



2021  
**Rogue River Basin**  
**Report Card**

# Key indicators of Basin health

This report card is made up of indicators, or key aspects, of socio-environmental health that, when analyzed and assessed, provide insight into the condition of the Basin. Indicators were chosen based on available Basin-wide data, as well as Basin values and threats. The 2021 Rogue River Basin Report Card includes several of these indicators within three categories: Water Quality, Salmon & Steelhead, and Communities.

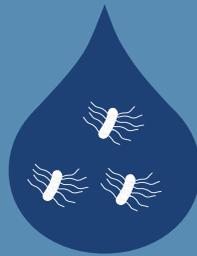
## Water Quality Indicators



**Water temperature** is a measure of how cool streams are compared to the state temperature standard desired for salmon and steelhead survivability. Data are from 2021.



**Turbidity** is a measure of water clarity that expresses how much light passes through the water column. It is dependent upon the amount of suspended particles and colored organic matter present. Data are from 2021.

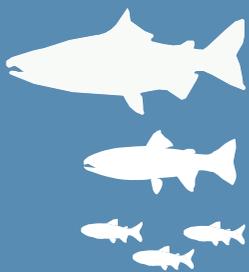


**Bacteria** is a measure of the presence and concentration of *Escherichia coli* (typically known as *E. coli*), at popular recreational sites. Data are from 2021.



**Cyanobacteria** is a measure of the chemical concentration of toxins released by cyanobacteria into the water during harmful algal blooms. Data are from 2021.

## Salmon & Steelhead Indicators



**Abundance** is an estimate of population sizes of salmon and trout migrating upstream from the Pacific Ocean to reproduce. Data are based on species-specific rolling averages from 2011-2021.



**Habitat Accessibility** is a measure of the amount of reasonably accessible, high-quality fish habitat compared with the amount of habitat historically available in the area. Data are from 2021.

## Community Indicators



**Air quality** is a measure of ambient air pollutants (PM2.5, PM10, ozone, nitrogen dioxide, sulfur dioxide, and carbon monoxide). Data are from 2021.



**Affordable housing** is a measure of households spending less than 30% of their income on housing. Data are from 2020.

Status of indicators within these categories was evaluated by comparing data to scientifically-derived thresholds or goals based on state standards, or historical data comparison in conjunction with expert insight. Each region score is area-weighted or population-weighted to attain the overall Rogue River Basin score. These indicators provide insight into the condition of ecosystems while also highlighting the linkages between the natural world and human communities. In the Upper and Middle Rogue regions, cyanobacteria and water temperature indicator data were insufficient for robust analysis and may not accurately reflect the health of the region as compared to other regions in the Basin.

# The Rogue's first report card

Communities within the Basin are inextricably linked to the health of the Rogue River and its tributaries, and the ecological foundation, the forests and upland landscapes. The Basin as a whole is facing new and ongoing threats that come with a changing climate, population growth, water use, and other socio-environmental challenges. This first-ever Rogue River Basin Report Card seeks to begin the process of assessing the impact of some of the threats on the condition of the Basin and its community while highlighting important gaps in our understanding of the Basin.

More than 7,000 years ago, the volcanic explosion of Mount Mazama in what is now southwestern Oregon led to the formation of Crater Lake. In present day, Boundary Springs bubbles out from the caldera of Crater Lake National Park, and it is here we can find the origin of one of Oregon's major rivers, the Rogue River. Athapascan, Takelma, and Shasta Peoples have inhabited the Rogue Basin since time immemorial, stewarding the lands and harvesting the first foods found in its salmon-rich waters and diverse oak woodlands.

The river flows 215 miles from its headwaters, converging with major tributaries including Big and Little Butte Creeks, Bear Creek, Elk Creek, the Applegate and Illinois Rivers, and Grave Creek within its 5,167 square mile drainage. The Rogue River is home to two congressionally-designated National Wild & Scenic sections in the Upper and Lower Rogue. Conservation initiatives over the last 10 years have allowed the mainstem to flow undammed for 157 miles of its length downstream of the William L. Jess Dam and Lost Creek Reservoir near Prospect. Low stream flows, and water quality and stream habitat degradation threaten aquatic ecosystems and one of the most productive salmon runs on the West coast.

