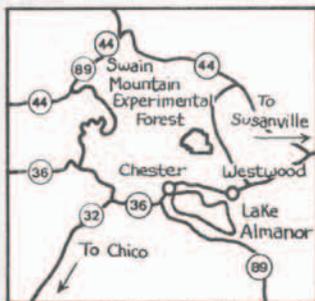
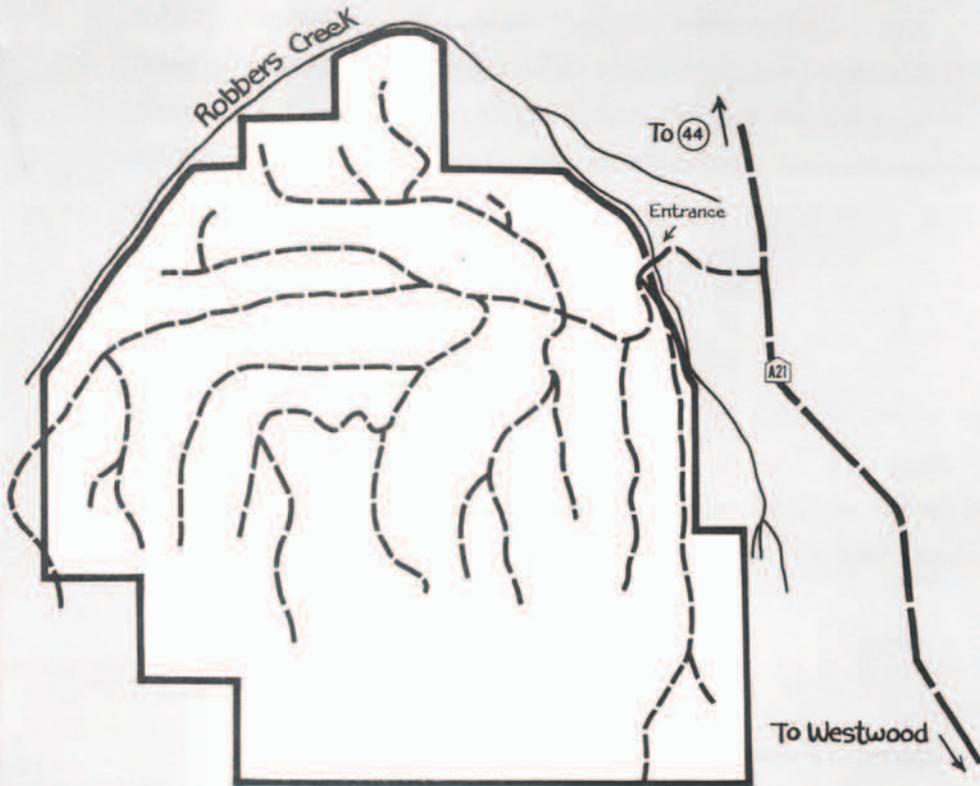


Swain Mountain Experimental Forest



LEGEND

-  Water Courses
-  Paved Roads
-  Gravel or Dirt Roads

0 1/2 1 Mile



0 1/2 1 Kilometer



SWAIN MOUNTAIN Experimental Forest

The Swain Mountain Experimental Forest was formally designated on March 22, 1932, as a place for field studies and demonstration of forest management practices in the true-fir types of California. Chosen specifically for the quality and extent of the fir timber present, the 2492-hectare Experimental Forest occupies all of Swain Mountain, a volcanic cone composed of vesicular andesite and ash. Stand volume can be high, up to 2058 cubic meters per hectare on one 1.6-hectare block, although the uncut virgin stands more commonly contain 840-1120 cubic meters per hectare.

The Experimental Forest largely sat idle for about 20 years until, in the early 1950's, preparation for an active program of regeneration research began with forest type mapping and construction of the initial road system. Initial research was to determine factors related to wind damage in the old-growth stands and to develop criteria for selection of wind firm seed trees. Seed dispersal was measured for both red fir (*Abies magnifica* A. Murr.) and white fir (*A. concolor* var. *lowiana* [Gord.] Lemm.). Relationships between natural regeneration and site factors such as soil temperature and moisture, insolation intensity, site preparation, and competing vegetation were explored. Snow surveys were taken for nearly 15 years in the clearcut and unlogged stands. Cone production in uncut stands and along clearcut strips was followed for 16 years.

