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Timber Resource Statistics for the San Joaquin and Southern Resource Areas of California

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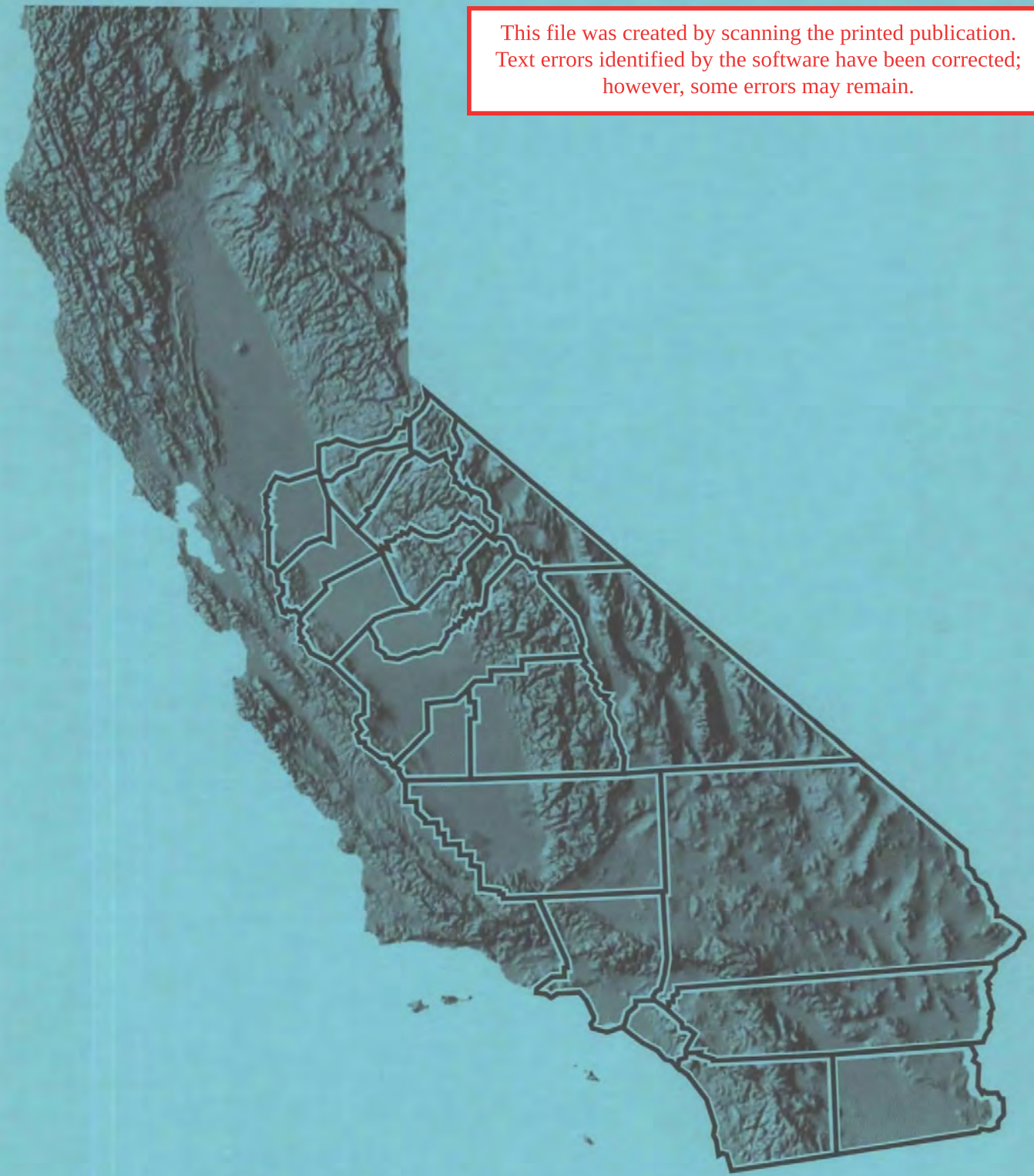

Authors

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Cover Map

The image on the cover was created from the North American 30 arc-second Digital Elevation Model obtained from the EROS Data Center, Sioux Falls, South Dakota.

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Abstract

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This report is a summary of timber resource statistics for the San Joaquin and Southern Resource Areas of California, which include Alpine, Amador, Calaveras, Fresno, Imperial, Inyo, Kern, Kings, Los Angeles, Madera, Mariposa, Merced, Mono, Orange, Riverside, San Bernardino, San Diego, San Joaquin, Stanislaus, Tulare, and Tuolumne Counties. Data were collected as part of a statewide mu88ltiresource inventory. The inventory sampled private and public lands except reserved areas and National Forests. The National Forest System provided data from regional inventories of the Angeles, Cleveland, El Dorado, Inyo, Los Padres, San Bernardino, Sequoia, Sierra, Stanislaus, and Toiyabe National Forests, and the Lake Tahoe Basin Management Unit. Area information for parks and other reserves was obtained directly from the organizations managing these areas. Statistical tables summarize all ownerships
and provide estimates of land area, timber volume, growth, mortality, and harvest. Estimates of periodic change of timberland area and timber volume are presented for all ownerships outside National Forests.

Keywords: Forest surveys, forest inventory, statistics (forest), timber resources, resources (forest), periodic change, trends, Alpine County, Amador County, Calaveras County, Fresno County, Imperial County, Inyo County, Kern County, Kings County, Los Angeles County, Madera County, Mariposa County, Merced County, Mono County, Orange County, Riverside County, San Bernardino County, San Diego County, San Joaquin County, Stanislaus County, Tulare County, Tuolumne County, California.

Summary

The San Joaquin and Southern Resource Areas of California include about 55.7 million acres of land in Alpine, Amador, Calaveras, Fresno, Imperial, Inyo, Kern, Kings, Los Angeles, Madera, Mariposa, Merced, Mono, Orange, Riverside, San Bernardino, San Diego, San Joaquin, Stanislaus, Tulare, and Tuolumne Counties. About 24 percent of this land is forest land, with an estimated 5 percent or 2.7 million acres in timberland. The majority of timberland (about 81 percent) is publicly owned, and is primarily in National Forests. Mixed conifer is the predominant forest type, occupying over 1 million acres of land. Most of the 8 billion cubic feet of volume is in softwood forest types growing in stands of sawtimber-sized trees. Softwood species comprise 91 percent of the total volume, with white fir, ponderosa pine, and red fir being the most prevalent species in these Resource Areas. Canyon live oak and California black oak are the dominant hardwoods. Most of the softwood volume is in trees greater than 21 inches in diameter breast height (d.b.h.), and most of the hardwood volume is in trees smaller than 21 inches in d.b.h. Outside the National Forests, the majority of volume is found in stands less than 100 years old; within National Forests, most stands exceed 100 years. Estimates of change between 1984 and 1994 are available for land outside National Forests. Data from both points in time were compiled by using current methods and procedures, to provide a common basis for evaluating periodic change (this is more accurate than using previously published data for 1984 as a comparison for change). An analysis of change outside National Forests indicates that 13,000 acres of timberland became reserved and 14,000 acres were converted to rights-of-way. Area occupied by hardwood forest types increased by about 27 percent, and the area of softwood forest types decreased by 11 percent. During the 1984-94 period, total growing-stock volume increased by 49 million cubic feet, a 3-percent rise. Hardwood volume increased about 11 percent in this period, while softwoods increased by 1 percent. These changes in volume are due to growth exceeding mortality and harvest during the 1984-94 period.

Preface

Forest Inventory and Analysis (FIA) is a nationwide project of the USDA Forest Service authorized by the Forest and Rangeland Renewable Resources Research Act of 1978. Work units, located at Forest Service Research and Experiment Stations, conduct forest resource inventories throughout the 50 States. The Pacific Resource Inventory, Monitoring, and Evaluation (PRIME) Program of the Pacific Northwest Research Station at Portland, Oregon, is responsible for forest inventories in Alaska, California, Hawaii, Oregon, and Washington.

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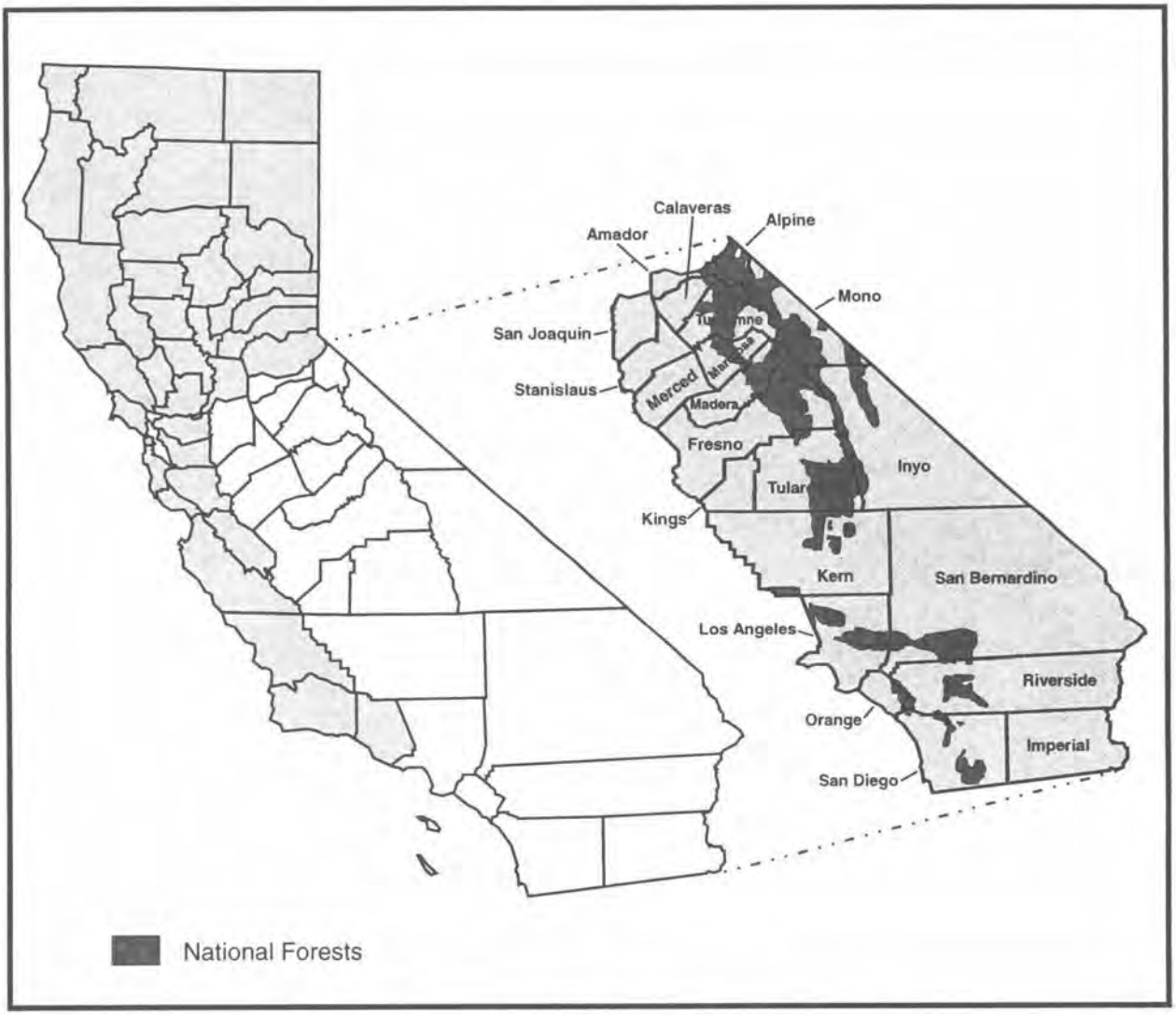

Figure 1--Counties in the San Joaquin and Southern Resource Areas of California.

Introduction

A multiresource inventory was conducted in California's forests from 1991 to 1994. The inventory area consisted of all land except reserved areas and public land administered by the National Forest System. Information about parks and other reserved areas was obtained directly from the organizations managing these areas. This report summarizes forest area and timber volume in the 21 counties of the San Joaquin and Southern Resource Areas (fig. 1). Statistical tables include data supplied by the National Forest System for both area and volume and provide a complete assessment of current timber resources across all ownerships. Other resources sampled in the inventory, but not included in this report, are oak woodlands, chaparral, standing snags, coarse woody debris, shrubs, and herbs.

The Pacific Resource Inventory, Monitoring, and Evaluation (PRIME) Program in the Pacific Northwest Research Station has been responsible for doing forest inventories on land outside National Forests in California since 1966. The earliest inventory carried out by the Pacific Northwest Research Station in the San Joaquin and Southern Resource Areas was reported by Bolsinger (1976, 1980). A second forest inventory was completed in 1984 (Hiserote and others 1986). The most recent inventory of the San Joaquin and Southern Resource Areas was conducted from 1991 to 1994. Earlier inventories were conducted by the Pacific Southwest Forest and Range Experiment Station in the 1930s, in 1953, and in 1963.

This report incorporates data for the Angeles, Cleveland, El Dorado, Inyo, Los Padres, San Bernardino, Sequoia, Sierra, and Stanislaus National Forests, and the Lake Tahoe Basin Management Unit administered by the Pacific Southwest Region (Region 5) and a portion of the Toiyabe National Forest administered by the Intermountain Region (Region 4). Only National Forest area that falls within the 21 counties of the San Joaquin and Southern Resource Areas is included in this report.

The 36 statistical tables that follow provide current estimates of land area, timber volume, net annual growth and mortality, and harvest. Tables 30 through 34 provide estimates of change in timberland area and volume between the 1981-84 inventory and the 1991-94 inventory for land outside National Forests. For consistency, data from the remeasured portions of the 1981-84 inventory plots were recompiled by using current procedures, definitions, standards, and expansion factors. Tables 30 through 34 can be used to make comparisons between inventories on land outside National Forests.

