Indigenous Conservation Practices Are Not a Monolith: Western cultural biases and a lack of engagement with Indigenous experts undermine studies of land stewardship

Abstract

Commentary On: Oswald, W. W., Foster, D. R., Shuman, B. N., Chilton, E. S., Doucette, D. L., Duranleau, D. L. Conservation implications of limited Native American impacts in pre-contact New England. Nature Sustainability https://doi.org/10.1038/s41893-019-0466-0

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In a recent article, Oswald et al.[1] argue that Indigenous Peoples had limited impact on landscapes in pre-contact New England. Claiming an interdisciplinary research approach, the authors conclude that fire should not be used as a land management tool today. We fully agree with the authors that "conservation strategies need to be grounded in strong, interdisciplinary, retrospective science on past environments, socioecological systems and ecosystems."[1] Unfortunately, their study lacks the historical and cultural data to meet the criteria[2] for such strong, interdisciplinary studies. Oswald et al. mischaracterize past fire occurrence and provide misguided conservation advice precisely because they fail to incorporate interdisciplinary and Indigenous knowledge to meet these criteria.

The article unequivocally erases Indigenous knowledge and Indigenous Peoples. Its Figure 4d presents a particularly egregious example of this erasure. This graphical representation of Indigenous human population trends over the past two millennia in what is currently known as

the northeastern United States shows Indigenous Peoples as currently extinct in the region, an assertion contradicted by the existence of numerous Tribal nations and Indigenous communities in the study region.[3] We could dismiss this omission of contemporary Indigenous Peoples and nations as a simple, straightforward error to be corrected, but it is only a particularly prominent example of the scholarly neglect that pervades the paper: neglect of Indigenous Peoples, their cultures, their histories, their past and present agency, and of whole fields of scholarship[4]. Indigenous Peoples and agencies of Tribal nations need to be included in research that implicates them and their ancestors.

Corollary to the cultural biases of the article is a lack of understanding of fire science. The article treats "fire" as always and everywhere the same, but to accurately interpret fire signals in the sedimentary record, it is essential to identify what burns, when, how and where it burns, how much charcoal and ash are produced, and how those materials would be transported. Throughout the region low severity Indigenous burns were likely implemented in the cool season, away from waterways, and below the forest canopy. Low severity patch-mosaic burning at focal subsistence points and along travel corridors could very well be compatible with a regionally dominant closed-canopy forest. It is clear from the charcoal record presented in Figure 3a that fire was present in the study region prior to European colonization. However, sedimentary charcoal is a secondary proxy for fire activity, best used to detect large, high severity fires. [5], not to discern human from natural ignitions. [6]

Similar analytic flaws call into question the article's interpretation of pollen data. The authors do not justify the spatial scale their sampling represents. They simply claim their sites are representative of the "landscape." Thus, they obscure the actual scale and geographic scope of their study area, failing to distinguish geospatial connections to diverse socio-cultural contexts of Indigenous burning. The article conceals this diversity with broad, sweeping terms such as "Native American" and "New England," terms that did not exist during the "pre-contact" period under study. Closer examination of the graphs of CHAR and pollen would show considerable variation among sites. Furthermore, the authors failed to fully unpack the complexity of the pollen signal from diverse vegetation communities across the study region.[7],[8]

Finally, we question the historical and archaeological data and analysis employed. Authors state that their interdisciplinary approach includes historical research, but their team includes no historians. They misunderstand monographs by historians Cronon and Pyne, characterizing them as uncritical, popular accounts, and they do not cite Pyne's most relevant work on fire in the northeastern United States[9]. Oswald et al. also seem to be unaware of historical scholarship[10] prior to Day (1953)[1]. They take no account of the many primary historical sources describing extensive open fields and forests in the region. Most problematically, they ignore Indigenous sources[11] that describe modifications of the environment, including but not limited to burning,

in and near Native settlements and agricultural fields and along the interlaced trails and travel corridors where people sustained economic relationships and kinship networks.
The meta-analysis of archaeological evidence fails to acknowledge the severe limitations inherent in combining results from disparate (and in some cases, irreconcilable) theoretical and methodological approaches, diverse environmental contexts of archaeological preservation, and multitude of contingencies that bias regional-level generalizations based on smaller-scale studies.[12] Further, the archaeological reports reviewed by the authors do little to illuminate variations in Indigenous lifeways over time and space, as they apparently represent a sampling bias as evidenced by their failure to meet current ethical practice to consult with Indigenous regional experts.[13]

A foundational problem with this study is its null hypothesis (reminiscent of a colonial trope, *vacuum domicilium*), that in the absence of significant evidence, the structure of New England forests must have been driven by "natural" processes rather than "human" causes. However, it is reasonable that after several thousand years, Indigenous Peoples and their practices coevolved with local ecosystems and cycles of succession, rendering their actions invisible to the methods being used here.[14]

In fact, given how long and how densely Indigenous Peoples have populated these forests, the notion that they had no impact on landscape-scale outcomes is a form of scientific and academic erasure of Tribal nations and Indigenous communities. The article's concluding statement, advocating for reconstituting European agricultural and wilderness management practices, dismisses the horrific experiences of genocide and war linked to those practices. Thus Oswald et al. perpetuate the expropriation of land from Indigenous Peoples under the duplicitous guise of scientific findings, without regard for the ongoing impacts of such arguments on existing Tribal nations and Indigenous communities. The goal of the paper seems to disprove Indigenous knowledge with positivist science. Unfortunately, studies limited in scope but prone to broad generalizations that are picked up by the popular media harm Tribal nations[15] as their attempts to reclaim and restore ancestral lands are often challenged by settler-colonial governments. In positioning their conclusion as a "guide," the authors argue that conservation stewardship today should involve "chainsaws, cattle and sheep grazing, and hay production, rather than fire." This recommendation neglects complex past and present challenges posed by pests such as the deer tick (a key vector of Lyme disease) and invasive species. In considering the implications of these challenges for land managers, Indigenous fire knowledge deserves more consideration.

The extrapolation of data into landscape management policy recommendations should be based on sophisticated, scientifically and ethically sound research, requiring a diverse group of investigators with knowledge of past and present land management practices. It is not enough to simply assert that archaeological and paleoecological studies provide the best means of understanding an Indigenous landscape. Oswald et al.'s work is severely hampered by

disciplinary bias that results in misinterpretation of fire dynamics and history, with its worst omission being the neglect of Indigenous knowledge. Instead of dismissing historical Indigenous fire as limited and localized, a paleoecological study that integrates Indigenous knowledge from the research design stage could inquire more deeply into the archaeological and historical record to identify intricate landscape-scale patterns of fire. We suggest the authors retract their paper, revisit their data analysis, and strengthen their interdisciplinary approach by inviting historians, agencies of Tribal nations (e.g. Tribal natural and cultural resource departments) and Indigenous knowledge holders to collaborate.

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