairie	1. Feasibility strategy developed (y/n).	Game Division/ *Aquatic Research Team Habitat /WLA Manager*	- Assign the development of a feasibility strategy to staff work matrices, if funding is available; apply for grants, if appropriate. - Consider relocating beaver to the wildlife area following the guidance of the WDFW Beaver Relocation Manual.
		J. Identify and implement habitat metrics targeting retention of shrubs/ perches, structural heterogeneity and/or other key habitat features important for Oregon vesper sparrow breeding by 2026.	Scatter Creek	1. Habitat metrics identified (y/n); 2. Habitat metrics implemented (y/n).	Prairie/oak species recovery biologist/*WL District Biologist/WLA Manager*	- Review literature and work with species experts to identify metrics. - Conduct habitat restoration and maintenance activities to achieve targets.
		K. Determine the status of the water howellia on the wildlife area by 2024.	West Rocky Prairie	1. Surveys conducted (y/n); 2. Protection measures implemented (y/n).	WLA Manager	- Surveys to determine the extent of the population and identify management needs. - Contact USFWS for guidance - Assess current small population that was discovered on the east side wetlands by Habitat Science staff on WRP.
3.	Protect and restore Species of Greatest Conservation Need butterfly habitat and species populations.	A. Restore/maintain habitat for the Taylor's checkerspot per reintroduction plan at West Rocky Prairie by 2023; Scatter Creek north by 2025.	Scatter Creek, West Rocky Prairie	1. # of acres maintained; 2. # of acres restored.	Prairie/Oak Species Recovery Biologist	- Conduct periodic (~ every 3 yrs) assessments to evaluate habitat condition. - Consistent with annual treatments - prescribed fire, herbicide, and seed/plug enhancements described in objectives 1C/1I. <u>Action to address climate change impacts:</u> Regarding the plant mix, is it well suited for future conditions? Also consider plant phenology.
		B. Maintain current efforts to protect and monitor Taylor's	Scatter Creek	1. Protection measures implemented (y/n).	Prairie/Oak Species Recovery Biologist	- Implement monitoring as per reintroduction plan.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		checkerspot on the Scatter Creek Unit to achieve population objectives identified in reintroduction and recovery plans.				- Develop and implement a long-term monitoring plan. - Protection efforts include habitat maintenance and restoration described under Goal 1. - Recreation is currently managed by using string fencing and signs around some of the high density occupied areas. - Implement trail closures at certain times of the year.
		C. Reintroduce Taylor's checkerspot at West Rocky Prairie by 2023, and as needed in other suitable areas. Monitor to track progress toward population objectives identified in the reintroduction and recovery plans.	West Rocky Prairie	1. Reintroduction conducted (y/n); 2. Monitoring conducted (y/n).	Prairie/Oak Species Recovery Biologist	- Follow policies and procedures as outlined in the reintroduction plan with respect to habitat restoration, maintenance and assessment as well as release and monitoring protocols. <u>Action to address climate change impacts:</u> Check for habitat suitability and future climate scenarios.
		D. Protect and restore habitat for butterfly SGCN during the life of the plan.	Scatter Creek, West Rocky Prairie, Glacial Heritage, Davis Creek	1. # of acres of Roemer's fescue; 2. # of acres of restored oak understory; 3. # of acres of early blue violet and prairie violet, including within restored oak understory; 4. # of acres of California oat grass; 5. # of acres of long-stoloned sedge; 6. # of acres of sickle-keel lupine; 7. # acres of kinnikinnick.	WLA Manager/ Prairie Restoration staff/ *Diversity Division*	- Prairie restoration efforts should protect, expand, and create high-quality prairie and oak woodland understory, enhance habitat by controlling tall invasive plants, and create new patches of identified plants and communities to benefit individual species: Roemer's fescue (All SGCN); restored oak understory (Propertius duskywing); early blue violet and prairie violet (Mardon skipper, valley silverspot and Puget Sound fritillary); California oat grass (Sonora skipper); long-stoloned sedge (Oregon branded skipper); sickle-keel lupine (Puget blue); and kinnikinnick (hoary elfin). - Annually control, rather than eradicate, key nonnative summer nectar plants (see Table 11).
		E. Design and conduct comprehensive survey of butterfly SGCN host	Scatter Creek, West Rocky Prairie, Glacial	1. Survey designed (y/n); 2. Survey completed (y/n).	WLA Manager/ *Prairie Restoration staff/*	- Survey and identify locations and quantity of habitat for SGCN species.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		plants and late-season nectar plants by 2022 to inform habitat restoration.	Heritage, Davis Creek		*Diversity Division*	- Identify the least impactful restoration methods and locations to reach recovery goals. Evaluate outcomes. - Through restoration and protection, expand known host and nectar plants consistent with 3D. - Create unit-specific GIS maps of host and late-season nectar plants - Repeat survey and update maps every 5 years and incorporate new information from other sources as it becomes available.
		F. Monitor butterfly SGCN on appropriate units annually to determine occupancy status, butterfly distribution, and relative abundance to inform siting of restoration units, both to restore habitat and protect species.	All	1. Occupancy status, butterfly distribution and relative abundance determined (y/n)	Diversity Division	- Monitoring for Mardon skipper, Sonora skipper, Oregon branded skipper, valley silverspot, Puget Sound fritillary should be done annually until butterfly numbers exceed 100 in 2 locations within a unit (then at 2-3-yr intervals or following a stochastic event). - Monitoring for Puget blue and hoary elfin should be done every 3 years beginning in 2023. - Monitoring for Propertius duskywing presence should be done on the Davis Creek unit for 3 years. - Monitoring for valley silverspot and Puget Sound fritillary presence should be done on the Skookumchuck and Black River units for 3 years.
		G. Protect butterfly SGCN by minimizing direct harm during habitat restoration and other management activities.	Scatter Creek, West Rocky Prairie, Glacial Heritage, Davis Creek	1. Annual meeting between Diversity and WLA Management and Restoration staff to design habitat restoration projects held (y/n); 2. % of individual species occupied area restored annually.	WLA Manager/ *Prairie Restoration staff/* *Diversity Division*	- Minimize direct impacts to species. - Prairie and oak woodland restoration should be conducted in a manner to protect all butterfly SGCN. - Aim to limit impactful habitat restoration and enhancement activities – e.g. limited to no more than 10 percent of a species' occupied habitat in any one year.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
4	Maintain and enhance game bird habitat.	A. Create an artificial mineral site for band-tailed pigeon by 2028.	Scatter Creek, Davis Creek, West Rocky Prairie, Skookumchuck	1. # of artificial mineral sites developed.	WL District Biologist	- Submit grant application for Migratory Bird Stamp funding. - Identify suitable locations - Locate > 3miles from existing mineral site - Develop and design construction plans - Maintain one site per month during April – mid September.
		B. Enhance 10 acres of habitat for either band-tailed pigeon or mourning dove before 2030.	Scatter Creek, Davis Creek, West Rocky Prairie, Skookumchuck	1. 10 acres in total of habitat enhanced (y/n).	WLA Manager/ *District Biologists*	- Identify suitable locations - Submit grant application for Migratory Bird Stamp funding or other grant sources. - Implement habitat enhancements - Monitor results
5.	Maintain and enhance waterfowl habitat.	A. Plant and maintain at least two types of species of wintering waterfowl forage on leased agriculture lands annually.	Davis Creek	1. # of acres enhanced annually; 2. # of forage species utilized.	WLA Manager	- Partner with agriculture lessee to plant and maintain winter forage crops. - Utilize state Duck Stamp funding; submit project applications and implement projects when funding is available. <u>Action to address climate change impacts:</u> Adapt for changes in hydrology, species presence, and best suitable food crops.
		B. Conduct at least one project to restore native wetland plant communities that benefit waterfowl annually consistent with Oregon spotted frog recovery.	All	1. # of projects implemented; 2. Type(s) of project(s) completed.	WLA Manager/ WL District Biologist	- Utilize state Duck Stamp funding; submit project applications and implement projects when funding is available. <u>Action to address climate change impacts:</u> Consider creating more habitat for native plants and consider water availability.
6.	Maintain and enhance elk habitat and provide recreation opportunities.	A. Meet with landowner annually to maintain forage management objectives on the Skookumchuck Unit.	Skookumchuck	1. # of acres of forage habitat established and maintained annually.	WLA Manager	- Onsite assessment coordinated with TransAlta biannually. - Recommend changes to management actions as needed.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		B. Improve a total of 20 acres of elk habitat on West Rocky Prairie and Davis Creek units by 2023.	West Rocky Prairie, Davis Creek	1. # of acres of habitat restored or enhanced per unit.	WLA Manager	- Utilize Davis Creek agriculture lessee, through in-kind work, to improve elk habitat and forage. - Utilize existing Rocky Mountain Elk Foundation funding to improve elk forage on West Rocky Prairie Unit.
7.	Maintain and restore riparian and wetland habitat.	A. Correct Beaver Creek fish passage by end of 2021.	West Rocky Prairie	1. Fish passage project completed (y/n).	Relevant staff in Habitat /Fish District Biologist/*WLA Manager*	- Finalize designs - Acquire permits and complete SEPA as necessary. - Conduct construction phase. - Coordinate with Habitat Program Fish Passage Program and CAMP. <u>Action to address climate change impacts:</u> Ensure design for any replacement structures considers future flows (use climate adapted culverts projections).
		B. Continue collaboration with Thurston County for the Dunnagan Creek Restoration project (Dunnagan Creek culvert).	Black River	1. Project completed (y/n); 2. Conduct annual vegetation management (y/n); 3. Evaluate Oregon spotted frog restoration options (y/n).	Relevant staff in Habitat Program/ *WLA Manager*	- Maintain communication with Thurston County and upstream landowner. - Provide technical support to Thurston County. - Maintain stream vegetation to allow sufficient winter flow downstream. <u>Action to address climate change impacts:</u> Ensure culverts and restoration enhancements are designed for future flows (use climate adapted culverts projections).
		C. Identify/ pursue funding for two riparian enhancement projects on the Davis Creek Unit by 2025.	Davis Creek	1. Projects identified (y/n); 2. # of funding requests submitted and received; 3. # of projects completed.	WLA Manager	- Reed canary grass control, invasive removal, oak protection, expansion of available riparian habitat. - Coordinate with WDFW species and habitat specialists. - Partner with conservation organizations to develop and implement riparian projects. - Prioritization of projects and grant applications.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
						<u>Action to address climate change impacts:</u> Ensure restoration enhancements are designed for future flows and species selection.
		D. Identify opportunities to improve riparian and instream habitat by 2027.	All except Glacial Heritage	1. Opportunities identified (y/n); 2. Funding secured (y/n); 3. Projects implemented (y/n).	WLA Manager	- Adhere to ASRP recommendations. - Use all tools and resources available to identify projects and suitable locations. - Where applicable be consistent with Oregon spotted frog recovery plan. <u>Action to address climate change impacts:</u> Ensure restoration enhancements are designed for future flows and species selection.
8.	Support and maintain appropriate recreation opportunities.	A. Construct one ADA; and three duck blinds at the Davis Creek Unit by 2025 and maintain existing blinds on all units.	Davis Creek, Black River, Scatter Creek	1. # Duck blinds installed; 2. # Duck blinds maintained.	WLA Manager/*WL District Biologist*	- Apply for Migratory Bird Stamp funding. - Work with local Western Waterfowl Association chapter and volunteers to implement the project.
		B. Host one clinic in collaboration with the Hunter Education Division per year.	All	1. # of Hunter Education clinics conducted annually.	Hunter Ed. */Game Division/ WLA manager/ Licensing Division*	- Schedule, plan, and conduct at least one clinic per year.
		C. Develop at least one paragraph of hunter information for each unit for kiosks and the website annually, or as changes occur.	All	1. Hunting information updated annually (y/n).	WL District Biologist/*WLA Manager*	- Curate information presented annually in the Hunting Prospects document and post onto the website or kiosks each year when Hunting Prospects are released.
		D. Develop and maintain recreational facilities at the wildlife area.	West Rocky Prairie, Scatter Creek, Davis Creek, Black River	1. Complete West Rocky Prairie parking expansion by 2025 (y/n); 2. Evaluate parking expansion at Scatter Creek Unit by 2025 (y/n);	WLA Manager	- Follow local regulations and funding requirements when implementing facility improvements and infrastructure expansion. - Seek opportunities to improve access locations, kiosks, and boundary fencing.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
				3. Develop and improve parking at Davis Creek Unit by 2023 (y/n); 4. Improve parking at Black River Unit by 2028; 5. Fencing improvement/ signage (y/n).		- Potential funding sources include RCO State Land Development, NOVA, Discover Pass, and WDFW capital projects.
		E. Conduct a trails assessment/inventory by 2022 for the purpose of designating, maintaining, and adding trails on the wildlife area.	All	1. Trails assessment/inventory conducted (y/n); 2. # of miles of designated trails maintained annually.	WLA Manager/ *District Team/ Planning, Recreation and Outreach Section Manager*	- Map trail locations and conditions. - Identify additional trail needs and potential locations. - Manage public use on trails to include seasonal closures, defining method of uses, and restrictions.
		F. Partner with Thurston County to develop a plan to create a Rails to Trails project on the Black River Unit by 2030.	Black River	1. Rails to Trails Project created (y/n); 2. Education kiosk developed (y/n).	WLA Manager	- Collaborate with Thurston County when they are ready to move forward with this rails-to-trails project. - Enhance public access on this unit and the new trail system. - Update unit rules and improve public safety upon changes to present recreation opportunities. - Support County Parks O&M efforts on this project.
		G. Develop and implement a strategy to resolve hunting, fishing, other recreation conflicts on the Skookumchuck Unit by 2024.	Skookumchuck	1. Strategy Developed (y/n); 2. Strategy implemented (y/n); 3. A stakeholder group is created to address the issue (y/n); 4. # of Calls to enforcement per year(reduced).	WLA Manager/ *Enforcement/Game Division*	- Focus on collaboration between landowner (TransAlta) and WDFW. - Address overlapping of hunting/fishing seasons and different user groups. - Engauge all effected stakeholders.
		H. Develop a strategy to improve, manage, and promote recreational	Davis Creek	1. Strategy developed (y/n); 2. Strategy implemented(y/n).	WLA Manager/ *Enforcement/ District Team*	- Determine appropriate recreation on site (kayaking, target shooting, horseback riding, dog training, and hunt dog trials).

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		opportunities on Davis Creek Unit by 2021.				- Consider sensitivity to species such as deer, elk, bear, migratory birds, and small game. - Promote recreation opportunities on the unit through advertising, social media, etc. - Engauge all effected stakeholders.
		I. Develop a strategy to improve management of field trial opportunities on the wildlife area by 2023.	Scatter Creek, Davis Creek	1. Strategy developed (y/n); 2. Strategy implemented (y/n).	WLA Manager	- Meet with WDFW staff and user groups annually to address challenges, make process improvements, and develop solutions to issues presented. - Assess field trials on the wildlife area and identify impacts to resources (habitat, species impacts). - Address suitability and identify potential new lands. - - Evaluate field trial events permitting – consider streamlining and potential LEAN study.
		J. Improve two horseback riding approved facilities by 2030.	Scatter Creek, Davis Creek	1. # of miles of trails developed; 2. Parking lot improvements completed (y/n); 2. Horse trails clearly marked at Scatter Creek (y/n).	WLA Manager	- Improvements should include trail signage, boundary signs, kiosks update with current hunting and resource information, to reduce conflict. - Evaluate plan, seek funding, and implement horseback riding facility projects.
		K. Evaluate potential new opportunities for recreational horseback riding compatible with species protection by 2022.	Scatter Creek, West Rocky Prairie	1. List of units evaluated; 2. # of opportunities identified; 3. # of new opportunities established; 4. Species and habitat protections considered (y/n).	WLA Manager	- Develop internal and external working group for evaluation and implementation of objective. - Monitor outcomes, changes in recreational use, and species response.
		L. Evaluate and implement improved opportunities for improved fishing access by 2022.	Davis Creek, Scatter Creek	1. # of opportunities identified; 2. Signage posted and outreach material distributed (y/n).	Fish Program/ *Water Access Program/WLA Manager*	- Fish and Wildlife programs collaborate on evaluating and improving fish access. - Seek and secure funding as needed.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		M. Continue program to support the release of pheasants and enhance hunting opportunities at the two existing pheasant release sites annually and evaluate alternatives or additional replacement sites as new lands are acquired by 2030.	All	1. # of pheasants released at each site; 2. # of new sites evaluated and developed; 3. # of hunter censuses conducted per season at each release site; 4. # and type of habitat improvement projects completed.	Game Farm Manager, *Wildlife District Bios/ WLA Manager*	- Produce and release pheasants to support hunting opportunities. - As lands come available (private or publicly acquired) the district biologist, wildlife area manager, and pheasant release program manager will evaluate for pheasant release suitability. - Generate a team to evaluate existing WDFW lands for pheasant release alternatives, as funding becomes available. - The regional staff representative, pheasant release program manager, and wildlife area manager will perform a biennial review on all existing release sites for site conditions and strategy. - Improve the quality of existing release sites to avoid the need for future replacement. Performing suitable cross species habitat projects that support pheasant hunting. - Seek to acquire pheasant release sites in future land acquisitions and landowner agreements. - Explore reservation system to add or replace pheasant release sites when conflicts arise. - Use hunter data surveys to evaluate use, demographics and release strategy.
		N. Conduct turkey surveys as directed by the Game Division.	Scatter Creek, Skookumchuck, West Rocky Prairie	1. # of surveys conducted.	WL District Bios	- Conduct turkey surveys as directed by the Game Division. - Report observations with survey effort focused during brood-rearing season.
		O. Provide, maintain, and improve hunting opportunities on the wildlife area annually.	All except Glacial Heritage	1. # of maintenance actions per species and locations; 2. # of improvement projects completed.	Wildlife Area Manager*/ District Wildlife Biologist/Game Division species specialist*	- Identify game species presence and hunting opportunities available. - Identify actions to be taken to maintain and improve hunting opportunities for specific game species.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
						- Implement actions identified when and where feasible following applicable regulations. - Promote and communicate opportunities available and actions taken annually.
		P. Identify and establish locations that are critical for protecting sensitive habitat from recreation use on the wildlife area by 2022.	All	1. Assessment/inventory of the critical areas to protect from substantial recreation use conducted (y/n); 2. # of protection areas established on each unit; 3. # of protection areas maintained on each unit; 4. Critical habitats identified and mapped (y/n); 5. Annual compliance monitoring conducted (y/n).	WLA Manager/*District Team/Lands Division Staff/Diversity Division*	- Develop team to address objective. - Reference statewide recreation strategy during evaluation and development of protection areas. - Evaluated each wildlife area unit. - Establish and post protection areas. - Map protection areas and define recreation opportunities per unit. - Update unit rules. - Monitor compliance regularly. - Monitor impact of protections.
		Q. Develop a wildlife viewing guide/app for the wildlife area by 2023.	All	1. Guide/app developed (y/n).	WLA Manager/*Diversity Division/ Lands Data Management and Communications Specialist/Wildlife Science staff.*	- Develop story map outlining recreation opportunities. - Review and update unit pages on WDFW website. - Initiate targeted social media presence. - Determine best information to include in viewing app. - Solicit funding/grants for development of app. - Post suitable wildlife viewing information on unit kiosks.
9.	Offer multiple and varied opportunities for stakeholder participation and engagement.	A. Coordinate and maintain a Wildlife Area Advisory Committee that meets at least annually.	--	1. # of meeting(s) per year; 2. # of correspondences annually.	WLA Manager	- Setup meeting time and place based on group members' availability. - Refine membership as needed based on membership participation and partner, stakeholder interests. - Draft agenda with attention to group interest and time constraints.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
						- Hold meeting and collect group comments and recommendations for consideration relative to future management actions (proposed or ongoing). - Include meeting notes in wildlife area management plan updates and website. - Inform and collaborate with WAAC members on management actions as needed.
		B. Coordinate communication with community member/ groups/neighbors about current wildlife area management activities.	--	1. # of members/groups / constituents contacted; 2. # of community meetings attended; 3. # of partnerships created; 4. # of public tours/events; 5. # of public presentations.	WLA Manager/ *District Team*	- Engage with user groups (e.g. horseback riding, field trial community, hunting related) and local chamber of commerce or community organizations - Prescribed fire letters and press releases distributed. - Provide WLA information to local organizations through email, telephone calls, social media, and written notices and newsletters. - Attend community group meetings, present as needed, and distribute WDFW and wildlife area information. - Consider developing a docent program to keep neighbors and public informed and provide presence to help reduce vandalism and dumping (11A).
		C. Develop a volunteer program to monitor, maintain and install nest boxes on the wildlife area by 2023.	All	1. Volunteer program developed (y/n); 2. # of nest boxes installed and maintained annually; 3. # of boxes monitored; 4. # of boxes utilized annually.	WLA Manager	- Coordinate with the Western Waterfowl Association, Black Hills Audubon and other volunteers. - Priority species includes wood ducks, bluebirds, purple martins, slender-billed nuthatch, white-breasted nuthatch, and bats.
		D. Work with local community business and tourism associations to communicate opportunities on and	All	1. # of stories or events promoted on the wildlife area annually; 2. # of local entities contacted.	WLA Manager/ *Lands Data Management and Communications Specialist/Wildlife*	- Work with internal Lands Messaging Team to develop messages, stories, and promotions on the wildlife area. - Develop 1-2 stores each biennium or as opportunities arise.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		benefits of the wildlife area.			*Science staff, Public Affairs Office*	
10.	Maintain productive and positive working relationships with neighbors, partners, and permittees.	A. Develop a wildfire management plan for Scatter Creek Wildlife Area during 2021.	All	1. Fire Management Plan developed (y/n); 2. Fire Management implemented (y/n).	WLA Manager/ *Lands Division staff*	- Coordinate with Fire Chief, and DNR to get recommendations. - Develop and implement Fire Management Plan. - Continue to enhance plans with local fire districts. - Establish fire breaks, where applicable, to help protect resources and infrastructure on as well as off the wildlife area units. <u>Action to address climate change impacts:</u> Include adaptation for increased fire occurrences.
		B. Maintain agriculture lease on Davis Creek for the benefit of species and habitat.	Davis Creek	1. Annually maintained (y/n); 2. # of acres of habitat enhancement: 3. # of acres within Ag lease.	WLA Manager	- Establish, renew, extend, and document agricultural lease as needed. - Monitor agriculture lease activities monthly. - Meet/communicate with the agricultural lessee at least quarterly to coordinate on lessee activities, recreation events, and habitat work. - Maintain forage and habitat for focal species consistent with acquisition funding sources.
		C. Develop an agreement with Center of Natural Lands Management or consider transfer of the Glacial Heritage unit by 2025.	Glacial Heritage	1. Agreement developed (y/n); 2. Unit transferred to new owner (y/n).	WLA Manager/ *Lands Agent/ WLP Regional Program Manager*	- Address issues including road easement, keys to gate, and hunting. -Improve coordination, communications, Capacity, and oversight.
		D. Work with partners (TransAlta) to develop and implement a strategy for future management on the	Skookumchuck	1. Standard Operating Procedure updated (y/n); 2. SOP implemented, and oversight provided (y/n);	WLA Manager/*WL District Biologist*	- Work with dam and SWHMA owner, if changed*, and continue cooperative management.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		Skookumchuck Unit by end of 2020 and 2025.		4. # of collaborative projects.		* Standard Operating Procedure for the Skookumchuck Wildlife Habitat Management Area is updated every 3-5 years upon mutual agreement between the landowner and WDFW, the primary focus is on elk habitat forage and northern goshawk habitat. *Dam mitigation agreement (currently owned and operated by TransAlta) remains in place while Skookumchuck dam exists and requires WDFW's oversight of the associated wildlife habitat management area.
		E. Monitor surrounding land use developments that may adversely impact and be incompatible with the wildlife area.	All	1. # of contacts made; 2. # of letters mailed.	Habitat Program/WLA Manager	- Coordinate with Habitat Program on potential development projects. - Issue comment letters as appropriate to county officials and other parties as needed.
11.	Properly train, equip, and license WLA staff to meet operational and management needs of the WLA.	A. Increase staff capacity – to meet maintenance, habitat/species requirements, recreational and other management needs.	All	1. Assistant manager hired (y/n); 2. Seasonal staff hired (y/n); 3. Restoration crew established (y/n).	WLP Regional Program Manager/*WLP water Access and WLA program manger*	- WLA Manager writes position descriptions, work plans, and submits request for adding WLA support staff. - WLA manager, WLP Regional Program manager and Lands Division will evaluate funding sources. - WLA manager will recruit.
		B. Identify resources for additional O&M funding – investigate sources of funding.	All	1. # of funding applications submitted for O&M; 2. # of O&M requests granted ($ amount received and purpose).	WLA Manager/ *WLP regional program manager*	- Explore funding opportunities. - Apply for grants as they become available. - Implement funded requests.
12.	Maintain safe, highly functional, and cost-effective administrative facilities and equipment.	A. Develop and implement a plan to reduce illegal dumping, trespass, and vandalism on the	All	1. Plan developed and implemented (y/n).	WLA Manager/ *Enforcement Program*	- Reduce hours of use – add signage and gates. - Add security cameras and improve lighting. - Engage neighbors, stakeholders to help.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		wildlife area within two years.				- Utilization of Master Hunters and Eyes in the Woods programs. - Alter vegetation management practices near problem areas to increase visibility and reduce place to hide dumping, trespassing, and vandalism activities. - Provide additional enforcement.
		B. Annually inspect 25% of fencing and gates; repair and replace as needed and as funding allows.	All	1. # miles of fencing inspected and repaired; 2. # gates repaired/replaced.	WLA Manager	- Fences that need replaced include Black River, Davis Creek, Scatter Creek and West Rocky Prairie units. - Conduct inspections at least annually. - Annually submit capital funding proposals for new fencing requests.
		C. Establish administrative access easement(s) for access to the West Rocky Prairie Unit by 2021.	West Rocky Prairie	1. Easements in place (y/n); 2. Determine easement expiration date (y/n).	WLA Manager/ Lands Agent	- Contact neighboring landowners to request an access easement. - Establish access easement agreement and fulfill easement agreement conditions. - Ensure equipment and vehicle access to all portions of West Rocky Prairie Unit are present. - If suitable easement(s) is not achievable, a new beaver creek crossing structure or passage methods must be established to achieve acquisition, grant funding, and ESA requirements.
		D. Develop a communication plan outlining recreational opportunities and restrictions by 2022.	All	1. Communication plan developed and implemented (y/n).	WLA Manager	- Consistent with the Recreation Strategy, work with PAO, WDFW Lands Division, and wildlife outreach staff to develop plan. - Utilize social media, press releases, kiosks, and other media for communicating opportunities for the public and management actions impacting recreation. - Establish a communication board and feedback station at the new Scatter Creek Wildlife Area Headquarters.
		E. Provide education and outreach material	All	1. Materials developed and posted (y/n).	WLA Manager	- Develop and post signage. - Engage volunteers to help with education.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
		to the public to reduce pets off leash by 2021.				- Provide clear and understandable rules. - Add definition of dog training. - Reference and comply with the new Recreation strategy.
		F. Develop a strategy and implement the removal and/ or preservation of buildings on the Davis Creek Unit by 2025.	Davis Creek	1. Capital funding request submitted (y/n); 2. Strategy developed and implemented (y/n); 3. # and type of facility projects conducted.	WLA Manager	- Need to prioritize building removals and repairs to best optimize resources on site. - Apply for capital funding. - Implement funded facility projects.
		G. Update wildlife area facility information in the centralized database annually.	All	1. Central facilities databased updated annually (y/n).	WLA Manager	- Use agency facility inventory tool to update facilities information.
		H. Review and update information on the wildlife area webpages annually.	All	1. Wildlife area web pages reviewed and updated annually (Y/N).	WLA Manager/*Lands Data Management and Communications Specialist*	- Keep information available to the public on the web pages current. - As soon as possible, post information about closures or major events that could limit public access.
13.	Investigate and improve the cultural ecosystems represented by prairies and oak woodlands and savannahs.	A. Develop an understanding of cultural ecosystems that can be communicated to and maintained by WDFW staff by 2023.	All	1. Agency definition of cultural ecosystem developed (y/n); 2. List of tribal contact people for discussions of traditional management practices on prairies developed (y/n); 3. Training conducted (y/n).	Wildlife Lands cultural resource specialists	- Meet with tribes to identify their interests, knowledge, and contact people. - Develop Cultural Ecosystems training module for Oak Savanna and Prairie lands.
		B. Establish monitoring plots in Scatter Creek Wildlife Area where the effects of traditional management techniques can be documented by 2023.	All	1. Monitoring protocol established (y/n); 2. Monitoring plots where chemical and mechanical techniques will not be used established (y/n); 3. Preliminary determination of which traditional techniques may be employed completed (y/n);	Wildlife Lands cultural resource specialists/ *WDFW biologists/ ecologists/ WLA manager*	- Consult with interested tribes and experts in Traditional Ecological Knowledge (TEK) regarding data categories and collection. - Fieldwork with WDFW staff, tribal and other participants to identify suitable test plots. - Lay out plots physically and in GIS.

	Goal	Objective	Unit	Performance Measure	WDFW Lead *Support*	Tasks
				4. Monitoring reports completed (y/n).		
		C. Implement traditional tending and harvest activities in test plots by 2023.	All	1. Annual tribal harvests conducted (y/n); 2. Final determination of which traditional techniques will be employed for each plot completed (y/n); 3. Annual monitoring reports completed (y/n).	Wildlife Lands cultural resource specialists/ *WDFW and tribal biologists/ecologists, tribal harvesters and tenders/WLA manager*	- Report that details which traditional techniques will be used at each plot and how the monitoring protocol will be implemented there. - Choose one or more plots (e.g. ag lands) where prescribed fire can be used on an annual or biennial basis to more closely match traditional practices than the current fire regime.
		D. Facilitate and manage tribal access to Scatter Creek Wildlife Area for cultural practices by 2023.	All	1. Map of ceded lands, usual & accustomed gathering areas, and traditional use areas in and around the wildlife area completed (y/n); 2. List of WDFW and tribal contacts for access inquiries completed (y/n); 3. Annual report of harvest and tending activities by unit completed (y/n).	Wildlife Lands cultural resource specialists/ WLA manager	- Create GIS layers for ceded lands and U & A in SCWLA. - Create contact list - Create GIS layers for cultural access (e.g., areas where herbicide spraying or sensitive species areas to be avoided, areas where harvest has occurred).

Part III - Species and Habitat Management

Physical characteristics

Geology and soils

Gravelly sandy loam soils developed on glacial outwash, are well-drained, and high in organic matter near the surface. Soils at many of the Scatter Creek Wildlife Area units include Spanaway gravelly sandy loam, Nisqually loamy fine sand, and Spanaway-Nisqually complex soils.

