Forestry In California

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Forestry In California

DeWitt Nelson — State Forester
I. S. C. — 1925

The cry of "Timber - r - r" preceded the cry of "Gold" in California for it was in the mill race of one of the early sawmills that James W. Marshall discovered gold on January 24, 1848. Already lumber was in demand for the towns and ranches of the wonderful new-found land.

With the discovery of gold the great trek West came to life. Wagon trains across the plains, deserts, and mountains; around the Horn by boat and the shortcut "by land" across the fever-infested Isthmus of Panama. Boats were left to rot in San Francisco Bay when their skippers and crews joined the mad rush for the gold-covered streambeds of the Sierra Nevada.

But gold was not sufficient unto itself, the people needed lumber for homes, stores, flumes, and fuel. Here was an abundant supply of timber for sawmills which sprang up to meet the demand. Wagon trains hauling supplies to the gold camps had a "pay-load" on the back-haul to the river ports.

So started the cutting of one of the greatest pine and mixed conifer forest areas of the world. With the growth of water-borne commerce hardy New Englanders went up the Coast and with "jack-screws" and river logging started to cut the "wood everlasting," the redwood (Sequoia sempervirens).

Today, many of these early cut-over lands are again furnishing a second crop of timber for the industrialization and ever-increasing demand for forest products to a wood hungry nation. One hundred years from saw to saw. California, the third largest producer of wood and the first largest consumer.

The early logging by horse, oxen, and jack-screw did a minimum of damage to reproduction, often left seed trees because they were too big to handle. Naturally, they logged the accessible and better sites first. Reproduction came in, and on those areas not ravaged by fire a second forest came into being. But that type of logging was too slow to meet the ever-growing demand for lumber. The Central Pacific railroad was completed in May, 1869 and more people rushed westward and transcontinental commerce began.

Soon came steam logging with the Dolbeer donkey, followed by the high speed, high lead donkey which left nothing in its wake but unmerchantable down timber and broken forest waste. The middle twenties saw the advent of tractor logging in the pine and
by the middle thirties "donkey logging" had become history. Today, the "Donkey" is on its last legs in the redwood region.

In most areas the day of "devastation" logging is over. The tractor at its worst leaves the cut-over land in better condition for natural regeneration. Economics has entered the field—more and more operators leave on the stump those trees that will not pay their way through the mill. This, of course, is on a sliding scale with general economic conditions. A poor brand of forestry? Yes, but a step forward in the evolution of thought from what was believed to be an unlimited supply of forest to the present time when it is recognized that good forest management is essential to assure a continuously adequate supply.

In one hundred years the State has changed from a wilderness and desert, populated by a handful of adventurers to a highly developed commonwealth having the third largest population in the nation. This miraculous growth can be credited to the variety and volume of its wealth in natural resources. During this kaleidoscopic period there were many impacts of growth that stemmed from the forest and wild lands and resulted in heavy resources drain.

Desert has blossomed into rich agricultural valleys because of harnessed water from the forested watersheds. Great water development, flood control, and reclamation projects are still in the making. Along with this came the generation of hydro-electric power for cities and industry. Great herds of cattle and sheep came off the range lands (much of it intermingled with the forest) in prime condition. Scenic grandeur with a wealth of fish and game made the State a mecca for the recreationist. Abundance of raw materials from farms, mines, oil fields, and forests, together with water, rail, and highway transportation, as well as a superb climate, have been a magnet drawing industry and people to new opportunities.

In a State as large and varied, with many of the resources intermingled, one finds no single unity of purpose. Naturally, there developed conflicts of interest and different philosophies of use, development, and resource management. Human nature being what it is there will always be keen competition for the resources available. So, we come to our Centennial with the realization that there are five major crops that must be managed for perpetual annual harvesting from our "wild-land" resources. These crops are: water, timer and forest products, forage for domestic livestock, wildlife (fish and game), and recreation.

The major uses of water in California are for irrigation, industry, power generation, and domestic use. Ninety percent of

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California's water comes from within the State's boundaries and much of it must be transported many miles through canals and aqueducts to its point of use. Los Angeles brings part of its water from the Colorado River across miles of desert and mountains; she also reaches far to the north on the east side of the Sierra Nevadas. San Francisco takes its basic supply from the west side of the Sierra Nevadas, near Yosemite National Park.

California is the third largest producer and the heaviest per capita consumer of timber and forest products in the nation. The total lumber cut to date is approximately 98 billion board feet. At least 75 percent of this cutting has been since the turn of the century. In 1947 the cut exceeded 3 billion board feet, and it is estimated that the cut for 1948 will be in excess of 4 billion board feet. Too much of the cut-over land was "clear-cut," or swept by subsequent fire, so that without great reforestation cost it cannot be counted as productive forest land for future crops. The impact of war resulted in hundreds of new sawmills, many of them cutting thrifty second growth currently producing its greatest interest in the form of increment. They are here to stay as long as they can cut such timber at a profit.

Along with the increased demand for lumber and forest products, there has been a slowly increasing level of utilization in the woods and at the mill. Research for more complete and efficient utilization is of prime importance.

