



WORKING DOCUMENT  
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## The Prineville Local Implementation Team's Sage-Grouse Threats Reduction Plan

Prepared by members of the  
Prineville Local Implementation Team

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## FOREWORD

**The purpose of this Threats Reduction Plan (TRP) is to provide a framework for local partners to prioritize and coordinate sage-grouse conservation efforts across ownership and management boundaries within the Prineville LIT area.** This document is not intended to be a standalone guide; rather, the TRP should be used in conjunction with Oregon’s statewide sage-grouse plans: Oregon Sage-Grouse Conservation Assessment and Strategy (ODFW, 2011); the Oregon Sage-Grouse Action Plan (SageCon, 2015), and the Approved Resource Management Plan Amendment (ARMPA) for Greater Sage-Grouse Conservation in Oregon (BLM, 2019), Crook/Deschutes Candidate Conservation Agreement with Assurances (USFWS, 2015); as well as emerging research, local knowledge and technical tools such as the SageCon Landscape Planning Tool. Additionally, the TRP is considered a living document and will be updated annually by LIT participants with leadership from the LIT Coordinator with new information relevant to sage-grouse conservation and to incorporate partner implementation efforts.

The threats to sage-grouse within the Prineville LIT area are diverse and complex. Each LIT member comes to this collaborative table with unique interests; however, everyone involved agrees that partnership coordination is necessary to advance sage-grouse conservation in this area. Local partners have already been working to conserve and protect central Oregon’s sage-grouse habitat decades before the LIT became an established platform; therefore, the role of the LIT space is to build on existing and future efforts; enhance communication to identify and address shared priorities; and to use this document and the LIT framework as mechanisms to gain access to resources that remove barriers to success.

Partners involved in the Prineville LIT include Bend and Prineville Oregon Department of Fish and Wildlife Districts, Prineville District Bureau of Land Management, Crook and Deschutes County Landowners, Department of State Lands, Natural Resources Conservation Service - Redmond Service Center, Crook and Deschutes Soil and Water Conservation Districts, Crooked River Weed Management Area, Ochoco and Deschutes National Forests, Crook and Deschutes Counties, US Fish and Wildlife Service, Oregon State University, East Cascades Audubon Society, and Oregon Natural Desert Association.

*Note: The LIT does not have decision-making authority – i.e., the LIT cannot dictate priorities to any individual group. LIT members (including working group members) will provide input and/or come to agreement on issues directly regarding the development of the TRP, only (see Appendix C: Prineville LIT Team Charter).*

## EXECUTIVE SUMMARY

Oregon's greater sage-grouse populations have declined by over 50% during the past 50 years, mainly due to the loss or degradation of native sagebrush habitats. Many threats to sage-grouse and their habitats have been identified at both statewide and local scales, and addressing these threats through local prioritized, collaborative conservation actions is necessary to reverse the current downward trends in Oregon's sage-grouse populations and sagebrush habitat quality and quantity (SageCon, 2015).

Oregon’s sage-grouse LITs are the identified forum to convene local collaboration. The Bureau of Land Management (BLM) is the primary land manager across southeast Oregon; therefore, LIT boundaries were broadly defined to align with BLM district boundaries (and the Baker Resource Area) (ODFW, 2011). Each LIT is responsible for refining its respective LIT boundaries (SageCon, 2015). Prineville LIT partners refined their LIT area in 2012 and revised that area in 2021 (Figure 1). The TRP is a guidance document focused on the 2021



Prineville LIT area; it was written by and for Prineville LIT members. The TRP should serve as a useful communication tool for LIT members when working together and when communicating with those working outside the scope of the LIT (e.g., funders, state directors). The TRP was developed through a collaborative process to solicit and incorporate input from a diverse set of interest groups. Together with vested collaborators and interest groups, we created, reviewed, and refined the content of this guidance document through a series of interactive meetings. Each collaborative meeting was attended by 20 to 30 local participants, including state and federal government agencies, conservation organizations, county organizations, private landowners, and other interests. A consensus-based, decision-making process was established, through which recommendations written into this guidance document were developed and are intended to support and inform land management actions and enhance coordination efforts across jurisdictional boundaries.

**Section 1** provides background information about Oregon’s LIT program and summarizes population trends and sage-grouse habitat for the Prineville LIT area. **Section 2** discusses the relevance of various state and federal plans, policies, programs, and the BLM’s National Environmental Policy Act (NEPA) and how those frameworks influence how the LIT functions. **Section 3** highlights diverse scientific resources utilized by, and available to the Prineville LIT; this section also acknowledges data gaps that, if addressed, would enhance the LIT’s ability to prioritize conservation efforts more effectively. **Section 4** discusses the LIT’s decision-making and communication frameworks regarding, 1) how partners analyzed the landscape to prepare section 5 of this document; 2) how to establish priorities moving forward; 3) and how the LIT will update this document. **Section 5** details each of the seven Prineville LIT action areas; priority threats LIT partners identified for each action area; and associated activities applied, ongoing, or planned by interest groups across public and private lands. **Section 6** wraps up the entire document by discussing how the LIT will use the information provided in Sections 1 – 5 to establish collaborative priorities for the future. This section also highlights the value associated with working in a structured, collaborative framework and why such a framework is necessary for this area.

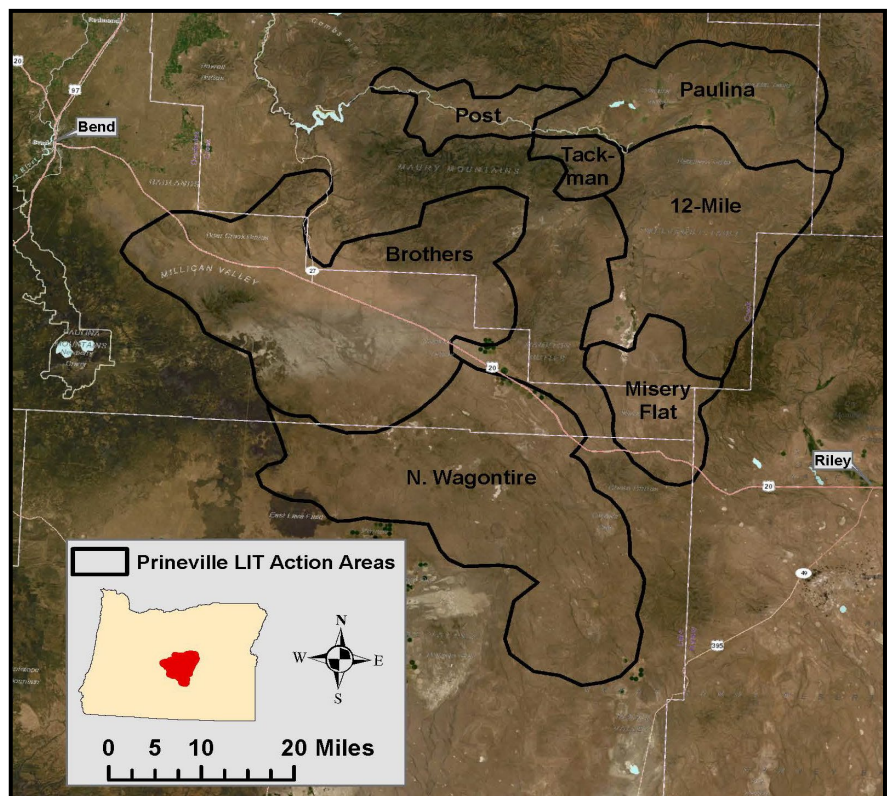


Figure 1: 2021 Prineville LIT area.

## 1. INTRODUCTION

The greater sage-grouse (*Centrocercus urophasianus*; hereinafter referred to as sage-grouse) is a sagebrush (*Artemisia* spp.) obligate bird species which occupies sagebrush habitat within the high-arid desert, Great Basin ecosystem of southeastern Oregon. Generally, sage-grouse require large, contiguous areas of sagebrush-dominated habitat with an understory consisting of native bunchgrasses and forbs (Connelly et al., 2000; Knick and Connelly, 2011). Historically, sage-grouse were widespread throughout this region, with an estimated population of over 75,000 birds in the mid-20th Century (Oregon Department of Fish and Wildlife [ODFW], 2005). As of 2022, sage-grouse have seen a substantial population decline in Oregon and are listed as a 'Sensitive Species' in the state (Oregon Administrative Rule 635-100-0040; Oregon Conservation Strategy, 2016).

Oregon's sage-grouse population estimate following the 2019 lek survey season was the lowest recorded in the State's history at 13,827 estimated individuals (ODFW, 2022), less than half the statewide population goal of 30,000 individuals (ODFW, 2011). Since the state's lowest nadir in 2019, sage-grouse populations have rebounded slightly with approximately 17,508 individuals estimated in Oregon in 2022 (ODFW, 2022). This steep downward trend in sage-grouse populations can be attributed to the loss or degradation of native sagebrush habitat in southeastern Oregon, as sagebrush habitat quantity and quality have both declined since the early 1980s (SageCon, 2021a). Oregon is not meeting its statewide goal of maintaining at least 70% of sage-grouse range as sagebrush habitat in advanced structural stages (ODFW, 2011), with sagebrush habitat currently covering an estimated 61% of sage-grouse range in southeastern Oregon (SageCon, 2021b). Reaching these statewide goals will require collaborative, locally-led conservation efforts among partners. Oregon's Sage-Grouse LITs prioritize and address threats to sage-grouse populations and sagebrush habitats at a more appropriate scale than these could be addressed statewide.

Sage-grouse populations in Oregon currently face many threats, typically related to direct or functional loss of the intact sagebrush habitats they rely upon for survival. The primary threats affecting most sage-grouse Priority Areas of Conservation (PACs) and adjacent low-density habitats in southeastern Oregon are large-scale wildfires, invasion of annual grasses and other invasive plants, and juniper expansion (ODFW, 2011; SageCon, 2015). Additional threats to sage-grouse in Oregon have been documented in specific PACs and include anthropogenic development, disturbance from increased human activity, loss of mesic resources and degradation of mesic habitat, sagebrush understory depletion, overabundant wild horse populations, nest predation by common ravens (*Corvus corax*), and West Nile virus (ODFW, 2011; SageCon, 2015). Utilizing local knowledge and science-informed resources, each LIT is responsible for identifying local threats to sage-grouse populations and addressing these threats through prioritized, collaborative actions. Local input and collaboration are necessary to reverse the current downward trends in Oregon's sage-grouse populations and sagebrush habitat quantity and quality.

### 1.1. LIT BACKGROUND & ORIGIN

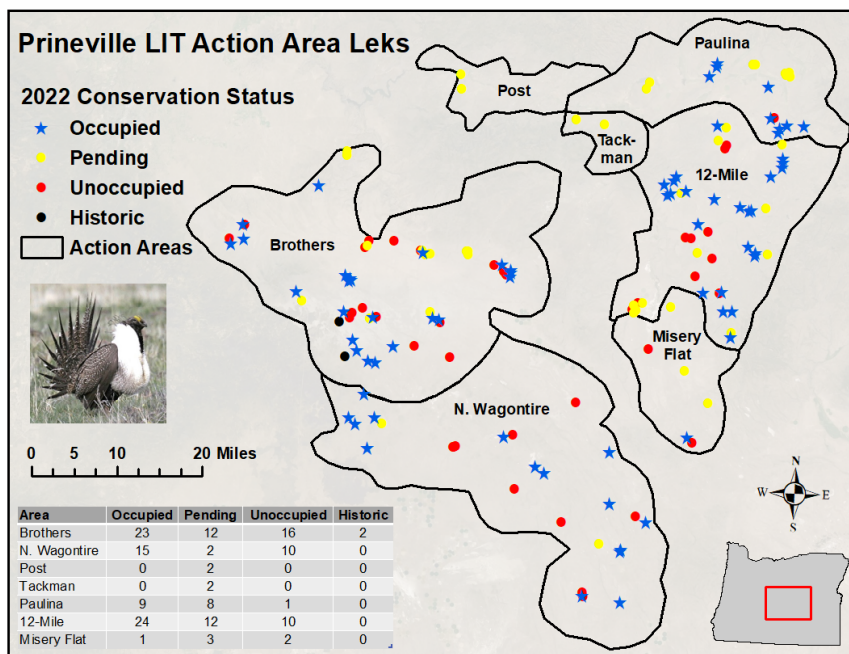
The importance of locally-led community-based collaboration in Oregon's sage-grouse conservation efforts is well-established. The Conservation Assessment identified the five LITs, based on BLM boundaries (and the Baker Resource Area) as the appropriate spatial scale for coordinating conservation actions between ODFW, land managers, and landowners (ODFW, 2011).

In 2015, the Oregon Sage-Grouse Action Plan (hereafter Action Plan) was developed by SageCon, in cooperation with many partners, as a guide to help reverse the continued downward trajectory of sage-

grouse populations in Oregon and promote long-term conservation of sagebrush habitats. The Action Plan outlined 329 conservation actions to improve sage-grouse habitat (SageCon, 2015).

LITs were initially identified in 2005, however, it was not until 2019 before funding was acquired to support LIT coordination capacity. Unlike other states with similar collaborative programs (e.g., Wyoming’s Sage Grouse Local Work Groups), secure and long-term funding mechanisms to support LIT project implementation currently do not exist. The absence of a designated funding mechanism influences how the LITs function and address priorities. For example, if Prineville LIT members determine project funding is needed, it will be up to the LIT (with support from the coordinator) to identify and apply for grant funding or work with land managers to designate funding.

## 1.2. SAGE-GROUSE POPULATION TRENDS



The seven Prineville LIT action areas are located mostly within the Prineville BLM District boundary, so sage-grouse population trends reported for the Prineville District are representative of trends in the Prineville LIT area. Overall, 72 occupied leks and 41 pending leks are located within the seven action areas (Figure 2). The estimated 2022 spring sage-grouse population in the Prineville BLM District was 1,464 individuals (95% CI: 1,325–1,603 individuals), a 6.3% increase from 1,365 individuals estimated in 2021 (ODFW, 2022). The 5-year average population trend in the District has been negative at -3.4% between 2018 and 2022. Observed male attendance is -24.7% below the 2003 baseline level ( $n_{2003} = 405$ ,  $n_{2022} = 305$ ), at complexes observed during both 2003 and 2022 (Figure 3).

Figure 2: Prineville LIT Action Area sage-grouse leks and 2022 conservation statuses.

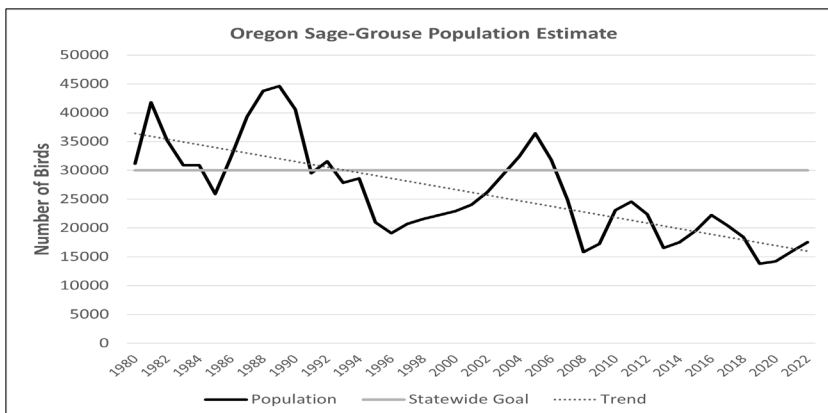
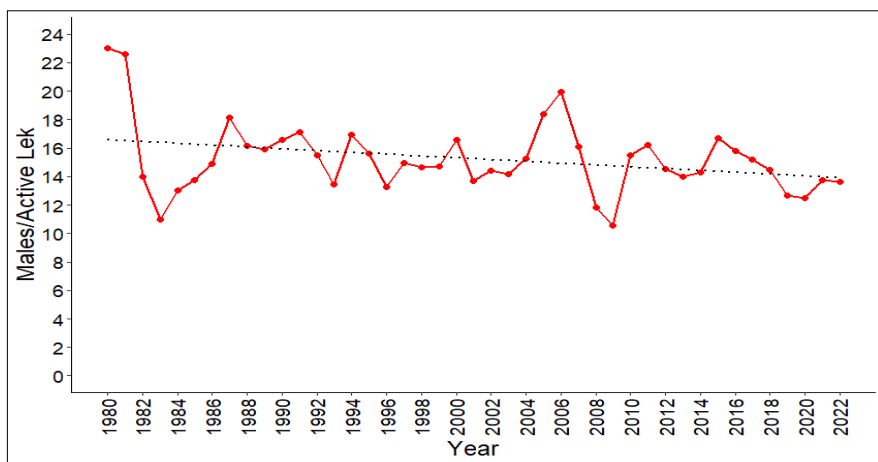


Figure 3: Oregon sage-grouse population estimates from 1980 through 2022. Values are relative to the statewide goal of 30,000 birds (horizontal

Data collected since the 2011 Conservation Assessment suggest a small, but significant decline in average lek complex size since 1980, with average males per lek complex declining by -0.06 males per year over this period (Multiple  $R^2 = 0.10$ ,  $p$ -value = 0.04; Figure 4). However, this relationship may be driven by two years of high observed lek



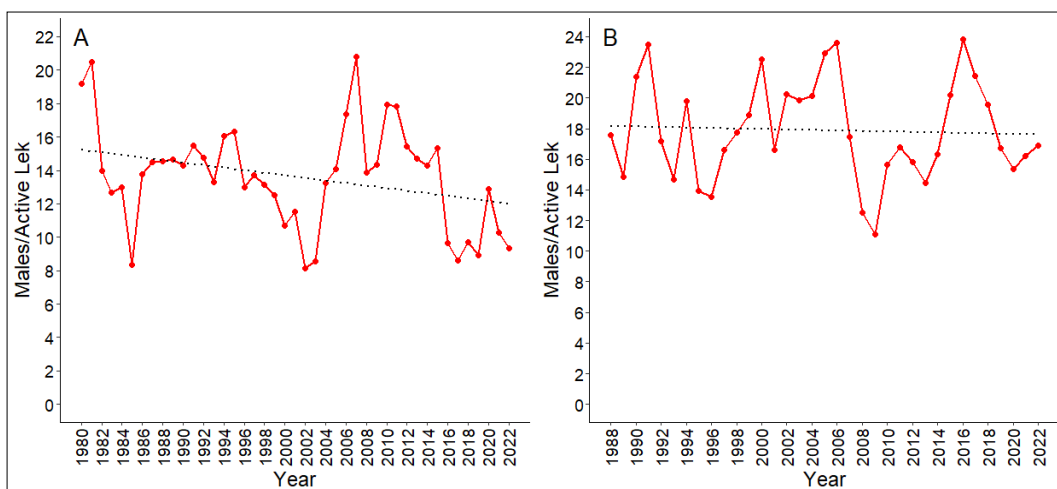
**Figure 4: Sage-grouse population trend for males per active lek in the Prineville BLM District, 1980-2022.**

attendance during the early 1980s, when the number of leks counted was low.

Two sage-grouse PACs are located within the Prineville LIT area, Brothers/N. Wagontire PAC and Paulina/12-Mile/Misery Flat PAC. Change in average sage-grouse lek complex size (males per active lek) since 1980 has shown a significant, negative trend of -0.08 males/year in the Brothers/N. Wagontire PAC (Figure 5). However, the percent change in male attendance at common leks between 2003 and 2022 was positive at +14.9%, and the percent

change in male attendance between 2017 and 2022 was positive at +7.7% (ODFW, 2022). In the Paulina/12-Mile/Misery Flat PAC, the change in average sage-grouse lek complex size (males per active lek) since 1980 has

shown an essentially stable (non-significant) trend of -0.02 males/year (Figure 5). Percent change in male attendance at common leks between 2003 and 2022 was negative at -34.2% and between 2017 and 2022 was negative at -6.8% (ODFW, 2022).



**Figure 5: Greater sage-grouse population trend (change in males per active lek) in the Brothers/N. Wagontire PAC, 1980-2021 (A) and the Paulina/12-Mile/Misery Flat PAC, 1988-2022 (B).**

Oregon’s sage-grouse PACs (BLM, 2015). These triggers are based on annual spring sage-grouse population estimates in each PAC, calculated from lek count data (BLM, 2021). The soft population trigger is tripped when the 5-year mean population estimate drops below the 95 % confidence interval of the overall mean annual population estimate (BLM, 2021). The hard population trigger is tripped when the 5-year mean population estimate falls below the overall mean annual population estimate by one standard deviation of the mean (BLM, 2021). The Brothers/N. Wagontire PAC tripped a hard population trigger in 2017 and remained below this threshold through 2021. The Paulina/12-Mile/Misery Flat PAC tripped a soft population trigger in 2021 for the first time since these thresholds were established in 2016.



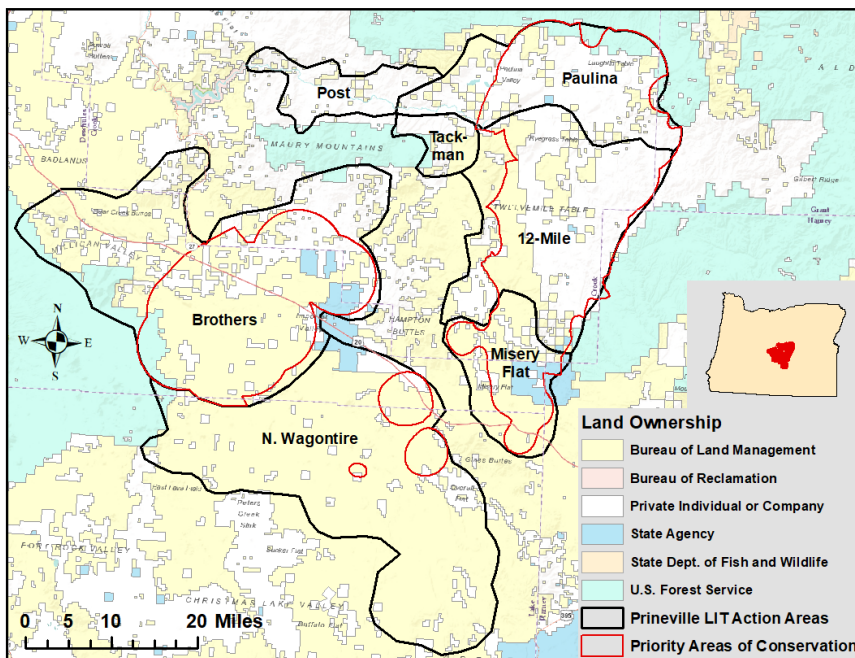
### 1.3. SAGE-GROUSE AREA DESCRIPTION

The seven Prineville LIT action areas (Brothers, North Wagontire, Misery Flat, 12-Mile, Paulina, Tackman, Post) are located mostly within the Prineville BLM District boundary and include two sage-grouse PACs. Overall,

**Table 1: Land ownership (acres) summarized by Prineville LIT action area, 2021.**

	Brothers	North Wagontire	Misery Flat	12-Mile	Paulina	Post	Tackman	Total
BLM	273,442	405,653	77,235	106,294	37,812	8,296	13,402	922,133
Private	152,435	46,660	16,022	171,323	127,934	54,475	15,471	584,319
State	17,297	6,195	15,077	1,697	758	0	0	40,025
USFS	41,904	4,642	0	1,864	22,134	478	3,376	74,398

36.0% of land ownership in the seven action areas is private, 56.9% is BLM, 2.5% is State of Oregon, and 4.6% is U.S. Forest Service (USFS) (Table 1). Of the seven action



**Figure 6: Land ownership and boundaries of the seven Prineville LIT Action Areas, outlined in black, 2021. Two sage-grouse PACs [Brothers/N. Wagontire and Paulina/12-Mile/Misery Flat] are outlined in red.**

areas, Brothers, North Wagontire, and Misery Flat are mostly public land, and 12-Mile, Paulina, Post, and Tackman are mostly private land (Figure 6).

The area varies in elevation from about 4,000 feet to about 5,600 feet. Mean annual precipitation is 10-11 inches in the Brothers/North Wagontire area and 13-19 inches in the Paulina/12-Mile area, with the greatest precipitation recorded in late winter and early spring. Generally, soils in the area are derived primarily from volcanic basalt flows and are mostly well-drained and dry. Soils in the vicinity of Pine Mountain and Brothers are derived from a pumice mantle and have a higher water-holding capacity than other soils of similar texture. These sites have higher effective precipitation, allowing them to

support plants that do not typically grow on other soils under similar precipitation conditions. Summers in the Prineville LIT area are typically hot and dry with average high and low temperatures in July-August of 82- and 42-degrees Fahrenheit (F), respectively. Heat waves of 95-degrees F or warmer are common. Average high and low temperatures in January are 38- and 17-degrees F, respectively. The average annual temperature historically was 43-degrees F. The Brothers/N. Wagontire PAC has one perennial stream. Streams and rivers are more common in the Paulina/12 Mile/Misery Flat PAC. Both PACs, especially the Brothers PAC, have numerous playas (undrained depressions that have water during wet periods). Some springs are present in the area. The vegetation is broadly characterized as shrub-steppe. Characteristic vegetation includes sagebrush, rabbitbrush (*Chrysothamnus* spp.), Idaho fescue (*Festuca idahoensis*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass (*Poa secunda*), many native forbs, and invasive species such as cheatgrass (*Bromus tectorum*), medusahead rye (*Taeniatherum caput-medusae*), and ventenata (*Ventenata dubia*). Western juniper (*Juniperus occidentalis*) is common throughout the area but has expanded significantly over the past several decades and was historically scattered in low density before European settlement (Cowlin, et al, 1942 and Soulé, et al, 2003).



## 2. POLICIES, PLANS, PROGRAMS, & EXISTING NEPA THAT INFLUENCE THE PRINEVILLE LIT AREA

State and federal policies, plans, programs, and existing NEPA influence how partners participate in the Prineville LIT. This section identifies those frameworks that are relevant to the Prineville LIT. We also briefly discuss the most fundamental influences of each state and federal framework concerning LIT function and implementation of the Prineville TRP.

### Oregon Department of Fish and Wildlife

The [Greater Sage-Grouse Conservation Assessment and Strategy for Oregon](#) (The 2011 Strategy; ODFW, 2011) describes ODFW's sage-grouse management and provides guidance to public land management agencies (e.g., BLM, USFS, DSL) on sage-grouse conservation in Oregon. The 2011 Strategy describes the habitat requirements of sage-grouse and establishes state and regional habitat and population goals and objectives. Regional goals and objectives align with BLM District boundaries (except for the Baker Resource Area). The Prineville LIT will address sage-grouse habitat and population threats that support The 2011 Strategy's stated goals and objectives.

- **Statewide Population Goal:** Manage greater sage-grouse statewide to maintain or enhance their abundance and distribution at the 2003 spring breeding population level, approximately 30,000 birds over the next 50 years.
- **Prineville District BLM Population Goal:** restore greater sage-grouse abundance and distribution near the 1980 spring breeding population level, approximately 3,000 birds.
- **Statewide Habitat Goals:** 1) maintain or enhance the distribution of sagebrush habitats within greater sage-grouse range in Oregon; and 2) manage those habitats in a variety of structural stages to benefit greater sage-grouse.
  - **Statewide Habitat Objective:** Manage a minimum of 70% of greater sage-grouse range for sagebrush habitat in advanced structural stages, sagebrush classes 3, 4, or 5, with an emphasis on classes 4 and 5. The remaining approximately 30% includes areas of juniper encroachment, non-sagebrush shrubland, and grassland (uplift areas) and should be managed to increase available habitat within greater sage-grouse range.
  - **Prineville District BLM Habitat Objective:** To maintain and enhance existing sagebrush habitats and enhance potential habitats that have been disturbed such that there is no net loss of sagebrush habitat. This objective is compartmentalized by region and specifies that the Prineville District shall maintain and enhance a minimum of 47% as advanced sagebrush structural stages and 53% uplift areas.

The following excerpt from the 2011 Strategy discusses conservation measures relevant to the Prineville District BLM region. The Prineville LIT has incorporated these measures into this TRP to support The 2011 Strategy's stated population and habitat goals and objectives.