History of glacial outwash prairies

About 150 years ago, prairies and oak woodlands covered nearly 150,000 acres of western Washington, stretching from present-day Tacoma south through the Chehalis River drainage basin and ending just south of present-day Oakville, and in Clark County. Today less than 2.5 percent of that landscape remains as prairie as of 2000 (Chappell, et al 2001). These grasslands contribute greatly towards regional biodiversity and cultural history in a landscape that would otherwise be dominated by coniferous forests. The prairies of the South Puget Sound were and are host to a unique assemblage of plants and animals, including many rare and endemic species.

The prairies and oak woodlands of the South Puget Sound were formed by a retreating glacier and sustained by harsh climatic conditions and periodic anthropogenic fires set by indigenous communities. Great quantities of rock, sand, and gravel were disgorged along an outwash plain 13,000 to 15,000 years ago during the Vashon deglaciation (Kruckeberg 1991). These coarse-textured, well-drained deposits became soils that favor plant species tolerant of low-moisture conditions (TNC 2002). For the first few thousand years after the glacier retreated, pollen studies indicate forest vegetation dominated the landscape. Then, 10,000 years ago, solar radiation increased and caused the warmest period of the post-glacial Holocene. Pollen records show that the vegetation shifted from forest to prairie species on glacial-till, outwash soils that became too dry for forests (Brubaker 1991).

About 4,000 years ago, temperatures dropped, once again increasing soil moisture. However, during this cooler period prairies were maintained by indigenous burning. Evidence of thousands of years of anthropogenic fires shows in dark-colored surface horizons (organic matter) of the Spanaway and Nisqually Soil Series, which are the primary soils of Western Washington prairies (Crawford and Hall 1997). During the past 4,000 years, forest formation has been retarded by coarse-textured, well-drained soils, low summer precipitation, and periodic anthropogenic fires (Dunn 1998).

These prairies formed the northwestern extent of grassland steppes and woodlands lying to the east and to the south (Clampitt 1993). They bordered both sides of the Nisqually River and spread to the Cascade foothills (Carpenter 1986), forming a mosaic of prairies, freshwater lakes and wetlands, estuaries, and woodlands.

Hydrology

The Chehalis River (Water Resource Inventory Area 23) drains the southwest portion of Thurston County (Black, Skookumchuck, and Chehalis rivers) and flows to the Pacific Ocean. Nearly all groundwater in Thurston County starts as rain that falls within the county. Much of southwestern Thurston County is underlain by a single shallow aquifer with no confining layers, making it susceptible to contamination. Aquifers in the vicinity of the Black Hills, Bald Hills, the Maytown uplands near Tenino, and Michigan Hill in the southwestern portion of the county, are not reliable sources of potable water. Also, in some places, small ponds and streams are dry for significant portions of the year due to lowering of the groundwater levels in the upper aquifer. The Deschutes River, Chehalis River, Yelm Creek, and Scatter Creek are all influenced to some degree by groundwater withdrawals (Thurston County Comp Plan 1995).

Climate

The Pacific Ocean, westerly winds and the Olympic Mountains largely influence the regions climate. The region generally experiences a maritime climate characterized by mild temperatures with prolonged cloudy periods; wet, mild winters, cool, relatively dry summers; and heavy precipitation, averaging 50 inches annually. Most of the precipitation falls between October and March, primarily as rain with an average of 12 inches of snow per year. Average temperatures are illustrated in Figure 10 (US Climate Data 2019).

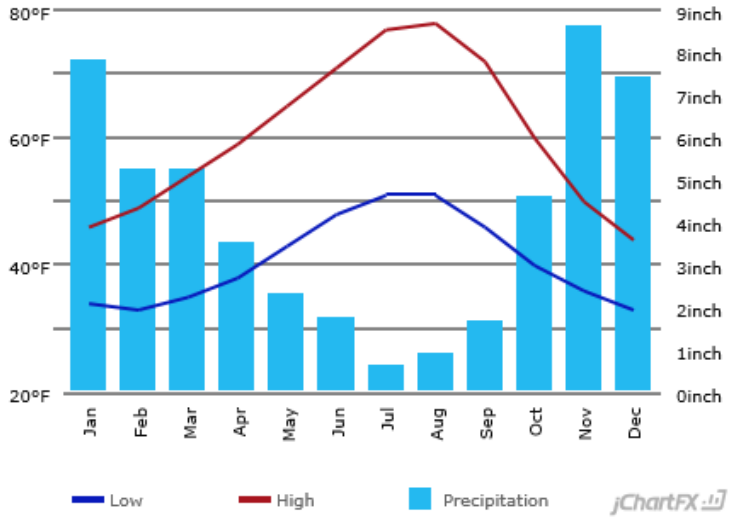


Figure 10. Thurston County average monthly high and low temperatures and precipitation (Source: U.S. Climate Data).

Ecological values

Ecological systems and ecological integrity

WDFW uses Ecological Integrity Assessments (EIA) and Ecological Integrity Monitoring (EIM) to track management progress on the wildlife area. Ecological integrity is defined as the ability of a system to support and maintain a community of organisms that has species composition, diversity, and functional organization comparable to those of natural habitats. EIM is a tool to evaluate ecological integrity and changes to integrity over time within priority systems and sites on the wildlife areas. The complete classification system, including descriptions of all ecological systems, can be found online at http://file.dnr.wa.gov/publications/amp_nh_ecosystems_guide.pdf and summarized in the framework.

The Scatter Creek Wildlife Area includes five National Ecological Systems of Concern to manage for ecological integrity, see Table 8.

Appendix A contains the list of Species of Greatest Conservation Need (SGCN) believed to be present on the wildlife area and their relationships with ecological systems of concern. Actions associated with ecological integrity are included in the goals and objectives section (page 56). These include actions to set the baseline for ecological integrity and to create a monitoring plan to evaluate progress over time for each of these systems.

Oak habitat on Scatter Creek Unit. Photo by Alan L. Bauer.

Table 8. Ecological systems of concern on the Scatter Creek Wildlife Area

Ecological System of Concern	Units	Acres	Description
North Pacific Lowland Riparian Forest and Shrubland	Scatter Creek, Black River, Davis Creek, Skookumchuck, West Rocky Prairie	589	Riparian forests and shrublands found throughout low elevations west of the Cascades. These forests and tall shrublands are linear in character, occurring on low-elevation, alluvial floodplains that are confined by valleys and inlets or lower terraces of rivers and streams. Annual flooding is a key ecological process which results in a diversity of patch types such as woodlands, shrublands, wet meadows, and marshes.
North Pacific Oak Woodland	Scatter Creek, West Rocky Prairie, Davis Creek	154	This is a large and small patch system which occurs primarily in the Puget Trough and Willamette Valley. In Washington, this oak woodland is most abundant on gravelly outwash plains in Thurston and Pierce counties but is found on dry sites that experienced frequent pre-settlement fires in other parts of the Puget Trough, especially within the rain shadow of the Olympic Mountains.
Temperate Pacific Freshwater Emergent Marsh	Davis Creek, Black River, Skookumchuck, West Rocky Prairie	106	This small patch ecological system is found at all elevations below timberline throughout the temperate Pacific Coast. However, the dynamic hydrological regimes, high nutrient status, and relatively warm growing season of lowlands in western Washington make this system more abundant at lower than at higher elevations. These semi-permanently to permanently flooded wetlands are dominated by emergent herbaceous species, mostly tall graminoids with some forbs.
Willamette Valley Upland Prairie and Savannah	Glacial Heritage, Scatter Creek, West Rocky Prairie, Davis Creek	956	This is a grassland and savanna system endemic to the Puget Trough and Willamette Valley. In Washington, it is most expansive in the South Puget Sound region and is found in the San Juan Islands and in southwest Washington. In South Puget Sound, this system occurs in large patches, usually associated with deep, gravelly/sandy glacial outwash that is excessively well drained within more forested landscapes.
Willamette Valley Wet Prairie	Scatter Creek, West Rocky Prairie	35	Primarily grass-dominated, seasonally wet meadows found in the prairie-oak landscapes of western Oregon and Washington. This system is

Ecological System of Concern	Units	Acres	Description
			extremely rare and nearly extirpated from Washington. They are associated with permeable glacial outwash and thus are restrictive to swales and riparian areas where surface topography intersects local ground water tables.

Habitat connectivity

The Scatter Creek Wildlife Area is comprised of relatively small, dispersed, and distinct units. Most Species of Greatest Conservation Need (SGCN) verified in these units are small with limited mobility. These include several prairie-associated butterflies along with wetland (e.g., Oregon spotted frog) and prairie obligate (e.g., Mazama pocket gopher) vertebrates. These species do not move far, but still require connected habitat for dispersal and genetic interchange with neighboring populations. The fragmentation of habitat, even at fine scale, reduces the chance that a species population on the wildlife area will survive.

A primary cause of habitat fragmentation on the Scatter Creek Wildlife Area is residential and commercial development, as well as transportation infrastructure. A local group is developing a connectivity analysis of western Washington that will inform projects in and around the Scatter Creek Wildlife Area. WDFW will work with local conservation partners to identify and map potential habitat linkages on and around the wildlife area, as well as areas for improving connectivity through habitat enhancements and restoration. This project includes a model of western gray squirrel. Its purpose is to inform and guide the conservation of this species as well as other at-risk oak-prairie specialists. It should be used as a resource to assess the wildlife area for establishing new populations of western gray squirrel.

For more information about the Coastal Washington Connectivity Analyses: (https://waconnected.org/coastal-washington-analysis/).

Species management

Overview

The Wildlife Area Management Planning Framework describes how species are classified – including species listed at the state or federal level as threatened or endangered, state sensitive and candidates, and other species of conservation concern, including WDFW's Species of Greatest Conservation Need (SGCN). SGCN species are described in the 2015 State Wildlife Action Plan (https://wdfw.wa.gov/species-habitats/at-risk/swap).

The Scatter Creek Wildlife Area supports a wide variety of game and non-game species. Common game species found on the wildlife area include mammals such as black-tailed deer, elk, beaver, coyotes, eastern gray squirrels, rabbits, bobcats, cougars, and black bears. Common gamebirds found at the wildlife area include a variety of waterfowl including mallards, buffleheads, and Canada goose. The diverse ecosystems of the wildlife area are also home to an array of non-game species including birds such as woodpeckers, songbirds, migratory birds, and swans; herptiles like the northwestern salamander and northwestern garter snake; and common butterflies like the Puget blue.

Table 9 describes the state and federal conservation status for species that may occur on the Scatter Creek Wildlife Area. The Scatter Creek Wildlife Area is also home to the federally endangered Taylor's checkerspot, and federally listed threatened species include: Mazama pocket gopher, Oregon spotted frog, bull trout, golden paintbrush, and water howellia.

Table 9. State and federal conservation status, SGCN inclusion, WDFW Priority Habitats and Species (PHS) criteria and priority areas for species that may occur on the Scatter Creek Wildlife Area

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
Birds			
Bald eagle	*Haliaetus leucocephalus*	SGCN	All
Band-tailed pigeon	*Columba fasciata*	SGCN, PHS	All
Barrow's goldeneye	*Bucephala islandica*	SGCN	Unknown
Cavity-nesting ducks: Wood Duck, Barrow's Goldeneye, Common Goldeneye, Bufflehead, Hooded Merganser		PHS	All, except Glacial Heritage
Cinnamon teal	*Spatula cyanoptera*	SGCN	All, except Glacial Heritage
Common loon	*Gavia immer*	SS, SGCN, PHS	Skookumchuck
Dusky Canada goose	*Branta canadensis occidentalis*	SGCN	Davis Creek
Golden eagle	*Aquila chrysaetos*	SC, SGCN, PHS	All

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
Great blue heron	*Ardea herodias*	PHS	Scatter Creek, Black River, Skookumchuck, West Rocky Prairie, Davis Creek
Harlequin duck	*Histrionicus histroinicus*	SGCN, PHS	Black River, Skookumchuck
Oregon vesper sparrow	*Pooecetes gramineus affinis*	SC, SGCN, PHS	Scatter Creek, West Rocky Prairie, Glacial Heritage, Davis Creek
Peregrine falcon	*Falco peregrinus*	SGCN	Skookumchuck, Davis Creek
Pileated woodpecker	*Dryocopus pileatus*	SC, PHS	Scatter Creek, West Rocky Prairie, Skookumchuck
Purple martin	*Progne subis*	SGCN	Scatter Creek, Black River, Skookumchuck, West Rocky Prairie, Glacial Heritage
Ring-necked pheasant	*Phasianus colchicus*	PHS	Scatter Creek, Skookumchuck
Short-eared owl	*Asio flammeus*	SGCN	Scatter Creek, West Rocky Prairie, Skoomkumchuck, Glacial Heritage
Slender-billed white-breasted nuthatch	*Sitta carolinensis aculeata*	SC, SGCN, PHS	Scatter Creek, West Rocky Prairie
Sooty grouse	*Dendragapus fuliginosus*	PHS	Unknown
Streaked horned lark	*Eremophila alpestris strigata*	FT, SE, SGCN, PHS	Scatter Creek, West Rocky, Glacial Heritage
Trumpeter swan	*Cygnus buccinator*	PHS	Davis Creek
Vaux's swift	*Chaetura vauxi*	SC, PHS	Scatter Creek, Glacial Heritage, Davis Creek
Waterfowl concentrations		PHS	All, except Glacial Heritage
Western bluebird	*Sialia mexicana*	SGCN	Scatter Creek, West Rocky Prairie, Glacial Heritage, Skookumchuck
Western screech owl	*Megascops kennicottii*	SGCN	All
Eastern wild turkey	*Meleagris gallopavo silvestris*	PHS	Black River, Skookumchuck
Nonbreeding concentrations of Grebes		PHS	Davis Creek
Nonbreeding concentrations of Bufflehead		PHS	Davis Creek, Skookumchuck
Mammals			
Columbian black-tailed deer	*Odocoileus hemionus columbianus*	PHS	All
Elk	*Cervus elaphus*	PHS	All, except Black River
Hoary bat	*Lasiurus cinereus*	SGCN	All

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
Mazama (western) pocket gopher	*Thomomys mazama*	FT, ST, SGCN, PHS	Scatter Creek, West Rocky Prairie
Roosting Concentrations of: Big-brown Bat, Myotis bats, Pallid Bat		PHS	All
Townsend's big-eared bat	*Corynorhinus townsendii*	SC, SGCN, PHS	All minus Glacial Heritage
Western gray squirrel	*Sciurus griseus*	ST, SGCN, PHS	Historic occurrence – Scatter Creek
Western spotted skunk	*Spilogale gracilis*	SGCN	Scatter Creek, West Rocky Prairie, Skookumchuck, Davis Creek
Reptiles			
Western pond turtle	*Actinemys marmorata*	SE, SGCN, PHS	Historic occurrence - All
Amphibians			
Cascade torrent salamander	*Rhyacotriton cascadae*	SC, SGCN, PHS	Skookumchuck
Cope's giant salamander	Diacamptodon copei	SGCN	Skookumchuck
Oregon spotted frog	*Rana pretiosa*	FT, SE, SGCN, PHS	West Rocky Prairie, Black River
Van Dyke's salamander	*Plethodon vandykei*	SC, SGCN, PHS	Skookumchuck
Fishes			
Bull Trout/Dolly varden	*Salvelinus confluentus/S. malma*	FT, SC, SGCN, PHS	Davis Creek
Coho salmon	*Onchorhynchus kisutch*	PHS	Scatter Creek, Skookumchuck, Davis Creek, Black River, West Rocky Prairie
Fall chinook	*Onchorhynchus tsawytcha*	SC, SGCN, PHS	Scatter Creek, Skookumchuck, Davis Creek, Black River
Fall chum	*Onchorhynchus keta*	SC, PHS	Davis Creek
Olympic mudminnow	*Novumbra hubbsi*	SS, SGCN, PHS	Scatter Creek, West Rocky Prairie, Davis Creek, Black River
Pacific lamprey	*Lampetra tridentata*	SGCN, PHS	Skookumchuck, Black River
Rainbow trout	*Onchorhynchus mykiss*	PHS	Scatter Creek, Skookumchuck, Davis Creek, West Rocky Prairie, Black River
Resident coastal cutthroat trout	*Onchorhynchus clarki clarki*	PHS	Scatter Creek, Skookumchuck, Black River, Davis Creek, West Rocky Prairie
River lamprey	*Lampetra ayresii*	SC, SGCN, PHS	Davis Creek
Spring chinook	*Onchorhynchus tsawytcha*	SC, SGCN, PHS	Davis Creek, Black River
Winter steelhead	*Onchorhynchus mykiss*	SC, SGCN, PHS	Scatter Creek, Skookumchuck, Davis Creek, Black River, West Rocky Prairie
Invertebrates			
Hoary elfin	*Callophrys polios*	SGCN	Scatter Creek

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
Mardon skipper	*Polites mardon*	SE, SGCN, PHS	Scatter Creek, West Rocky Prairie, Glacial Heritage
Oregon branded skipper	*Hesperia colorado*	SGCN	Scatter Creek, West Rocky Prairie
Pacific clubtail	*Gomphus kurilis*	SC, SGCN, PHS	Black River
Poplar Oregonian	*Cryptomastix devia*	SC, SGCN, PHS	
Propertius duskywing	*Erynnis propertius*	SGCN	Scatter Creek, West Rocky Prairie, Davis Creek
Puget blue	*Icaricia icarioides blackmorei*	SC, SGCN, PHS	Scatter Creek, West Rocky Prairie, Glacial Heritage
Puget Oregonian	*Cryptomastix devia*	SGCN	
Puget Sound fritillary	*Speyeria cybele pugetensis*	SGCN	Scatter Creek, West Rocky Prairie, Glacial Heritage
Sonora skipper	*Polites sonora siris*	SGCN	Scatter Creek, West Rocky Prairie
Suckley cuckoo bumblebee	*Bombus suckleyi*	SGCN	All
Taylor's checkerspot	*Euphydryas editha taylori*	FE, SE, SGCN, PHS	Scatter Creek, West Rocky Prairie, Glacial Heritage
Valley silverspot	*Speyeria zerene bremnerii*	SC, SGCN, PHS	Scatter Creek, West Rocky Prairie, Glacial Heritage
Western bumblebee	*Bombus occidentalis*	SGCN	All
Western floater	*Anodonta kennerlyi*	SGCN	Scatter Creek
Western pearlshell	*Margaritifera falcata*	SGCN	Skookumchuck, Davis Creek, Black River
Western ridged mussel	*Gonidea angulata*	SGCN	Davis Creek
Plants			
California compassplant	*Wyethia angustifolia*	ST, SSC	Scatter Creek
Dense sedge	*Carex densa*	ST, SSC	West Rocky Prairie
Golden paintbrush	*Castilleja levisecta*	FT, SSC	Scatter Creek, West Rocky Prairie, Glacial Heritage
Hall's aster	*Aster hallii*	ST, SSC	Scatter Creek
Nuttall's quillwort	*Isöetes nuttallii*	SS, SSC	Scatter Creek, West Rocky Prairie
Rose checker-mallow	*Sidalcea virgata var. malviflora*	SE, SSC	Scatter Creek
Small-flowered trillium	*Trillium parviflorum*	SS, SSC	Scatter Creek, West Rocky Prairie
Scouler's catchfly	*Silene scouleri ssp. scouleri*	SS, SSC	Scatter Creek, West Rocky Prairie, Glacial Heritage

Common Name	Scientific Name	Federal/State Status/SGCN/PHS	Wildlife Area Unit
True babystars	*Leptosiphon minimus (Linanthus bicolor)*	SS, SSC	Scatter Creek, West Rocky Prairie
Texas toadflax	*Nuttallanthus texanus (Linaria canadensis var texana)*	ST, SSC	Scatter Creek, West Rocky Prairie
Water howellia	*Howellia aquitilis*	FT, ST, SSC	West Rocky Prairie
White-top aster	*Aster curtus*	SSC	Scatter Creek

Abbreviations:
State endangered (SE), State threatened (ST), State Sensitive (SS), State Candidate for listing (SC), Federal endangered (FE), Federal Threatened (FT), Federal candidate (FC), Species of Greatest Conservation Need (SGCN); DNR Natural Heritage – Species of Special Concern (SSC).

Game species overview and management

Game species found on the Scatter Creek Wildlife Area include mammals such as black-tailed deer, elk, beaver, coyotes, eastern gray squirrels, rabbits, bobcats, cougars, and black bears. Gamebirds include band-tailed pigeons, pheasants, doves, turkeys (Skookumchuck unit only), and a variety of waterfowl species including wood duck and Canada goose.

The Game Management Units (GMUs) associated with the Scatter Creek Wildlife Area include:

- GMU 660 (Minot): Davis Creek Unit
- GMU 663 (Capitol Peak): Black River Unit, Glacial Heritage Unit
- GMU 666 (Deschutes): Scatter Creek Unit, West Rocky Prairie Unit
- GMU 667 (Skookumchuck): Skookumchuck Unit

Black-tailed deer

Black-tailed deer (*Odocoileus hemionus columbianus*) range throughout western Washington (WDFW 2016, Rue, 1997) and are potentially found on all units of the Scatter Creek Wildlife Area. Forests and shrublands are the most significant habitat type supporting black-tail populations (Nelson, et al. 2008).

Black-tailed deer are a relatively small ruminant with adult females and males weighing approximately 125 and 175 pounds respectively (Brown, 1961). They require a high-quality diet and select from a large variety of vegetation to meet their nutritional needs. Their preference includes browsing on the leaves, buds and twigs of shrubs and deciduous trees as well as grazing on grasses and flowering plants (forbs) (Nelson, et. al. 2008, Rue, 1997 and Brown, 1961). Additional foods include the buds of conifer trees, mushrooms, acorns, berries, fruit, sedges, and various agricultural crops. The food resources favored by black-tailed deer are most abundant in early seral habitats such as those recently impacted by fire, timber harvest, windfall, mechanical treatments, and forest disease outbreaks. Despite the abundance of food produced following disturbances,

black-tailed deer also inhabit older forest stands where forest complexity, especially breaks in the forest canopy, allow sunlight to reach the forest floor and produce forage.

Black-tailed deer home ranges are typified by their small size. Home range size is often listed as less than one square mile. Rice found that some black-tailed deer had limited home range sizes that averaged a meager 0.135 square miles (Rice, 2012). Black-tailed deer in western Washington are occasionally migratory (Rice, 2012). The black-tailed deer that inhabit the various units of the Scatter Creek Wildlife Area are commonly year-round residents. They often stay near the unit boundaries at the interface of timbered and more open habitats. Black-tailed deer in western Washington are predated on by cougars, wolves, black bears, bobcats, and coyotes (WDFW 2016). Wolves are currently absent from most western Washington habitats and apparently absent from all the Scatter Creek Wildlife Area units (WDFW 2019). However, recent reports of wolves in Lewis County near the Skookumchuck are being investigated. Cougars are the most significant natural predator on adult deer in western Washington when present. Black bear, bobcats, and coyotes prey almost exclusively on fawns. Black-tailed deer mortality varies by location and the gender and age-class of the animal. Fawn survival is primarily impacted by natural factors such as predators, and malnutrition. Adult female deer may succumb to hunters, predation, malnutrition, vehicle collision, disease, or other factors. Adult males are primarily taken through hunter harvest except in urban/suburban areas where road collision may be more common (Bender, L.C., et al. 2004).

Black-tailed buck. Photo by Alan L. Bauer

Black-tailed deer inhabiting the units of the Scatter Creek Wildlife Area are included in two different deer management zones by WDFW. Black-tail deer found west of Interstate 5 are in the Willapa Hills Black-tail Deer Management Zone, while those east of Interstate 5 are in the South Cascade Mountain Black-tail Deer Management Zone. See the annual Game Status and Trend Report at: https://wdfw.wa.gov/hunting/management/plans

The Status and Trends reports discuss population status, harvest, and habitat trends within each of these Management Zones. The units of the Scatter Creek Wildlife Area lie within four different Game Management Units (GMU) which are smaller subsets of the Deer Management Zones. Each GMU may offer slightly different season structures (specifically during muzzleloader season) to prospective deer hunters. The total acreage managed within the various wildlife area units is very small relative to the total size of these GMU's. Consequently, deer hunting opportunities within the wildlife area may not be representative of the GMU. See the annual Big Game Hunting Seasons and Regulations Pamphlet for current season structure (https://wdfw.wa.gov/hunting/regulations/). Harvest data pertaining to each of the GMUs may also be found on the WDFW website: (https://wdfw.wa.gov/hunting/management/game-harvest).

Elk

Elk inhabiting units of the Scatter Creek Wildlife Area located west of Interstate 5 are associated with the Willapa Hills Elk Herd (WDFW 2014), while those located east of Interstate 5 are associated with the South Rainier Elk Herd (Huang et al. 2002). See the Department's annual Game Status and Trend Reports (https://wdfw.wa.gov/hunting/) for more information related to population status, harvest, habitat trends, and other management issues within each of these elk herd areas. Based on preliminary genetic work conducted by WDFW, Roosevelt elk on the west slope of the Cascade Crest have interbred with Rocky Mountain elk.

Elk (*Cervus elaphus*) range throughout large portions of western Washington state (WDFW 2016, Toweill and Thomas, 2002) and inhabit a variety of habitat types in western Washington including forests, wetlands, alpine areas, shrublands, and agricultural areas. Consequently, elk are potentially found on all units of the Scatter Creek Wildlife Area. See the Department's Game Management Plan 2015-2021 for more information on the elk herds of Washington State (https://wdfw.wa.gov/sites/default/files/publications/01676/wdfw01676.pdf).

The Davis Creek, Skookumchuck, and West Rocky Prairie units provide the most significant elk habitat among the lands making up the Scatter Creek Wildlife Area. Only the Skookumchuck Unit, with its connection to Weyerhauser's Vail Tree Farm and the Centralia Mine, collectively contains enough elk habitat to support resident elk year-round. Elk frequently spend time in the Davis Creek and West Rocky Prairie units but, they do not reside there consistently. Elk are preyed upon by cougars, wolves, black bears, and grizzly bears (WDFW 2016). While elk are preyed upon by cougars, wolves, black bears, and grizzly bears across their range (WDFW 2016) wolves and grizzly bears are currently absent from Scatter Creek Wildlife area. Cougars are a frequent predator of adult elk in Washington. Adult male cougars tend to kill adult elk more frequently than adult females (White et al., 2011) in locations where deer are also an available prey item. Both cougars and black bears will predate elk calves though, bear predation is mostly limited to the first 2-3 weeks after the calves are born. After that time, elk calves can flee and evade predatory bears.

Elk adult females weigh approximately 600 pounds and males ranging from 700-800 pounds (Thomas and Toweill 1982). Elk can digest a large variety of plant types to meet their nutritional needs, preferring to graze on grasses and flowering plants (forbs) as well as browsing on the leaves, buds, and twigs of shrubs and deciduous trees (Toweill and Thomas, 2002). Food selection changes along with seasonal differences in plant phenology and is a combined function of plant availability and elk preference (Thomas and Toweill 1982). The food resources favored by elk are most abundant within early seral habitats including those recently affected by fire, timber harvest, windfall, mechanical treatments, and forest disease outbreaks. Elk habitat models developed by the U.S. Forest Service Pacific Northwest Research Station identify the best elk habitat as having open forest canopy, relatively flat topography and relatively short distances to cover (U.S. Forest Service 2018).

Small game and upland birds

Upland gamebirds that occur on the Scatter Creek Wildlife Area include band-tailed pigeons, pheasant, doves, and turkeys. These game species benefit from management actions for priority species on the wildlife area. The WDFW Game Management Plan, available online at

(https://wdfw.wa.gov/sites/default/files/publications/01676/wdfw01676.pdf) provides more detailed information regarding WDFW's statewide strategy for the management of these species.

Pheasant

Ring-necked pheasant. Photo by WDFW staff.

The ring-necked pheasant (*Phasianus colchicus*) is one of Washington's most popular upland game birds and has vast recreational and economic value. Pheasants were introduced north into western Washington in 1883 with great success. With a strong natural reproduction foothold, the WDFW started rearing and releasing captive-raised birds in 1925 to further increase abundance. Over time, the pheasant population has risen and fallen with the peak in the late 1970's when more than 500,000 pheasants were harvested. Since that time, pheasant harvest has steadily declined, believed to be due primarily to habitat changes and modern farming practices. This trend has led to more intensive habitat management and release programs.

Due to its wet climate and lack of grain farming, western Washington does not have a self-sustaining population of pheasants. The WDFW's primary management goal for pheasants in the wildlife area is to provide hunting opportunity through the Western Washington Pheasant Release Program.

The western Washington pheasant hunting season runs 10-11 weeks during the fall months when pheasants are distributed several times a week to hunting areas located across western Washington. The Scatter Creek Wildlife Area has two pheasant release sites at the Scatter Creek and Skookumchuck units. The Scatter Creek and Skookumchuck units provide 17.5 percent of the program's participation according to licensing data from 2018. The popularity is most likely due to the proximity to large population centers in the South Puget Sound Region. In addition, the Davis Creek Unit has been the location for an Upland Bird Hunting Clinic and mentored pheasant hunt for the past several years. The WDFW Hunter Education Division manages this clinic program to provide new hunters with the basics of ethics, strategy, biology, and safety for hunting upland birds in the state of Washington. For more information about the Upland Bird Hunting Clinics see this link: (https://wdfw.wa.gov/hunting/requirements).

Waterfowl

Eighteen different species of waterfowl are found within the Scatter Creek Wildlife Area during either the breeding season or winter migration (see Table 10). Davis Creek is the only unit where habitat is specifically managed to benefit wintering waterfowl. An agricultural lease at Davis Creek maintains crops or grass at low height during the wintering months when high waters in the Chehalis River fills the swales and creates sheet water areas attractive to wintering waterfowl.

Canada geese are present but are not a management focus. The Davis Creek Unit averages 3-8 hunters per day on a weekend and opening days, and mid-week averages 1-5 hunters per day. The Scatter Creek Unit hosts 1-5 duck hunters per day. The West Rocky Prairie Unit has very limited waterfowl hunting. The Skookumchuck Unit provides waterfowl hunting but the daily number of hunters is unknown. Future acquisitions with wetlands and/or open water will be assessed and managed for waterfowl and recreational hunting where appropriate.

Wood duck boxes have been placed at the Davis and Scatter Creek units to benefit breeding birds. Placement and monitoring are performed by the Washington Waterfowl Association volunteers.