Inventory Procedures

Land Outside National Forests

The San Joaquin and Southern Resource Areas were inventoried with a double sampling for stratification design (Cochran 1977) on permanent, systematic grids. These grids produce an even geographic distribution of field and photo plots across the State and maintain an equal sampling intensity across counties. Photo plots for the primary sample were chosen by randomly selecting a point inside each square of the grid.

In the San Joaquin and Southern Resource Areas, the primary sample was a grid of 21,387 photo plots established during the 1981-84 inventory and updated in 1991 for changes in ownership. The primary sample included 1,260 timberland photo plots that were examined in 1981 to classify the forest stand at the grid location.

The secondary sample consisted of 1,336 forest and nonforest field plot locations established in the previous inventory and reclassified or remeasured in 1991-94. Each plot was a cluster of five subplots and subsampled about every 16th photo plot on the primary grid. This ratio of 1 field plot to 16 photo plots provides enough plots to meet the required sampling precision for estimates of forest area and volume. There were 88 timberland plots, established in the previous inventory, that were remeasured.

Permanent five-subplot field plots were installed at timberland grid locations during the 1981-84 inventory. At that time, all five subplots sampled a single homogeneous condition; if necessary, subplots were moved into the condition found at the center of the plot. Variable-radius sampling was used to select trees 7 to 36 inches in diameter at breast height (d.b.h.) on a subplot. Trees of all other diameters were selected with fixed-radius plots.

In 1991, the field plot design was modified to remove the potential for bias inherent in the 1981-84 procedures. The term "condition class" was defined for the modified design to identify different situations that could occur on a plot. A condition class or "condition" refers to an area with a distinct land class (for example, timberland, oak woodland, nonforest) or a distinct vegetative condition (for example, forest type, stand structure). The modified design requires that all subplots in the cluster, be placed in fixed locations on the plot, regardless of the number of conditions found. If a plot straddled two or more conditions, the boundary around each condition was mapped and the conditions were sampled. Tree selection procedures were identical to those used in the previous inventory. Data for each condition on a plot were kept separate and compiled as "condition class plots." For the 1,336 field plots in the 1991-94 inventory, we sampled 1,949 condition classes, of which 127 were timberland, 378 were oak-woodland, 101 were pinyon-juniper, 325 were chaparral, and the rest were nonforest.

Current estimates of area for timberland, other forest, and nonforest land are based on all 1,949 conditions. Tree data on timberland conditions are used to estimate timber volume, growth, mortality, and removals; and to determine stand characteristics such as forest type, stand size, and stand age by condition class.

Estimates of change in area and volume were compiled from data on subplots installed in 1981-84 that were in the same location in 1991-94. Subplots that were offset slightly in the previous inventory to ensure that the entire subplot fell in one condition also were remeasured to analyze for change. All other subplots that were moved by more than 56 feet in the 1981-84 inventory were not remeasured.

For more information about field, photo interpretation, or technical procedures (including volume and stocking equations, design discussion, and specific methods used in the compilation of data), see appendix A.

National Forest Land

The Pacific Southwest Region of the Forest Service (Region 5) supplied the most recent inventory data available for the Angeles, Cleveland, El Dorado, Inyo, Los Padres, San Bernardino, Sequoia, Sierra, and Stanislaus National Forests and the Lake Tahoe Basin Management Unit. Data were collected in different years as follows: Cleveland, 1995; El Dorado, 1994; Inyo, 1994; San Bernardino, 1995; and the Lake Tahoe Basin Management Unit, 1993. Older inventories from the Angeles, Los Padres, Sequoia, Sierra, and Stanislaus were updated by the Region to 1992. Data for the Toiyabe National Forest (Region 4) were extracted primarily from the national timber inventory database developed for the 1992 Resources Planning Act (RPA) assessment (Powell and others 1994). Inventory designs and methods have changed over the years and may differ among the National Forests and Regions: details of National Forest inventories may be obtained from the timber management staff at each Regional office (see appendices A and B).

The following is a brief description of current inventory procedures used by Region 5. Individual inventories were conducted within the administrative boundaries of a National Forest. Satellite imagery and aerial photography were used to create a map of the vegetation types (conifer, hardwood, shrub, or grassland) by using the CALVEG classification system (U.S. Department of Agriculture 1981). Information obtained from the vegetation map was used to develop strata, which were identified by vegetation type, stand size, and stand density. Field plots were established on a permanent, systematic grid extending across an entire National Forest. Plots were pin-pricked on orthophotos and contain five subplots. Each subplot included a variable-radius plot to sample intermediate-sized trees and two fixed-radius circular plots to sample the smallest and largest trees. Plots were linked to the vegetation maps developed for a Forest and were stratified based on characteristics of each stratum. Area estimates were calculated from strata delineated on maps, and volume per acre was estimated from tree measurements on field plots within a stratum. Total volume estimates were calculated by expanding the stratum volume per acre by the area in that stratum.

Changes in Definitions and Techniques

In 1991-94, some changes were made in the definitions and techniques used in the 1981-84 inventory. The most notable differences are adoption of new area figures from the latest Bureau of Census report (U.S. Department of Commerce 1990), a modified field plot design, and a different method to classify stand characteristics, such as forest type, on timberland plots.

Land and Water Area Updated

The Bureau of Census compiles and publishes the area of land and water in the United States every 10 years. These area figures, available by state and county, are accepted and used by PRIME as the gross number of acres to be inventoried in each county. The previous inventory was based on 1980 census data, and the current inventory uses 1990 census figures. Raster-scanned U.S. Geological Survey topographic maps and a geographic information system are now used by the Bureau of Census to identify water bodies and landforms and to determine the size of much smaller areas than was possible previously. As a result, the definition of inland water was changed to reflect the finer resolution: streams with a minimum width of 200 feet are now recognized, compared to 660 feet in 1980; and small water bodies are now at least 4.5 acres in size, compared to 40 acres in the past.

The new numbers and change in definitions caused a shift in gross area between land and water in California and affected the distribution of area among the counties. According to the 1990 census, total land area decreased by 49,000 acres in the San Joaquin and Southern Resource Areas. This has a direct impact on the size of the inventory area and the expansion factors (acres) associated with each plot.

Modified Field Plot Design

The field plot design adopted for the current inventory of California had a significant impact on the plot layout, the compilation of data, and the development of data for periodic change analysis. In the new plot layout, all five subplots were established in fixed positions and all conditions on a plot were sampled. New subplots were installed in 1991-94 to replace previously moved subplots from the 1981-84 inventory. Only data collected on subplots in the fixed layout pattern of the modified design were included in estimates of current area and volume for 1991-94.

The 1981-84 design forced all subplots to be laid out in the condition found at the center of the first subplot. Because the current design samples all conditions on a plot, more data are available on conditions that might not have been sampled as thoroughly in the previous inventory. Less prevalent conditions, such as riparian areas, are not found as often at the plot center because of the small land area occupied. The current design samples these areas as they are encountered on a plot and should improve the estimates for these areas.

Plots that cross condition class boundaries contain information pertinent to each condition. When multiple conditions exist on a plot, all data in one condition are processed together. The basic sampling unit is no longer the plot, it is now the condition class. This can impact the amount of information present to classify stand characteristics, such as forest type, stand-size, and stand age.

Although five-subplot plots were established during both inventories, the locations may not coincide, thereby affecting the number of subplots available for remeasurement. Subplots installed in the previous inventory that were moved more than 56 feet were not remeasured in 1991-94. Because of this, remeasured plots can contain less than five subplots or include less than 100 percent of the plot area.

An outcome of the modified design is two databases, each containing different sets of condition class plots; one set contains all conditions and is used to produce current estimates of area and volume for 1991-94, and the second set contains only remeasured subplots and conditions on a plot and is used to produce estimates of change between the two inventories. Because remeasured subplots are in the same condition at both inventories, each plot in the "change" database contains only one condition, and its expansion factor may differ from that used in the current database. Thus, current inventory estimates from the "change" database differ slightly from those based on the new sample--the result of sampling error. The current database is more reliable for estimates of the current status of resources in 1991-94 but is less reliable for estimating periodic change, because it includes data not sampled in the earlier inventory.

Classifying Stand Characteristics on Timberland Plots

Stand characteristics such as forest type, stand-size, and stand age are calculated from tree data tallied for a plot. In the previous inventory, these characteristics were assigned by computing the relative proportion of basal area among trees of different species, d.b.h., or age. In the current inventory, a technique was adopted that compares the individual contribution of each tree to the density of a normal stand (MacLean 1979). This method is based on area occupancy and reflects the ability of a tree to use the limited resources of a site (light, water, nutrients). Species with large crowns, for example, can intercept more light and water and will occupy a larger portion of the site. Stocking equations were developed by species from the relation between tree diameter and the average growing space occupied by trees in normal stands. Stocking estimates were adjusted for tree clumping, quadratic mean diameter, crown position, and stockability of the site. In 1991-94, stocking estimates were used to determine the stand characteristics of a plot, which in some cases were different from characteristics developed with the basal area method used in the past. For example, hardwood species with broad crowns generally occupy a greater proportion of a site and receive larger stocking estimates with the current procedure. As a result, stand classifications changed for some plots compared to the 1981-84 inventory, simply due to the change in procedure.

Analysis of Change Between Inventories on Lands Outside National Forests

Changes in forest resources based on comparisons of statistics from this report with those published for the 1981-84 inventory of the San Joaquin and Southern Resource Areas (Hiserote and others 1986) are obscured by definition or the procedural changes discussed above. Instead, the reader should use summaries of recompiled 1981-84 data that take into account the technical changes made in the 1991-94 inventory. Those summaries are provided in tables 30 to 34, which have been developed from remeasured plots on land outside National Forests and include recompiled 1981-84 data. An analysis of data in these tables will provide reliable estimates of area and volume at both inventories. Note that tables displaying periodic change do not include National Forest data, because data from earlier inventories were not recompiled to reflect real change over the period.

Tables 30, 31, and 32 show changes in timberland area and volume on ownerships other than National Forests in the period between the 1981-84 and 1991-94 inventories. Table 33 displays the change in area and volume by forest type, and table 34 shows volume by species for both inventories. All estimates were computed directly from the sample-based inventory data and are subject to sampling error. Other tables of recompiled 1981-84 data for land outside National Forests are available by request.

Reliability of Inventory Data

Standard errors for the estimated area, cubic-foot volume, and net annual cubic-foot growth and mortality for the San Joaquin and Southern Resource Areas, outside National Forests, are shown below. Confidence intervals can be calculated with this information.

Confidence intervals are quantitative expressions of the variability of the estimates for area and volume. The tabulation below indicates, for instance, a two-in-three (68-percent, one standard error) chance that the timberland area estimate for all non-National Forest owners (568 thousand acres) is within the range of 535 to 601 thousand acres.

The sample design in this inventory provides the highest precision when estimates are aggregated for both of the San Joaquin and Southern Resource Areas. As the sample is divided into smaller units, the confidence interval gets broader. For example, estimates of area by forest type for one county are less precise than the estimate of forest type for the whole resource area.

Standard errors for estimates of land area, by land class and owner class outside National Forests, are displayed below:

Land class	Other public	Forest industry	Other private	All owners
		Thousand acres (± standard error)		
Timberland	53 ± 16	146 ± 11	369 ± 32	568 ± 33
Other forest	1,069 ± 57	0	3,450 ± 81	4,519 ± 81
Nonforest	1,073 ± 61	13 ± 6	3,830 ± 84	4,917 ± 80

Standard errors for estimates of land area and growing-stock volume, by county, outside National Forests, are displayed below:

County	Timberland area	Softwood species volume	Hardwood species volume	Total volume
	Thousand acres (± standard error)	*----Million cubic feet (± standard error)-----*		
Alpine	20 ± 1	24 ± 22	0	24 ± 22
Amador	61 ± 5	173 ± 37	38 ± 12	211 ± 35
Calaveras	140 ± 17	365 ± 63	100 ± 20	465 ± 67
Fresno and Madera	60 ± 14	204 ± 52	34 ± 18	238 ± 63
Inyo	15 ± 1	3 ± 2	0	3 ± 2
Kern	18 ± 9	20 ± 8	19 ± 18	39 ± 24
Kings and Tulare	44 ± 10	149 ± 71	81 ± 47	230 ± 74
Mariposa	31 ± 7	66 ± 31	21 ± 11	87 ± 41
Mono	11 ± 4	18 ± 10	0	18 ± 10
Riverside	7 ± 5	9 ± 6	4 ± 4	13 ± 11
San Bernardino	18 ± 8	60 ± 34	17 ± 10	77 ± 39
San Diego	23 ± 12	22 ± 14	11 ± 9	33 ± 19
Tuolumne	120 ± 16	292 ± 62	41 ± 11	333 ± 62
Total	568 ± 33	1,405 ± 119	366 ± 61	1,771 ± 134

Standard errors for estimates of timber volume, growth, and mortality, by species or forest type group and owner class, on timberland outside National Forests are shown below:

Volume, species, and forest type	Other public	Forest industry	Other private	All owners
	Million cubic feet (volume ± standard error)			
Net volume:				
Softwood species	108 ± 62	516 ± 52	782 ± 94	1,405 ± 119
Hardwood species	33 ± 23	47 ± 15	286 ± 56	366 ± 61
Total	140 ± 46	562 ± 56	1,068 ± 119	1,771 ± 134
Net volume:				
Softwood forest types	86 ± 67	556 ± 57	765 ± 112	1,406 ± 138
Hardwood forest types	55 ± 33	7 ± 6	292 ± 72	353 ± 78
Total [1]	140 ± 46	562 ± 56	1,068 ± 119	1,771 ± 134
	Thousand cubic feet (volume ± standard error)			
Net annual growth:				
Softwood forest types	832 ± 825	11,279 ± 1,540	8,757 ± 1,680	20,868 ± 2,354
Hardwood forest types	581 ± 446	-28 ± 28	2,512 ± 728	3,065 ± 838
Total [1]	1,414 ± 824	11,251 ± 1,544	11,238 ± 1,720	23,902 ± 2,378
Net annual mortality:				
Softwood forest types	1,059 ± 793	7,001 ± 772	10,580 ± 1,582	18,641 ± 1,873
Hardwood forest types	813 ± 478	125 ± 125	3,701 ± 1,029	4,639 ± 1,120
Total [1]	1,872 ± 572	7,127 ± 784	14,530 ± 1,713	23,529 ± 1,894

Standard errors have been calculated for most of the tabular data in this report and are available on request from the PRIME Program, Pacific Northwest Research Station, Forestry Sciences Laboratory, P.O. Box 3890, Portland, Oregon 97208-3890.

