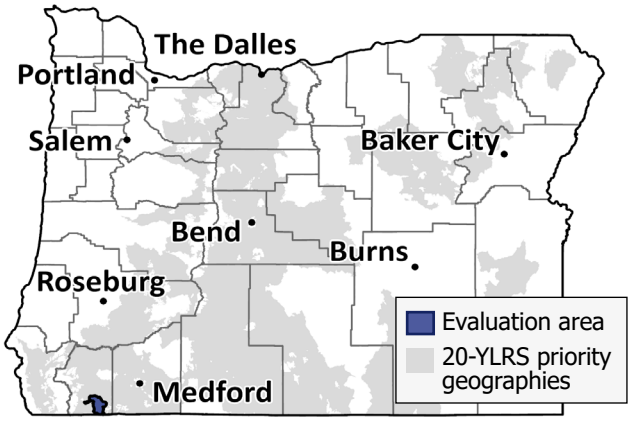
SUCKER CREEK
LANDSCAPE EVALUATION SUMMARY (2026)

The Oregon Department of Forestry's 20-Year Landscape Resilience Strategy (20-YLRS)[1] identified the Sucker Creek watershed as high priority for resilience-based management needs. The 20-YLRS aims to 1) reduce wildfire risk to communities, 2) adapt ecological systems to persist in a changing climate, 3) create functional aquatic and terrestrial ecosystems, and 4) support vibrant local economies. Organized around these four elements, this document presents current conditions, identifies restoration needs, and establishes treatment goals for the Sucker Creek watershed (hereafter "evaluation area").[2]

Evaluation area overview



Total acres	Forested acres	Treatment need (acres)
61,577	56,164	28,323

Figure 1. Evaluation area with 20-YLRS priority geographies. Watersheds (USGS, 2023); Counties (BLM, 2023); 20-YLRS Priority geographies (INR, 2023)

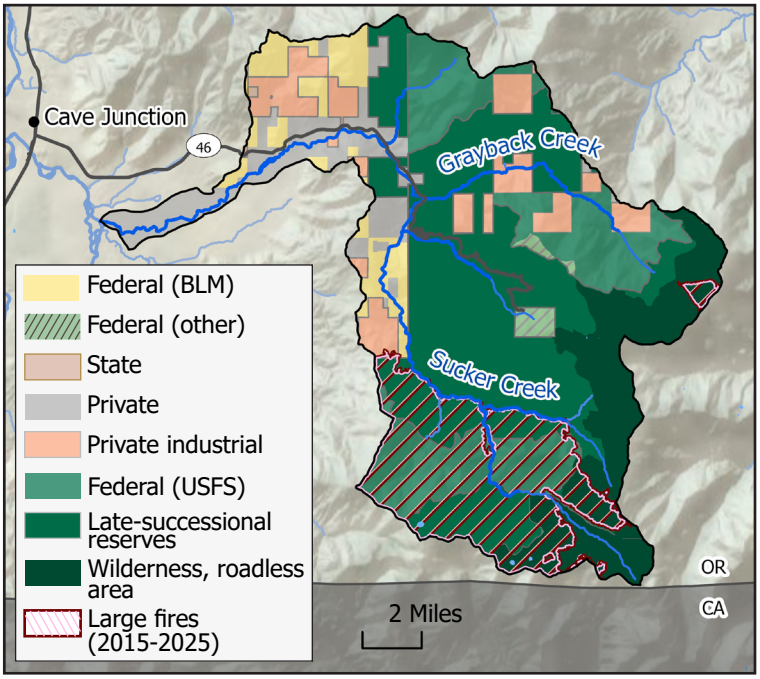


Figure 2. Geographic context. Land ownership (ODF, 2025); Hydrography (USGS, 2023); Highway network (ODOT, 2025); Cities (ODOT, 2024); Large fires (ISU, 2026)

The Sucker Creek watershed (Figure 1) is in the Southern Oregon Coastal Basin in the Siskiyou Mountains, which are part of the Klamath Range. Sucker Creek winds 26 miles from near the California border into the Illinois Valley. Numerous streams including Grayback Creek, starting at the base of Grayback Mountain, and Cave Creek, which originates in the Oregon Caves National Monument and Preserve, drain into Sucker Creek before it converges with the East Fork of the Illinois River south of Cave Junction. Elevations range from 1,335 feet south of Cave Junction to 7,025 feet in the Siskiyou Mountains. Annual precipitation ranges from 47-81 inches.

