

from large open gaps to dense tree clusters) and vertically (multiple vegetation layers) intricate. Mixed conifer is also primary habitat for more vertebrate species than any other Sierra forest type (California Department of Fish and Game 1994). New information has been gathered by researchers in the Teakettle Experiment detailing soils, pathogens and various species associated with the mixed-conifer forest type. Many of these ecological attributes are directly influenced by patterns in forest composition and structure that we quantitatively describe.

The purpose of this paper is to provide quantitative information on vegetation characteristics of mixed-conifer and red fir forests in the southern Sierra Nevada; present a detailed summary of the vegetation and environment of the Teakettle Experimental Forest that will provide baseline information to researchers involved in long-term experiments; and provide information on species and ecological characteristics common to mixed-conifer forests.

Location, Access and Accommodations

The Teakettle Experimental Forest is located on the Kings River Ranger District of the Sierra National Forest, approximately 80 km east of Fresno above the north fork of the Kings river in T 11 S, R 27 E. The center of the forest is at 36° 58' N latitude and 119° 2' W longitude on the Patterson Mountain U.S. Geological Survey 7.5' topographic map. Teakettle encompasses ca. 1,300 ha and ranges in elevation from 1,880 m at the southeast corner to 2,485 m at the top of Patterson Mountain along the western boundary (fig. 1). It consists primarily of old-growth, mixed-conifer and red fir forests typical of mid-elevations on the western slopes of the southern Sierra Nevada range. These two forest types cover 17 percent of the state. The major tree species in mixed-conifer forests include white fir (*Abies concolor*), incense cedar (*Calocedrus decurrens*), sugar pine (*Pinus lambertiana*), ponderosa pine (*Pinus ponderosa*), Jeffrey pine (*P. jeffreyi*), and black oak (*Quercus kelloggii*), and in the northern Sierra include Douglas-fir (*Pseudotsuga menziesii*) (Barbour 1988, Rundel and others 1977). Giant sequoia can intermix with mixed conifer, but it is limited to 68 groves in the southern Sierra and is not present at Teakettle. Red fir (*A. magnifica*) normally dominates forests above mixed conifer, but white fir, Jeffrey pine, western white pine (*Pinus monticola*), and lodgepole pine (*Pinus contorta*) may also be present (Barbour and Woodward 1985).

Figure 1—Location and topography of the Teakettle Experimental Forest east of Fresno as displayed from a U.S. Geological Survey 30m resolution digital elevation model. Teakettle creek drains the main elevational gradient from the NW corner at 2,485m to the SE corner at 1,880m. The two structures in the figure are the main cabin for housing researchers and an equipment storage shed.

