VEGETATION CHANGE TRENDS IN YOSEMITE NATIONAL PARK OVER THE LAST CENTURY (1897-2008)

Noah S. Wasserman
San Francisco, California
2009

At the highest elevations, the multi-decadal life cycles of tree species require monitoring techniques that are able to cover these extended timelines. In order to expand the temporal scale of change detection, repeat-photography research methods are applied to alpine and sub-alpine vegetation ecosystems in and around Yosemite National Park, California. Historic photographs provide the backdrop for a qualitative assessment of vegetation in sub-alpine and alpine vegetation zones. Over 80 photographs from circa-1900 and circa-1985 were compared to those taken in 2008 to add an additional quarter century to previous change detection studies completed in the region. Growth trends as documented included 1) increased density of Krummholz stands, 2) increased density of sub-alpine forest stands at the tree line, 3) invasion of individual trees into meadows, 4) reduced instances of forest clearings and increased forest density, and 5) growth of trees on domes and rocky slopes. Evidence of upslope movement of the tree line was visible, confirming current knowledge of tree line systems in the American West, but contrary to previous studies conducted in this specific area. The application of GPS and other technological innovations allow for continued monitoring of upper elevation systems and follow-up is strongly encouraged.

Keywords: Vegetation change, repeat photography, national parks, Yosemite National Park, Sierra Nevada Mountains.