Land cover in the evaluation area is 79% forest, 12% herbaceous, 4% developed, 2% shrub/scrub, 2% wetlands, and 1% agriculture.[3]

The Rogue River–Siskiyou National Forest encompasses 40,186 acres in the upper portion of the evaluation area (Table 1). The Oregon Caves National Monument and Preserve (owned by the National Park Service) is within the National Forest boundary, and so is included in the total. The evaluation area includes 2,810 acres of Congressional designated wilderness, 6,980 acres of inventoried roadless areas, and 31,557 acres of late-successional reserves designated by the Northwest Forest Plan (Figure 2).

Table 1. Percent land ownership in forested areas (ODF, 2025; Laughlin et al., 2025)

Owner	Percent
U.S. Forest Service	67
Bureau of Land Management	9
Other federal	7
State	<1
Local	0
Tribal	0
Private industrial	9
Private non-industrial	7

[1] *More about Oregon's 20-YLRS at: https://www.oregon.gov/odf/documents/aboutodf/20-year-landscape-resiliency-strategy-booklet.pdf*
[2] *This document is part of a series of landscape evaluations. Other evaluations can be found at: https://hdl.handle.net/1794/33453*
[3] *Herbaceous and shrub/scrub land cover classes may include recently disturbed or regenerating forests.*

1 Reduce wildfire risk to communities

Average flame length shows the average expected flame length at a location based on simulated fires across many modeled fire scenarios. Higher values indicate areas where fires are expected to (on average) burn with greater intensity (Figure 3).

There are predominantly very high average flame lengths (>12 feet) throughout most of the evaluation area, with only localized areas of lower flame lengths along major drainages and in the southwestern portion, especially within the footprint of the 2020 Slater Fire.

Wildfire risk reduction treatments should focus on protecting Cave Junction, nearby private lands, the Highway 46 corridor, and scattered homes and infrastructure in the lower portions of the evaluation area. Because large fires also have the potential to move from the upper federal portions of the evaluation area toward the Illinois Valley, treatments should also be designed to reduce landscape-scale fire spread, improve firefighter safety, and strengthen operational control opportunities. Table 2 summarizes fire history in the evaluation area.

2 Adapt ecological systems to persist in a changing climate

Forests in the evaluation area have experienced significant mortality from drought stress, insect attack, and large fires. Estimates of climate water deficit (CWD), a measure of long-term moisture stress, show the Sucker Creek watershed has dried over the last half-century with the greatest increases in CWD (Figure 4). From the late 20th to early 21st century, mean CWD in the evaluation area increased from 132 to 167 mm. Continued declines in water availability are likely in the upcoming decades.

Restoration treatments that significantly reduce forest density, reduce surface fuel loading, and shift species composition to fire- and drought-tolerant species like white oak, black oak, ponderosa pine, and Jeffrey pine are required to restore forest resilience to a warming climate. There is significant botanical diversity in the evaluation area, and unique hazards to forest health including Port-Orford-cedar root disease. Fuel reduction treatments should be planned to maintain native botanical diversity while limiting fire and disease threats to the evaluation area's world-class biodiversity that plays a critical role in resilience to climate change.

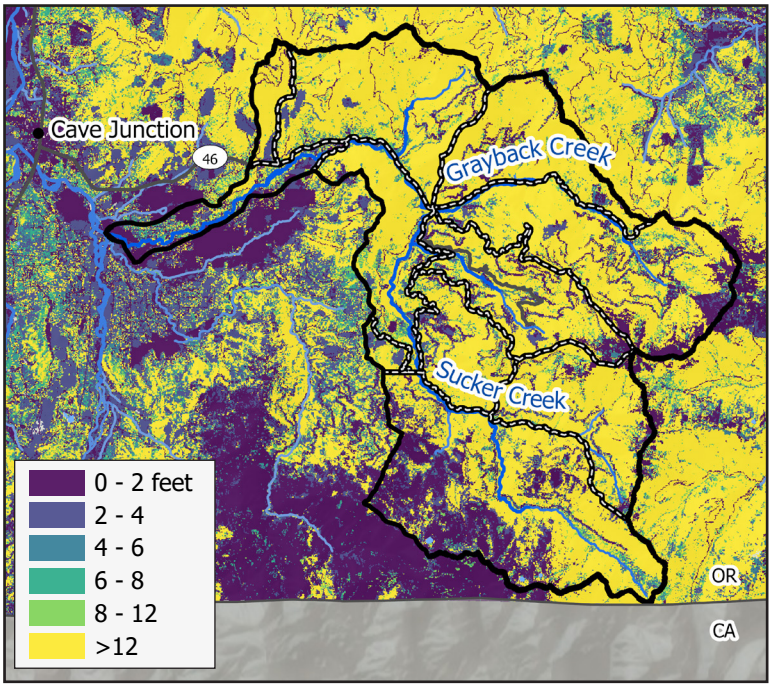


Figure 3. Average flame length (McEvoy et al., 2023), Potential operational delineations (PODs) shown as dotted black and white lines (USFS, 2021)

