

The Redwoods of California

conservation of Sequoias possible through seedling maintenance and proper cutting practices

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The redwoods of California are the only living species of Sequoia.

There are two Sequoias—the Coast redwood or *Sequoia sempervirens*, and the Sierra redwood or the *Sequoia gigantea*. They are both sequoias and both are redwoods and very close relatives of the bald cypress—*Taxodium distichum*—of the southeastern United States; of the Japanese *Cryptomeria* or Sugi—often called Japanese redwood; and of the recently discovered *Metasequoia*, incorrectly named Dawn redwood.

The Coast redwood is found over a narrow range more than 500 miles long—from the southern edge of Monterey County north to the Chetco River in southwest Oregon. The redwood belt is not continuous. There are breaks. Very little of it is more than 20 miles from the Coast. It produces one of the most unique forests of the world, and is famed for its grandeur as well as for its commercial products.

Occasional trees will be found more than 20 feet in diameter and a little more than 350 feet high. But such giants are rare. The extremes of diameter and height do not necessarily go together. The tallest trees are rarely more than 12 feet in diameter, occasionally 15 or 16 feet. The largest-diameter trees generally have lost much of their tops. In the forest diameters will vary from less than one foot to 10 or 12 feet in diameter. Such a range may be found on a single five-acre area.

Diameter is no criterion of age. Actual ring counts on a half dozen 12-foot Coast redwoods reveal the ages to range from 550 to 2,200 years. The greatest age of a Coast redwood, definitely authenticated by an actual ring count, is 2,200 years. This was a tree 12 feet in diameter, the top of which had broken off much more than 100 years before the tree was cut. Diameter is a matter of opportunity.

Redwood is a slow-growing tree in an old-growth or virgin forest where the trees have been in competition with one another from birth. But given full opportunity and the best soils the redwood will make very rapid growth. A forest tree may grow so slowly that in 75 years the radius will increase only one inch. Under more favorable conditions—getting full light—the same tree on similar soil may make one inch in three or four years. A tree growing very slowly in an

unbroken forest, may speed up its rate of growth many times if it is left standing after the competing trees are cut.

The redwood forest is what is known as a climax forest, as it is able to maintain itself. In a virgin forest individual trees grow up and drop out and others take their places. The fact that it is a climax forest is due largely to the ability of the redwood to endure heavy shade and to reach great age. The climax character does not bar other species—Douglas fir, white fir, hemlock and spruce. These can find entrance—the Douglas fir in openings, and the others under the redwood.

On the flats, where a larger number of trees per acre can be supported, the forest is likely to be 100% redwood. On the slopes there will be a varying percentage of the associated species. But everywhere, the trees are of all ages and sizes. This characteristic is important in determining methods of cutting. The mixed-age, mixed-size make-up of the forest makes it possible to cut on a selective basis—cutting can be centered on the larger trees, while the others are left to continue their growth.

Few Seedlings Needed

For an original redwood forest to reproduce itself, only an occasional seedling need get started. A new one in 100 years or more may be enough to replace the trees which fall. This seedling may be only six inches in diameter when it is 100 years old. It can hang on to life and grow very slowly under the shade of its elders. Eventually when it is 500 years old, it may be 200 feet high in a forest of 300-foot giants, and 30 inches or more in diameter. By this time its competing 1,000-year-old neighbors may be 500 years older and are likely to be topheavy. One of them will eventually fall and give the 500-year-old a better chance to reach a place in the upper crown canopy.

When the old forest is cutover, the story of replacement is quite different. More light, more root space and more soil moisture are available. If a sufficient number of seed trees have been left, there is assurance of a good seed supply and some shade to protect the soil against excessive dessication.

Given good weather and good luck it

is necessary for only 500 to 1,000 seeds per acre to germinate, and grow into seedlings and saplings to adequately reforest the area, assuming that the new trees are uniformly spaced. This eventually will result in an even-aged forest, with a few old seed trees projecting above it. The new forest may be 100% redwood, or there may be a heavy percentage of other species. Much depends on what the seed trees are and whether or not they bear a cone crop in the year of logging. The new forest will never again look like the original one. First of all there is a uniformity of age and size that did not occur before, and second, the trees won't be left for 1,000 years. They will be big enough for a second cutting in 100 years or less, depending on the site and kind of products desired.

For the past 30 years citizen organizations and the State have acquired the best of the forests for preservation as state parks. About 65,000 acres are set aside for recreation in such parks, and before long the total may be 100,000 acres. That is more than 10% of the remaining old-growth.

California still has somewhat less than two thirds of its original redwood forest area. What is not reserved for parks or other noncommercial forest, will certainly be cut. Commercial forests will be cut so long as there is a demand for lumber to build houses, bridges, fences, railroads, toys, tanks, and coffins, and the redwood forest must contribute its share.

Formerly the redwoods were cut clean with not a green tree or shrub left standing after the slash was burned to eliminate its fire hazard. Land so cut is not in good condition.

The present situation is much improved: where once the cutover land was devoid of seed trees and the new crop was a solid field of useless brush, it is now left equipped with from a few to many seed trees per acre. These trees may be as much as 36 inches or more in diameter in the northern counties, and 24 inches in Mendocino County. State law requires that four trees be left per acre. Actually, on a large part of the current cutover lands as many as 20 to 30 trees per acre are being left.

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