

# New study offers insight into past—and future—of west-side wildfires

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Smoke plume from the Riverside Fire on Mount Hood National Forest, Oregon, in September 2020. Credit: USDA Forest Service

When the 2020 Labor Day Fires torched more than 300,000 hectares over the span of two weeks in parts of western Oregon and Washington, they devastated communities and put the threat of west-side fires squarely into focus. A new study led by the USDA Forest Service's Pacific Northwest Research Station examines the context surrounding the fires and offers insight into the historical role of large, high-severity fires—and the future of wildfires—west of the Cascades.

"Without a doubt, the 2020 Labor Day Fires were a significant fire event on many levels, and one that was a wake-up call for the region," said Matthew Reilly, research forester and lead author of the study, which is published in the journal *Ecosphere*. "The goal of our study was to help understand how this event compared to past west-side fires so that we can help inform adaptation strategies aimed at preventing or mitigating similar events in the future."

Drawing from a literature review, extensive historical data, and new analysis, Reilly and his co-authors explored five questions surrounding the 2020 Labor Day Fires: how the 2020 fires compared with historical fires in the region, the role of weather and climate, the effects of [forest management](#) and pre-fire forest structure on burn severity, the impacts of these fires on west-side landscapes, and what can be done to adapt to similar fires in the future. Ultimately, they found that the 2020 fires were remarkably consistent with historical fires on the west side, both in terms of their timing and size and the cause of their rapid spread—dry conditions combined with strong east winds.

"Our findings suggest that these severe fires are normal for west-side landscapes when you look at historical fire regimes at longer time scales," Reilly said. In fact, the researchers identified similarly large historical fires in the early 20<sup>th</sup> century under similar weather conditions—some even burning right around Labor Day—in some of the same locations that burned in 2020.

Because of the abundant and productive forests characteristic of the west side and the driving role of extreme winds, conventional fire management tools used in dry forests, like prescribed burning and fuels management, will likely be less effective in west-side forests than they are on the east side. This is particularly the case, their study found, when fire weather conditions are as extreme as those witnessed during the 2020 fires.

"Our study indicates we need very different approaches and adaptation strategies in west-side forests compared to those we use in dry forests," Reilly said.

The study was conducted as part of the Pacific Northwest Research Station's ongoing West-side Fire Research Initiative, which was launched in 2019 to develop science-based tools to help resource managers respond to wildfire risk in west-side forests. The study's coauthors are from the Washington State Department of Natural Resources, University of Washington, Oregon State University, and USDA Forest Service's Pacific Northwest Region.

## Highlights

- The 2020 Labor Day Fires were much larger and more severe than others in the recent record, but they were remarkably consistent with many historical fires. Strong east winds and [dry conditions](#) are the common denominators in both large historical fires of the past and the 2020 fires.
- Forest management and fuel treatments are unlikely to influence fire severity in the most extreme wind-driven fires, like the 2020 Labor Day Fires. Pre-fire forest structure, largely the result of previous [forest](#) management activities, had little effect on burn severity when east winds were strong during the 2020 fires.
- Fuel treatments around homes and infrastructure may still be

beneficial under low and moderate fire-weather conditions.

- Adaptation strategies for similar fires in the future in west-side communities might, instead, focus on ignition prevention, [fire](#) suppression, and community preparedness.

**More information:** Matthew J. Reilly et al, Cascadia Burning: The historic, but not historically unprecedented, 2020 wildfires in the Pacific Northwest, USA, *Ecosphere* (2022). [DOI: 10.1002/ecs2.4070](https://doi.org/10.1002/ecs2.4070)

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