Table 10. Duck and geese species using the wildlife area during the breeding season and winter migration

Species	Breeding Season	Winter Migration
Mallard	X	X
Gadwall	X	X
American wigeon	X	
American green-winged teal	X	X
Cinnamon teal	X	
Common merganser	X	X
Blue-winged teal	X	X
Northern shoveler	X	X
Scaup		X
Ring-necked duck	X	X
Bufflehead	X	X
Common merganser	X	
Hooded merganser	X	X
Pintail		X
Wood duck	X	
Coot	X	X
Canada goose	X	X
Goldeneye		X
White fronted goose		X

Davis Creek Unit

Large portions of the Davis Creek Unit flood periodically during winter high water events. The property is actively farmed for hay and other crops through an agricultural lease to benefit waterfowl. Other popular activities include hunting for waterfowl, deer, elk, and doves. This is an excellent birding area and is recognized by the Puget Lowlands Riparian Bird Conservation Area as a priority habitat. There are several options for waterfowl hunting at this unit including field swale and sheet water habitats, Chehalis River backchannels, and Davis Creek beaver dam associated wetlands. The species of ducks that may be found during hunting seasons include:

Dabbling Ducks: Moderate numbers of mallards, pintail, wigeon and teal. Wood ducks may be found early in the season.

Diving Ducks: Buffleheads and Ring-necked ducks

Geese: Canada geese may occur throughout the season.

Scatter Creek

Limited numbers of waterfowl and duck hunting occurs at the north and south tracts of Scatter Creek along the Scatter Creek channel and wetlands. Ducks are harvested during waterfowl season mostly from jump shooting. The species of ducks that may be found include:

Dabbling Ducks: Low numbers of mallards, teal, and wigeon. Occasionally wood ducks early in the season.

Diving Ducks: Occasional common goldeneyes, buffleheads, and hooded mergansers.

Geese: Geese are limited in this unit.

West Rocky Prairie Unit

Wetlands in this area are primarily managed to benefit Oregon spotted frogs which benefit waterfowl incidentally. Invasive Reed canary grass is mowed and when flooded, provides habitat for waterfowl. Wintering waterfowl that can be found include:

Dabbling Ducks**:** Low numbers of mallards and teal. Wood ducks occur in wooded wetlands.

Diving Ducks: Low numbers of buffleheads, ring-necked ducks, hooded and common mergansers

Geese: Geese are limited in this unit.

Black River Unit

This unit provides access to the Black River which is consistently used by waterfowl. Flooded sedge habitat on site is also occasionally used. Waterfowl hunters can either hunt waterfowl from the shorelines or launch near the water access area to access additional waterfowl habitat. Wintering waterfowl that can be found include:

Dabbling Ducks: Low numbers of mallards and wood ducks in the marsh.

Diving Ducks: Low numbers of hooded and common mergansers

Geese: Geese are very limited in this unit.

Skookumchuck Unit

This unit provides waterfowl hunting on the Skookumchuck River, flooded agricultural areas connected to the river, and surrounding wetlands. Wintering waterfowl that can be found include:

Dabbling Ducks: Moderate numbers of mallards, pintail, wigeon, and teal. Wood ducks occur in the wooded wetlands.

Diving Ducks: Buffleheads, ring-necked ducks, hooded, and common mergansers occur.

Geese: Canada geese may occur throughout the season particularly on the flooded agricultural fields.

Gadwall. Photo by Alan L. Bauer.

Diversity species overview and management

The Scatter Creek Wildlife Area supports a variety of diversity species (species not hunted). Diversity species include Species of Greatest Conservation Need (SGCN), Priority Habitat and Species (PHS), and federally and state-listed species. Highlighted in this section, along with associated recovery actions, are Mazama pocket gopher, Oregon spotted frog, Oregon vesper sparrow, western gray squirrel, and several prairie or oak woodland obligate butterflies.

Mazama pocket gopher. Photo by Gail Olson, WDFW.

Mazama pocket gopher

The Mazama pocket gopher is one of two pocket gopher species in Washington. The northern pocket gopher (*Thomomys talpoides*) is widely distributed in central and eastern Washington, while the Mazama pocket gopher (*Thomomys mazama*) occurs only in Clallam, Mason, Thurston, and Pierce counties. All Mazama pocket gophers were classified as a state threatened in Washington in 2007. Subsequently, U.S. Fish and Wildlife Service (USFWS) listed Mazama pocket gophers in Thurston and Pierce counties as a threatened species.

The Mazama pocket gopher is a listed species primarily because of its declining populations due to habitat loss. In Washington, Mazama pocket gophers are mainly found on glacial outwash prairies. Urban development, intensive agriculture, gravel mining, and invasion of woody plants (especially fir trees and Scotch broom), along with other land uses have wiped out more the 90 percent of the region's prairie.

Mazama pocket gophers (also known as western pocket gophers) are small subterranean rodents. On the wildlife area, they occur on the Scatter Creek and West Rocky Prairie units. They are distinguished from other field rodents such as mice and voles by their fur-lined cheek pouches, or "pockets" (hence their common name), and their especially stout teeth and claws used for digging underground burrow systems. These burrows are deep chambers used for nesting, food storage, and latrines, as well as relatively shallow tunnels used for foraging. Pocket gophers feed on roots but may also pull whole plants into their tunnels to eat or store. Occasionally, they make very brief foraging trips above ground, grabbing, and stuffing food quickly into their cheek pouches before returning to their burrows.

Prior to becoming a state listed species, official records of Mazama pocket gophers on the Scatter Creek Wildlife Area were rare, with only a few records of mounds on the south unit in the mid-1990. The removal and control invasive woody plants since then has improved gopher habitat. By 2008, mounds were more widely distributed on the north and south tracts of the Scatter Creek Unit. Gophers are still abundant to this day.

Several surveys before 2009 on the West Rocky Prairie Unit found no evidence of pocket gophers. A translocation since then successfully established a small gopher population. Pocket gophers are now more widespread with more proactive prairie habitat management on West Rocky Prairie. Continued management on Scatter Creek is important in maintaining viable pocket gopher populations, which is key to pocket gopher recovery in Thurston County.

Pocket gophers are "ecosystem engineers" because of their impact on the landscape by tunneling and below ground feeding. They play an important role in prairie ecosystems by mixing soils and influencing the soil chemical and structure. This slows woody plant encroachment, stimulates plant growth, and increases plant diversity. There is some evidence that pocket gophers may even be responsible for creating prairie soils.

Pocket gophers are so rarely seen above ground that most people will never see a live animal. Thus, their presence is most often noticed by the dirt mounds they leave on the surface when digging their tunnels. While mounds can help to detect pocket gopher presence, they are often confused with the mounds of moles, who are more common. Therefore, it takes training and practice to reliably distinguish a mole mound from a gopher mound.

Pocket gophers are an important part of the animal community. They are prey for several animals, including hawks, owls, weasels, snakes, and coyotes, and their burrow systems provide shelter for prairie-obligate amphibians and insects. They are intolerant of mammalian intruders, such as mice and voles, and even other pocket gophers. Thus, they do not share their burrow system except during the breeding season and while females are raising young.

They have one litter per year, averaging five pups per litter. Most pocket gophers do not live more than a year, but those that do may survive for > 5 years. Pocket gophers are active throughout the day and over the entire year. They do not hibernate but may be less active in winter. Despite being active year-round, pocket gopher mounds are most evident in the late summer and fall when young gophers are dispersing and populations are generally are at their highest. Therefore, this is the best time of year to look for pocket gophers.

Oregon spotted frog. Photo by Julie Tyson, WDFW.

Oregon Spotted Frog

The Oregon spotted frog (*Rana pretiosa*) is one of the most at-risk amphibians in western North America. Its population has declined due to various impacts and landscape alterations. The Oregon spotted frog was listed as state endangered in Washington in 1997 and as threatened under the Endangered Species Act in 2014 (USFWS 2014).

Oregon spotted frogs in Washington are only known from a few watersheds in six counties (Whatcom, Skagit, Pierce, Thurston, Skamania, and Klickitat). In Thurston County, they are known from only 13 subpopulations in the Black River drainage (Lisa Hallock pers. com). The West Rocky Prairie Unit is the furthest east of these subpopulations. Because of the nearby proximity of these subpopulations to the Black River Unit, we recommend surveys of this unit in that area. If Oregon spotted frogs are observed, then we need to improve and maintain suitable habitat on the Black River Unit (Hallock 2013).

Retaining Oregon spotted frog habitat requires limiting the spread of Reed canary grass and woody vegetation (e.g., willows, hardhack) as well as maintaining hydrological connectivity and sufficient

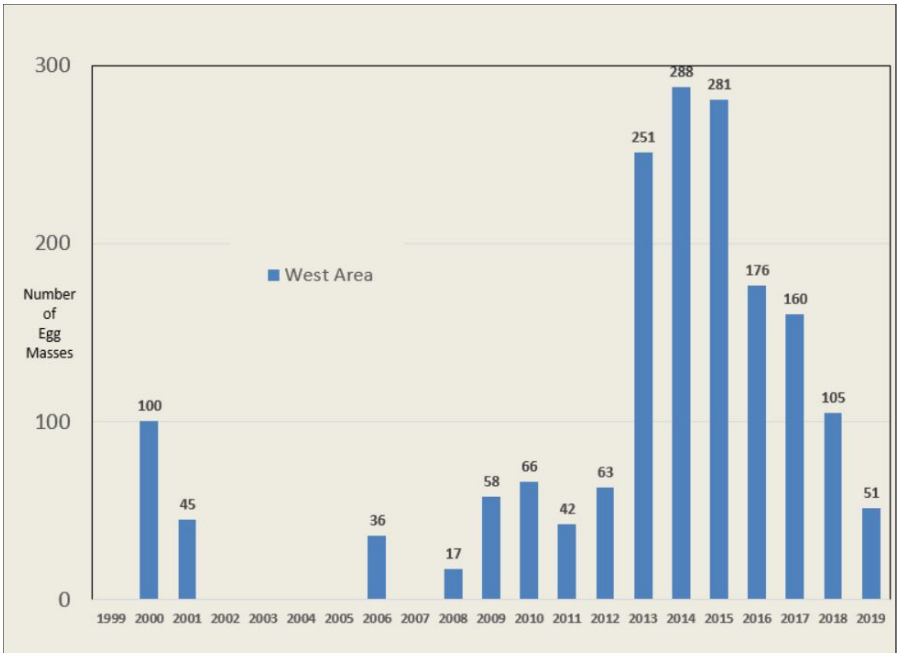
areas of perennial water. All subpopulations on the wildlife area face each of these challenges to a degree.

Oregon spotted frogs are entirely aquatic, and their aquatic needs often occupy palustrine wetlands connected to rivers and streams (Hallock 2013). Perennial streams and associated intermittent tributaries provide aquatic connectivity among their breeding (seasonally flooded marshes with shallow sun-exposed edges), active summer (perennial typically >9.88 acres) and overwintering habitats (Hallock 2013).

Four breeding areas have been verified in the West Rocky Prairie Unit. Each of these areas are genetically linked (genetic steppingstones) (Tyson, pers comm). Adult frogs move seasonally between these four breeding areas (Waddell 2015). West Rocky Prairie also shares genetics with other sites in the Black River Drainage, highlighting this subpopulation's importance to the overall health and diversity of other subpopulations in the drainage (Goldberg 2015).

Population estimates on the West Rocky Prairie Unit are generated through counts of egg masses during the breeding season. This monitoring of the unit began in 1999 and the whole unit has regularly been monitored for egg masses from 2009 to 2019 (Figure 11, Julie Tyson pers. comm.).

Figure 11: Oregon spotted frog egg mass counts in the "West Area" of West Rocky Prairie Unit - Comparable surveys done from 2009-2019



Oregon Vesper Sparrow

The Oregon vesper sparrow (*Pooecetes gramineus affinus*) is the rarest of four recognized subspecies. Its breeding range extends from southwestern British Columbia through western Washington and Oregon, and into northwestern California (Campbell et al. 2001, Jones and Cornely 2002, Altman 2003). It is a state candidate species and Washington's State Wildlife Action Plan recognizes it as a Species of Greatest Conservation Need (SGCN). This migratory subspecies overwinters from central California west of the Sierra Nevada to northwestern Baja California,

Mexico. See https://wdfw.wa.gov/species-habitats/species/pooecetes-gramineus-affinis for more information about this species.

In Washington, Oregon vesper sparrows occur in lowlands west of the Cascades (Jewett et al. 1953, Smith et al. 1997, Mlodinow 2005). Although nesting records are few, the historical breeding range is believed to extend from northern Skagit County, the San Juan Islands, and Clallam County south through southern Puget Sound, including Thurston County. Based on records from 1992 to the present, Washington's current breeding population is now limited almost entirely to remnant prairies in Thurston and Pierce counties, and grasslands on San Juan Island, though small numbers may still breed in eastern Clallam County and in Mason County (Smith et al. 1997, Mlodinow 2005). In the past 20 years, this species has been documented at three units on the Scatter Creek Wildlife Area; Scatter Creek, West Rocky Prairie, and Glacial Heritage.

The Washington population is threatened with extirpation (Mlodinow 2005) and is estimated at 250-300 birds in the Puget Lowlands and 50-100 birds on islands along the lower Columbia River (Altman 2011). Current numbers in Thurston County are unknown, but appear quite small at Glacial Heritage, Mima Mounds, Scatter Creek, and West Rocky Prairie (D. Canning, pers. comm).

Oregon vesper sparrow breeding habitats in Washington include herbaceous-dominated, open upland landscapes such as native and non-native grasslands and savannahs, pastures, airfields, Christmas tree farms, and vegetated dredged-material sites. Within these habitat types, sparrows prefer moderately short and structurally diverse grass and forb cover with patchy bare ground and sparsely vegetated areas, low to moderate shrub or tall forb cover, and low tree cover. Oregon vesper sparrows typically avoid wet areas or sites with tall, dense herbaceous vegetation (Altman, et al. 2019).

Oregon vesper sparrow. Photo by Bob Altman.

Western Gray Squirrel

The range of the western gray squirrel (*Sciurus griseus*) has contracted significantly, leaving three isolated populations in Washington. Two of the three Washington population are east of the Cascades, one of which covers an area in Chelan and Okanogan counties. The other population

covers an area in Yakima and Klickitat counties. West of the Cascades is the smallest of the three populations, which occurs in Pierce and Thurston counties.

Western gray squirrels were historically more widely distributed in the state but hit a decline by the 1940s and 1950s (Linders and Stinson 2007). Habitat loss, disease, and local hunting pressure combined to reduce their numbers and distribution. Habitat loss and degradation, together with their small and isolated populations are all significant factors affecting populations today. The western gray squirrel is a state threatened species and is designated an SGCN in Washington.

Historically, western gray squirrels were distributed across the Puget Lowlands in suitable habitat. The species was thought of as uncommon in the southern Puget Trough during late 1800s due to hunting but increased substantially after 1910 (probably because of legal protection and increased forest availability). In the early 1920s Bowles (1921) described western gray squirrels as "extremely numerous" in the South Puget Sound Region. Records show western gray squirrels remained widespread in Pierce and Thurston counties into the 1970s (Barnum 1975; WDFW WSDM database). Currently, the western Washington population is believed to be restricted to Joint Base Lewis-McChord (JBLM), where extensive oak woodlands, mature Douglas fir stands, and the last remaining stands of ponderosa pine in South Puget Sound provide ample suitable habitat.

To expand the area occupied on JBLM and to increase genetic diversity WDFW augmented this small population from 2007 to 2012 with 93 animals from eastern Washington and Oregon (Vander Haegen and Orth 2011; Vander Haegen pers comm). Several radio-marked squirrels from these releases ventured off JBLM into rural Thurston County, but no known breeding populations currently exists off-base.

Western gray squirrel. Photo by WDFW staff.

Western gray squirrels are arboreal (living in trees) and are never found far from tree cover. They are ground foragers, as are eastern gray squirrels (*Sciurus carolinensis*) (an introduced species) and the two species compete for food and possibly nest sites where their ranges overlap. Squirrels are diurnal and active most of the day depending on season. During the hottest parts of the summer, squirrel activity declines mid to late afternoon as temperatures rise. They are most active in fall, when foraging and creating food caches. Western gray squirrels are associated with low elevation transitional forests of ponderosa pine, Douglas-fir and Oregon white oak, but also use big-leaf

maple and Oregon ash. Riparian areas they use as foraging habitat and for travel. In general, western gray squirrels are secretive and avoid disturbed areas or areas close to people but do occasionally habituate to areas with plentiful food resources, such as orchards.

Recovery of western gray squirrels in western Washington will require establishing populations in areas outside of JBLM. Scatter Creek and West Rocky Prairie units are identified as potential core areas in a connectivity analysis conducted by WDFW and funded by the Doris Duke Foundation (Matt Vander Haegen pers comm). Both units contain mature oak stands as well as ash and maple. Each unit also is adjacent to larger forested stands of primarily closed canopy Douglas-fir. The Scatter Creek and West Rocky Prairie units offer the greatest opportunity for supporting local concentrations and for expanding recovery of western gray squirrels.

Habitat loss and degradation is the greatest threat to squirrels in western Washington. The primary causes include land clearing, clearing and thinning of Douglas-fir forest, and the loss and degradation of oak stands in the absence of fire. Active management is necessary to help promote the features characteristic of suitable western gray squirrel habitat. These include forests with larger-sized trees, tree species diversity, mast production, and an open understory. These characteristics provide squirrels with enough food and cover, while reducing the risk of predation. The Scatter Creek and West Rocky Prairie units have the potential for these features along with the core habitat needed to establish and maintain a population on the wildlife area.

Butterflies

More than 45 butterfly species have been documented on South Puget Sound Prairies, the highest butterfly species diversity of any habitat type in western Washington. Native grasslands (prairies) and associated oak woodlands of the South Puget Sound Region support a high diversity of plant species, which in turn support a wide range of butterfly species.

Nine SGCN butterflies occurring in the Scatter Creek Wildlife Area (Table 12) have been identified as Species of Greatest Conservation Need (SGCN). Prairie and oak woodland butterfly SGCN are extirpated from many South Puget Sound Prairies, even ones that are protected and conserved. The populations of some of these species in the wildlife area are low. For some, the wildlife area is the sole population or one of only a handful of extant populations in the South Puget Sound Region.

Habitat loss is a primary threat to their abundance and distribution (New et al. 1995). About 2.5 percent of historic Puget Trough prairie-oak ecosystem remains as of 2000 (Chappell et al. 2001). Changes to vegetation structure and plant species assemblages negatively influence these species (Henry and Schultz 2012, Severns 2008). The historic loss of prairie, coupled with invasive plants, especially tall, non-native grasses, has degraded and eliminated habitat for these butterfly species. This all has led to local extirpations and greatly reduced numbers.

In this section are species accounts on the nine butterflies designated as SGCNs. Each account describes the biology of each species, threats to their persistence, and efforts to conserve them. Table 11 summarizes key life history information, including timing of the adult (or flight) period, host plants (requisite plants which females egg-lay and larvae feed on), and primary nectar plants (sources of adult nutrition). Table 12 summarizes each species range in Washington and the number of populations in the South Puget Sound Region.

Table 11. Key life history attributes for butterfly Species of Greatest Conservation Need occurring on Scatter Creek Wildlife Area

Species	Adult Period	Host Plants	Primary Nectar Plants
Propertius duskywing	April-May	Garry oak (*Quercus garryana*)	Common camas (*Camassia quamash*)[1]
Oregon branded skipper	July-Aug	Long-stolon sedge (*Carex inops*)[1], unknown grass/sedge species	Tansy ragwort (Senecio jacobaea)[1], white-top aster (*Sericocarpus rigidus*)[1]
Mardon skipper	May-June	Roemer's fescue (*Festuca roemeri*)[3]	Early blue violet (*Viola adunca*)[2], common vetch (*Vicia sativa*)[2]
Sonora skipper	June-July	Likely California oatgrass (*Danthonia californica*)[1], Unknown grass/sedge species	Lance selfheal (*Prunella vulgaris lanceolata*)[1]
Hoary elfin	April-May	Kinnikinnick (*Arctostaphylos uva-ursi*)	Kinnikinnick
Puget (Blackmore's) blue	May-June	Sickle-keel lupine (*Lupinus albicaulis*) [2]	Sickle-keel lupine[2]
Puget Sound fritillary	July-Aug	Early blue violet, Prairie violet (*Viola praemorsa*)[1]	Bull thistle (*Cirsium vulgare*), spreading dogbane (*Apocynum androsaemifolium*)[1]
Valley silverspot	July-Aug	Early blue violet	Canada thistle (*Cirsium arvense*)[2],showy fleabane (*Erigeron speciosus*)[2]
Taylor's checkerspot	April-May	English plantain (*Plantago lanceolata*), harsh paintbrush (*Castilleja hispida*)	Puget balsamroot (*Balsamorhiza deltoidea*)[4], nineleaf biscuitroot (*Lomatium triternatum*)[4]

Sources: [1]A. Potter, pers comm. [2] Hays et al. 2000. [3] Henry and Schultz 2012. [4] Linders et al. 2019.

Table 12. Overall range, and estimated number of extant populations in the South Puget Sound region for butterfly Species of Greatest Conservation Need occurring on Scatter Creek Wildlife Area

Species	Overall Range	Estimated number of populations South Puget Sound region
Propertius duskywing	Disjunct: aligned with oak distribution: southwest British Columbia; South Puget Sound region, San Juan Islands, east slope Cascades, Washington; western Oregon, south to northwestern California	3-5
Oregon branded skipper	Disjunct: southeast Vancouver Island, British Columbia; South Puget Sound region, San Juan Islands, Washington	3-5
Mardon skipper	Highly disjunct: South Puget Sound region, southeast Cascades, Washington; southwest Oregon; northwestern California	3

Sonora skipper	Southwest Washington	3-5
Hoary elfin	South Puget Sound region, Washington	10-15
Puget (Blackmore's) blue	Disjunct: southeast Vancouver Island, British Columbia; eastern Olympic Mountains, South Puget Sound region, Washington	7-10
Puget Sound fritillary	Scattered populations: northeast Olympic Mountains, and southwest, Washington; western Oregon	10-15
Valley silverspot	Scattered populations: southeast Vancouver Island, British Columbia; northeast Olympic Mountains, San Juan Islands, southwest Washington. Extirpated from Oregon.	5-10
Taylor's checkerspot	Disjunct: southeast Vancouver Island, British Columbia; northeast Olympic Peninsula, South Puget Sound region, Washington; Willamette Valley, Oregon	2

Hoary elfin

Hoary elfin is a butterfly subspecies restricted to the South Puget Sound region (Table 12) (Pelham 2020). Populations have been documented from prairies in western Pierce County and southern Thurston County, and pine barrens and shrublands in Mason and Kitsap counties. One large, and several small populations persist within Scatter Creek Wildlife Area.

Hoary elfin is the sole prairie-oak butterfly reliant on Kinnikinnick, a woody shrub (Table 11). Adults court, mate, and nectar in or near Kinnikinnick; eggs are laid singly, larvae feed, and pupae (immature form between larva and adult) overwinter on the host plant as well (Pyle 2002). One of the first butterflies to emerge in the spring on South Puget Sound prairies, adults are present between April and May. They often perch motionless or rubbing their hindwings together on Kinnikinnick. The butterfly's deep brown, mauve, and frosty (hoary) wing coloring camouflages them in their host plant. James & Nunnallee (2011) reared hoary elfins in captivity and documented the life cycle and life stages; eggs hatched in 5-9 days, and pupation (life stage exhibiting complete metamorphosis) occurred in protected locations approximately 25-29 days post egg-hatch. Kinnikinnick often occurs near forest edge. In addition to loss of prairie to development and invasive species, forest encroachment particularly threatens hoary elfin and their host plant.

Mardon skipper

Mardon skipper once occurred on many prairies in South Puget Sound (Potter et al. 1999). Their distribution has since contracted and is now restricted to three small populations, including Scatter Creek, Glacial Heritage, and West Rocky Prairie units within the Scatter Creek Wildlife Area. Mardon skipper was consequently listed as State Endangered in 1999.

Mardon skipper. Photo by Rod Gilbert.

Their abundance on the wildlife area has declined significantly over the last decade. Potter and Olson (2012) systematically monitored Mardon skipper on the wildlife area in 2008 and 2009, observing at least 85 during a peak, single-day survey at Scatter Creek Unit north tract, and at least 399 on Scatter Creek Unit south tract. These same units were surveyed in each of the last three years. On these more recent surveys they found far fewer butterflies, even with intensive survey efforts. The highest number of individuals observed was in 2017, with a combined total from all survey visits of 36 individuals on Scatter Creek Unit north tract, and 92 on Scatter Creek south tract. Their numbers have since further declined.

Mardon skippers use open, grass dominated habitat with abundant Roemer's fescue interspersed with early blue violet, and common vetch as nectar sources (Table 12, Hays et al 2000). Adult Mardon skippers prefer short, open-structured, native fescue grasslands, which provide access to nectar plants to deposit their eggs and a requisite thermal environment. In a study of egg-laying habitat selection at the Scatter Creek Wildlife Area, Henry and Schultz (2012) found females selecting Roemer's fescue for laying. Henry (2010) observed Mardon skippers overwintering as dormant larvae in the South Puget Sound Region.

Oregon branded skipper

Oregon branded skipper populations are disjunct and restricted to a handful in the South Puget Sound region, San Juan Islands, and Vancouver Island, British Columbia, Canada (Hinchliff 1996, COSEWIC 2013) (Table 12). In the South Puget Sound region, the butterfly has been extirpated from several sites, and a few small populations remain within Scatter Creek Wildlife Area.

Oregon branded skipper is a subspecies grass-feeding skipper (subfamily Hesperiinae) (Pelham 2020). They complete one life cycle from egg to adult annually. A non-migratory butterfly, they inhabit native grasslands year-round, through all life stages. Oregon branded skipper is a late-summer species; adults are flying, searching for nectar, mating, and egg-laying in late-July and August. On prairies, this period is characterized by extended drought, warm temperatures, and floral nectar scarcity. During a 2013-18 study of nectar sources, 191 butterflies were observed; only a few plant species provided nectar, many were non-native, including tansy ragwort (Table 11). Oregon branded skippers use both wet and dry Willamette Valley Prairie ecological systems in the South Puget Sound region, with wet prairie often provided flowering plants when the same species ceased flowering on nearby dry prairie (Potter 2018). Egg-laying has been observed on Roemer's fescue (Pyle 2002), and in multiple years and sites on long-stolon sedge (Potter 2016). Oregon branded skipper eggs, laid in late-summer, overwinter, hatching in early-spring, and the resulting larvae feed and develop in silken tents self-constructed between the blades of their host plants (Hardy 1954, James and Nunnallee 2011). In addition to loss of native grasslands from development, invasive plants, including non-native grasses have degraded and eliminated habitat for this butterfly on many sites.

Propertius duskywing

Propertius duskywing historically occupied oak woodlands across the South Puget Sound region, on Joint Base Lewis-McChord (Pierce County), and several prairie-oak sites in Thurston and Mason counties (Pyle 1989, Hinchliff 1996). Current distribution in this region is restricted to one sizable and a few small populations within Scatter Creek Wildlife Area.

Propertius duskywing is the sole prairie-oak butterfly directly reliant on Oregon white oak, in which females lay eggs and larvae feed (Table 11). They complete one life cycle from egg to adult annually. A sedentary butterfly, the species inhabits a site year-round through all life stages. Adults feed on floral nectar, especially from common camas, and do not range far from their oak hosts. Female butterflies lay eggs in the tree canopy, where resulting larvae feed and develop, concluding with the creation of an oak leaf hibernation structure which drops to the ground when oaks leaves are shed, typically during the winter. Oak trees and woodlands, and floral nectar sources are habitat features for this butterfly. During a study on two Propertius duskywing occupied sites, the butterfly was not detected in healthy oak trees overgrown with encroaching vegetation, however, they were observed in the trees following removal of overgrowing shrubs and trees (Potter 2016). It's likely oak understory, the micro-habitat where the butterfly occurs from winter to spring is a key habitat feature. Consequently, threats to Propertius duskywing include loss of oak woodland and butterfly-accessible oak trees (oaks not overtopped by conifers or overgrown with other vegetation), and degradation of oak understory.

Puget (Blackmore's) Blue

We know of eleven historical Puget blue records in Pierce and Thurston county prairie as well as two records in shrublands in Mason County (Hinchliff 1996, Potter pers comm.). Recent surveys show these sites no longer support Puget blue. The butterfly does persist on several sites, including three of the Scatter Creek units (Scatter Creek, West Rocky Prairie, Glacial Heritage).

Recent studies have focused on Puget blues in the South Puget Sound Region. One study found this species reliant on an herbaceous perennial called sickle-keel lupine as both a host plant and a primary source of nectar (Hays et al. 2000, Table 12). Another study found them using four native prairie species to gather nectar: sickle-keel lupine, graceful cinquefoil (*Potentilla gracilis*), spring gold (*Lomatium utriculatum*), and western buttercup (*Ranunculus occidentalis*; Dzurisin 2005). As with other species of blues, males search for evaporated puddles, moist soils (a behavior called "puddling"), animal urine, and feces to take in salt (Scott 1986, Ann Potter pers comm).

Puget blues are sedentary butterflies that complete one life cycle annually. They occupy a single site year-round from egg through adult. Females lay eggs individually under the lower leaves of sickle-keel lupine (Hays et al. 2000). These eggs then hatch in five to ten days (James and Nunnallee 2011, Ann Potter pers comm). Early in their larval growth, young caterpillars seek protection in concealed locations at the base of host plants. They then enter a dormant phase (James and Nunnallee 2011, LaBar and Schultz 2012), which lasts from about late-July/early-August until the following spring. Upon breaking dormancy in spring, larvae reinitiate lupine feeding on small, new growth, and continue development, becoming chrysalises in late-April to early-May (LaBar and Schultz 2012). They finally emerge as butterflies 10-14 days later (James and Nunnallee 2011).

Puget Blue. Photo by Rod Gilbert.

Many species of blues engage in mutualistic relationships with ants, known as myrmecophily (Pierce et al. 2002). This typically involves ants tending to and "milking" butterfly larvae. The ants also protect larvae from predators and parasitoids. The ants in return get nutrition in the form of a nectar-like substance (honeydew; Downey 1962, Pierce et al. 2002). Habitat conditions and risks that impact ants, may likely also impact Puget blues due to this symbiotic relationship.

The butterfly's dependence on sickle-keel lupine limits them to sites supporting significant patches of this plant. Bare ground depressions (where water collects and evaporates) is also an important habitat feature for adults during their flight period. Puget blues use prairie habitat high in forb (broad-leafed herbaceous plants) cover. They can persist in habitat moderately degraded by Scotch broom and non-native grasses unlike most other SGCN prairie butterflies (Hays et al. 2000).