Data Quality

Field crews attended a 2-week intensive training session to learn data collection procedures. During the first few weeks of field work, inexperienced crew members were paired with experienced crew members. About 10 percent of the field plots were revisited, and all items were remeasured to check on accuracy and consistency in classification, plot layout, tree measurements, and species identification. Each person's work was audited about five times during the field season. If consistent errors were detected, crews were informed and retrained as necessary. Data were edited extensively by using computer programs in both the field and the office. The edits checked for reasonableness of tree measurements in relation to other measurements on the tree. Questionable data were sent back to the field for verification, and data were corrected as necessary.

[1] Volume of the nonstocked forest type is included in the total.

Terminology

Available other forest land--Forest land incapable of growing 20 cubic feet per acre per year (mean annual increment at culmination in fully stocked, natural stands) of industrial wood because of adverse conditions such as sterile soils, dry climate, poor drainage, subalpine sites, steepness, or rockiness.

Class of timber--A classification of trees as growing stock, cull, and salvable dead. Growing-stock trees are divided into poletimber and sawtimber trees.

Condition class--A mapped area on a plot with a distinct land class (for example, timberland, oak woodland, nonforest) or a distinct vegetative condition (for example, forest type, stand size). The first condition identified at plot center is the only condition that is remeasured and used for the analysis of periodic change.

County and municipal lands--Lands owned by county and other local public agencies.

Cull trees--Live trees of noncommercial species, and live trees of commercial species that are more than 75 percent defective. Noncommercial species are junipers, pinyon pines, gray pine, Pacific yew, Pacific dogwood, apple, and willow. Cull trees are not growing-stock trees.

Cull trees, rotten--Cull trees with defect caused primarily by rot.

Cull trees, sound--Trees of noncommercial species or cull trees of commercial species with defect caused primarily by poor form and roughness.

Diameter class--A classification of trees based on diameter outside the bark measured at breast height, 4-1/2 feet above the ground. D.b.h. is the common abbreviation for diameter at breast height. Trees are grouped into 2-inch classes up to 21 inches d.b.h., after which the class intervals become broader.

Even-aged stands--Stands where 70 percent or more of the tree stocking falls within three adjacent 10-year age classes.

Farmer-owned lands--Lands owned by the operators of farms.

Forest industry lands--Lands owned by companies that grow timber for industrial use. Includes companies both with and without wood processing plants.

Forest land--Land at least 10 percent stocked with live trees, or land that had this minimum tree stocking in the past and is not currently developed for nonforest use. The minimum area recognized is 1 acre.

Forest types--Stands are assigned a pure softwood, pure hardwood, softwood-hardwood mix, hardwood-softwood mix, or mixed-conifer forest type. Stands with 70 percent or more of the stocking in live softwood trees are classified as pure softwood types and are assigned the type name of the softwood species with the greatest stocking among all softwoods on the condition class plot. Stands with 70 percent or more of the stocking in live hardwood trees are classified as pure hardwood types and are assigned the type name of the hardwood species with the greatest stocking among all hardwoods on the condition class plot. Mixed species

types are assigned if softwood stocking is between 31 to 69 percent total stocking on the plot: stands with 50 to 69 percent of the stocking in live softwood trees are classed as softwood-hardwood types, and receive a type name that includes the softwood species with the greatest softwood stocking, followed by the hardwood species with the greatest hardwood stocking; stands with 51 to 69 percent of the stocking in live hardwood trees are classed as hardwood-softwood types, and receive a type name that includes the hardwood species with the greatest hardwood stocking, followed by the softwood species with the greatest softwood stocking. For ease in reporting, the secondary forest type will be identified after a slash as "softwood" or "hardwood" in the summary tables. If a softwood forest type is one of the following species--sugar pine, ponderosa pine, Jeffrey pine, incense-cedar, Douglas-fir, white fir, or red fir--the plot is examined to determine if it is a mixed-conifer type (see appendix A, item 3, for a procedural reference). The alpine forest type is a general classification used by the National Forest System for high-elevation areas occupied by one or more of the following species: subalpine fir, Engelmann spruce, limber pine, bristlecone pine, whitebark pine, foxtail pine, or western white pine.

Growing-stock trees--All live trees except cull trees (see "cull trees").

Growing-stock volume--Net volume in cubic feet of live sawtimber and poletimber growing-stock trees from the top of a stump 12 inches tall to a minimum 4-inch top (of central stem) inside the bark. Net volume is gross volume less deductions for rot and missing bole sections.

Growth, current net annual, growing-stock--The increase in growing-stock volume during the last year in the period between the previous and current inventories. Components of current net annual growth for growing-stock volume include (a) the increment in net volume of poletimber and sawtimber growing-stock trees alive at the beginning of the year and surviving to year end; plus (b) ingrowth, the net volume of growing-stock trees reaching poletimber or sawtimber size during the year; minus (c) mortality, the net volume of poletimber and sawtimber growing-stock trees that died during the year.

Growth, current net annual, sawtimber--The increase in sawtimber volume during the last year in the period between the previous and current inventories. Components of current net annual growth for sawtimber volume include (a) the increment in net volume of sawtimber trees alive at the beginning of the year and surviving to year end; plus (b) ingrowth, the net volume of trees reaching sawtimber size during the year; minus (c) mortality, the net volume of sawtimber trees that died during the year.

Growth, periodic gross, growing-stock--The increase in growing-stock volume between the previous and current inventories that is attributable to increasing tree size. Periodic gross growth includes (a) the increment in net volume of poletimber and sawtimber growing-stock trees alive at both the previous and current inventories; (b) the increment in net volume of poletimber and sawtimber growing-stock trees alive at the previous inventory and harvested between inventories; and (c) ingrowth, the net volume of growing-stock trees reaching poletimber or sawtimber size between inventories.

Growth, periodic gross, sawtimber--The increase in sawtimber volume between the previous and current inventories that is attributable to increasing tree size. Periodic gross growth includes (a) the increment in net volume of sawtimber trees alive at the both the previous and current inventories; (b) the increment in net volume of sawtimber trees alive at the previous inventory and harvested between inventories; and (c) ingrowth, the net volume of trees reaching sawtimber size between inventories.

Hardwoods--Nonconiferous trees, usually broad-leaved. See "Names of Trees" for a list of hardwood species in this report.

Industrial wood--All commercial roundwood products except fuelwood. Roundwood includes logs or bolts that are in straight sections at least 8 feet long for hardwoods and 12 feet long for softwoods.

Land area--Area reported as land by the Bureau of the Census (U.S. Department of Commerce 1990). Total land area includes dry land and land temporarily or partially covered by water, such as marshes, swamps, and river flood plains; streams, sloughs, and canals less than 200 feet wide; and lakes, reservoirs, and ponds less than 4.5 acres in area.

Land class--A classification of land by major use. The minimum area for classification is 1 acre.

Mean annual increment (MAI) at culmination--A measure of the productivity of forest land expressed as the average increase in cubic-foot volume per acre per year. For a given species and site index, the mean is based on the age at which the mean annual increment culminates for fully stocked natural stands. The MAI is calculated from equations and is based on the site index of the plot.

Miscellaneous Federal lands--Federal lands other than lands administered by the Forest Service.

Miscellaneous private owners--All private owners not otherwise classified.

Mortality, average annual, growing stock--The annual net volume of poletimber and sawtimber growing-stock trees that died between the previous and current inventories.

Mortality, average annual, sawtimber--The annual net volume of sawtimber trees that died between the previous and current inventories.

Mortality, periodic, growing stock--The net volume of poletimber and sawtimber growing-stock trees that died between the previous and current inventories.

Mortality, periodic, sawtimber--The net volume of sawtimber trees that died between the previous and current inventories.

National Forest lands--Federal lands that have been designated by Executive Order or statute as National Forest or purchase units and other lands under the administration of the Forest Service, U.S. Department of Agriculture, including experimental areas and Bankhead-Jones Title III lands.

Native American lands--Tribal and allotted lands held in trust by the Federal Government. Native American lands are grouped with farmer and miscellaneous private lands as other private lands.

Net volume--Gross volume less deductions for sound and rotten defects. Growing-stock net volume is gross cubic-foot volume less deductions for rot and missing bole sections on poletimber and sawtimber growing-stock trees. Sawtimber net volume is gross board-foot volume less deductions for rot, sweep, crook, missing bole sections, and other defects that affect the use of sawtimber trees for lumber.

Noncommercial species--A tree species not suitable for industrial wood products: junipers, gray pine, Pacific yew, Pacific dogwood, apple, and willow. Noncommercial species will not be included in growing-stock volume tables; however, if one or more of these species dominate on a plot, the forest type might be classified as a noncommercial species.

Nonforest land--Land that has never supported forests or formerly was forested and currently is developed for nonforest uses. Included are lands used for agricultural crops, Christmas tree farms, improved pasture, residential areas, city parks, constructed roads, operating railroads and their right-of-way clearings, powerline and pipeline clearings, streams more than 30 feet wide, and 1- to 40-acre areas of water classified by the Bureau of the Census, U.S. Department of Commerce, as land. If intermingled in forest areas, unimproved roads and other nonforest strips must be more than 120 feet wide, and clearings or other areas must be 1 acre or larger to qualify as nonforest land.

Nonstocked areas--Timberland less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are classified as nonstocked area.

Other private lands--Private lands not owned by forest industry. Native American lands, farmer-owned lands, and miscellaneous private lands are included.

Other public lands--Lands administered by public agencies other than the U.S. Department of Agriculture, Forest Service. Other public lands do not include Native American lands, which are included with other private lands.

Poletimber stands--Stands with a quadratic mean diameter (mean diameter weighted by basal area) from 5.0 to 9.0 inches at breast height if a softwood stand and from 5.0 to 11.0 inches at breast height if a hardwood stand.

Poletimber trees--Live growing-stock trees of commercial species that are 5.0 inches in d.b.h. or larger but smaller than sawtimber trees.

Removals, average annual, growing stock--The annual net volume of poletimber and sawtimber growing-stock trees removed by harvesting, silvicultural activities, and land clearing between the previous and current inventories. Removals are estimated from data collected on field plots in the inventory and not from information in State harvesting records.

Removals, average annual, sawtimber--The annual net volume of sawtimber trees removed by harvesting, silvicultural activities, and land clearing between the previous and current inventories. Removals are estimated from data collected on field plots in the inventory and not from information in State harvesting records.

Removals, periodic, growing stock--The net volume of poletimber and sawtimber growing-stock trees removed by harvesting, silvicultural activities, and land clearing between the previous and current inventories. Removals are estimated from data collected on field plots in the inventory and not from information in State harvesting records.

Removals, periodic, sawtimber--The net volume of sawtimber trees removed by harvesting, silvicultural activities, and land clearing between the previous and current inventories. Removals are estimated from data collected on field plots in the inventory and not from information in State harvesting records.

Reserved other forest--Forest land incapable of growing 20 cubic feet per acre per year (mean annual increment at culmination in fully stocked, natural stands) of industrial wood that has been dedicated to noncommodity use through statute, ordinance, or administrative order.

Reserved timberland--Forest land capable of growing 20 cubic feet or more per acre per year (mean annual increment at culmination in fully stocked, natural stands) of industrial wood that has been dedicated to noncommodity use through statute, ordinance, or administrative order. Plots were not established in reserved areas; tree data therefore were not available to determine the mean annual increment (MAI) for these plots. Because of this, reserved forest land with an MAI of less than 20 cubic feet per acre per year may be classified as reserved timberland rather than reserved other forest land.

Roundwood--Logs, bolts, or other round sections cut from trees.

Sapling and seedling stands--Stands with a quadratic mean diameter (mean diameter weighted by basal area) less than 5.0 inches at breast height.

Sapling and seedling trees--Live trees of commercial species that are less than 5.0 inches in d.b.h. and have no diseases, defects, or deformities likely to prevent their becoming poletimber trees.

Saw-log portion--The bole of sawtimber trees between the stump and the saw-log top. Saw-log top is 7.0 inches in diameter outside bark on softwoods and 9.0 inches in diameter outside bark on hardwoods.

Sawtimber stands--Stands with a quadratic mean diameter (mean diameter weighted by basal area) larger than 9.0 inches at breast height if a softwood stand and larger than 11.0 inches at breast height if a hardwood stand.

Sawtimber trees--Live softwood trees of commercial species at least 9.0 inches in d.b.h. and live hardwood trees of commercial species at least 11.0 inches in d.b.h. At least 25 percent of the board-foot volume in a sawtimber tree must be free from defect. Softwood trees must contain at least one 12-foot saw log with a top diameter of not less than 7 inches outside bark; hardwood trees must contain at least one 8-foot saw log with a top diameter of not less than 9 inches outside bark.