The range resource was recognized by the Spaniards, long before the discovery of gold. Early settlers found a bountiful cattle and sheep range with an abundance of native grasses and browse. Today, relatively few areas support these original species, even in limited quantity. Heavy grazing and repeated burning have resulted in soil erosion, permitted invasion and establishment of low-grade annuals and encouraged the natural plant succession of less desirable brush species. Many of the best range grasses present today are annuals which came here by accident from the Mediterranean area, and are far inferior to native perennial species.

We hope that much of the land primarily suitable for range use can be improved by clearing, reseeding, and proper livestock management. This will be a long and expensive process.

Wild life was abundant. With the forest providing streams for sport fishing and the habitat for game, this resource must be given consideration in any overall development and management program. With one and one-half million hunting and fishing licenses sold each year, many people buy an interest in the welfare of at least this one crop.

With seashore, desert, and mountains within a few hours
drive of each other, California has become a mecca for recreationists. The estimated use of our forest and watershed areas for recreation was fifty million man-days in 1947. Such use not only increases the fire risks, but in concentrated use areas can have a damaging effect on the resources which make them so popular. The conflict between "wilderness slums" and primitive areas is rapidly becoming a reality in many places. The problem of protecting urban developments in forested areas from fire, along with health and sanitation, is reaching staggering proportions.

Some may question the order in which I have set forth the five major crops which we annually harvest from our forest and "wild-lands" areas. These questions will be raised primarily because of personal interests. However, I do not believe that any one who has any general knowledge of the problems and California's economy will question the reason for giving water the number one position. Also, if we are to have an adequate water supply, one cannot question the importance of proper protection and management of the other four reproducible resources.

Naturally, in areas of intensive use or development for any one of the above crops, other uses are discouraged or minimized as much as possible. There is scarcely a single acre which does not produce two or more of these crops in varying degrees; therefore, the term "multiple use" and therein the forester's problem of resources management. With so many people personally involved, so many interest groups concerned, so many industries dependent, the problem of integrated resources management and protection takes on complex proportions.

Before looking at the State's forest policies and approach to the forest problem, let us consider the acreages represented by the various vegetative type classes.

<table>
<thead>
<tr>
<th>Major Vegetation Type</th>
<th>Million Acres and Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forest cropland</td>
<td>17.1</td>
</tr>
<tr>
<td>Other conifer forest land</td>
<td>6.0</td>
</tr>
<tr>
<td>Woodland (hardwoods)</td>
<td>10.0</td>
</tr>
<tr>
<td>Chaparral</td>
<td>9.8</td>
</tr>
<tr>
<td>Sagebrush</td>
<td>7.3</td>
</tr>
<tr>
<td>Grass</td>
<td>10.3</td>
</tr>
<tr>
<td>Desert</td>
<td>24.3</td>
</tr>
<tr>
<td>Barren and marsh</td>
<td>1.5</td>
</tr>
<tr>
<td>Cultivated, urban and industrial</td>
<td>13.7</td>
</tr>
</tbody>
</table>

All types ........................................... 100.0

1From Forest Survey Release No. 4, March 1, 1946. Calif. Forest and Range Experiment Station, U. S. Forest Service.

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The same figure expresses both millions of acres and percent because the total land area of California is approximately 100 million acres.

Approximately 46 million acres of California's 100 million acres are federally owned. The major holdings are under the jurisdiction of the U.S. Forest Service, the U.S. Park Service, the Bureau of Land Management, Indian Service, Grazing Service, Army and the Navy.

Of the 17.1 million acres of forest cropland, 8.8 million acres are publicly owned and 8.3 million acres are privately owned.

From the tables, it is obvious that 86% of the State's area is "wild-land"; land on which varying degrees of resource management are needed. The intensity of the management depends upon the type and value of the resources being utilized.

In a country of luxuriant growth with long, hot, dry summers the first problem is that of adequate fire protection. Without such protection no management, public or private, can afford to practice a desirable and adequate level of forestry.

![Typical California brush fire in watershed area.](Photo by author)
All of the State's "wild-lands" (forest, watershed and range) in need of protection are included under a systematic and correlated program. The degree of intensity of protection in all areas varies with the risks, difficulty of control and values at stake. This protection is handled by eight agencies; the U. S. Forest Service, the State Division of Forestry, and six independent counties. All are correlated through cooperative agreements. Together, they protect fifty-one million acres having "public interest values" and expend approximately twelve million dollars annually for direct protection purposes.

For the timber cropland it will be noted that it is divided about half and half between public and private ownership. We shall assume that the public timber crop lands, mostly National Forest, are under a reasonably intensive form of forest management. Consider then only the privately owned timber crop lands on which the State is responsible for administering the State Forest Practice laws.

The proper management of private forest lands propounds three major problems to the public forester: To be successful, forestry must produce a reasonable profit to the owner and operator. To be uniformly applied and practiced, it seems to be necessary to have some legal form of administration and control. To secure uniform practice there must be an education program and inspection service. An informed and understanding owner-operator is essential to success. Therefore, the human element met with proper education and public assistance, plus a dollar and cents profit is the thread which holds the success or failure of a sound forestry program on private land.