Mixed conifer forests, grasslands, oak woodlands/savannas, and chaparral comprise the Basin's upland habitats as a result of the convergence of major mountain ranges and ecoregions. Agriculture, mining, and logging, along with increased urbanization and development, increased drought, high-intensity wildfires, and invasive species threaten the health of these habitats and the diverse species that depend on them.

Sixty percent of the Basin is comprised of public lands. Recreational opportunities abound, drawing tourists from all over the country to explore mountain vistas in the national forests of the Upper Rogue, the Bear Creek Greenway in the urbanized Middle Rogue, and raft whitewater through the canyons and past wilderness areas in the Lower Rogue. Big Butte Springs provides high-quality drinking water to more than half of the Basin's roughly 300,000-person population.

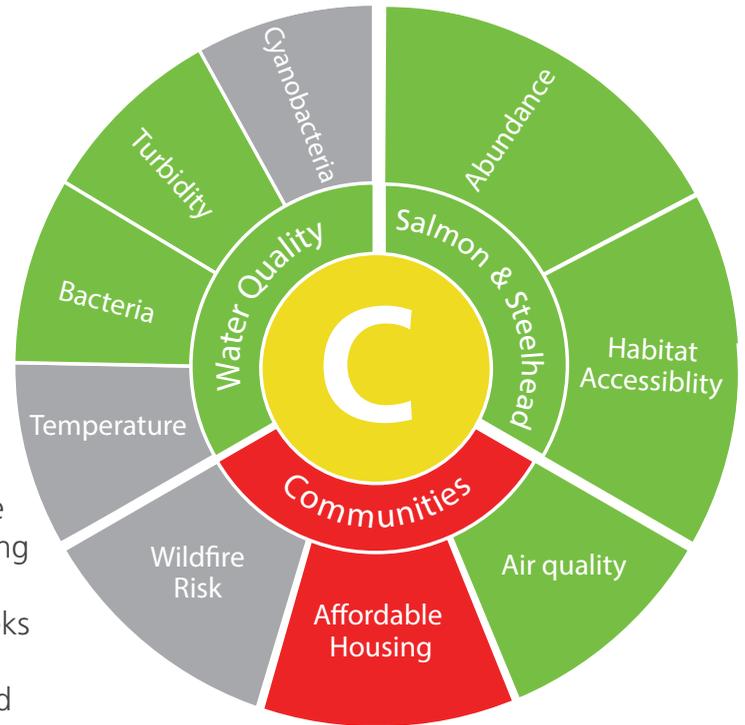
Relevant stakeholders representing 18 different organizations within the Rogue River Basin were identified as key report card partners. Their expertise and access to relevant social, economic, and environmental data were used over the course of two stakeholder workshop series where indicators were determined and developed to evaluate the overall health of the Rogue River Basin.



# Rogue River Basin in moderate health

Overall, the Rogue River Basin received a moderate grade of C (74%). Results varied, with generally better results for indicators within the Water Quality and Salmon & Steelhead categories. Overall, Basin scores ranged from as low as 31% for Affordable Housing to as high as 83% for Salmon & Steelhead. However, it is important to note that the poorer scoring Communities category had the fewest indicators due to limited data availability Basin-wide.

The Middle Rogue (72%) and Upper Rogue (73%) sub-basins had the lowest grade, C. The Lower Rogue had the highest grade, B (83%). This highlights land use and population density differences among these reporting regions in the Basin. In the two lowest scoring regions, the Upper and Middle Rogue, Little Butte and Bear Creeks had the most substantial negative impact, respectively. These results will help assess the need for more focused restoration and conservation attention.



## Report card process

Report card development is a five-step process that begins with conceptualizing the system and is followed by choosing indicators (the topics that will be graded), defining thresholds (the grading scheme), calculating scores (determining the grades), and communicating report card results. Watershed report cards have been used on local, national, and global scales to empower change via assessment of watershed condition, engaging communities, and increasing awareness, promoting legislative action, and increasing collaborative efforts among partner organizations.

