

## Bringing dark data to light: a case study of historic vegetation data for modern ecological analysis

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Research efforts that synthesize historical and contemporary ecological data with GIS and spatial modeling approaches improve our understanding of the complex response of species, communities, and landscapes to changing biophysical conditions through time and in space. Historical ecological data are particularly important in this respect. Detailed records of past agricultural, ecological, and climate conditions exist in several forms, including paper archives, historic imagery, biological specimens, and digital data. Unfortunately, these materials are often hidden, many are disorganized or degraded, and some exist as "dark archives" that are currently invisible to researchers. There are remaining technical barriers that limit the synthesis of historic and contemporary data. Recent technological improvements derived from work in digitization, spatial database design, and web visualization can make multiple diverse datasets more readily available for integration and synthesis. This talk presents one case study of a historical archive of vegetation data (the Wieslander Vegetation Type Mapping project in California) and highlights the importance of rescuing, digitizing and sharing historical datasets through cloud-based application programming interfaces (APIs). The digitization and sharing of the data via the web has broadened the scope and scale of the types of analysis performed: the data have now been used to understand legacies of land use change, to examine changes to chaparral and forest communities around the state and to predict community structure and shifts under a changing climate.

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