Puget Sound fritillary

Puget Sound fritillary occurs in small populations across inland southwestern Washington; its range encompasses all units of the Scatter Creek Wildlife Area. The butterfly has been extirpated from several South Puget Sound prairies, and population sizes for all sites in this region have decreased dramatically over the last decade (Potter 2018). Small populations persist on three units of Scatter Creek Wildlife Area and may occur on additional units.

The Puget Sound fritillary, a member of the Heliconiinae (Fritillary) subfamily, is a large, strikingly colored butterfly, dorsally, males have distinctive black, line and dot patterning on bright orange wings, while females are chocolate brown with a cream outline, and both have small metallic silver orbs on their ventral hindwings. They complete a single life cycle from egg to adult annually. Puget Sound fritillary is a late-summer species; adults are flying, searching for nectar, mating, and egg-laying July – early September. On prairies, this period is characterized by extended drought, warm temperatures, and floral nectar scarcity, and many plants in flower during this period are non-native. Adults often seek out non-native thistles for their nutrition (Table 11). Research on effects of reduced nectar availability in the Mormon fritillary (*Speyeria mormonia*) found that female fertility is significantly impaired by restricted nectar (Boggs 2003), an effect which likely holds true for other fritillaries as well. Puget Sound fritillary eggs are laid late in the summer; tiny larvae hatch within a few weeks and seek shelter to overwinter, but do not feed until the following spring. Egg-laying by Puget Sound fritillary has been observed in the South Puget Sound region on two species of violet. Fritillary larvae are dark colored with many bristled spines, and feed nocturnally; these

characteristics along with a gland that secretes defensive chemicals protect larvae from predators (James and Nunnallee 2011). This species does not migrate, they are strong fliers though, and not sedentary butterflies, inhabiting prairies and forest openings year-round, through all life stages. Key habitat features include substantial host plants patches with abundant late-season nectar resources nearby. Prairie-forest edge is utilized by this butterfly for egg-laying sites, and nectaring from partially shaded plants that have extended flowering periods (Potter pers comm.). Loss of prairies, forest openings and glades, and fragmentation and degradation of their habitats has reduced and eliminated Puget Sound fritillary populations in the South Puget Sound region.

Sonora skipper

Sonora skipper. Photo by Brad Gill.

Sonora skipper is endemic to southwestern Washington. Historical records show it occurring on the prairies of southern Thurston County, and occasionally in grassy wetland edges and forest openings in other southwest Washington locales (Hinchliff 1996, Pelham 2020). Despite recent efforts to locate this butterfly in South Puget Prairies, only two prairie sites have records from the last few years. Those prairies are both on the West Rocky Prairie Unit, making it the sole unit currently supporting Sonora skipper in this region. Sonora skipper is a subspecies of the grass-feeding skipper (Hesperiinae) subfamily. They complete a single life cycle from egg to adult annually. Sonora skippers do not migrate and are highly sedentary. They inhabit open, short-stature, native grasslands year-round. Little is known of this butterfly's life history and habitat needs, including their requisite host plant(s). They seem to use one or more grass or sedge species and seem to associate with California oat grass (Table 12). Their overwintering life stage and habitat is also unknown. In the South Puget Sound Region, adults present themselves in mid-June to early-July, and feed on nectar from a variety of plants, especially lance selfheal, a short-stature, native, herbaceous perennial.

Taylor's checkerspot

Taylor's checkerspot is a highly sedentary, non-migratory butterfly that occupy the same sites year-round. Adults on South Puget Sound Prairies most commonly forage for nectar on Puget balsamroot, nineleaf biscuitroot, and grassland saxifrage (*Micranthes integrifolia)* Linders et al. 2019, Table 12).

Taylor's checkerspot was listed as state endangered in 2006 and in 2013 was listed as Endangered under the Endangered Species Act. Taylor's checkerspot once occupied over a dozen prairie and bald sites in the South Puget Sound region. They were extirpated around 2000 from the Scatter Creek Wildlife Area and all but one of Washington's populations (on JBLM) was extirpated by 2007.

Taylor's checkerspot experts and wildlife area staff have worked cooperatively to manage for this butterfly. This work has involved intensive multi-year releases of captive-reared butterflies combined with efforts to restore and enhance Taylor's checkerspot habitat. These efforts have helped established a fledgling population in the wildlife area and has demonstrated the crucial role that Scatter Creek Wildlife Area has in sustaining butterfly SGCNs that do not occur elsewhere.

A recent captive-rearing and reintroduction program in the South Puget Sound Region has added to the number of occupied sites. Multi-year releases are underway on several sites, with one reintroduction site on JBLM. A second site on the Scatter Creek Unit is showing promise for meeting the criteria for an established population (Linders et al. 2019). Environmental conditions, including the diversity, size, and quality of habitat along with compatible management have contributed to this re-establishment. The butterfly's abundance and distribution are monitored annually on this site. The West Rocky Prairie Unit has been identified as a future site for Taylor's checkerspot reintroduction.

Taylor's checkerspot butterfly. Photo by Aaron Barna.

The Taylor's checkerspot life cycle is typically completed within one year, though larvae can postpone the adult life stage by up to three years when weather and/or food conditions are unfavorable (Kuussaari et al. 2004). Their lifecycle begins with the female depositing her eggs in clusters on host plants (English plantain and harsh paintbrush). Eggs in each cluster then typically hatch in synchrony within eight to nine days (Barclay et al. 2010, James and Nunnallee 2011). After about a month, larvae enter a dormant phase between mid-June and mid-July (Guppy and Shepard 2001). They then spend most of their life in this larval stage. This inactive phase lasts until late the following winter and overlaps with the period when host plants are aging and no longer palatable (January to March depending on weather and site conditions). During the dormant phase, larvae often shelter under rocks, logs, in soil cracks, plant litter, or duff, and sometimes in the tunnels of ground-nesting bees and ants (Guppy and Shepard 2001, Fimbel 2009). Host plant species remains a major component of their diet, in addition to other post-dormancy food sources such as sea blush (*Plectritis congesta*), blue-eyed Mary (*Collinsia parviflora*), and dwarf owl-clover (*Triphysaria pusilla*). After 9-10 months as larvae they become pupae in late-March to early-May. Larvae select locations on vegetation just above ground level to pupate and emerge as adults in two to six weeks (duration dependent on environmental conditions).

In the South Puget Sound Region, Taylor's checkerspot inhabit short-stature native grasslands and balds where their host plant is in high abundance and density (Severns and Grosboll 2011). Severns and Pelham (2020) found Taylor's checkerspots in Oregon selecting areas with a high cover of short-stature native bunchgrasses and adult nectar resources for egg-laying. They also prefer habitat with diverse floral nectar resources. Floral nectar abundance affects reproductive success in checkerspots (Murphy et al. 1983) and nectar species diversity is important since variation in both butterfly and plant phenologies (the timing of a periodic biological phenomenon in relation to climatic conditions) can result in some nectar species not being available during all or a portion of the adult life stage.

Valley Silverspot

Valley silverspot historically occurred in native grasslands (prairies and balds) across the South Puget Sound Region. This range encompasses all the Scatter Creek Wildlife Area units. Evidence suggest that once there were large silverspot populations in the region (Hinchliff 1996, Ann Potter, pers comm). Population sizes for all occupied sites are now dramatically smaller (Potter 2018) due to the loss, fragmentation and degradation of prairie habitat. They have also been extirpated from several South Puget Sound Prairies.

Valley Silverspot nectaring from non-native Bull Thistle (*Cirsium vulgare*) at Scatter Creek North. Photo by Brad Gill.

Valley silverspots do not migrate but are not sedentary and are strong fliers. They inhabit prairies and forest openings year-round from egg to adult. They require a substantial coverage of their host plants near late-season nectar resources. Prairie-forest edge is a key habitat feature as it shades nectar plants, which extends the flowering period (Ann Potter pers comm). In a 2-year study of the habitat and nectar use of valley silverspot on two South Puget Sound Prairies, Hays et al. (2000) identified early blue violet as a host plant and native showy fleabane and non-native Canada thistle as nectar sources (Table 12).

Valley silverspot is in the Fritillary (Heliconiinae) subfamily. They complete a single life cycle annually from egg to adult. Adults fly in search of nectar and a mate and then lay their eggs in July-early September. Tiny larvae then hatch within a few weeks and seek shelter to overwinter. Larvae do not feed until the following spring. Fritillary larvae are dark colored with many bristled spines, and feed nocturnally. These characteristics along with a gland that secretes defensive chemicals protect larvae from predators (James and Nunnallee 2011).

Because valley silverspot is a late-summer species, floral nectar is often scarce when most needed because of the extended drought and high temperatures in late summer. Many plants that do flower

this time of year are non-native. Research on nectar availability to the Mormon fritillary (*Speyeria mormonia*) find female fecundity impaired by restricted nectar (Boggs 2003). This same effect likely also holds true for other late-summer *fritillaries*.

Other diversity species

Species of Greatest Conservation Need not highlighted in the brief descriptions above may also occur on the wildlife area (Table 13). These species are important to track through periodic surveys when feasible.

Though we know through observation of several non-game SGCNs that have been verified on the wildlife area, other non-game SGCNs likely also occur. Below is a list (Table 13) of SGCNs, including many not documented on the Scatter Creek Wildlife Area but that have the potential to occur. These species merit consideration in this plan because the wildlife area contains suitable habitat (WDFW 2015).

Species potentially on the wildlife area may be considered for future wildlife area surveys. Although resources may not make it possible or feasible to pre-plan surveys for each of these species, staff members and volunteers can still opportunistically combine searches with other planned activities, particularly when an activity occurs in known suitable habitat (see Chapter 4 in WDFW 2015). Beyond surveys, the agency may eventually get involved in active management or recovery of non-game SGCNs that occur or could potentially occur on the wildlife area. Recovery may include looking for suitable places to translocate and reintroduce animals. When appropriate, the wildlife area may play a role in efforts like this for some of the SGCNs identified in Table 13.

Table 13. Species of greatest conservation need (SGCN) that are associated with ecosystems that occur on the Scatter Creek Wildlife Area

Species of Greatest Conservation Need	SGCN is closely associated with Ecological System on wildlife area	SGCN is generally associated with Ecological System on wildlife area
Birds		
Bald eagle*	X	X
Cinnamon teal	X	X
Common loon*	X	X
Dusky Canada goose	X	X
Golden eagle*		X
Harlequin duck	X	X
Mountain quail*	X	X
Northern spotted owl*		X
Oregon vesper sparrow*	X	X
Peregrine falcon*	X	X
Purple martin*	X	X
Short-eared owl*		X
Slender-billed white-breasted nuthatch	X	X
Streaked horned lark*	X	X

Species of Greatest Conservation Need	SGCN is closely associated with Ecological System on wildlife area	SGCN is generally associated with Ecological System on wildlife area
Western bluebird	X	X
Western screech-owl*		X
Mammals		
Fisher*		X
Hoary bat		X
Mazama (western) pocket gopher*	X	X
Silver-haired bat*		X
Townsend's big-eared bat*		X
Western gray squirrel*	X	X
Western spotted skunk		X
Amphibians		
Cascade torrent salamander	X	X
Cope's giant salamander		X
Dunn's salamander*	X	
Oregon spotted frog*	X	X
Van Dyke's salamander*		X
Reptiles		
Western pond turtle*	X	
Invertebrates		
Bluegray taildropper	X	
Hoary elfin*	X	
Mardon skipper*	X	
Olympia pebblesnail	X	
Oregon branded skipper*	X	
Oregon Megomphidx		X
Pacific clubtail*	X	
Pacific vertigo		X
Propertius duskywing*	X	
Puget blue*	X	
Puget Oregonian	X	X
Puget Sound fritillary*	X	
Rainier roachfly		X
Sasquatch snowfly		X
Sonora skipper*	X	
Taylor's checkerspot*	X	
Valley silverspot*	X	
Western pearlshell*	X	
Western ridged mussel*	X	

Species of Greatest Conservation Need	SGCN is closely associated with Ecological System on wildlife area	SGCN is generally associated with Ecological System on wildlife area

* WSDM database occurrences present within 20 miles of one or more of the wildlife area units.

Camas at Scatter Creek Unit. Photo by Alan L. Bauer.

Fish species overview and management

Fish Species

The Scatter Creek Wildlife Area lies within the greater Chehalis River Basin, which supports a diverse assemblage of native and non-native fish species. Both anadromous and resident life histories of native fish occur within the basin, see Table 14 for a summary of fish species on the Scatter Creek Wildlife Area. Federally listed threatened or endangered fish species within the Chehalis River Basin do not occur, except an occasional visit from bull trout (*Salvelinus confluentus*). Grays Harbor Basin is part of that critical habitat designation, but documented population has not been recorded.

The six individual units of the Scatter Creek Wildlife Area are located within three different ecological regions –Black River, Cascade Mountains, and Lower Chehalis River (Chehalis Basin Strategy 2020).

Black River Ecological Region

The Black River is primarily a migration corridor for adult fall Chinook, coho, steelhead, and Pacific lamprey, and may provide holding habitat in cold-water pockets for over-summering spring Chinook. This section of the Black River and backwater areas in the Black River Unit provide rearing habitat for fall Chinook, coho, and steelhead. There is also suitable habitat for Olympic mudminnow and their presence is documented on West Rocky Prairie (Beaver Creek and Allen creek), Scatter Creek, and Black River units.

Scatter Creek is a tributary of the Chehalis River and flows through the Scatter Creek Unit. Scatter Creek provides spawning habitat for coho, and rearing habitat for fall Chinook, coho, and steelhead. Sections of Scatter Creek go subterranean during dry summer months limiting the distribution of fish. However, there are deep pools throughout Scatter Creek that persist during these dry periods and provide refuge for fish.

Cascade Mountains Ecological Region

Skookumchuck River flows through the Skookumchuck Unit and provides both spawning and rearing habitat for spring and fall Chinook, coho, steelhead, and Pacific lamprey. This upper section of the Skookumchuck River has one of the largest densities of spawning spring Chinook in the Chehalis Basin. There is also suitable habitat for Olympic mudminnow, and their presence is unknown.

Lower Chehalis River Ecological Region

Davis Creek Unit is located adjacent to the mainstem Chehalis River at about river mile 42. Although fall Chinook may spawn in this section of the river, it is mostly a migration corridor for spring and fall Chinook, coho, chum, steelhead, and Pacific lamprey.

Table 14. Fish species on the Scatter Creek Wildlife Area

Common name	Scientific name	Origin	Federal/State Status/SGCN	WLA Unit
Black crappie	*Pomoxis nigromaclatus*	Non-native		Davis Creek
Bullgill	*Lepomis marcrochirus*	Non-native		Davis Creek, Black River
Brown bullhead	*Ameiurus nebulosis*	Non-native		Davis Creek
Chinook salmon (fall, spring)	*Oncorhynchus tshawytscha*	Native	SC, SGCN, PHS	Davis Creek, Black River, Scatter Creek, Skookumchuck
Chum salmon	*Oncorhynchus keta*	Native	SC, PHS	Davis Creek,
Coho salmon	*Oncorhynchus kisutch*	Native	PHS	Davis Creek, Black River, West Rocky Prairie, Scatter Creek, Skookumchuck
Common carp	*Cyprinus carpio*	Non-native		Davis Creek
Cutthroat trout	*Oncorhynchus clarkii*	Native	PHS	Davis Creek, Black River, West Rocky Prairie, Scatter Creek
Large-mouth bass	*Micropterus salmiodes*	Non-native		Davis Creek, Black River
Largescale sucker	*Catostomus marcocheilus*	Native		Scatter Creek, Skookumchuck, Davis Creek
Mountain whitefish	*Prosopium williamsoni*	Native		
Northern pikeminnow	*Ptychocheilus tridentatus*	Native		Scatter Creek, Skookumchuck, Davis Creek
Olympic mudminnow	*Novumbra hubbsi*	Native	SS, SGCN, PHS	Davis Creek, West Rocky Prairie, Scatter Creek, Black River
Pacific lamprey	*Lampetra tridentata*	Native	SGCN, PHS	Davis Creek, Black River, Skookumchuck
Peamouth	*Mylocheilus caurinus*	Native		Skookumchuck
Prickly sculpin	*Cottus asper*	Native		Skookumchuck, Black River, Davis Creek
Pumpkinseed	*Lepomis gibbosus*	Non-native		Davis Creek, Black River
Rainbow trout		Native		Davis Creek, Black River, West Rocky Prairie, Scatter Creek
Red-side shiner	*Richardsonius Balteatus*	Native		West Rocky Prairie, Scatter Creek, Skookumchuck, Davis Creek

Common name	Scientific name	Origin	Federal/State Status/SGCN	WLA Unit
Reticulated sculpin	*Cottus gulosus*	Native		Skookumchuck, Black River, Davis Creek
Riffle sculpin	*Cottus perplexsus*	Native		Skookumchuck, Black River, Davis Creek
Rock bass	*Ambloplites rupestris*	Non-native		Davis Creek
Small-mouth bass	*Micropterus dolomieui*	Non-native		Davis Creek
Speckled dace	*Rhinichthys osculus*	Native		West Rocky Prairie, Scatter Creek, Skookumchuck, Davis Creek
Steelhead	*Oncorhynchus mykiss*	Native	SC, SGCN, PHS	Davis Creek, Black River, Scatter Creek, Skookumchuck, West Rocky Prairie
Three-spine stickleback	Gasterosteus aculeatus	Native		Davis Creek, Black River, West Rocky Prairie, Scatter Creek, Skookumchuck, Davis Creek
Western brook lamprey	*Lampetra richardsoni*	Native		Davis Creek, West Rocky Prairie, Scatter Creek
Yellow perch	*Perca flavescens*	Non-native		Davis Creek

Fish Management

Fish management in and around the streams of the Scatter Creek Wildlife Area consists of protecting the natural resource while providing recreational fishing opportunities. Recreational fishing on the wildlife area include opportunities for salmon and gamefish. Gamefish include trout species, *cyprinids*, and spiny-ray fish such as bass, bluegill, and perch. Hatchery-origin fish from the Skookumchuck hatchery may occur on the Scatter Creek Wildlife Area.

See the Recreation section for more information on fishing opportunities.

Habitat management

This section provides a description of habitat management activities that occur on the Scatter Creek Wildlife Area, including forest management, riparian and aquatic habitat management, weed management, fire history and prairie management, and habitat restoration.

Prairie balsam root at Scatter Creek Unit. Photo by Alan L. Bauer.

Forest management overview

There are approximately 1,780 acres of forest on the Scatter Creek Wildlife Area. Fire suppression and logging prior to WDFW ownership have greatly altered forests. Native Americans historically maintained prairies and oak woodlands with low to moderate intensity fire. This practice-controlled Douglas-fir, Oregon ash, and brush. Douglas-fir is dominating oak trees and encroaching into the prairies in the absence of fire.

Most of these areas are recovering naturally but thinning is needed to accelerate recovery and increase species diversity in dense Douglas-fir stands. The West Rocky Prairie Unit has been impacted by relatively recent logging, many forests have been converted to early seral stage Douglas fir. In contrast, conifer forests on the Scatter Creek Unit have not been logged for at least 60 years and these forests are rapidly progressing towards climax conditions.

Forest Management approach

WDFW manages the forest landscape balancing forest health, fire risk, and species management (i.e., SGCN and PHS Priority Species). Timber harvest, thinning, prescribed fire, and tree planting in suitable areas enhance species composition, accelerate stem growth, and recreate historic forest conditions (e.g. diverse, patchy forests). This increases ecological integrity by improving habitat quality for priority species. Forest management tools, including prescribed fire, will help reduce wildfire risk on WDFW lands and adjacent lands, reducing the risk of fire on WDFW lands will lessen potential impacts to adjacent private lands as well as minimize habitat loss.

Sites on the Scatter Creek, West Rocky Prairie, and Davis Creek units are identified for active forest management. In each unit custom prescriptions will be developed for each unit in collaboration with WDFW staff. See Appendix G. Habitat Management and Restoration Plan for more information on specific projects.

Fire history and prairie management

Traditionally, fire was used by Native Americans to maintain prairie oak woodlands within the South Puget Sound Region. In more recent history, wildfire suppression has threatened the health of fire-dependent oak woodlands and prairies in the Scatter Creek Wildlife Area. Today, WDFW has returned to the practice of prescribed burns, which removes non-native species, including Scotch broom and tall oat grass. Areas are seeded and planted with native prairie plants to restore habitat for imperiled species.

Scatter Creek Wildlife Area is managed to protect and restore high-quality native grassland (prairie habitat) communities, maintain forests, and enhance wildlife populations. A major focus is recovery of the Mardon skipper and Taylor's checkerspot, and habitat restoration for the Mazama pocket gopher. Additional goals include protecting SGCNs and rare plants (e.g. golden paintbrush and Hall's aster). Butterflies generally require short native vegetation and specific foodplants throughout the year. The Mazama pocket gopher requires areas without dense Scotch's broom and other shrubs. Prescribed burns can enhance habitat characteristics for all these species, as well as the vesper sparrow, Puget blue, and valley silverspot butterfly.

Fire is considered a pre-planting tool that removes Scotch broom and tall oat grass effectively, reduces moss and lichen, and subsequently increases bare ground for direct seeding and planting with native species. Areas are seeded and planted with native prairie plants primarily for restoration of habitat for imperiled species. Habitat enhancement is focused on integration of multiple species objectives applied to one area.

The annual prescribed fire plan includes a survey for SGCN along with a Level Two qualitative Ecological Integrity Assessment prior to and then again one year after the fire. Native grasses and forbs are planted from fall through early spring.

There have been many wildfires on the Scatter Creek Wildlife Area in the past. There is only one significant fire on the wildlife area documented in the last decade, which happened on August 22, 2017 when a wildfire burned 284 acres of the south tract of the Scatter Creek Unit. In that event roughly 61 acres of forest burned. The effects of the wildfire on forest habitat were highly variable, with approximately 80 to 90 percent mortality of Douglas-fir and significant loss of dense oak woodland areas. Approximately half the burned acreage was logged in October 2018 to enhance prairie and oak woodland habitat (27 acres of oak woodland and 25 acres of prairie). Post wildfire cleanup is occurring year-round and will be an ongoing management action throughout the next 10 years.

Oak trees on the Scatter Creek Unit – north tract. Photo by Alan L. Bauer.

Riparian and aquatic habitat management

Riparian and aquatic habitat management on the Scatter Creek Wildlife Area has not been a management focus in previous planning efforts. This is largely due to the limited species of concern utilizing the habitat. Additionally, they are not under direct threat of loss or further reduction in habitat quality. Wetland enhancement projects for Oregon spotted frog continue and are described in the habitat restoration section below.

Invasive weed maintenance is routinely conducted in riparian habitat. Snag creation occurs annually on the wildlife area which maintains a diverse stand structure, increases nesting structure for birds, and encourages wood recruitment into streams. Beaver activity is present and valued for their part in adding habitat complexity. Off channel habitat conservation, riparian plantings, and Olympic mudminnow surveys are the focused management activities under this plan.

Weed management

WDFW manages weeds to establish and maintain diverse native plant communities that support native fish and wildlife. Invasive plants and noxious weeds can infest high quality native plant communities and convert them to low quality monocultures that reduce wildlife value as well as increase wildfire risk. The weed management plan (Appendix B) identifies weed species and management practices to control weeds. See Table 15 for a list of weeds of concern on the Scatter Creek Wildlife Area. The goal of the weed control plan is to maintain or improve the habitat for fish and wildlife, meet legal obligations, and reduce spread to adjacent private lands.

Table 15. Weeds of primary concern on the Scatter Creek Wildlife Area

State designation	Weed Species
Class A	None known
Class B	Mouseear hawkweed, spotted knapweed, sulfur cinquefoil, tansy ragwort, Japanese knotweed, perrotfeather, poison hemlock, yellow archangel
Class C	Common groundsel, Scotch broom, bull thistle, Canada thistle, common catsear, common St. John's wort, common tansy, English hawthorn, English ivy, evergreen blackberry, field bindweed, Himalayan blackberry, oxeye daisy, Reed canary grass, wild carrot, yellow flag iris

Habitat restoration

Restoration efforts on the Scatter Creek Wildlife Area focuses on prairie oak woodland, forest, aquatic, and wetland habitats. The Habitat Management and Restoration Plan (Appendix G), expected completion 2022, will include site specific restoration actions for each of the six units. Forest, oak and prairie restoration activities were discussed previously in the Forest Management Section, as well as fire history and prairie management. The following section provides an overview of aquatic restoration projects specifically for the Oregon spotted frog.

Wetland habitat restoration

Wetland restoration of the West Rocky Unit for Oregon spotted frog has been ongoing since 2009. This includes mowing Reed canary grass and removing woody vegetation (e.g. willows, hardhack spirea). Until a permanent solution for Reed canary grass removal is approved, yearly mowing (late summer/early fall) is required. The most viable option for long-term Reed canary grass removal over large areas is herbicides. This approach is not yet approved for use on occupied sites by USFWS or the Washington State Oregon Spotted Frog Working Group. Annual maintenance of restored areas (where woody vegetation was removed) is also needed until all willow regrowth is halted or stumps are removed.

The main habitat challenges are the spread of Reed canary grass and woody vegetation in addition to the loss of hydrological connectivity and sufficient areas of perennial water. Climate change will likely exacerbate these challenges. Periodic fire along with beaver and large browsers like deer and elk historically helped maintain these ecological processes. Beaver sign and their ecological role in these wetlands are now limited in the West Rocky Prairie Unit.

Hydrological monitoring for Oregon spotted frog began in 2013 to analyze potential hydrological changes occurring in the unit. A model is going to be developed using monitoring data to determine

if hydrological restoration is feasible to improve aquatic conditions and to determine where restoration should occur. Examples of restoration include either creating ponds that are active throughout the summer or by installing an artificial beaver dam to maintain water levels longer into the summer. In addition, West Rocky Prairie Unit should be assessed for feasibility of beaver translocation. Restoring beavers to this area could help restore ecological functions and enhance restoration efforts for Oregon spotted frog in the basin.

Recent prescribed fire on Mima Mounds – West Rocky Prairie Unit. Photo by Lauri Vigue.

Climate change approach

Purpose

The primary purpose of this section is to evaluate the potential impacts of projected changes in climate on the Scatter Creek Wildlife Area and highlight opportunities to mitigate or prepare for those impacts. This section also summarizes work by the wildlife area planning team to review the management objectives (see Goals and Objectives section) and make changes as appropriate to ensure that objectives are robust to future changes.

This work is consistent with the directives of a 2017 WDFW policy titled "Addressing the Risks of Climate Change," which states that WDFW will "manage its operations and assets to better understand, mitigate, and adapt to impacts of climate change."

Projected climate change impacts

Continued increases in average annual and seasonal Pacific Northwest temperatures are projected as a result of global warming, as well as increases in extreme heat. Warming is projected to continue throughout the 21st century. For the 2050s relative to 1950-1999, temperature is projected to rise +5.8°F (range: +3.1 to +8.5°F) for a high greenhouse gas scenario (RCP8.5). Much higher warming is possible after mid-century. Lower emissions of greenhouse gases will result in less warming. Warming is projected for all seasons. The warming projected for summer is slightly larger than for other seasons (CIG 2013). Table 16 describes the projected climate summary report for 2010-2039 for Water Resource Inventories 22 and 23.

Table 16. Climate Summary Report (2010-2039) for Water Resource Inventories 22 and 23

Climate Attribute	Value	Change
Average annual temperature	52.6 +/- 0.6 degrees F	+2.3 degrees F
Freeze free days	339.0 +/- 6.1 days	+19.4 days
Annual precipitation	86.8 +/- 2.9 in	+0.8 inches
Growing season length	259.0 +/- 14.4 days	+35.6 days

Source: Climate Impacts Group Tribal Projection Tool 2019 data.

Impacts to wildlife area resources

Impact to bird species

A large portion of the climate stress experienced by Washington's birds will be due to more extreme spring heat events and more heavy rains. Birds in western Washington are more likely to find their summer ranges affected than their winter ranges; as with the state as a whole, this is because many birds have historically lived in northern Canada or Alaska during the summer and they simply cannot go further north to avoid higher temperatures. If global annual temperatures climb by 5.4 °F, changes in the availability of summer range will mean the local region will risk losing 42 species of birds in one or more counties; 13 additional species may disappear due to loss of winter range. Nine of the species are at risk of losing large parts of both their summer and winter ranges (Audubon 2019).

Potential shifts in prairie ecosystems

According to the Climate Impacts Group (2015), climate change may lead to prairie expansion in the Puget Sound Region. Increases in summer water stress will negatively affect less drought tolerant trees and species adjacent to prairies, potentially enabling prairie ecosystems to expand (Bachelet et al 2011). Increases in winter precipitation may also lead to an increase in the area of wetland prairies in South Puget Sound. Further research is needed on how exotic prairie species in the Puget Sound will respond to climate change.

Butterflies

Ecological changes attributable to global climate change have been observed most prominently in the distribution and phenology (the study of cyclic and seasonal natural phenomena, especially in relation to climate and plant and animal life) of plants and animals, and butterflies and their habitats worldwide have served as focal study systems in the field of climate change effects (Parmesan 2006). The findings of many studies demonstrate and predict phenological shifts in butterfly life cycles (Westwood and Blair 2010, Kearney et al. 2010). This research has showed greater shifts for butterflies with limited ranges and narrow larval diets (Diamond et al. 2011), both of which are characteristics of imperiled prairie oak butterflies. Plant phenology is more sensitive to temperature than butterfly phenology, setting up a scenario of mismatch between butterflies and the plants they rely on (Kharouba and Vellend 2015). Increased temperatures reduce the quality and palatability of host plants, and at higher temperatures larvae have reduced capacity to convert vegetation into body matter (Bauerfeind and Fischer 2013).

Climate change is found to contribute to: shifts in butterfly species' ranges, both elevational and latitudinal (Crozier 2003, Wilson et al. 2007), butterfly extinctions (McLaughlin et al. 2002), and fundamental changes in the condition of butterfly habitat (Davies et al. 2006). Butterflies as a group are highly sensitive to climate, with temperature influencing behavior, adult life span, larval development, overwintering health, and many aspects of their habitats. Their sensitivity to temperature changes, in addition to vulnerabilities from obligate (being able to live only in one set of conditions) plant relationships, increased wildfires, and the current patterns of small, isolated populations place butterflies at significant threat from climate change.

Oregon spotted frogs

Oregon spotted frogs have a year-round aquatic habitat requirement which increases the potential for geographic isolation from other subpopulations (a subset of a larger population) and increases their overall susceptibility to local site extirpation. Climate change may exacerbate this isolation through loss of aquatic connectivity to other sites. With the trajectory of habitat change and interrelated conditions that threaten the species, they are not expected to recover without some intervention, of which habitat management is essential (Hallock 2013).