Table 2. Fire perimeters summarized from the Historic Fires Database (ISU, 2026) and fire points from Wildland Fire Incident Locations (NIFC, 2026)

Fire history	2000-2010	2011-2019	2020-2025
Acres within burn perimeters	19	265	12,518
Wildfire ignitions (natural)	22	17	14
Wildfire ignitions (human-caused or unknown cause)	12	8	9

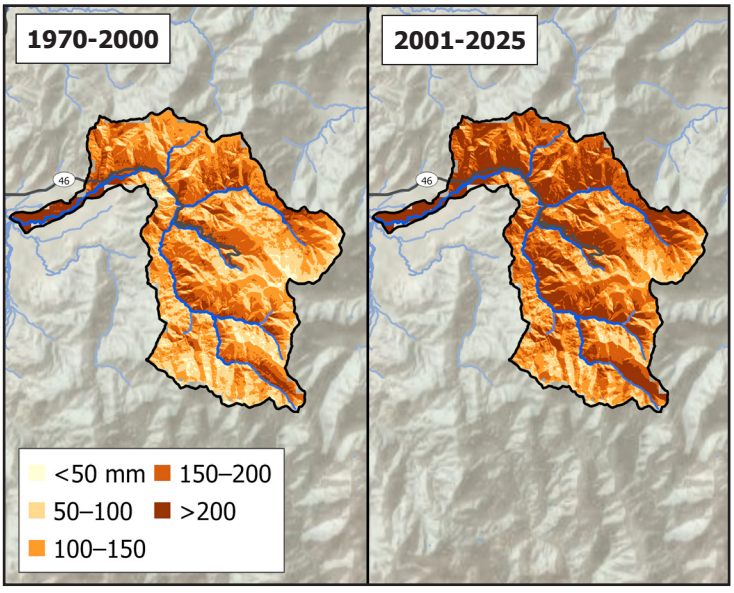


Figure 4. Climate water deficit 1970-2000 shown left and 2001-2025 shown right (University of Oregon, 2026)

3 Create functional aquatic and terrestrial ecosystems

Fuel treatments that aim to return forests to their natural range of variation can improve fish and wildlife habitat by reducing the threat of catastrophic wildfires, which have widespread and long-lasting impacts on terrestrial and aquatic species. These treatments can also create more open canopy, structurally diverse conditions that support a wider array of wildlife than the overly dense, structurally uniform, closed-canopy forests produced by decades of fire suppression. Reducing stand density can also decrease competition and stress on trees, which makes them less vulnerable to insects and disease. By restoring more natural forest conditions, these treatments can create ecosystems that are more diverse and resilient and are better able to support fish and wildlife populations.

Insect and disease risk

Projected warmer average temperatures and lower or inconsistent precipitation are primary direct stressors to trees and invite opportunistic beetle pests. Site factors such as steep slopes, south-facing aspects, and rocky or poor soils can exacerbate these hot drought impacts. Mitigation and/or prevention of drought and insect impacts can be accomplished by reducing forest density and shifting species composition to more drought-tolerant seedlots or tree species. Additionally, timely slash management is necessary for prevention of beetle outbreaks in pine species. The primary diseases of concern for this area include Sudden Oak Death (SOD) in tanoak and Port-Orford-cedar (POC) root disease in Port-Orford-cedar. SOD is a quarantine pest and must be managed according to state protocols. POC root disease easily spreads by contaminated water, wet soil, or equipment. Sanitary practices should be followed to avoid movement to uninfected areas. Laminated root rot also occurs in this area, primarily in Douglas-fir and true fir. General management for root diseases includes switching to non-host species or creating buffer cuts around heavily infested areas to prevent spread (Figure 5).