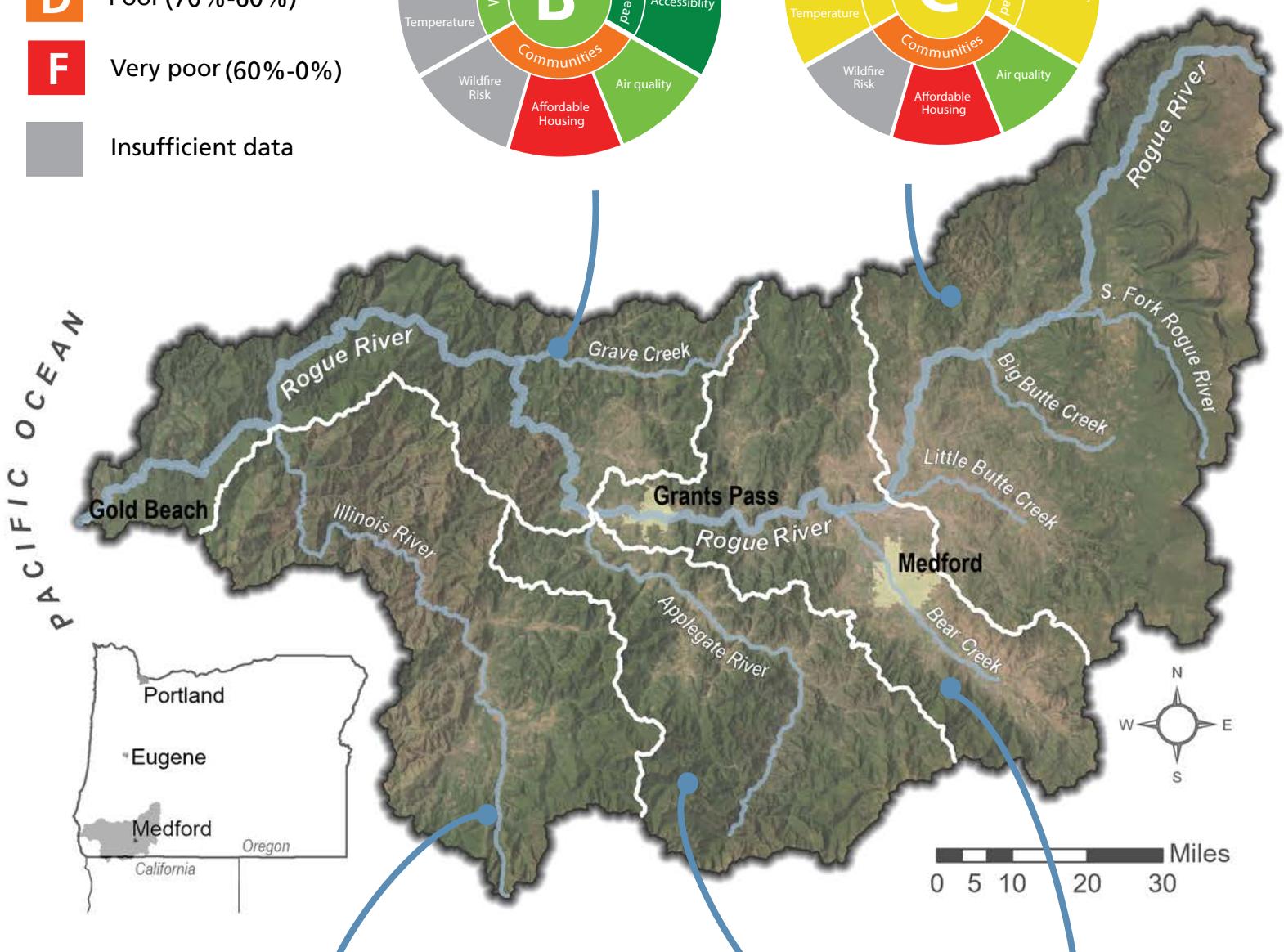
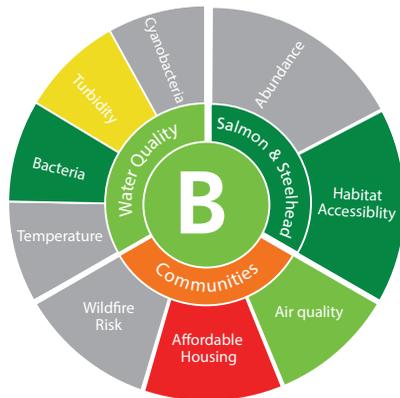
This is the first Rogue River Basin Report Card, and its moderate Basin-wide score reflects the efforts of stakeholders to conserve and restore the Basin. However, the small number of indicators also highlights the need to develop additional indicators to assess the condition on a larger and more encompassing scale and suggests a need for more comprehensive monitoring programs.