*Because Prineville District includes a larger human population than most others in Oregon's sage-grouse range, there is an array of issues that likely will need action in the near future.*

*Juniper encroachment (130,000 ha [320,000 acres]) is a significant issue for this region as it may marginalize 30% of the habitat remaining in the district. Disturbances due to fire need to be clarified through more thorough inventories. Maintaining the connectivity of habitat between this region and Burns and Lakeview districts is critical to ensuring the long-term sustainability of the current population. Identifying partnerships to best maintain or rehabilitate these areas will be critical in this region where private land comprises a slight*

*majority of sage-grouse habitat. Similar to Baker County because of the preponderance of private land, this region will be a priority for NRCS projects. Because of declining sage-grouse population trends in this region, aggressive management is needed to identify limiting factors and halt the decline.*

*Human impact is the greatest in this region, whether it is anthropogenic structures (power lines, OHV trails, residential developments) or activities (mountain biking, bird watching, horseback riding). These all occur in greater frequency on a relatively smaller area in comparison to the remainder of sage-grouse range in the state. Thus, management and mitigation of such activities will be necessary to reduce the impacts on sage-grouse. Managing human activity may be the primary conservation action to assist in stabilizing populations. Habitat improvements should be pursued in concert with managing human activity.*

The 2011 Strategy also describes methods ODFW used to develop the sage-grouse Core Areas (PACs) and Low-Density Habitat (see Section 5.1.). As previously noted, two PACs fall within the Prineville LIT area. PAC boundaries are currently under revision and will be incorporated into the Prineville TRP when available.

### **SageCon Partnership**

The [Oregon Sage-Grouse Action Plan](#) (The Action Plan; SageCon, 2015) was developed through the SageCon Partnership in connection with the 2011 Strategy. The purpose of the Action Plan is to outline a coordinated framework for action and accountability among private, nongovernmental, local, State, and federal partners in advancing immediate and long-term sage-grouse conservation efforts to achieve the State's sage-grouse population and habitat objectives discussed in the 2011 Strategy. The Action Plan presents a science-based assessment of threats; the establishment of goals and objectives for addressing threats; and a framework for adaptive management. This document acknowledges that conservation success relies upon effective partnerships, noting that it is imperative to incentivize and enlist the help of land managers from federal and state agencies, nongovernmental organizations, and private entities in addressing the habitat threats to sage-grouse as well as other rangeland interests.

The Prineville LIT will play a significant role in the implementation of the Action Plan by serving as a local venue to advance opportunities for project-level application and implementation of the Action Plan's higher-level approach to prioritizing conservation actions on the ground, including partnerships for advancing such opportunities; and advising the statewide technical team and coordinating council on implementation-related local priorities, issues, or concerns, which will be part of shaping adaptive management of the Action Plan. It is anticipated that work related to the above efforts will benefit from the engagement of an on-the-ground resource such as the LITs, with that work including refinement of maps; engagement with private landowners to implement site-specific plans tied to CCAAs; and providing ongoing coordination to address area-specific threats. The Action Plan states that the LITs will include the local SWCDs, local government, private landowners, relevant local agency staff, and conservation and other NGO representation.

### **Bureau of Land Management**

The [Oregon Greater Sage-Grouse Approved Resource Management Plan Amendment](#) (ARMPA; BLM, 2015) is the baseline plan for managing sage-grouse on BLM-managed lands in the Prineville District BLM. The purpose of the ARMPA is to identify and incorporate appropriate measures in existing land use plans to conserve, enhance, and restore Oregon sage-grouse habitat by avoiding, minimizing, or compensating for unavoidable impacts to sage-grouse habitat in the context of the BLM's multiple use and sustained yield mission. Changes in the management of sage-grouse habitats are necessary to avoid the continued decline of populations across

the species' range. This ARMPA focuses on areas affected by threats to sage-grouse habitat identified by the USFWS in the March 2010 listing decision and in the USFWS 2013 Conservation Objectives Team (COT) report. The ARMPA presents the goals, objectives, allowable land-use activities, and management actions to address each threat to protect and preserve sage-grouse and its habitat on public lands managed by the BLM in Oregon.

Sage-grouse habitat on BLM-administered lands in the decision area consists of lands allocated as priority habitat management areas (PHMA) and general habitat management areas (GHMA).

- **PHMA**—BLM-administered lands identified as having the highest value to maintain sustainable sage-grouse populations. Areas of PHMA largely coincide with PAC boundaries.
- **GHMA**—BLM-administered lands where some special management will apply to sustain sage-grouse populations; areas of occupied seasonal or year-round habitat outside of PHMA.

While the final environmental impact statement (EIS) constitutes compliance with NEPA for the broad-scale decisions made in this ARMPA, the BLM will continue to prepare environmental assessments (EA) and EISs, where appropriate, as part of implementation-level planning and decision-making.

### **Bureau of Land Management**

The [High Desert Shrub Steppe Restoration Environmental Assessment](#) (HDSSR EA; BLM 2011) was prepared by the Prineville District BLM in 2011 and proposes to maintain or improve sage-grouse habitat suitability through vegetation management on public land around Millican, Brothers, Hampton, and Paulina. Based on the analysis documented in the Environmental Assessment (DOI-BLM-OR-POOO-2008-0157-EA) and the Finding of No Significant Impact (FONSI), [Prineville District BLM's Decision Record](#) selected Alternative 2: Mechanical Treatment Emphasis to occur on up to 13,600 acres per year within the 616,600-acre project area. This alternative covers the following activities,

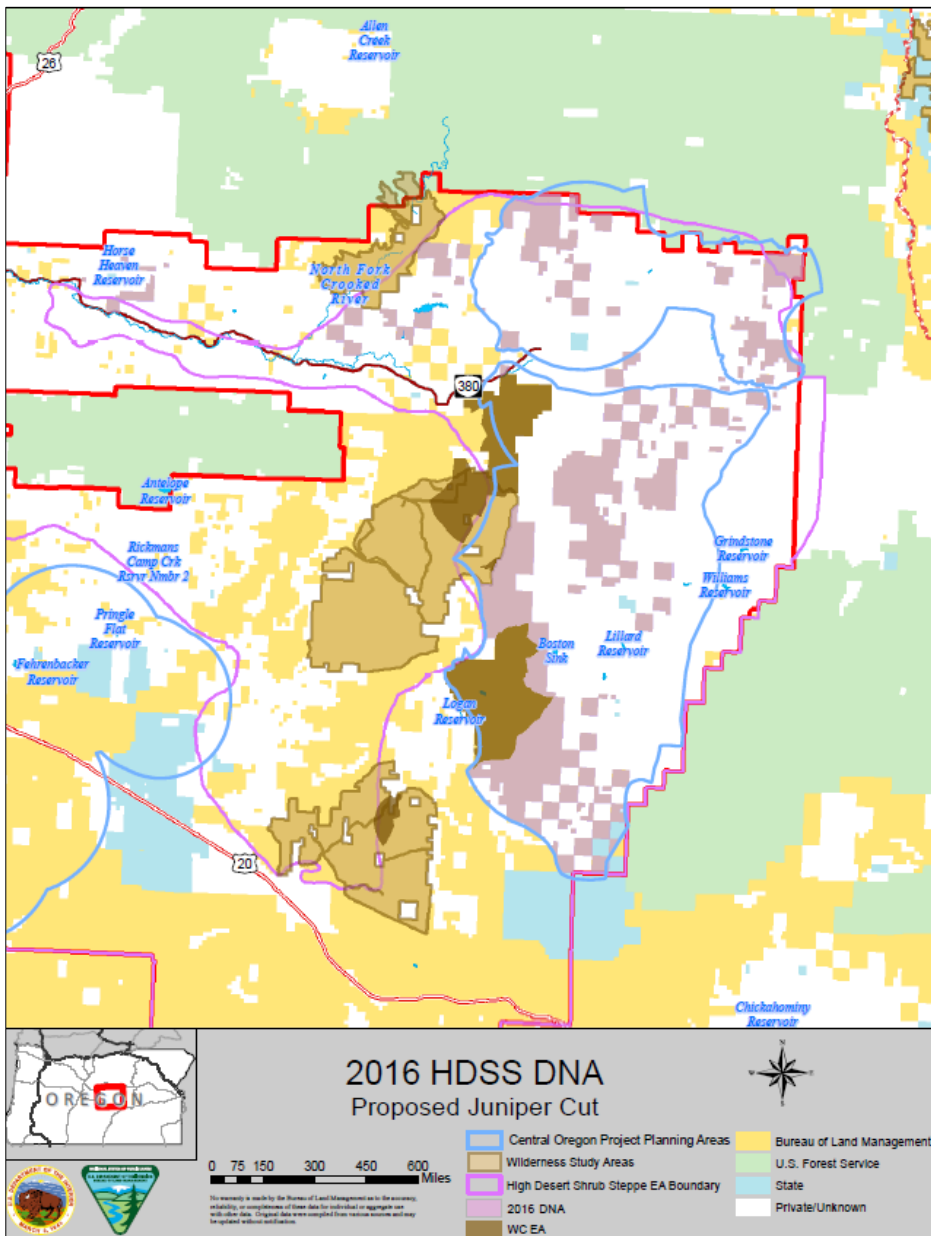
- Cut, mow, or crush young juniper and/or shrubs on 10,200 acres annually, and allow removal of tree boles via personal use permits (generally firewood), commercial sales, or other methods.
- Prescribe burn 3,400 acres of standing live vegetation, and about half of the areas that have already been treated by cutting, mowing, or crushing.
- Seed or rootstock transplant 500 acres per year of native or non-native forbs, grass, or shrubs or a combination, generally on sites also treated mechanically or by prescribed burn.
- Require several additional project design features described in detail in Chapter 2 Alternatives (pages 8-10) and Appendix B of the EA (pages 30-38).

The number of acres treated annually will vary depending on conditions at specific treatment sites, funding availability, opportunities for partnerships with private landowners, agencies, or organizations, and other factors. Treatments will be prioritized on those ecological sites most important to sage-grouse within currently occupied range, though treatment unit boundaries may include other ecological sites as well as potential but unoccupied habitat, or newly documented occupied habitat.

[2016 Sage-grouse Habitat Improvement Juniper Treatment](#) (Determination of NEPA Adequacy [DNA], BLM 2016; DOI-BLM-ORWA-P000-2016-0043-DNA) was prepared by the Prineville District BLM in 2016 (Figure 7). The BLM proposed to cut juniper on approximately 92,400 acres, as analyzed in the 2011 HDSSR EA. Implementation would occur over a five to ten-year period, depending on funding. Proposed treatments would be implemented as described in Alternative 2 of the High Desert Shrub Stepped Restoration EA, with



minor adjustments to some of the project design features to be consistent with the direction in the 2015 ARMPA. Any portion of the project that contains new or revised directions from the ARMPA was notated as such.



**Figure 7: BLM managed land analyzed for treatment under the 2016 Sage-grouse Habitat Improvement Juniper Treatment DNA.**

that are currently being implemented or were done since 2014 to improve greater sage-grouse habitat. A limited amount of broadcast burning under a pine understory was also proposed.

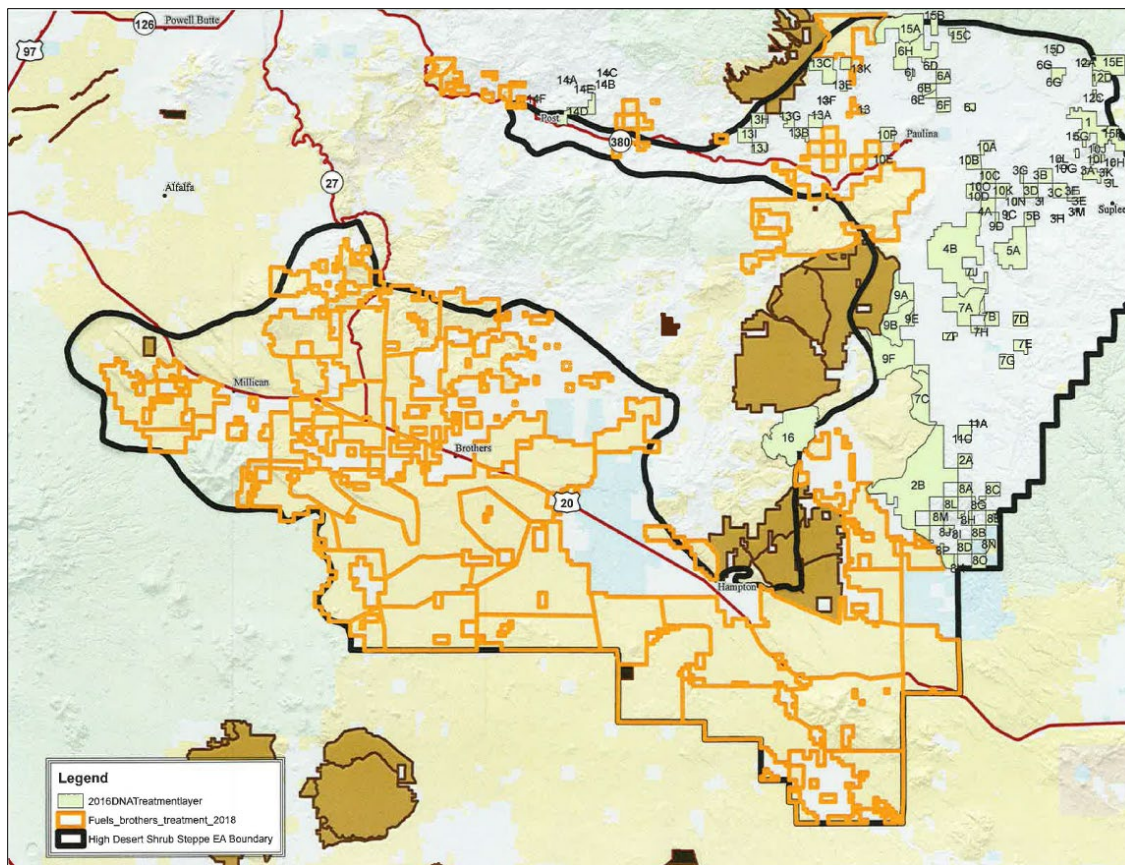
Implementation would occur over a five-to-ten-year period, depending on funding. Proposed treatments would be implemented as described in Alternative 2 of the HDSSR EA, with minor adjustments to some of the project design features to be consistent with the 2015 ARMPA.

Under this DNA, a majority of the new proposed action was within the same analysis area that was analyzed in the HDSSR EA. The new areas that were added were immediately adjacent to the EA analysis area and within occupied greater sage-grouse habitat, potential suitable greater sage-grouse habitat, or fuel break areas; which is within the purpose and need of the HDSSR EA. Furthermore, the geographic and resource conditions of the portion of the proposal that were not within the delineated project area of the HDSSR EA were similar to those analyzed in the HDSSR EA.

[Sage-grouse Habitat Improvement Juniper Treatment Prescribed](#)

[Burning](#) (DNA, BLM 2018; DOI-BLM-ORWA-P000-2017-0009-DNA) was prepared by the Prineville District BLM in 2018. The BLM proposed to implement prescribed burning actions on up to 13,000 acres/year within and adjacent to the 616,600-acre project area analyzed in the 2011 HDSSR EA. A majority of the proposed burning treatments consist of jackpot or pile burning to treat active fuels that were created as a result of juniper cutting projects

2018 Sage-Grouse Habitat Improvement Juniper Treatment (DNA, BLM 2018; DOI-BLM-ORWA-P000-2018-



**Figure 8: BLM managed land analyzed for treatment under the 2018 Sage-grouse Habitat Improvement Juniper Treatment DNA.**

0044-DNA) was prepared by the Prineville District BLM in 2018 (Figure 8). The BLM proposed to cut juniper on approximately 484,533 acres as analyzed in the 2011 HDSSR EA with an additional 29,177 acres near the HDSSR EA boundary. Implementation would occur over a five-to-ten-year period, depending on funding and clearances. Proposed treatments would be implemented as described in Alternative 2 of the HDSSR EA, with

minor adjustments to some of the project design features to be consistent with the 2015 ARMPA. Prescribed fire in and around the HDSSR EA was covered in the Sage-grouse Habitat Improvement Juniper Treatment Prescribed Burning DNA (DOI-BLM-ORWA-P0000-2017-0009-DNA) and was not covered in depth in this DNA.

To date, the Prineville District BLM has treated 254,809 acres under a variety of EAs. Units claimed in GIS encompass space between juniper stands and have been counted in acreage. Additionally, areas cleared include low-density acres that require hand crews to grid the unit to not miss early Phase I juniper. Because of this, reported acreage seems inflated.

Integrated Invasive Plant Management Environmental Assessment Prineville District (EA, BLM 2016; DOI-BLM-ORWA-P000-2011-0019-EA) was prepared by the Prineville District BLM and signed in 2016. The BLM proposed to expand and update its existing integrated noxious weed management program. This 2016 EA tiered to the 2010 Final Environmental Impact Statement and analyzes herbicide and non-herbicide invasive plant treatment methods applied in an integrated management approach. It examines the environmental effects of the proposal at a site-specific scale within the Prineville District.

## Bureau of Land Management

### *Playa Project Environmental Assessment*

Playas are low-lying depressions with clay soils where water seasonally collects across the high desert. Playas provide limited suitable growing conditions required by some forbs and insects. These features provide important habitat for sage-grouse rearing their broods. When the west was settled, playas were altered by digging deep into the center, allowing water to collect for livestock. The water footprint then decreased in size, thus reducing the number of forbs and insects at the playas. Because of this, the quality of brood-rearing habitat was reduced or lost completely. Over the past 10 years, the Prineville District BLM has collaborated with multiple resource specialists, grazing permittees, and partners to restore two altered playas on BLM managed lands with the implementation of the Sage-grouse Playa Management Environmental Assessment. Playa restoration, rerouting routes to go around playas, vegetation treatments (juniper and silver sagebrush thinning), and off-site water development were analyzed within the document.

## Bureau of Land Management

### *Brothers/North Wagontire Causal Factor Analysis* (CFA; BLM, 2017)

The BLM Oregon's ARMPA identifies an adaptive management response when sage-grouse habitat and/or population thresholds are not met. Within the ARMPA, population and habitat thresholds are identified for each sage-grouse PAC and BLM compares those thresholds to the status of each PAC annually. When population and/or habitat thresholds are exceeded for a given PAC, BLM must complete a Causal Factor Analysis (CFA) to understand the cause(s) (or threats) that are impacting sage-grouse populations and/or habitat within a given PAC. They then use the CFA to identify adaptive management actions. The Brothers/North Wagontire PAC exceeded its population threshold in 2017 and an interdisciplinary/inter-organizational team was convened to conduct the Brothers/North Wagontire CFA. The following recommended management responses were identified within the 2017 CFA,

1. Prioritize juniper and invasive weed treatments in Brothers PAC.
2. Start clearance work for vegetation treatments in FY18 as funding allows.
3. Continue to complete Standards and Guides for permit renewals.
4. Continue Assessment Inventory and Monitoring plots in the Brothers PAC.
5. Continue to install flight diverters where appropriate as funding allows.
6. Initiate travel management with future implementation/activity level planning where feasible and as funding allows.

During 2021 and 2022, the Prineville BLM District and cooperators implemented the following actions to address the 2017 CFA,

- Completed **29 Assessment, Inventory, and Monitoring (AIM)** plots
- **17,180 acres** within the Brothers/N. Wagontire were contracted out for juniper cutting. **455 acres** of prescribed burning (jackpot and/or pile) occurred when conditions allowed.
- Playa project - Seeded in December 2020 and 2021. Second and third years of monitoring seeding reclamation was completed in July 2021 and 2022.
- ODFW continues to interface with hunters to determine where sage-grouse were harvested.
- **13 vehicle counters** were deployed in the Brothers PHMA. BLM uses data collected to estimate the amount and season of use of vehicle traffic during critical sage-grouse seasons (e.g., lek season).
- Continue to coordinate and collaborate with the Prineville LIT.
- **130 guzzler maintenance visits.**
- Installed flight diverters along **7.1 miles** of fence.



- West Nile virus surveys were conducted at **4 guzzlers**. Initial monitoring began in 2017
- The OR/WA BLM State Office and Prineville District Office have funded an assistance agreement with Oregon State to hire a graduate student for three years to complete research in the Brothers/N. Wagontire and Paulina/12 Mile/Misery Flat PACs (see section 5.3. for more information).

### ***Paulina/12-Mile/Misery Flat Causal Factor Analysis***

The Paulina/12-mile/Misery Flat PAC exceeded its population threshold in 2016 and again in 2021, prompting the completion of a causal factor analysis. The adaptive management process was not yet fully established in 2016, so the CFA for that year was not initiated. In 2021, the estimated annual population within the PAC declined 11.9%, tripping the soft population trigger. This document is currently being completed by the Prineville BLM interdisciplinary team and will be reviewed by the Prineville District Manager. More information regarding this CFA, including management actions, will be available at a later date.

Prineville BLM will continue to implement adaptive management responses by installing flight diverters, prioritizing juniper thinning, adding any applicable stipulations to proposed projects within PAC boundaries, and ensuring conformance for Special Recreation Permits and other projects within GRSG habitat. Work is also continuing to capture route densities to inform travel management in the future, with activity level planning where feasible and as funding allows.

### **Bureau of Land Management**

#### **Sage-Grouse Habitat Assessment Framework**

Sage-grouse select habitat at multiple scales and are sensitive to landscape changes. Loss and degradation of habitat (as discussed throughout the TRP) lead to isolation, reduction, and extirpation of populations (Connelly et al. 2000; Knick et al. 2013). These and other factors (e.g., disease) require an integrated approach to landscape conservation to assess and effectively conserve sage-grouse populations and their habitats. Conservation concerns will continue to exist until managers demonstrate the effectiveness of actions that maintain and restore habitats at scales that match the species' biological needs.

The Sage-grouse Habitat Assessment Framework (HAF) was developed in the early 2000s by sage-grouse experts from state, federal, and nongovernmental organizations to empower land managers to implement project-level actions that make sense at the landscape scale. The HAF establishes indicators to determine the status of sage-grouse habitat needs at multiple scales and for seasonal habitats. The results of these assessments will provide the necessary information to evaluate whether the BLM managed lands are meeting the sage-grouse land health habitat standard. However, sage-grouse habitats transcend jurisdictional boundaries and therefore require a coordinated approach to management. The HAF provides a blueprint for landscape conservation; success will be achieved through implementation with local stakeholder involvement.

Landscape conservation is a scale-dependent process whereby priority landscapes are identified across the species range (broad scale) and appropriate conservation actions are implemented within seasonal habitats to benefit populations (site scale). The HAF has adopted the hierarchical orders of habitat selection as described by Johnson (1980). Johnson's orders of selection are widely accepted and provide the foundation for the HAF to discuss scale in common and consistent terms. Johnson (1980) described four orders of habitat selection in which each higher order is dependent on the previous order (Figure 9). For example, a food item is nested within a feeding site, which is nested within a seasonal use area, which is nested within a home range, which is nested within a population area, which is part of the species range. Sage-grouse select nesting and feeding

areas within their seasonal range and that seasonal range is nested within their home range. An ecological or anthropogenic disturbance that changes their home range can affect nesting or feeding site selection.

The Prineville LIT area is encompassed by the Central Oregon Mid-scale. Within this mid-scale, there are four fine-scale areas, Prineville, Brothers, Paulina, and Burns. The Central Oregon Mid and Brothers fine-scale assessments have been completed. The Prineville BLM District is currently in the process of analyzing site-scale information and has been mandated (along with all other BLM offices) to complete that work by the end of 2024.

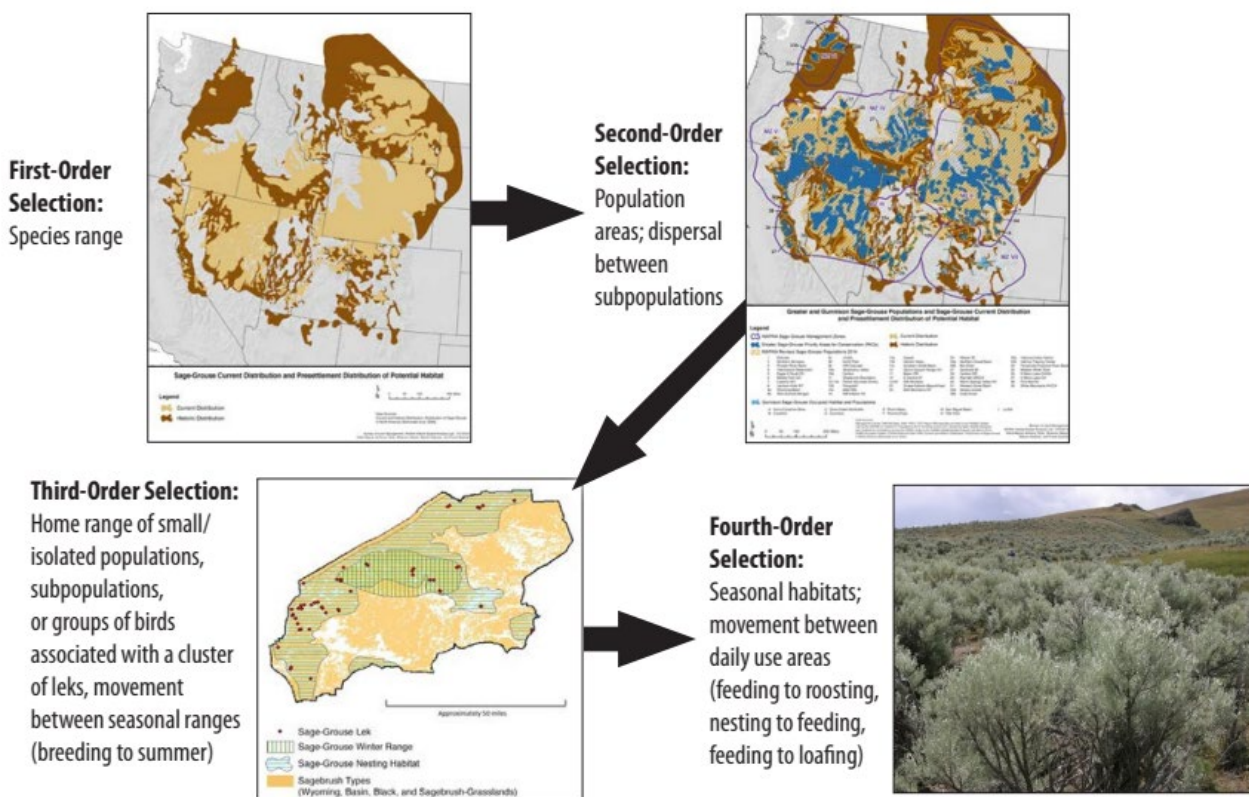


Figure 9: Habitat selection by sage-grouse based on Johnson's (1980) four orders.

### Oregon Department of Fish and Wildlife

The [Oregon Sage-Grouse Mitigation Program](#) is part of Oregon’s approach to sage-grouse management and recovery. This program was developed under the State’s Sage-Grouse Conservation Partnership (SageCon), as part of a collaborative approach to balancing economic development and healthy rangeland ecosystems in central and eastern Oregon. Under the Oregon Sage-Grouse Mitigation Program, landowners can enter into an agreement with ODFW to preserve and/or restore habitat for sage-grouse. In exchange for long-term land protection through an easement and conducting and maintaining specific management actions, landowners receive credits that can be sold in the State’s mitigation program to offset development impacts to sage-grouse (e.g., transmission line construction or mining activity). See the [Mitigation Program Manual and Summary for Credit Generators](#) for more information. The Mitigation Program uses a Habitat Quantification Tool (HQT) to calculate credit value based on the acres of functional sage-grouse habitat provided by a property and the amount of uplift (improvement) in habitat condition. Mitigation Program funds are provided to the landowner to complete restoration actions and maintain long-term stewardship for the duration of the

credit (up to 100 years, depending on contract length). However, these funds cannot be used to pay for management or restoration actions that already have non-mitigation-based public funding or are earmarked to be funded. This program will become increasingly relevant to the Prineville LIT area given its proximity to urban centers including Bend and Redmond.