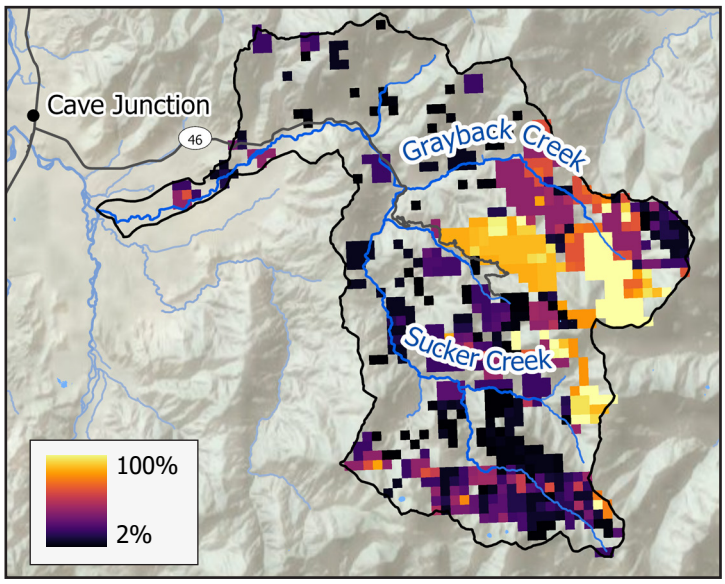


Figure 5. Percent impacted by insect and disease (2015-2025) (ODF, 2026)

Wildlife habitat

The U.S. Fish and Wildlife Service has designated 26,251 acres of the evaluation area as critical habitat for the northern spotted owl (*Strix occidentalis caurina*), 70% of which is within late-successional reserves designated by the Northwest Forest Plan (Figure 6). Approximately 8,989 acres of spotted owl habitat were affected by the 2020 Slater Fire and may not currently support the same late-successional forest conditions that contributed to the critical habitat designation. Spotted owls primarily rely on structurally complex, late-successional forests with closed canopies for nesting, roosting, and foraging habitat. These forest conditions currently comprise approximately 34% of the evaluation area.

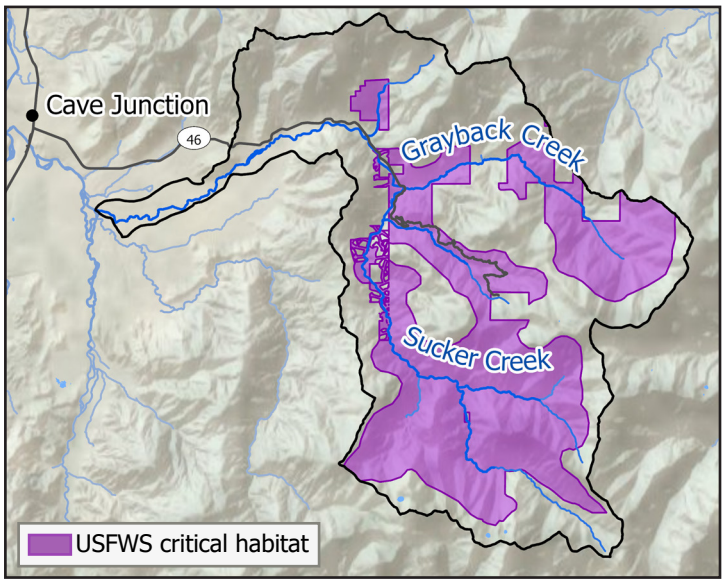


Figure 6. Critical habitat for threatened and endangered species (USFWS, 2026; NOAA, 2025)

Forest types and ecological departure analysis

Table 3 shows acres identified by the Region 6 Ecological Departure Analysis (Laughlin et al., 2025) as needing disturbance, such as fire or thinning, to address departures in forest type and seral class conditions from their historical range of variation (HRV). Current forest type and seral class distributions are shown in Figures 7 and 8, respectively.

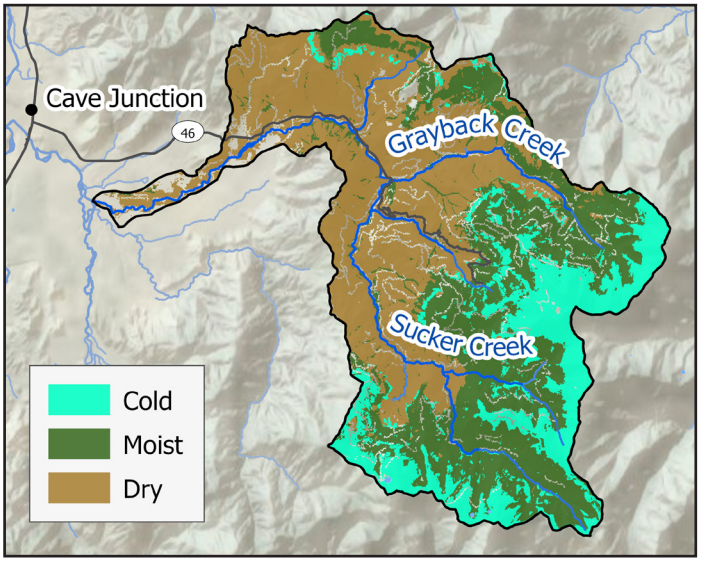


Figure 7. Forest type derived from modified Integrated Landscape Assessment Project Potential Vegetation Types (Laughlin et al., 2025)