Sawtimber volume--Net volume of sawtimber trees measured in board feet. Softwood volume is estimated from the top of a stump 12 inches tall up to a minimum 6-inch top diameter, inside bark, and hardwood volume is estimated from the top of a stump 12 inches tall up to a minimum 8-inch top diameter, inside bark. Net sawtimber volume equals gross volume less deduction for rot, sweep, crook, and other defects that affect use for lumber.

Scribner rule--The common board-foot log rule used locally in California to determine sawtimber volume. Scribner volume is estimated in terms of 16-foot logs for both softwoods and hardwoods. See "sawtimber volume" for utilization limits.

Site class--A classification of the potential productivity of forest land expressed as mean annual increment (MAI) at culmination in fully stocked natural stands. Six classes in this report are based on a range of MAI values that were calculated on every plot.

Site index--A measure of the productivity of forest land expressed as the average height of dominant and codominant trees at a specified age.

Softwoods--Coniferous trees, usually evergreen, with needles or scalelike leaves. See "Names of Trees" for a list of softwood species in this report.

Stand age--The 10-year age class that best characterizes the stand. See "even-aged stand" and "uneven-aged stand" for more details.

Stand-size class--A classification of stands based on tree size. Stand-size classes are sawtimber, poletimber, and sapling-seedling stands.

State lands--Lands owned by States or administered by State agencies.

Timber harvest--Volume of roundwood removed from forest land for products. Timber harvest statistics reported in tables 35 and 36 were collected by the California State Board of Equalization, Timber Tax Division, in Sacramento. The Board of Equalization figures do not include smash, mismanufacture, breakage, or wood left behind in the forest. Average annual removals (tables 28 and 29) and periodic removals (tables 31 and 32) are based on trees sampled in PRIME inventories that were live during the previous inventory but were harvested or killed in a cultural operation before the current inventory.

Timber volume--Includes the net volume in cubic feet of poletimber and sawtimber trees and salvable dead sawtimber trees, and the net volume in cubic feet of cull trees of commercial species. In table 18, the volume of cull trees includes the gross volume of noncommercial species. Volume is measured from the top of a stump 12 inches tall to a minimum 4-inch top diameter, inside bark.

Timberland--Forest land capable of growing 20 cubic feet or more per acre per year (mean annual increment at culmination in fully stocked, natural stands) of industrial wood and not in a reserved status through removal of the area from timber utilization by statute, ordinance, or administrative order; and not in a withdrawn status where it is pending consideration for reserved status.

Uneven-aged stands--Stands where less than 70 percent of the tree stocking falls in three adjacent 10-year age classes.

Upper stem portion--The bole of sawtimber trees above the saw-log top--7.0 inches diameter outside bark for softwoods and 9.0 inches diameter outside bark for hardwoods--to a minimum top diameter of 4.0 inches inside bark, or to the point where the central stem divides into limbs.

Withdrawn timberland--Timberland in National Forests that is being considered for permanent reserved status. Although this land has not been removed from timber utilization by statute, ordinance, or administrative order, it is not being actively managed as timberland.

Names of Trees

Common name	Scientific name [2]
Softwoods:	
Bigcone Douglas-fir	*Pseudotsuga macrocarpa* (Vasey) Mayr
Bristlecone pine	*Pinus aristata* Engelm.
California-nutmeg	*Torreya californica* Torr.
Coulter pine	*Pinus coulteri* D. Don
Douglas-fir	*Pseudotsuga menziesii* (Mirb.) Franco
Engelmann spruce	*Picea engelmannii* Parry ex Engelm.
Foxtail pine	*Pinus balfouriana* Grev. & Balf.
Giant sequoia	*Sequoiadendron giganteum* (Lindl.) Buchholz.
Gray pine (foothill pine)	*Pinus sabiniana* Dougl.
Incense-cedar	*Libocedrus decurrens* Torr.
Jeffrey pine	*Pinus jeffreyi* Grev. & Balf.
Junipers	*Juniperus* spp. L.
Knobcone pine	*Pinus attenuata* Lemm.
Limber pine	*Pinus flexilis* James
Lodgepole pine	*Pinus contorta* Dougl. ex Loud.
Mountain hemlock	*Tsuga mertensiana* (Bong.) Carr.
Pacific yew	*Taxus brevifolia* Nutt.
Pinyon pine	*Pinus* spp.
Ponderosa pine	*Pinus ponderosa* Dougl. ex Laws.
Red fir:	
California red fir	*Abies magnifica* A. Murr.
Shasta red fir	*Abies magnifica* var. *shastensis* Lemmon
Subalpine fir	*Abies lasiocarpa* (Hook.) Nutt.
Sugar pine	*Pinus lambertiana* Dougl.
Western white pine	*Pinus monticola* Dougl. ex D. Don
Whitebark pine	*Pinus albicaulis* Engelm.
White fir	*Abies concolor* (Gord. & Glend.) Lindl. ex Hildebr.

Common name	Scientific name [2]
Hardwoods:	
Apple	*Malus* spp. Mill.
Bigleaf maple	*Acer macrophyllum* Pursh
Cottonwood	*Populus tricocarpa* Torr. & Gray
Blue oak	*Quercus douglasii* Hook. & Arn.
California black oak	*Quercus kelloggii* Newb.
California buckeye	*Aesculus californica* (Spach) Nutt.
California-laurel	*Umbellularia californica* (Hook. & Arn.) Nutt.
Canyon live oak	*Quercus chrysolepis* Liebm.
Coast live oak	*Quercus agrifolia* Née
Engelmann oak	*Quercus engelmannii* Greene
Eucalyptus	*Eucalyptus* spp. L'Her.
Fremont cottonwood	*Populus fremontii* Wats.
Giant chinkapin	*Castanopsis chrysophylla* (Dougl.) A. DC.
Interior live oak	*Quercus wislizeni* A. DC.
Oregon ash	*Fraxinus latifolia* Benth.
Oregon white oak	*Quercus garryana* Dougl. ex Hook.
Pacific dogwood	*Cornus nuttallii* Audubon
Pacific madrone	*Arbutus menziesii* Pursh
Quaking aspen	*Populus tremuloides* Michx.
Tanoak	*Lithocarpus densiflorus* (Hook. & Arn.) Rehd.
Valley oak	*Quercus lobata* Née
Walnut	*Juglans* spp. L.
White alder	*Alnus rhombifolia* Nutt.
Willow	*Salix* spp.

[2] Nomenclature per Little (1979).

Tables

Table 1--Land area, by county, land class, and administrative status, San Joaquin and Southern Resource Areas, California, 1994 [a b]

County	Forest land						Non-forest	All land [c]
	Timberland	Reserved timberland	Withdrawn timberland	Available other forest	Reserved other forest	Total forest		
	Thousand acres							
Alpine	85	112	5	100	54	356	117	473
Amador	104	14	2	121	1	242	137	379
Calaveras	204	5	2	254	0	465	188	653
Fresno and Madera	572	495	1	660	151	1,879	3,306	5,185
Imperial	0	0	0	0	0	0	2,672	2,672
Inyo	27	38	3	819	57	944	5,579	6,523
Kern	148	2	0	828	11	989	4,222	5,211
Kings and Tulare	391	296	--	603	209	1,500	2,477	3,977
Los Angeles	79	0	0	639	143	861	1,737	2,598
Mariposa	152	199	1	331	28	711	218	929
Merced	0	0	0	52	3	55	1,179	1,234
Mono	183	35	3	968	24	1,213	735	1,948
Orange	1	0	0	125	13	139	366	505
Riverside	35	33	0	491	117	676	3,937	4,613
San Bernardino	179	50	0	431	35	695	12,145	12,840
San Diego	47	8	0	1,005	149	1,209	1,482	2,691
San Joaquin	0	0	0	25	1	26	870	896
Stanislaus	0	0	0	132	26	158	799	957
Tuolumne	479	296	26	223	86	1,110	321	1,431
Total	2,688	1,583	43	7,807	1,108	13,228	42,487	55,715

-- = less than 500 acres, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Source: U.S. Department of Commerce 1990.

Table 2--Area of reserved timberland, withdrawn timberland, and other forest land, by forest type, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Forest type	Reserved timberland	Withdrawn timberland	Other forest		Total
			Available	Reserved	
			Thousand acres		
Softwood types:					
Alpine types	215	13	27	0	254
Mixed conifer	441	11	68	36	555
Douglas-fir	4	0	1	12	17
Gray pine	0	0	12	0	12
Jeffrey pine	31	--	11	0	42
Lodgepole pine	246	--	79	19	344
Ponderosa pine	25	4	41	13	83
Other pines	108	0	0	32	140
Red fir	264	10	0	0	274
Other true firs	94	0	0	0	94
Mountain hemlock	33	0	0	0	33
Giant sequoia	9	0	0	0	9
Pinyon-juniper	0	0	999	159	1,158
Other softwoods	1	0	2	197	200
Total, softwood types	1,471	39	1,240	467	3,215
Hardwood types:					
Blue oak	0	0	531	2	533
Engelmann oak	0	0	23	0	23
Oregon white oak	0	0	7	0	7
California black oak	8	2	11	41	61
Canyon live oak	0	0	189	0	189
Coast live oak	0	0	44	3	47
Interior live oak	0	0	290	1	291
Unclassified oaks	0	0	1,122	97	1,219
California buckeye	0	0	34	0	34
Cottonwood / aspen	1	0	23	0	24
White alder	0	0	7	3	9
Willow	0	0	12	3	15
Eucalyptus	--	0	3	0	4
Other hardwoods	0	0	2	5	7
Total, hardwood types	8	2	2,298	155	2,462
Chaparral	0	0	3,070	479	3,549
Nonstocked	99	3	0	0	102
Unclassified	6	0	1,199	8	1,213
Total, all types	1,583	43	7,807	1,108	10,541

-- = less than 500 acres, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

Table 3--Area of timberland, by county and owner class, San Joaquin and Southern Resource Areas , California, 1994 [a b]

County	Public						Private					
		Other public						Other private				
	National Forest	Bureau of Land Management	Miscellaneous Federal	State	County and municipal	Total public	Forest industry	Farmer	Native American	Miscel-laneous	Total private	All owners
	Thousand acres											
Alpine	65	3	0	0	0	68	0	9	0	8	17	85
Amador	43	0	0	0	0	43	27	13	0	21	61	104
Calaveras	64	3	1	0	0	68	53	36	0	47	136	204
Fresno and Madera	512	0	0	0	0	512	0	36	0	24	60	572
Imperial	0	0	0	0	0	0	0	0	0	0	0	0
Inyo	12	8	7	0	0	27	0	0	0	0	0	27
Kern	131	0	0	0	0	131	0	9	0	9	18	148
Kings and Tulare	348	14	7	0	0	369	0	11	8	4	23	391
Los Angeles	79	0	0	0	0	79	0	0	0	0	0	79
Mariposa	121	0	0	0	0	121	0	15	0	16	31	152
Merced	0	0	0	0	0	0	0	0	0	0	0	0
Mono	172	6	0	0	1	179	0	1	0	3	4	183
Orange	1	0	0	0	0	1	0	0	0	0	0	1
Riverside	28	0	0	0	0	28	0	1	0	6	7	35
San Bernardino	161	0	0	0	0	161	0	3	0	15	18	179
San Diego	24	0	0	0	0	24	0	3	4	16	23	47
San Joaquin	0	0	0	0	0	0	0	0	0	0	0	0
Stanislaus	0	0	0	0	0	0	0	0	0	0	0	0
Tuolumne	359	2	1	0	0	362	66	16	0	35	117	479
Total	2,120	36	16	0	1	2,173	146	153	12	204	515	2,688

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

Table 4--Area of timberland, by forest type and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Forest type	National Forest	Other public	Forest industry	Other private	All owners
			Thousand acres		
Softwood types:					
Douglas-fir	74	0	0	0	74
True firs--					
White fir	--	0	0	0	--
Red fir	288	0	0	0	288
Total	288	0	0	0	288
Mixed conifer--					
Mixed conifer	755	14	122	99	990
Mixed conifer / hardwood	0	0	14	31	44
Total	755	14	136	130	1,034
Ponderosa / Jeffrey pine--					
Ponderosa pine	326	0	9	39	374
Ponderosa pine / hardwood		0	0	12	12
Jeffrey pine	184	5	0	17	205
Total	510	5	9	67	591
Other softwood types--					
Alpine types	41	0	0	0	41
Lodgepole pine	61	3	0	9	72
Coulter pine	15	0	0	3	18
Knobcone pine	--	0	0	0	--
Incense-cedar	0	0	0	--	--
Pinyon pine	0	2	0	4	6
Total	117	4	0	16	137
Total, softwood types	1,744	23	145	213	2,124
Hardwood types:					
White alder / softwood	0	0	0	4	4
Quaking aspen	0	13	0	0	13
Coast live oak	0	0	0	7	7
Canyon live oak	0	12	0	37	49
Canyon live oak / softwood	0	0	0	31	31
California black oak	109	7	1	32	148
California black oak / softwood	0	0	0	10	10
Interior live oak	0	0	0	8	8
Interior live oak / softwood	0	0	0	13	13
Total, hardwood types	109	31	1	141	282
Nonstocked [c]	266	0	0	16	282
Total, all types	2,120	53	146	369	2,688

-- = less than 500 acres, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 5--Area of timberland, by owner class, stand-size class, and forest type group, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Owner	Sawtimber			Poletimber			Seedling - sapling			All stand-size classes			
	Softwood types	Hardwood types	All types	Softwood types	Hardwood types	All types	Softwood types	Hardwood types	All types	Softwood types	Hardwood types	Not classified [c]	All types
	Thousand acres												
National Forest	1,577	109	1,686	40	0	40	68	0	68	1,685	109	325	2,120
Other public	20	15	35	0	3	3	3	13	16	23	31	0	53
Forest industry	137	1	138	3	0	3	5	0	5	145	1	0	146
Other private	195	95	290	8	20	28	10	26	35	213	140	16	369
All owners	1,928	220	2,148	52	23	75	86	38	124	2,065	281	341	2,688

-- = less than 500 acres, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Stand-size class was not determined for nonstocked stands, and for some softwood types on National Forest land.