### **US Fish and Wildlife Service and Crook SWCD**

#### ***Crook/Deschutes Sage-Grouse Candidate Conservation Agreement with Assurances (CCAA)***

This Programmatic CCAA for sage-grouse is administered by the USFWS and Crook SWCD to address the conservation needs of sage-grouse on private lands. Landowners voluntarily commit to maintaining contiguous habitat by avoiding further fragmentation and addressing known threats to sage-grouse on enrolled lands conservation measures that address every threat to sage grouse on the enrolled property through comprehensive site specific plan (SSP). In exchange for these voluntary conservation actions, FWS issues an Endangered Species Act (ESA) Enhancement of Survival Permit based on the number of acres and habitat quality that is enrolled. If sage-grouse become ESA-listed in the future, enrolled landowners receive assurances against additional regulatory requirements and are covered should any incidental take occur on enrolled lands while conducting covered range and livestock management practices. Furthermore, lands enrolled in CCAAs are often prioritized for funding assistance to complete conservation actions.

The Crook/Deschutes CCAA program works in concert with five other CCAA permits in the state that together cover all sage-grouse occupied private rangelands and Department of State Lands rangelands within Oregon. Interested landowners in Deschutes and Crook Counties can enroll in the program through the Crook Soil and Water Conservation District. The program is protected by privacy statutes (Section 3.2) so individual landowners cannot be identified but in aggregate there are 40,928 acres enrolled in Crook and Deschutes Counties at the end of 2022. There are 258,991 more acres that landowners committed to enroll in the next five years but they require more staff capacity at Crook SWCD to accomplish the work. Landowners who are enrolled in the program work on improving overall ranch resiliency through grazing management plans, juniper cutting, annual grass treatments, fence marking, drought planning, and wildfire risk reduction. All plans require annual monitoring and long-term monitoring to measure trends and compliance. The SWCD writes grants and seeks funding to implement the work that is prescribed in the plans. To date the enrolled landowners have improved habitat conditions by cutting 10,818 acres of Phase I and II juniper and spraying 315 acres of IAGs with Rejuvra, marking 2.4 miles of high-risk fence, installing 65 wildlife escape ramps in troughs, and installing Bevear Dam Analogs (BDAs) on 1.5 miles of a creek to improve mesic conditions.

### **Natural Resources Conservation Service**

#### ***Sage Grouse Initiative and Working Lands for Wildlife***

In 2023, USDA launched a new framework for the Sage-Grouse Initiative (SGI): the voluntary, incentives-based conservation program now falls within the broader program, Working Lands for Wildlife (WLFW). This transition was implemented to build flexibility into USDA's approach to addressing threats to sagebrush and grassland ecosystems across the western US and builds upon the huge successes realized by SGI and the Lesser Prairie Chicken Initiative over the last 10+ years. WLFW prioritizes proactive conservation in and around intact but vulnerable rangelands. This focuses efforts in places where they are more likely to be effective and cost efficient, rather than reactive responses in regions that are already highly degraded (Figure 10). This focus is particularly relevant to private landowners within the Prineville LIT area given various decision support tools (see Section 3.1) highlight the area as intact sagebrush rangeland and a priority geography for conservation investments. SGI will continue to be an important conservation program for private landowners within the



Prineville LIT area. While the program now falls within WLFW, SGI continues to use win-win solutions to target voluntary, incentive-based conservation that improves sage-grouse habitat while supporting working ranches. Additionally, landowners enrolled in the CCAA are often more competitive for SGI funding. Conservation practices within SGI will prioritize efforts that address the following threats to sagebrush rangelands, exotic annual grass invasion, land use conversion, woodland expansion, and riparian/wet meadow restoration.

Given the privacy statute discussed in Section 3.2, it is not possible to analyze the impact of SGI down to the Prineville LIT scale; however, metrics are available for the NRCS Redmond Service Center. Since 2010, the Redmond Service Center has signed 97 SGI contracts to help private landowners remove over 120,000 acres of western juniper,

Current priorities for the Redmond Service Center include low-tech wet meadow restoration and restoring intact sage/steppe habitats from annual grass invasion by applying the herbicide, Rejuvra (chemical name, indaziflam); approved in 2022 by the USDA for use on private land.

SGI is a valuable private land conservation program in Crook and Deschutes Counties; however, payment limitations associated with farm bill programs restricts project implementation on large acreage ranches in this area. The total amount of financial assistance payments paid to a person or legal entity through SGI during the current Farm Bill may not exceed an aggregate of \$450,000.

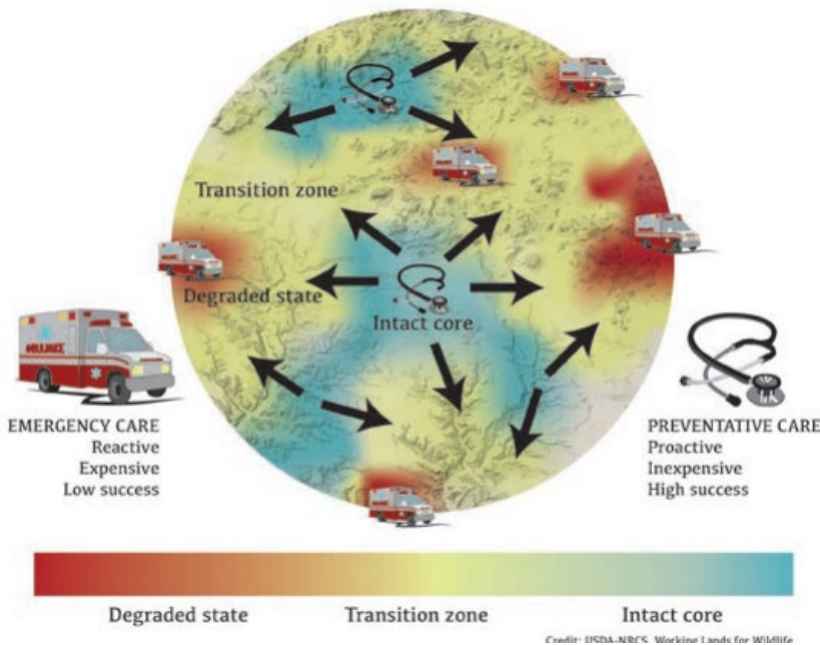


Figure 10: WLFW's defend the core, grow the core.

### Natural Resources Conservation Service

The [Regional Conservation Partnership Program \(RCPP\)](#) is a partnership grant program that provides funding to address landscape-scale project proposals. RCPP projects fall under two categories,

- **RCPP Classic** projects are implemented using NRCS contracts (e.g., Environmental Quality Incentives Program) and easements (e.g., Agriculture Conservation Easement Program) with producers, landowners and communities, in collaboration with project partners.
- Through **RCPP Grants**, the lead partner must work directly with agricultural producers to support the development of new conservation structures and approaches that would not otherwise be available under RCPP Classic.

The RCPP could be a useful funding source for Prineville LIT partners particularly given that payment restrictions associated with SGI do not count against RCPP funds.

**Oregon Watershed Enhancement Board**

The [Focused Investment Partnership \(FIP\)](#) is a large grant program, offering partnership proposals up to \$12 million to projects over six years for high-performing partnerships that have an existing [Strategic Action Plan](#) and are ready to implement projects. The FIP program encourages local partners to collaborate, plan, prioritize, implement, and monitor projects around a common purpose and monitoring framework. The FIP proposals must address one of the seven board-identified ecological priorities; one of those priorities is Sagebrush/Sage-steppe. There are currently no FIP grants that address the Sagebrush/Sage-steppe ecological priority within the Prineville LIT area. FIP grants are offered once per biennium. The next offering will become available in 2024.

**Oregon Watershed Enhancement Board**

[Open Solicitation Grants](#)

Several grant programs fall within this grant category including Restoration, Acquisition, Technical Assistance, Monitoring, Stakeholder Engagement, and Small Grants. Open Solicitation Grants cover approximately 50 percent of OWEB’s grant budget. Several Prineville LIT partners have successfully acquired Open Solicitation Grants to conduct project implementation on private lands within the Prineville LIT area including Crooked River Weed Management Area and Crook Soil and Water Conservation District

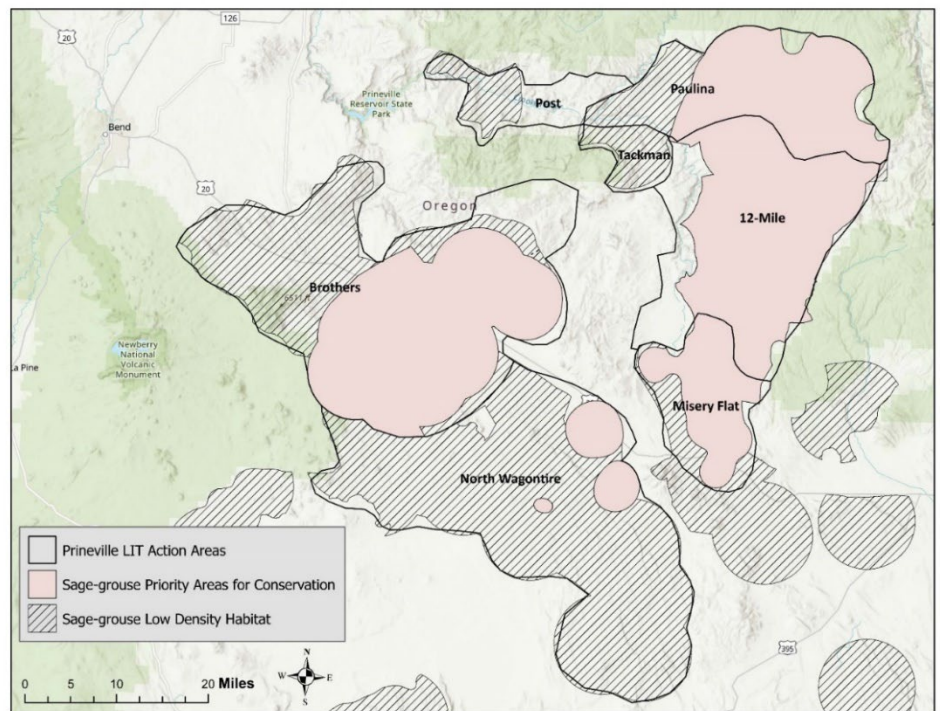
**3. SCIENCE THAT INFORMS & INFLUENCES THE PRINEVILLE LIT AREA**

Various scientific and technical resources are available to the Prineville LIT. This section summarizes datasets used to develop this TRP and local research efforts that have and will continue to inform how the LIT identifies priorities. Within this section, we also discuss the potential influences of climate change on this area.

**3.1. SUMMARY OF DATA SETS**

**Sage-grouse Priority Areas for Conservation (PAC) and Low-Density Habitat**

Oregon Administrative Rule (OAR) 660-023-0115 defines Priority Areas for Conservation (PAC or core areas) and “Low-density areas” of sage-grouse habitat in accordance with the 2011 Oregon Sage-Grouse Conservation Assessment and Strategy (CAAS; ODFW, 2011). PACs areas are defined as ‘mapped sagebrush types or other habitats that support sage-grouse annual life history requirements that are encompassed by areas: A) of very high, high, and moderate lek density strata; B) where low lek density strata overlap local connectivity corridors; or C) where



**Figure 11: ODFW's Sage-grouse Priority Areas for Conservation (PAC) and low-density habitat polygons that fall within and adjacent to the Prineville LIT area.**



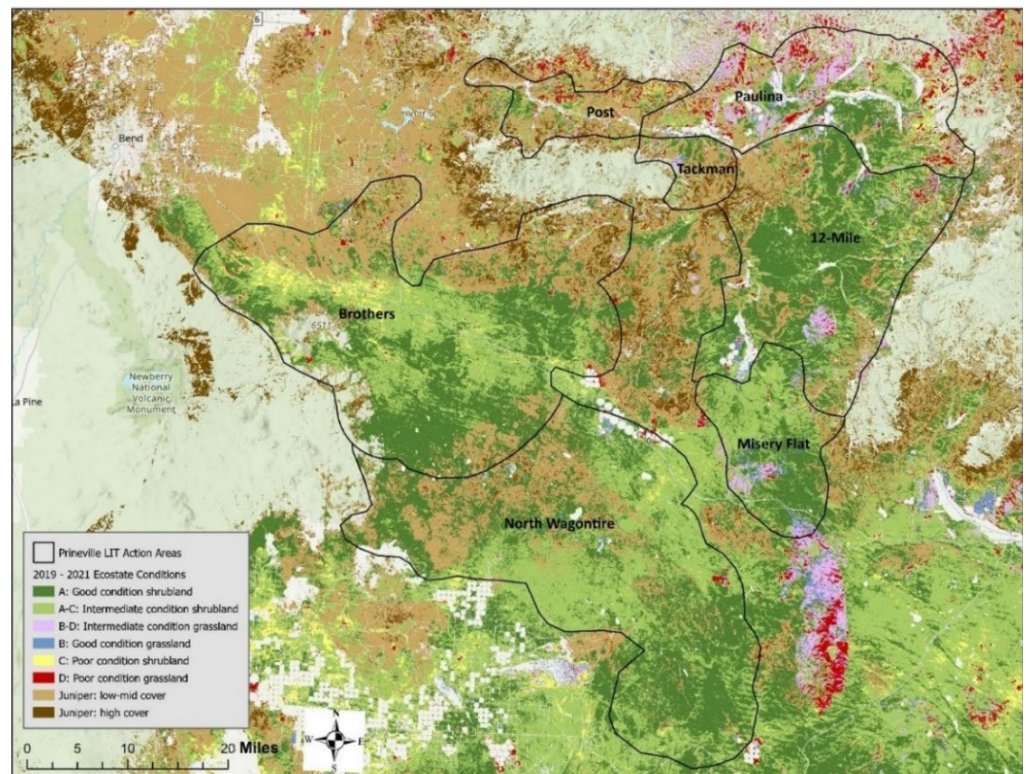
winter habitat use polygons overlap with either low lek density strata, connectivity corridors, or occupied habitat.’ Low-density areas are defined as ‘mapped sagebrush types or other habitats that support sage-grouse that are encompassed by areas where: A) low lek density strata overlapped with seasonal connectivity corridors; B) local corridors occur outside of all lek density strata; C) low lek density strata occur outside of connectivity corridors; or D) seasonal connectivity corridors occur outside of all lek density strata.’ The methods used to develop these habitats and the definitions of each of these terms used in the OAR are outlined in detail in the 2011 CAAS (ODFW, 2011). Two PACs fall within the Prineville LIT area: Brothers and Paulina/12-Mile/Misery Flat.

The Prineville LIT used PAC and low-density boundaries as a starting point to develop their LIT action areas (Figure 11). Input regarding local priorities and insight about local habitat conditions and known sage-grouse observations was incorporated when drafting and revising the action area boundaries. The entire LIT area was sub-divided into seven action areas to more easily discuss the assessment of threats, past and ongoing efforts, and future partnership opportunities. Action area boundaries are not intended to limit the extent of collaborative opportunities – e.g., LIT priorities may cross action area boundaries. The action areas were revised in 2021 and will require additional revisions after ODFW completes its sage-grouse habitat assessment which will modify the current PAC and low-density boundaries.

### Threat-Based Ecological States

Conifer expansion, invasive annual grasses, and wildfire are identified as widespread threats to the sustainability of sage-grouse in Oregon (SageCon 2015). A threat-based land management framework for the northern Great Basin was developed to help practitioners assess the impact of these three threats at large scales (Johnson, et al, 2019). To further support planning efforts aimed at addressing these threats, the [SageCon Ecostate Time Series Maps](#) (ecostate maps) were created to provide a large-scale spatial depiction of rangeland condition across southeastern Oregon (SageCon 2022).

Ecostate maps were created to support planning and decision-making processes; help local partners identify priorities across ownership boundaries; and serve as a high-level communication tool. The ecostate maps are designed for use when discussing large landscapes. They should be used in conjunction with local knowledge and insights and are not



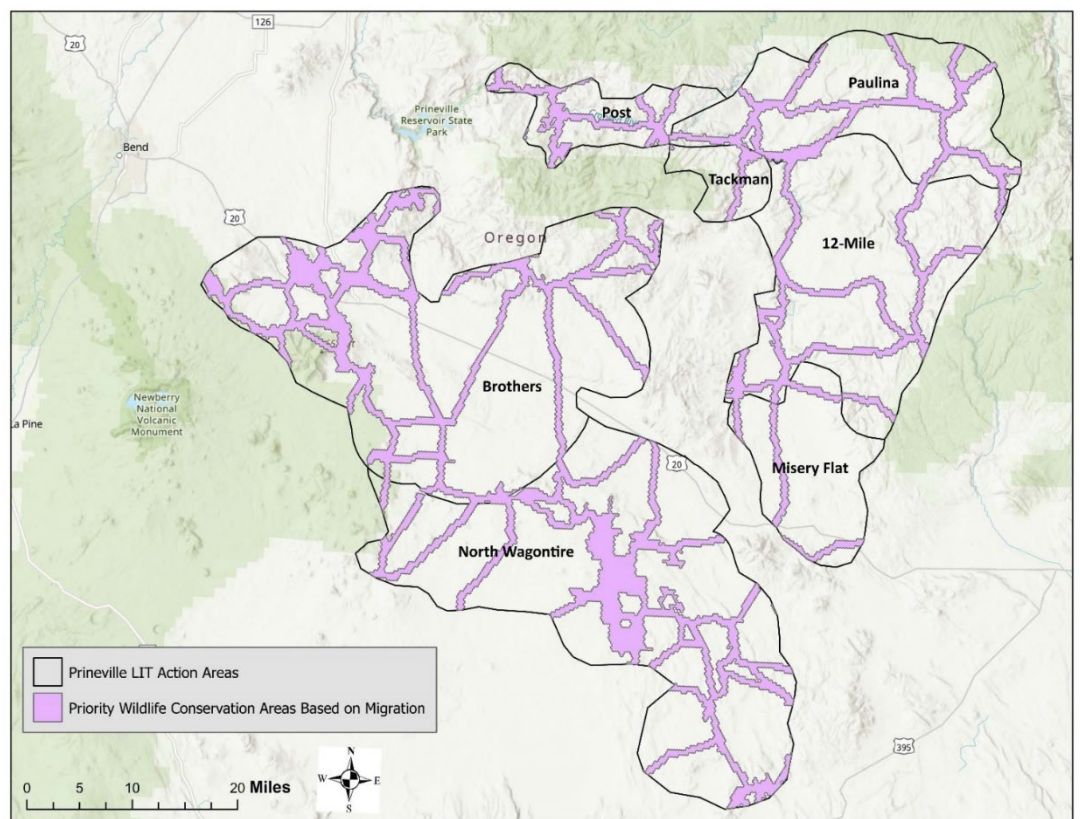
**Figure 12: SageCon's Threat Based Ecostate Map illustrates threats of conifer expansion (tan and dark brown) and invasion of exotic annual grasses (yellow and red) averaged over 2-year timeframes. Intact sagebrush landscapes appear in light and dark green.**

intended as a stand-alone tool. Through their consensus process, the Prineville LIT identified these three threats as “high priority for the Prineville LIT to address” (see Section 4). The Prineville LIT has incorporated the ecostate maps throughout this plan and intends to use them as a communication tool and to identify priorities. Figure 12 illustrates threat-based ecostate changes over time across the Prineville LIT area. In addition to other variables and considerations (e.g., local knowledge, landowner participation, available resources) the Prineville LIT may consider prioritizing light and dark green areas expressed across all time periods.

**Oregon Connectivity Assessment and Mapping Project (OCAMP)**

Many species, including sage-grouse, rely on the ability to move throughout the landscape to fulfill their survival needs. The Prineville LIT will be able to use this data set to help direct on-the-ground efforts for the acquisition, restoration, and conservation of habitat; inform this planning document; guide granting efforts; and inform land use development of sensitive habitats (Figure 13). Human-caused changes to the landscape can affect the ability of wildlife to move across terrestrial landscapes by adding obstacles, impacting critical stopover sites, and increasing habitat fragmentation. By using this information we can identify critical areas as we prioritize threats in the action areas. OCAMP aims to link landscapes for wildlife by identifying current wildlife habitat

connectivity throughout the state for a wide diversity of species, dispersal capabilities, and sensitivity to anthropogenic threats. These species’ connectivity models were compiled to highlight Priority Wildlife Connectivity Areas (PWCAs) – an interconnected network representing the parts of the landscape with the highest overall value for facilitating wildlife movement in Oregon. The maps produced for OCAMP were built to aid in statewide planning and prioritization efforts to maintain functional habitat connectivity.



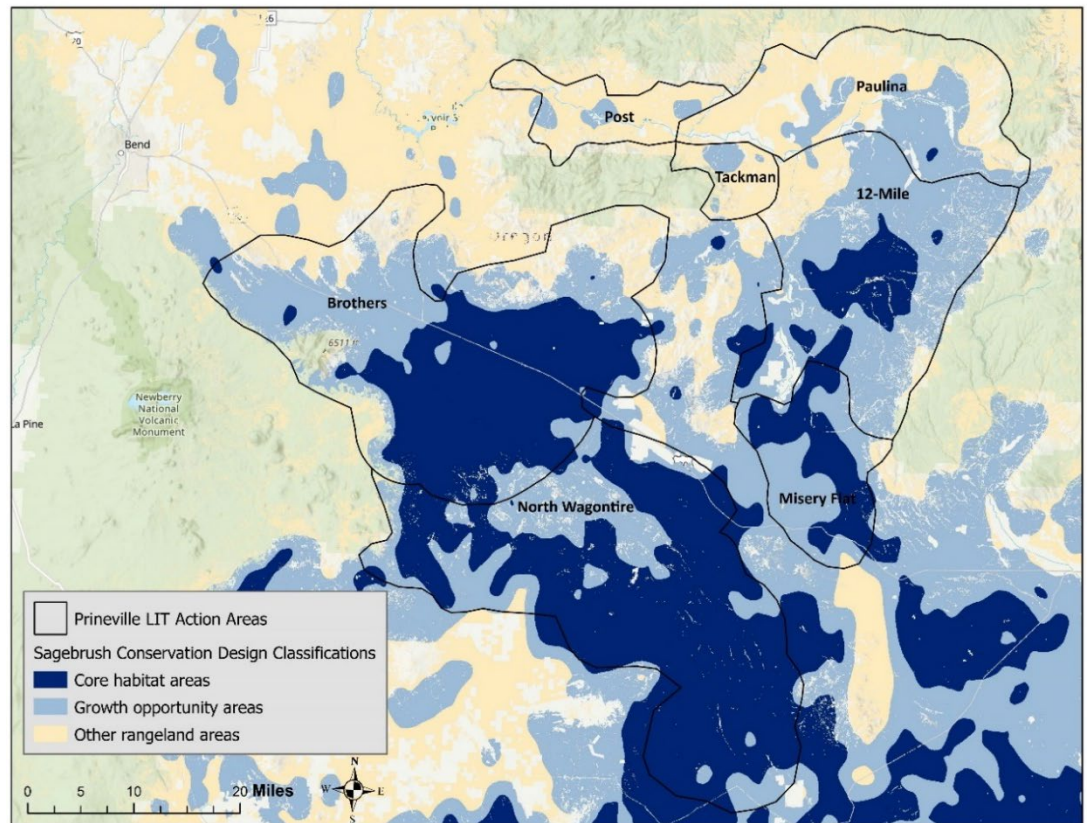
**Figure 13: Priority Wildlife Conservation Areas will help the Prineville LIT further define collaborative priorities.**



### Sagebrush Conservation Design (SCD)

In September 2022, the US Geological Survey (USGS) and other federal agencies published a report (Doherty et al., 2022) showing that 1.3 million acres of sagebrush habitat across the western US are being lost annually. The report, titled *A Sagebrush Conservation Design Framework to Proactively Restore America’s Sagebrush Biome*, incorporates remotely sensed landcover products to identify healthy and degraded sagebrush areas; where and how sagebrush habitat loss is occurring; and lays out a strategy to slow the loss. [The Sagebrush Conservation Design \(SCD\)](#) is an online mapping tool developed in connection with the report and utilizes the proactive **defend the core, grow the core** strategy that involves first protecting Core Sagebrush Areas (CSA) and then growing those areas by working outward to more degraded areas (Growth Opportunity Areas or GOA) – rather than addressing the most heavily impacted sagebrush rangelands first. Federal grant programs (e.g., FWS’s Sagebrush Bipartisan Infrastructure Law program) now use the SCD in their ranking criteria.

USGS’s SCD has become increasingly relevant to federal funders when determining where to prioritize restoration funds. The Prineville (and Lakeview) LIT area maintains a large proportion of Core Habitat Areas compared to other parts of southeast Oregon and the SCD will therefore be an important tool to help the LIT establish cross-boundary priorities that will be competitive for restoration grant funding (Figure 14). An assessment for the Prineville LIT area was conducted to determine the number of acres within each SCD classification,



**Figure 14: US Geological Survey's SCD has become increasingly relevant to federal funders when determining where to prioritize restoration moneys. The Prineville (and Lakeview) LIT area maintains a large proportion of Core habitat areas compared to other parts of southeast Oregon.**

- CSA: 632,281ac (39%)
- GOA: 550,428ac (34%)
- ORA\*: 376,031ac (23%)

\*ORA refers to other rangeland areas.

### 3.2. DATA GAPS & LIMITATIONS

Throughout the development of this document, LIT members have identified information gaps that either require further investigation (e.g., development threats) or invoke the group to understand why such limitations exist and identify adaptive solutions to succeed within those parameters (privacy protections for landowners).

#### Development Threats

Prineville LIT partners are concerned about the threat to sage-grouse habitat from human development. The team used the Action Plan to break the category “development” into three broad categories: “human development” (e.g., placement of temporary structures on small, privately owned tax lots), “recreation” (e.g., OHV use, mountain biking, paragliding), and “land use conversion” (e.g., conversion to solar power). When the LIT ranked all 16 threats according to the criteria outlined in Section 4 of this plan, they identified that, to effectively address each sub-category of development, the group needs more information and more resources. The Sage Grouse Development Siting Tool includes some information about disturbance related to development, such as size/frequency of private properties; land sale histories; pending and proposed land use changes, but there are currently no data sources that analyze trends in land use change or pending changes.

#### Drought in Crook County

National drought maps (Figure 15) that are produced by The University of Nebraska-Lincoln place the majority of Crook County in a state of Exceptional Drought for the last three years. This persistent state of drought puts additional stress on the populations of sage-grouse that rely on this area. The lack of precipitation leads to water table declines and decreases the area covered by wet meadows. Drought is also problematic as it decreases the vigor and abundance of forb species that are required in sage-grouse chick diets.

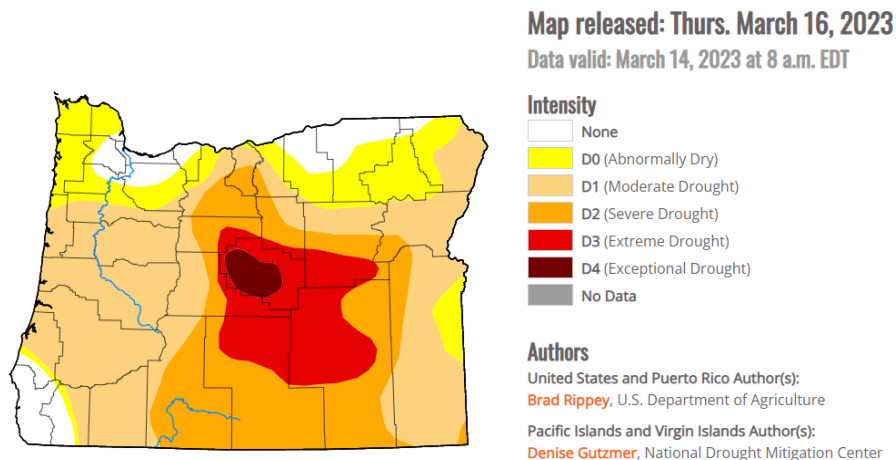


Figure 15: Oregon drought map.

#### Wet Meadow and Riparian Data

Prineville LIT members are interested in using existing wetland data to develop a mesic habitat map (Donnelley et al., 2016) for this LIT area; however, the current dataset has limited utility due to the coarse spatial scale at which data are collected (30m pixels). The Institute for Natural Resources is developing better tools to identify these recourse areas but at this point, we are using the data for summary analysis of the action areas and then we will identify specific projects using local knowledge.

