

Large herbivores can reduce forest fire risks

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Red deer (*Cervus elaphus*) hind, Glen Garry, Highland. There have been arguments about the future of red deer on the Scottish island of South Uist. Credit: Charlesjsharp/Wikipedia/CC BY-SA 4.0

The use of large herbivores can be an effective means to prevent and mitigate wildfires, especially in places facing land abandonment. They can replace much more costly solutions like firefighting or mechanical

vegetation removal. This is the finding of a study led by researchers from the German Centre for Integrative Biodiversity Research (iDiv), published in the *Journal of Applied Ecology*. They provide suggestions for fire and agricultural policies in Europe and globally

In many parts of the world, socio-economic drivers are causing large-scale land abandonment. Nomadic practices and pastoralism are decreasing worldwide as well. As a result, areas gradually grow over with bushes, and trees accumulate combustible plant material. Established firebreaks are lost. These processes lead to a higher risk and greater intensity of wildfires. Currently, one of the main responses to this risk is to invest in firefighting capacity. While this can be effective in fighting wildfires once they occur, more promising strategies involve avoiding intense wildfires in the first place.

Researchers from the German Centre for Integrative Biodiversity Research (iDiv), Leipzig University, the Helmholtz-Centre for Environmental Research (UFZ), Wageningen University and CIBIO/InBIO (Research Centre in Biodiversity and Genetic Resources of University of Porto and University of Lisbon) found, that large herbivores – including domestic livestock, wild and semi-wild herbivores – can form a nature-based solution to reduce the risk of wildfires. The study was conducted as part of the project GrazeLIFE (LIFE-Preparatory project on request of and co-financed by the European Commission), coordinated by Rewilding Europe.

The international research team examined whether large herbivores can reduce the amount of [fire](#)-prone vegetation and in turn the impact of wildfires. To do this, they evaluated existing studies that investigated connections between herbivores, vegetation structure, fire risk, fire frequency and fire damage. They found that herbivores can mitigate wildfire damage. The effectiveness depends on a number of factors: herbivore population density, herbivore species and diet, but also the

type of vegetation and environmental conditions.

"Not only domestic animals can do the job, but also reintroduced wild and semi-wild herbivores," said Julia Rouet-Leduc, lead author of the study and doctoral researcher at iDiv and Leipzig University. "They can be effective in reducing wildfire risk, especially in remote and inaccessible areas where careful management with herbivores can combine wildfire prevention with nature conservation." Dr Fons van der Plas, senior author of the study and an assistant professor at Wageningen University added that "extensive forms of grazing will not lead to homogeneous short vegetation, but the presence of short, grazed patches can already be enough to avoid uncontrollable fire spread, acting as natural fire breaks." Where needed, short-term intensive grazing (known as "targeted grazing") can also be combined with other actions like mechanical clearing to further reduce fire risks.

Based on their findings, the researchers make recommendations for land managers and policymakers to mitigate wildfires. One is to maintain and promote extensive grazing by domestic or (semi-)wild herbivores in areas currently facing land abandonment. This will require integrating relevant agricultural, forestry and fire management policies, and providing financial support for fire prevention with animals. In Europe, for example, the Common Agricultural Policy should support farmers and land owners in using extensive grazing for fire management.

"Allowing animals to do the work is an exceptionally cost-efficient way to manage the land, while at the same time restoring missing ecosystem functions; and it can benefit local people," said Dr Guy Pe'er, researcher at iDiv and UFZ and also lead author of the study.

"At the same time, we have to accept that fires are natural processes and important to many ecosystems, and we have to learn to live with them to a certain extent," said Rouet-Leduc. "With climate change, wildfires are likely to become increasingly severe in many parts of the world," said

Pe'er. "Current policies can, and should, take much better account of nature-based solutions, like allowing herbivores to do their job."

More information: Julia Rouet-Leduc et al, Effects of large herbivores on fire regimes and wildfire mitigation, *Journal of Applied Ecology* (2021). [DOI: 10.1111/1365-2664.13972](https://doi.org/10.1111/1365-2664.13972)

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