

INTERPRETATIONS OF VEGETATIVE CHANGE THROUGH 1989: THE PHOTOPPOINTS

Text modified from Gruell and others (1982)

Photo layout and design by Dennis G. Simmerman

The 1907 to 1911 logging operations and subsequent lack of surface fires dramatically changed the patterns of plant succession at Lick Creek. Large quantities of overstory pines were felled, creating sizable openings. Logs were skidded and slash was burned in piles (Koch 1998) locally scraping off or consuming surface vegetation, pine needle litter, and humus, and exposing mineral soil. The photo sequences covering the next 40 years show that tall shrubs (especially Scouler's willow) and tree regeneration became established in direct proportion to the amount of stand opening and soil surface disturbance. The response of tall shrubs and tree regeneration was most vigorous on the moist habitat types.

Even though overstory Douglas-fir were mostly removed in the 1907 to 1911 logging, Douglas-fir regeneration increased markedly thereafter. This regeneration is a result of (1) the absence of surface fires and (2) the opening up of the stand through logging. Figure 15 depicts the probable tree succession associated with fire control and partial cutting in this forest type. Note that this shows a speedup in the natural succession illustrated in figure 5. Douglas-fir regeneration increased markedly on the moist habitat types and under lighter cutting treatments. Pine regeneration was more successful in the dry habitat types and with greater stand opening and site disturbance.

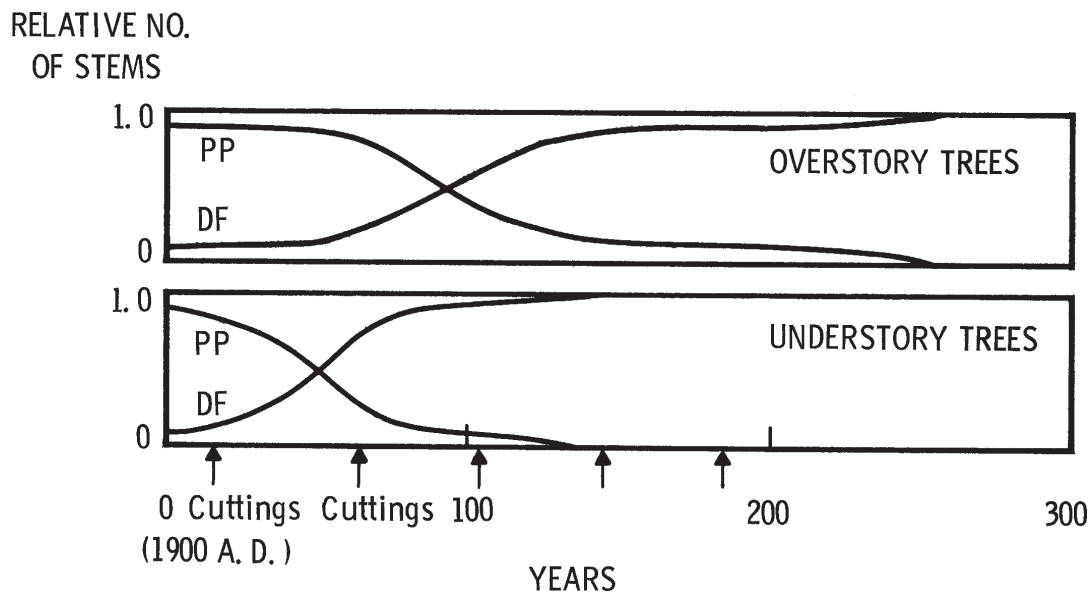


Figure 15—The effect of succession on relative abundance of ponderosa pine and Douglas-fir at Lick Creek: hypothesized succession with fire control and partial cuttings (Gruell and others 1982).

At some photopoints, several of the large pines left after early logging died from windthrow and mountain pine beetle attacks. This provided further opportunity for understory trees and shrubs to develop. Also, the photo sequences allow observation of the slow progression of death, downfall, and decay, including disintegration of stumps.

On dry habitat types, the original grassland type of undergrowth was replaced within a few decades by conifers and shrubs, including antelope bitterbrush. Often, dense pole stands developed after 30 to 40 years, tall shrubs began to be shaded out, and undergrowth, in general, became sparse. After thinning of the poles and removal of many of the remaining large pines in the 1950's and 1960's, the tall shrubs and other undergrowth became more dense. Where adequate thinning occurred, the remaining pole-size conifers generally show good vigor; otherwise, dense thickets of small trees developed. Composition has shifted toward mixed stands of ponderosa pine and Douglas-fir, and with continued partial cuttings and lack of surface fires, Douglas-fir increased dominance on many sites.

In general, the photos show that the dry habitat types have changed from original dominance by large ponderosa pine with bunchgrasses beneath to thrifty pole-size pine and Douglas-fir with scattered willow and undergrowth of species such as pinegrass, elk sedge, and snowberry. Bitterbrush occupies localized dry sites that were heavily scarified.

The transition shown on the moist habitat types begins with stands dominated by large ponderosa pines and with some Douglas-fir. These had open understories and ground cover composed of low shrubs and pinegrass. After the 1907 to 1911 logging and subsequent fire suppression, vigorous pole and tall shrub communities of Douglas-fir, ponderosa pine, and Scouler's willow developed, with a low shrub and pinegrass ground cover beneath. Thinning of the poles since 1950 kept the willow from becoming badly suppressed.

Photopoint captions contain interpretations of stand changes. These were taken from Gruell and others (1982) but updated by Helen Y. Smith, Stephen F. Arno, Michael G. Harrington, and Dennis G. Simmerman for 1989 and 1997 photos (Photopoints 1 through 14).