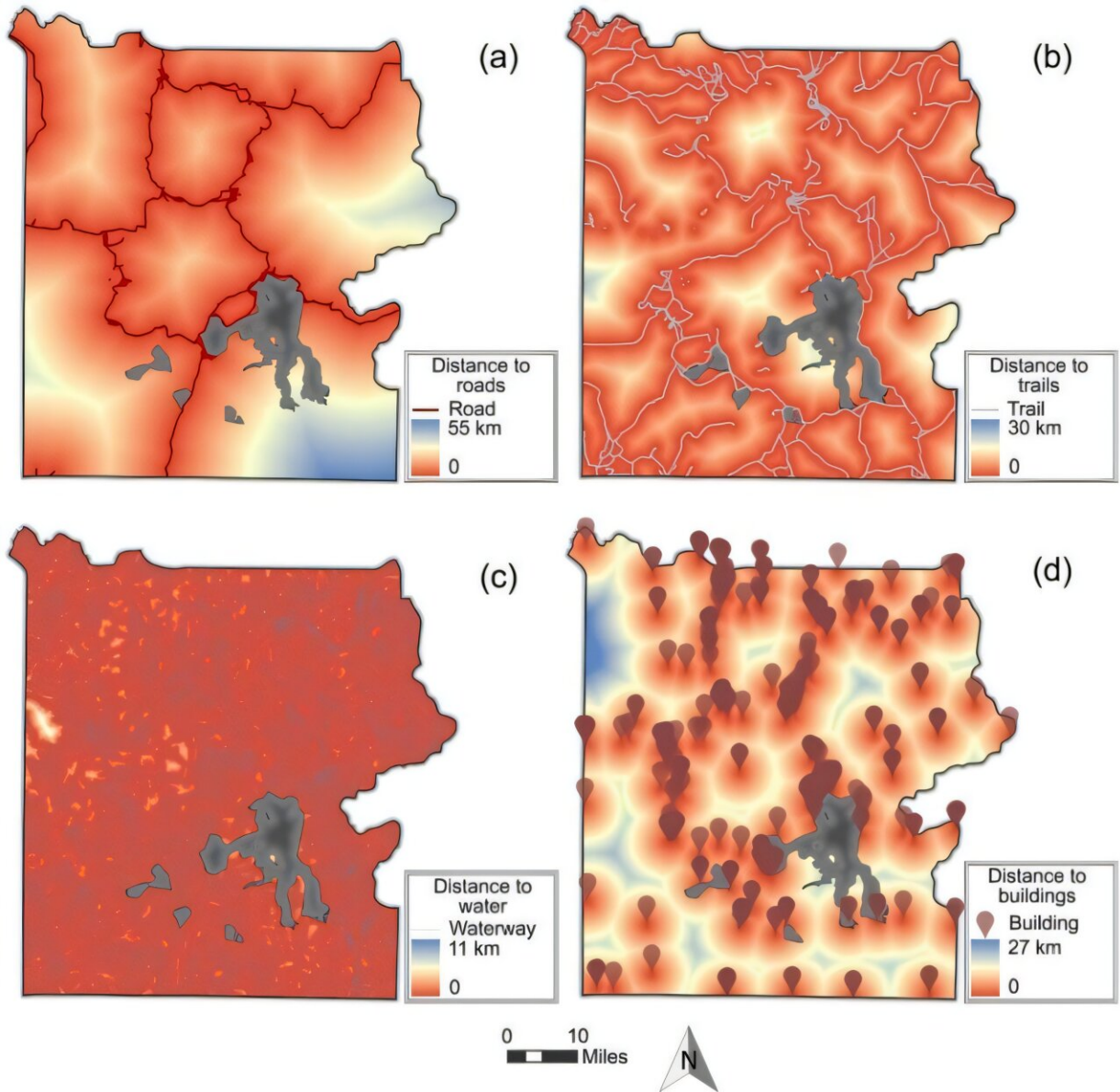


Yellowstone's standing dead trees pose growing wildfire danger

January 8 2025



Output maps of the distance accumulation calculation from the point and line vulnerability criteria. (a) Distance to roads, (b) Distance to trails, (c) Distance to water, (d) Distance to buildings. Credit: Di Yang et al.

Standing dead trees in Yellowstone National Park are growing wildfire hazards, especially near park infrastructure. A new study [published](#) in *Forest Ecosystems* explores how these dead trees contribute to fire risk and threaten roads, buildings, and trails.

Dead trees, particularly those that remain standing, are a significant fire hazard. These trees—often caused by pests, diseases, and [climate change](#)—create a large amount of dry, combustible material. As temperatures rise and droughts intensify, the risk of wildfires increases, making it essential to understand how dead trees contribute to fire danger.

The team used a random forest classification model, a powerful machine learning technique, to map the distribution of dead trees across Yellowstone. They combined data from the National Ecological Observatory Network (NEON) and [satellite imagery](#), which provided information on canopy height, vegetation cover, and tree health.

Their findings revealed that about 40% of the park is experiencing moderate to high levels of tree mortality, with areas like the central-western park hit hardest by past fires. "Our model showed an accuracy of 76.65%, giving us a clear picture of where standing dead trees are concentrated," said Dr. Di Yang, co-author of the study.

By using spatial analysis, the researchers identified regions with the highest concentrations of standing dead trees. The study also showed significant clustering of these trees, especially in areas affected by past fires, which could lead to more severe future fires.

The study also assessed the vulnerability of park infrastructure by looking at how close dead tree hotspots are to roads, trails, buildings, and water sources. The researchers found that areas near park entrances and popular sites are the most vulnerable, while large, less dense clusters of [dead trees](#) in the northeast and south posed a lower risk.

This study offers crucial insights for managing wildfire risk in Yellowstone and similar ecosystems. The researchers hope their methods can be applied to other regions facing the same challenges, allowing for better-informed [fire](#) management strategies.

More information: Carolyn Prescott et al, Classification and clustering analysis of standing dead trees and associated park asset wildfire vulnerability in Yellowstone National Park, *Forest Ecosystems* (2024). [DOI: 10.1016/j.fecs.2024.100284](https://doi.org/10.1016/j.fecs.2024.100284)

Provided by Tsinghua University Press

Citation: Yellowstone's standing dead trees pose growing wildfire danger (2025, January 8) retrieved 24 January 2025 from <https://phys.org/news/2025-01-yellowstone-dead-trees-pose-wildfire.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--