#### Privacy Protected Work on Private Land

Work conducted by NRCS is confidential and locations are not disclosed, and this information is protected under the Confidentiality, Freedom of Information Act, and Privacy Act. Some work that is done on private land by Crook SWCD with respect to the CCAA program is protected under the same statute. These data can

be presented in aggregate over larger areas, but specific locations cannot be reported. This generates some communication and reporting challenges and elevates the importance of local collaboration across boundaries to involve the work on private land and leverage the knowledge of the private landowners about habitat improvement to the adjacent public land where they lease grazing allotments.

### 3.3. PAST & ONGOING RESEARCH

This section provides a high-level summary of past and ongoing sage-grouse research projects within the Prineville LIT area. We asked those associated with local research efforts to provide an overview of their investigations. Please refer to publications and project updates for detailed information about each study.

**Brothers and Paulina PACs Greater Sage-grouse Research**  
**Principal Investigator: Christian Hagen, Oregon State University**  
**Research duration: 2022–Ongoing**

#### Overview

The BLM Prineville District Office, ODFW, and other conservation partners in Central Oregon are concerned about the declining sage-grouse populations in the Brothers PAC. Population numbers are declining more steadily in this region than surrounding areas (Hanf et al, 1994). The Brothers PAC is the western-most population of sage-grouse range in North America. This range edge is being encroached by human development to the West as the cities of Bend, Redmond, and Prineville, OR continue to expand. Land uses in this area include grazing, farming, recreation (e.g., off-highway vehicle use, hang-gliding, hunting), residential development, mining, and juniper and sagebrush control projects (Hanf et al, 1994). This area also has a history of wildfire. The BLM is collaborating with Oregon State University to conduct a three-year study of this population to identify population bottlenecks and limiting factors that may be contributing to reduced resilience of the surrounding populations. Research objectives are to affix GPS-Satellite transmitters to equal numbers of females (~30 in each) in the Brothers and Paulina PACs annually over the next three field seasons. Data collected from these transmitted birds will help researchers understand and compare space use and demography (e.g., nest success, chick survival, adult survival) in Brothers PAC (in decline) and Paulina PAC (stable). Given their proximity, climatic conditions should be similar between them and will allow researchers to identify differences between them as they relate to other biophysical factors. The year 2022 marked the pilot year of this three-year study and the objectives during 2022 were to determine current sage-grouse use areas and vital rates, and raptor and corvid presence.

**Identifying Best Practices for Forb Island Restoration: Research Study in the Brothers PAC**  
**Research Partners: Institute for Applied Ecology, East Cascades Audubon Society, and TerraWest**  
**Conservancy**  
**Research duration: 2021-2023**

#### Overview

Despite substantial collaborative efforts to conserve greater sage-grouse (*Centrocercus urophasianus*), and their critical habitats, the dramatic decline in populations over the past 50 years has yet to be arrested. The breeding population of sage grouse in Oregon was estimated to be 15,927 in 2021, the third lowest population estimate since 1980. The habitat threats of juniper encroachment, invasion of annual grasses, and altered fire regimes receive much conservation and management attention. Combined, these threats impact the habitats that grouse depend upon. However, removing or mitigating these threats does not guarantee the restoration of critical habitat elements, in particular understory plant communities. Forbs, perennial grasses, and forb-associated arthropods in sagebrush understories are critical for chick-rearing and reproductive success.

Studies have shown that annual recruitment is directly correlated to availability of grass and forb-associated arthropods. Therefore, restoration of these important understory plant communities is a high priority, as they are scarce or missing in many sage-grouse PACs.

The goal of this study is to identify best practices for restoring forb and grass understories in core sage-grouse habitat. We tested how various treatments (seeding methods, mowing, micro-irrigation, and grazing exclusion) affect restoration success in a crossed and replicated experiment near Brothers, Oregon. Research plots were installed, and treatments applied in November 2021. After one growing season (November 2021 through June 2022), we found that mowing and irrigation increased total forb cover. We also found that irrigation and seeding method increased establishment of seeded species. A manual drill seeding tool was the most effective at increasing the establishment of our seeded species – yarrow (*Achillea millefolium*), Lewis' flax (*Linum lewisii*), and squirreltail grass (*Elymus elymoides*).

This study is being conducted by the Institute for Applied Ecology with funding, volunteer, and in-kind support from East Cascades Audubon Society and TerraWest Conservancy. Multiple years are needed to accurately assess the effects of restoration treatments on plant communities and establishment, particularly in arid environments and for perennial species. Therefore, our results are strictly preliminary. We will continue this study for at least one more year (and longer depending on funding).

**Sage Grouse in the High Desert of Central Oregon: Results of a Study, 1988–1993**  
**Authors: Jan M. Hanf, Paul A. Schmidt, Erica B. Groshens, BLM Prineville District Office**  
**Research duration: 1988–1993**

**Overview**

The Prineville District BLM initiated a sage-grouse study within the Deschutes Resource Area in 1988 after noting declines in the number of males attending leks. The purpose of the study was to define seasonal use areas and to determine an overwintering sage-grouse population estimate. For the duration of the study period, sage-grouse were monitored using various methods during breeding, nesting, brood-rearing/summering, and wintering seasons. The following outlines high-level results of the study. Between 14 and 20 leks were monitored from 1988–1993. The average number of males per lek declined -42% during this time on the 14 leks that were analyzed. Nesting information was gathered from 1991–93. Sixty-eight percent (19 of 28) of monitored hens initiated nesting activity. Nest success averaged 30%. Habitat structure appeared to be as important to nest success as habitat type. All nests monitored were within 12.8 km of a known lek. Crop contents from eight hens were collected in June–September of 1992 and contained nearly 100% plant material. Marked and unmarked sage-grouse were observed drinking water from all types of water developments; sage-grouse concentrated near water sources during late summer and fall. Winter habitat use was studied during the winters of 1991–92 (low precipitation year) and 1992–93 (high precipitation year). During winter 1991–92, sage-grouse used five habitat types, with mountain big sagebrush (*Artemisia tridentata ssp. vaseyana*) and low sagebrush (*Artemisia arbuscula*) types used most frequently. During winter 1992–93, 98% of the observations were in the mountain sagebrush habitat type. Seasonal use areas for radio-marked birds within the Prineville BLM District were mapped. Sage-grouse made extensive movements (up to 48 km) between seasonal use areas and used large landscapes. The report suggests that, in better conditions, sage-grouse may not need to move as far to meet their requirements. Additionally, lands between seasonal use areas are important travel and temporary use corridors.



Management recommendations developed by an interdisciplinary team concentrated on, 1) maintaining communication with USFWS and other federal, state, and local agencies; 2) developing a Conservation Agreement for sage-grouse with USFWS; 3) determining habitat conditions on the Prineville BLM District with respect to the sage-grouse life cycle; 4) improving the habitat quality where necessary; 5) limiting conflicting land uses during sensitive times in the sage-grouse life cycle; 6) exploring possibilities to enhance land use practices on private lands that are important to sage-grouse; and 7) continuing monitoring sage-grouse populations on the Prineville BLM District, with emphasis on the eastern edge of the District.

### 3.4. CLIMATE CHANGE SUMMARY

As we prioritize restoration investments in the Prineville LIT area it will be important to implement solutions in the context of climate change, which is exacerbating habitat threats the LIT identified. Changes in soil moisture availability to plants and increased wildfire may be the most important effects on shrub steppe plant communities. Even if precipitation increases, soil moisture is projected to decline due to increased air temperature, evaporation, and water use by plants. The effects will vary among the plant species and responses are likely to include remixing of native and non-native species along gradients in moisture and temperature, as mediated by topography and soil conditions. The timing of precipitation and the shift from snow to rain will contribute to favor non-native or less-desirable vegetation, including invasive annual grasses and expanding western juniper, which can use winter moisture more effectively than native forbs and grasses. Declining snowpack may lead to continued decline of desirable native plant species, especially of big sagebrush which will also be impacted by projected increased frequency of fire. Wildfires can decimate large areas of sagebrush, and most sagebrush species are slow to regenerate, or can be prevented from regeneration due to an accelerated fire cycle driven by invasive annual grasses. Wetlands that serve as late summer and fall habitats for sage-grouse are likely to become less extensive and more ephemeral. Sage-grouse populations may be unable to quickly adapt to these habitat changes.

Developing projects that enhance ecosystem resilience and increase carbon storage through increasing mesic habitat availability and healthy deep rooted native perennial plant species will be beneficial to the suite of sage steppe species that use this habitat, including sage-grouse. In The Prineville LIT area, we will incorporate climate adaptation strategies that align with the primary threats that are identified across the action areas. This will include rapid removal or control of invasive plants, and collaboration to prioritize areas across management boundaries to control invasive annual grasses. Mechanical treatments, and prescribed fire on sites not prone to annual grass invasion, such as in higher elevation mountain sagebrush, will continue to be implemented to control expansion of juniper and thereby help maintain and expand sage-grouse habitat. Promoting effective native seed mixtures that compete with annual grasses and that respond well post-fire, and supporting ranching operations through investments that promote grazing management systems to enhance flexibility will improve resilience of shrubland and grassland communities. To minimize negative effects of climate change on riparian areas and groundwater ecosystems, managers will plan for more frequent flooding, increase upland water storage, and manage water to maintain springs and wetlands. Promoting connectivity along stream networks would assist animal movement, and beaver colonization can increase water retention. Relocating roads and recreation developments away from floodplains would also reduce impacts. Removing junipers in upland watersheds is likely the most influential management action to improve late season water tables and soil moisture in mesic areas. For more details on the potential effects of climate change on greater sage-grouse in this area, including references, please refer to Appendix B.

#### 4. PROCESS USED TO DEVELOP THIS PLAN

The Prineville LIT consists of a diverse set of interest groups. To ensure a fair and efficient collaborative process, LIT members developed a team charter (Appendix C) which includes a vision and mission statement; the LIT’s overarching goals; limitations associated with the LIT space; a set of definitions to ensure all partners have the same understanding about words that are fundamental to the LIT; information about the TRP; a discussion of LIT structure (i.e., the LIT Coordinator, LIT membership, and the LIT Working Group); and a discussion about the LIT Working Group including membership, the decision making process, work group decorum, and a set of roles and responsibilities for each work group member. The charter was drafted in 2020 and revised in 2023. In 2020, LIT members used the decision-making process within the first draft of their charter to develop a five-step process to determine the most appropriate approach for the LIT to address various local threats to sage-grouse.

**STEP 1:** *Developed a comprehensive list of local threats to sage-grouse populations and their habitat.* The LIT identified 16 local threats which fall into three broad categories,

1. **Habitat threats:** conifer expansion, invasive annual grasses, mesic habitat, understory composition, wildfire, loss of connectivity/small habitat patch size, improper or unauthorized grazing, other invasive plants, wild horses
2. **Population threats:** hunting, predation, West Nile virus
3. **Development threats:** habitat development, recreation, land use conversion

This list derives from the Action Plan’s comprehensive list of threats to sage-grouse habitat and populations.

**STEP 2:** *Established priority categories to determine how the LIT should address each threat (Table 2).*

- **Immediate/high priority for LIT** – adequate resources and known management actions exist to address this threat; scientific data/information exists to suggest this is a local threat; the threat can be addressed through the LIT; partner interest exists to address this threat.
- **Need more information** – this may be a threat the LIT can reasonably address; however, we currently do not have adequate data to understand the impact of this threat within the Prineville LIT area.
- **Need more resources** - this may be a threat the LIT can reasonably address; however, we currently do not have adequate management tools/resources to address this threat in the Prineville LIT area.
- **Low priority for LIT** – currently not feasible for the LIT to address this threat.

**Table 2: The consensus process was used to prioritize each threat locally identified by the LIT.**

	HABITAT THREATS									POPULATION THREATS			DEVELOPMENT THREATS			
	Conifer expansion	Invasive annual grasses	Mesic habitat	Understory composition	Wildfire	Loss of connectivity/small habitat patch size	Improper or unauthorized grazing	Loss of sagebrush	Other invasive plants	Wild horses	Hunting	Predation	West Nile virus	Human Development	Recreation	Land use conversion
1. High priority for the LIT	X	X	X	X	X											
2. Need more information						X					X	X		X	X	
3. Need more resources				X										X		X
4. Low priority for the LIT							X	X	X	X			X			

**STEP 3:** *Updated the Prineville LIT Action Areas based on current conditions and partner-identified threats associated with each action area (Figure 15).*

- Prineville LIT Action Areas were developed in 2012 through a collaborative effort with landowners, livestock producers, county, state, and federal agency personnel, and private NGOs. Several factors were considered in action area development; these included PACs, biology of sage-grouse, sage-grouse

population size, perceived movements, population status, land ownership, past project work, the potential for future project work, habitat needs, and potential benefit to sage-grouse.

- In 2021, the reformed Prineville LIT enlarged 12-Mile, Brothers, and Post Action Areas to include areas that are known to LIT members as habitat not reflected in the core area maps. These modifications are based on leks and reflect connectivity corridors between action areas. The other four action areas (North Wagontire, Misery Flats, Paulina, and Tackman) remained the same.

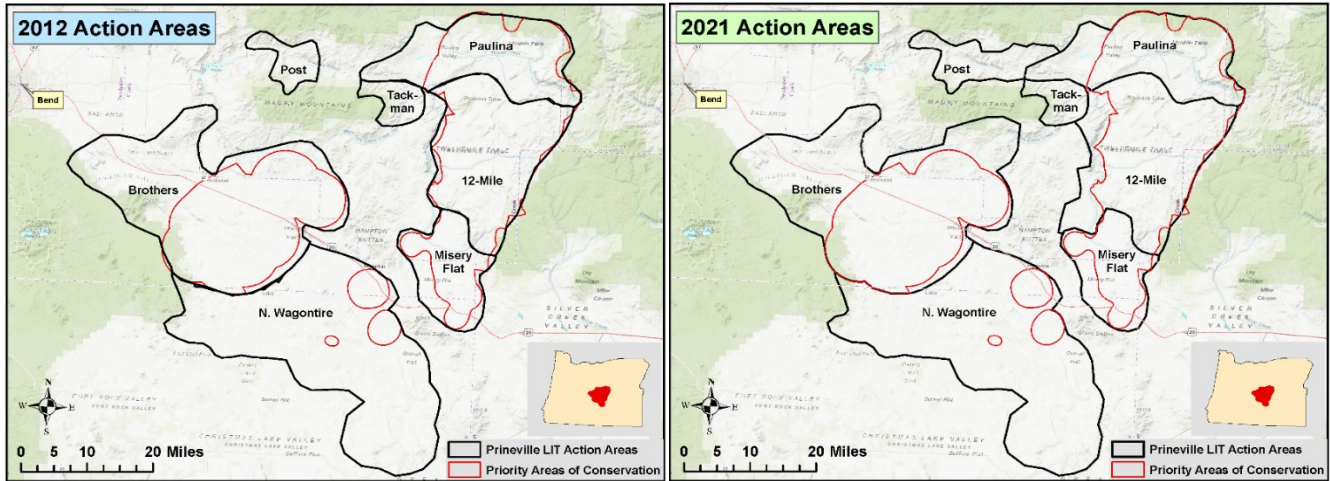


Figure 16: The LIT used consensus to update the action area boundaries.

**STEP 4** Identify the primary threats for each action area (Table 3).

- LIT members used various resources including the Action Plan, local knowledge, partner project priorities, and decision support tools (i.e., LPT).

Table 3: The LIT used consensus to outline the primary threats present within each action area.

Action Area	HABITAT THREATS										POPULATION THREATS			DEVELOPMENT THREATS		
	Conifer expansion	Invasive annual grasses	Mesic habitat	Understory composition	Wildfire	Loss of connectivity / small habitat patch size	Improper or unauthorized grazing	Loss of sagebrush	Other invasive plants	Wild horses	Hunting	Predation	West Nile virus	Human Development	Recreation	Land use conversion
12-Mile	X	X	X	X												
Brothers	X	X	X	X		X								X	X	
Misery Flat	X	X		X												
North Wagontire	X	X	X	X												
Paulina	X	X													X	
Post	X	X		X												
Tackman	X	X							X							

**STEP 5:** Local partner voluntary data call: identify relevant conservation efforts that have already occurred in each action area.

- Requested the following information from partners,
  - past and ongoing treatment actions;
  - future treatment opportunities; and
  - any barriers or constraints preventing implementation.

#### 4.1. PRIORITIZATION CRITERIA

The prioritization criteria outlined below will empower LIT partners to coordinate around shared opportunities and invest in collaborative efforts, resulting in the greatest conservation outcomes for sage-grouse. These criteria apply to project implementation and all other collaborative endeavors – e.g., communication and outreach efforts, research needs, etc.

**Prioritize areas,**

1. Within PACs.
2. Intact and early transitioning habitat, high resistance/resilience areas.
3. Located where follow-up treatment is needed and/or adjacent to prior conservation efforts.
4. Treatments cross two or more ownership/management boundaries.

**Prioritize threats,**

1. Opportunities that address the high priority threats identified by LIT members: invasive annual grasses, conifer expansion, mesic habitat condition, understory composition\*, and wildfire prevention.

**Partner priorities,**

1. Overlap with existing program priorities and policies (e.g., SGI, CCAA, NEPA).
2. Presents an opportunity to maintain intact sagebrush habitat.
3. Presents an opportunity to engage private landowners.

\*LIT members also noted that understory composition requires additional resources to address this threat.

#### 4.2. UPDATING THIS DOCUMENT

Regularly updating this plan will be important to maintain relevancy and track progress over time. Except where noted, TRP sections listed in Table 4 will be updated annually.

**Table 4: Sections of the TRP that will require annual review and update and associated partners responsible for each section.**

Section	Responsible Party
1.2: Sage-grouse Population Trends	ODFW's Sage-grouse Conservation Coordinator
2.0: Policies, Plans, Programs, NEPA*	LIT Coordinator, BLM, ODFW, NRCS, SWCDs
3.1: Summary of Datasets*	LIT Coordinator and relevant partners
3.2: Data Gaps and Limitations*	LIT Coordinator and relevant partners
3.3: Ongoing Research	ECAS, OSU
5.0: Action Area Narratives, 1) Past and Ongoing Treatments 2) Treatment Opportunities 3) Barriers and Constraints	BLM, Crook SWCD, Crooked River WMA, Deschutes SWCD, DSL, NRCS, ODFW, US Forest Service
6.0: Collaborative Opportunities	All

\*Data and new information for these sections do not become available annually and therefore, will be incorporated into the TRP according to the LIT schedule as it becomes available (e.g., ecostate maps will be updated every two years).

Beginning in 2024, the LIT Coordinator will develop a protocol to collect updates from responsible parties listed above. The following timeline in Table 5 and associated tasks will include,



**Table 5: 2024 timeline to update the TRP.**

Deadlines	Task
January 15, 2024	The coordinator will share protocol with all LIT members.
February 15, 2024	LIT partners (particularly responsible parties) will submit updates to the coordinator.
March 15, 2024	The coordinator will distribute the updated TRP to LIT partners.

## 5. ACTION AREA NARRATIVES

Action area narratives provide background information on each management section within the Prineville LIT area. For the sake of brevity and relevancy, the group primarily discusses past actions and efforts only as far back as 2000. All narratives are formatted consistently and contain the following sections specific to each action area,

- i. Overview of the area and landownership summary.
- ii. Priority threats the LIT will address and a summary of associated activities applied, ongoing, or planned by interest group across public and private lands.

LIT partners also identified barriers to successful activity implementation in Table 6, which is summarized for the entire Prineville LIT area, given that most barriers are not specific to any given action area. Partners hope to use the LIT space to address these barriers collaboratively.

**Table 6: Overarching barriers LIT partners reported that prevent them from implementing local conservation activities to address threats to sage-grouse.**

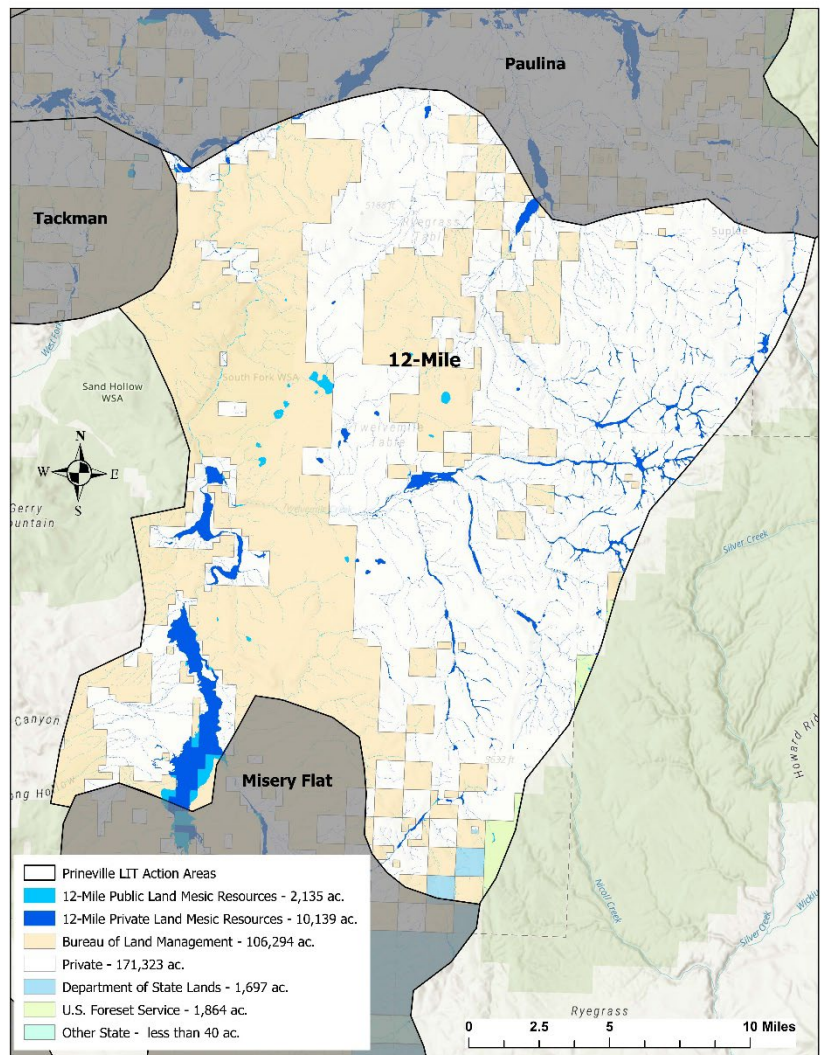
Partner	Funding	NEPA	Access to Resources	Information Gaps	Capacity	Willing Participants	Additional Notes
BLM	X	X			X		<ul style="list-style-type: none"> <li>•Reduced funding, which leads to limited staff capacity to conduct NEPA analysis and implementation.</li> <li>•Currently unable to use Rejuvra to treat IAGs.</li> </ul>
Crook SWCD	X		X	X	X		<ul style="list-style-type: none"> <li>•Need to develop a source of affordable native seed.</li> <li>•Lack of understanding about where sage-grouse get water and how they use this landscape.</li> <li>•Lack of sage-grouse data to inform restoration siting.</li> <li>•Lack of funds for this area for treatments or surveys</li> </ul>
Crooked River WMA	X			X		X	<ul style="list-style-type: none"> <li>•Lack of funds to treat ventenata.</li> <li>•Pre-treatment surveys needed to map IAGs and other noxious weeds.</li> <li>•Outreach and education needed to inform private landowners about the threat associated with IAGs and clarity around treatment options and benefits to livestock operations.</li> </ul>
Deschutes SWCD						X	Engaging absentee landowners who own small tax lots just east of Bend.
Deschutes NF	X						<ul style="list-style-type: none"> <li>•Competing priorities limit resource for sage-grouse conservation. Management actions will depend on collaboration with neighboring BLM lands.</li> <li>•Lack of resources to enforce travel management laws.</li> <li>•Currently unable to use Rejuvra to treat IAGs.</li> </ul>
Department of State Lands	X						
Landowners/Land Managers			X		X		<ul style="list-style-type: none"> <li>•Sustained drought conditions require landowners to haul water daily.</li> <li>•lack of workforce, wildfire, improper recreation, and possible litigation.</li> </ul>
NRCS	X						Many landowners have already met the 2019-23 Farm Bill funding cap.
Ochoco NF		X					Currently unable to use Rejuvra to treat IAGs.

Another overarching consideration that is relevant to the entire LIT area is the limitation associated with using remotely sensed data to assess juniper cover across the landscape. Often, juniper removal projects are not detectable in the remotely sensed data (e.g., datasets that assess tree canopy cover) because many sites that are selected for treatment have a relatively low canopy cover (Phase I or II). Treatment areas are generally located on sites with light cover because the understory grasses, shrubs, and forbs are still in good condition and additional investments in seeding or herbicides are not required for ecological uplift to occur.

## 5.1. 12-MILE ACTION AREA

### OVERVIEW AND LANDOWNERSHIP

The 12-Mile Action Area (Figure 17) covers approximately 281,200 acres in the southeast corner of Crook County with a small portion in northwest Harney and southeast Grant Counties. There are 24 active leks and 12 pending leks (Table 7). Water sources include 13 intermittent and perennial creeks and rivers totaling 112 miles of stream length with adjacent floodplains, wet meadows, and seasonal wetlands. Between 1992 and 2022, 7,050 acres of habitat (2.5%) burned in wildfires, which were primarily caused by lightning strikes. Most of the landscape is dominated by mountain sagebrush and Idaho fescue plant communities that transition to ponderosa pine forests at higher elevations (~5,500 feet). The LIT amended this action area in the last revision and added approximately 20,000 additional acres on the west side of the PAC boundary due to the presence of significant mesic resources along the South Fork Crooked River. In ODFW habitat models these areas are excluded because they are considered fragmented or developed by agricultural use; however, in this local planning document, we included the pivots, irrigated meadows, and other surrounding acres because sage-grouse are commonly observed using these areas in the summer both by members of the LIT and in seasonal habitat maps (Henderson, 2019).



**Figure 17. Ownership map of the 12-Mile Action Area. This action area has the most privately owned land of the seven action areas.**

**Table 7: 12-mile Action Area breakdown of, A) ownership; B) acres that fall within PACs; and C) leks and their 2022 status.**

Ownership/Admin	Approx. Acres	Percent	Approx. Acres		Percent in PAC
			Total	in PAC	
BLM	106,294	38%	281,178	224,942	80%
Private	171,323	61%			
State	1,697	1%			
USFS	1,864	1%			
<b>TOTALS</b>	<b>281,178</b>	<b>100%</b>			

2022 Lek Count by Classification					
Occupied	Pending	Unoccupied	Historic	TOTAL	
24	12	10	0	46	

**THREATS AND ASSOCIATED ACTIVITIES**

Through our collaborative process, the LIT identified four threat priorities in the 12-Mile Action Area: ***Conifer expansion, mesic habitat, understory composition, and invasive annual grasses.***

***Conifer Expansion***

The northwest end of the 12-Mile Action Area has more dense stands of conifer, predominantly on the BLM managed land in the northwest portion of the action area. Some of these areas fall outside of the Preliminary Priority Habitat and will not be treated under current treatment plans. Table 8 compares remotely sensed data on juniper cover during two five-year periods, 30 years apart, and shows that tree cover increased by 173%. This detectable change in cover is an analog for expansion into additional areas where the canopy cover is not detectable through the models, such as Phase I encroachment. Local insight and ground verification will be required to determine the accuracy of the remotely sensed data in these areas and whether removal is warranted based on topography, soil type, cost of treatment, and the likelihood of recovering understory plant communities. Increasing juniper density and the associated canopy closure cause understory species to shift to a less diverse array of species and shade-intolerant species to drop out. Juniper expansion is also a cause for decreased sage-grouse occupancy.

**Table 8: Average tree canopy cover over two 5-year timeframes show an increase of 73% (RAP, 2021).**

Tree Canopy Cover - 12-Mile		
1986 - 1990 average	2017 - 2021 average	Percent Change
6,186	10,685	173%

**Public Land Treatments**

- BLM,
  - Cut 59,904 acres of juniper between 1980 and 2022; 42,503 acres were lopped and scattered; and 10 acres were piled and burned. Jackpot burning for all juniper treatment units is ongoing.
  - Planning phase: 18,955 acres of juniper are identified for future treatments (estimated 2024–2026, funding dependent).
  - Areas of previous juniper treatments (approximately 102,417) are identified for retreatment in the next five to 15 years depending on the original treatment date.