At the West Rocky Prairie Unit, there is a possibility that this initial population decrease reflects the harsh summer drought conditions during the summer of 2015 that decreased water levels at the two permanent summer ponds in the west area (Mathieu 2019). Both ponds are used for summer refuge by adults and juveniles. This reduced footprint of late summer active-season habitat may have contributed to adult mortality and subadult mortality, depressing new adult breeding recruits. The summer water levels in these ponds have fluctuated since 2015 but have not rebounded to pre-drought conditions (Mathieu 2019). Unfortunately, the drought conditions observed during 2015 are expected to become more frequent under future climate scenarios.

Species of concern with high vulnerability to climate change

Table 17 shows the Species of Greatest Conservation Need (SGCN) on the Scatter Creek Wildlife Area that were assessed in the WDFW Climate Change Vulnerability Assessment (WDFW 2015) as having a moderate-high vulnerability to climate change, and with high confidence in the data. Note that only SGCN were considered in this assessment and it does not include climate sensitivities for other species that may be associated with the wildlife area.

Table 17. Species on Scatter Creek Wildlife Area with moderate-high overall vulnerability* and high confidence (WDFW 2015)

Species of Greatest Conservation Need	Vulnerability Rank	Comments	Climatic factors of concern
Golden eagle	Moderate – High	Golden eagles may experience some sensitivity to warmer temperatures. Sensitivity of this species is also influenced by foraging requirements (e.g., prey abundance and habitat), which can affect nest success and ability to lay eggs.	- Increased temperatures - Altered fire regimes
Western gray squirrel	Moderate - High	Western gray squirrels are susceptible to altered fire regimes that degrade forest quality for extended periods of time. Additionally, western gray squirrels are sensitive to disease outbreaks, which could become more frequent with warmer temperatures.	- Altered fire regimes - Increased disease outbreaks - Increased temperatures - Changes in precipitation
Bull trout Coastal Recovery Unit	Moderate – High	Sensitivity of bull trout is primarily driven by water temperature. Bull trout historically relied heavily on salmon as a food resource and may be less resilient to temperatures in areas where foraging opportunities of salmon eggs and juveniles have declined.	- Increased water temperatures - Altered runoff timing - Lower summer flows - Increased winter/spring flood events
Cope's giant salamander	Moderate - High	Cope's giant salamanders appear sensitive to temperature and precipitation factors that cause microhabitat desiccation as well as high flow events that degrade aquatic habitat. Elevated temperatures (although one study has shown these salamanders may tolerate a wider temperature range), increased solar radiation, and moisture loss, as well as declines in stream flow that reduce aquatic habitats, will likely negatively affect this species.	- Increased temperatures - Changes in precipitation - Shifts from snow to rain - Range contractions are projected for the southern Cascades ecoregion, with possible expansions in the northern Cascades and/or low-mid elevation southern coastal streams.
Oregon spotted frog	Moderate – High	Very limited information is available regarding the sensitivity of the Oregon spotted frog to climate change. Its main sensitivity is likely to be due to changes in pond and wetland habitat.	- Increased temperatures - Changes in precipitation - Altered hydrology

Species of Greatest Conservation Need	Vulnerability Rank	Comments	Climatic factors of concern
Mardon skipper	Moderate – High	Population numbers vary annually in response to variable weather because Mardon skippers exhibit physiological and indirect (i.e., habitat) sensitivity to temperature and precipitation. Mardon skippers are also vulnerable to fire. Mardon skippers are highly sedentary and unable to escape fire, therefore fire can cause direct mortality of all life stages.	- Increased temperatures - Changes in precipitation - Altered fire regimes - Increased frequency of temperature and precipitation extremes - Reduced snowpack - Earlier snowmelt
Propertius duskywing	Moderate – High	This species exhibits some physiological sensitivity to warming temperatures, as well as indirect sensitivity to temperature via habitat changes. Warming temperatures, including later first frost could also affect duskywing by altering the timing of their oak hosts leaf drop.	- Increased temperatures - Later first frost - Drought
Taylor's checkerspot	Moderate – High	Population numbers vary annually in response to variable weather because checkerspots exhibit physiological and indirect (i.e., habitat) sensitivity to temperature and precipitation. Temperature influences butterfly behavior (e.g., mating, foraging, egg-laying time), adult life span, and larval development. Cool, wet spring conditions limit adult activity and therefore fecundity. Warming temperature may also affect phenological timing between checkerspots and key plant species (host and nectar plants), causing low availability of nectar resources and pre-mature desiccation of larval forage, leading to reduced fitness or starvation of adults or larvae. Taylor's checkerspot is also sensitive to rain, and extreme downpours could cause severe population declines by washing away eggs and larvae and limiting adult flight.	- Increased temperatures - Drought - Extreme precipitation events - Increased invasive weeds - Increased frequency of temperature and precipitation extremes - Reduced snowpack - Earlier snowmelt - Later first frost - Increased invasive weeds

Species of Greatest Conservation Need	Vulnerability Rank	Comments	Climatic factors of concern
Western bumble bee	Moderate – High vulnerability	Temperatures may also affect the distribution of this species, as it appears to prefer cooler environments. Increasing fire frequencies may help maintain bumble bee foraging habitat by preventing conifer encroachment on meadows with abundant flowers but will also likely be lethal to bumble bee colonies. In general, bumblebees are likely sensitive to climate-driven changes in nesting, foraging, and overwintering habitat, but detailed information is currently lacking. Shifts in temperature, precipitation, and snowpack may affect bumblebee distribution and life history, potentially forcing them into unfavorable habitats. These climate-driven changes may also affect habitat quality and availability. One of the primary concerns for bumblebee species is a shift in the abundance, distribution, and/or phenological synchrony of key forage flowering vegetation, as pollen and nectar availability influences reproduction and overwintering success of queens.	> Increased temperatures > Reduced snowpack > Earlier snowmelt > Later first frost > Altered fire regimes > Increased frequency of temperature and precipitation extremes > Drought

*Vulnerability to climate change was determined by an evaluation of inherent sensitivity to climatic variables, as well as an assessment of the likelihood of change in key climate variables important for each species. Confidence in each ranking was also assessed, based on the extent and quality of reference material and information.

Making the goal and objectives of the wildlife area plan climate resilient

Scatter Creek Wildlife Area goals and objectives potentially affected by climate change, or those with a "climate nexus," are listed below (Table 18). Opportunities to build resilience to climate change are summarized for each objective and are also integrated into the final list of objectives available on page 53.

Table 18. Scatter Creek Wildlife Area objectives with climate nexus

Objectives with a climate nexus	Opportunities to build resilience
Goal 1: Improve ecological integrity (EI) of South Puget Sound prairie, oak woodlands, forests, and wetlands and riparian habitats by protecting, restoring and/or maintaining these critical habitats.	
Establish an ecological integrity baseline and associated goals for ecological systems of concern/priority systems by 2025.	Consider adding a metric for climate change, e.g. soil moisture, and compare different habitat types. Continue collecting plant phenology data. Start a volunteer emergence scheme (monitor changes over time).
Restore/maintain habitat for the Taylor's checkerspot per reintroduction plan at West Rocky Prairie by 2023; Scatter Creek north by 2025.	Regarding the plant mix, is it well suited for future conditions? Also consider plant phenology.
In coordination with partners, continue to seek funding to acquire available high-quality oak-prairie habitat and riparian habitat and include public access.	Consider selecting parcels that are well suited to future climate - where species can adapt to climate change. Consider cost of maintaining habitat with climate future.
Goal 2: Achieve species diversity at levels consistent with healthy ecosystems	
Reintroduce Taylor's checkerspot at West Rocky Prairie by 2023, and as needed in other suitable areas, and monitor to achieve population objectives identified in the reintroduction and recovery plans.	Check for habitat suitability and future climate scenarios.
Protect, restore, maintain, and create habitat for Oregon spotted frog.	Maintain "appropriate" water levels on the landscape for oviposition and connectivity.
Goal 4: Maintain and enhance waterfowl habitat.	
Plant and maintain at least two types of species of wintering waterfowl forage on leased agriculture lands at Davis Creek annually.	Adapt for changes in hydrology, and food crops.
Conduct at least one project to restore native wetland plant communities that benefit waterfowl annually consistent with Oregon spotted frog recovery.	Consider creating more habitat for native plants and consider water availability.
Goal 6: Maintain and restore riparian habitat.	
Correct Beaver Creek fish passage by 2021.	Ensure design for any replacement structures considers future flows (use climate adapted culverts projections).
Continue collaboration with Thurston County for the Dunnagan Creek Restoration project (Dunnagan Creek culvert).	Ensure culverts and restoration enhancements are designed for future flows (use climate adapted culverts projections).
Identify/ pursue funding for two riparian enhancement projects on the Davis Creek Unit by 2025.	Ensure restoration enhancements are designed for future flows and species selection.
Identify opportunities to improve riparian and instream habitat by 2027.	Ensure restoration enhancements are designed for future flows and species selection.
Goal 9. Maintain productive and positive working relationships with neighbors, partners, and permittees.	
Develop a wildfire management plan for Scatter Creek Wildlife Area by 2021.	Include adaptation for increased fire occurrences.

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Appendices

A. Species and habitat information

B. Weed management plan

C. Fire response information

D. Scatter Creek Unit history and cultural resources summary

E. Public response summary

F. Research and other studies

G. Habitat management and restoration plan

Appendix A. Species and habitat information

Table 19. Scatter Creek Bird List (Compiled by Kelly McAllister) - 2010

Double-crested cormorant	Rufous hummingbird
Green heron	Belted kingfisher
Great blue heron	Northern flicker
Canada goose	Red breasted sapsucker
Wood duck	Downy woodpecker
Mallard	Hairy woodpecker
Hooded merganser	Pileated woodpecker
Turkey vulture	Olive-sided flycatcher
Osprey	Western wood-peewee
Northern harrier	Pacific-slope flycatcher
Bald eagle	Willow flycatcher
Sharp-shinned hawk	Hutton's vireo
Cooper's hawk	Cassin's vireo
Red-tailed hawk	Warbling vireo
American kestrel	Steller's jay
Chukar	Western scrub-jay
Ring-necked pheasant	American crow
Glaucous-winged gull	Common raven
Band-tailed pigeon	Tree swallow
Rock dove	Violet-green swallow
Mourning dove	Barn swallow
Barn owl	Black-capped chickadee
Short-eared owl	Chestnut-backed chickadee
Vaux's swift	Bushtit
Marsh wren	Brown creeper
Golden-crowned kinglet	Red-breasted nuthatch
Western bluebird	Winter wren
Swainson's thrush	Bewick's wren
Hermit thrush	Marsh wren
American robin	Purple finch
European starling	House finch
Orange-crowned warbler	Red crossbill
Yellow-rumped warbler	Pine siskin
Black-throated gray warbler	American goldfinch
Townsend's warbler	Evening grosbeak
Yellow warbler	House sparrow
MacGillivray's warbler	Cedar waxwing
Wilson's warbler	Lazuli bunting
Common yellowthroat	Brewer's blackbird
Western tanager	Brown-headed cowbird
Spotted towhee	Bullock's oriole
Chipping sparrow	Cliff swallow
Fox sparrow	House wren
Savannah sparrow	Dark-eyed junco
Song sparrow	Black-headed grosbeak
Vesper sparrow	Western meadowlark

White-crowned sparrow Red-winged blackbird
Golden-crown sparrow

Table 20. Rare plant list - 2020 Scatter Creek and West Rocky Prairie units

Common Name	Scientific Name	Status
American bistort	*Polygonum bistortoides*	Considered rare
Barestem biscuitroot	*Lomatium nudicaule*	Considered rare
Biennial cinquefoil	*Potentilla biennis*	Considered rare
California compassplant	*Wyethia angustifolia*	SSC
Celeryleaf licorice-root	*Ligusticum apiifolium*	Considered rare
Columbian larkspur	*Delphinium trolliifolium*	Considered rare
Columbian white-top aster	*Sericocarpus rigidus*	SSC
Common viburnum	*Viburnum ellipticum*	Considered rare
Forest scurfpea	*Rupertia physodes*	Considered rare
Hall's aster	*Symphyotrichum hallii*	ST, SSC
Howell's violet	*Viola howellii*	Considered rare
Gairdner's yampah	*Perideridia gairdneri*	Considered rare
Golden paintbrush	*Castilleja levisecta*	FT, SSC
Large camas	*Camassia leichtlinii*	Considered rare
Little mountain thimbleweed	*Anemone lyallii*	Considered rare
Narrowleaf onion	*Allium amplectans*	Considered rare
Northern bedstraw	*Galium boreale*	Considered rare
Rose checkermallow	*Sidalcea virgata (S. malviflora ssp. virgata)*	SE, SSC
Royal Jacob's-ladder	*Polemonium carneum*	SSC
Scouler's catchfly	*Silene scouleri ssp. scouleri*	SS, SSC
Smallflower wakerobin	*Trillium albidum ssp. parviflorum (T. parviflorum)*	SSC
Straightbeak buttercup	*Ranunculus orthorhynchus*	Considered rare
Texas toadflax	*Nuttalanthus texanus*	ST, SSC
Toughleaf iris	*Iris tenax*	Considered rare
Tufted hairgrass	*Deschampsia caespitosa*	Considered rare
Water howellia	*Howellia aquatilis*	ST, SSC
Wood rein orchid	*Platanthera elegans*	Considered rare

SSC – Species of special concern (DNR)

Table 21. Species of Greatest Conservation need relationship with Ecological Systems of Concern for Scatter Creek Wildlife Area

Species of Greatest Conservation Need Relationship with Ecological Systems of Concern for the Scatter Creek WLA	North Pacific Lowland Riparian Forest and Shrubland	North Pacific Oak Woodland	Temperate Pacific Freshwater Emergent Marsh	Willamette Valley Upland Prairie and Savannah	Willamette Valley Wet Prairie
Bald eagle	x	x	x	x	x
Cinnamon teal			X		x
Dusky Canada goose			x		
Harlequin duck			x		
Oregon vesper sparrow				X	x
Peregrine falcon	x		X		
Purple martin			x		
Short-eared owl			x	x	x
Slender-billed white breasted nuthatch	x	X			
Streaked horn lark				X	X
Western bluebird	x	x		X	X
Western screech owl		x			
Hoary bat	x	x	x	x	
Mazama (western) pocket gopher		x		X	x
Townsend's big-eared bat	x	x	x	x	x
Western gray squirrel	x	X		x	
Western pond turtle		X	X	X	
Cascade torrent salamander	X				
Cope's giant salamander	x				
Oregon spotted frog	X	x	X		
Van Dyke's salamander	x				
Hoary elfin				X	
Mardon skipper		x		X	X
Oregon branded skipper				X	X
Propertius duskywing		X		X	

Puget blue			X	
Puget Sound fritillary		X	X	X
Sonora skipper			X	X
Taylor's checkerspot butterfly	x	X	X	X
Valley silverspot butterfly	x	X	X	X

X **Bold** indicates SGCN species that are closely associated with the ecological system. Small "x" for SGCN generally associated with the ecological system.

Appendix B. Weed management plan

Weed control goals at the Scatter Creek Wildlife Area
The goals of weed control on the Scatter Creek Wildlife Area, which is composed of the Scatter Creek, Black River, Davis Creek, Glacial Heritage, Skookumchuck, and West Rocky Prairie units, are to maintain or improve the habitat for fish and wildlife, meet legal obligations, and protect adjacent private lands.

To these ends, WDFW uses integrated pest (i.e. weed) 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."

At the Scatter Creek Wildlife Area, WDFW's weed management objectives are the following:

a) Puget Prairies - High quality prairie is essential for the endangered Taylor's checkerspot, Mardon skipper, other SGCN butterflies and Mazama pocket gopher. Prairie habitat occurs at Scatter Creek, Glacial Heritage, and West Rocky Prairie units. Davis Creek and Skookumchuck units have remnant prairie soils and may receive treatments to enhance prairie vegetation in the future. Scotch broom is the most prevalent and problematic broadleaf weed to control on these upland sites. At least 75 acres a year should be mowed between both north and south Scatter Creek tracts, along with 35 acres at West Rocky Unit. Up to 10 acres per year at each of the same sites may be treated with broadleaf applications of herbicide. Other broadleaf weeds of concern include hairy cats-ear, ox-eye daisy, tansy ragwort, common groundsel, sulfur cinquefoil, mouse-eared hawkweed, and spotted knapweed. Hairy cats-ear and ox-eye daisy are widespread on these prairies and containment is tied into a suite of restoration practices to be discussed later. Tansey ragwort and common groundsel should be monitored annually and hand-pulled where they occur sparsely. A timber harvest in 2018 created dense occurrences of common groundsel that may require chemical and mechanical control. Sulfur cinquefoil, mouse-eared hawkweed, and burrowing clover should be monitored annually and sprayed with a combination of Garlon and milestone where they occur.

   A composition of native bunchgrasses is essential in preserving quality prairie. Therefore, invasive grass control is pivotal to the IPM for grasslands on the wildlife area. Species of concern include tall oat grass, bent grass, sweet vernal grass, rat-tail fescue, soft-brome, and cheatgrass. The first three are perennial grasses and should be chemically controlled with Fusilade (50 acres a year at Scatter Creek). Tall oat grass is extensive on the wildlife area, and the most important of the perennial grasses to control. Mechanical means of control will take place during the season, once the plant bolts and becomes unreceptive to herbicide, at least 10 acres a year. Monitoring for tall oat grass at the West Rocky Prairie Unit should occur annually. Treatment with grass-specific herbicide should take place over 5 acres a year. Invasive annual grasses are an increasing problem on grassland sites. They can form small monocultures where they occur, such areas should be monitored annually. They should be cut in the early spring before their seed heads form, with possible follow up with Glyphosate the following winter, if high densities of seedlings persist. Annual monitoring is necessary in targeted restoration areas each spring where they can easily be controlled at low density.

   In addition, prescribed fire is used when conditions allow, to reset native vegetation in the same way Native Americans maintained the prairies to promote food resources. It is the most

effective tool for invasive control on prairies. Acreage targets of 15-30 acres per year should receive prescribed fire at Scatter Creek South, North and West Rocky Prairie units. Post-fire green up of invasive species should be sprayed with herbicide, either Roundup or Fusilade depending on the timing and effect of burns. Areas burned will receive targeted restoration actions in the form of reseeding with natives, plug-planting of natives, and successive herbicide treatments as required.

b) Parking areas and roads - Survey all unit parking areas and roads a minimum of twice per year and treat weeds on site at that time. Besides general weeds, problematic species such as tansy ragwort and Canada thistle pose a risk of spreading to new areas if not treated and controlled. Spotted knapweed has been known to occur occasionally in parking areas at Scatter Creek Wildlife Area and will be removed on sight. Blackberry is an issue at the West Rocky Prairie Unit parking lot and should be cut back on a biannual basis. It is estimated that up to 5 acres require annual maintenance.
c) Riparian and wetland - Complete noxious weed inventories and annual surveys of the aquatic, riparian, and wetland habitats are needed at all units except Glacial Heritage and Skookumchuck units. Aquatic and riparian weed species are present and required treatment, but the extent of the infestations is unknown. Davis Creek Unit should be a primary area of focus. Parrot feather, poison hemlock, field bindweed, English ivy, Reed canary grass, and Himalayan blackberry, Japanese knotweed are present at that unit. Improve breeding habitat at Beaver and Allen creeks at West Rocky Prairie for Oregon spotted frog by annually mowing Reed canary grass 1.5 acres and brush cutting 1 acre to increase sunlight to breeding areas. Additionally, yellow flag iris occurs within Beaver Creek at West Rocky Prairie Unit, monitoring is needed to understand the extent of its coverage as well as continuing annual treatments. With more information about the extent of the infestation, IPM can be put into place. Mechanical control measures should be the first to be explored in this case. If necessary, aquatic control herbicides can possibly be utilized. Before any weed treatment activity, surveys for Oregon spotted frogs should be conducted to determine occupancy of the treatment site. If yellow flag iris and other noxious weeds are outside of occupied Oregon spotted frog locations, herbicides can be used. If within occupied Oregon spotted frog areas, approvals will need to be obtained before any aquatic herbicides are sprayed.
d) Oak woodland - Blackberry, Scotch broom, and common hawthorn are threats to oak regeneration within forested areas at Scatter Creek, West Rocky, Davis Creek, and Skookumchuck units. All these invasive species compete with and exclude young, slow-growing oaks within the understory. Efforts need to be made to cut back and spray where oaks occur, while also avoiding damage to seedling and saplings. An attainable goal for management would be 3 acres per year at both Scatter Creek and West Rocky Prairie units. Davis Creek Units oak woodland is much smaller in comparison to these two sites but still requires the same treatment.
e) Riparian Oregon ash forests - Reed canary grass and blue bindweed displace native species and shade out a wide variety of native species. Reed canary grass is the dominant understory species in many areas. Blue bindweed contributes to the toppling of riparian ash trees due to added weight during ice storms.
f) Conifer Forest – English ivy and English holly are invasive species that compete with and exclude native understory vegetation. Currently these species are minor components of the understory. They should be controlled now, however, to avoid greater challenges later. Control of these species would be a good activity for volunteers.

Weed Species of Concern on Scatter Creek Wildlife Area

Weed species of concern on the wildlife area include but are not limited to:

Blackberry (*Rubus armeniacus*), burrowing clover (*Trifolium subterraneum*), Canada thistle (*Cirsium arvense*), common groundsel (*Senecio vulgaris*), mouseear hawkweed, (*Hieracium pilosella*), ox-eye daisy (*Leucanthemum vulgare*), Scotch broom (*Cytisus scoparius*), spotted knotweed (*Centaurea stoebe*), Reed canary grass (*Phalaris arundinacea*), sulfur cinquefoil (*Potentilla recta*), tall oatgrass (*Arrhenatherum elatius*), tansy ragwort (*Jacobaea vulgaris*), rat-tail fescue (*Vulpia myuros*), yellow-flag iris (*Iris pseudacoris*), bull thistle (*Cirsium vulgare*), common St. John's wort (*Hypericum perforatum*), common tansy (*Tanacetum Vulgare*), English hawthorn (*Crataegus Monogyna*), English ivy (*Hedera Hibernica*), and field bindweed (*Convolvulus arvensis*).

Weeds treated and occurring on the Scatter Creek Wildlife Area are listed in Table 22. The table also describes the weed's classification, an estimate of the acreage affected by the weed, how many acres were treated, the relative density of infestation, the general trend the weed infestation has been exhibiting, the control objective and/or strategy for the weed and finally, which wildlife units have the weed present.

Detailed descriptions and natural history information for each of the above state-listed weed species listed above can be found at the Washington State Noxious Weed Control Board web site http://www.nwcb.wa.gov/search.asp. Information on other species contained in the list can be found at the University of California's IPM Online web site: http://www.ipm.ucdavis.edu/PMG/weeds_intro.html.

Weed management information for individual weed species can be found at the PNW Weed Management Handbook link at: http://pnwhandbooks.org/weed/control-problem-weeds

Table 22. Scatter Creek Wildlife Area weed table including the weed class and unit location on the wildlife area

Weed Species	Thurston County Weed Class	2018 Estimated Affected Acres	2018 Treated Acres	Annual Trend	Control Objective/Strategy	Wildlife Area Unit Weed Distribution
Burrowing clover	NA	2.4	2.4	Decreasing	Control	Scatter Creek
Common Groundsel	C	90	25	Decreasing	Control	Scatter Creek
General weeds	NA	600	63	Decreasing	Control	Scatter Creek, West Rocky Prairie
Grasses	NA	300	56	Decreasing	Control	West Rocky Prairie
Mouseear hawkweed	B	1.5	1.5	Decreasing	Control	West Rocky Prairie
Spotted knapweed	B	2.5	2.5	Decreasing	Control	Scatter Creek

Scotch broom	C	900	272	Decreasing	Control	Scatter Creek, West Rocky Prairie
Sulfur cinquefoil	B	0.1	0.1	Decreasing	Eradication	West Rocky Prairie
Tall oat grass	NA	900	152.5	Decreasing	Control	Scatter Creek, West Rocky Prairie
Tansy ragwort	B	45	91.3	Decreasing	Control	Scatter Creek

Appendix C. Fire response information

Agency	Units Covered	Contact number
West Thurston Regional Fire Authority	Scatter Creek, West Rocky Prairie, Black River, Glacial Heritage	360-352-1614
South Thurston Fire and EMS	Skookumchuck	360-264-4116
Grays Harbor County Fire District #1- Oakville	Davis Creek	360-273-6645
Department of Natural Resources, South Puget Sound Region	Scatter Creek, West Rocky Prairie, Black River, Glacial Heritage, Skookumchuck	360-802-7080
Department of Natural Resources, Pacific Cascade Region	Davis Creek	360-575-5089

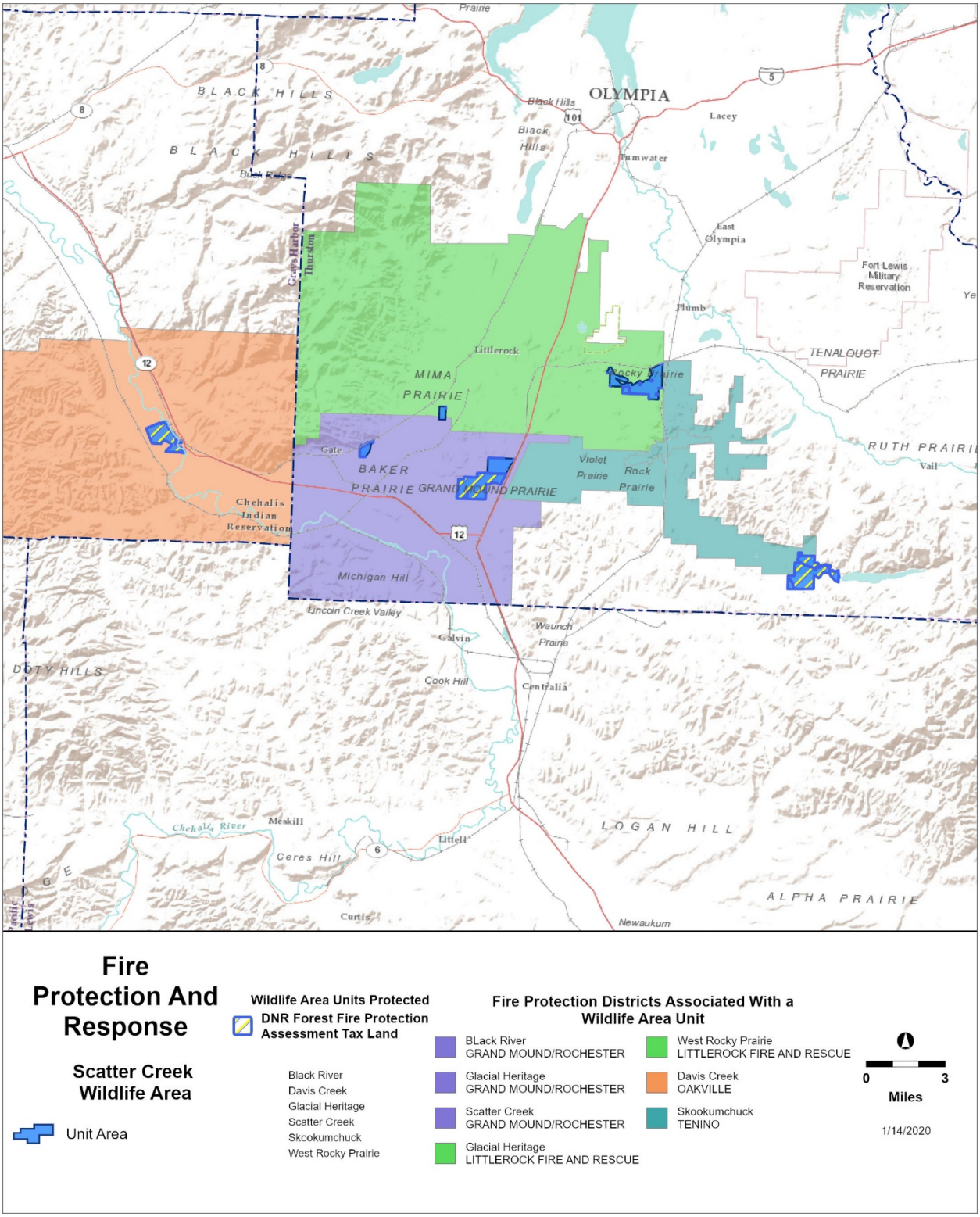
Department of Fish and Wildlife Contacts.

Contact	Phone Number
Darric Lowery, Wildlife Area Manager	360-701-5145
Josh Cook, Prairie Restoration Specialist	360-480-6508
Brian Calkins, Region 6 Wildlife Program Manager	360-742-4561
Mary Linders, Prairie/Oak Species Recovery Biologist	360-480-1800

Fire district information / Washington Department of Natural Resources

The majority of the Scatter Creek Wildlife Area is covered by both the West Thurston Regional Fire Authority and the Department of Natural Resources South Puget Sound Region. The Davis Creek Unit is in a separate fire management area in the Grays Harbor County Fire District, and in the Department of Natural Resources (DNR) Pacific Cascade Region (Figure 11). When a wildlife fire is reported, the county fire districts are usually the first to respond because most people call 911, and fire districts are often the closest resource. When a fire occurs within a fire district, county resources will engage in suppression efforts primarily. If additional resources are needed, the county resources will bring in DNR fire resources to help address the situation. Fire district personnel are well trained in structural fires and further training in wildland fire suppression through DNR. The DNR has the primary protection responsibility for state and private forest land and takes the lead on wildland fire suppression efforts. Both organizations have fire engines and other resources to suppress wildland fires.

Figure 12. Summary of fire protection and response



Appendix D. Scatter Creek history and cultural resources summary

History prepared by Edward Echtle, Echtle Consulting (2018)

The Scatter Creek Wildlife Area lies within the traditional range of the Kwaiailk (Q'^{w}ay'áyiłq') or Upper Chehalis people. The population occupied the shores and tributaries of the Chehalis River, upstream from its confluence with the Satsop River and spoke Tsamosan, a language distinct from the Lower Chehalis People downstream to Grays Harbor (Hajda 1990). Precontact estimates number the population at 1,200 to 1,500 living in approximately 48 villages between the Satsop River and the Cascade Mountains (Eells and Castile 1985).

Most villages were at the mouths of rivers and creeks. The settlements nearest to the Scatter Creek Wildlife Area were Squiaitl at Black River, another at the mouth of Scatter Creek, and aqaygt (long prairie) at Grand Mound, each comprised of several extended families. Dwellings were built of cedar planks over a log frame, near waterways. House entrances were oriented toward adjoining water (Marr et al. 1980).

