Fire and Research Natural Areas in California:
Restoring a Key Ecological Process to Reference Landscapes
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Research Natural Areas (RNAs) are often selected to exemplify minimally disturbed ecosystems where ecological processes can proceed unencumbered with minimal human intervention. Ideally, such areas serve as properly functioning reference landscapes for land managers. However, most RNAs have been modified to varying degrees by past and ongoing actions, most notably fire management. These factors, in combination with a changing climate, compromise the usefulness of the RNA system as a reference network and underline the importance of considering natural disturbance in RNA stewardship. We examined 64 RNAs on National Forest System lands in California to assess departure from their natural (pre-Euroamerican settlement) fire regime in terms of fire frequency and severity. We found that more than two thirds of the area encompassed by RNAs in California exhibit moderate to high departure. Of these, 87% are burning much less frequently than they would have under their presettlement fire regime and 13% are burning much more frequently. Seventeen RNAs in erstwhile frequent-fire ecosystems have not had a fire recorded within their boundary since prior to 1908 and 50% of the area has not burned in at least 109 years. We present case studies that demonstrate where recent wildfire has had positive and negative effects on the target element in RNAs, as well as areas where fire management actions, if implemented in the near future, could effectively maintain the conditions for which the RNA was set aside. We suggest that a re-examination of the strictly hands-off approach that has characterized RNA management is required.