During 1944 an Interim Legislative Forest Study Committee and the State Board of Forestry spent much time investigating and studying the many forestry problems in the field. In this they worked closely with the timberland owners and operators. As a result, there was introduced and passed in the 1945 legislative session a Forest Practice Act with as nearly unanimous support as any legislation can have.

The Act set forth a legislative policy "to declare the necessity of good forest practices in the processes of harvesting such forest resources, and conserving and maintaining the productivity of such forest lands in the interests of the economic welfare of the State and the continuance of the forest industry; . . . . , and it is declared to be the policy of the State of California to encourage and promote and require such development, use, and management of forests and forest lands as will maintain the continuous production of forest products, to the end that adequate supplies of forest
products are assured for the needs of the people for their farms, homes, and industries. It is declared to be the policy of the State of California to encourage and assist private ownership in the management and economic development of privately owned forest lands.

The law divided the State into four Forest Practice Districts with a gubernatorial-appointed five man committee for each District, each committeeeman representing a specific class of forest owner and/or operator. The committees were charged with formulating and adopting (after public hearings) Forest Practice Rules, and approving forest management plans for final approval by the State Board of Forestry. The rules before receiving final approval had to be approved by ballot by 2/3 of the private timber ownership of the District.

This approach to the problem resulted in the creation of for-
A Range Improvement Control Burn, Madera County, California. This area was burned during the fall of 1947 and perennial grasses seeded in the ash, resulting in a good stand. Late rains were favorable to growth of the grass but left the ground very soft. Stock were placed on the area before the ground had dried causing much damage by trampling and pulling up clumps of new grass. Photo taken by the author May 3, 1948.

est practice rules through the processes of democratic procedure. It required one and one-half years to develop the rules and to secure the necessary approvals. They have now been in effect for the same length of time. To date the majority of operators are complying with the rules and many of the large operators are greatly exceeding them. We have a big educational job before us and that education must reach the men in the woods who are doing the actual logging.

Along with Forest Practices, goes the job of protecting the forests from insects and disease. Here too, the State is working with the owner and Federal Government on a 50-50 cooperative basis. This work reaches into the forest recreational areas as well as the timber crop lands.

In the field of range improvement the State has no jurisdictional control. Because of our responsibility for protecting from fire wild-land resources having statewide interest values—timber, watershed, and forage—we find ourselves engaged in a most in-
teresting and complex range improvement program, in cooperation with land owners. Part of the ten million acres of brush land in secondary watershed areas represents a potentially valuable range for our livestock industry. These lands are characterized by widely differing soils, varied brush types, annual winter precipitation ranging from 10 to 80 inches, and long, hot dry summers. Many of these areas have always been brush covered; on others, the chaparral is a result of clear-cut logging and burning, as well as encroachment into grass lands due to overuse of the range. In many cases the brush areas are intermingled with timber lands which frequently causes conflicts in land use philosophies.

It has been demonstrated in a number of cases that brush types can be temporarily changed to a grass type if there exists a proper combination of natural conditions. These requirements include reasonably good soils, favorable exposures, and slope gradients not subject to serious erosion. Given proper treatment and correct management, some of these lands can contribute materially to our range economy.

First, the brush must be eliminated. This can be accomplished by prescribed burning or mechanical clearing. The first is cheaper, but the latter is more lasting and usually more productive if topography will permit its use.

Secondly, the denuded area should be resown to suitable forage grasses. In this field the College of Agriculture is contributing much through research and experimentation.

The third important step is that of balancing use with forage production. Proper season of use is frequently more important than adjustment of livestock numbers in permitting perennial grasses to become firmly established on reseeded areas. Here again, the College and the Extension Service have been active in this field.

During the past four years approximately 200,000 acres have been cleared and 75,000 acres reseeded; but relatively few acres properly managed. The results have varied, ranging from complete failures to comparative successes. Of two things we are sure. There is no easy and inexpensive way to convert brush land to grass land; nor can a single formula be applied to all areas under all conditions.

In this Centennial year, California looks back over a colorful period of development through the exploitation of her varied and abundant resources. The State now looks forward with the full realization that its future social and economic welfare will depend upon her ability to so manage the reproducible resources that they will continuously contribute their share to the support of commun-

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ity and industrial life. There are just as colorful years ahead as there have been in the past. There are more and greater problems to be solved. Foresters, both public and private, must play an important role in this great drama. To them falls a large share of the responsibility for assuring an adequate supply of water, timber, forage, wildlife, and recreation from our wild lands.

FACTS ABOUT THE AUTHOR

DeWitt Nelson acquired his B. S. degree in 1925 from Iowa State College. After graduation he was appointed to manage the sale of timber in the Tahoe National Forest in California. He was appointed a Federal District Ranger of this region in 1926. During 1927-30 "Swede" Nelson acted as Assistant Supervisor of The Trinity National Forest. From 1930-1940 he held various top executive positions in the national forests of California. He was Supervisor of the San Bernadino National Forest from 1940-1944.

In 1944, DeWitt Nelson was appointed as State Forester of California. It is with pride that we publish Mr. Nelson's article and claim him as one of our graduates.