For centuries the Upper Chehalis People subsisted on the resource rich rivers, prairies and forests of their homeland, procuring and storing food for daily use as well as for the winter months. The prairies produced numerous berries, roots, and nuts harvested mainly by women and children. Among the resources gathered were camas roots, roots of wild sunflower and tiger lily, wild carrots, acorns and hazelnuts, blackberries, and strawberries (Marr et al. 1980). The Upper Chehalis people enhanced the productivity of the prairies through controlled burns every 2-3 years (Hajda 1990; Marr et al. 1980).

Fish, especially salmon, was a key staple. Scatter Creek was well known among the Upper Chehalis People as an exceptionally productive salmon fishery, attracting large runs of Chinook, coho and chum each year. Fish weirs spanning rivers and streams at shallow points facilitated harvest of the salmon (Marr et al. 1980).

Seasonal gatherings with nearby tribes fostered trade and good relations with neighbors. Trade with visiting Chinook, Cowlitz, Quinault, and Klickitat peoples introduced the Chehalis to goods procured from European and American traders years before they met in person. Among the earliest outside influences on the Chehalis people was the arrival of the horse prior to 1800, likely procured through trade with Klickitat people from east of the Cascades (Marr et al. 1980).

Besides the village sites, the Grand Mound, a 100-foot high geologic feature that is the namesake of the surrounding prairie, is an important cultural site. The Upper Chehalis people used the mound as a burial place in the pre-contact era. The Upper Chehalis People either buried or placed the deceased in canoes in trees, depending on their status (Eells and Castile 1985).

By the 1820s, the Upper Chehalis were aware of European and American traders in the area, through contacts with neighboring tribes. In 1824 the Hudson's Bay Company launched an effort to establish a new trading house on the Fraser River, and sent an expedition from Fort George (now Astoria, Oregon) to chart an overland route to the outpost. Headed by James McMillan, the expedition traveled along the coast via Willapa Bay to Grays Harbor, then upstream on the Chehalis River. Along the way they recorded encounters with members of the Upper Chehalis who they called the Holloweena. Work (1912) wrote, *Sunday, (November) 28 (1824): […] pursued our course*

up the (Chehalis) river a distance of about 10 miles S. E. to where it receives a little river called the Black River from the Northward, up which we proceeded about 10 miles in about a N. E. direction. […] Pased [sic] an Indian house belonging to the Holloweena nation, I counted 12 persons at it, probably some more were in the house.

Monday, (November) 29 (1824): […] Passed two houses of the HalIoweena Nation at which I counted 10 men and as many women besides children, probably some more were in the houses. Saw some more Indians some of whom had horses.

On their return trip, the survey party divided at Grand Mound Prairie; half returned by their original path while the other half went south to the Cowlitz River to reach Fort Vancouver, also established in 1824 by the Hudson Bay Company as its new headquarters for the region (Bagley 1915). The Cowlitz Trail, long used by native peoples as a trade corridor, became the principal north-south route for non-natives traveling between the Columbia River and Puget Sound. In the ensuing years, Grand Mound prairie developed as an important crossroads in regional travel (McLelland 1953).

In 1833 the Hudson Bay Company established Nisqually House, the first permanent European settlement on Puget Sound, on the prairie east of the mouth of the Nisqually River. It became the center for trading with South Puget Sound tribes including the Upper Chehalis People who were active in fur trapping. In exchange for furs, Upper Chehalis People procured blankets, iron tools, guns, cloth, and beads as well as flour and sugar (Marr 1980).

Tragically, contact with the newcomers brought diseases previously unknown to the Upper Chehalis, causing a catastrophic decline in population. In 1841 the United States Exploring Expedition under Charles Wilkes visited the area and estimated approximately 700 Upper Chehalis People, half the pre-contact population (Boyd 1990; Marr 1980).

Beginning in the 1830s American emigrants crossed North America along the Oregon Trail to the Willamette Valley seeking free land. By the 1840s unclaimed land south of the Columbia River was scarce and American settlers began moving north toward the Puget Sound country, jointly held by the United States and Great Britain. In 1845 a party of American settlers led by George Bush and Michael Simmons took up claims around the mouth of the Deschutes River at Budd Inlet and on the nearby upland prairies. Over the next several years many Americans followed.

The Oregon Treaty of 1846 fixed the boundary between British and United States territories at the 49th parallel, opening the way for increased American settlement north of the Columbia River. By the early 1850s the Cowlitz Trail was a busy thoroughfare, as recent arrivals claimed land in an around the newly established towns of Tumwater, Olympia, Steilacoom, and others.

By 1852 Grand Mound Prairie attracted the attention of Cornish immigrants Samuel and Anna James who chose it for their new homestead. The James' arrived in the United States in 1843 and crossed the Oregon Trail to the Willamette Valley in 1851. After a short stay they migrated north following the Cowlitz Trail, choosing the south edge of the prairie along the Chehalis River for their claim. Along with fertile land and a reliable water source they found a small log cabin, recently abandoned by a trapper known as Tenas Jack, which they appropriated as their own.

That November Anna Maria (James 1980) penned a letter to her sister in England, describing their new surroundings:

…a prairie of ten miles long and varied from two to four miles in width, stretching away to the north of us, watered with a beautiful stream of water and covered with grass at this time as green as in May. […] like a fine lawn, skirted on each side by oaks and maples at this time in all the brilliant hues of autumn, behind one gently rising hill, forests of fir and cedar of the most gigantic height and size…

…This prairie takes its name from a remarkable Mound about a mile from our house. It stands on about 25 acres and is 100 feet high with a fine spring halfway up. The rest of this prairie is almost level without a spring except in the margin. The soil of the Mound has just enough clay to make it rich and excellent. The rest of the prairie is deficient of clay, it has a rich black mold averaging two feet deep resting on a substrata of sand and gravel which in some places is so mixed with the soil as to give it the name of a gravel prairie…

…[The Chehalis River] flows within a few yards of our house and is at this time and it seems will continue to be all winter, so full of salmon that Tom and Johnny could with ease catch a barrel in an hour…

From their arrival, the James' relations (James 1980) with their Chehalis neighbors was amicable, consisting of frequent visits for trade and to socialize:

We are the only inhabitants of this great prairie except for a few Indians who have a fishing station about a mile from us. These are on very friendly terms with us, supplying us with venison, wild fowl and meats at a very reasonable price and as we are the only customers and we in return letting them have what sappalille (flour) and molasses we can at reasonable prices which they are always willing to pay…

In 1854 an outbreak of disease among the Upper Chehalis People further diminished the population. The James family helped care for the sick, providing medications and comfort for the worst cases. In return, leaders granted the James' permission to stay on the prairie as permanent residents (James 1980). In the years following the outbreak, early ethnographer George Gibbs estimated their numbers at just 216 (Marr 1980).

While the James' location on Mound Prairie was initially isolated from other settlers, new neighbors arrived soon after. A few miles to the west, Benjamin C. Armstrong took up a claim on Cedar Creek and constructed a sawmill in partnership with his nearby neighbors (Ott 2009). When the James' constructed their first home in the early 1850s, they purchased lumber from this mill (James 1980).

Introduction of exotic produce and ornamental plants to Grand Mound began with the James' arrival. To establish their farm, the James' acquired plant stock from nurseries in the Willamette valley. Among the plants they purchased were Roman, Russet, and Red June apples. Samuel James also grafted Golden Sweets and others onto crabapple stock. In addition, they bought English gorse, lilacs, privit, coffee tree, trumpet tree and tree of heaven, tulips, jonquils, hyacinths, daffodils, daisies and primroses (James 1980).

One of the James' earliest neighbors was the Leonard and Lucetta Durgin family who arrived in 1853. The Durgins took a claim that included the Grand Mound and built their home on its summit.

One of their first endeavors was to establish their own plant nursery to supply neighbors with fruit and vegetable stock (James 1980; Pioneer and Democrat 1855).

In late 1853 the first group of Oregon Trail emigrants to arrive on Puget Sound by crossing the Cascade Mountains arrived. Comprised of several extended families, many took up claims on Grand Mound Prairie. Among these, David F. Byles, who initiated his parents' and siblings' migration west, took up a 160 donation claim along Scatter Creek, while his relatives took nearby claims. In July 1854 Byles married Mary Jane Hill, daughter of Robert and Lauretta Hill, who traveled in the same emigrant party as the Byles' (Hines 1894).

The donation land law required David and Mary Byles had to reside on the land for at least four years to receive title. No record exists of the dwelling they constructed. However, since cut lumber was available from local mills, it's possible they opted for a plank or box frame house instead of a rough split cedar or log cabin. The exact build date of the house occupied in later years by Miller and Brewer families is then an open question; it's possible the Byles constructed, or at least began construction of the plank house.

In 1853, Congress designated Washington a separate territory from Oregon. Its first governor, Isaac I. Stevens, arrived later that year. In December of 1854, Governor Stevens initiated a series of treaty councils with tribes across Washington, anxious to formalize American claim to the land. The Council that included the Upper Chehalis People as well as the Quinault, Queets, Satsop, from the Lower Chehalis, Chinook, and Cowlitz, took place at the mouth of the Chehalis River in early 1855. The negotiations ended without agreement when the tribes refused to sign because Stevens' treaty did not specify the location of reservations (Marr et al. 1980).

When natives east of the Cascade Mountains and on Puget Sound took up arms against settlers in the winter of 1855-56 over disputed treaty provisions, settlers across the territory built forts and blockhouses for protection. On Grand Mound Prairie neighbors built a fortification at the center of the prairie, known as Fort Henness. The stockade featured a rough log palisade wall built of timbers cut near the Byles' claim, north of Scatter Creek. David Byles served as a "orderly sergeant" in the volunteer militia (Washington Writers Project 1937).

Despite tensions, the Upper Chehalis People declined to participate in the conflict and camped near the Sidney and Nancy Ford claim on Ford's Prairie to the south with other native non-combatants (Marr et al. 1980). Elisha Sargent, whose claim adjoined the Byles' to the west, demonstrated his intent to keep peace with his native neighbors by placing his musket in the crook of an oak tree in front of his cabin. The musket remained in place until the 1930s when a local storekeeper removed it to display in his shop (Oregonian 1930).

The peaceful relations between Grand Mound Prairie settlers and the Upper Chehalis People resulted in almost no local bloodshed. An exception took place late in the conflict, when a lone native rider approached Fort Henness without displaying a white flag. When the sentry on duty killed the rider without warning, other settlers arrested the sentry and turned him over to the authorities (James, 34). By the summer of 1856, the conflict ended and Fort Henness fell into disuse, the lumber repurposed in other buildings including a school and masonic hall. Portions of that building survive, relocated a short distance to the south, serving as a community meeting hall in later years (DAHP 1975).

Following the conflict, Grand Mound Prairie received a new influx of settlers taking land claims. In addition, the Fraser River Gold Rush in British Columbia increased traffic on the nearby Cowlitz Trail. While the James' intended long-term residence, others took up land claims only to sell at their earliest opportunity. In a letter to relatives, Samuel James (James 1980:39) noted the transience of his neighbors,

The Americans are ever in motion. They generally calculate to build and do a little work on a piece of land, and then watch the first opportunity for selling, and the money they get is mostly spent in travelling before they settle again, and thus the great multitude of them are always on the move.

Such was the case with David and Mary Byles who relocated to Olympia in 1858. By then David Byles worked for the general land office (Hines 1894). The Byles' sold their claim to real estate speculator Milas Galliher for $2,500 (SWRA 1859). Galliher, who arrived in 1854, managed a hotel in Steilacoom. Along with his twin brother Silas Galliher, Milas bought and sold land throughout the south sound region. For a time, he owned the Nicholas DeLin claim at Commencement Bay but sold before the Northern Pacific developed the site as "New Tacoma," for its terminus on Puget Sound (Morning Olympian 1896).

The sale to Galliher predated Byles' receipt of the deed to the land, prompting them to make the sale contingent on the Byles completing the required survey and filing the remaining documents (SWRA 1858). Shortly afterward the Byles purchased a claim at the mouth of the Chehalis River and began a tannery. In 1861, the Byles platted the town of Cosmopolis on their property and became prominent citizens of the lower Chehalis River Valley (Hines 1894).

In 1852, George Washington Miller made the overland journey to Oregon, residing for a time in the Willamette Valley. The next year Miller married Manila Harper in Portland, Oregon and they relocated to Thurston County where their first child, Mary Jane, was born. However, when conflict arose with natives in 1855, the Millers returned to Oregon where son Thomas Jefferson was born in 1856, daughter, Letitia Knox, in 1858 and Benjamin Franklin in 1860 (Oregonian 1909).

After the conflict subsided, the Millers returned north, taking a claim on Grand Mound Prairie in 1859, just south of the David and Mary Byles claim (Oregonian 1909). The Millers purchased the former Byles claim from Milas Galliher in July 1860, perhaps because the farm was more developed than Millers' claim (SWRA 1860). Whether the box-frame house existed at the time of sale is unknown. However, descendants of the Brewer family who owned the land from 1873 to the 1964 believed the Millers built the house in 1860 (Brewer 1990).

George W Miller became active in local politics, elected as a Thurston County commissioner in 1861, a position he held until late 1863 (Olsen 2011). As the population grew on Grand Mound Prairie, the disperse community established a school and Masonic Hall. When the Millers sold part of their earlier claim in 1862, they deeded land for a cemetery near the former site of Fort Henness, currently (2018) known as Grand Mound Cemetery (Morning Olympian 1939). Anecdotal evidence suggests the Millers moved a number of burials on their land to the cemetery in 1863, although information related to who's burials these were was not provided (Morning Olympian 1939).

During this time the Upper Chehalis People remained an integral part of Grand Mound Prairie economic and social life. In 1864 the federal government established a reservation for the Upper Chehalis, encompassing land still occupied by tribe members on Grand Mound Prairie along the Chehalis River. Since the 1855-56 conflict however, many Upper Chehalis relocated to the Quinault

reservation or resided with other nearby tribes, diminishing their local population (Marino 1990). By 1868 federal agents estimated 40 native families resided on the Chehalis Reservation (Marr et al. 1980).

During the Millers' time at the Scatter Creek more children were born- Bethena Ann in 1861, Abraham Lincoln in 1863, George Washington in 1865, William Sheridan in 1867, Manila May in 1869, Kate in 1871, and Samuel Jackson in 1872 (United States Census 1870; Klickitat County Census 1883).

Meanwhile, the Millers received patents on their lands south of the Scatter Creek Farm in the late 1860s. It appears the Millers supplemented their livelihood on the farm through the buying and selling of land on Grand Mound Prairie, expanding their farm to 467 acres through purchase of adjoining parcels (BLM 1869). The Millers departed for Klickitat County in 1873 where they continued farming and stock raising. Manila passed away at Goldendale, Washington in 1877; George W Miller died in Vancouver, Washington in 1909 (Findagrave 2012; Oregonian 1909).

In 1873, as the Northern Pacific Railway completed its transcontinental line to Puget Sound, the Reece and Eliza Brewer Family purchased the former Byles claim and adjoining lands from George and Manilla Miller (Brewer 1990).

Reece Alexander Brewer arrived in Oregon in 1853 at age eighteen, accompanying his widowed mother Elvira Brewer and several siblings. By 1854, Elvira Brewer filed a claim near Junction City Oregon where Reece resided with his mother. Shortly after their arrival in Oregon, Reece's brothers John, William, and Oliver moved north into Washington Territory, staking claims on Grand Mound Prairie (Brewer 1990).

In 1857, Elvira Brewer passed away, leaving Reece Brewer free to pursue his own course. He married Eliza Johnson in 1858, part of a family that traveled west in the same wagon train as the Brewers. Apparently, Reece Brewer knew George W Miller; Miller served as a witness at the Brewers' wedding ceremony during his residence in Oregon in the late 1850s. In 1860, Reece, Eliza and their first child, James, relocated to Thurston County, and took up a claim south of the Millers in section 8 of 15N 3W, near his brothers' claims (Brewer 1990).

During the 1860s, the Brewers had more children- John in 1860, Martha Jane in 1861, Ella in 1862 and Emma in 1865. Family memory holds these years were challenging, as the Brewers struggled to endure harsh winters and build a farm. For unknown reasons, Eliza passed away in 1870, leaving Reece to raise their family (Brewer 1990; United States Census 1870).

Despite these hardships, Reece became active in politics, serving a term in the Washington Territorial legislature in 1871 (DAHP 1985). In 1873, when George and Manilla Miller decided to relocate to Klickitat County, they offered their farm for sale to the Brewers. This marked the beginning the Brewer family's nine-decade residence on the property. The sale, which excluded one acre set aside for the schoolhouse, encompassed the entire Byles claim and several adjoining parcels extending to the west and south to the township line (SWRA 1873).

Railroad building in the 1870s rapidly changed commerce and the flow of traffic through the Grand Mound area. The initial Northern Pacific line, completed from Kalama to Commencement Bay in 1873, closely followed the Cowlitz Trail, although it diverged at Centralia, passing through Tenino a few miles to the east. Growth in the area's population led to more roads as well. By the 1870s a wagon route connecting Grand Mound to Tumwater passed a short distance to the east of the

Brewer place. Originally known as the "Middle Road," it later became Case Road (Echo 1870; Morning Olympian 1893).

Possibly due to the increased access to larger markets and competition from outside produce, Reece Brewer co-founded the Puget Sound Farmer's Cooperative Assoc., an agricultural producers' advocacy group (Washington Standard 1876). The Brewers also purchased additional land south of their existing farm, across what is now 183rd Ave (Brewer 1990).

In January 1875, a ceremony in the Brewer home united Reece Brewer and Flora French in marriage. Flora was born in Washington Territory in 1857, the daughter of John and Rebecca French who also lived on Grand Mound Prairie. In November their first child, Effie Flora was born. Their second child, Fred Reece, was born in October of 1878. Flora died of pneumonia later that year. After Flora's death Reece transferred Effie and Fred to the care of Flora's parents from 1879 to 1881 (Brewer 1990).

The Grand Mound Post office, established in 1852 as a stop on the stage line between Olympia and the Columbia River, was housed in a succession of settlers' homes. In 1884, Reece Brewer took his turn as local postmaster and the Brewer home served as the community mail stop until 1888 (Ramsey and Goff 1988).

In the 1880s Reece's children came of age and began their own families. Ella Brewer married David Brown in 1885; in 1887 John Brewer married Ella Sparks and James Brewer married May Burbee. Martha Brewer married Albert Wright in 1888 (Brewer 1990).

Voters elected Reece Brewer as Thurston County Commissioner in 1888, a position he held until 1892 and again in 1897. During his tenure Thurston County built an ornate new courthouse in Olympia (Rathbun 1972). In 1905 citizens repurposed the courthouse as the State Capitol Building, to replace the original 1850s-era capitol building. The courthouse/capitol building, now known as the "Old Capitol" remains in use at Olympia as the Office of Superintendent of Public Instruction.

During Brewer's time as commissioner he married a third time to neighbor Eliza James Stocking, daughter of Samuel and Anna Maria James and widow of James Stocking (Brewer 1990). He also remained active in farming and dairying, partnering in the construction of a creamery at Grand Mound (The Ranch 1894). The increased dairying activity may be due to the arrival of the Northern Pacific Railroad line between Centralia and Grays Harbor via Grand Mound in the early 1890s (Hannum and Hannum 2012).

In 1897 Reece's daughter Effie Flora married stockman Frank S "Tib" Mills. They began their life together in a rented home on the prairie (Morning Olympian 1897). Tib and Fred Brewer, in partnership with Reece Brewer, bought and sold cattle, driving herds from eastern Lewis County and the Grand Mound area to railroad stockyards in Centralia and Chehalis (Brewer 1990).

Around 1900 Fred Brewer met and married Gertrude Morris, daughter of a storekeeper at Grand Mound. For a time, they resided with Reece and Eliza at their Scatter Creek home (Brewer 1990).

In the first decade of the new century the Brewers faced a succession of tragedies. In 1902 Ella Brewer Brown passed away after the birth of her third child. In 1903 Fred and Gertrude Brewer relocated to a nearby house owned by his late mother's family. In 1906, Gertrude contracted pneumonia and died, leaving Fred to raise their two children. Shortly after, Effie and Tib returned to live at the Scatter Creek house and took on care of Fred and Gertrude's two children, David and

Ella's three children as well as looking after the aging Reece and Eliza. That fall, Fred's son Archie Brewer died of pneumonia. Eliza James Brewer passed away shortly after, due to complications from a fish bone lodged in her throat (Brewer 1990).

Sometime in this period the house received some remodeling. The porch was extended around the east face of the house and the fireplace was rebuilt with more modern materials. Sandstone quarries at Tenino offered cut stone for building and ornamentation. The rebuilt fireplace incorporated firebricks dating from 1908 or after, produced by the Washington Brick, Lime and Sewer Pipe Company at Clayton, Washington. The added flourish of an ornamental Tenino Sandstone mantel reflected the next generation's intent to keep their pioneer home comfortable and up to date.

In 1908 the close-knit extended family posed for a photographer on the porch of their venerable family home. The photo shows the house with the new second entrance and featured the patriarch Reece Brewer, his sister Sarah Bacon, grandchildren Flora Brewer, Willard Florence and Gladys Brown and others. A year later Reece passed away at age 74, leaving his farm to the Mills' and Fred Brewer (Daily Recorder 1909).

By 1910 Effie and Tib Mills, David Brown and his three children, and Fred Brewer's children, Willard and Flora, all lived at the Scatter Creek home (United States Census 1910). The Brewer farm benefitted from new transportation options in the 1910s as automobiles and trucks became common. Nearby, the recently formed Washington State Highway Department designated the former Cowlitz Trail as part of the newly created Pacific Highway in 1916, continuing its role as the main north-south route through the area, with Case Road serving as an alternate route to Olympia (Pacific-Hwy.net 2014).

In 1914, Fred Brewer met and married Bessie Braden Winnett, a widow whose father also dealt in cattle. The Braden family owned farms near Calgary, Canada where Fred and Bessie relocated for better economic opportunities. However, after their arrival in Calgary influenza took Bessie's life in 1918, and Fred returned to the Brewer farm to continue ranching (Brewer 19,90).

In 1919 Martha Jane Brewer Wright passed away and was interred in Grand Mound Cemetery. (FindaGrave.com 2009). Her original marble grave marker contained two errors, showing her given name as Anna and her birth year as 1867. Sometime after her spouse, Albert Wright, passed away in 1922, Martha's tombstone was replaced with a granite stone with the correct name and birth year. The original stone, with errors, was moved to the Mills-Brewer farm and placed at the base of a maple tree, near the house.

As the children residing at the house matured, they contributed to the family's income by selling surplus potatoes grown in their family garden. In addition, they trapped raccoon, muskrat, mink, and other fur-bearing animals along Scatter Creek, curing the pelts in the dry heat of the attic. A fur company in Missouri paid cash for pelts mailed to their warehouse (Brewer 1990). By the 1920s the Grand Mound School district operated two buses. Since the Brewer farm was the end of the route, the district paid Wilbert and Willard $5 per month to drive and store the buses overnight on the farm (Brewer 1990).

By the 1920s the Brewer and Brown children began leaving home, starting their own families although nephew, Willard Brown, remained in the Brewer home after marriage, raising three young children, Richard, Alice and Robert. Tragedy struck the family again in 1934 when Tib was killed by

an automobile while crossing a nearby road. Shortly afterwards, Fred returned to the Brewer place to live with his older sister Effie and help tend the farm (Daily Olympian 1934; Brewer 1990).

While the dates are uncertain, architectural styles and materials suggest the barn and milk house standing a short distance west of the house were built sometime from the 1930s to the 1950s (Artifacts 2007). However, the barn closely resembles a model offered by Tumwater Lumber Mills in their 1922 "Ready Cut Homes" catalog (TLMC 1922). Also in the early to mid-1900s the family added a cold-storage room near the northeast corner of the house and a garage, just slightly north and west of the main house. The family's privy was likely nearby as well, although no indication of its precise location is evident. The house was plumbed for water and a toilet sometime during the Mills' tenure.

After World War II, increased traffic congestion on the Pacific Highway compelled Washington State to construct a new four-lane bypass near the Brewer farm in 1954, later designated "Interstate 5". By then Effie Mills and Fred Brewer were elderly, finding it difficult to manage their large land holdings. In 1960 Effie divided portions of her share of the land, conveying several parcels to family members including Oliver Dinsmore, (son of Gladys Brown Dinsmore,) W. M. Moody, Louise Fawbush, Mary Hendrickson, W.E. and J.B. Woody and Willard Brewer (WDFW 1960a, 1960b, 1960c). By the early 1960s, Fred Brewer began talks with Washington State officials, weighing the option of selling the property for use as a public game reserve (Chronicle 1964).

In the early 1960s hunters regularly called on the Brewers farm, using it as a de facto hunting reserve. After Effie Brewer Mills passed in 1963, her remaining lands transferred to Fred Brewer. Afterward, talks between Fred Brewer and state officials resulted in a formal lease agreement in March 1964, allowing state regulated hunting on the property while the Brewers maintained grazing rights. The lease also included an agreement to buy the land, to be exercised at the state's discretion (WDFW 1964a). That June Fred Brewer passed away (Daily Olympian 1964).

In October a formal dedication ceremony at the site included an address by then Governor Albert Rosellini and a dog trial demonstration. Photos from the occasion show the garage and chicken coop near the home. In the following months the Game Department worked toward finalizing purchase of the land. It received approval from the legislature in April 1965, having also negotiated with the adjoining landowners to purchase five parcels from Fred Brewer, the Dinsmore and the Brown families totaling approximately 430 acres (WDFW 1964b; WDFW 1965). Official reports justifying the land purchase to the legislature cited increasing public demand for outdoor recreation sites for hunting, canine field trials, and general nature study. Need to preserve the area's unique topography, namely Mima Mounds, were also a considered (WDFW 1965).

A site plan drawn by Game Department staff in 1964 indicates the intended enhancements to the property as it transitioned to a public hunting area. It proposed installation of "duck boxes," feeders and watering cisterns. It also designated areas for hay and oat cultivation as well as pasture, possibly holdover uses from the Brewer and Mills families' era (WDFW 1964c).

The 1964 plan also called for a low earth dam on Scatter Creek, to create a shallow pond to enhance waterfowl habitat. A Game Department engineering study in 1966 determined such a dam was unfeasible, as the ground would likely absorb the water (WDFW 1966). However, an informal survey of the area by staff in 2017 revealed a partial earth dam near the location shown in the 1964 plan map. Further inspection of WDFW records is required to determine the date of construction and purpose of the extant earthworks.

Photographs show the Game Department renovated the Miller-Brewer house by 1970. The second entrance at the west end of the porch was closed and the kitchen was upgraded with modern cabinets and appliances. An oil heating system was also installed in this period as well as upgraded wiring and electrical service. In 1973 a new well was drilled east of the house, and an old well located beneath the rear porch was discontinued as the household water supply (Chronicle 1973; Gerchak 2018).

Through the 1970s and 1980s state employees, usually Game department staff, rented the home as a residence (Gerchak 2018). Sometime after 1970 and before the mid-1980s the garage and chicken coop were razed. During the period of use as a rental property, Miller-Brewer house received inconsistent maintenance and underwent few changes. By the 1980s Game Dept. staff determined the chimney unsafe and barred fires in the fireplace (Gerchak 2018). In 1993 the house received a metal roof to replace the aging cedar shingles and an old hand-dug well beneath the rear porch was capped with concrete.

A survey of historic buildings undertaken by Thurston County in the 1980s resulted in placement of the Miller-Brewer home on the County and State Historic Register. In 1988 it was also placed on the National Register of Historic Places for its connection to significant people and events in regional and national history. The Miller-Brewer House was also significant as being one of only a few surviving examples in southwest Washington of vernacular Greek Revival style of architecture and plank construction dating to the Territorial era (personal communication, Greg Griffith, May 19, 2020). The following year the Thurston County Historic Commission erected a cobblestone pyramid marker with a mounted plaque, sponsored by Puget Sound Power and Light, as a Washington State Centennial Project.

By 2007 Miller Brewer House and Barn were vacant, and suffered from vandalism and deferred maintenance. A storm toppled part of a nearby tree, damaging the house, necessitating repairs.

During this timeframe, a group of interested Grand Mound-Rochester area residents, led by local historian Henry Edinger, sought to use the house to generate interest in local history and attract visitors to the area. To this end, the group was granted access by the Department of Fish and Wildlife (formerly the Washington Game Department) to open the house for public visitation, special tours, and events. They also monitored the building for vandalism and damage from natural causes such as storms.

Recognizing the architectural and historical significance of the Miller Brewer House, Edinger approached the Thurston County Historical Commission to explore approaches to long-term preservation. As a result, Thurston County agreed to fund a Historic Structure Report (HSR) to thoroughly document the building and plan for long-term repair and maintenance. Historic preservation consultants Artifacts, Inc. of Tacoma, was selected to produce the HSR that included detailed diagrams and photo details of the house's structure; a brief history of the house and environs; and recommendations for preserving the house and barn.

The house was again occupied by WDFW staff as a field office, in part to stem vandalism. Staff undertook repairs to the bathroom floor, deteriorated due to water leaks from the aging plumbing and fixtures. In 2016 the Thurston County Historic Commission, in partnership with WDFW, rebuilt the 1989 cobblestone monument, adding additional plaques as well as a new interpretive marker briefly explaining the site's history.

In 2017 a dry summer led to hazardous fire conditions on Grand Mound Prairie. On August 22nd a fire started on an adjacent private parcel to the west of the Scatter Creek Wildlife Area quickly spread out of control across the Scatter Creek unit, fanned by winds out of the west. Staff evacuated the Miller-Brewer House as the barn caught fire. Fire crews, focused on preserving homes in the area, were unable to protect the vacant historic structures and both house and barn were lost in the fire.

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Appendix E. Public response summary

Table 23. WDFW Response to public comments received during public review of the Scatter Creek Wildlife Area Management Plan draft under the State Environmental Policy Act (SEPA) from May 8, 2020 until June 8, 2020 - DNS 20-023.