**Private land Treatments**

- NRCS contracted and/or treated 39,571 acres of Phase I and II juniper.
- Crook SWCD – OWEB grant #215-4013 paid for 3,379 acres of juniper cutting.

**Mesic Habitat**

The 12-Mile action area contains approximately 18,033 acres of mesic resources based on Normalized Difference Vegetation Index (NDVI) calculations from satellite imagery (Donnelley et al., 2016). Approximately 3,000 of those acres are irrigated agriculture and the remaining 15,000 acres are riparian areas, wet meadows, and seasonal wetlands which are all important features for sage-grouse chicks late in the season. Most mesic resources exist on private land (91%); therefore, it will be essential to work with landowners to develop projects that benefit these areas. LIT members that work on mesic habitat on private lands are NRCS and Crook SWCD. Crooked River Watershed Council also specializes in instream restoration projects and could be a good partner for this type of work.

**Private Land Treatments**

- Crook SWCD installed 15 instream habitat structures, 1.6 miles of riparian fence to protect 65 acres of mesic habitat, four sediment basins to maintain mesic habitat, and 15 off-channel water sources to preserve mesic habitat.
- NRCS
- Crooked River Watershed Council

**Invasive Annual Grasses**

IAGs occur throughout the 12-Mile Action Area but the areas to the north are the most impaired based on resistance and resilience models (Table 9).

**Public Land Treatments:** 4,500 acres treated; efficacy will be determined in the years to come.

- BLM – from 2005–2022, 50 acres of invasive plants were treated through aerial and ground application methods.

**Private Land Treatments**

- Crook SWCD -308 acres of Rejuvra treatment on medusahead.
- Crooked River Weed Management Association - 1,142 acres of upland treatments for invasive annual grasses with two landowners between 2015–2019.
- NRCS- 3,000 acres of IAG treatments.

**Understory Composition**

Decision support tools including the Sage Grouse Initiative’s (SGI) Tree Canopy Cover Tool and SageCon’s LPT indicate sites with greater tree canopy cover within the 12-mile Action Area have a lower concentration of perennial grasses and forbs and a higher percentage of annual grasses and forbs; however, ground verification and surveys are needed (Table 10).

**Table 9: Average annual grass and forb cover over two 5-year timeframes show an increase of 63% (RAP, 2021).**

Annual Grass and Forb Cover - 12-Mile		
1986 - 1990 average	2017 - 2021 average	Percent Change
17,433	28,399	163%

**Table 10: Average perennial forb and grass cover over two 5-year timeframes show an increase of 12% (RAP, 2021).**

Understory Composition (perennial forb and grass cover) - 12-Mile		
1986 - 1990 average	2017 - 2021 average	Percent Change
75,074	84,072	112%



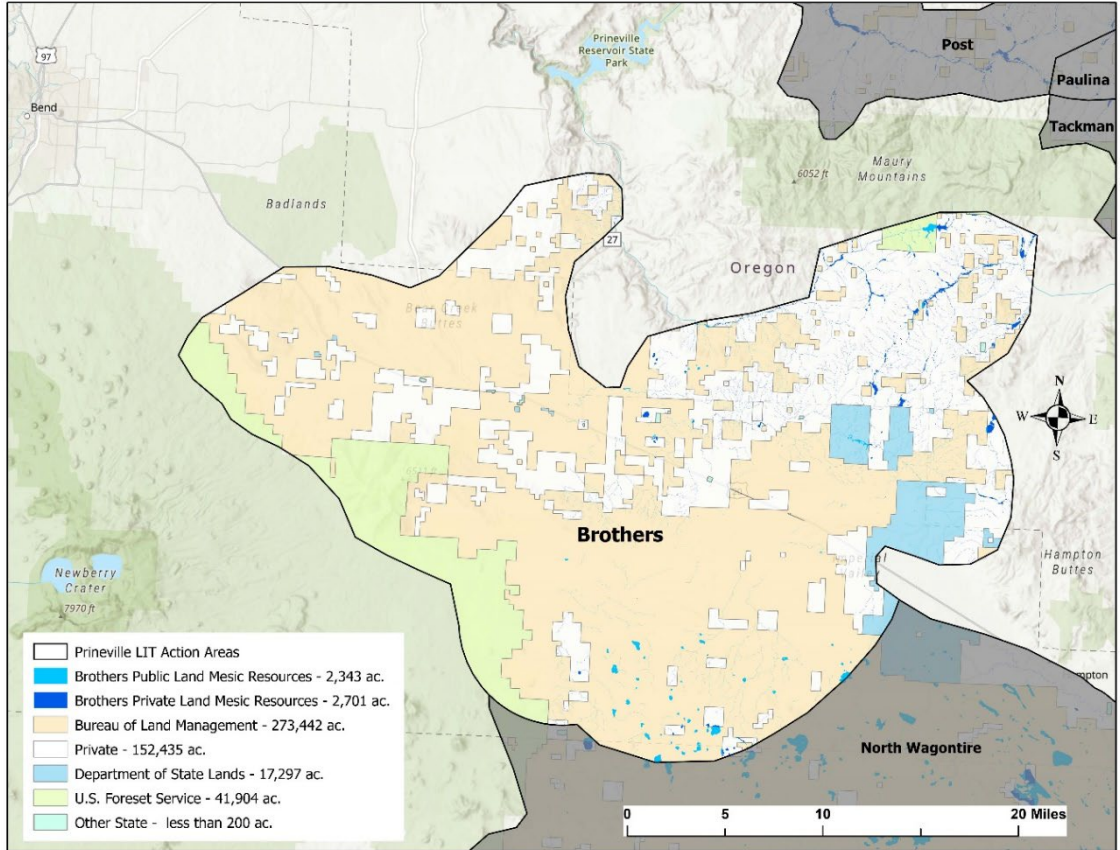
## 5.2. BROTHERS ACTION AREA

### OVERVIEW AND LANDOWNERSHIP

The Brothers Action Area (Figure 18, Table 11) encompasses the westernmost PAC (Brothers/North Wagontire) in Oregon. The western edge of the action area is 14 miles east of the City of Bend and extends east to Crook County and encompasses the headwaters of Camp Creek. The boundary extends south to the border of Lake

County. The town of Brothers is in the center of the action area on Highway 20 which runs east-west. Given its proximity to Bend, this action area faces various threats associated with human activity and development. The Brothers Action Area includes unique features such as Pine Mountain, an important area for sage-grouse broods, and pumice soils that cover about 90,000 acres across the center, which allow a unique array of plant species to thrive in an area with an average

of 9-11 inches of precipitation. Furthermore, this action area is particularly arid, with very few natural water sources. As a result, members of the LIT identified more threats within this action area than any other action area. A [Camp Creek Restoration Atlas](#) was completed in 2021 and will help to prioritize mesic and upland restoration.



**Figure 18: Brothers Action Area ownership map. LIT partners identified more threats to sage-grouse here than any other action area.**

**Table 11: Brothers Action Area breakdown of, A) ownership; B) acres that fall within PACs; and C) leks and their 2022 status.**

Ownership/Admin	Approx. Acres	Percent	Approx. Acres		Percent in PAC
			Total	in PAC	
BLM	273,442	56%	485,078	257,091	53%
Private	152,435	31%			
State	17,297	4%			
USFS	41,904	9%			
<b>TOTALS</b>	<b>485,078</b>	<b>100%</b>			

Priority Area for Conservation (PAC)	Approx. Acres		Percent in PAC
	Total	in PAC	
<b>Priority Area for Conservation (PAC)</b>	485,078	257,091	53%

2022 Lek Count by Classification	Occupied	Pending	Unoccupied	Historic	TOTAL
	<b>2022 Lek Count by Classification</b>	23	12	16	2

A. Ownership/Admin

C. Leks

**THREATS AND ASSOCIATED ACTIVITIES**

Through our collaborative process, the LIT identified seven threat priorities in the Brothers Action Area: **Conifer expansion, invasive annual grasses, mesic habitat, understory composition, lack of connectivity and small patch size, human development, and recreation.**

**Conifer Expansion**

Average tree canopy across the action area is 5.3% from 2017–2021 and 4.2% from 1986–1990 (Table 12). The highest cover occurs at the northern and eastern portions of the action area across private land and BLM administered lands. Additional expansion occurs along the southern edge where Brothers Action Area borders the North Wagontire Action Area (Rangeland Analysis Platform (RAP) 2022). **Since 2000, 48,667 acres of juniper treatments have been completed.**

**Table 12: Average tree canopy cover over two 5-year timeframes show an increase of 26% (RAP, 2021).**

Tree Canopy Cover - Brothers		
1986 - 1990 average	2017 - 2021 average	Percent Change
20,394	25,735	126%

**Public Land Treatments**

- BLM
  - The Central Oregon Field Office treated 17,402 acres of conifer between 2000 and 2016.
  - Current plans direct that all expanding conifer on BLM managed lands in the Brothers Action Area will be treated by 2024. Cultural clearances are complete on all BLM land north of Highway 20, and crews will begin cutting in spring 2023. Jackpot and pile burning associated with these conifer treatments are ongoing and will occur when conditions permit.
  - Retreatment will be needed as previous prescriptions grow back.
- DSL
  - From 2004–2010, 766 acres of juniper were cut/piled/burned. Approximately 500 acres of which need re-treatment as soon as possible.
  - Beginning spring 2023, 2,792 acres of Phase I and II juniper will be removed throughout the Barbwire School Trust allotment.
- Deschutes National Forest
  - NEPA planning and project development are needed to develop categorical exclusions to treat expanding junipers in this action area. A Pine Mountain sage-grouse categorical exclusion was created in 2008, which covered conifer removal on 6,758 acres around Pine Mountain.
  - Approximately 100 acres have been treated since 2017, but many additional acres are inaccessible.

**Private Land Treatments**

- NRCS contracted and/or treated 20,915 acres of Phase I and II juniper on private land.
- Crook SWCD treated 121 acres with an OWEB grant.
- Deschutes SWCD worked with U.S. Fish and Wildlife Service (FWS) to remove 200 acres of expanding junipers on private land on and near Pine Mountain between 2000 and 2005.

**Invasive Annual Grasses**

Average annual forb and grass cover across the action area is 5.5% from 2017–2021 and 3.9% from 1986–1990 (Table 13). IAG containment programs for small outbreaks (i.e., early detection, rapid response) are critical for this action area because IAG invasions in this area are currently minimal. Most private landowners in this

action area need assistance treating other invasive plants and IAGs; however, efforts to engage landowners and inventory where treatments to prioritize efforts are needed.

**Public Land Treatments**

- BLM treated 1,100 acres from 2004–2018.
- Deschutes National Forest
  - Weed treatments were completed on approximately five acres within the Pine Mountain area.
  - A Mountain Mahogany Restoration categorical exclusion was created in 2016, which covers conifer removal on 44 acres within this action area (i.e., Mahogany Butte). This project has not yet been implemented.

**Table 13: Average annual grass and forb cover over two 5-year timeframes show an increase of 41% (RAP, 2021).**

Annual Grass and Forb Cover - Brothers		
1986 - 1990 average	2017 - 2021 average	Percent Change
18,937	26,706	141%

**Private Land Treatments**

- Crooked River Weed Management Area was alerted about several small-scale IAG infestations in this area in 2022 and is working with the landowners to prescribe a treatment plan. They are supplying the herbicide and the landowner will do the application.

**Mesic Habitat**

The Brothers Action Area has the least water sources of all action areas with the Prineville LIT area. Approximately 1.0% of the action area is classified as a perennial or ephemeral water source (National Wetlands Inventory 2021). Existing data needs to be analyzed to compare historic wet meadow data to current and future years’ productivity. Across the action area, wet meadow habitat is limited to playas, push-up dams (i.e., dams outside of playas), dugouts, water sets (i.e., troughs), portable troughs, and guzzlers. Lack of understanding about where sage-grouse get water and how they use this habitat area.

**Public Land Treatments**

- BLM - in 2015, the Prineville BLM began a [playa restoration project](#) within the Brothers Action Area; this work is ongoing. As part of this project, 1) two water wells were drilled to offset water sources lost from dugout fill-ins, and clean water is now available to livestock and wildlife; 2) two dugouts were backfilled in 2018 and seeded with native grasses and forbs in 2018 and 2020 and monitoring is ongoing.
- ODFW helps monitor and maintain approximately 12 guzzlers in this area. Their origins are a mix of BLM and ODFW installations. ODFW recruits many Oregon Hunters Association (OHA) volunteers that monitor and repair the guzzlers annually. In summers of extreme drought, ODFW hauls water to a few guzzlers with the highest wildlife use (primarily big game but may secondarily benefit sage-grouse locally). Guzzlers are fenced to exclude livestock but allow ungulates to access.
- Deschutes National Forest – ongoing effort to find manageable escape ramp designs for use in temporary water set tubs. Eight guzzlers and dugout ponds were mapped within this action area; fencing maintenance needs were identified and documented at each guzzler.

**Private Land Treatments**

- Crook SWCD installed 34 escape ramps.

**Understory Composition**

Average perennial forb and grass cover across the action area is 17.7% from 2017–2021 and 15.3% from 1986–1990 (Table 14). Which shows an improvement in the understory over the past 30 years. The higher elevation places in the action area such as Kotzman Basin and Pine Mountain features greater precipitation and lower

average temperatures with allow a more diverse understory community to flourish. These areas are important for sage-grouse during the summer. One of the biggest challenges to restoration of forb communities is a lack of affordable and available native seed.

**Public Land Treatments and Investments**

- BLM
  - All opportunities are funding dependent.
  - Seed native forbs and bunchgrasses where jackpot burns occur when conditions allow.
  - native seedings: 45 acres of the Pine Mountain Fire were reseeded with native bunchgrasses and forbs in 2017.
- Ochoco National Forest
  - Wildlife staff collaborated with the botany program to collect native forb seeds and grow them out in Forest Service greenhouses. Native seed is now available for restoration and rehabilitation.
- Deschutes National Forest
  - Within the Opine area, approximately 7,220 acres of thinning and prescribed burning occurred in 2007.
  - Various grazing management programs have been implemented including cooperatively installing pasture infrastructure (e.g., fencing/cattle guards) to reduce pressure on other pastures within the Pine Mountain area.

**Table 14: Average perennial forb and grass over two 5-year periods shows an increase of %16 (RAP, 2021).**

Understory Composition (perennial forb and grass cover) - Brothers		
1986 - 1990 average	2017 - 2021 average	Percent Change
74,291	85,944	116%

**Loss of Connectivity/Small Habitat Patch Size**

The Prineville LIT area is at the northwestern extent of sage-grouse range; furthermore, the Brothers Action Area is within proximity to the city of Bend, which poses a significant challenge to westward lek recovery. Due to the proximity of this action area to a population center, several variables including human development (e.g., transmission lines, Highway 20, roads, exurban sprawl), and encroachment from recreation fragment the landscape. Further investigation is necessary to understand the extent to which such variables contribute to loss of connectivity and subsequent population declines within the Brothers Action Area. Additionally, lack of sage-grouse data exists to inform restoration siting.

**Public Land Treatments**

- BLM has installed flight diverters (i.e., fence markers) along ??? miles of fence.
- DSL installed flight diverters along 17 miles of fence as of February 2020.
- Deschutes National Forest
  - Planted 4,400 sagebrush plugs during the fall of 2019 and 2020, across 12 acres of the Tepee Fire.
  - Installed flight diverters on all fences rated as high risk according to the SGI [Fence Collision online tool](#).

**Private Land Treatments**

- Crook SWCD installed flight diverters along two miles of fence.

**Human Development**

The threats of habitat fragmentation are a proxy for wildlife disturbance, habitat fragmentation, and vectors for annual grass invasion. The threat of human development is increasing with the increasing population in Central Oregon and the expansion of land uses radiating from the population hubs in Bend, Redmond, and



Prineville. Currently, there are 239 parcels under 320 acres (the minimum for permitted development) within the CSA and 55 of these parcels are within 0.6 miles of active sage-grouse leks. These parcels are increasingly occupied or used as primary residences as housing costs in Central Oregon continue to rise. There is a need to work with the Land Conservation and Development Commission (LCDC) on land use laws as well as education and outreach about current laws that apply to the development code on these parcels. Squatting, litter, and illegal development are threatening the integrity of the sage-steppe ecosystem in this action area.

Engagement with Deschutes County Planning Department is necessary to advise about the implications of zoning changes on wildlife. Real estate speculation around energy development is driving up land prices as we saw in the advertisement for the Moffit Ranch.

In 2023, Deschutes County began citing a solid waste disposal facility and several of the proposed locations are in sage-grouse habitat. A facility like this would require mitigation through ODFW to offset the additive mortality that would otherwise result. This mitigation would not prevent a net loss of impact where we would see a decline in the acres of sage-grouse habitat and an increase in predator presence because of presence in the immediate vicinity area of a landfill.

**Department of Land Conservation and Development (DLCD)** maintains an online database ([Sage-Grouse Development Registry Summary of PAC Development](#)) to track human development within the PACs. A report was generated with this tool; overall, DLCD's records indicated 1,640 acres of the Brothers PAC have been developed for the following,

- Powerlines: 725 acres
- Roads: 582 acres (including Highway 20)
- Towers: 5 acres
- Mining (non-coal): 328 acres
- Solar was not identified within the Brothers PAC

This report is not comprehensive given that many roads and all dwellings were excluded. Additionally, this report only summarizes development within the PAC and does not address the broader action area. In addition to the development categories listed above, the LIT has identified development of small privately-owned tax lots as a current and potentially larger future threat to this area, as the increasing prevalence of unpermitted structures and off-grid occupation continue to fragment the landscape within the action area.

#### **Public Land Activities**

- Deschutes National Forest - NEPA planning, and project development are needed to develop infrastructure to improve grazing management. Piping water to permanent water sets will minimize truck traffic associated with hauling water; additionally, permanent water can be more easily equipped with escape ramps than temporary water sets.

#### **Private Land Activities**

- ODFW worked with Deschutes and Crook SWCDs as well as Oregon Desert Land Trust to apply for funding to plan and strategize how to effectively protect and preserve small parcels in the northern portion of the Brothers PAC. This funding was not awarded. The group will, 1) seek other grant opportunities and re-apply for funding to pursue this work to assure we can limit the loss of sage-grouse habitat in core habitat; and 2) work with partners to conserve and protect habitat from further fragmentation.
- Terra West brokers mitigation credits and is currently pursuing an easement on land managed by Golden Sage LLC. This site would be part of the block of credits that would provide offsets for development in Oregon's Central Service Area for mitigation.

## **Recreation**

Given the proximity to Bend, various recreation activities extend east into the Brothers Action Area and impact sage-grouse habitat quality. Across BLM administered lands, recreation activities seem to be tied primarily to general use rather than special use permits. BLM Millican Valley Off Highway Vehicle (OHV) Trail Systems (North and South units) comprise approximately 40,000 acres of the northeast portion of the Brothers Action Area. The North Millican Valley OHV Trail System includes mule deer winter range and is closed seasonally. Trails are open for OHV use annually from May 1 to November 30. South Millican Valley OHV Trail System consists of 43 miles of trails and is open to recreationists seasonally from August 1 to November 30; however, high OHV use has been detected outside the designated OHV area throughout the year.

### **Public Land Activities**

- BLM is currently analyzing a new permit that supports a youth program hosted within the Brothers Action Area. The location of this program and associated activities does appear to have an impact on sage-grouse habitat characteristics.
- Deschutes National Forest
  - In spring 2020 7.4 miles of roads were closed or obliterated within the [Opine Travel Management Area](#). The National Forest partnered with Central Oregon's Combined Off Highway Vehicle Operations (COHVOPS) on a trail ethics campaign, "stay the trail", to post trail signs along 22.4 miles of OHV trails in this action area.
  - NEPA planning and project development are needed to align roads that are not adjacent to Opine Travel Management area. There is a lack of law enforcement resources associated with travel management in the area. No resources are available on the forest for managing motorized recreation outside of the OHV areas.
  - Unpermitted paragliding is an ongoing issue in this action area, which has been mapped and is being monitored. Permitted and unpermitted Paragliding is common around Pine Mountain. An unauthorized landing zone was established on Deschutes National Forest which is used by unpermitted recreationists who launch from the southeast slope of Pine Mountain. The landing zone is an approximately 1.5-acre section of sagebrush and perennial bunchgrasses that were removed with the use of a mower.
  - Mountain bike use in the Pine Mountain area has become increasingly popular, particularly since the beginning of the COVID-19 pandemic.

### 5.3. MISERY FLAT ACTION AREA

#### OVERVIEW AND LANDOWNERSHIP

The Misery Flat Action Area (Figure 19, Table 15) is in southeastern Crook County, southeastern Deschutes County, northeastern Lake County, and a small portion in northwestern Harney County. There are three intermittent and perennial creeks and rivers totaling 11 miles of riparian areas. Additionally, there are 1,386 acres of wetlands (National Wetlands Inventory-FWS). Between 1984 and 2017, 22,086 acres burned due to wildfire, mostly caused by lightning strikes. Most of the landscape is dominated by big sagebrush and Idaho fescue plant communities. There are old growth stands of western juniper found throughout the action area (Figure 20).

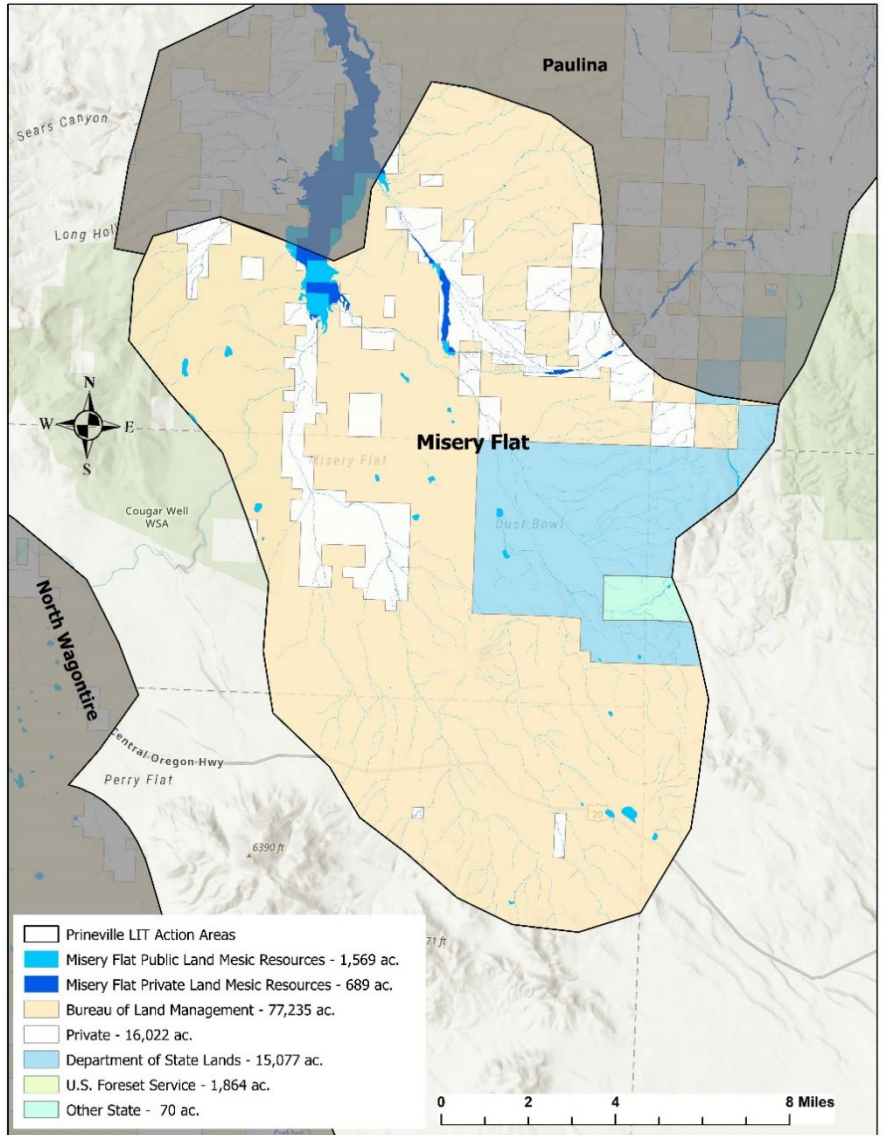


Figure 19: Misery Flat ownership map.

Table 15: Misery Flat Action Area breakdown of, A) ownership; B) acres that fall within PACs; and C) leks and their 2022

Ownership/Admin	Approx. Acres	Percent	Approx. Acres		Percent in PAC
			Total	in PAC	
BLM	77,235	71%	108,334	76,917	71%
Private	16,022	15%			
State	15,077	14%			
USFS	0	0%			
<b>TOTALS</b>	<b>108,334</b>	<b>100%</b>			

A. Ownership/Admin

Priority Area for Conservation (PAC)	Approx. Acres		Percent in PAC
	Total	in PAC	
	108,334	76,917	71%

B. PACs

2022 Lek Count by Classification	Occupied	Pending	Unoccupied	Historic	TOTAL
		1	3	2	0

C. Leks

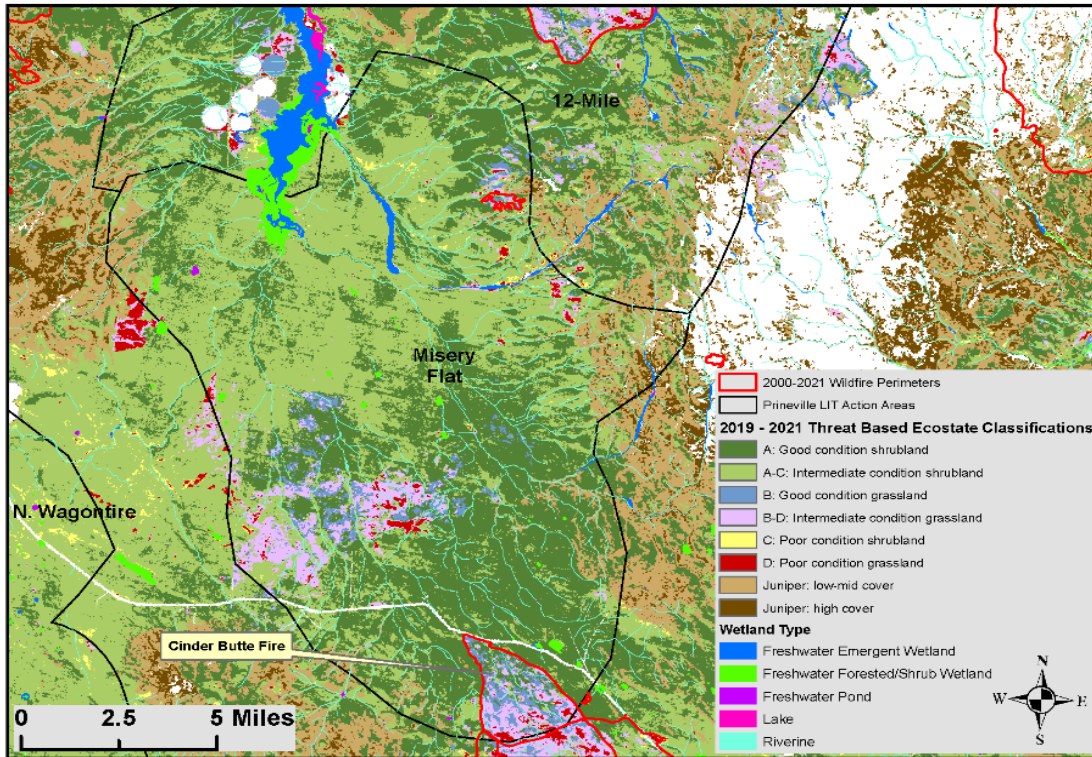


Figure 20: SageCon's 2019-2021 Ecostate map of the Misery Flat Action Area.

**THREATS AND ASSOCIATED ACTIVITIES**

Through our collaborative process, the LIT identified three threat priorities in the Misery Flat Action Area: **Conifer expansion, invasive annual grasses, and understory composition.**

**Conifer Expansion**

The northwestern and eastern boundary of the Misery Flat Action Area have the highest concentrations of conifer expansion. The northwestern boundary overlaps with the Cougar Well and Hampton Butte Wilderness Study Areas (WSAs). The eastern boundary overlaps with juniper and ponderosa pine (*Pinus ponderosa*) stringers coming off the Malheur National Forest. Canopy cover for these conifer stands range from 4–10% to 20–50%. Rangeland Analysis Platform data indicates an average tree cover of 1.0% from 2017–2021 and 0.7% from 1986–1990 (Table 16). Juniper treatments needed in connectivity areas. BLM is in the process of completing cultural clearances in this action area and will cut juniper here when surveys are complete.