The second round of heavy research cutting in the early 1970's centered again on natural regeneration and the impact of shelterwood density and clearcut size and shape. During the 1960's and 1970's, studies of impacts of dwarf mistletoe and fertilization began as did studies of growth and yield of mixed fir stands. Long-term studies of response of severely suppressed true fir to release from overstory competition were installed. The information gained from this work constitutes the basis for true fir management in California.

The third and current period of heavy cutting is to extend the shelterwood research results to operationally large areas and create extensive acreage of fir regeneration for future research. To these ends about one third of the Forest is currently being regenerated through shelterwood cutting.

CLIMATE

The climate at Swain Mountain can be classified as cool and moist even though there is a 4- to 5-month summer dry spell. Precipitation averages from 1243 to 1270 millimeters per year, almost all of which falls between October and March. Eighty percent of the moisture falls as snow, and snowpacks of 3 to 4 meters are common in February. In exceptionally wet years with late spring snows, drifts can persist until late July. Between April (or May) and October, precipitation is negligible and from scattered thunder showers. Winter temperatures generally do not fall below -23°C and summer temperatures only occasionally exceed 29° C. Average monthly minimum and maximum air temperatures range between -17°C and 4°C for January and between 4°C and 27°C for July.

SOILS

Soils vary from 0.6 to 2.4 meters deep and are generally well drained except in association with small “shoestring” meadows. The soils are derived in place from weathering of the andesite and associated ash. The lava flows that formed the mountain are occasionally visible at the surface. Soil series have not been mapped. Site quality varies but in general is good—a Dunning Site II or Site Index 150 at 300 years.

MAIN COMMUNITIES

The forest cover types on the Experimental Forest include large areas of Red Fir (SAF 207), White Fir (SAF 211), and small areas of Lodgepole Pine (SAF 218) cover types (Eyre 1980). White fir predominates at the low to mid elevations (1737 to 1890 m) with the proportion of red fir increasing with increasing eleva-

tion to the top at 2149 meters. Together the true fir occupy 1821 hectares (fig. 16). Lodgepole pine (*Pinus contorta* Dougl. ex Laud.) grows throughout the forest associated with meadows, but forms pure stands only on the lowest elevations and in areas of shallow soils or high water tables. There are 178 hectares in lodgepole pine. Approximately 445 hectares on the south slope of the mountain are occupied by an old brushfield that has been planted to ponderosa and Jeffrey pine (*P. ponderosa* Dougl. ex Laws and *P. jeffreyi* Grev. & Balf).

DATA BASES

Several types of maps are available: topographic map (1:15,840); timber type/age class map of original forest cover (1:15,840); a map created in 1956 from cruise data and aerial photos, and a map of all experimental cutting sites on the Forest.



Figure 16—This old-growth true fir forest composed of mature and overmature red and white fir with scattered regeneration of predominantly red fir, is typical of the forest on Swain Mt. Experimental Forest.

Low altitude color aerial photos, approximate scale 1:3800 are available. Flights were made in 1980 and 1981 and show all experimental cuttings to that date.

EXAMPLES OF RESEARCH

- Natural regeneration
- Growth and yield
- Pathology
- Site preparation
- Effects of insects on cone crops
- Mortality prediction for old-growth fir.

FACILITIES

There are no facilities on the Forest, and no surface water is available. Unimproved campgrounds are along Robbers Creek, which forms part of the boundary of the Forest. Water from the creek is not potable.

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LOCATION

Swain Mountain lies at latitude 40°25' N. and longitude 121°06' W., 13 kilometers north of Westwood (see map). The Experimental Forest covers the entire mountain and rises from 1737 to 2149 meters above mean sea level.

The Forest can be reached via County Road A-21, a paved road that is kept clear of snow all winter. Neither the approximately 1.6 kilometers of all-weather road between the highway and the Forest, nor the extensive road network on the Forest are kept open during winter. Access between approximately mid-December and early May is limited to snowmobile, skis, or similar transportation. All of the current 41.8 kilometers of all-weather road is accessible by automobile, except when limited by snow. All parts of the Forest are easily reachable by short walks over gentle terrain.