	Comment	WDFW Response
1.	We use the Scatter Creek access site for exercising our dogs. It is a great resource to have this so close to the Olympia area. As I look at future plans for the site I would like to express a desire to have the cross fencing removed or at a minimum remove the bottom strands of barbed wire. Dogs and barbed wire are a bad combination. Hunting dogs and barbed wire are an even worse situation. Since the land is not grazed I don't see the need for the cross fence and definitely not a need for the barbed wire fencing. No issue and like the perimeter fencing. Thank you for this consideration. David Knutzen	The fence your referring to is on the boundary of WDFW owned and private property, currently we do not have the authority to remove the fence. If WDFW were to acquire the land then fence could be removed.
2.	WDFW is the primary state agency tasked with "preserving, protecting, and perpetuating fish, wildlife, and ecosystems". In the Scatter Creek Wildlife Area plan, please include a ban on all hunting, fishing, and trapping. This will force WDFW to do their stated mandate and save life on earth. D. Weinstein	Part of WDFW's mandate includes maximizing outdoor recreation and specifically makes reference to hunting and fishing. Hunting activities will continue to occur within the Scatter Creek Wildlife Area where identified as appropriate and beneficial to both the resource and the public. Additionally, hunters and fishers contribute greatly to conservation efforts as well.
3.	We are really excited and looking forward to hopefully getting some better kayak/canoe access to the Black River or improved/new trails that can be used as hiking/walking trails. We routinely use the Black River area and would support additional trails. One concern I have with the improved trails is to make sure we are able to keep it clean. I worry that with improved access we might see more trash that ends up in this ecosystem. Unfortunately, as we've been out lately, we keep seeing more trash being dumped along roads or dumped along trails or near the river banks. We do our part to pick up items as we can, but there is often too much for us to take. Anyways we are are excited to hear more details and hope to enjoy seeing any improvements made for better to the Black River area. Chad Flagg	Thank you for your interest in the Black River Unit, we will consider trail maintenance and upkeep as we improve trails on the unit.
4.	Hello... Don't know if this the proper way to submit suggestions, but here it goes. In the past, I've attended two planning meetings at the Swedish Hall in Rochester, and signed up as a volunteer both times. For the last couple of years, I've been using the trails in Scatter Creek and would like to offer a few suggestions on ways to enhance recreational opportunities.	We appreciate your interest in volunteering and glad you participated in our public meetings about this wildlife area. Your comments will be considered and incorporated, where feasible, in the management of recreation on the wildlife area units.

	1). Any possibility of enhancing the trails by widening the walking surface to accommodate two people walking side by side. As it is, the trails are not maintained, and grass and brush hinders using the trails after seasonal rains spur natural vegetation growth. 2). I also like to see primitive 'hike in', (limited or no impact), sites for camping. There wouldn't need to be an open camp fires or potable water. Food preparation could be limited to freeze dried meals prepared over a pack stove and water provided by the individual. Pack it in, pack it out. I'm still available as a volunteer. I have two decades working on natural resources projects for the California Conservation Corps. Projects included; Fisheries Restoration, Trail Construction and Maintenance, Invasive Plant Management, and Fire Rehab. I've worked with numerous Non-Profits, Community Action Agencies, City, County, State, and Federal Agencies. Thanks for any considerations. Dan Owen	
5.	I am responding to the Scatter Creek Wildlife Area management plan… I use the main Scatter Creek release site located off of Case Road SE. I have owned a home in the Rochester area for the last 17 years, only just recently selling that home. During the time living in the Rochester area, I used this site often for wilderness walks and allowing my hunting dog breed to run. Since the sell of my home, I have continued the use of the area at least 3 times a week, but often more even this it is currently necessary for me to travel 15 miles (one way) to use the area. My biggest concern in the proposed management plan is that I heard multiple time during the presentation that there was plans to reduce off-leash use. This is one of the main reasons I love this area. It is one of the only local areas that allows a wilderness setting that you can take your dog so they can run/walk….OFF LEASH. There are numerous core users of the area that do the same. This is an amazing location that is enjoyed for the ability to exercise (walk or jog) in a natural setting but also allows dog owners to bring their dog and not worry with the need of using a leash. It is not overly crowded and dog owners are responsible users **hunting** of the area. Please reconsider the reduction of Off-leash use of this area. Thank you in advance for your consideration and review of my comments. Brenda Anderson	We appreciate your enthusiasm and use of the Scatter Creek Wildlife Area, we are continuing to balance endangered species needs with recreation use. Dogs on leash are required at certain times and areas.

6.	For the most part I like your plan because of the nature conservation. I do not like the hunting planned for the Scatter Creek Unit. I like to go there to take photos, hike, and enjoy nature. I would accept continued pheasant hunting because of its historical use there. However, that in itself has interfered with my enjoyment of the area because, even when being there at 7:30 am, I have been yelled at and told to get out by pheasant hunters. It was very unpleasant to walk back to the parkling lot with a bunch of angry men with guns and I just don't go during pheasant season anymore. I would not like to see more hunting unless the hunting is during the exact same time as pheasant hunting. Any hunting using a rifle seems far too dangerous for that area and the amount of homes nearby. I also do not believe in any non-food hunting such as for coyote and cougar. So, my opinion is keep the pheasant hunting and only allow the other bird hunting if it falls during the same time as pheasant hunting. Don't allow non-bird hunting. Madeline McIntire	The Scatter Creek Unit was acquired for game species management and associated recreation activities including hunting. There is a firearm restriction on this unit limiting to shotgun only. No new types of hunting are proposed, and the existing hunting opportunities have long been established on this wildlife area unit. The other bird hunting referenced in the plan is not a new activity. It has been going on for years. The intent of the new management plan is to not increase hunting use, but rather to better identify safe and practical areas where hunting can occur.
7.	Here are my comments on the Scatter Creek Wildlife Area Proposed Management Plan. As a reminder, I've also attached a copy of our BCHW Scatter Creek Riders chapter's Wish List for horseback riders on the Scatter Creek Unit. I also am concerned about horseback riding on the Skookumchuk unit and will address that area. I reviewed the entire document, but focused my comments on Part II - Wildlife Area Management and Planning - Recreation - Wildlife Area goals, objectives and monitoring - Table 7, Goals 7 and 8, which appears to be where our Wish List is addressed to some extent. Overall, as I commented on at the virtual meeting in March, the plan is comprehensive from my point of view as a user and not an expert, and is an excellent document describing the Scatter Creek Wildlife Area Units history, habitats and wildlife. The Skookumchuk unit allows horseback riding, but is not regularly utilized by riders for several reasons:	Thank you for your review and feedback. Other comments are noted and will be considered when improving horseback riding opportunities. Your comments regarding the Skookumchuck unit will be relayed to the landowner.

	• In the past, the private timber land across the street was accessed from the eastern parking lot at the Skookumchuk unit. However, approximately ten years ago it was logged and most trails were lost. However, many horseback riders also rode the Skookumchuk unit fields and enjoyed the experience. • Vandalism at the parking lot kept people away. • Due to the small size of the parking lots, users other than horseback riders, often blocked horse trailer rigs in preventing them from easily departing the parking lot. If the vandalism and parking issues were resolved, horseback riders would be drawn back to this area. The Skookumchuck unit should be included wherever the Scatter Creek and Davis Creek units are mentioned in relation to horseback riding (e.g. improving facilities, evaluating units for new horseback riding opportunities, etc.). Joan Fleming	
8.	I did not expect to see horseback riding being included on the West Rocky Prairie unit, but I know riders who would like to horseback ride there and would be happy to see that happen. I see that Goal 7.K proposes that as a possibility and encourage that to be implemented. I did not find that Table 7 as mentioned above covered the horseback rider Wish List completely or in a clearly stated way, except that parking lot improvements are mentioned in a general way. There is general language about designating, maintaining and adding trails to all the areas, but no specific mention of trail access for horseback riding. • Evaluation of potential new opportunities for horseback riding is mentioned, but does not state that the ultimate goal is to expand opportunities for horseback riding. • There is no mention of adding a restroom to the North Wildlife area off Case Road. • Parking lot improvements and maintenance details as mentioned in our Wish List are not included. • The expansion of the parking lot at the South Wildlife area off Case Road is mentioned, but seems to imply	See previous WAAC comments and responses. Other comments are noted and will be considered when improving horseback riding opportunities. Much of the "wish list" items have been consolidated in order to maintain brevity in the objective section. Parking area improvements off Case Rd are being addressed in conjunction with the construction of the new wildlife area headquarters. Due to regulatory hurdles with development and permanent impacts to critical habitat, gaining support and permits for improvements will be challenging, costly, and could take a good deal of time to accomplish. Nonetheless, objectives are set in this plan to work toward meeting several items on the wish list provided where feasible.

	that this might not happen due to the USFWS requirement for an HCP. The table states that coordination with the community for stakeholder input should happen and that Backcountry Horseman was a key user group. The local contact for Back Country Horsemen of Washington (BCHW) should be the Scatter Creek Riders chapter, P. O. Box 1016, Rochester, WA - 98579. I am a member of this chapter. I am pleased that the horseback riding community is being seriously considered in this management plan for the next ten years. These trails are important to us because they give us more opportunities to recreate in the local community. When we are given multiple local choices for riding, we spread our use over more trails and that helps prevent overuse of individual trails. Having riding locations close to home prevents us from driving longer distances in order to recreate - thus saving fuel and wear and tear on our rigs. Thank you for the opportunity to comment on this management plan. Joan Fleming	
9.	Hello and thank you for the opportunity to comment on the Scatter Creek Wildlife Area draft management plan. I read through most of the document and was interested to learn about how the South Unit of the Grand Mound prairie had recovered from the 2017 fire. I visit Scatter Creek and West Rocky Creek every spring and was devastated when I heard about the fire. Over the last few years, I have been able to watch the area come back with the help of restoration work and was glad to hear that the butterfly recovery is still going strong. One thing missing from the draft plan was information in the cultural resources section. It was very sad to see the historic house and barn lost in the fire. Since the Brewer House is so well documented, even down to photos of the wallpaper, I was hoping WDFW would propose constructing a replica of the house on the original site. As to the management of these areas over the next decade: I am glad to hear WDFW is on the verge of finally adding the leased area on the North Unit of Scatter Creek to the wildlife area. This is an amazing piece of land, with riparian creek	Thank you for your support and comments. The cultural resource appendix is included in the final plan to be placed on the agency's website. As of now, we have no firm plans to re-build and/or build a memorial structure at the location of the Miller Brewer House. Thank you for your support in acquiring additional prairie habitat.

	habitat, intact oak forest, and some really neat bouldered prairie in the southwest corner of the property. It also has some wet swales where wet prairie species could be reintroduced. Finally, any pieces of functioning prairie or oak woodland that WDFW can purchase to add to the mosaic of protected habitats, I would like to see the department pursue. Development pressure in Thurston County is going to close out those opportunities in the near future. Farther to the south, a large prairie and oak mosaic just to the north of the Mother Theresa monument would seem to be a good target for conservation that WDFW should look into. The sheer amount of restoration work that I have witnessed (and occasionally aided with some Scotch broom pulling) over the last two decades on our state prairie habitats has been impressive and gratifying. The opportunity to partner with the Center for Lands Management and other restoration groups is great. I want these efforts to continue and for our South Sound prairies to thrive. Thank you, Kurt Wieland	
10.	I would like to see the phasing out of dog training on the Scatter Creek Case Road units. This activity is not conducive to the safety of prairie habitat and species, makes the area unusable to more passive recreation, and simply does not need to be conducted on one of Washington's rarest habitats. I would like to see DFW purchase some nearby dry farmland habitat as a replacement that could be used year-round and get the dogs and crowds off the prairie. Pheasant release happens in the fall and isn't as much of a problem since the flowers and songbirds are gone, but finding all the fluorescent skeet-shooting debris all over the prairie is disheartening and I would like to see that activity moved to less sensitive land as well. Kurt Wieland	Thank you for expressing your concerns surrounding dog training, pheasant hunting, and target shooting on the Scatter Creek Unit. This unit was acquired with grant funding specifically for game species management as well as the associated recreation activities. Dog training, competitive hunt dog trials, and upland bird hunting, will continue as a result. WDFW will continue to balance habitat, public use, and species needs at this multi-use and highly beneficial site.
11.	The addition of mature oak forests to the Davis Creek unit is exciting and I am hopeful DFW can get grant funds for this endeavor in the near future. I also visit the Glacial Heritage Park on Prairie Appreciation Day every year. As much as I like seeing this amazing place, I would prefer that access remain limited and gated and that DFW sell their 80-acre inholding to Thurston County and buy replacement prairie elsewhere. Unlike the other areas, Glacial	Thank you for your support in acquiring additional prairie habitat. To the degree we can we will continue to pursue these acquisitions. Objective 9C addresses the future of the Glacial Heritage Unit – specifically to developing an agreement with the Center of Natural Lands Management or consider transfer of the unit by 2025.

	Heritage does not have vandalism problems, and keeping it closed off makes sense to me. In the agonizingly protracted drama over West Rocky Prairie, I am encouraging DFW to remain steadfast in its efforts to purchase the remainder of this area from the Port of Tacoma. The Port's scheme to sell this to a company that wants to turn this amazing place into a diesel truck and warehouse hub is truly ridiculous. The noise, lights, and human presence that would result from 6 million square feet of warehouse would completely ruin the rural character of West Rocky Prairie and make restoration of gray squirrels and enhancement of butterflies and spotted frogs on the adjacent state wildlife area impossible. In addition, purchasing this land would allow access from the gated road to the north of the wildlife area. The current south access is nice, but it is a long walk for many casual visitors to get to the prairie. The Port property continues to languish under a blanket of 10-foot-tall Scotch broom instead of being restored. Thurston County's recent decision not to change the designation of this land sends a clear message to P of T that this development is not wanted by residents and planners in the county, and the Port needs to be encouraged to sell the land to DFW. Also not mentioned in the draft report that I could see was the plan to purchase the Alpaca Farm by Tenino. I assume this area would become part of the Scatter Creek Wildlife Area. I took a tour of the Colvin Ranch across the highway from the alpaca farm last year and was amazed at the beauty and habitat potential these two areas have. I hope DFW will continue its efforts to secure funding to purchase the entire farm—the gopher habitat, upland prairie, Oregon oak, wet prairie remnant, elk herd, and mixed mature forest of this property would make it a key link in keeping our prairie and surrounding lands functioning. In combination with large existing conservation easements to the south, the total habitat connectivity would be gigantic. Kurt Wieland	
12.	I was glad to hear a new headquarters is being constructed on Scatter Creek north unit. The vandalism of restrooms and broken glass in the parking lots could be greatly diminished by the presence of an office and personnel down there. I am supportive of plans to free up more oak trees from conifer incursion on Scatter Creek and West Rocky Prairie and the	Comments noted.

	continued reintroduction of butterflies and future return of western gray squirrels to these areas. Related to this, the Scatter Creek units both have Douglas Fir and big-leaf maple habitat on their edges owned by Port Blakely. This edge forest should be purchased from the timber company to provide more refuge for the returning squirrels as well as protecting the scenery from future clear-cutting (which I am sure Port Blakely has planned). Kurt Wieland	
13.	WDFW needs to be very proactive in promoting fire-wise behavior around Scatter Creek. The 2017 fire was completely preventable, with a citizen creating sparks on a dry windy day. That human lives were not lost was very fortunate. Perhaps out of the scope of this plan- I detest the gigantic billboard next to the North Unit. I would like this detriment to the scenery to be moved to a less intrusive location. From some areas on the unit, that thing is right in the way of the view of Mt. Rainier. Kurt Wieland	Objective 9A. addresses the development of a fire management plan for the wildlife area by 2021. Thank you for your comment. The billboard is on tribal property.
14.	Hello! I'd like to submit my comments for the Scatter creek management plan. I'll just run my suggestions/requests down in bullet form; - work with CNLM to do more seeding of Puget Balsam on the north unit of scatter creek, west rocky and glacial heritage. That is a huge nectar source for the Taylor's checkerspot, which is already known because thats why WDFW and USFWS released them on the south unit. I believe the TCB and balsam are intrinsically linked; you need balsam and host larval plants established before future reintroductions at those sites, or it won't work. – unknown	Yes, you are correct that Puget balsamroot and associated host plants are important resources for Taylor's checkerspot and other Lepidoptera, balsamroot is both a nectar source and roost site. For this reason, it is a key component in our habitat requirements for Taylor's checkerspot reintroduction. Food and roost sites need to be established prior to reintroduction for best success. Puget balsamroot is used in restoration treatments at all sites mentioned and is added once areas have been sufficiently prepped using fire and herbicide. That said, it is a very slow growing species that is not well suited to all sites and which can take many years before it is large enough to become functional. In that time many individual plants succumb to mortality, so ensuring it occurs on these sites is easier said than done. But that doesn't keep us from trying as long as the funding is available.
15.	-continue to work on purchasing the port of Tacoma land adjacent to West rocky prairie! That would be an amazing land acquisition, great for deer, elk and grouse. As would have been the Alpacas of America property... -continue oak woodland restoration and conifer removal at west rocky. Work with CNLM to seed species associated with oak woodland and Savannah (balsam, montaine prairie violet, nodding onion, small flowered trillium). Removal of reed canary grass along beaver creek and work to restore or recreate rare wet prairie habitat. Use girdled conifers for nest habitat for bluebirds and white breasted nuthatches	Comments noted.

	Unknown	
16.	-manage upland portion of west rocky and Skookumchuck for ruffed grouse habitat (blackberry removal, planting of alders, laying down pea gravel to the roadbed). If the port of Tacoma land is picked up, this would be a great section for grouse; a young second gen forest. Unknown	Comments noted.
17.	- try to establish a safe target shooting area at West rocky prairie. Skookumchuck doesn't allow any target shooting, and scatter creek is shotgun only. I can understand for rifle, but It is silly I can't sight in my bow at either of these places, with hundreds of acres of open space. West rocky is the only other option for target shooting, but there is no earthen backstop (other than the mounds lol KIDDING) - Update website to inform prospective hunters that scatter creek is shotgun only. I was thinking about taking my. 22 to rabbit hunt this year, or maybe go for deer with my bow along the north unit of the creek, but only the signage at the site tells that both units are shotgun only (which I didn't know until I stopped there last week). Unknown	West Rocky Prairie was purchased in part with USFWS funding. USFWS does not allow a formal shooting range at West Rocky Prairie. Archery is covered in the new target shooting rules and archery hunting is allowed at the Scatter creek Unit. Refer to the draft target shooting rules and hunting regulations (https://wdfw.wa.gov/about/wdfw-lands/recreation-planning/rule-development/target-shooting). We have not assessed target shooting on West Rocky Prairie. Under the established rules, dispersed target shooting may be allowed.
18.	potential wet prairie restoration opportunity at Skookumchuck. The presence of Oregon iris and the small patches of camas I saw on a walk last week near the barn tells me that it was previously a wet prairie habitat, that is now being choked out by the tall grass cultivated for the release of pheasants. Also observed puget blue butterflies at Skookumchuck during this walk. -since glacial heritage cannot be hunted, continue to restore habitat for streaked horned lark, western bluebird, and TCB. Apparently mazama pocket gophers do not do well to transplanting according to USFWS, otherwise I'd say do that as well (still baffles me there are no MPGs past the black river at glacial or mima) -continue scotch broom removal efforts at all sites Unknown	Prairie restoration not a focus on the Skookumchuck unit per Wildlife Habitat Management Program plan. WDFW will make recommendations to TransAlta when the management plan is up for renewal. The Primary objective on this unit is to provide forage and cover for elk. Other comments noted.
19.	-continue efforts to establish Golden Paintbrush populations at all applicable sites, as it is an endangered species and also a larval and nectar host for TCBs	The WDFW is working with USFWS to develop guidance on which sites are appropriate for establishing golden paintbrush, a federally threated species. While some work suggests this species may have value for the endangered Taylor's checkerspot butterfly, observations of field use in the wild in Washington is so far quite limited, although

	- increase prescribed burns at north and south units of scatter creek, Skookumchuck, glacial (duh) and west rocky prairie. The prairie forb diversity on the north unit is dramatically lower than the south unit, and the balsam near the cemetary are getting overtaken by scotch broom and woody shrubs. Unknown	that work is ongoing. In contrast, Harsh paintbrush is well established as an oviposition and larval host for Taylor's checkerspot butterfly, which is heavily used by wild populations historically and at present. Unfortunately, because there is potential for these two paintbrush species to hybridize, the decisions about what to put where must be made carefully and coordinated with all potential partners to ensure sufficient recovery opportunity and long-term conservation of both species. While WDFW is generally in agreement that some of these sites would benefit from increasing prescribed burns, this is a matter that must consider many factors including timing, weather conditions, burn objectives, desired fire return intervals, and the cost/benefit of burning. Some sites (e.g., Scatter Creek south tract) are challenging to burn because they require specific wind directions in addition to other atmospheric conditions on the day of the burn, with all of this limited to the burn window after September 15th, unless a burn exemption can be obtained from DNR. In addition, burn size may be limited due to funding for follow up treatments (herbicide, seeds, and plugs) as well as the need to consider the location of and impacts on the many rare species that occur on WDFW lands. Prescribed fire at the Skookumchuck unit can occur if the landowner is willing and if it meets objectives within the associated Wildlife Habitat Management Program plan. Scatter Creek north tract has large areas to the east where prairie forb diversity has degraded and has been managed more for recreation. These stretches have gotten less restoration focus than the western portion of the north tract where many unique plants and sensitive features occur. Prescribed burns were not carried out in 2017 and 2019 for various extenuating circumstances, and some of the intervening years have seen burns conducted under less than ideal conditions. Scatter Creek north tract will always present logistical hurdles for prescribed fire with it's proximity to I-5 and a restrictive burn window, but the plan is to continue to burn, restore and increase the native plant populations. A prescribed burn occurred nearby the cemetery in 2019. The south tract in general is regularly mowed and scotch broom and other brush are cut. The future intention is to reduce shrubs and brush along Case Road for better wildfire prevention and increased prairie vegetation richness. Unfortunately, the 2017 wildfire at Scatter Creek's south tract has significantly impacted our ability to maintain and restore other portions of this unit and others due to limited resources. The WDFW

		will be developing a restoration plan for these sites in fall 2020 that should prioritize key management actions and impart a better understanding of the resources required for suitable management of these important sites. In contrast to the other sites, burning at Glacial Heritage has been widespread and relatively frequent such that increased burning there is likely to negatively impact Lepidoptera and increase exotic vegetation through an overabundance of open ground where weed seed germinates readily. In addition, excessive burning can lead to drying of the soil which can then inhibit survival of the native plants we're trying to restore. For Taylor's checkerspot, Glacial Heritage would most benefit from increases in the amount of host plant and tall forbs that would provide larval food and roost sites; efforts to restore these species have been ongoing for decades but have proved difficult due to the poor soils that predominate across large portions of the site.
20.	Prior to the approval of any increased recreational activity on the wildlife area, there should be a comprehensive conservation review. Questions to be answered include: Are PHS recommendations consistent with current management? How can the department conserve various SGCN tied specifically to the ecological systems of concern on the wildlife area, such as the Oregon vesper sparrow? What needs to occur to do that? Where specifically will the various species be conserved and recovered? Recreation and species impact review cannot be piecemealed, issue by issue, by passive action or inaction, portion of site by portion of site, in the absence of conservation guidance and a framework designed for successful conservation and recovery. Dave Hays	On Page 44 of the draft Scatter Creek Wildlife Area Management Plan is a statement of how to balance recreational use with wildlife / habitat protection. The statement refers to a Statewide Recreational Strategy under development. The plan says that the issues of how to guide and balance recreation with wildlife and habitat will be addressed in the Recreation Strategy once that's developed. Thus, the agency will include staff from the Diversity Division on the group overseeing the development of the strategy to ensure the best tools are being used to guide decisions that require balancing recreation with species needs (e.g., PHS, SWAP).
21.	…there is no objective to improve quality of the prairie ecological systems of concern (outside logging trees to create more prairie), even though the department is currently undertaking that at the present time.. and there should be an objective reflecting current work. Dave Hays	An objective has been added to reflect goals for improving the quality of prairie habitat.
22.	..grassland bird conservation, including restoration of habitat, is not specifically mentioned. Why not, especially with the decline of the Oregon vesper sparrow and grasslands the primary habitat of the species? (There are Oregon vesper sparrow currently visiting the wildlife area but **there are no objectives for the Oregon vesper sparrow in the plan**). That's an example, one of many reasons why it is important to have an objective relative to improve the ecological system. Dave Hays	An objective was added to the management plan that includes Oregon vesper sparrow conservation.

23.	Recreation has a significant impact on ground nesting birds like the Oregon vesper sparrow. Recreation appears (but not studied) to have a current significant impact on SGCN butterflies like the Mardon skipper. Where specifically, on the wildlife area, will the conservation of these species occur for the long term? It can't be done everywhere, so where will it occur? If we are going to improve recreational opportunities, how will that be done and provide habitat for the SGCN? This is a difficult but important area. Enforcement of current rules could provide conservation benefits. Current spring closures are not followed by some, especially on evenings and weekends, and even a low level of human disturbance may adversely affect ground nesting birds. It is critical that areas for conservation of Oregon vesper sparrow be identified. Dave Hays	There are a variety of tools that wildlife area managers refer to for identifying the location of places where conservation of a certain species should be a priority. A couple such tools are our WSDM and PHS databases, each of which shows all known locations of diversity species, particularly PHS/SGCN species. Because the known locations in WSDM and PHS are almost always incomplete, there needs to be another way to locate broader areas of potential habitat. One such tool is our SWAP, and specifically the information in SWAP that connects ecological systems to species of greatest conservation need. This is a useful tool because it not only allows us to see where species have been observed, but also can help us identify places where species could occur because the right habitat occurs in the place. Though taken together, these two pieces of information can help to narrow down where added protection is needed (e.g., from incompatible uses such as certain types of recreation), like all tools they are imperfect and cannot provide a perfect answer. To address that, the results of any analysis using these types of tools then should go through review by local species and habitat experts to make sure the right places were captured and to adjust when they're not. An objective to the WLA plan has been added reflecting the comments received.
24.	The Mardon skipper is nearly extirpated on the Scatter Creek units. These are the only known populations in the Puget trough outside of Joint Base Lewis McChord. What do we need to bring this species back? Actions to recover this species need to be taken, and specific objectives to recover Mardon skipper, an endangered species, should be included in the plan beyond the catch basin objective currently written for all of the SGCN butterflies. One objective, clearly is to identify, outline, and take appropriate management actions to increase populations of Mardon skipper. Dave Hays	Your comments will be considered and an objective focusing on the Mardon skipper will be added to the plan.
25.	Again, no new recreational expansion should occur until a comprehensive recreation and conservation review across all units is conducted and an objective for that review should be included in the plan. I cannot emphasize this point enough: ***WDFW cannot advertise and draw the public, under any circumstances, to places where it knows adverse impacts to endangered species occur under current management, without a clearly articulated conservation strategy.*** Dave Hays	See comments above (#20, 23) – An objective was added to designate areas critical for the protection of sensitive habitat from recreation use on the wildlife area prior to or during the development of the recreation plan for the wildlife area.
26.	Rare plant conservation is part of good stewardship of WDFWs wildlife areas. Their protection is a component of good stewardship. However, they cannot be protected without intent. That includes identification and use of species information in management activities like the planned logging,	A plant protection objective has been added to the plan and the wildlife area manager will consider your comments and recommendations provided.

	herbicide application, and recreation. The recent logging action at the south unit of Scatter Creek was much needed and has the potential for great benefit, but it destroyed an important area of Mardon skipper habitat, and adversely affected rare plants. Any future logging must be conducted with care that greatly exceeds past efforts. Examples of increased care include a compliance officer present each day. Rare plant objectives should include rare plant surveys prior to management actions like logging, development of rare plant databases, and rare plant conservation actions within the conservation of the ecological systems of concern. Strategies should be coordinated with DNR natural heritage, but land management actions are the responsibility of WDFW. The absence of rare plant surveys is no excuse for damage and elimination, and damaging actions only lower the view of WDFW as caretakers of public land. Dave Hays	
27.	What can be called Willamette Valley wet prairie is extremely hard to discern, and perhaps a hopeless accounting task, but it is very small. The wildlife area is recognized as having some of the best remaining examples of this ecological system. It is difficult and impossible to protect high quality native habitat from activities that disturb, degrade and destroy it with signs that say please pick up after yourself and stay on the trails, but that is the challenge inherent in managing rare ecological systems and endangered species. There has to be more. This includes not only the comprehensive conservation review, but (as examples) objectives and actions like the purchase of appropriate equipment for land managers, increased enforcement, restrictions on the use of tractors and heavy equipment, improved public education, development of site docents, area exclusion fencing, and improved guidance to recreational groups. Current scotch broom control is not conducted during times of the year it has been documented to be most successful, leading to inefficient use of funds and occasional impacts to habitat. I understand issues of staffing and equipment, but this needs to be rectified. Dave Hays	Your valid comments will be considered and incorporated, where feasible, in the management of the wildlife area units.
28.	If contamination is suspected, discovered, or occurs during the proposed SEPA action, testing of the potentially contaminated media must be conducted. If contamination of soil or groundwater is readily apparent, or is revealed by testing, Ecology must be notified. Contact the Environmental Report	Relevant regulations will be followed. Comments noted.

	Tracking System Coordinator for the Southwest Regional Office. Dept of Ecology	
29.	Erosion control measures must be in place prior to any clearing, grading, or construction. These control measures must be effective to prevent stormwater runoff from carrying soil and other pollutants into surface water or stormdrains that lead to waters of the state. Sand, silt, clay particles, and soil will damage aquatic habitat and are considered to be pollutants. Any discharge of sediment-laden runoff or other pollutants to waters of the state is in violation of Chapter 90.48 RCW, Water Pollution Control, and WAC 173-201A, Water Quality Standards for Surface Waters of the State of Washington, and is subject to enforcement action. Construction Stormwater General Permit: The following construction activities require coverage under the Construction Stormwater General Permit: 1. Clearing, grading and/or excavation that results in the disturbance of one or more acres **and** discharges stormwater to surface waters of the State; and 2. Clearing, grading and/or excavation on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan of development or sale will ultimately disturb one acre or more **and** discharge stormwater to surface waters of the State. a) This includes forest practices (including, but not limited to, class IV conversions) that are part of a construction activity that will result in the disturbance of one or more acres, **and** discharge to surface waters of the State; and 3. Any size construction activity discharging stormwater to waters of the State that Ecology: a) Determines to be a significant contributor of pollutants to waters of the State of Washington. b) Reasonably expects to cause a violation of any water quality standard. If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a	Erosion control measures will be implemented, and necessary permits acquired prior to construction. Comments noted.

	site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) will be required to be submitted. Additionally, sites that discharge to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, high pH, or phosphorous, or to waterbodies covered by a TMDL may need to meet additional sampling and record keeping requirements. See condition S8 of the Construction Stormwater General Permit for a description of these requirements. To see if your site discharges to a TMDL or 303(d)-listed waterbody, use Ecology's Water Quality Atlas at: https://fortress.wa.gov/ecy/waterqualityatlas/StartPage.aspx. Dept of Ecology.	
30.	Only a few days ago as I exercised my bird dog on the Case Road section I observed two posted signs that read "State Game Land, Do Not Enter." A now-deceased former Dept. of Game assistant director and close friend pointedly informed me that the Scatter Creek properties were originally purchased with hunter license funds. In my past few years' year-round experience in those properties, and in the Pt. Blakely and DNR lands between Case and Littlerock Roads, I observe that hunting and dog training are incrementally being curtailed and reduced. I have no argument with restoration of the prairie mounds areas, or protection of rare plants, gophers and butterflies. I appreciate those efforts. But I wonder if people opposed to hunting or those who are non-hunters can appreciate the original purchasers of that land and remain in approval of the legal hunting uses of the properties. Twenty years ago I did hunt pheasants from 2-4PM on Sundays with an aged dog for a time, but I do not choose to hunt birds there regularly because of the crowds and potential dangers. In summary, this is a reminder that hunters bought that land and have first right to it, and a cautionary note to the nice-sounding, but ultimately exclusionary results of multiple use. Joseph Jauquet	Thank you for expressing your concerns. The Scatter Creek unit is open to the public, but not to motorized vehicles. This unit was acquired for game species management and associated recreation activities including hunting. Hunting and related outdoor sports will continue. The wildlife area manger will look for the signs you mentioned and make corrections.

