

## **FOREST REPRODUCTION IN THE SOUTHERN SIERRA NEVADA, CALIFORNIA (1B)**

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We recorded annual changes in seedling density and seedling and sapling growth over 11 years in 55 625m<sup>2</sup>-plots and seed production in 487 1m<sup>2</sup>-traps in mid-to high elevation forests in Sequoia and Yosemite National Parks. Sampling was conducted across a steep elevational gradient and encompassed several forest types including ponderosa pine-mixed conifer forests at 1500-1637m, white fir-mixed conifer forests at 2033-2210m, red fir forests at 2484-2576m and subalpine forest at 2838-3097m. We found marked variation between species and across both temporal and spatial gradients as well as differences in response to fire. Seedling and sapling densities as well turnover declined with elevation. Patterns of annual variation in both seed production and first year seedling recruitment was similar in all species in that they exhibited strong mast seeding cycles of high and low years, however the time between high years was different between species. Some species such as white fir and incense cedar recruited and established seedlings and saplings in the understory of undisturbed forests, whereas most pine species did not. Following fire, seedling recruitment was substantially higher in both firs and pines, although seedling recruitment was a function of timing of mast seeding cycles and fire. Since reproductive failure may be one of our earliest signals of changing climate and forest conditions, seedling recruitment could provide a sensitive indicator, but due to the extreme annual variability, longer term data sets may be necessary to fully exploit this as an indicator of change.

Key words: seedlings, mast seeding, saplings, forest reproduction, Sierra Nevada