Table 6--Area of timberland, by cubic-foot site class and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Owner	Site class [c]						All classes
	≥225	165-224	120-164	85-119	50-84	20-49	
	Thousand acres						
National Forest	0	18	520	634	616	331	2,120
Other public	0	0	8	15	3	27	53
Forest industry	17	26	63	26	15	0	146
Other private	17	19	68	55	73	136	369
All owners	34	63	659	731	707	494	2,688

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Site class is the mean annual increment cubic-foot growth per acre at culmination in fully stocked, natural stands.

Table 7--Area of timberland, by forest type and stand-size class, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Forest type	Sawtimber	Poletimber	Seedling-sapling	Not classified [c]	All classes
			Thousand acres		
Softwood types:					
Douglas-fir	19	0	0	55	74
True firs--					
White fir	--	0	0	0	--
Red fir	279	1	9	0	288
Total	279	1	9	0	288
Mixed conifer--					
Mixed conifer	917	16	58	0	990
Mixed conifer / hardwood	44	0	0	0	44
Total	961	16	58	0	1,034
Ponderosa / Jeffrey pine--					
Ponderosa pine	349	15	10	0	374
Ponderosa pine / hardwood	10	3	0	0	12
Jeffrey pine	184	18	4	0	205
Total	542	36	14	0	591
Other softwood types--					
Alpine types	41	0	0	0	41
Lodgepole pine	72	0	0	0	72
Coulter pine	15	0	0	4	18
Knobcone pine	0	0	--	0	--
Incense-cedar	0	0	--	0	--
Pinyon pine	0	0	6	0	6
Total	127	0	6	4	137
Total, softwood types	1,928	52	86	59	2,124
Hardwood types:					
White alder / softwood	4	0	0	0	4
Quaking aspen	0	0	13	0	13
Coast live oak	7	0	0	0	7
Canyon live oak	32	3	13	0	49
Canyon live oak / softwood	31	0	0	0	31
California black oak	142	7	0	0	148
California black oak / softwood	5	5	0	0	10
Interior live oak	0	8	0	0	8
Interior live oak / softwood	0	0	13	0	13
Total, hardwood types	220	23	38	0	282
Nonstocked [d]	0	0	0	282	282
Total, all types	2,148	75	124	341	2,688

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Stand-size class was not determined for nonstocked stands and for some softwood types on National Forest land.

[d] Nonstocked areas are less than 10 percent stocked with live trees; includes recent clearcuts scheduled for planting.

Table 8--Number of live trees on timberland outside National Forests, by species and diameter class, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Species	Diameter class (inches at breast height)													All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0-38.9	39.0 +	
	Thousand trees													
Softwoods:														
White fir	8,276	3,567	3,068	1,895	1,793	876	1,073	909	570	492	200	817	39	23,575
California red fir	954	792	887	475	42	66	137	87	66	27	34	27	12	3,606
Incense-cedar	16,144	10,045	5,665	3,514	1,989	1,570	921	1,137	529	413	328	772	76	43,103
Lodgepole pine	772	695	309	310	178	210	102	181	152	69	72	133	4	3,185
Coulter pine	0	0	0	0	35	51	105	15	0	42	2	22	0	274
Jeffrey pine	981	925	1,077	826	406	563	370	426	259	203	180	296	41	6,551
Sugar pine	1,719	693	722	487	775	352	260	51	154	50	106	351	84	5,804
Ponderosa pine	4,667	4,324	3,643	2,885	2,328	1,286	912	857	893	330	460	1,065	47	23,697
Gray pine	182	0	0	0	0	60	35	60	69	31	0	18	0	456
Pinyon pine	257	301	0	0	48	0	0	0	0	0	0	0	0	605
Bigcone Douglas-fir	0	301	601	236	0	0	0	0	0	0	0	27	29	1,194
Douglas-fir	2,977	1,819	927	152	97	180	223	124	58	19	103	201	27	6,906
Giant sequoia	0	0	0	0	0	0	0	0	35	30	0	13	5	83
California-nutmeg	128	0	0	95	0	0	0	0	0	0	0	0	0	223
Total	37,057	23,462	16,899	10,874	7,691	5,214	4,137	3,847	2,785	1,706	1,484	3,743	362	119,261
Hardwoods:														
Bigleaf maple	227	161	66	0	27	0	18	0	0	0	0	7	0	506
California buckeye	745	0	0	0	131	0	0	0	0	0	0	0	0	876
White alder	0	0	0	0	123	0	22	99	16	34	43	27	0	364
Pacific madrone	0	0	0	0	53	30	0	0	13	0	0	0	0	97
Pacific dogwood	1,264	1,709	287	0	68	0	0	0	0	0	0	0	0	3,328
Oregon ash	951	95	0	0	0	0	0	35	0	0	0	0	0	1,081
Walnut	0	365	182	0	0	0	0	0	0	0	0	0	0	547
Tanoak	771	0	128	0	0	0	31	0	0	0	0	0	0	930
Quaking aspen	642	514	128	0	0	0	0	17	13	0	0	17	0	1,331
Coast live oak	174	0	174	108	0	109	48	71	0	0	19	0	0	701
Canyon live oak	15,551	6,293	2,612	2,088	1,576	918	606	443	369	237	95	151	12	30,949
Oregon white oak	0	0	136	0	0	0	0	0	0	0	0	0	0	136
California black oak	3,407	1,855	1,896	2,139	2,281	1,003	858	711	438	210	255	559	62	15,674
Valley oak	0	0	0	0	0	0	0	0	0	0	19	31	0	50
Interior live oak	6,183	3,751	326	494	0	0	0	27	0	0	0	0	0	10,780
Willow	899	0	0	129	103	53	0	0	0	0	0	0	0	1,184
California-laurel	877	547	558	0	0	0	0	0	0	0	0	0	0	1,982
Total	31,690	15,290	6,494	4,957	4,362	2,113	1,582	1,403	849	481	430	791	74	70,515
All species	68,746	38,752	23,392	15,831	12,053	7,327	5,719	5,249	3,634	2,188	1,915	4,533	436	189,776

0 = none found

[a] Includes cull trees.

[b] Totals may be off because of rounding; data subject to sampling error.

Table 9--Number of growing-stock trees on timberland outside National Forests, by species and diameter class, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Species	Diameter class (inches at breast height)													All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0-38.9	39.0 +	
	Thousand trees													
Softwoods:														
White fir	8,070	3,567	2,914	1,895	1,793	876	1,073	909	570	492	200	817	39	23,215
California red fir	954	792	887	475	42	66	137	87	66	27	34	27	12	3,606
Incense-cedar	16,144	9,659	5,486	3,514	1,989	1,570	921	1,137	529	413	328	767	70	42,525
Lodgepole pine	772	695	309	310	178	210	71	181	152	69	72	133	4	3,155
Coulter pine	0	0	0	0	35	51	105	15	0	42	2	22	0	274
Jeffrey pine	981	770	768	566	406	563	340	426	259	203	180	296	41	5,799
Sugar pine	1,719	693	542	487	775	352	260	51	154	50	106	351	84	5,625
Ponderosa pine	4,359	4,008	3,643	2,885	2,328	1,286	912	857	893	330	460	1,065	47	23,072
Bigcone Douglas-fir	0	301	601	236	0	0	0	0	0	0	0	27	29	1,194
Douglas-fir	2,977	1,819	927	152	97	180	223	124	58	19	103	201	20	6,899
Giant sequoia	0	0	0	0	0	0	0	0	35	30	0	13	5	83
California-nutmeg	128	0	0	95	0	0	0	0	0	0	0	0	0	223
Total	36,103	22,305	16,077	10,614	7,643	5,154	4,042	3,787	2,716	1,676	1,484	3,719	350	115,668
Hardwoods:														
Bigleaf maple	227	161	66	0	27	0	0	0	0	0	0	7	0	488
California buckeye	745	0	0	0	0	0	0	0	0	0	0	0	0	745
White alder	0	0	0	0	123	0	22	42	16	34	43	27	0	307
Pacific madrone	0	0	0	0	53	30	0	0	13	0	0	0	0	97
Oregon ash	951	95	0	0	0	0	0	35	0	0	0	0	0	1,081
Walnut	0	365	182	0	0	0	0	0	0	0	0	0	0	547
Tanoak	771	0	128	0	0	0	31	0	0	0	0	0	0	930
Quaking aspen	642	514	128	0	0	0	0	17	13	0	0	17	0	1,331
Coast live oak	174	0	0	0	0	0	0	36	0	0	19	0	0	228
Canyon live oak	14,212	5,777	2,293	1,998	1,395	639	606	405	355	217	95	135	5	28,129
Oregon white oak	0	0	136	0	0	0	0	0	0	0	0	0	0	136
California black oak	3,049	1,855	1,424	2,037	2,044	958	746	510	425	210	192	486	36	13,972
Valley oak	0	0	0	0	0	0	0	0	0	0	19	31	0	50
Interior live oak	4,973	3,251	326	59	0	0	0	27	0	0	0	0	0	8,636
California-laurel	877	547	558	0	0	0	0	0	0	0	0	0	0	1,982
Total	26,620	12,565	5,242	4,093	3,642	1,626	1,404	1,071	823	461	368	702	41	58,658
All species	62,723	34,870	21,319	14,708	11,284	6,780	5,446	4,857	3,539	2,137	1,852	4,421	390	174,326

0 = none found

[a] Growing-stock trees are all live trees except cull trees (noncommercial species are classified as sound cull).

[b] Totals may be off because of rounding; data subject to sampling error.

Table 10--Net volume of growing stock on timberland, by species and diameter class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Species	Diameter class (inches at breast height)											
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0-38.9	39.0 +	All classes
	Million cubic feet											
Softwoods:												
White fir	19	42	59	90	102	134	136	138	526	424	347	2,015
Red fir	7	13	16	23	25	30	36	33	183	344	485	1,195
Incense-cedar	13	27	33	38	47	57	43	47	151	105	115	676
Whitebark pine	--	--	1	--	--	1	--	--	1	--	--	4
Bristlecone pine	--	--	--	0	--	0	--	0	0	0	0	1
Lodgepole pine	4	10	17	24	19	34	33	32	123	84	23	402
Coulter pine	--	1	1	1	2	1	1	3	6	5	1	20
Foxtail pine	0	0	--	--	--	--	--	--	--	--	--	--
Limber pine	0	0	--	--	--	--	0	--	1	1	--	3
Jeffrey pine	4	9	20	29	33	49	45	50	221	260	246	965
Sugar pine	2	7	15	12	15	14	20	15	101	154	203	558
Western white pine	--	--	1	1	1	3	3	1	16	20	19	64
Ponderosa pine	10	25	37	46	58	79	84	78	334	288	191	1,229
Bigcone Douglas-fir	2	1	0	0	0	0	0	0	1	2	10	15
Douglas-fir	4	5	8	11	14	12	10	6	39	41	35	185
Giant sequoia	0	0	--	--	0	0	1	1	0	3	34	39
California-nutmeg	0	--	0	0	0	0	0	0	0	0	0	--
Mountain hemlock	--	1	1	3	3	4	4	4	21	13	6	59
Total	63	140	208	277	320	417	417	408	1,722	1,744	1,714	7,430
Hardwoods:												
Bigleaf maple	--	--	--	--	--	--	--	0	0	2	0	2
White alder	--	--	3	2	4	3	3	3	8	1	0	27
Pacific madrone	--	--	1	1	--	--	1	--	--	--	--	2
Oregon ash	--	--	--	--	1	3	1	--	1	0	0	6
Walnut	1	0	0	0	0	0	0	0	0	0	0	1
Tanoak	--	--	--	--	1	--	--	0	0	0	0	1
Quaking aspen	--	0	--	--	1	1	1	--	2	--	0	5
Coast live oak	0	--	--	2	1	1	--	--	2	1	--	7
Canyon live oak	19	23	24	19	19	21	19	13	20	12	21	209
Oregon white oak	--	0	0	0	0	0	0	0	0	4	0	5
California black oak	10	27	33	37	39	42	31	29	100	51	27	425
Valley oak	2	0	--	0	2	0	8	--	6	2	--	21
Interior live oak	2	1	1	1	1	2	--	2	1	--	4	15
California-laurel	2	--	--	0	0	0	0	0	0	0	0	2
Other hardwoods	1	--	--	--	--	--	--	--	1	1	--	4
Total	37	52	64	62	68	72	64	46	140	74	52	732
All species	101	192	273	339	388	489	481	454	1,862	1,818	1,766	8,162

-- = less than 500,000 cubic feet, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Includes growing-stock trees ≥ 5 inches d.b.h.