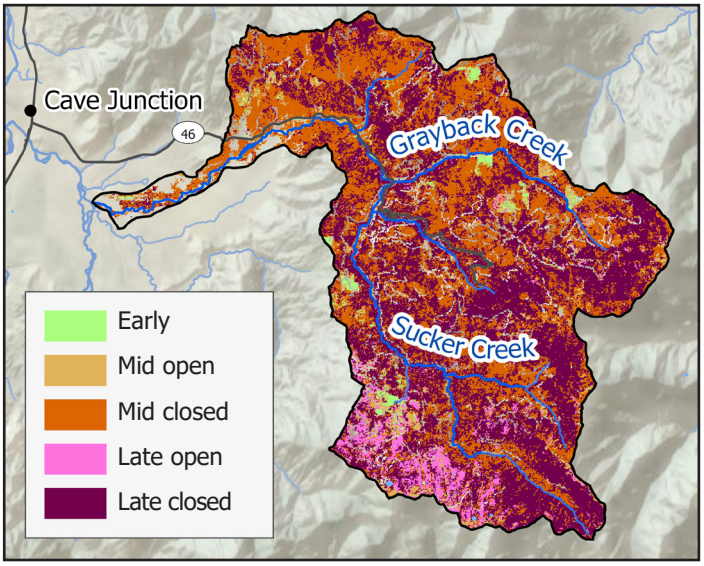


Figure 8. Seral class (Laughlin et al., 2025)

Table 3. Forest type and seral class combinations with departures from historical range of variation (HRV). See methods document for model limitations and historical departures for all forest types and seral classes in the evaluation area

Forest conditions		HRV departure	HRV departure proportional to land ownership				
Forest type	Seral class	Acres	USFS	BLM	Other federal	State	Private
Dry	Mid closed	8,583	3,454	1,626	222	20	3,261
Dry	Late closed	8,130	4,977	1,431	265	12	1,445
Moist	Late closed	6,158	5,123	277	555	-	203
Moist	Mid closed	4,850	3,770	140	473	-	467
Cold	Various*	602	512	7	81	-	2
Total		**28,323**	**17,836**	**3,481**	**1,596**	**32**	**5,378**

** Various includes cold late closed and cold mid closed*

Forest treatment needs

The treatment narrative below summarizes our professional interpretation of the Region 6 Ecological Departure Analysis and implications for management of forest types in the evaluation area.

- **Dry forest**

  The primary restoration opportunities in the evaluation area are in black oak and white oak woodlands, ponderosa pine/Jeffrey pine woodlands, and dry mixed conifer forests of ponderosa pine, Douglas-fir, white fir, and oaks. Variable density thinning and thinning from below followed by prescribed fire should be designed to restore historical woodlands and meadow habitat, significantly reduce forest density, remove ladder fuels, shift species composition to fire-tolerant oak and pine, and reduce surface fuel loading (Figure 9).

- **Moist forest**

  Planted stands in moist forest should be a high priority for variable density thinning treatments to create structurally and compositionally diverse stands. Fuel treatments including burning following thinning are usually necessary to reduce surface fuels. Shaded fuel breaks or thinning from below that removes young Douglas-fir and white fir from mature stands may be appropriate in the immediate vicinity of resources at high risk of catastrophic fire.

Cold forest

The majority of cold forests in the Sucker Creek watershed are found in high-elevation wilderness areas, inventoried roadless areas, and late-successional reserves. There are few important forest restoration opportunities in cold forests and they are currently a low priority for treatment. The majority of cold forests in the Sucker Creek watershed are found in high-elevation wilderness areas, inventoried roadless areas, and late-successional reserves. There are few important forest restoration opportunities in cold forests and they are currently a low priority for treatment.

