



Research Brief for Resource Managers

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Type Conversion From Forest to Shrubland

Wilken, G.C. 1967. History and fire record of a timberland brush field in the Sierra Nevada of California. *Ecology* 48:302-304.

Surveyor's notes are sometimes used to reconstruct past vegetation, just as Wilken has done in this study of a large western Sierra Nevada brush field. The Blue Canyon brush field was considered an odd brushfield at 5,000 ft. because it was well within the western timber zone. It had soils suitable for timber and some apparent relics of what was presumed to have been a more extensive timber stand. It was assumed that this brush field had not been forested in over 100 years. After reviewing the surveyor's notes and fire history of Blue Canyon, Gene Wilken concluded that the chaparral vegetation burned too frequently and too intensely to allow the forest to regenerate.

Wilken took soil samples indicating that the brushfield geology was excellent for trees. He also used 1866 surveyor reports as evidence that previously logged forest ("relict stumps and large logs") occurred in the area. These same records also had evidence of large brush fields as early as 1866.

Wilken reconstructed fire records from news reports and found fires that likely burned all or part of the brush fields in 1885 and 10 years later in November 1895 (20 and 30 years after the survey report). In 1902 John Leiberg wrote: "All along the Blue Canyon and Canyon Creek drainage

Management Implications

- The soil characteristics and historical records of the Blue Canyon brush field show that the site was suited to timber, but it had already been logged and had extensive brushfields by 1866.
- The recruitment of forest conifers is too slow and the anthropogenic fire return interval is too short to support conifer forest at this location.

a large proportion of the reforestation consists of scrubby oak instead of the coniferous species of trees which formerly constituted the timber in these localities. The extensive and heavy stands of brush which have here come as a sequel to fires show no sign of being replaced with tree growth."

Aerial photographs of forest regeneration taken over the period 1939-62 showed some new tree growth in the interior near stand remnants, along intermittent streams, and at the edge of the field near the surrounding forest. However, the basic size and shape of the brush field had not changed in that 23-year time span.

Wilken finished with this observation: "Both state and private landholders have acknowledged that natural succession is operating too slowly for their needs and are clearing sizable portions of the brush field for planting to trees."