[c] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

Table 11--Net volume of sawtimber on timberland, by species and diameter class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Species	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-28.9	29.0-38.9	39.0 +	All classes
	Million board feet, Scribner rule									
Softwoods:										
White fir	184	342	456	614	643	704	2,973	2,686	2,262	10,863
Red fir	50	83	107	138	169	164	1,022	2,169	3,233	7,133
Incense-cedar	69	121	162	221	174	198	707	557	675	2,883
Whitebark pine	1	1	1	2	1	1	4	1	--	12
Bristlecone pine	--	0	--	0	2	0	0	0	0	3
Foxtail pine	0	--	--	--	--	--	--	--	--	1
Lodgepole pine	55	92	85	155	157	171	692	522	154	2,082
Coulter pine	2	2	7	4	4	12	30	30	7	98
Limber pine	0	--	--	--	0	--	4	4	1	11
Jeffrey pine	60	100	143	220	211	252	1,240	1,654	1,695	5,575
Sugar pine	46	42	63	63	93	73	561	971	1,420	3,334
Western white pine	2	1	6	12	12	7	85	124	126	376
Ponderosa pine	111	169	257	374	411	408	1,930	1,899	1,360	6,919
Bigcone Douglas-fir	1	--	1	2	3	3	18	20	97	144
Douglas-fir	24	41	62	53	47	29	203	243	203	906
Giant sequoia	1	1	0	0	3	3	0	17	232	256
Mountain hemlock	3	8	12	17	22	19	121	87	41	332
Total	609	1,006	1,362	1,875	1,952	2,044	9,591	10,983	11,506	40,927
Hardwoods:										
Bigleaf maple		--	--	--	--	0	0	1	0	1
White alder		7	14	12	15	9	35	6	0	99
Pacific madrone		3	--	--	1	--	--	--	--	4
Oregon ash		--	--	2	--	--	--	0	0	2
Tanoak		--	2	--	--	0	0	0	0	2
Quaking aspen		--	--	3	4	--	6	0	0	14
Coast live oak		--	--	--	--	--	--	--	--	1
Canyon live oak		23	34	39	34	25	25	22	3	204
California black oak		25	35	38	40	25	127	90	77	457
Valley oak		0	--	0	--	--	19	3	1	23
Interior live oak		--	--	1	--	--	--	1	--	2
Other hardwoods		--	--	--	--	--	--	--	--	--
Total		58	85	96	95	59	212	123	81	809
All species	609	1,064	1,447	1,970	2,047	2,103	9,803	11,106	11,587	41,736

-- = less than 500,000 board feet, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Includes sawtimber softwood trees ≥ 9 inches d.b.h. and sawtimber hardwood trees ≥ 11 inches d.b.h.

[c] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

Table 12--Net volume of growing stock on timberland, by species and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Species	National Forest	Other public	Forest industry	Other private	All owners
			Million cubic feet		
Softwoods:					
White fir	1,731	43	138	103	2,015
Red fir	1,168	0	0	27	1,195
Incense-cedar	429	16	92	140	676
Whitebark pine	4	0	0	0	4
Bristlecone pine	1	0	0	0	1
Lodgepole pine	348	6	0	48	402
Coulter pine	13	0	0	6	20
Foxtail pine	--	0	0	0	--
Limber pine	3	0	0	0	3
Jeffrey pine	851	21	16	78	965
Sugar pine	417	14	61	66	558
Western white pine	64	0	0	0	64
Ponderosa pine	805	9	142	273	1,229
Bigcone Douglas-fir	0	0	0	15	15
Douglas-fir	99	0	66	20	185
Giant sequoia	33	0	1	4	39
California-nutmeg	0	0	0	--	--
Mountain hemlock	59	0	0	0	59
Total	6,024	108	516	782	7,430
Hardwoods:					
Bigleaf maple	--	0	0	2	2
White alder	16	0	5	7	27
Pacific madrone	--	0	0	2	2
Oregon ash	5	2	0	0	6
Walnut	0	0	0	1	1
Tanoak	0	0	0	1	1
Quaking aspen	2	0	0	3	5
Coast live oak	6	0	0	2	7
Canyon live oak	93	20	6	90	209
Oregon white oak	4	0	0	--	5
California black oak	210	11	36	168	425
Valley oak	13	0	0	8	21
Interior live oak	13	0	0	2	15
California-laurel	1	--	0	1	2
Other hardwoods	4	0	0	0	4
Total	367	33	47	286	732
All species	6,391	141	562	1,068	8,162

-- = less than 500,000 cubic feet, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Includes growing-stock trees ≥ 5 inches d.b.h.

[c] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

Table 13--Net volume of sawtimber on timberland, by species and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Species	National Forest	Other public	Forest industry	Other private	All owners
		Million board feet, Scribner rule			
Softwoods:					
White fir	9,534	214	634	481	10,863
Red fir	7,013	0	0	120	7,133
Incense-cedar	1,941	64	325	553	2,883
Whitebark pine	12	0	0	0	12
Bristlecone pine	3	0	0	0	3
Foxtail pine	1	0	0	0	1
Lodgepole pine	1,816	30	0	237	2,082
Coulter pine	72	0	0	27	98
Limber pine	11	0	0	0	11
Jeffrey pine	5,030	85	84	375	5,575
Sugar pine	2,554	79	324	377	3,334
Western white pine	376	0	0	0	376
Ponderosa pine	4,734	56	681	1,449	6,919
Bigcone Douglas-fir	72	0	0	72	144
Douglas-fir	435	0	351	120	906
Giant sequoia	226	0	5	25	256
Mountain hemlock	332	0	0	0	332
Total	34,161	527	2,404	3,834	40,927
Hardwoods:					
Bigleaf maple	--	0	0	1	1
White alder	58	0	8	32	99
Pacific madrone	1	0	0	4	4
Oregon ash	0	2	0	0	2
Tanoak	--	0	0	2	2
Quaking aspen	3	0	0	11	14
Coast live oak	0	0	0	1	1
Canyon live oak	46	36	8	115	204
California black oak	4	23	79	351	457
Valley oak	1	0	0	22	23
Interior live oak	1	0	0	1	2
Other hardwoods	--	0	0	0	--
Total	114	61	94	540	809
All species	34,276	588	2,498	4,374	41,736

-- = less than 500,000 board feet, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Includes sawtimber softwood trees ≥ 9 inches d.b.h. and sawtimber hardwood trees ≥ 11 inches d.b.h.

[c] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

Table 14--Net volume of growing stock on timberland, by forest type and stand-size class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Forest type	Sawtimber	Poletimber	Seedling-sapling	Not classified [d]	All classes
			Million cubic feet		
Softwood types:					
Douglas-fir	24	0	0	40	64
True firs--					
White fir	37	0	0	0	37
Red fir	1,756	--	1	0	1,757
Total	1,793	--	1	0	1,794
Mixed conifer--					
Mixed conifer	3,618	6	16	0	3,641
Mixed conifer / hardwood	200	0	0	0	200
Total	3,819	6	16	0	3,841
Ponderosa / Jeffrey pine--					
Ponderosa pine	1,144	19	6	0	1,169
Ponderosa pine / hardwood	15	1	0	0	15
Jeffrey pine	375	0	1	0	376
Total	1,534	20	7	0	1,560
Other softwood types--					
Alpine types	101	0	--	0	101
Lodgepole pine	182	0	0	0	182
Coulter pine	21	0	0	5	26
Pinyon pine	0	0	2	0	2
Total	303	0	2	5	310
Total, softwood types	7,472	26	25	45	7,568
Hardwood types:					
White alder / softwood	22	0	0	0	22
Quaking aspen	2	0	12	0	13
Coast live oak	11	0	0	0	11
Canyon live oak	124	2	5	0	130
Canyon live oak / softwood	55	0	0	0	55
California black oak	251	10	0	0	261
California black oak / softwood	7	5	0	0	12
Interior live oak	0	4	0	0	4
Interior live oak / softwood	0	0	6	0	6
Total, hardwood types	471	21	22	0	514
Nonstocked [e]	0	0	0	79	79
Total, all types	7,943	47	48	124	8,162

-- = less than 500,000 cubic feet, 0 = none found
[a] Totals may be off because of rounding; data subject to sampling error.
[b] Includes growing-stock trees ≥ 5 inches d.b.h.
[c] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.
[d] Stand-size class was not determined for nonstocked stands and for some softwood types on National Forest land.
[e] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 15--Net volume of sawtimber on timberland, by forest type and stand-size class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Forest type	Sawtimber	Poletimber	Seedling-sapling	Not classified [d]	All classes
	Million board feet, Scribner rule				
Softwood types:					
Douglas-fir	43	0	0	231	274
True firs--					
White fir	239	0	0	0	239
Red fir	10,407	1	3	0	10,410
Total	10,645	1	3	0	10,649
Mixed conifer--					
Mixed conifer	18,816	19	54	0	18,888
Mixed conifer / hardwood	869	0	0	0	869
Total	19,684	19	54	0	19,757
Ponderosa / Jeffrey pine--					
Ponderosa pine	5,521	37	24	0	5,582
Ponderosa pine / hardwood	66	0	0	0	66
Jeffrey pine	2,009	0	7	0	2,016
Total	7,595	37	31	0	7,663
Other softwood types--					
Alpine types	528	0	2	0	530
Lodgepole pine	948	0	0	0	948
Coulter pine	73	0	0	27	100
Pinyon pine	0	0	8	0	8
Total	1,549	0	10	27	1,585
Total, softwood types	39,517	57	97	258	39,929
Hardwood types:					
White alder / softwood	104	0	0	0	104
Quaking aspen	7	0	43	0	50
Coast live oak	33	0	0	0	33
Canyon live oak	296	3	3	0	302
Canyon live oak / softwood	189	0	0	0	189
California black oak	891	17	0	0	909
California black oak / softwood	13	14	0	0	27
Interior live oak	0	6	0	0	6
Interior live oak / softwood	0	0	14	0	14
Total, hardwood types	1,533	41	60	0	1,634
Nonstocked [e]	0	0	0	173	173
Total, all types	41,050	98	157	431	41,736

0= none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Includes sawtimber softwood trees ≥ 9 inches d.b.h. and sawtimber hardwood trees ≥ 11 inches d.b.h.

[c] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[d] Stand-size class was not determined for nonstocked stands and for some softwood types on National Forest land.

[e] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 16--Net volume of growing stock on timberland, by forest type and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Forest type	National Forest	Other public	Forest industry	Other private	All owners
			Million cubic feet		
Softwood types:					
Douglas-fir	64	0	0	0	64
True firs--					
White fir	37	0	0	0	37
Red fir	1,757	0	0	0	1,757
Total	1,794	0	0	0	1,794
Mixed conifer--					
Mixed conifer	2,704	73	471	392	3,641
Mixed conifer / hardwood	0	0	59	141	200
Total	2,704	73	530	533	3,841
Ponderosa / Jeffrey pine--					
Ponderosa pine	1,021	0	26	122	1,169
Ponderosa pine / hardwood	0	0	0	15	15
Jeffrey pine	342	6	0	28	376
Total	1,363	6	26	165	1,560
Other softwood types--					
Alpine types	101	0	0	0	101
Lodgepole pine	116	6	0	60	182
Coulter pine	21	0	0	5	26
Pinyon pine	0	0	0	2	2
Total	238	6	0	67	311
Total, softwood types	6,162	86	556	765	7,568
Hardwood types:					
White alder / softwood	0	0	0	22	22
Quaking aspen	2	11	0	0	13
Coast live oak	0	0	0	11	11
Canyon live oak	0	30	0	101	130
Canyon live oak / softwood	0	0	0	55	55
California black oak	159	14	7	82	262
California black oak / softwood	0	0	0	12	12
Interior live oak	0	0	0	4	4
Interior live oak / softwood	0	0	0	6	6
Total, hardwood types	161	55	7	292	514
Nonstocked [d]	68	0	0	12	79
Total, all types	6,391	141	562	1,068	8,162

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Includes growing-stock trees ≥ 5 inches d.b.h.

[c] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[d] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 17--Net volume of sawtimber on timberland, by forest type and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Forest type	National Forest	Other public	Forest industry	Other private	All owners
			Million board feet, Scribner rule		
Softwood types:					
Douglas-fir	274	0	0	0	274
True firs--					
White fir	239	0	0	0	239
Red fir	10,410	0	0	0	10,410
Total	10,649	0	0	0	10,649
Mixed conifer--					
Mixed conifer	14,548	369	2,156	1,816	18,888
Mixed conifer / hardwood	0	0	214	655	869
Total	14,548	369	2,370	2,470	19,757
Ponderosa / Jeffrey pine--					
Ponderosa pine	4,912	0	109	561	5,582
Ponderosa pine / hardwood	0	0	0	66	66
Jeffrey pine	1,870	28	0	118	2,016
Total	6,782	28	109	745	7,663
Other softwood types--					
Alpine types	530	0	0	0	530
Lodgepole pine	628	30	0	290	948
Coulter pine	81	0	0	19	100
Pinyon pine	0	0	0	8	8
Total	1,238	30	0	317	1,585
Total, softwood types	33,491	426	2,479	3,532	39,929
Hardwood types:					
White alder / softwood	0	0	0	104	104
Quaking aspen	9	40	0	0	50
Coast live oak	0	0	0	33	33
Canyon live oak	0	77	0	226	302
Canyon live oak / softwood	0	0	0	189	189
California black oak	643	44	19	202	909
California black oak / softwood	0	0	0	27	27
Interior live oak	0	0	0	6	6
Interior live oak / softwood	0	0	0	14	14
Total, hardwood types	652	161	19	801	1,634
Nonstocked [d]	132	0	0	41	173
Total, all types	34,276	588	2,498	4,374	41,736

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Includes sawtimber softwood trees ≥ 9 inches d.b.h. and sawtimber hardwood trees ≥ 11 inches d.b.h.