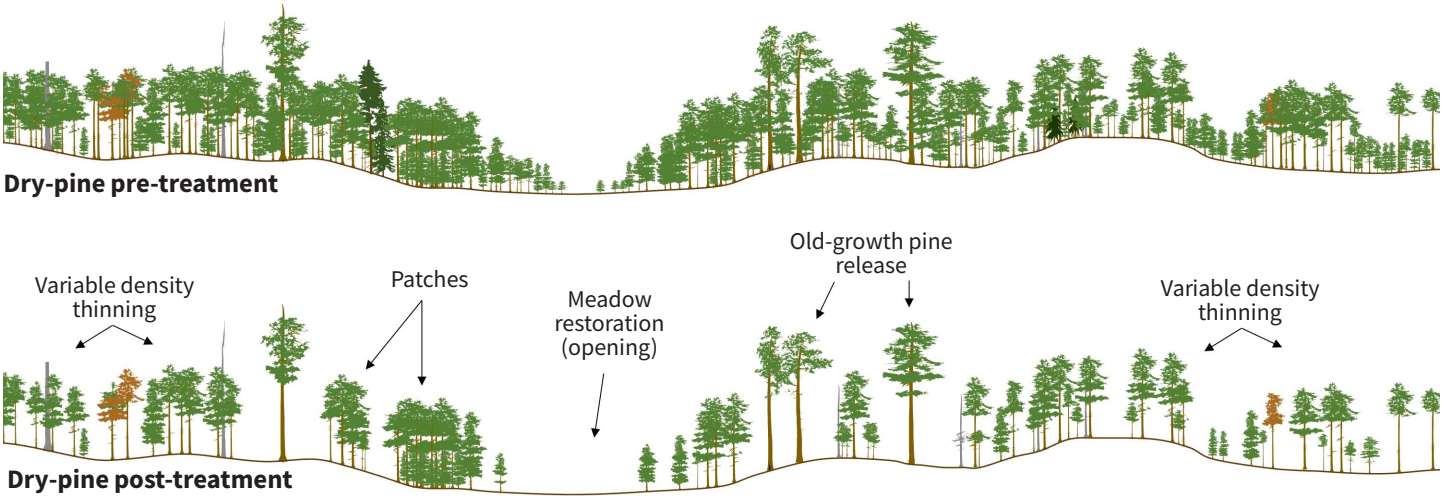


Figure 9. Model of dry mixed conifer variable density thinning

Presence of old trees

The evaluation area historically had significant cover of old Douglas-fir, oak, and pine. Historical logging and recent fires reduced old-growth cover, but there remain many numbers of centuries-old trees (Figure 10). In dry forests and some moist forests, thinning treatments can improve resistance of old trees to uncharacteristic drought, insect, disease, and fire disturbance.

Tree density

Forest density in almost all dry forests and some moist forests is significantly in excess of historical conditions. Competition in dense forests threatens the persistence of old trees and is associated with increased risk of crown fire and insect outbreaks.

Fire return interval

Fire history research indicates that mean fire return intervals ranged from 7 to 15 years in dry forests and 12 to 30 years in moist forests, although some exceptionally moist areas (including some riparian Port-Orford-cedar stands) may have had fire return intervals in excess of 100 years.

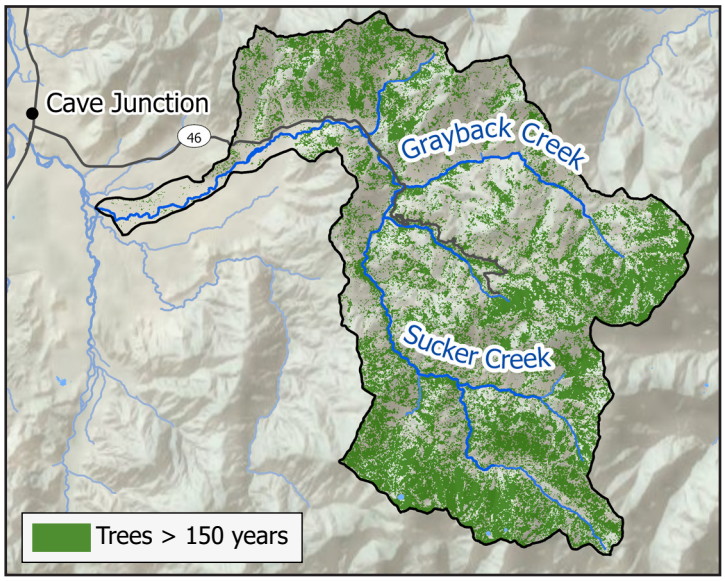


Figure 10. Old trees (LEMMA, 2021)



Precommercial thinning and prescribed burning in dry mixed conifer stands in southern Oregon. Photo: James D. Johnston

4 Support vibrant local economies

Socioeconomic context

The Sucker Creek watershed is located within Josephine County and adjacent to Jackson County. The total population in these two counties in 2020 was 311,349 (Table 4). Thirty-two percent of residents were considered low-income, which is higher than the statewide percentage of 27%. Compared to the state of Oregon overall, the area had about the same proportion of residents under age 18 (20%) and slightly fewer residents ages 25-44 (23%). In contrast, there was a larger share of residents ages 65 and older (25%). Workforce non-participation was 44%, which was also higher than the statewide average of 38%.

