

California forests: A multiple resource

Henry J. Vaux



Steam railways were the standard log hauling technology throughout California in the 1880's and 1890's. Most of the old growth redwood of the sort depicted here has since been cut and today the industry relies largely on younger, smaller trees.

Within California lie some of the most diverse forests to be found anywhere in the world. Forty million acres (two-fifths of the state) bear forest cover. Included are the oldest known trees (whitebark pines), the largest (Sierra big trees), the tallest (coast redwood), and a remarkable pygmy forest where trees reach full maturity at heights of no more than six or eight feet. In addition to such scientific highlights, California forests are of vital importance as a source of wood products, as protective cover for major watersheds, as habitat for characteristic and important fish and wildlife, and as outdoor playgrounds for millions of people.

About 16 million acres of commercial forest provide raw material for the production of lumber, plywood, pulp, and various other forest products. Each year about 900 million cubic feet of such products are removed from the forests to meet consumer needs for housing, packaging materials, and many other end uses. The industry is concentrated in a great horseshoe which extends northward along the coast from Santa Cruz County to the Oregon border, eastward to Modoc County, and thence south along the Sierra Nevada to Tulare County. Within this area, forest products industries provide annual employment for about 100,000 people and generate annual payrolls of \$1.25 billion. They provide the principal economic base for 16 of the state's 58 counties. Slightly more than half the commercial forest is publicly owned, most of it in National Forests. Only one-sixth of the commercial forest is owned by the forest products industry. The remainder is held by farm and other owners, much of it in small holdings of 20 to 80 acres.

History

Sawmilling was one of the first industries established in California. Water powered mills began to operate around San Francisco Bay in the 1830's, and John Marshall's discovery of gold was made in the course of construction of a sawmill in the Sierra foothills. Following statehood in 1850, forests in the vicinity of the mining areas were heavily cut for construction, mining pur-

poses, and fuelwood. Much timber in the Tahoe Basin was exported to meet demands created by the Nevada silver strikes.

Before 1940, lumbering was generally on a modest scale, and where cutover land was protected from fire, naturally regenerated second-growth forests usually developed. Such forests are an increasingly important source of commercial timber today.

Following World War II, forest products output in the state expanded rapidly, reaching a peak during the late 1950's. During the last two decades, sawlog production has been slightly declining, as limitations on the available supply of merchantable timber become more binding. The four principal species cut for forest products are redwood, Douglas-fir, ponderosa pine, and white fir. Virtually all of California's commercial forest has been harvested at least once, and significant areas have been subjected to two, or even three, harvest cuts. Thus, outside park and wilderness areas, virgin forests are largely restricted to the National Forest system, where in 1976 there were still almost 1 million acres of unroaded (and hence unharvestable) area.

As logging activity expanded, the impacts of road construction and careless logging practices had significant adverse effects on soil erosion and water quality. In addition, by 1970 a significant percentage of cutover land was not adequately stocked with conifers, so that the annual wood growth was less than half of its actual potential. These conditions reflected the fact that, until about 1960, the timber economy was still an economic frontier. Wood supplies were relatively large and values were still low. There was little or no economic incentive for forest conservation. Although this economic environment has been transformed during the past two decades, many reminders of this recently closed forest frontier still remain.

Varied services

But California forests are much more than an industrial base. As protectors of vital watersheds, as recreational areas, and as plain environment visible from most people's homes and work places, they offer major services to the urban population. The



importance of these services has long been understood by urban people, and their understanding has led to widespread urban concern for proper forest protection and use. Combined with the industrial significance of forests, this has resulted in important forestry programs of fire protection, recreation development, and watershed protection.

The state's Mediterranean climate results in prolonged seasons of high fire hazard, and increasing population has resulted in more frequent wildfire occurrence. As a result, man-caused fires, some burning very large areas, have greatly influenced the vegetative cover on forest lands and continually threaten the forest, other property, and human life. Modern methods of fire control in effect during the last two decades have limited the extent and damage of wildfires in "normal" years. However, given a conjuncture of low relative humidity, high wind, and tinder-dry fuels, a wildfire may be virtually unstoppable. Many such wildfires destroy existing forest cover and make its natural reestablishment time-consuming.

One impact of people on the forests has been development for recreational use. Once roads were built into the commercial forest to harvest timber and provide better protection from fire, recreationists were quick to follow. Fishing, hiking, camping, hunting, and numerous other recreation activities expanded rapidly as new roads provided vehicular access to more and more forest land. Favorable climate, high speed state highways, and a mobile population have combined to make recreational use of California forests heavier than that in other states. Because of these recreational needs and the scientific significance of the forests, more than 8 million acres have been reserved as national or

state parks, wilderness or recreation area. The proportion of productive forest area reserved for these purposes is twice that characteristic of the rest of the U.S. Moreover, use of private forest land in the Coastal Zone and other special treatment areas is limited by statute to protect recreational amenities to a larger degree than in other states.

Recreation has been accompanied by expanded residential use of forest areas. Large numbers of summer cabins, second homes, year-round residences, and even subdivisions have been (and continue to be) built on otherwise productive forest land. As a result of this and other land use pressures, only about 60 percent of the privately owned commercial forest in California has been classified as in the Timber Production Zone.

Research needs and research programs have evolved in response to the state's diverse and rapidly changing forest situation. Early forestry research at the University of California (1920 to 1940) focused on basic studies of timber regeneration, growth, and yield, and on the economics of logging methods. By 1950 major diversification of the research effort was underway with important new research in forest products, forest economics, ecology and silviculture, inventory methods, stand regulation, forest entomology, and soil/water/vegetation relationships.

Although the basis for a comprehensive forestry research program has thus been laid, the existing level of effort falls far short of what is needed to meet now urgent needs for information to guide every day decision-making by forest resource managers. The great diversity of California forests already noted means that soil, vegetation, and hydrologic conditions need to be mapped in place and more complete research guidelines are needed on how soil, vegetative, and hydrologic conditions are affected by various land management treatments. In addition, such areas of research as forest genetics and forest sociology should be expanded to provide knowledge for the more intensive forest management needed in the future.

Californians make heavier and more diversified demands on their forests than any other people in the industrialized world. They demand a higher level of per capita consumption of wood, a larger amount of forest-based recreation, a higher standard of water quality control, and more attention to environmental amenity than do forest dependent communities elsewhere. To meet these demands—and they will expand in the future—we need a much broader and deeper forestry research effort than has yet been achieved. But at least the foundations for the needed effort are in place.

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Many men have contributed to the building of the U.C. forestry program. Three of the more prominent were Myron Krueger, (l) a leader in the development of logging and forest engineering programs; Emanuel Fritz, who became known as "Mr. Redwood" for his 35 years of research on that tree; and Henry J. Vaux (r), internationally recognized for his work in forest economics and forest policy.

