

Climate scientists increasingly ignore ecological role of Indigenous peoples

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In their zeal to promote the importance of climate change as an ecological driver, climate scientists increasingly are ignoring the profound role that indigenous peoples played in fire and vegetation

dynamics, not only in the eastern United States but worldwide, according to a Penn State researcher.

"In many locations, evidence shows that indigenous peoples actively managed vast areas and were skilled stewards of the land," said Marc Abrams, professor of forest ecology and physiology. "The historical record is clear, showing that for thousands of years indigenous peoples set frequent fires to manage forests to produce more food for themselves and the wildlife that they hunted, and practiced extensive agriculture."

Responding to an article published earlier this year in a top scientific journal that claimed fires set by Native Americans were rare in southern New England and Long Island, New York, and played minor ecological roles, Abrams said there is significant evidence to the contrary.

In an article published today (July 20) in *Nature Sustainability*, Abrams, who has been studying the historical use of fire in eastern U.S. forests for nearly four decades, refutes those contentions.

"The palaeoecological view—based on a science of analyzing pollen and charcoal in lake sediments—that has arisen over the last few decades, contending that anthropogenic fires were rare and mostly climate-driven, contradicts the proud legacy and heritage of land use by indigenous peoples, worldwide," he said.

In his article, Abrams, the Nancy and John Steimer Professor of Agricultural Sciences in the College of Agricultural Sciences, argues that the authors of the previous paper assumed that the scarcity of charcoal indicated that there had not been burning. But frequent, low-intensity fires do not create the amount of charcoal that intense, crown-level, forest-consuming wildfires do, he pointed out.

"Surface fires set by indigenous people in oak and pine forests, which

dominate southern New England, often produced insufficient charcoal to be noticed in the sediment," said Abrams. "The authors of the earlier article did not consider charcoal types, which distinguish between crown and surface fires, and charcoal size—macro versus micro—to differentiate local versus regional fires."

Also, lightning in New England could not account for the ignition of so many fires, Abrams argues. In southern New England, lightning-strike density is low and normally is associated with rain events.

"The region lacks dry lightning needed to sustain large fires," he said. "Moreover, lightning storms largely are restricted to the summer when humidity is high and vegetation flammability is low, making them an unlikely ignition source."

Early explorers and colonists of southern New England routinely described open, park-like forests and witnessed, firsthand, Native American vegetation management, Abrams writes in his article, adding that oral history and numerous anthropological studies indicate long-term burning and land-use for thousands of years by indigenous people.

Burning near Native American villages and along their extensive trail systems constitutes large land areas, and fires would have kept burning as long as fuel, weather and terrain allowed, he explained. Following European settlement, these open oak and pine woodlands increasingly became closed by trees that previously were held in check by frequent fire.

The authors of the previous paper also argued that fire should not be used as a present-day management tool, a view that Abrams does not support.

The role of anthropogenic fires is front and center in the long-running

climate-disturbance debate, according to Abrams, who notes that fires increased with the rise of human populations. The world would be a very different place without those fires, he contends.

"Surprisingly, the importance of [indigenous peoples](#) burning in vegetation-fire dynamics is increasingly downplayed among paleoecologists," he writes. "This applies to locations where lightning-caused fires are rare."

Abrams points out that he is not denying the importance of climate in vegetation and [fire](#) dynamics or its role in enhancing the extent of human fires. "However," he writes, "in oak-[pine forests](#) of southern New England, Native American populations were high enough, lightning-caused fires rare enough, vegetation flammable enough and the benefits of burning and agriculture great enough for us to have confidence in the importance of historic human land management."

More information: W. Wyatt Oswald et al, Conservation implications of limited Native American impacts in pre-contact New England, *Nature Sustainability* (2020). [DOI: 10.1038/s41893-019-0466-0](https://doi.org/10.1038/s41893-019-0466-0)

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