Restoration treatments in the evaluation area were more costly than Oregon's 20-YLRS priority geographies, ranking in the 78th percentile for estimated restoration costs. At the 54th percentile, the evaluation area had slightly higher revenue potential compared to other 20-YLRS priority geographies in the state. The evaluation area ranked in the 43rd percentile for local contractor capacity, which could bring challenges in finding a local workforce for restoration treatments in this area (Figure 11).

Table 4. Socioeconomic characteristics (U.S. Census Bureau, Decennial Census, 2020 [Table P12]; American Community Survey 5-Year Estimates, 2020-2024 [Tables B23025, C17002])

	Evaluation area counties	State of Oregon	Location quotient[i]
Total population	311,349	4,237,256	-
Low-income population	99,995 (32%)	1,140,423 (27%)	1.19
Population under 18	61,568 (20%)	866,604 (20%)	0.97
Population age 25-44	72,810 (23%)	1,159,452 (27%)	0.85
Population age 65+	76,471 (25%)	795,108 (19%)	1.31
Workforce non-participation rate[ii]	44%	38%	1.18

[i] Location quotients above 1 mean that the value is higher for the selected counties than the state mean; LQs below 1 mean that the value is lower than the state mean.

[ii] Represents the percentage of the labor force-eligible population that is neither employed nor actively seeking employment. High non-participation rates may reflect factors such as retirement and discouragement from seeking work.

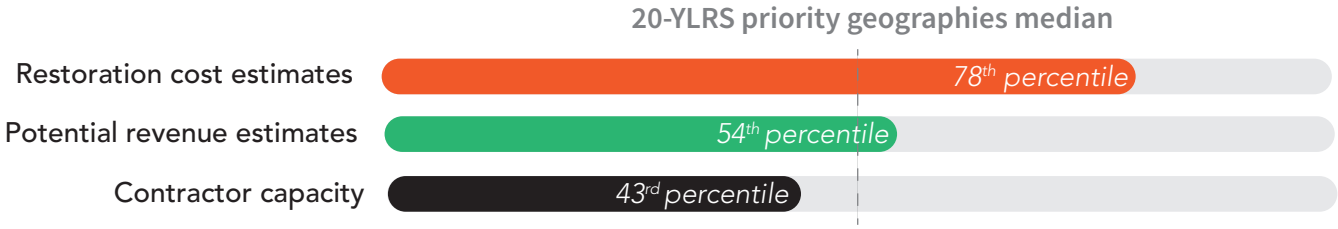


Figure 11. Percentile ranking for potential revenue, cost, and contractor capacity. Percentile rankings show the evaluation area as compared to all other 20-YLRS priority geographies in the state. The 50th percentile line represents the 20-YLRS priority geographies median

Restoration cost estimates

We calculated a restoration cost index that incorporates haul distances to timber processing facilities, watershed slopes, and road density. The composite cost index is the mean of location quotients for those three variables.

Timber processing facilities

Distance to timber processing facilities is a major expense for restoration contractors. The mean drive time to timber processing facilities within the Sucker Creek watershed was approximately 69 minutes, which is about 18 minutes longer than the mean across all 20-YLRS priority geographies (Figure 12). The nearest timber processing facilities that accept roundwood include Boise Building Solutions, Boise Cascade Veneer, and Murphy Plywood in White City, OR; Homestead Log Home Inc. in Central Point, OR; and South Coast Lumber Company in Brookings, OR.

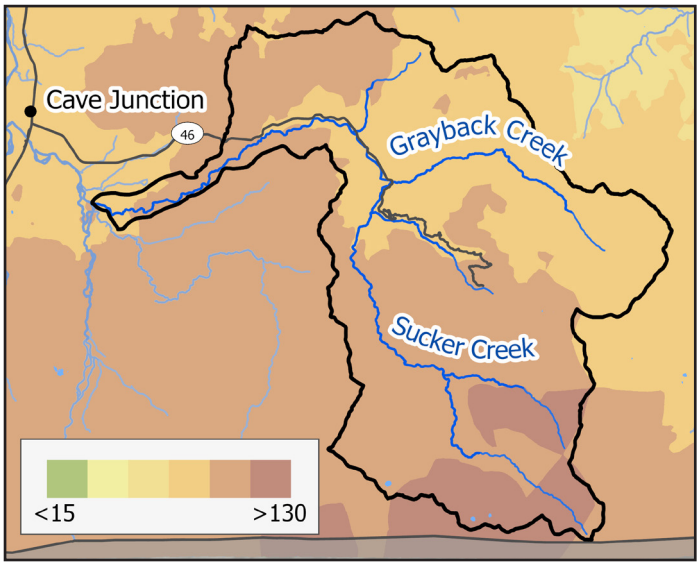


Figure 12. Drive time in minutes to nearest timber processing facility (BBER, 2026; ODF, 2025)

Slope and road density

Forest slopes and road access are important considerations for estimating costs of restoration treatments. Slopes greater than 40 percent require more costly specialized equipment. Slopes greater than 65 percent present even more challenges. Areas with lower density of roads are logistically challenging, as logs and other biomass must be transported longer distances to areas accessible by log trucks.