[c] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[d] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 18--Volume of timber on timberland, by class of timber, owner group, and species group, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Class of timber	Softwood species	Hardwood species	All species
		Million cubic feet	
Sawtimber trees:			
Outside National Forests--			
Saw-log portion	1,307	172	1,479
Upper-stem portion	26	121	147
Total	1,333	293	1,626
National Forests	5,894	313	6,207
Total, sawtimber trees	7,227	606	7,833
Poletimber trees (all owners)	203	126	329
All growing-stock trees	7,430	732	8,162
Cull trees:			
Outside National Forests--			
Sound cull trees	9	24	33
Rotten cull trees	3	27	30
Total	12	51	63
National Forests	28	2	30
Total, cull trees	40	53	93
All timber	7,470	785	8,255

[a] Totals may be off because of rounding; data subject to sampling error.
[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

Table 19--Current net annual growth of growing stock on timberland, by forest type and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Forest type	National Forest	Other public	Forest industry	Other private	All owners
			Thousand cubic feet		
Softwood types:					
Douglas-fir	721	0	0	0	721
True firs--					
White fir	444	0	0	0	444
Red fir	34,219	0	0	0	34,219
Total	34,662	0	0	0	34,662
Mixed conifer--					
Mixed conifer	71,004	889	9,289	4,080	85,262
Mixed conifer / hardwood	0	0	678	1,002	1,680
Total	71,004	889	9,966	5,082	86,942
Ponderosa / Jeffrey pine--					
Ponderosa pine	28,644	0	1,312	2,794	32,750
Ponderosa pine / hardwood	0	0	0	367	367
Jeffrey pine	6,328	-39	0	361	6,650
Total	34,972	-39	1,312	3,521	39,767
Other softwood types--					
Alpine types	1,463	0	0	0	1,463
Lodgepole pine	1,619	-18	0	-105	1,496
Coulter pine	247	0	0	234	481
Pinyon pine	0	0	0	24	24
Total	3,328	-18	0	153	3,463
Total, softwood types	144,688	832	11,279	8,757	165,555
Hardwood types:					
White alder / softwood	0	0	0	252	252
Quaking aspen	-68	88	0	0	20
Coast live oak	0	0	0	76	76
Canyon live oak	0	545	0	620	1,164
Canyon live oak / softwood	0	0	0	688	688
California black oak	3,559	-51	-28	383	3,863
California black oak / softwood	0	0	0	263	263
Interior live oak	0	0	0	62	62
Interior live oak / softwood	0	0	0	169	169
Total, hardwood types	3,491	581	-28	2,512	6,556
Nonstocked [d]	443	0	0	-31	413
Total, all types	148,622	1,414	11,251	11,238	172,524

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Negative net annual growth is the result of annual mortality exceeding gross annual growth.

[d] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 20--Current net annual growth of sawtimber on timberland outside National Forests, by forest type and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Forest type	Other public	Forest industry	Other private	All owners
	Thousand board feet, Scribner rule			
Softwood types:				
Mixed conifer--				
Mixed conifer	7,237	56,322	27,370	90,928
Mixed conifer / hardwood	0	3,948	7,886	11,835
Total	7,237	60,270	35,257	102,763
Ponderosa / Jeffrey pine--				
Ponderosa pine	0	8,168	12,108	20,275
Ponderosa pine / hardwood	0	0	1,848	1,848
Jeffrey pine	- 117	0	2,199	2,081
Total	- 117	8,168	16,154	24,205
Other softwood types--				
Lodgepole pine	- 65	0	- 483	-548
Coulter pine	0	0	1,218	1,218
Pinyon pine	0	0	138	138
Total	- 65	0	873	808
Total, softwood types	7,054	68,438	52,284	127,775
Hardwood types:				
White alder / softwood	0	0	1,824	1,824
Quaking aspen	288	0	0	288
Coast live oak	0	0	319	319
Canyon live oak	660	0	6,759	7,419
Canyon live oak / softwood	0	0	817	817
California black oak	- 465	74	4,922	4,530
California black oak / softwood	0	0	2,777	2,777
Interior live oak	0	0	126	126
Interior live oak / softwood	0	0	520	520
Total, hardwood types	484	74	18,062	18,619
Nonstocked [d]	0	0	3	3
Total, all types	7,538	68,511	70,348	146,397

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Board-foot growth is not available on National Forest land.

[c] Negative net annual growth is the result of annual mortality exceeding gross annual growth.

[d] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 21--Average annual mortality of growing stock on timberland, by forest type and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a b]

Forest type	National Forest	Other public	Forest industry	Other private	All owners
			Thousand cubic feet		
Softwood types:					
Douglas-fir	54	0	0	0	54
True firs--					
White fir	92	0	0	0	92
Red fir	11,843	0	0	0	11,843
Total	11,934	0	0	0	11,934
Mixed conifer--					
Mixed conifer	16,894	872	5,834	5,485	29,084
Mixed conifer / hardwood	0	0	796	1,763	2,558
Total	16,894	872	6,630	7,247	31,643
Ponderosa / Jeffrey pine--					
Ponderosa pine	5,595	0	371	1,643	7,609
Ponderosa pine / hardwood	0	0	0	204	204
Jeffrey pine	826	90	0	398	1,314
Total	6,421	90	371	2,244	9,127
Other softwood types--					
Alpine types	902	0	0	0	902
Lodgepole pine	225	97	0	994	1,315
Coulter pine	0	0	0	69	69
Pinyon pine	0	0	0	26	26
Total	1,127	97	0	1,089	2,312
Total, softwood types	36,430	1,059	7,001	10,580	55,071
Hardwood types:					
White alder / softwood	0	0	0	250	250
Quaking aspen	7	151	0	0	158
Coast live oak	0	0	0	82	82
Canyon live oak	0	379	0	1,458	1,836
Canyon live oak / softwood	0	0	0	603	603
California black oak	825	283	125	1,088	2,321
California black oak / softwood	0	0	0	118	118
Interior live oak	0	0	0	45	45
Interior live oak / softwood	0	0	0	57	57
Total, hardwood types	831	813	125	3,701	5,470
Nonstocked [c]	107	0	0	249	356
Total, all types	37,368	1,872	7,127	14,530	60,897

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 22--Average annual mortality of sawtimber on timberland outside National Forests, by forest type and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Forest type	Other public	Forest industry	Other private	All owners
	Thousand board feet, Scribner rule			
Softwood types:				
Mixed conifer--				
Mixed conifer	4,509	25,937	25,275	55,720
Mixed conifer / hardwood	0	2,705	8,018	10,723
Total	4,509	28,642	33,292	66,443
Ponderosa / Jeffrey pine--				
Ponderosa pine	0	1,593	7,711	9,303
Ponderosa pine / hardwood	0	0	890	890
Jeffrey pine	400	0	1,664	2,064
Total	400	1,593	10,265	12,257
Other softwood types--				
Lodgepole pine	460	0	4,753	5,213
Coulter pine	0	0	268	268
Pinyon pine	0	0	113	113
Total	460	0	5,134	5,594
Total, softwood types	5,368	30,235	48,691	84,294
Hardwood types:				
White alder / softwood	0	0	1,056	1,056
Quaking aspen	569	0	0	569
Coast live oak	0	0	137	137
Canyon live oak	956	0	2,748	3,704
Canyon live oak / softwood	0	0	2,164	2,164
California black oak	1,102	341	2,844	4,286
California black oak / softwood	0	0	263	263
Interior live oak	0	0	81	81
Interior live oak / softwood	0	0	105	105
Total, hardwood types	2,627	341	9,397	12,364
Nonstocked [c]	0	0	928	928
Total, all types	7,995	30,575	59,016	97,587

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Board-foot mortality is not available on National Forest land.

[c] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 23--Land area, by county and land class (metric), San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

County	Forest land						Non-forest	All land [c]
	Timberland	Reserved timberland	Withdrawn timberland	Available other forest	Reserved other forest	Total forest		
	Thousand hectares							
Alpine	34	45	2	40	22	144	47	191
Amador	42	6	1	49	--	98	55	153
Calaveras	83	2	1	103	--	188	76	264
Fresno and Madera	231	200	--	267	61	760	1,338	2,098
Imperial	0	0	0	0	0	0	1,081	1,081
Inyo	11	15	1	331	23	382	2,258	2,640
Kern	60	1	--	335	4	400	1,709	2,109
Kings and Tulare	159	120	--	244	85	607	1,002	1,609
Los Angeles	32	--	0	258	58	348	703	1,051
Mariposa	62	81	--	134	11	288	88	376
Merced	0	0	0	21	1	22	477	499
Mono	74	14	1	392	10	491	297	788
Orange	--	0	0	51	5	56	148	204
Riverside	14	13	0	199	47	274	1,593	1,867
San Bernardino	72	20	0	174	14	281	4,915	5,196
San Diego	19	3	0	407	60	489	600	1,089
San Joaquin	0	0	0	10	--	11	352	363
Stanislaus	0	0	0	53	11	64	323	387
Tuolumne	194	120	11	90	35	449	130	579
Total	1,087	641	17	3,159	448	5,353	17,195	22,548

-- = less than 500 hectares, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Source: U.S. Department of Commerce 1990.

Table 24--Area of timberland, by owner class and stand-size class (metric), San Joaquin and Southern Resource Area, California, 1994 [a] [b]

Owner	Sawtimber	Poletimber	Seedling-sapling	Not classified [c]	All classes
	Thousand hectares				
National Forest	682	16	28	132	858
Other public	14	1	6	0	22
Forest industry	56	1	2	0	59
Other private	117	11	14	6	149
All owners	869	30	50	138	1,088

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Stand-size class was not determined for nonstocked stands and for some softwood types on National Forest land.

Table 25--Area of reserved timberland and other forest land, by forest type and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Land class and forest type	National Forest	Other public	Forest industry	Other private	All owners
			Thousand acres		
Reserved timberland:					
Softwood types--					
Alpine types	215	0	0	0	215
Mixed conifer	195	245	0	0	441
Douglas-fir	4	0	0	0	4
True firs	264	94	0	0	358
Jeffrey pine	31	0	0	0	31
Lodgepole pine	85	161	0	0	246
Ponderosa pine	25	0	0	0	25
Other pines	1	108	0	0	109
Mountain hemlock	0	33	0	0	33
Giant sequoia	0	9	0	0	9
Total	819	651	0	0	1,471
Hardwood types--					
California black oak	8	0	0	0	8
Cottonwood / aspen	0	--	0	1	1
Eucalyptus	0	--	0	0	--
Total	8	--	0	1	8
Nonstocked	99	0	0	0	99
Unclassified	6	0	0	0	6
Total, reserved timberland	931	651	0	1	1,583
Reserved other forest:					
Softwood types--					
Mixed conifer	36	0	0	0	36
Douglas-fir	12	0	0	0	12
Lodgepole pine	19	0	0	0	19
Ponderosa pine	13	0	0	0	13
Pinyon-juniper	70	89	0	--	159
Other conifers	--	228	0	0	229
Total	150	316	0	--	467
Hardwood types--					
California black oak	41	0	0	0	41
Coast live oak	3	0	0	0	3
Other oaks	3	95	0	3	100
White alder	3	0	0	0	3
Other hardwoods	3	5	0	0	8
Total	52	100	0	3	155
Chaparral	219	255	0	5	479
Unclassified	8	0	0	0	8
Total, reserved other forest	428	671	0	8	1,108
Total, reserved forest land	1,359	1,323	0	9	2,691
Available other forest:					
Softwood types--					
Alpine types	27	0	0	0	27
Gray pine	--	0	0	12	12
Jeffrey pine	5	0	0	6	11
Lodgepole pine	79	0	0	0	79
Ponderosa pine	40	0	0	1	41
Mixed conifer	68	0	0	0	68
Pinyon-juniper	468	368	0	163	999
Other softwoods	1	2	0	0	3
Total	688	370	0	182	1,240
Hardwood types--					
California buckeye	0	0	0	34	34
Blue oak	46	8	0	477	531
Engelmann oak	0	0	0	23	23
California black oak	0	3	0	9	11
Canyon live oak	154	8	0	28	189
Coast live oak	15	5	0	25	44
Interior live oak	4	41	0	245	290
Unclassified oaks	0	87	0	1,035	1,122
Other hardwoods	30	0	0	23	53
Total	249	150	0	1,899	2,298
Chaparral	1,186	541	0	1,343	3,070
Unclassified	1,165	8	0	26	1,199
Total, available other forest	3,288	1,069	0	3,450	7,807

-- = less than 500 acres, 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

Table 26--Area, net volume of growing stock, and net volume of sawtimber on timberland, by stand age and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a] [b]

