ABSTRACT

Understanding spatio-temporal interactions between anthropogenic and biophysical drivers of ecosystem change is crucial for predicting landscape dynamics, sustainable conservation planning, and understanding ecosystem function at societally relevant timescales. In this context, historical data is increasingly important for investigating long-term processes, documenting rare or extreme events, analyzing ecosystem response to contrasting cultural regimes, and providing key insights into current ecosystem structure and function. Historical data and a long-term perspective provide at least three key functions: (1) lengthen the temporal scale of potential scientific inquiry to include otherwise irretrievable environments; (2) provide a contextual foundation from which to assess change; and (3) situate the study of the environment in a wider disciplinary context. Motivated by this, I will present the ways in which a historical forest inventory dataset from the 1930s has enhanced understanding of nearly a century’s worth of change in forested ecosystems across California. In parallel, I will discuss how technological developments in sensor networks and remote sensing enables monitoring of ecosystem change dynamics at varying spatial scales across California. Collectively, these perspectives call for the integration of historical data with next generation ecological monitoring to enhance conservation in the 21st century.

BIO

Kelly Easterday is currently a postdoctoral researcher at University of California Berkeley. Her research analyzes complex drivers of spatiotemporal change, including climate, fire, land management, and the ecological history of place. Largely focusing on ecosystem change in California, her research combines the rapidly emerging field of spatial data science within the theoretical constructs of historical ecology, landscape ecology, biogeography, land management and policy, and forest ecology. Her work has continued to utilize the incredible network of University of California Reserves and Extension Centers in a new project, the California Heartbeat Initiative, integrating unmanned aerial vehicles and wireless sensor networks to understand biophysical and ecohydrological controls of vegetation health and distribution.