- A** Very good (100%-90%)
- B** Good (90%-80%)
- C** Moderate (80%-70%)
- D** Poor (70%-60%)
- F** Very poor (60%-0%)
- Insufficient data

## Lower Rogue

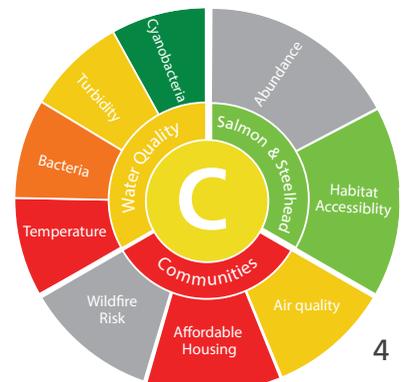
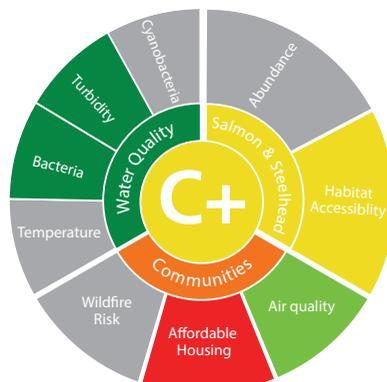
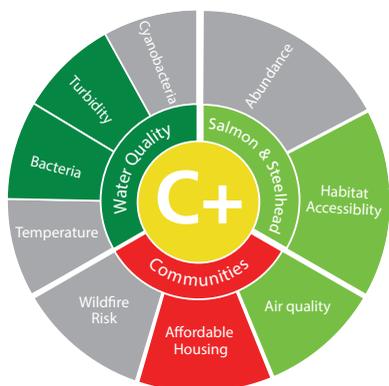
## Upper Rogue



## Illinois River

## Applegate River

## Middle Rogue





## Altered fire regimes and loss of aboriginal fire stewardship threatening upland areas

The Rogue River winds its way among the major mountain ranges in the Pacific Northwest—through volcanic west and high Cascade Mountains in its upper reaches, and down through the diversity-rich Klamath-Siskiyou Mountains. Fires play a critical role in the functioning and resilience of these forested ecosystems. However, in the western United States wildfire burn areas have increased drastically over the last 50 years.

Among the diverse upland areas, the Rogue River Basin is home to some of the most extensive remaining oak ecosystems in the western United States. For time immemorial, these oak ecosystems, have been stewarded by tribes of aboriginal North Americans. Tribes engaged with the landscape for the benefit of resources such as oak acorns and wildlife habitat, and established sustainable foraging, gathering, and hunting practices for ceremonial and subsistence purposes. Tribes regularly ignited low-intensity surface fires in oak stands to maintain cultural landscapes of oak-conifer forest, woodland, and savanna and often placed ancestral villages near these culturally invaluable sites.

The forced end to aboriginal stewardship and beneficial fire contributed to the interruption of natural fire regimes. A fire regime is the general pattern in which fire occurs over time in a particular ecosystem. Beginning in the 1850s, land management practices changed including clearing, overgrazing, increased agriculture, the introduction of invasive plants, heavy fire suppression, and the shift to conifer-centric forests, further disrupted the natural fire regime.

Aboriginal fire practices were an essential component of the ecological processes that maintained and enriched oak ecosystems in the Rogue Basin. Additionally, these activities are exacerbated by changes in climate and fire behavior. Tribes gathered place-based cultural knowledge, developed sophisticated traditional practices, and regard for the plants, animals, and natural resources as relations worthy of perpetual care and attention. The forced end to this stewardship and beneficial fire resulted in historic loss and degradation to oaks and the hundreds of diverse plant and wildlife species that depend upon these ecological anchors. There are ongoing efforts and programs partnering with tribes to reintroduce aboriginal fire practices back onto the landscape for the benefit of the health of forests and aboriginal stewardship.



# Ongoing drought stresses Rogue streams and forests

Climate change, prolonged drought, record heat waves, and wildfire severity have increased in varying levels within the reporting regions of the Rogue Basin and threaten the condition of many ecosystems as well as community health.