Table 11: Average tree canopy cover over two 5-year timeframes show an increase of 43% (RAP, 2021).

Tree Canopy Cover - Misery Flat		
1986 - 1990 average	2017 - 2021 average	Percent Change
751	1,073	143%

**19,231 acres** of juniper were cut in this action area since 2020.

**Public Land Treatments**

- BLM
  - Treated 15,969 acres of conifer from 2006–2019. Some units were considered revisits where older units were treated again to capture younger juniper. From 2015–2019, 11,413 acres of new treatments included the limbs lopped and scattered. 2,147 acres were prescribed burns



(piles and jackpots) between 2007–2017. Jackpot and pile burning associated with conifer treatments are ongoing and will continue to occur when conditions permit.

- Areas of previous juniper expansion are expected to be re-treated between five and 15 years from now depending on original treatment date to reduce new establishment.
- In five to 10 years weed treatment will continue where needed and when conditions allow or are appropriate.
- DSL
  - 882 acres of juniper between were cut between 2003 and 2020.
  - 225 acres of juniper will be cut/fell in 2023 to improve hydrology in riparian areas.

**Private Land Treatments**

- NRCS contracted and/or treated 2,380 acres of phase 1 and 2 juniper on private land in this action area.

***Invasive Annual Grasses***

IAGs are widespread throughout the Misery Flat Action Area. RAP estimates indicate an average annual grass and forb cover of 9.3% between 2017–2021 and 5.5% from 1986–1990 across the action area (Table 17). There has not been much work done by agencies or organizations on IAGs in this area.

***Understory Composition***

Between 1959 and 1969, 2,909 acres of crested wheatgrass (*Agropyron cristatum*) were planted. Within the 1995 Cinder Butte Fire scar, crested wheatgrass is the dominant species found. Although crested wheatgrass provides some benefit to the landscape through quick establishment, soil stabilization, and the ability to outcompete undesirable species, it can end up dominating the plant community and outcompete the more desirable native species. This hinders recruitment of native plant species that are critical components in sage-grouse habitat. More data are needed to determine understory composition. According to the RAP, across the whole action area, average perennial grass and forb cover from 1986–1990 was 23.1% and 23.6% from 2017–2021 (Table 18). SageCon’s LPT indicates areas within historic fire perimeters exhibit a higher percentage of annual grasses and forbs.

**Public Land Treatments**

- BLM
  - 17 acres of sagebrush were masticated within the action area located on the Burns District.
  - From 2000–2018, 47,556 acres of weeds were treated.
  - Between 2015 and 2018, 357 acres were seeded with native grasses and forbs. There is potential for seeding jackpot and pile burns with native forbs and bunchgrasses when conditions allow or are appropriate.
- DSL - one acre of forb broadcast island seeding was completed in fall 2020. Currently, no maps have been created for future forb seeding locations in the area. The last seeding will be evaluated for the next three to four years to determine success, then additional sites will be identified.

**Table 12: Average annual grass and forb cover over two 5-year timeframes show an increase of 69% (RAP, 2021).**

Annual Grass and Forb Cover - Misery Flat		
1986 - 1990 average	2017 - 2021 average	Percent Change
5,903	9,982	169%

**Table 13: Average perennial forb and grass cover over two 5-year timeframes show an increase of 2% (RAP, 2021).**

Understory Composition (perennial forb and grass cover) - Misery Flat		
1986 - 1990 average	2017 - 2021 average	Percent Change
24,794	25,331	102%

### 5.4. NORTH WAGONTIRE ACTION AREA

#### OVERVIEW AND LANDOWNERSHIP

The North Wagontire Action Area (Figure 21) is located primarily in northeastern Lake County with a small portion of southern Deschutes County. The Area is 90% public land (Table 19). Although there are no perennial or ephemeral creeks in the North Wagontire Action Area, there are 8,640 acres of wetlands (National Wetlands Inventory); most of which are in the form of playas. Between 1915 and 2020, 21,438 acres burned due to wildfire dominantly caused by lightning strikes. 6,547 acres burned from 2001–2020, and no fires burned in the action area from 1992–2000. Most of the landscape is dominated by mountain big sagebrush (*Artemisia tridentata* ssp. *Vaseyana*)/Idaho fescue plant communities (Figure 22). This area presents management challenges the implementation partners change as you move south of Hwy 20 and into Lake County. BLM and NRCS projects are managed by partners outside of this LIT. Landowner constraints include lack of workforce, wildfire, improper recreation, and possible litigation.

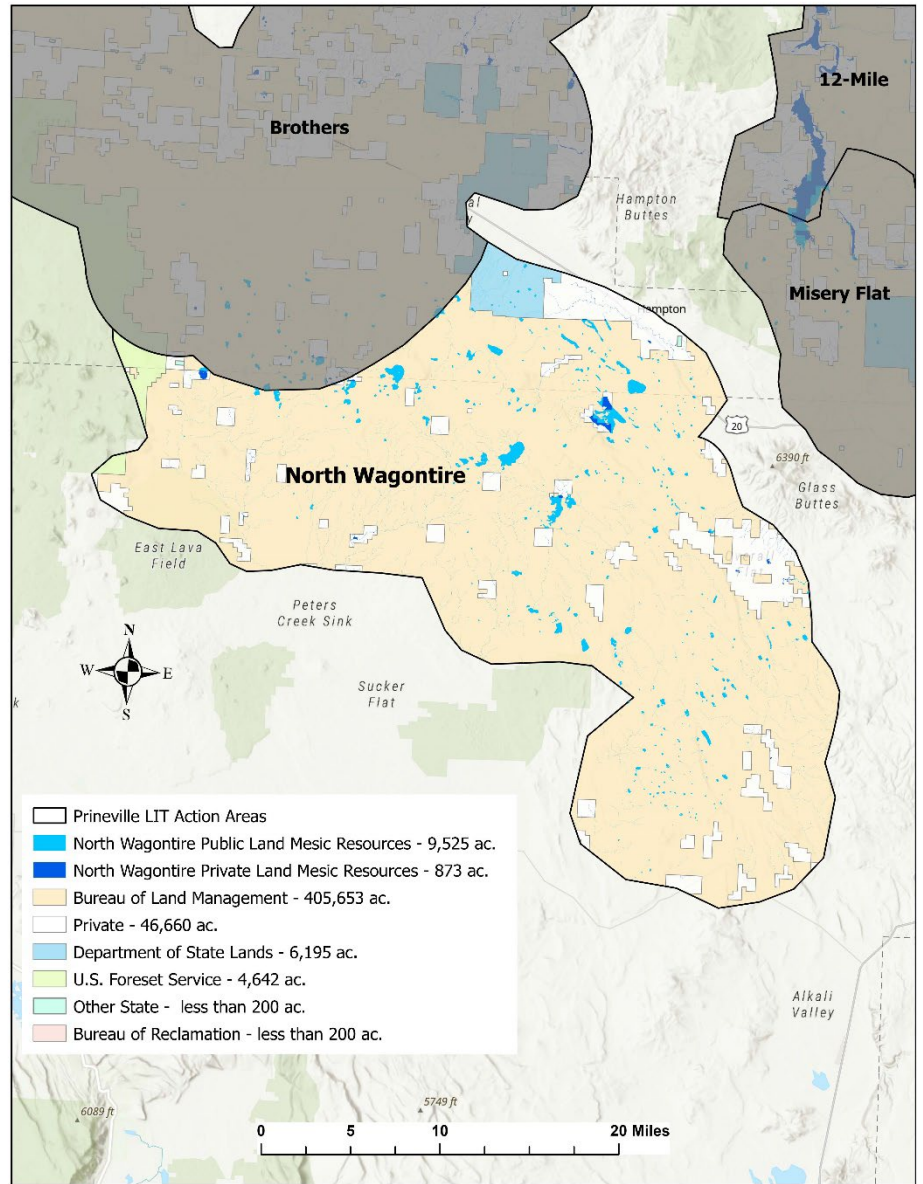


Figure 21: North Wagontire Action Area ownership map. This action area is the largest of the seven action areas and maintains the largest proportion (88%) of BLM administered lands.

Table 19: Misery Flat Action Area breakdown of, A) ownership; B) acres that fall within PACs; and C) leks and their 2022 status.

Ownership/Admin	Approx. Acres	Percent
BLM	405,653	88%
Private	46,660	10%
State	6,195	1%
USFS	4,642	1%
<b>TOTALS</b>	<b>463,150</b>	<b>100%</b>

A. Ownership/Admin

	Approx. Acres		Percent in PAC
	Total	in PAC	
<b>Priority Area for Conservation (PAC)</b>	463,150	37,052	8%

B. PACs

2022 Lek Count by Classification	Occupied	Pending	Unoccupied	Historic	TOTAL
		15	2	10	0

C. Leks



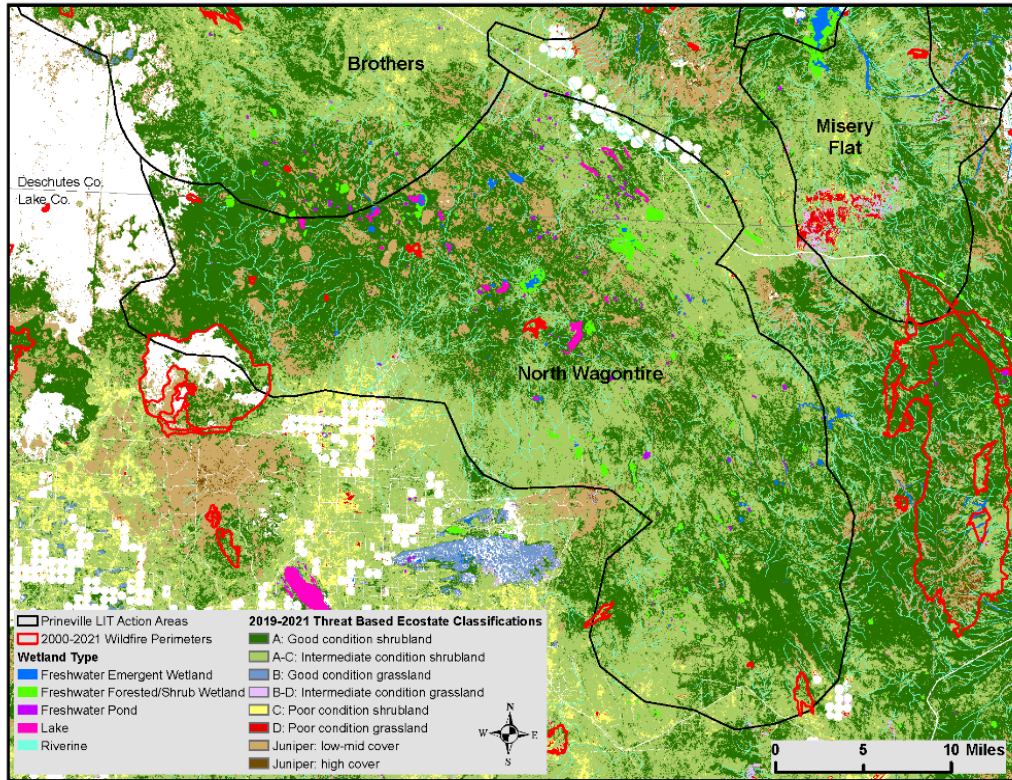


Figure 22: SageCon's 2019-2021 Ecostate map of the North Wagontire Action Area.

**THREATS AND ASSOCIATED ACTIVITIES**

Through our collaborative process, the LIT identified four threat priorities in the North Wagontire Action Area: **Conifer expansion, invasive annual grasses, mesic habitat, and understory composition.**

**Conifer Expansion**

The northern half of the North Wagontire Action Area contains mostly old growth juniper stands primarily on BLM and DSL administered land and these will not be cut. Juniper expansion in the southern portion of this action area is managed by the Lakeview district BLM and anything outside of the PPH designated habitat is not covered by NEPA, both of which lower the likelihood of juniper treatments occurring in this area. This area falls at the northern extent of the Lakeview BLM District where there has been less focus on juniper treatment. Efforts should prioritize areas around Benjamin Lake and lek locations. Canopy cover for these juniper stands range from 4–10% to 20–50%. RAP data indicates an average tree canopy cover increased by 71% over the past 30 years but total cover in this area is the lowest of any action area. Tree canopy cover was 1.4% from 1986–1990 and increasing to 2.4% from 2017 to 2021 (Table 20). Ground verification will be required to determine the accuracy of the remotely sensed data in these areas and whether removal is warranted given other environmental conditions (e.g., topography and current understory). The area of greatest concern for potential conifer expansion is within connectivity areas identified by The Nature Conservancy and ODFW OCAMP models (Section 3.1, Figure 14).

Table 20: Average tree canopy cover over two 5-year timeframes show an increase of 71% (RAP, 2021).

Tree Canopy Cover - North Wagontire		
1986 - 1990 average	2017 - 2021 average	Percent Change
6,484	11,116	171%

**Public Land Treatments**

- BLM
  - 1,080 acres of juniper were cut from 2007–2013.
  - Areas managed by the Prineville District have been identified for treatment. Because this area is lower priority for the Lakeview District, juniper in the North Wagonfire Action Area have not yet been identified for future cutting treatments.
  - 1,714 acres were broadcast burned in 1992 (no longer an approved practice on BLM administered lands),
  - 5,237 acres were jackpot burned or broadcast burned from 2007–2016.
  - 1,273 acres were masticated on the Burns and Lakeview Districts between 2005–2014.
- Deschutes National Forest
  - Under the Deschutes National Forest Prescribed Burn Categorical Exclusion, approximately 147 acres were burned, reducing conifer expansion.
  - Under the Mountain Mahogany Restoration Categorical Exclusion, the Forest analyzed removing 340 acres of juniper and pine within the action area. This project has not yet been implemented.

***Invasive Annual Grasses***

Although relatively low in abundance, IAGs are found throughout the North Wagonfire Action Area. RAP estimates indicate an average annual grass and forb cover of 5.8% from 2017–2021 and 3.3% from 1986–1990 across the action area (Table 21).

**Table 21: Average annual grass and forb cover over two 5-year timeframes show an increase of 76% (RAP, 2021).**

Annual Grass and Forb Cover - North Wagonfire		
1986 - 1990 average	2017 - 2021 average	Percent Change
15,285	26,864	176%

**Public Land Treatments**

- BLM - 4,281 acres of weeds were treated from 1958–1964. In 2017, 387 acres of weeds were treated within the North Wagonfire Action Area. No other treatments were recorded from 1964–2017.

**Private Land Treatments**

- Crooked River Weed Management Area - no treatments of IAGs since 2008 in their records. This area is mostly out of the Crooked River watershed for treatments or assistance.

***Mesic Habitat***

Most of the wet meadow habitats within the North Wagonfire Action Area are associated with playas (i.e., dry, flat areas, free from vegetation where ephemeral lakes form during wet periods and that are underlain by clay, silt, and/or soluble salts). Aside from agricultural fields on private lands, NDVI data collected from 1984–2016 indicate sites farther from major drainages that may contain wetland or wet meadows had low (nearly 0%) yearly productivity. More data are needed to compare historic wet meadow data to current and future productivity.

**Public Land Treatments**

- ODFW helps monitor and maintain approximately 5 guzzlers in this area. Their origins are a mix of BLM and ODFW installations. ODFW recruits many Oregon Hunters Association (OHA) volunteers that monitor and repair the guzzlers annually. In summers of extreme drought, ODFW hauls water to a few guzzlers with the highest wildlife use (primarily big game but may secondarily benefit sage-grouse locally). Guzzlers are fenced to exclude livestock but allow ungulates to access.



**Understory Composition**

More data and ground verification are needed to determine understory composition. According to the RAP, average perennial grass and forb cover from 1986–1990 was 18.1% and 19.1% from 2017–2021 (Table 22). Decision support tools (e.g., RAP) indicate sites with greater tree canopy cover within the North Wagontire Action Area have a lower concentration of perennial grasses and forbs and a higher percentage of annual grasses and forbs. There has not been much work done by agencies or organizations on understory composition.

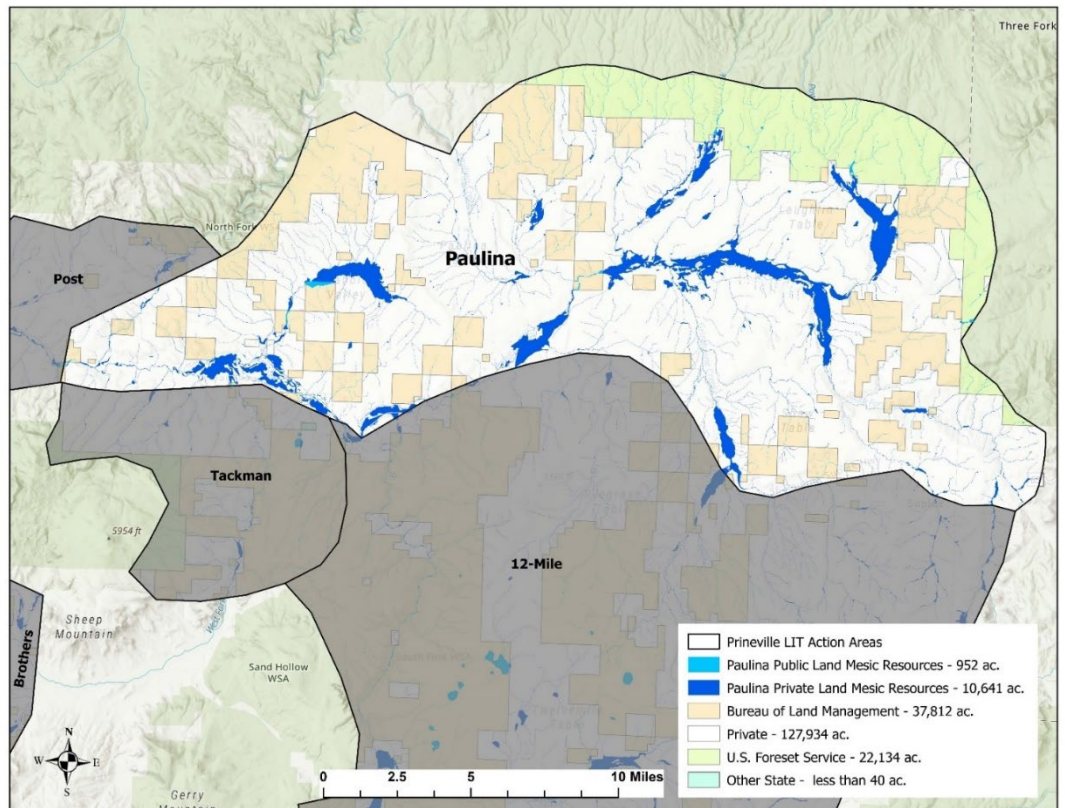
**Table 22: Average perennial forb and grass cover over two 5-year timeframes show an increase of 6% (RAP, 2021).**

Understory Composition (perennial forb and grass cover) - North Wagontire		
1986 - 1990 average	2017 - 2021 average	Percent Change
83,835	88,466	106%

**5.5. PAULINA ACTION AREA**

**OVERVIEW AND LANDOWNERSHIP**

The Paulina Action Area (Figure 23, Table 23) falls primarily in the eastern portion of Crook County with a small portion in western Grant County. There are 16 intermittent and perennial creeks\* and rivers totaling 89 miles of riparian areas and 9,530 acres of wetlands (National Wetlands Inventory-FWS). Between 1973 and 2015, 7,942 acres burned due to wildfire primarily caused by lightning strikes. Most of the landscape is dominated by big sagebrush/Idaho fescue plant communities, with the northern portion of the action area dominated by stiff sage (*Artemisia rigida*) and Idaho fescue plant communities. There are ponderosa pine (*Pinus ponderosa*) stringers coming off the Ochoco National Forest and old growth stands of western juniper found throughout the action area (Figure 24). Crook SWCD is conducting outreach and conservation planning with private landowners in this area which is funded through OWEB technical assistance grants and a Working Lands for Wildlife grant through the National Fish and Wildlife Federation. The conservation plans provide sage-grouse specific action plans to improve their habitats. The [Camp Creek Restoration Atlas](#) was completed and will help prioritize mesic and upland restoration throughout the Camp Creek watershed.



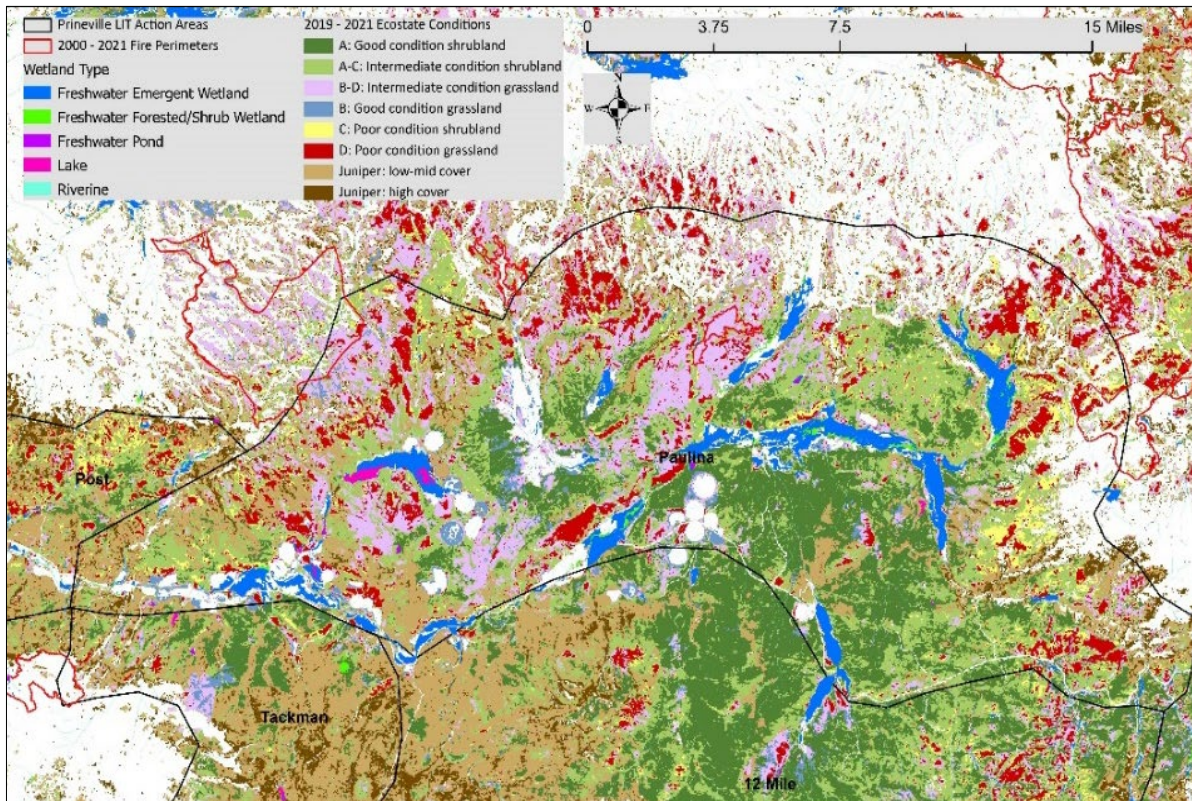
**Figure 23: Paulina Action Area ownership map. This action area is falls primarily on private land (68%) and maintains the most private land mesic resources (10,641 ac.). Engagement with private landowners will be critical in this area.**

**Table 23: Paulina Action Area breakdown of, A) ownership; B) acres that fall within PACs; and C) leks and their 2022 status.**

Ownership/Admin	Approx. Acres	Percent	Approx. Acres		Percent in PAC
			Total	in PAC	
BLM	37,812	20%	188,638	139,592	74%
Private	127,934	68%			
State	758	0%			
USFS	22,134	12%			
<b>TOTALS</b>	<b>188,638</b>	<b>100%</b>			

B. PACs					
2022 Lek Count by Classification	Occupied	Pending	Unoccupied	Historic	TOTAL
		9	8	1	0



**Figure 24: SageCon's 2019-2019 Ecostate map for the Paulina Action Area.**

\*List of creeks and rivers within this action area: Beaver Creek, Alkali Creek, Bear Creek, Rock Creek, Camp Creek (east), Camp Creek (west), Swamp Creek, Crooked River, NF Crooked River, SF Crooked River, Maury Creek, Kelly Creek, Sunflower Creek, Paulina Creek, Wolf Creek, Trout Creek.

**THREATS AND ASSOCIATED TREATMENTS**

Through our collaborative process, the LIT identified three threat priorities in the Paulina Action Area: **conifer expansion, invasive annual grasses, and recreation.**



**Conifer Expansion**

The north and northeastern areas of the Paulina Action Area that border USFS managed lands have the highest concentrations of ponderosa pine and juniper stands. These areas are of least concern for conifer expansion because the elevation and mature forest components indicate that while these lands are mapped sage-grouse habitat their site potential is a woodland rather than shrub-steppe. Remotely sensed data show that the average canopy cover increased by 25% in this action area between a 5-year period beginning in 1986 and a 5-year period in 2017 (Table 24).

**Table 24: Average tree canopy cover over two 5-year timeframes show an increase of 125% (RAP, 2021).**

Tree Canopy Cover - Paulina		
1986 - 1990 average	2017 - 2021 average	Percent Change
9,621	12,073	125%

**Public Land Treatments**

- BLM
  - Areas of juniper expansion which were previously cut will need re-treatment in 10–15 years. Management included cut, lop, and scatter (14,911 acres of juniper cut, lopped, and scattered) and 40 acres were piled and burned. Jackpot burning for all juniper treatment units is ongoing and acres are not available.
  - 10,660 acres of BLM managed land is identified for future juniper treatments. To reduce new establishment, areas of previous juniper expansion are expected to be re-treated between 2028 and 2042 depending on the original treatment date.
- Ochoco National Forest is working with ODFW to remove juniper on National Forest administered lands adjacent to private lands. They plan to implement this work in the next few years.

**Private land treatments**

- NRCS contracted and/or treated 39,282 acres of Phase I and II juniper on private land in this action area. They also implemented 1,400 acres of brush control adjacent to previous cuts.
- Crook SWCD
  - 777 acres of juniper cut through OWEB grant #215-4013.
  - 4,202 acres of juniper cut through OWEB grant #213-4030.
  - 313 acres cut and piled through FWS Partners.
  - 47 acres cut through OWEB small grant #18-16-019.
- ODFW - worked with cooperating landowners since 2015 through the Mule Deer Initiative (MDI) to treat approximately 500 acres of juniper expansion on private lands. While MDI projects often target areas with slopes and leave patches of trees for big game cover, ODFW and private landowners worked to align MDI treatments in this area with other juniper treatments that were designed to benefit sage-grouse.

**Invasive Annual Grasses**

IAGs are widespread throughout the Paulina Action Area. RAP estimates indicate an average annual grass and forb cover has increased by approximately 100% in this area when comparing two 5-year averages 20 years apart (1986-1990, 8.7% and 2013-2017, 17.2%) (Table 25). In this area, crested wheatgrass plantings have been used to reduce annual grass invasions and while they are successful at outcompeting the invasive annuals the crested is

**Table 4: Average annual grass and forb cover over two 5-year timeframes show an increase of 98% (RAP, 2021).**

Annual Grass and Forb Cover - Paulina		
1986 - 1990 average	2017 - 2021 average	Percent Change
16,411	32,446	198%

outcompeting the natives as well. The south facing aspect of much of this action area makes these soils less resistant to annual grass invasion. IAG surveys, outreach and education are needed for the smaller private landowners.

**Public land treatments:** Public land managers are currently using the herbicide, imazipic to treat invasive annual grasses.

