

#### **4.17) The Southern Sierra Repeat Photography Project**

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Sequoia-Kings Canyon National Parks

The Southern Sierra Repeat Photography Project, centered on Sequoia and Kings Canyon National Parks but including foothill communities and Giant Sequoia groves outside these parks, attempts to reconstruct historical changes in southern Sierran plant communities over the past 125 years. The general study area for the project encompasses foothill and forest communities from the Stanislaus river south to the Kern River. Although the project comprises a large geographic area we have established three foci in order to better facilitate completion of a useable project in two field seasons. The foci include a comparison of vegetation change in Yosemite Valley and Kings Canyon; a look at changes in foothill chaparral communities and the chaparral-conifer ecotone; and an examination of early vegetation conditions and subsequent change in Giant Sequoia groves. A primary goal of our project is to use the photo pairs to describe past and present vegetation conditions and any vegetation change visible in the photos as objectively as possible. We will also develop a method to quantify the changes that are apparent from the photo pairs.

To date we have collected over 80 old photos and re-photographed approximately 40. Analyses of the photo pairs indicate several important vegetation changes but also, and maybe more interestingly, some pairs show little change. Photo pairs from the Kings Canyon of Kings Canyon National Park reveal what appears to be an increase in size and density of both the coniferous species of the valley floor and the oak/shrub species of the canyon walls from 1875 to the present. The oak woodlands of the Sierra Nevada foothills appear to be relatively the same as photos from the late 1800s and early 1900s but the chaparral communities seem to be undergoing a type conversion from dense chaparral to grasslands dominated by exotic annual grasses. In the photo pairs from the Giant Forest in Sequoia National Park (which date from the early 1900s) and the Mariposa Grove in Yosemite National Park (dating back to 1860) vegetation change depends on the photograph you are viewing. Some show a dramatic increase in the density of conifers, other than Giant Sequoia, within the groves and a subsequent decrease since the onset of prescribed burning and mechanical removal. While other old photos indicate that the Sequoia groves of the past were rather dense. One interesting point to mention from these photo pairs is that regardless of whether the forest shows an increased density or not, most do show a change in the structure of the canopy. The new photos show trees with limbs growing down the trunks and reaching the floor of the forest, whereas the trees in the old photos appear to be free of these lower limbs.