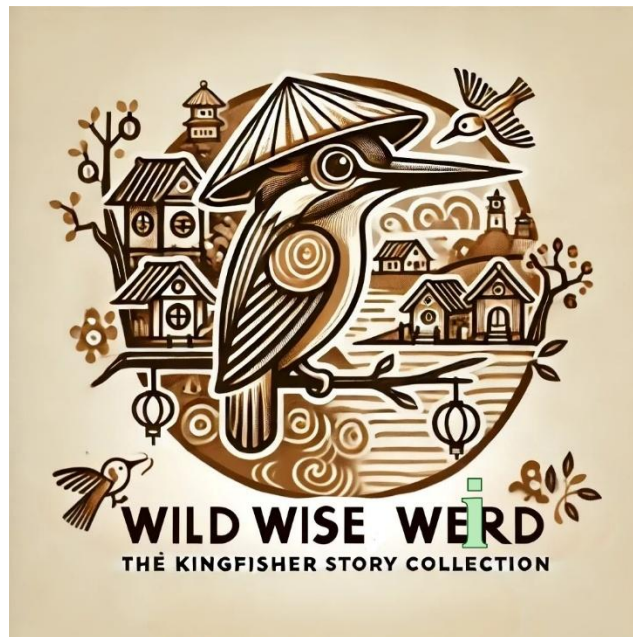# Fighting Fire with Fire: How Prescribed Burns Help Us Adapt to Climate Change

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"– When it is a matter of life and death, to survive, one must be intelligent."

In "Luck"; *Wild Wise Weird* [1]

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As climate change accelerates, so too does the risk of wildfires. Rising temperatures and prolonged droughts have transformed many landscapes into highly flammable environments. In response to this growing threat, a recent study by Hashida et al. [2] highlights a proactive and promising adaptation strategy: prescribed fires, also known as controlled burns.

Prescribed fires are deliberately ignited under carefully managed conditions to reduce excess vegetation that fuels wildfires [3,4]. While forest managers and Indigenous communities have long employed this practice to support ecosystem health and fire resilience, the study offers a novel contribution by providing rigorous economic evidence on how private landowners in the southeastern United States (U.S.) are increasingly adopting prescribed burning as a means of adapting to climate change.

Drawing on more than a decade of panel data from burn permits across seven southeastern states (2010–2021), Hashida et al. [2] explore two central questions: (1) How do climate conditions and previous wildfire events influence landowners' decisions to conduct prescribed burns? and (2) How do prescribed burning and climate conditions, in turn, affect the likelihood of wildfires?

The results are striking. Counties that had experienced a large wildfire within the previous three years increased their prescribed burning acreage by approximately 70%, indicating a robust adaptive response. Additionally, hotter and drier conditions—quantified using vapor pressure deficit (VPD), a key measure of atmospheric dryness—were also associated with significant increases in prescribed burning. The estimated elasticity of prescribed fire acreage with respect to VPD ranged from 2.5 to 2.8, suggesting that landowners interpret higher VPD as an indicator of elevated wildfire risk and respond accordingly [2].

Moreover, prescribed burning proves to be an effective tool in mitigating wildfire risk. The study found that a 1% increase in prescribed burn acreage reduces the probability of a large wildfire by approximately 0.085 percentage points. Conversely, a 1% increase in VPD raises the probability of a large wildfire by 0.355 percentage points. This suggests that a 4.18% increase in prescribed burning could fully counterbalance the elevated wildfire risk associated with climate-induced increases in VPD.

To estimate long-term impacts, the researchers simulated wildfire outcomes through the year 2050. In a scenario without climate adaptation, the number of large wildfires in the southeastern U.S. is projected to rise from 27 to 36 per year due to climate change. However, when adaptation through increased prescribed burning is included, the projected number drops to 29, effectively preventing nearly 140 large wildfires over the next two decades.

These findings underscore the critical role private landowners play in climate adaptation. Yet, because the benefits of prescribed burning often extend beyond individual property boundaries—reducing fire risk for neighboring lands—it exemplifies the classic challenge of privately provided public goods. To scale up this adaptation strategy, policy interventions such as legal protections and financial incentives are needed to lower barriers and encourage broader adoption.

Prescribed fire represents a compelling nature-based solution in the face of a warming climate. By harmonizing economic decision-making with ecological resilience, this approach reinforces the nature-human nexus, illustrating how deliberate and informed stewardship of our landscapes can serve as a buffer against escalating climate extremes [5].

References

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