31.	Thank you for the opportunity to provide comments on the Scatter Creek Management Plan. I am a general public recreational user at the Scatter Creek Wildlife Unit, where I hike/walk weekly. In the past when my dog was younger, would regularly walk with my dog off-leash there (on-leash during the posted nesting bird season). I have been using the Scatter Creek Unit over the past 15+ years. The Scatter Creek Unit is a beautiful prairie and my comments are on that Unit. I support the overall plan to improve and restore the prairie, oak woodland, wetlands and other habitats. I especially appreciate the proposed work to improve habitats for Western Gray Squirrel and prairie butterflies. That is exciting and challenging conservation work! I look forward to the re-introduction of the Western Gray Squirrel, having never seen one in the wild. Clearly the biggest future challenges and potential conflicts facing these Units are the increasing recreational use by our growing population. Balancing those needs is a difficult task and I appreciate WDFW trying to address those in this updated management plan. An increased presence of WDFW on all the Units will help greatly in addressing problems if additional funding occurs to support staffing. **<u>Comments on Table 7 Scatter Creek Wildlife Area goals, objectives and performance measures:</u>** Page 63-64, 7J: **Horse trails clearly marked at Scatter Creek.** This needs to happen very soon. In the past few weeks since Scatter Creek Unit has re-opened following the closure for the Covid-19 pandemic, I have observed both riders (4 horses & riders galloping about) and sign of horses (hoof prints, manure) on every trail in the North Unit, except the leased area. Riders are ignoring the boundary limits on their riding area. This was occurring during this last winter; I emailed the Area Manager with my concerns at that time. In addition to signage, additional outreach to the horse riding community is needed to help educate their members. Page 66, 8B: **Stakeholder participation and engagement.** In addition to the key user groups of backcountry horseman, field trial community, hunting related groups, local chamber of commerce or community organizations, don't overlook the	Thank you for your comments, they will be considered and incorporated where feasible. WDFW wildlife area staff do not want to overlook and user/ stakeholders. Currently we do not have any designated "friends" group on the wildlife area units, this is a good idea to help connect with all user groups. The objective to "Provide education and outreach material to the public to reduce pets off leash by 2021" is targeted to reduce observed habitat impacts, species conflicts, and observance of non-compliance with posted rules. This objective may take several forms and will be implemented as needed. The Scatter Creek Unit will remain a multiuse site, but some areas may be restricted to some user groups during particular times of the year or only in designated areas.

	difficult task of reaching out to the frequent, numerous but unorganized users (I observe a steady stream of hikers, dog walkers, runners and family groups in my weekly+ visits). Please continue the postings on the bulletin boards in the parking lots (where I saw notice of this comment period) and consider additional posting at trail entrances, similar to the signage used when herbicides are applied, to notify users of upcoming or proposed management actions. Additionally, are there Friends Groups for any of the Units that could assist in engaging these "unorganized" users through periodic onsite use surveys on certain days of the year? I'm concerned that a considerable number of user/stakeholders are overlooked. Page 69, 11E: "**Provide education and outreach material to the public to reduce pets off leash by 2021?"** What is the context for this goal? I could not find any detail on it in the draft plan. Is this an issue with unleashed dogs during the bird nesting period? Is this a change in management planning to eliminate the dog walkers at the Scatter Creek Unit? Is this a needed change for the reintroduction of the Western Gray Squirrel? Please provide more information on this proposed action. The text in the draft plan includes the "?", suggesting this is a question to be determined yet. Kate Benkert	
32.	A section of Scatter Creek itself dries up and goes underground during the summer. From my observations over the years from the access point to Scatter Creek in the leased portion of the North Tract, it has generally dried up by late May - June and surface flows return in the late fall (November/December) after the initial rainfalls and recharge of the shallow aquifer. In 2019 the Creek was dry by mid-April (earliest I've observed) and water did not resurface until January 2020. A long dry spell! This week (June 1 - 6), Scatter Creek at the North Tract access point dried up and the ponded area (see Page 47) in the South Tract of Scatter Creek Unit was as low as I have ever seen it (photo below; June 5 2020).	Long dry periods for Scatter Creek does present increase challenges for the aquatic recourses and habitat management. Ground water withdrawals as well as surface and ground-to-surface inputs do occur upstream of the Scatter Creek Wildlife Area Unit. These do have an influence of flow regimes. As does both climate changes and presence or absence of beavers. WDFW does not conduct formal water flow monitoring at the Scatter Creek Unit. We will consider your recommendation.

	 Are there upstream surface or ground water withdrawals of Scatter Creek that are reducing base flows and may affect future management of the wetland and fishery resources? Are the fluctuating dates for water disappearance and return in Scatter Creek becoming more variable due to warming climate, droughts, and more changing rain patterns? Does WDFW have water flow monitoring at Scatter Creek Unit to track changes? I appreciate the Section of the Management Plan integrating climate change into management for prairie species and the ponds for Oregon Spotted Frog, but there is nothing addressing the flows in Scatter Creek. Additional focus on what is happening with flows in Scatter Creek is recommended. Kate Benkert	
33.	Page 22: Wildlife viewing is **not** listed in recreational opportunities, yet page 23 states "…this is an excellent birding area…." Places to go on the WDFW website indicates that wildlife viewing is available on the Davis Creek Unit. Table 6 (page 50) of the plan indicates wildlife viewing is a recreational opportunity. ***Typo***: Table 7, page 59, item 3.B – "Morning Dove" should be "Mourning Dove." Denis DeSilvis, Washington Diversity Council	Thank you for your comment. The plan has been updated.
34.	***Errors in waterfowl breeding season vs winter migration designation****:* Table 10, page 85 (A cursory check of the breeding atlas for Washington birds indicates significant errors in this table.) - American wigeon is listed as using wildlife area during the breeding season, yet not using the area during winter migration. The opposite is more factual: American	WDFW has conducted multiple aerial surveys of ducks in the Chehalis Valley during the breeding season (April/early May) since 2010. Wigeon, scaup, bufflehead and ring-necked ducks have all appeared during some of those surveys. They occur infrequently but, are found within the Chehalis River Valley during the breeding season. Ring-necked duck, wigeon and bufflehead were documented on or within in close vicinity to the Davis Creek Unit during the breeding season of 2015-2106. Scaup appear to be sporadic in occurrence.

	wigeon do not breed in this area and are a common winter resident. - Scaup (assume both lesser scaup and greater scaup) may be found in this area in the winter, but do not breed here. - Ring-necked duck do not breed in this area. - Bufflehead do not breed in this area. - Common merganser do breed in the area, but are also found here during the winter. ***Missing information***: Both Table 20 and Appendix G are not in the available draft. Denis DeSilvis, Washington Diversity Council	Common Merganser do appear to occur within area in winter – and were added to the table. Table 20 and Appendix G are included in the final plan. They were not complete for the SEPA 30-day public review.
35.	***Inconsistencies between the information found in the draft versus the WDFW website:*** • There are 6 units but only 5 on the website under Scatter Creek Wildlife Area. The 5 units listed plus a 6th called Scatter Creek. • There are at least 3 different acreages for the Davis Creek Unit: 520 (first page on website) vs 537 (on the website under Davis Creek WAU) vs 542 (draft, p.22) • Also, 3 different acreages for the Skookumchuck Unit: 883 (website) vs 966 (draft, p. 32) vs 974 (draft, p. 38). Denis DeSilvis, Washington Diversity Council	The website has been corrected to be consistent with the wildlife area plan. Thank you for your comments.
36.	***Questions concerning land acquisition***: Wildlife Area Goals, Objectives, p. 52 – do goals include strategies for acquiring the land for the adjacent/nearby habitat needed to support the species? As part of the 5- and 10-year plans? In conjunction with tribal traditional lands? Settler historical usage? As related to land acquisition (and concerning the above item), the following items from the draft plan apply: Mentions of acquisition in Table 7: 1. Improve ecological integrity (EI) … habitats by protecting, restoring, and/or maintaining these critical habitats. G. Maintain and Seek funding… expansion on Davis Creek Unit by 2025, p. 54 4 H. Continue to see funding to acquire …, All Units, p. 55 2. Achieve species diversity … G. Acquire one site to support … 7. Support and maintain … recreation …	Yes, the focus of the land acquisitions has been and will continue for species and habitat protection (e.g. Oregon spotted frog, Mazama pocket gopher, Taylor's checkerspot butterfly). As lands and funding opportunities for acquisition become available, they will be evaluated and pursued following the internal land acquisition process.

	0. … and as new lands are acquired … 12. Investigate and improve the cultural ecosystems represented by prairies and oak woodlands and savannahs Denis DeSilvis, Washington Diversity Council	
37.	Thank you for the opportunity to provide feedback on the Washington Department of Fish and Wildlife's (WDFW) 2020 Scatter Creek Wildlife Area Draft Management Plan. Scatter Creek provides recreation access to trails with abundant opportunities like wildlife viewing to the populations of Thurston County and South Puget Sound. Washington Trails Association (WTA) supports the draft management plan as proposed and appreciates WDFW's efforts to balance the needs of conservation and interests of many different recreation user groups. Washington Trails Association has a 50-year legacy of engaging the hiking community. WTA enhances hiking experiences in Washington state by empowering a diverse and growing community of hikers to explore, steward and protect trails and public lands. WTA is the nation's largest state-based trail advocacy organization, with 24,000 members, thousands of volunteers each year and an online community of more than 100,000. The draft management plan offers a comprehensive package of efforts to address recreation interests in its project management goals. We appreciate the careful work on the management plan's goal #7, "support and maintain appropriate recreation opportunities". This goal includes draft objectives such as comprehensive education efforts, the development of recreational facilities, partnership on a Rails toTrails project, addressing user conflict, promoting recreational opportunities, expanding access for equestrians, and conducting a trails assessment. As presented, these draft objectives indicate a knowledge of best practices, willingness to partner with local user groups, and a vision for the future of the area. We appreciate these draft objectives and encourage their inclusion in the final management plan. Thank you for the opportunity to provide comment on this plan. We are hopeful for the future of the Scatter Creek Wildlife Area! Andrea Imler, Washington Trails Association	Thank you for your review and feedback. It would be great if WTA and WDFW can partner to improve recreational opportunities within the Scatter Creek Wildlife Area in the future.

38.	We note that a cultural resources summary is to be included as Appendix D to the plan. Therefore, we appreciate and recommend that interested/affected Tribes, DAHP, and other interested parties be afforded an opportunity to review and comment on the summary before the final plan is adopted. Gregory Griffith, Department of Archaeology & Historic Preservation	Following WDFW process, we will provide DAHP and consulting parties with copies of reports.
39.	In the cultural resources section on page 43 and the reference on page 15 to the Scatter Creek August 2017 wildfire, we appreciate reference to the historic Miller-Brewer House. We recommend that in both references, it should be mentioned that the house was listed in the National Register of Historic Places and Washington Heritage Register in 1988. It should also be mentioned that the Miller-Brewer House was significant as being one of only a few surviving examples in southwest Washington of vernacular Greek Revival style of architecture and plank construction dating to the Territorial era. We also recommend inclusion of information about when, why, and how the Miller-Brewer House was acquired and incorporated as part of the Scatter Creek Unit in the Wildlife Area Description on page 17 and/or on page 39. Gregory Griffith, Department of Archaeology & Historic Preservation	The section has been revised.
40.	In the Wildlife area goals, objectives, and monitoring section beginning on page 52, we support and commend the Department of Fish and Wildlife (DFW) for inclusion of Goal 12: Investigate and improve cultural ecosystems represented by prairies and oak woodlands and savannahs. In view of this goal, we recommend that DFW consider inviting Tribal representation on the Wildlife Area Advisory Committee. Gregory Griffith, Department of Archaeology & Historic Preservation	WDFW would prefer to have tribal representative on the Wildlife Area Advisory Committee. At the initiation of the Scatter Creek planning process, WDFW sent letters to 11 tribes. WDFW did not receive any response to the letters nor comments on the draft plan. If you have any suggestions on appropriate representatives it would be appreciated.
41.	We note on page 23 and on pages 69-70 references to removal and/or preservation of buildings on the Davis Creek Unit by 2022. We recommend that the plan include a general goal and tasks to conduct a comprehensive survey and inventory effort of cultural resources (including buildings, structures, sites, objects, and cultural landscapes) within the wildlife area that are 40 years of age and older (given the 10 year timespan of the plan's implementation). The survey effort should be conducted by cultural resource professionals meeting National Park Service (NPS) Professional Qualification standards in the appropriate area of expertise. Plus, all of the cultural resources should be documented on the appropriate DAHP inventory forms and uploaded into DAHP's WISAARD GIS database. It is recommended that the results of the survey/inventory work of	All state funded WDFW projects are reviewed under Executive Order 05-05; when historic structures are present WDFW will have these structures inventoried by a person or persons meeting the SOI qualifications. Field survey and inventory, likewise, will be conducted as needed. WDFW's funding does not permit comprehensive cultural studies of acquisitions.

	the Wildlife Area shall be used to guide DFW on management decisions as to removal and/or preservation of any buildings/structures, and particularly those at the Davis Creek Unit. Gregory Griffith, Department of Archaeology & Historic Preservation	
42.	In view of the loss of the historically significant Miller-Brewer House, we recommend that goal 11 include a task to develop and implement an interpretation plan for the house site and any surviving archaeological resources. The interpretation plans should be developed in consultation with interested/affected Tribes, DAHP, and other interested parties. Gregory Griffith, Department of Archaeology & Historic Preservation	WDFW has consulted with DAHP, the Thurston County Historic Commission, and the Tribes regarding several proposed interpretive plans and archaeological investigations at the Miller-Brewer House and elsewhere on the Scatter Creek WLA. To date WDFW has not identified funding sources to complete the interpretive work, when a project is identified WDFW will engage it's consulting partners. The report for the archaeological investigations at the former Miller-Brewer house is in production, the historic presented in the Planning document is part of that report.
43.	In view of the Scatter Creek wildfire that destroyed the Miller-Brewer House and increasing potential for wildfires to impact DFW facilities and properties across the state, we recommend that the Department develop and implement goals, policies, and procedures to protect and manage cultural resources in order to minimize or avoid losing such resources in the future. Gregory Griffith, Department of Archaeology & Historic Preservation	WDFW cultural resources staff are currently working with Tribal staff and WDFW Burn Teams to develop appropriate responses to prescription fire. We appreciate the guidance to extend this effort to wildland fire. The wildlife area manager will also complete a Fire Management Plan by the end of 2021, this objective is included in the plan.

Appendix F. Research and other studies

Table 24. Summary of research activities conducted on the Scatter Creek Wildlife Area

Researcher	Year	Title	Description
Cara Applestein, Center for Natural Lands Management	2015	Prairie Quality Monitoring Resample	This study surveyed a subsample of plots measured in the 2007-2009 study to assess progress made towards management goals to improved prairie quality.
Cara Applestein, Jonathan D. Bakker, Eric G. Delvin, Sarah T. Hamman	2018	Evaluating Seeding Methods and Rates for Prairie Restoration	Tested three different methods of seeding and five seeding rates to determine their efficacy in establishing three common species of Pacific Northwest prairies: Festuca roemeri, Eriophyllum lanatum, and Potentilla gracilis.
Jonathan Bakker, Eric Delvin Peter Dunwiddie, University of Washington	2008-2012	Staged-scale restoration: Refining adaptive management to improve restoration effectiveness (2017 publication)	Provides a scientifically rigorous strategy to improve restoration while customizing treatments for individual sites. It explicitly enables restoration projects to be conducted within an adaptive management framework, and clearly and intentionally integrates ecological research into restoration efforts.
Loni Beyer, Washington Department of Fish and Wildlife	2012	Understanding Mardon Skipper Oviposition Habitat across the Puget Prairies: Scaling Up in Time and Space	The research aimed to understand spatial and temporal differences in Mardon skipper habitat preferences by replicating research conducted at Scatter Creek Wildlife Area in 2009 (Henry and Schultz 2012). During the 2012 flight season Mardon skipper oviposition at two prairie sites were surveyed, Mortar Point 13 (MP13) on the Joint Base Lewis-McChord Artillery Impact Area and the South unit of Scatter Creek Wildlife Area.
Lalita M. Calabria, Kate Petersen, Sarah T. Hamman, Robert J. Smith	2016	Prescribed Fire Decreases Lichen and Bryophyte Biomass and Alters Functional Group Composition in Pacific Northwest Prairies	Investigated the effects of fire on ground-dwelling bryophytes and lichens by estimating standing biomass, cover, mat depth and functional group diversity in burned and unburned plots at five prairie sites located in the South Puget Sound.
Florence Caplow, Department of Natural Resources	2007	Botanical Assessment of Wet Prairie Swales Scatter Creek and West Rocky Prairie Wildlife Areas Thurston County, Washington	The purpose of this project was to complete a botanical assessment of wet prairie remnants and swales at Scatter Creek Wildlife Area and the newly acquired West Rocky Prairie, to guide future restoration activities in these wet areas at both sites.
Chappell et al, Department of Natural Resources	2001	Distribution and decline of native grasslands and oak woodlands in the Puget Lowlands and Willamette Valley ecoregions, Washington.	Assesses past and current amount and condition of prairie and oak woodland habitats.
W. D. Devine, C. A. Harrington, J. M. Kraft	2010	Acorn storage alternatives tested on Oregon white oak	Assessed various combinations of storage factors pre-storage treatments for white oak acorn storage, using Oregon white oak (Quercus garryana Douglas ex Hook. [Fagaceae]) acorns from 7 seed sources.
Peter W. Dunwiddie	2009 Final Report	Evaluating Suitability of Prairies for Golden Paintbrush (*Castilleja levisecta*) Recovery by Experimental Outplanting in South Puget Sound	Compare the relative suitability of different prairies in the South Puget Sound for golden paintbrush that have already been identified as potential reintroduction sites.
Peter W. Dunwiddie, R. Adam Martin	2016	Microsites Matter: Improving the Success of Rare Species Reintroductions	Study was undertaken to better understand how to increase the success rates of recovery plantings of a rare hemiparasite, golden paintbrush (*Castilleja levisecta—Orobanchaceae*).

Gregory Eide, Daphne Stone, Lalita Calabria, John Villella	2014	Lichen Communities on Oak (Quercus garryana) in Washington	Northwest Lichenologists investigated lichen diversity on oaks (Quercus garryana) at 10 sites in the Puget Trough and Columbia River Gorge in Washington.
Nate Haan University of Washington	2017	Ecological interactions between *Euphydryas editha* larvae and their host plants (PhD dissertation)	Examined ecological interactions between larvae of *Euphydryas editha* (Lepidoptera: Nymphalidae) and their host plants. In a field study, compared outcomes for *E. editha* ssp. *taylori* larvae as they fed on *C. levisecta, C. hispida,* and *P. lanceolata*.
Sarah Hamman, Marc Hayes, Julie Tyson, Washington Department of Fish and Wildlife	2017-2018	Evaluating native vegetation mats as a potentially superior tool to restore Reed canary grass-invaded Oregon spotted frog habitat	The pre-vegetated, coir filled, fiber mats, or emergent vegetation mats, facilitate the restoration of native vegetation in RCG invaded wetlands.
David Hays, Ann Potter, Chris Thompson, Patrick Dunn, Washington Department of Fish and Wildlife	2000	Critical habitat components for four rare south Puget Sound grassland butterflies	Collected information on the life history requirements of four rare south Puget Sound butterflies in 1998-1999: Mardon Skipper (*Polites mardon*), Taylor's Checkerspot (*Euphydryas editha taylori*), Puget Blue (*Plebejus icaricia blackmorei*), and Valley Silverspot (*Speyeria zerene bremnerii*).
Marc Hayes, Dave Hays, Julie Tyson, Washington Department of Fish and Wildlife	2009-2011	Re-examination of Approaches to Manipulating Invasive Reed canary grass (*Phalaris arundinacea*) to Enhance Oregon Spotted Frog (*Rana pretiosa*) Oviposition Habitat in Western Washington State, USA.	Applied two experimental approaches (mowing and mowing with burning) in 15 m x 30 m plots with reference (control) plots to determine preference for oviposition. Our results confirm that mow or mow and burn treatments can 26 influence where Oregon Spotted Frogs deposit eggs, which presents a clear opportunity to potentially enhance oviposition habitat.
Erica H. Henry, Cheryl B. Schultz, Washington State University - Vancouver	2012	A first step towards successful conservation: understanding local oviposition site selection of an imperiled butterfly, Mardon skipper (2012 publication)	In the Puget prairies of Washington State little is known about the habitat requirements of Mardon skipper (*Polites mardon*). Investigated oviposition site selection and used results to assess oviposition habitat quality at a restored site with reintroduction potential.
Louise Jackson, University of Washington	1977-1982	Comparison of phenological patterns in prairie and subalpine meadow communities (1982 publication)	A comparison of phenological patterns, pollinators, and plants.
Louise Jackson, University of Washington	1978	Life Cycles of Plants in Two Western Washington Communities (MS thesis)	Documentation for complete project, a subset of which is covered in the publication listed above.
Lameace Kalisz, Marc Hayes	2019	Determining cover board preference of female reptile species at West Rocky Prairie Unit	The goal of this study will be to determine the presence/absence of eight species of reptiles (excluding testudines) that have historically occupied oak-prairie habitats in western Washington. Furthermore, the study will investigate if cover board use differs between male and female reptiles and explore the relationship between thermal properties and reptile use.
H. Elizabeth Kirkpatrick, Kaitlin C. Lubetkin	2011	Responses of Native and Introduced Plant Species to Sucrose Addition in Puget Lowland Prairies	Compared the available soil nitrate, the cover of native and introduced species between sugar-addition and control plots on two Puget Lowland prairies.
Alexandra E. Lincoln, Rachel K. Brooks, Sarah T. Hamman	2018	Off-target Impacts of Graminoid-Specific Herbicide on Common Camas (Camassia quamash) Growth, Abundance, Reproduction, and Palatability to Herbivores	Implemented a factorial design testing the effects of herbicide type (fluazifop, clethodim, control) and application season-frequency on camas growth, foliar cover, reproduction, and palatability to herbivores.

R. Adam Martin & Sarah T. Hamman	2016	Ignition Patterns Influence Fire Severity and Plant Communities in Pacific Northwest Prairies	Used observations from five prescribed burns in the South Puget Sound prairies of western Washington, to evaluate the relationship between intensity, severity, and effects. Collected data from two burns on how ignition patterns affected these relationships.
Jim Mathieu, Marc Hayes, Julie Tyson	2012-present	Hydrological Monitoring for Maytown Mining Project Migitation and overall hydrologic integrity of West Rocky Prairie and how that relates to Oregon Spotted Frog needs	Water level monitoring begin April 2012 through December 2018 and qualitatively examines how changes in water level trends may potentially impact critical habitat used by the Oregon spotted frog. To meet this goal this contract is purposed to develop conceptual and quantitative models to be used as a planning tool for analyzing alternative site treatments/features.
Gail Olson, Washington Department of Fish and Wildlife	2007-2009	Prairie Quality Monitoring	This study collected vegetation data on three Scatter Creek Units as part of a broader effort to establish a baseline of prairie quality metrics for all major publicly owned prairie sites in Thurston County.
Gail Olson, Washington Department of Fish and Wildlife	2008	Mazama Pocket Gopher Occupancy Modeling	Occupancy surveys for Mazama pocket gophers were conducted on Scatter Creek and West Rocky Prairie units as part of a broader study to determine what habitat factors were most associated with site occupancy and within-site use. This study provided some of the early evidence for management objectives regarding Scotch broom control.
Gail Olson, Washington Department of Fish and Wildlife	2009-2014	Mazama Pocket Gopher Translocation Study	This study examined the feasibility of using translocations to establish new populations of Mazama pocket gophers in unoccupied areas.
Gail Olson, Washington Department of Fish and Wildlife	2014-2016	Development of survey methods for Mazama pocket gophers	Scatter Creek Wildlife Area and West Rocky Prairie units were included in this study, which aimed to develop and standardize methods for estimating Mazama pocket gopher occupancy, distribution, and abundance.
Gail Olson, Washington Department of Fish and Wildlife	2015	Mazama Pocket Gopher Site Evaluation Study	The same three Scatter Creek Units surveyed in the Occupancy Modeling study were included in a follow-up project to determine if occupancy models could be used predictively to evaluate site suitability for pocket gophers. Habitat data from 2015 surveys were added to prior occupancy models and new models were developed from 2015 data only. The results were somewhat inconsistent within and among sites, with the differences attributed in large part to differences in how habitat data were collected.
Gail Olson, Washington Department of Fish and Wildlife	2016-2017	Effects of prescribed fire on Mazama pocket gophers	This pilot study was conducted on the West Rocky Unit to determine whether there were short-term effects of prescribed fire on pocket gopher survival and movements.
Ann Potter, Gail Olson Washington Department of Fish and Wildlife	2012	Monitoring Mardon Skipper (*Polites mardon*) on the Scatter Creek Wildlife Area	The task was to design and test survey methods to determine Mardon skipper abundance and distribution for each Scatter Creek unit. This report documents our efforts and findings.
Kirsten M. Prior	2019	Oak gall wasp-parasitoid interactions in western oak savannas: comparing interactions along a range-expanding species' native and expanded ranges.	In 2017 and 2019, our goals were to sample the abundance and diversity of cynipid wasps and their parasitoids on Q. garryana in the native and expanded range of N. saltatorius.

Kristen Ramsdell, Marc Hayes, Julie Tyson	2013	The Diel Breeding Patterns of the Oregon Spotted Frog (*Rana pretiosa*) Observed by Camera Traps	Study the environmental parameters that may affect reproductive ecology of Oregon spotted frog during breeding. Collected time-lapse photography at oviposition locations so the precise times of egg deposition were delineated, and the conditions associated with oviposition could be identified for the following parameters: time of day, water temperature, light intensity, cloud cover, precipitation and moon phase.
Cheryl B. Schultz, Jason D. Dzurisin, Cheryl Russell, WSU-Vancouver	2009	Captive rearing of Puget blue butterflies (Icaricia icarioides blackmorei) and implications for conservation (2009 publication)	To develop rearing protocols and investigate possible effects of captive conditions, we reared Puget blue butterflies, a subspecies closely related to the endangered Fender's blue (*I. i. fenderi*) which is limited to Oregon. Reared individuals from two wild populations in Washington to investigate two approaches for egg collection and three diapause environments.
Darlene Southworth, Elizabeth M. Carrington, Jonathan L. Frank, Peter Gould, Connie A. Harrington, Warren D. Devine	2009	Mycorrhizas on nursery and field seedlings of Quercus garryana	Assessed the relationship between mycorrhizal infection and seedling growth in a nursery. Further, we compared the mycorrhizal assemblage of oak nursery seedlings to that of conifer seedlings in the nursery and to that of oak seedlings in nearby oak woodlands.
Amanda Stanley, Peter Dunwiddie, Thomas Kaye	2005-2009	Restoring Invaded Pacific Northwest Prairies: Management Recommendations from a Region-Wide Experiment (2011 publication)	Conducted a 5-year study at 10 sites from British Columbia to the Willamette Valley aimed at improving methods for restoring degraded prairies and oak savannas.
Amanda G. Stanley, Thomas N. Kaye and Peter W. Dunwiddie	2011	Multiple Treatment Combinations and Seed Addition Increase Abundance and Diversity of Native Plants in Pacific Northwest Prairies	To develop and test treatment combinations that reduce target non-native weeds with minimal nontarget impacts and increase native species diversity and abundance.
Amanda G. Stanley, Peter W. Dunwiddie, Thomas N. Kaye	2011	Restoring Invaded Pacific Northwest Prairies: Management Recommendations from a Region-Wide Experiment	Conducted a 5-year study at 10 sites from British Columbia to the Willamette Valley aimed at improving methods for restoring degraded prairies and oak savannas.
Joshua Wallace, Marc Hayes	2009	Setting a standard sampling method for detecting reptiles in a prairie environment using artificial cover objects with a focus on thermal characteristics	This is a second year of a two-year study that will compare three different types of artificial cover objects in their effectiveness at detecting reptiles in a South Puget Sound prairie with a focus on the thermal characteristics of the different cover object types.
Chelsea Waddell, Marc Hayes, Julie Tyson	2014	The Oregon Spotted Frog (*Rana pretiosa*) in Lowland Western Washington: A Population Parentage, & Non-Breeding Habitat Analysis	Despite these important efforts, adult non-breeding habitat utilization in western Washington remains poorly known. This effort exploited the fact that a large fraction of egg masses laid in 2014 (February-March) at the target study site, West Rocky Prairie, had already been genetically sampled. This effort sampled adult OSFs genetically in their non-breeding active-season habitat (July- September), and linked those adults to breeding locations based on parentage of egg masses.
Heather White-Kapust, Kellly McAllister	2000-2001	Ovipostion Habitat Enhancement and Population Estimates of Oregon Spotted Frogs at Beaver Creek	Mowing of Reed canary grass vegetation in 3m circles to capture response of frog oviposition to habitat manipulation.

Amy Yahnke, Marc Hayes, Julie Tyson	2010	Effects of the Herbicide Imazapyr on Juvenile Oregon Spotted Frogs.	Lab testing of herbicides used for Reed Canary grass control on Oregon Spotted Frogs. OSF phenology during the weed management season (May-October), we determined that post-metamorphic juveniles were the youngest life stage (e.g. potentially the most vulnerable to herbicide toxic effects) present in September (Yahnke et al., in preparation). For management agencies to proceed with reed canary grass control in OSF habitats, it will be important to show that harm to the target species for conservation is not likely to come from the habitat restoration efforts.

Appendix G. Habitat management and restoration plan