- Ochoco National Forest-

**Private land treatments:**

- NRCS – 435 acres of invasive annual grass treatments.
- Crook SWCD – Sage-grouse CCAA site specific plans identify the need for IAG treatments, surveys and education across several properties to the north of the highway. 46 acres of crested wheatgrass planted to prevent IAGs,
- Crooked River Weed Management Area – From 2015–2019 IAG treatments were completed with 7 landowner agreements in the Paulina area. From 2015–2019 upland treatments have amounted to 11,836 acres. Lack of funds available for this area, especially for ventenata.

### ***Recreation***

There are 594 miles of mapped roads (highways, improved dirt roads, and two-tracks) within the Paulina Action Area with 200 miles on public land and 394 on private land. In addition to the mapped roads that are a part of the official inventory, an orthoimage from 2018 was used to and map an additional 34 miles of two track roads and OHV trails on public land in the action area. The condition and frequency of use is not currently known but it will be important to monitor the growth of these transportation networks due to the increase in fragmentation and noise that comes along with this recreational use of the area and the increase in use of OHVs by hunters.

#### **Public Land Treatments**

- Ochoco National Forest – ODFW worked with the Ochoco National Forest to permanently close 68 miles of roads in the Sunflower AMP on USFS lands.

### ***Other Efforts and Historical Context***

- Various partners in Crook County successfully acquired funds through the Joint Chiefs Landscape Restoration Partnership. This program is a partnership between the USFW and NRCS to mitigate wildfire threats to landowners and communities across the nation. [The Upper Crooked River Restoration proposal](#) was approved for funding to implement various conservation practices from 2020–2022 across ownership boundaries encompassing nearly 800,000 acres of land within and adjacent to the Paulina Action Area.
- Crook SWCD worked on three grants in mesic areas to help private landowners, 1) implement 3.5 miles of riparian planting to improve mesic conditions; 2) construct 14.7 miles of fence around 874 acres of mesic habitat; 3) remove 3.25 miles of hazard fence; and 4) constructed upland fencing around 301 acres of riparian planting, and 13 instream structures.
- NRCS completed prescribed grazing plans on 5,500 acres and contracted 27 BDAs for mesic habitat improvement near active sage-grouse leks (one property and one drainage).
- In 1949, 1961, and 1969, BLM seeded 1,149 acres with crested wheatgrass.
- In 2006, BLM treated four acres of weeds of other noxious weeds by ATV.



## 5.6. POST ACTION AREA

### OVERVIEW AND LANDOWNERSHIP

The Post Action Area (Figure 25, Table 26) extends west from Paulina Action Area, running along the Crooked River and Highway 380 for approximately 22 miles. The town of Post is located on HWY 380 at the west end of this action area. The Maury Mountains border this action area to the south and the Ochoco Mountains to the north. Minimal sage-grouse activity in this area is declining and the area is challenged by the susceptibility of the south-facing hillslopes on the north side of the highway being prone to annual grass invasion. Models show that this area is already challenged by a significant invasion of medusahead (Table 26). The action area is dominated by private land and NRCS is actively addressing juniper encroachment with many ranches in the area.

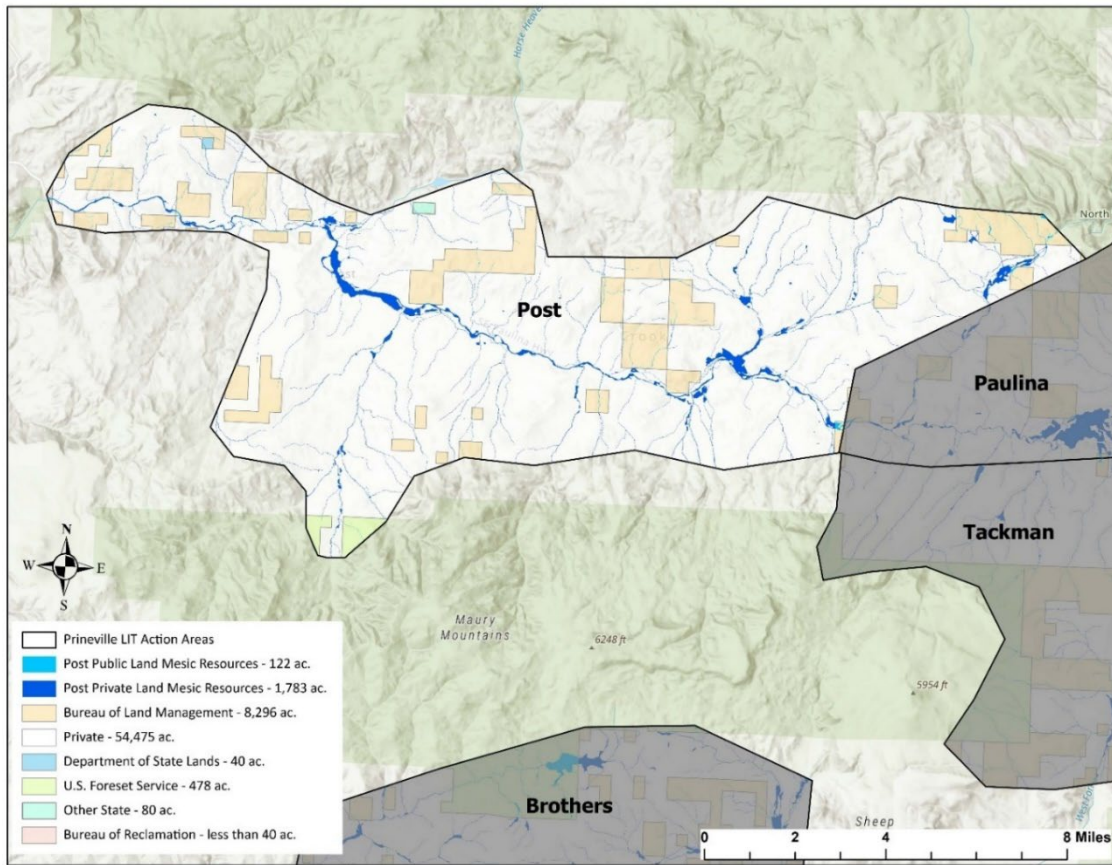


Figure 25: Post Action Area ownership map.

Table 26: Post Action Area breakdown of, A) ownership; B) acres that fall within PACs; and C) leks and their 2022 status.

Ownership/Admin	Approx. Acres	Percent	Approx. Acres		Percent in PAC
			Total	in PAC	
BLM	8,296	13%	63,249	0	0%
Private	54,475	86%			
State	0	0%			
USFS	478	1%			
<b>TOTALS</b>	<b>63,249</b>	<b>100%</b>			

A. Ownership/Admin

Priority Area for Conservation (PAC)	Approx. Acres		Percent in PAC
	Total	in PAC	
Priority Area for Conservation (PAC)	63,249	0	0%

B. PACs

2022 Lek Count by Classification	Occupied	Pending	Unoccupied	Historic	TOTAL
	2022 Lek Count by Classification	0	2	0	0

C. Leks

**THREATS AND ASSOCIATED ACTIVITIES**

Through our collaborative process, the LIT identified three threat priorities in the Post Action Area: ***Conifer expansion, invasive annual grasses, and understory composition.***

***Conifer Expansion***

RAP data indicates an average tree canopy cover of 8.8% from 2017–2021 and 9.4% from 1986–1990 (Table 27).

**Private Land Treatments**

- NRCS contracted and/or treated 3,489 acres of Phase I and II juniper.
- Crook SWCD treated 60 acres of juniper through OWEB Small Grant #18-16-001.
- ODFW treated 2,000 acres of juniper through the Mule Deer Initiative.

**Table 27: Average tree canopy cover over two 5-year timeframes show a decrease of 6% (RAP, 2021).**

Tree Canopy Cover - Post		
1986 - 1990 average	2017 - 2021 average	Percent Change
5,947	5,568	94%

***Invasive Annual Grasses***

RAP data indicates an average annual forb and grass cover of 13.0% from 2017–2021 and 6.1% from 1986–1990 (Table 28). This action area has seen the highest rate of annual cover of all action areas. Lack of funds are available for partners to address this area, especially to treat ventenata. CCAA site specific plans identify the need to treat IAGs; surveys are needed to assess small private land parcels. Outreach and education needed to inform private landowners about the threat associated with IAGs and clarity around treatment options and benefits to livestock operations.

**Private Land Treatments**

- Crook SWCD
  - 420 acres of IAG treated through OWEB Small Grant #18-16-001.
  - 50 acres of treatment through OWEB small grant #18-18-011.
- Crooked River Weed Management
  - From 2015–2019, 2,385 acres of IAGs were treated on one landowner’s property.
  - This area has lands that that will be treated with Joint Chiefs grant funds and treatments began in 2022.

**Table 5: Average annual grass and forb cover over two 5-year timeframes show an increase of 113% (RAP, 2021).**

Annual Grass and Forb Cover - Post		
1986 - 1990 average	2017 - 2021 average	Percent Change
3,859	8,225	213%

***Understory Composition***

RAP data indicates an average perennial forb and grass cover of 25.5% from 2017–2021 and 21.8% from 1986–1990 (Table 29).

**Public Land Treatments**

- BLM - There is potential for seeding jackpot burns with native forbs and bunchgrasses when conditions allow or are appropriate.
- Crook SWCD implemented a 60-acre seeding treatment through OWEB small grant #18-18-011.

**Table 29: Average perennial forb and grass cover over two 5-year timeframes show an increase of 17% (RAP, 2021).**

Understory Composition (perennial forb and grass cover) - Post		
1986 - 1990 average	2017 - 2021 average	Percent Change
13,793	16,134	117%

**Other Efforts**

- In 2020, Deschutes Land Trust worked with ODFW and NRCS to help a landowner enroll 3,980 acres of private land near the town of Post into a perpetual conservation easement with additional support from the NRCS Agricultural Land Easement program. Deschutes Land Trust will continue to work with the private landowner to put permanent conservation easements on the remainder of their 18,000-acre ranch.
- BLM treated five acres of other invasive plants between 2006–2016.

**5.7. TACKMAN ACTION AREA**

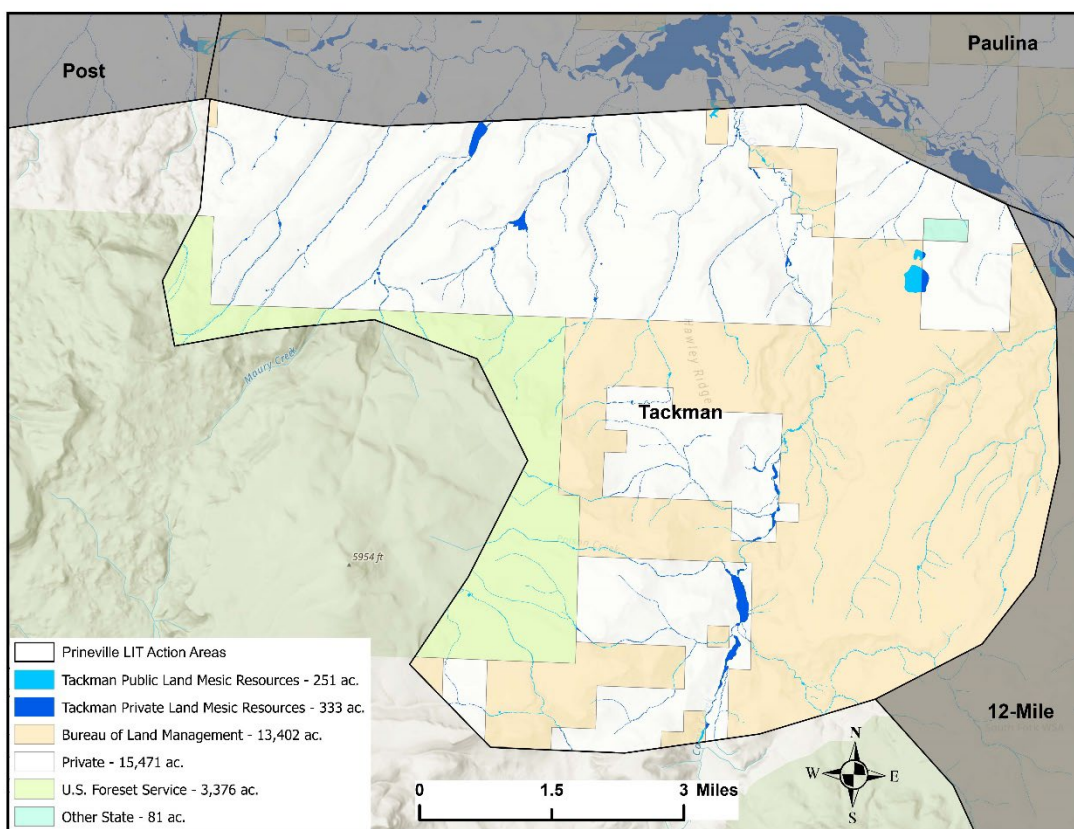
**OVERVIEW AND LANDOWNERSHIP**

The Tackman Action Area (Figure 26) is located south of Highway 380 in the Crooked River Valley, approximately 45 miles east of Prineville. This action area extends 7.25 miles south from the highway towards the Maury Mountains and stretches across the Lower Camp Creek Watershed. Elevation ranges from 3,549

feet in the irrigated hay fields on the north side to 5,249 feet on a hillcrest on the west side. At these higher elevations, ponderosa pines and junipers are mixed in the dry forests at the edge of suitable sage-grouse habitat. There are 76 miles of perennial and intermittent streams that flow through the action area including: Cemetery, Camp, Maury, Tom Vaughn, and Stewart Creeks. An analysis of mean NDVI surrounding these water sources identified approximately 1,789

acres that fall within categories identified as mesic resources that can be utilized by sage-grouse during late brood-rearing season to meet the nutritional needs of chicks. At mid-elevations, sagebrush flats dominated by mountain big sage with Idaho fescue and blue bunch wheatgrass rise above the creeks and provide lekking areas and nesting habitat (Figure 27).

In 2016, the East Maury fire burned 381 acres (1.1%) of the area and was concentrated in high elevation forest. In 2018, the Cemetery fire burned 1,159 acres (3.6%) of mixed forest and sage steppe plateau and came within a quarter mile of the Cemetery Ridge lek. The only other lek in the action area is Stewart Creek and the status of both leks are pending. The leks are located on private land and have not been surveyed since



**Figure 26: Tackman Action Area ownership map.**



2008, at which time counts were down to zero males from high counts of seven and six males, respectively. Private land comprises nearly half of the action area and those acres are consolidated among four landowners who utilize the land for growing hay, grazing cattle, and some forestry production. The remainder of the action area is public land split between BLM, the Ochoco National Forest, and DSL administered lands, all of which are leased as grazing allotments (Table 30).

**Table 30: Tackman Action Area breakdown of, A) ownership; B) acres that fall within PACs; and C) leks and their 2022**

Ownership/Admin	Approx. Acres	Percent	Approx. Acres		Percent in PAC
			Total	in PAC	
BLM	13,402	42%	32,249	0	0%
Private	15,471	48%			
State	0	0%			
USFS	3,376	10%			
<b>TOTALS</b>	<b>32,249</b>	<b>100%</b>			

A. Ownership/Admin

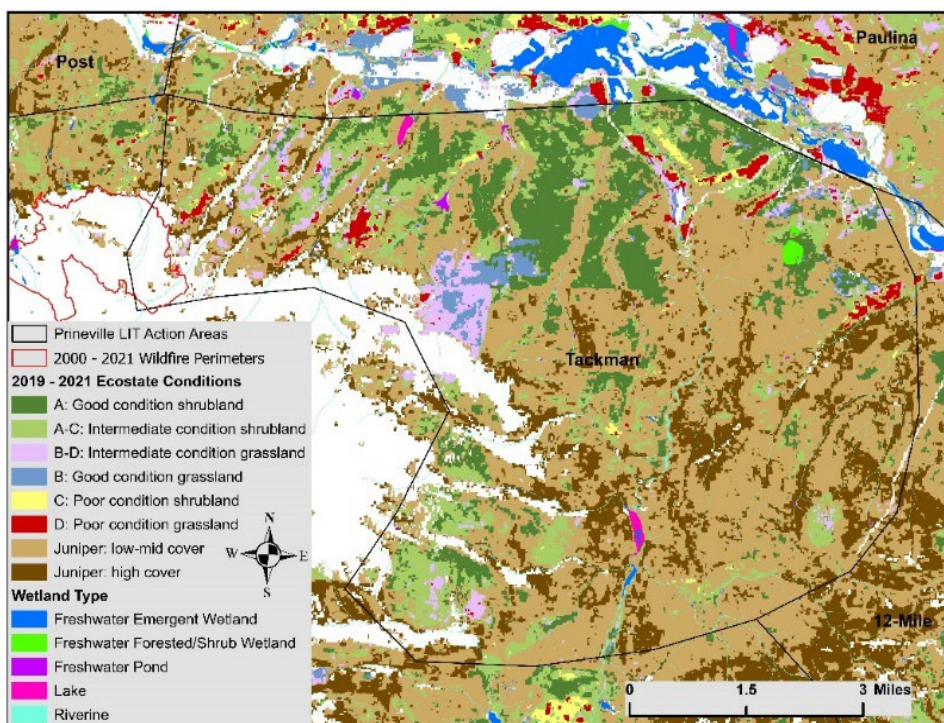
Priority Area for Conservation (PAC)	Approx. Acres		Percent in PAC
	Total	in PAC	
Priority Area for Conservation (PAC)	32,249	0	0%

B. PACs

2022 Lek Count by Classification	Occupied	Pending	Unoccupied	Historic	TOTAL
	2022 Lek Count by Classification	0	2	0	0

C. Leaks



**Figure 27: SageCon's 2019-2019 Ecostate map for the Tackman Action Area.**

**THREATS AND ASSOCIATED ACTIVITIES**

Through our collaborative process, the LIT identified three threat priorities in the Tackman Action Area: ***Conifer expansion, invasive annual grasses, and other invasive plants.***

***Conifer Expansion***

Expanding conifers are increasing in both canopy closure and the amount of area invaded, even with active removal occurring. Juniper cover averaged 9.0% between 1986–1990 and 12.8% between 2017–2021 (Table 31). High density juniper cover (>20%) exists in approximately 25% of the action area with the majority of that existing in the southeast region on BLM managed land. The acres in the Ochoco National Forest and some of



the BLM resource area to the south are comprised of pine forest with a juniper component. Approximately 1,500 acres of that are considered non-habitat due to the mixed conifer cover.

**Public Land Treatments**

- BLM - All eligible acres are identified for treatment starting in 2024 or 2025. There is NEPA in place to cover cutting and burning. Reseed jackpot burns with native forbs and bunchgrasses when conditions allow or are appropriate. In 10–15 years, will need to re-treat areas of juniper expansion.

**Private Land Treatments**

- NRCS contracted and/or treated 4,739 acres of Phase I and II juniper on private land. Juniper treatments completed through the SGI will need to be retreated in approximately 15 years. Potentially 500–1,000 acres of conifer treatment are planned. Potentially 500 acres of slash treatment from previous juniper cuts (joint chief fuels reduction).
- ODFW - 500 acres of juniper treatment through the Mule Deer Initiative on private land.

**Table 31: Average tree canopy cover over two 5-year timeframes show an increase of 42% (RAP, 2021).**

Tree Canopy Cover - Tackman		
1986 - 1990 average	2017 - 2021 average	Percent Change
2,902	4,128	142%

**Invasive Annual Grasses**

IAGs threaten the bunchgrass and forb communities in this action area with the most at risk areas located on the north end on the tabletops where resilience and resistance to invasion are low.

While 50% of the area is considered intact core which should be preserved and grown, much of that area is heavily invaded by juniper with cover greater than 10%. The condition of the understory in those areas should be more closely evaluated prior to restoration action being taken to determine the amount of investment required for ecological uplift to occur.

In the area outside of the Paulina PAC, 48% is categorized as transitioning with approximately half of that area classified as high restoration potential. This classification is due to moderate levels of herbaceous cover (at least 20% perennial cover and a ratio of annuals to perennials between 1:1 and 1:3), in addition to moderate or high resistance resilience categorization. RAP data indicates average an annual forb and grass cover of 8.4% from 2017–2021 and 5.6% from 1986–1990 across this action area (Table 32). Funding invasive annual grass treatments is a challenge in this area, especially for ventenata. IAG surveys are needed for the smaller private landowners to gauge the level of invasion and new infestations.

**Table 32: Average annual grass and forb cover over two 5-year timeframes show an increase of 50% (RAP, 2021).**

Annual Grass and Forb Cover - Tackman		
1986 - 1990 average	2017 - 2021 average	Percent Change
1,806	2,709	150%

**Private Land Treatments**

- Crooked River Weed Management Area - 10,332 acres (this number includes retreating many acres once or twice) of IAG treatments were completed across five private landowner properties from 2015–2019.

**Other Invasive Plants**

Other invasive plants are also a threat as they occur in disturbed areas around water developments, roads, and agricultural infrastructure such as corrals, barns, and stack yards. The most common species are whitetop (*Lepidium draba*), spotted knapweed (*Centaurea stoebe*), and Russian thistle (*Salsola iberica*).

**Public Land Treatments**

- BLM treated five acres of other invasive plants in 2005.

## 6. COLLABORATIVE OPPORTUNITIES

Each section leading up to this final discussion provides context about the LIT area and the partners who have worked and continue to work on sage-grouse conservation issues. LIT partners agree that 1) many threats face sage-grouse within the Prineville LIT area, and 2) cross-boundary, multi-stakeholder partnerships are necessary to improve habitat conditions and reverse the downward sage-grouse population trend in this area. While opportunistic collaboration is important and does exist outside of the LIT framework, structured and intentional collaboration provided by the LIT is essential to ensure this diverse set of partners maintains the level of accountability that is necessary to address the various and complex issues affecting sage-grouse and sage-grouse habitats in this area.

This final section attempts to call out recurring themes from previous sections of the TRP to help the partnership chart a collaborative path forward with a mind toward identifying shared priorities for the Prineville LIT. Establishing LIT priorities will be essential to capitalize on limited capacity that exists for many interest groups of the Prineville LIT. Furthermore, utilizing the LIT space to develop and implement shared priorities will build resilience in the partnership as well as the sagebrush landscape.

Three initial priorities are proposed. Note, these priorities are still high-level and require deeper investigation by LIT members. Two of the three priorities include focusing our collective efforts on addressing threats within and between two action areas: Brothers and 12-Mile. The third priority is contextual in nature and challenges the LIT to develop a long-term work plan in which opportunities to act toward addressing the threats to sage-grouse can be documented, tracked, and adapted over time as needed. The work plan should tier down from The Action Plan and align with the goals and objectives identified in ODFW's 2011 Strategy (see section 2).

### Developing Action Area Priorities

Before we can effectively act on action area priorities, it will be necessary for LIT members to participate in an interactive mapping exercise in which LIT partners work together to draw out priorities based on scientific and technical resources and local knowledge. One such process was tested during the 2022 SageCon Summit and will serve as the basis for the Prineville LIT exercise. The stepwise process, outlined below, loosely describes this exercise which will be convened during a LIT meeting,

- Break everyone into small groups of four or five. Each group should have diverse partner representation – i.e., each person represents a different interest group. Groups will be assigned by the LIT Coordinator.
- Each group will be given a computer and/or a packet of resources including a summary of each action area with information about the primary threats identified by the LIT; map products displaying habitat classification tools such as those discussed in Section 3.1; information and maps of existing NEPA; past treatment data; and other relevant resources such as ownership maps. All information will be scaled to the Brothers and 12-Mile Action Areas.
- Additionally, the group will be given information provided in Section 4.2. Prioritization Criteria.
- Each group will work together to draft a proposal for the entire LIT to consider. This proposal will include *drawing on a map* any potential LIT opportunities for cross-boundary collaboration that will help address the threats identified within and between the two action areas. As groups develop their proposals, they must consider the prioritization criteria and identify how their proposal incorporates those criteria.
- As partners problem solve through this exercise, they should simultaneously overlay and reference the scientific and technical resources provided, while also incorporating local knowledge to bolster their rationale about how and where the LIT should establish priorities within and between each action area. Every participant in the group should have an opportunity to provide input.

- After the small group exercise, the entire LIT will reconvene. Each small group will present their map and discuss the rationale behind how and why the group developed priorities.
- The challenge for the LIT and specifically for the LIT Working Group will be to come to consensus on cross-boundary priorities that are based on overlapping themes provided by the small group proposals and the prioritization criteria.

Although we describe this exercise specifically regarding the initial priorities for the Brothers and 12-Mile Action Areas, the intent is to replicate this exercise annually to ensure priorities remain relevant.

### ***Why prioritize Brothers and 12-Mile Action Areas?***

While we recognize that a broader set of priorities and interests exist across the LIT area, the intent of the collaborative is to challenge its participants to collectively focus on issues and areas that present overlapping interests, where cross-boundary inputs will generate optimal conservation outputs. While this does not preclude the LIT from considering efforts outside the Brothers and 12-Mile Action Areas, LIT participants agree that investments in these two areas will be the highest priority within the LIT framework. The Brothers and 12-Mile Action Areas meet all items listed in Section 4.2: Prioritization Criteria and the following points provide further rationale to support prioritizing these areas,

- Both encompass PACs and maintain the greatest number of active leks: 24 in 12-Mile and 23 in Brothers.
- More conservation investments by the greatest diversity of LIT partners have been recorded for the Brothers Action Area than any other area. Partners who have invested and continue to invest in this area include, BLM, DSL, Crook and Deschutes SWCDs, private landowners, Crooked River Weed Management Area, NRCS, Deschutes National Forest, ECAS, ODFW, and OSU.
- The 12-Mile Action Area maintains the greatest amount of surface water (approximately 12,000 acres), which has been identified as a highly valuable resource across the landscape. Furthermore, more than 80 percent of the water within the 12-Mile Action Area is on privately owned land.
- Opportunities exist to increase connectivity between the two action areas; and therefore, build a more resilient landscape.
- The majority of BLM's NEPA within the Prineville LIT area falls within and between these two action areas.
- The threats affecting both action areas are diverse and complex and require critical problem solving that can be achievable within structured collaborative platforms such as the LIT.
- The landscape of these areas is relatively intact compared to other action areas and minimal inputs will generate optimal conservation results.
- Based on technical resources such as the Sagebrush Conservation Design and the SageCon Ecostate Maps (Section 3.1.), and partnership buy-in, these action areas are highly competitive to receive grant funding to implement cross-boundary projects at landscape scales.
- Multiple opportunities exist in these two areas to support LIT partners conducting outreach efforts, specifically to discuss fragmentation issues and early detection, rapid response toward invasive annual grasses.

### **Developing a LIT Work Plan**

Establishing Brothers and 12-Mile Action Area priorities will be a huge and important initial step toward implementing actions identified in the TRP. However, the exercise above provides short-term opportunities in landscapes requiring long-term investments. As previously mentioned, the LIT framework provides the necessary space and collaborative structure required to address the diverse and complex issues sage-grouse face across the Prineville LIT area. The LIT work plan will build from the LIT's stated Vision, Mission, and Goals

(Appendix C) and will prioritize opportunities within the Brothers and 12-Mile Action Area. The work plan will also discuss opportunities for the remaining LIT action areas and the Prineville LIT area broadly and will challenge the collaborative to establish a roadmap to help the LIT prioritize, implement, track, and adapt efforts over time.

Development of the LIT work plan will be an iterative process and one that will build from the development of the action area priorities discussed above; should tier down from the Action Plan; and align with the goals and objectives outlined in ODFW's 2011 Strategy. In general, the work plan will include goals, objectives, strategies, timelines, and responsible parties that will help the LIT meet its vision and mission statements. The LIT Working Group will lead the development of the work plan and will use consensus to adopt the initial plan and adapt it over time. Before creating the work plan, the LIT Working Group must define aspects of the document (what are goals, objectives, strategies, etc.) to ensure a collective understanding around how words are defined and used.

Most discussions within the TRP have focused on project implementation, which will continue to be an important theme within the work plan; however, the work plan should also empower LIT partners to consider other opportunities that become amplified through collaboration such as improving communication across local interest groups (e.g., engaging more landowners) and to state and regional partners that manage conservation funds and influence policy decisions (note, the LIT space does not engage in policy-making or lobbying but may use its platform to convey collaborative interests to those who do).