Forty-eight percent of slopes within the Sucker Creek watershed were below thresholds requiring specialized logging equipment (i.e., 40%; Figures 13 and 14). In terms of treatment costs, the proportion of steeper slopes relative to all 20-YLRS priority geographies is high. Road density analysis suggests that the evaluation area is slightly above the mean for all priority geographies.

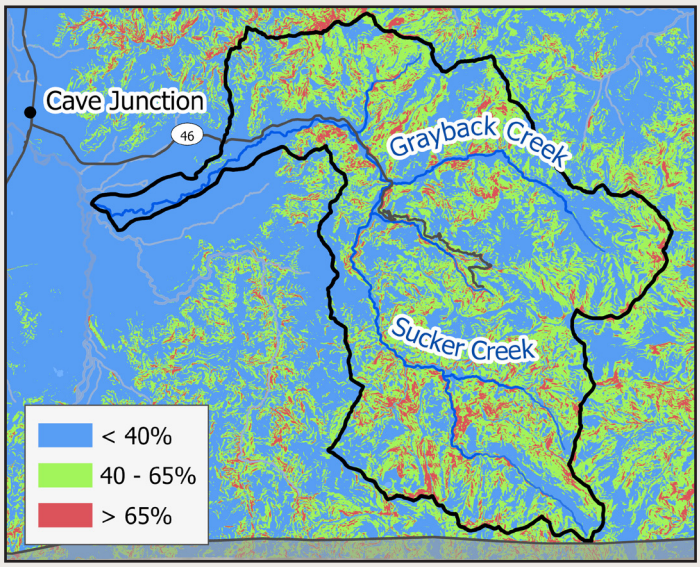


Figure 13. Percent slope for Sucker Creek watershed (ODF, 2023)

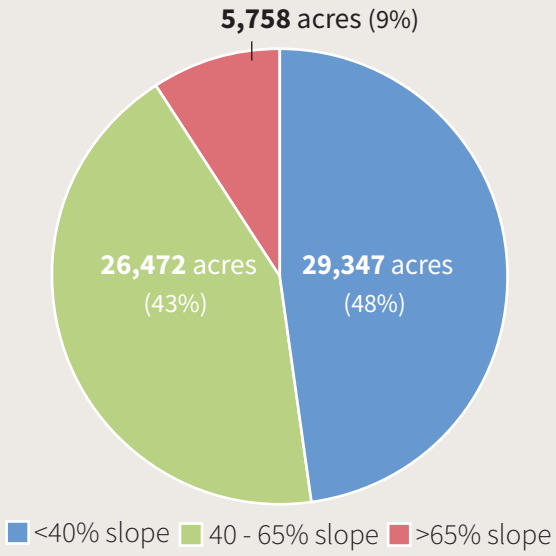


Figure 14. Total acres and proportion for percent slope classes (as shown in Figure 13)

Potential revenue estimates

Median revenue from commercial treatments during the 2017-2023 period was $1,731 per acre, ranking in the 54th percentile (Table 5). This suggests that potential revenues from commercial treatments could be higher relative to all Oregon 20-YLRS National Forest priority geographies, which had a median revenue of $357 per acre and median volume of 7.0 MBF per acre.

Table 5. Median per acre revenue, median per acre volume, and revenue percentile rank for Sucker Creek watershed commercial treatments (TIM, 2023; FACTS, 2023)

Median revenue per acre	Median volume per acre (MBF)	Revenue percentile rank
$1,731	10.2	54

Contractor capacity

A total of 64 Oregon businesses with federal intensive forestry work contracts between 2017 and 2023 were located within a 130-minute drive of the evaluation area. A 130-minute drive is the median drive time for Oregon contractors to 20-YLRS priority geographies. Considering all 20-YLRS priority geographies, contractor capacity for the evaluation area is about 22 percent lower than average, ranking in the 43rd percentile.

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METHODS | https://hdl.handle.net/1794/33482