While drought is a normal part of the climate cycle, the Rogue River Basin has experienced increasing occurrences of extreme and severe drought over the past seven years (according to U.S. Drought Monitor data). Despite intentional water management efforts, these conditions resulted in major socio-environmental impacts including crop/pasture losses, widespread water shortages or restrictions, as well as impacts to ecosystems including decreased streamflow and increased water temperatures.

Several of the organizations that collaborated to develop the report card focus on ecological restoration projects that counteract detrimental drought impacts. Enhancing side channels and improving connection to mainstream channels promoting groundwater recharge and increases soil moisture. Together these results make streamside forests healthier, reduce the risk of wildfire, and create habitat for native plants and wildlife.

In the Upper Rogue more than two miles of side channel have been restored in the Little Butte Creek and Elk Creek watersheds. Future projects are planned to expand to another 10 miles. In the high gradient reaches of the Lower Rogue, off-channel habitat restoration is focused on vital estuarine areas, God Wants You and Saunders Sloughs. In the future, report card partners plan to continue implementing projects in the estuary with side channel enhancements that will add more than 10 acres of habitat to these watersheds (particularly important for young salmon and trout).

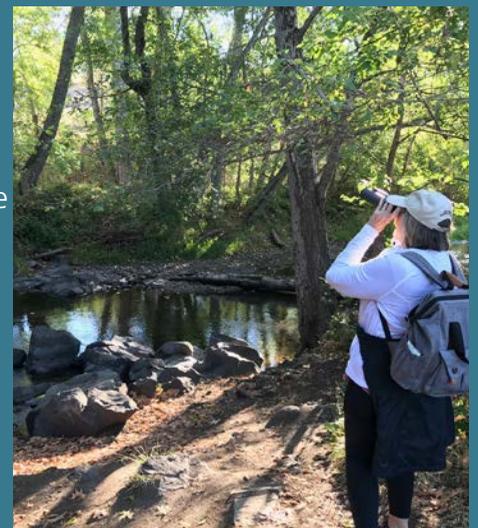
These past and future efforts will aid in creating resilient floodplain ecosystems as unpredictable weather events continue to occur within the changing climate.



## A resilient river for everyone

Rogue River Basin communities depend on a healthy and resilient watershed for high-quality drinking water, jobs, quality of life, recreation, and economic benefit. A 2019 Recreation Economic Impact Study determined that the two counties that make up almost the entirety of the Rogue Basin supported more than 900 jobs and generated more than \$27 million in labor wages from hunting, fishing, and wildlife watching.

In the 2021 season, more than 13,000 people floated the Wild & Scenic Lower Rogue River on just the 35 miles of river from Grave Creek to Foster Bar. The Rogue River is known for its world class whitewater kayaking and rafting, and draws people from all over the United States to experience its ruggedness, diverse wildlife, and stunning blue waters. All forms of Basin recreation support the regional economy and encourages community members to experience the beauty and diversity of the Rogue River Basin.





## Consider your impact, be a Basin community steward

### Conserve water



Regularly monitor irrigation/sprinkler systems, explore xeriscaping in yards, and reduce pollution by considering use of sulfate-free detergents and soaps.

### Get involved



Make your voice heard, engage with local organizations working on initiatives to increase protections for the Rogue, native fish, and community support.

### Support



Volunteer your time and/or contribute donations to support river restoration and stewardship organizations and community support groups.

**Get connected to take action using the QR code below!**

## Acknowledgments

This report card is an assessment of Rogue River Basin condition in 2021. This document was produced by the Rogue River Watershed Council with technical support from the Klamath Bird Observatory, Medford Water Commission, Lomakatsi Restoration Project, Lower Rogue Watershed Council, Oregon Department of Fish & Wildlife, Rogue Riverkeeper, Rogue Valley Council of Governments, and University of Maryland Center for Environmental Science Integration and Application Network. Thank you to everyone who attended workshop sessions and offered input on the report card process. The data and methods underpinning this report card are detailed in the methods document and at <https://www.rogue-river-basin-report-card.com/publications>. Funding support for this project was provided by The Carpenter Foundation.

Cover photo: Capturing Carnage. Page 3: Drone photo-Cascade Stream Solutions. Page 5: Fire photo-Lomakatsi Restoration Project. Page 6: drone photo-Brian Kelley, birder photo-David Rockwell. Page 7: drone photo-Rogue Valley Council of Governments. All other photos and graphics: Rogue River Watershed Council and University of Maryland Center for Environmental Science Integration and Application Network.