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## APPENDIX A: ACRONYMS

### **Agencies, Organizations, Interest Groups, etc.**

BLM – Bureau of Land Management  
Crook SWCD – Crook Soil and Water Conservation District  
Deschutes SWCD – Deschutes Soil and Water Conservation District  
DSL – Department of State Lands  
DLCD – Department of Land Conservation and Development  
ECAS – East Cascades Audubon Society  
FWS – U.S. Fish and Wildlife Service  
LIT – Local Implementation Team  
NRCS – Natural Resources Conservation District  
ODFW – Oregon Department of Fish and Wildlife  
OWEB – Oregon Watershed Enhancement Board  
USFS – U.S. Forest Service

### **Programs/Policy**

CCAA – Candidate Conservation Agreement with Assurances  
DNA – Determination of NEPA Adequacy  
FIP – Focused Investment Partnership

NEPA – National Environmental Policy Act  
SGI – Sage Grouse Initiative

### **Plans**

ARMPA – Approved Resource Management Plan Amendment  
Action Plan – Oregon Sage-Grouse Action Plan  
Conservation Assessment - Oregon Sage-Grouse Conservation Assessment and Strategy  
TRP – Threats Reduction Plan

### **Technologies**

LPT – Landscape Planning Tool  
NDVI – Normalization Difference Vegetation Index  
PAC – Priority Areas for Conservation  
RAP – Rangeland Analysis Platform

### **Other**

COHVOPS – Central Oregon’s Combined Off Highway Vehicle Operations  
OHV – Off Highway Vehicle  
WUI – Wildland Urban Interface

## APPENDIX B: OVERVIEW OF POTENTIAL CLIMATE CHANGE EFFECTS ON GREATER SAGE-GROUSE HABITAT IN THE PRINEVILLE LIT AREA

The potential effects of regional climate change on the distribution and abundance of sage-steppe wildlife are difficult to assess because of interactions among of many factors (Whitcomb 2011, Mitchell et al. 2017, Crous 2019). To simplify the forecast, it can be assumed that effects on the Greater Sage-Grouse (sage-grouse) in the Prineville LIT area (LIT area) are mediated by the effects on its habitat, especially the distribution and abundance of plant species that provide sage-grouse cover, nesting sites, and food. Generally, climate change predictions for western North America show altered precipitation patterns, and increased frequency and severity of drought conditions (Dettinger et al. 2015, Dai et al. 2018). The effects of climate change on the key plant species depend on their abilities to either acclimate to regime changes in air temperature, precipitation, humidity, soil moisture, soil nutrient levels, atmospheric CO<sub>2</sub> levels, fire frequency, and land management practices, or to migrate to areas where the regimes are tolerable. The effects of climate change will vary among plant species (Kleinhesselink and Adler 2018), but of all these factors, moisture appears most important (Mitchell et al. 2017). At the community or assemblage scale, the responses are likely to include remixing of native and non-native species along gradients in moisture and temperature (Thuiller et al. 2008, Elmendorf et al. 2015, Mitchell et al. 2017), as mediated by topography and soil conditions. As annual production of grasses and forbs is primarily driven by moisture availability, sage-grouse responses will require adaptations to these habitat changes. For example, sage-grouse females may mitigate drought impacts on chick survival by selecting nest and brood-rearing sites favorable to chick survival (Gibson et al. 2017). However, during prolonged or severe drought, these selection mechanisms are likely inadequate to mitigate impacts of drought conditions on chick survival, resulting in reduced recruitment (Gibson et al. 2017). As such, management actions focused on increasing mesic habitat availability, especially in mid- to late-summer, and restoring and maintaining deep rooted native perennial plant species will be important to improve the resilience of sage-grouse and populations of other sage-steppe wildlife to changing climatic conditions. Since the mid-20<sup>th</sup> century, sage-grouse populations have experienced steep declines within the region (ODFW 2022) and throughout its greater geographic range (Herren et al. 2021, Coates et al 2021).

### Site Characteristics

The vegetation of the LIT area is broadly characterized as shrub-steppe, with three basic plant strata (Schroeder and Johnson 2018), each of which can have different responses to climate change and other threats. Native species characteristic of the overstory are species of sagebrush and rabbitbrush. Western juniper is expanding into the sage-steppe, due in part to climate change (Knapp and Soulé 1998, Loehman et al. 2022). Native species of the understory include Idaho fescue, bluebunch wheatgrass, and Sandberg bluegrass, and a variety of native forbs. Common invasive exotics of the understory include cheatgrass, medusahead and ventenata. The soil surface and its biocrust of moss, lichen, cyanobacteria, algae, and fungi (Ponzetti and McCune 2001) comprise the bottom stratum.

The LIT area's elevation ranges from about 4,000 ft to about 5,600 ft, and this elevational gradient affects plant distribution and abundance in the area. Mean annual precipitation is about 10-11 inches in Brothers and 13-19 inches in Paulina, with most precipitation occurring in late winter and early spring. Spatial variations in precipitation totals and frequency are typical and can be ecologically significant. Annual precipitation amount and timing strongly affects the vigor and composition of understory grasses and forbs (Cable 1975, Bates et al. 2006, Whitcomb 2011). Soils in the area are derived primarily from volcanic basalt flows and are mostly well-drained and dry. Soils derived from a more recent pumice mantle, such as in the vicinity of Pine Mountain and Brothers, have a higher water holding capacity than other soils of similar texture, which results in sites having

higher effective precipitation, allowing them to support plants that do not typically grow on other soils with similar precipitation (J. Moffitt, 2023; pers. comm.). Summers are typically hot and dry with common daily high and low temperatures in July-August of 82 to 42 degrees F, although it is common to have heat waves of 95 degrees F or warmer. The typical high and low temperatures in January are 38 to 17 degrees F. Average annual temperature historically was 43 degrees F. The Brothers/N. Wagontire Priority Area for Conservation (PAC) has one perennial stream. Streams and rivers are more abundant in the 12 Mile/Paulina/Misery Flat PAC. Both PACs, and especially the Brothers PAC, have numerous playas (undrained depressions that have water during wet periods) and several springs.

### **Climate Predictions**

Halofsky et al. 2019 state future climates are uncertain for shrublands of central and south-central Oregon, as predictions vary with climate change models. However, in general, precipitation is projected to increase during winter and decrease during summer, and the number and intensity of heavy winter precipitation events is projected to increase. Average warming in the area is projected to increase from 2.3 to 7.2 degrees F by 2050, and from 4.8 to 8.6 degrees F by 2080. The degree of change will depend on the global increase in carbon dioxide and will vary across the area due to its highly variable topography (Chambers 2008). Even under increases in precipitation, realized soil moisture may decline due to increased air temperature, evaporation, and water use by plants (Westerling 2009). Furthermore, the proportion of precipitation falling as rain rather than snow is expected to increase (Barr et al. 2011, Fleishman 2023), which may ultimately decrease annual mesic habitat availability (Lundblad et al. 2022).

Halofsky et al. 2019 and Nicholas Vora 2021 (pers. comm.) summarized that local and regional effects of climate change on surface hydrology will be significant. Decreased snowpack and earlier snowmelt will shift the timing and magnitude of streamflow; peak stream flow will be higher, and summer low flows will be lower. Projected changes in climate and hydrology will have far-reaching effects on aquatic and terrestrial ecosystems, especially as the frequency of extreme disturbances, such as drought, wildfire, and deluge affect wildfire, insect outbreaks, plant disease, flooding, etc. The timing of precipitation and the shift from snow to rain will contribute to favor non-native or less-desirable vegetation, including invasive annual grasses and expanding western juniper that can use winter moisture more effectively than native forbs and grasses. Higher air temperature, through its influence on soil moisture, is expected to cause gradual changes in the abundance and distribution of tree, shrub, and herbaceous species, with drought-tolerant and invasive species being more competitive. Shrublands are limited by snowpack, soil moisture, and winter temperatures. Declining snowpack may lead to continued decline of desirable native plant species, especially of big sagebrush; drought tolerant species may replace big sagebrush in some locations. As disturbances increase, abundance of rubber rabbitbrush may increase in areas once dominated by sagebrush, partly because disturbed sites could be warmer and drier than undisturbed sites. Increased winter precipitation could lead to an increase in woody species, such as native but expanding western juniper. Extended periods of high temperatures and low precipitation during summer could lead to soil moisture deficits and seasonal drought. Land use conversion, increased recreation from an increasing population, improper grazing, increased wildfire, conifer expansion, and invasive annual grasses will compound the effects of climate change on sagebrush-steppe habitats. Streams are likely to become episodic. Riparian and groundwater-dependent ecosystems will be especially vulnerable to higher air temperature, reduced snowpack, higher winter-spring stream flows, and lower late summer-early fall flows. The wetlands (i.e., mesic habitat) that serve as late summer and fall habitats for sage-grouse are likely to become less extensive and more ephemeral.

Future climate change is expected to increase the frequency of wildfire (Mote et al. 2019). The sage-steppe is likely more susceptible to wildfire than forested areas (Crist 2023). Wildfires can decimate large areas of sagebrush, and most sagebrush species are slow to regenerate, or can be prevented from regeneration due to an accelerated fire cycle driven by invasive annual grasses. Due to the predicted increase in wildfire frequency in sage-steppe landscapes, and the dependency of sage-grouse on intact sagebrush habitats, wildfire may be one of the most important climate-related factors in this ecosystem. Efforts to reduce the probability of large-scale wildfire in these landscapes will be imperative for the persistence of sage-grouse in this area, especially under climate change predictions.

Halofsky et al. 2019 further summarize that most plant and animal species are adapted to dry conditions, but extreme temperature may exceed physiological thresholds, water may be more limiting, and increased wildfire will alter vegetation structure and composition. Sage-grouse and other sagebrush-obligate species will be sensitive to these changes. Any climate change that favors invasive annual grasses or conifer expansion will adversely affect sage-grouse. The spatial and structural simplification caused by increased fire frequency is likely to provide habitat conditions favored by species like horned larks, while reducing the extent of spatially and structurally diverse shrub habitat favored by species like sage-grouse and pygmy rabbit. In low-elevation shrub-steppe, fires will especially favor invasive annual grasses and their control will be critical, as will management of other stressors (e.g., motorized recreation, land conversion and development, improper grazing). Reduced stream flow and a reduction in early and late-summer mesic habitats may result in lower insect abundance, a key part of sage-grouse diet in spring and summer. In wetland, riparian, and open-water habitat, reducing stressors will help increase resilience (e.g., limiting impacts from road construction and recreation sites).

### **Actions**

Adaptation strategies for rangelands include rapid removal or control of invasive plants, and collaboration among landowners and land managers to effectively control invasives. Mechanical treatments and prescribed fire on sites not prone to annual grass invasion, such as higher elevation mountain sagebrush, can be used to control expansion of juniper and help maintain and expand sage-grouse habitat. Promoting early-season native species that compete with annual grasses, implementation of appropriate post-fire actions (e.g., effective seed mixtures), and development of flexible grazing management systems will improve resilience of shrubland and grassland. To minimize negative effects of climate change on riparian areas and groundwater ecosystems, managers can plan for more frequent flooding, increase upland water storage, and manage water to maintain springs and wetlands. Removing junipers in upland watersheds is likely the most influential management action to improve late season water tables and soil moisture in mesic areas. Areas with heavy juniper expansion and high juniper cover have higher canopy interception of snow, reducing soil moisture in these areas. Additionally, these areas of heavy juniper expansion have much higher surface run-off and erosion in summer storms, compared to intact shrublands with bunchgrass communities that allow water to infiltrate into the soil. Promoting connectivity along stream networks can assist animal movement, and beaver colonization can increase water retention. Relocating roads and recreation developments away from floodplains would also reduce impacts. Management actions to increase the quantity and quality of mesic habitats in the sage-steppe should be prioritized to improve the drought resilience of these areas, benefiting sage-grouse and the suite of other species which rely on these habitats for survival (Gibson et al. 2017, Donnelly et al. 2018, Lundblad et al. 2022).



## APPENDIX C: PRINEVILLE LIT TEAM CHARTER

### **LIT Vision**

The LIT helps maintain and enhance culturally, economically, and ecologically healthy public and private landscapes.

### **Mission**

The LIT implements the Oregon Sage-grouse Action Plan ([Action Plan](#)) of the SageCon Partnership within the LIT geographic area of focus, according to the Action Plan.

### **LIT Goals**

The LIT will,

1. Identify priority areas for habitat conservation within its respective geographic scope;
2. Promote coordinated actions across jurisdictional boundaries to address threats to sage-grouse habitat and populations within its scope; and
3. Serve as a forum to align interest groups' and organizations' sage-grouse conservation actions.

### **Limitations**

- The LIT has no authority to direct management actions to private landowners or public land administrators; rather, recommendations provided by the LIT are intended to help inform land management actions and provide opportunities for collaboration across public and private lands.
- The LIT will provide recommendations but does not have decision-making authority. The LIT cannot dictate priorities to any individual group.
- The LIT members (including Working Group members) will provide input and/or come to agreement on issues directly regarding the development of the LIT products, only.

### **Definitions**

**Consensus:** an agreement among the majority of people in a group. Consensus does not require unanimity. In practice, a consensus is a large enough majority that the group can act on the majority opinion with a minimum of continuing disagreement or dissent.

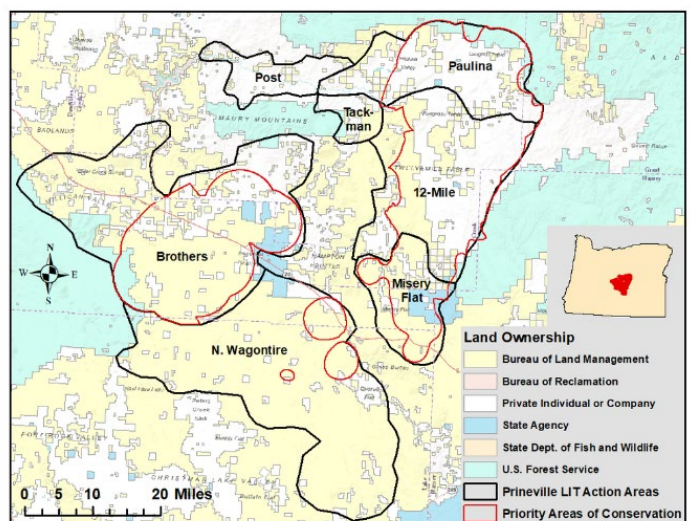
**Conservation:** a system of governmental and social efforts to protect natural resources against abuse, destruction, or degradation.

**Conservation Action:** any purposeful effort to promote or achieve Conservation.

**Ecosystem:** the organisms interacting with each other and their physical environments within a specified geographic area and period of time.

**Geographic Focus Area:** the Landscapes subject to the actions of the LIT, generally as shown to the right.

**Landscape Health:** the levels or status of a landscape's essential services relative to their target levels. Landscape Health is synonymous with Ecosystem Health ([Collins 2018](#)).



**Landscape Resilience:** the ability of one or more Landscape Services to return to levels that were reduced due by abusive, destructive, or degradational events or processes, natural or anthropogenic, without human intervention.

**Landscape Resistance:** the ability of one or more Landscape Services to maintain their levels against potentially abusive, destructive, or degradational events or processes, natural or anthropogenic, without human intervention. Landscape Resistance is synonymous with Ecosystem Resistance.

**Landscape Restoration:** the restoration of the desired or needed levels of a Landscape Service. Landscape Restoration is synonymous with Ecosystem Restoration.

**Landscape Service:** a process, product, or condition of a landscape that benefits people. The main types of services are provisioning, regulating, cultural, and supporting ([Reid 2005](#)). Landscape Service is synonymous with Ecosystem Services.

**Landscape:** the set of physical geographic features, including landforms, aquatic areas, vegetation, land uses, and built structures that can be viewed together from the Earth's surface, its atmosphere, or space. In the context of landscape ecology, landscape refers to a mosaic of patches that recurs over a broad region of the earth's surface ([Forman 1995](#)).

**Threat:** an existing or future natural or anthropogenic event or process that currently or has the potential to abuse, destruct, or degrade a Landscape Service.

## **Acronyms and Terms**

### *Organizations*

BLM – Bureau of Land Management

DSL – Department of State Lands

ECAS – East Cascades Audubon Society

NRCS – Natural Resources Conservation Service

ONDA – Oregon Natural Desert Association

ODFW – Oregon Department of Fish and Wildlife

OWEB – Oregon Watershed Enhancement Board

SWCD – Soil and Water Conservation District

USFS – US Forest Service

USFWS – US Fish and Wildlife Service

### *Plans, Programs, Terms, etc.*

Action Plan – Sage-grouse State Action Plan

AIM – Assessment and Inventory Monitoring

ARMPA – Oregon Greater Sage-grouse Approved Resources Management Plan Amendment

CCA – Candidate Conservation Agreement

CCAA – Candidate Conservation Agreement with Assurances

CFA – Causal Factor Analysis

DNA – Determination of NEPA Adequacy

EA – Environmental Assessment

GHMA – General Habitat Management Areas

HAF – Sage-grouse Habitat Assessment Framework

LIT – Local Implementation Team

NEPA – National Environmental Policy Act

PAC – Priority Area for Conservation

PHMA – Priority Habitat Management Areas

Prineville TRP – Prineville Threats Reduction Plan

RCPP – Regional Conservation Partnership Program

SGI – Sage Grouse Initiative

The Strategy – ODFW's Greater Sage-grouse Conservation Assessment and Strategy

WLFW – Working Land for Wildlife

## **Threats Reduction Plan (TRP)**

The primary product of the LIT will be the Prineville LIT Threat Reduction Plan (TRP). The TRP will identify and prioritize collaborative, cross-boundary sage-grouse conservation actions within the LIT geographic focus area. The TRP is expected to have the following beneficial results and uses,

- Consensus-based recommended conservation actions;
- Communication of needed conservation actions to the community of conservation scientists, managers, and concerned citizenry;
- Funding for recommended conservation actions.

## ***TRP Timeline***

The TRP will be completed in Spring 2023. The TRP may soon need to be revised or updated, however, given that ODFW is updating The Strategy and revising core and low-density sage-grouse habitat designations, and that the BLM is preparing its Greater Sage-grouse Draft Environmental Impact Statement and Proposed Resource Management Plan Amendments.

## ***LIT Structure***

### *LIT Coordinator*

The LIT Coordinator convenes the LIT and its Working Group. The responsibilities of the LIT Coordinator include, but are not necessarily limited to,

- Prepare meeting agendas for the LIT and its Working Group;
- Facilitate LIT meetings;
- Track and report LIT activities and progress to the LIT and ODFW;
- Coordinate with the ODFW Sage-Grouse Coordinator to ensure the LIT is developing objectives that align with the State Action Plan;
- Communicate with LIT members, other partners, and the public at large to achieve and maintain good working relations and public awareness of the LIT;
- Ensure all interest groups that choose to participate in the LIT are equitably represented.

### *LIT Membership*

Participation in the LIT is open to anyone with an interest or investment in sage-grouse and sagebrush landscapes within the LIT geographic area of focus. The LIT Coordinator will maintain a comprehensive roster of past and current LIT members.

### *Working Group*

The LIT Working Group is responsible for drafting and revising the TRP based on the advice and review of the LIT and other qualified interests, as determined by the LIT Coordinator.

## ***TRP Development Guidance***

The Working Group will consider the following guidance in developing the TRP.

- Identify and rank the threats and recommend threat-specific conservation actions, recognizing that some actions can address multiple threats.
- Utilize the Oregon Sage-grouse Action Plan (Action Plan) as a guide and reference.
- Utilize landscape planning datasets and tools, including tools available through SageCon and the Conservation Efforts Database; plus, data and information from LIT members and other interests.
- Compile information on existing relevant conservation efforts and strive to recommend new or revised conservation actions that are consistent and compatible with existing efforts.
- Subdivide the LIT geographic Area of focus into “Action Areas,” wherein recommended conservation actions should be prioritized. The Action Areas should reflect geographic variations in the need and applicability of different conservation actions.
- Recommend conservation actions that are achievable, scientifically valid, consistent, and compatible, and that in aggregate are likely to achieve the LIT mission.
- Identify critical information gaps that must be filled over time to address critical threats or implement recommended conservation actions, recognizing that information gaps may be threat- or action-specific and that some gaps may relate to multiple threats and actions.

- Periodically reconvene with entire LIT to ensure all interests have input to Working Group activities and are informed of Working Group progress and products.
- Always use the best available science to identify and prioritize threats, and to recommend conservation actions. Solicit and incorporate independent, third-party review of the TRP.
- Acknowledge and plan for TRP updates to accommodate changes in understanding and context.

### ***Working Group Decorum***

Members of the Working Group will adhere to these conduct guidelines regarding Working Group meetings.

- Communicate regularly with others in your interest group to ensure they are able to provide input to the Working Group and are informed about Working Group progress and products.
- Prepare for Working Group meetings by understanding meeting agendas and materials and communicating with others to plan for productive participation.
- During meetings, stay on task and help the LIT Coordinator keep other Working Group participants on task.
- Attend meetings regularly. In the event no participants from a given interest group can attend a meeting, absentee participation may be permitted at the discretion of the LIT Coordinator.
- Refrain from personal comments about others. Restrict comments to the tasks of the Working Group.
- Be intellectually honest; represent what you believe to be right and true and useful.
- Maintain an open mind. Fully consider the perspectives and knowledge of others. Ask and answer questions objectively. Strive to advance and resolve debate with consensus, rather than win arguments. Listen actively.
- Be as active as possible given realistic assessments of personal expertise and capacity. Avoid over-commitment.

### ***Work Group Decision Making***

Disagreements among Working Group members are expected. Landscapes encompass multitudes of belief systems and political perspectives reflecting differences in culture, heritage, and professional and personal experience and orientation. The diversity of perspectives embodied in the Working Group is a primary source of its validity and strength.

Decision-making by the Working Group will strive for consensus. The LIT Coordinator will facilitate requisite debate and discussion or assign a facilitator from the Working Group, LIT, or from outside the LIT.

A quorum of Working Group Members is required for the Working Group to make a decision. A quorum consists of at least eight Working Group members in good standing, including the LIT Coordinator. No decision can be made in the absence of the LIT Coordinator.

Decisions are made by a simple verbal or written vote. Each member is allowed one vote each time a vote is taken. A member may vote yes, no, or abstain. The votes are tallied by the LIT Coordinator or meeting scribe and reported during the meeting. How each member votes is not recorded. The decision is based on the majority vote. The LIT Coordinator may decide if and when a majority of votes is large enough to represent consensus (see definitions). In the absence of consensus, the LIT Coordinator may decide to facilitate more discussion at that time or at a later date and retake the vote. If the LIT Coordinate accepts a decision based on a small majority vote in the absence of a clear consensus, the LIT Coordinator may ask the minority voters to develop a written dissenting opinion on the decision. All decisions and dissenting opinions will be recorded in the final minutes of the meeting.



Members who participate in the decision-making process of the Working Group must cast their votes based on what they sincerely believe will most likely achieve the objectives of the Action Plan and the TRP, without undo regard for their own interests or those of the organizations they represent.

### ***Working Group Membership***

Members of the Working Group (i.e., member organizations as well as specific individuals) are selected by the LIT Coordinator to capture the breadth of perspectives across the LIT geographic area of focus. The LIT Coordinator will strive to recruit members non-governmental organizations, public agencies at all levels of government, and private interests that have major influence on sage-grouse conservation.

Member organizations will be represented by one or two individuals associated with each interest group. The LIT Coordinator will maintain a comprehensive roster of past and current Working Group. Only one representative from any member organization can participate in the decision-making process of Working Group meetings.

Any member who is absent from three or more consecutive Working Group meetings will be notified in writing by the LIT Coordinator of being dropped from the Working Group roster. Members who are dropped from the roster can request in writing to be readmitted by the LIT Coordinator. Readmission to the roster will be decided by the LIT Coordinator.

The Working Group automatically includes the LIT Coordinator. Meetings of the Working Group will be supported by a meeting scribe for note taking, vote tallies, and other administrative activities. The meeting scribe may be a Working Group member.

#### *ODFW Sage-grouse Coordinator*

- Role: ODFW is the convener of the LITs – the Sage-grouse Coordinator will represent ODFW at a statewide level
- Responsibilities,
  1. Support the LIT Coordinator by attending meetings; helping to resolve any conflict between partners;
  2. Present annual population estimates to the working group and entire LIT membership.
  3. Provide sage-grouse scientific expertise to ensure the working group is developing recommendations based on scientific rationale.
  4. Ensure the LIT develops recommendations that align with the State Action Plan.

### **Working Group Members**

#### *Private Landowners*

- Role: LIT working group participant
- Responsibilities,
  1. Support and elevate private landowner interests. Help LIT Coordinator outreach to private landowners.
  2. Provide insight regarding landscape-level resource concerns.
  3. Utilize the LIT to learn about opportunities to collaborate with neighboring landowners/land administrators on cross boundary project implementation.

#### *Bureau of Land Management*

- Role: LIT working group participant
- Responsibilities,
  1. Listen to partner perspectives with regard to sage-grouse habitat needs.
  2. Inform and provide BLM updates to LIT partners to increase communication.

3. Learn what other partners are doing; when possible, align BLM actions.

*Natural Resources Conservation Service*

- Role: LIT working group participant
- Responsibilities:
  1. Listen to partner perspectives with regard to sage-grouse habitat needs.
  2. Inform and provide NRCS updates to LIT partners to increase communication.
  3. Learn what other partners are doing; when possible, align NRCS actions.
  4. Support and elevate private landowner interests. Help LIT Coordinator outreach to private landowners.

*US Forest Service*

- Role: LIT working group participant
- Responsibilities:
  1. Listen to partner perspectives with regard to sage-grouse habitat needs.
  2. Inform and provide USFS updates to LIT partners to increase communication.
  3. Learn what other partners are doing; when possible, align USFS actions.

*US Fish and Wildlife Service*

- Role: LIT working group participant
- Responsibilities:
  1. Resource for reputable sage-grouse scientific and ecological information.
  2. Listen to partner perspectives with regard to sage-grouse habitat needs.
  3. Inform and provide USFW updates to LIT partners to increase communication.

*Department of State Lands*

- Role: LIT working group participant
- Responsibilities:
  1. Listen to partner perspectives with regard to sage-grouse habitat needs.
  2. Inform and provide DSL updates to LIT partners to increase communication.
  3. Learn what other partners are doing; when possible, align DSL actions.

*Oregon Department of Fish & Wildlife*

- Role: LIT working group participant
- Responsibilities:
  1. Resource for reputable sage-grouse scientific and ecological information.
  2. Inform and provide ODFW updates (including lek survey efforts) to LIT partners to increase communication.

*Counties*

- Role: LIT working group participant
- Responsibilities:
  1. Listen to partner perspectives with regard to sage-grouse habitat needs.
  2. Inform and provide County updates to LIT partners to increase communication.
  3. Learn what other partners are doing; when possible, align County actions.

*Soil and Water Conservation District*

- Role: LIT working group participant
- Responsibilities:
  1. Listen to partner perspectives with regard to sage-grouse habitat needs.
  2. Inform and provide SWCD updates to LIT partners to increase communication.
  3. Learn what other partners are doing; when possible, align SWCD actions.
  4. Support and elevate private landowner interests. Help LIT Coordinator outreach to private landowners.

### *Conservation Groups*

- Role: LIT working group participant
- Responsibilities:
  1. Ensure LIT recommendations prioritize sage-grouse habitat and population requirements.
  2. Identify opportunities in which conservation organizations can provide support to land managers and practitioners when implementing sage-grouse conservation actions.

### **Working Group participants listed alphabetically (one voting member per interest group)**

- BLM (Central Oregon Field Office: Larry Ashton, Prineville Field Office: Brie Porter)
- Conservation groups (primary: ECAS – Stu Garrett, alternate: ECAS – Josh Collins)
- Crook County (primary: Tim Deboodt)
- Crook SWCD (primary: Andy Gallagher)
- Deschutes SWCD (primary: Erin Kilcullen)
- DSL (primary: Randy Wiest)
- Landowner Representative (primary: Jade Cooper, alternate: Runinda McCormack)
- NRCS (primary: Chris Mundy, alternate: Damon Brosnan)
- ODFW (primary: Greg Jackle, alternate: Andrew Walch)
- USFS (Deschutes: Lauri Turner; Ochoco: Monty Gregg)
- USFWS (primary: Emily Weidner, alternate: Brian Wilk)

### ***Literature Cited***

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