Stand age	National Forest			Other public			Forest industry			Other private			All owners		
	Area	Growing stock volume	Sawtimber volume, Scribner rule	Area	Growing stock volume	Sawtimber volume, Scribner rule	Area	Growing stock volume	Sawtimber volume, Scribner rule	Area	Growing stock volume	Sawtimber volume, Scribner rule	Area	Growing stock volume	Sawtimber volume, Scribner rule
	Thousand acres	*Thousand cubic feet*	*Thousand board feet*	*Thousand acres*	*Thousand cubic feet*	*Thousand board feet*	*Thousand acres*	*Thousand cubic feet*	*Thousand board feet*	*Thousand acres*	*Thousand cubic feet*	*Thousand board feet*	*Thousand acres*	*Thousand cubic feet*	*Thousand board feet*
Even-aged:															
0-9	42	1,919	8,661	15	10,760	40,288	5	4,410	13,102	22	15,618	43,710	83	32,707	105,761
10-19	1	72	0	1	0	0	0	0	0	0	0	0	3	72	0
20-29	25	4,063	10,456	0	0	0	3	6,089	9,868	11	15,515	38,861	39	25,667	59,185
30-39	21	13,841	44,171	0	0	0	0	0	0	16	24,975	88,736	37	38,816	132,907
40-49	2	278	1,275	0	0	0	1	2,708	13,121	15	28,524	98,092	17	31,511	112,489
50-59	--	20	70	0	0	0	0	0	0	21	21,795	61,824	21	21,815	61,894
60-69	1	915	3,540	0	0	0	23	72,569	285,015	8	34,156	81,359	31	107,641	369,914
70-79	5	2,882	13,254	0	0	0	0	0	0	21	69,784	307,338	25	72,666	320,592
80-89	68	160,025	776,042	8	65,689	338,784	7	26,404	100,319	30	116,732	519,039	113	368,850	1,734,184
90-99	92	350,063	1,800,164	4	13,026	25,532	1	6,465	19,045	34	104,417	451,399	130	473,971	2,296,139
100-109	196	702,628	3,405,318	0	0	0	8	41,179	154,458	18	82,357	406,574	220	826,164	3,966,350
110-119	52	252,161	1,375,733	0	0	0	7	22,694	89,692	9	17,028	79,691	68	291,883	1,545,116
120-129	246	944,413	5,206,271	0	0	0	0	0	0	0	0	0	246	944,413	5,206,271
130-139	146	870,094	4,822,134	0	0	0	0	0	0	0	0	0	146	870,094	4,822,134
140-149	208	823,847	4,257,930	0	0	0	0	0	0	0	0	0	208	823,847	4,257,930
150-159	114	460,960	2,493,533	0	0	0	0	0	0	0	0	0	114	460,960	2,493,533
160-169	33	109,056	599,780	0	0	0	0	0	0	0	0	0	33	109,056	599,780
170-179	59	194,893	1,082,248	0	0	0	0	0	0	0	0	0	59	194,893	1,082,248
180-189	50	131,538	602,224	0	0	0	0	0	0	0	0	0	50	131,538	602,224
190-199	68	272,994	1,609,277	0	0	0	0	0	0	0	0	0	68	272,994	1,609,277
200-299	317	984,417	5,782,132	0	0	0	0	0	0	1	10,281	47,958	319	994,698	5,830,090
300 +	29	42,155	249,085	3	6,252	27,827	0	0	0	0	0	0	32	48,407	276,911
Uneven-aged:															
< 100	0	0	0	18	37,187	125,499	53	223,660	992,461	94	295,664	1,322,835	165	556,511	2,440,796
100 +	0	0	0	5	7,553	29,892	39	156,167	821,262	54	219,509	785,751	98	383,229	1,636,905
Nonstocked [c]	267	67,558	132,334	0	0	0	0	0	0	16	11,675	40,820	283	79,233	173,154
Undetermined [d]	79	0	0	0	0	0	0	0	0	0	0	0	79	0	0
Total, all ages	2,120	6,390,793	34,275,631	53	140,468	587,822	146	562,344	2,498,344	369	1,068,032	4,373,987	2,688	8,161,638	41,735,783

-- = less than 500 acres, 500 cubic feet, or 500 board feet; 0 = none found

[a] Totals may be off because of rounding, data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

[d] No age class was estimated for these stands.

Table 27--Net volume of growing stock and sawtimber on timberland, by county, owner class, and species group, San Joaquin and Southern Resource Areas, California, 1994 [a b]

County	National Forest			Other public			Forest industry			Other private			All owners		
	Softwood species	Hardwood species	All species	Softwood species	Hardwood species	All species	Softwood species	Hardwood species	All species	Softwood species	Hardwood species	All species	Softwood species	Hardwood species	All species
							Million cubic feet								
Growing stock:															
Alpine	238	--	238	0	0	0	0	0	0	24	0	24	262	--	262
Amador	153	5	158	0	0	0	85	5	90	88	33	121	326	43	369
Calaveras	248	--	248	3	14	17	192	31	223	170	55	225	613	100	713
Fresno and Madera	2,131	181	2,312	0	0	0	0	0	0	204	34	238	2,335	215	2,550
Inyo	11	--	11	17	0	17	0	0	0	0	0	0	28	--	28
Kern	0	0	0	0	0	0	0	0	0	20	19	39	20	19	39
Kings and Tulare	1,438	53	1,492	78	16	94	0	0	0	58	65	123	1,574	134	1,709
Los Angeles	87	12	98	0	0	0	0	0	0	0	0	0	87	12	98
Mariposa	229	39	268	0	0	0	0	0	0	66	21	87	295	60	355
Mono	123	5	128	10	0	10	0	0	0	7	0	7	140	5	145
Orange	1	2	3	0	0	0	0	0	0	0	0	0	1	2	3
Riverside	38	13	51	0	0	0	0	0	0	9	4	13	47	17	64
San Bernardino	168	41	209	0	0	0	0	0	0	60	17	77	228	58	286
San Diego	12	16	28	0	0	0	0	0	0	22	11	33	34	27	61
Tuolumne	1,147	1	1,148	0	3	3	238	11	249	54	27	81	1,439	42	1,481
Total	6,024	367	6,391	108	33	141	516	47	562	782	286	1,068	7,430	732	8,162
							Million board feet, Scribner rule								
Sawtimber:															
Alpine	1,414	--	1,414	0	0	0	0	0	0	95	0	95	1,509	--	1,509
Amador	861	--	862	0	0	0	398	15	413	402	72	474	1,661	87	1,749
Calaveras	1,359	0	1,359	16	26	42	920	60	980	865	101	966	3,160	187	3,347
Fresno and Madera	12,401	34	12,435	0	0	0	0	0	0	1,059	108	1,167	13,460	142	13,602
Inyo	49	0	49	70	0	70	0	0	0	0	0	0	119	0	119
Kern	1,687	18	1,704	0	0	0	0	0	0	92	19	111	1,779	37	1,815
Kings and Tulare	6,438	2	6,440	400	31	431	0	0	0	260	121	381	7,098	154	7,252
Los Angeles	561	34	594	0	0	0	0	0	0	0	0	0	561	34	594
Mariposa	1,289	9	1,298	0	0	0	0	0	0	332	33	365	1,621	42	1,663
Mono	712	0	712	41	0	41	0	0	0	27	0	27	780	0	780
Orange	4	1	5	0	0	0	0	0	0	0	0	0	4	1	5
Riverside	204	7	211	0	0	0	0	0	0	49	10	59	253	17	270
San Bernardino	896	7	903	0	0	0	0	0	0	302	30	332	1,198	37	1,235
San Diego	59	3	63	0	0	0	0	0	0	95	18	113	154	21	176
Tuolumne	6,228	--	6,228	0	4	4	1,086	19	1,105	256	28	284	7,570	51	7,621
Total	34,161	114	34,276	527	61	588	2,404	94	2,498	3,834	540	4,374	40,927	809	41,736
							Million cubic meters								
Growing stock:															
Alpine	7	--	7	0	0	0	0	0	0	1	0	1	7	--	7
Amador	4	--	4	0	0	0	2	--	3	2	1	3	9	1	10
Calaveras	7	--	7	--	--	--	5	1	6	5	2	6	17	3	20
Fresno and Madera	60	5	65	0	0	0	0	0	0	6	1	7	66	6	72
Inyo	--	--	--	--	0	--	0	0	0	0	0	0	1	--	1
Kern	0	0	42	0	0	3	0	0	0	1	1	3	1	1	1
Kings and Tulare	41	2	42	2	--	3	0	0	0	2	2	3	45	4	48
Los Angeles	2	--	3	0	0	0	0	0	0	0	0	0	2	--	3
Mariposa	6	1	8	0	0	0	0	0	0	2	1	2	8	2	10
Mono	3	--	4	--	0	--	0	0	0	--	0	--	4	--	4
Orange	--	--	--	0	0	0	0	0	0	0	0	0	--	--	--
Riverside	1	--	1	0	0	0	0	0	0	--	--	--	1	--	2
San Bernardino	5	1	6	0	0	0	0	0	0	2	--	2	6	2	8
San Diego	--	--	1	0	0	0	0	0	0	1	--	1	1	1	2
Tuolumne	32	--	32	0	--	--	7	--	7	2	1	2	41	1	42
Total	170	10	181	3	1	4	15	1	16	22	8	30	210	21	231

-- = less than 500,000 cubic feet, 500,000 board feet, or 500,000 cubic meters; 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

Table 28--Current net annual growth, average annual mortality, and average annual removals of growing stock on timberland, by species and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Species	National Forest [d]		Outside National Forests												All owners [d]	
			Other public			Forest industry			Other private			Total, outside National Forests				
	Current net annual growth	Average annual mortality	Current net annual growth	Average annual mortality	Average annual removals	Current net annual growth	Average annual mortality	Average annual removals	Current net annual growth	Average annual mortality	Average annual removals	Current net annual growth	Average annual mortality	Average annual removals	Current net annual growth	Average annual mortality
								Thousand cubic feet								
Softwoods:																
White fir	50,935	15,410	632	521	0	3,328	1,941	3,422	1,576	1,425	1,973	5,536	3,887	5,395	56,471	19,297
Red fir	22,280	8,209	0	0	0	0	0	0	269	390	0	269	390	0	22,549	8,599
Incense-cedar	9,293	1,103	150	148	0	1,527	991	1,485	1,915	1,404	175	3,591	2,544	1,660	12,884	3,647
Whitebark pine	15	46	0	0	0	0	0	0	0	0	0	0	0	0	15	46
Foxtail pine	--	0	0	0	0	0	0	0	0	0	0	0	0	0	--	0
Lodgepole pine	6,235	1,950	- 18	97	0	0	0	0	- 374	817	0	-392	914	0	5,844	2,864
Coulter pine	241	64	0	0	0	0	0	0	283	91	0	283	91	0	524	155
Limber pine	58	0	0	0	0	0	0	0	0	0	0	0	0	0	58	0
Jeffrey pine	15,263	1,926	47	292	0	135	248	167	507	1,180	22	690	1,719	189	15,953	3,645
Sugar pine	9,745	3,446	12	248	0	907	857	831	566	956	1,247	1,484	2,060	2,078	11,229	5,507
Western white pine	1,045	287	0	0	0	0	0	0	0	0	0	0	0	0	1,045	287
Ponderosa pine	28,040	3,792	72	126	0	3,411	2,190	2,390	4,306	4,152	2,300	7,789	6,468	4,690	35,829	10,261
Bigcone Douglas-fir	569	40	0	0	0	0	0	0	271	46	0	271	46	0	841	87
Douglas-fir	3,414	496	0	0	0	1,748	226	220	559	62	79	2,307	288	299	5,721	784
Giant sequoia	107	0	0	0	0	151	2	0	37	10	0	188	12	0	295	12
California-nutmeg	0	0	0	0	0	0	0	0	8	2	0	8	2	0	8	2
Mountain hemlock	1,288	66	0	0	0	0	0	0	0	0	0	0	0	0	1,288	66
Total	148,528	36,836	894	1,431	0	11,207	6,456	8,514	9,923	10,535	5,796	22,024	18,422	14,309	170,552	55,257
Hardwoods:																
Bigleaf maple	0	0	0	0	0	0	0	0	7	26	0	7	26	0	7	26
White alder	0	0	0	0	0	141	55	0	- 7	118	35	134	172	35	134	172
Pacific madrone	0	0	0	0	0	0	0	0	6	43	0	6	43	0	6	43
Oregon ash	0	0	- 23	41	0	0	0	0	0	0	0	- 23	41	0	- 23	41
Walnut	0	0	0	0	0	0	0	0	23	13	0	23	13	0	23	13
Tanoak	0	0	0	0	0	0	0	0	20	9	0	20	9	0	20	9
Quaking aspen	0	0	0	0	0	0	0	0	- 38	71	0	- 38	71	0	- 38	71
Coast live oak	0	0	0	0	0	0	0	0	15	17	0	15	17	0	15	17
Canyon live oak	0	60	199	240	0	- 7	71	0	775	1,206	94	968	1,517	94	968	1,576
Oregon white oak	0	0	0	0	0	0	0	0	12	2	0	12	2	0	12	2
California black oak	91	420	347	156	0	- 91	545	0	408	2,376	115	664	3,076	115	754	3,497
Valley oak	0	0	0	0	0	0	0	0	23	81	0	23	81	0	23	81
Interior live oak	0	12	0	0	0	0	0	0	43	25	0	43	25	0	43	37
California-laurel	0	0	- 4	4	0	0	0	0	27	10	0	23	14	0	23	14
Other hardwoods	4	41	0	0	0	0	0	0	0	0	0	0	0	0	4	41
Total	95	533	519	441	0	43	671	0	1,314	3,995	244	1,877	5,107	244	1,972	5,640
All species	148,622	37,368	1,414	1,872	0	11,251	7,127	8,514	11,238	14,530	6,040	23,902	23,529	14,554	172,524	60,897

-- = less than 500 cubic feet; 0 = none found

[a] Totals may be off because of rounding, data subject to sampling error.

[b] Data for some National Forests were collected during 1993-95, older data were updated to 1992; data for other owners were collected during 1991-94.

[c] Negative net annual growth is the result of annual mortality exceeding gross annual growth.

[d] Annual removal volume is not available for National Forests.

Table 29--Current net annual growth, average annual mortality, and average annual removals of sawtimber on timberland outside National Forests, by species and owner class, San Joaquin and Southern Resource Areas, California, 1994 [a b c]

Species	Other public			Forest industry			Other private			All owners		
	Current net annual growth	Average annual mortality	Average annual removals	Current net annual growth	Average annual mortality	Average annual removals	Current net annual growth	Average annual mortality	Average annual removals	Current net annual growth	Average annual mortality	Average annual removals
	Thousand board feet, Scribner rule											
Softwoods:												
White fir	3,925	2,621	0	19,922	8,766	18,686	10,734	6,664	11,607	34,581	18,051	30,293
Red fir	0	0	0	0	0	0	1,119	1,695	0	1,119	1,695	0
Incense-cedar	2,648	626	0	7,136	3,566	7,175	8,823	5,118	864	18,606	9,310	8,039
Lodgepole pine	- 65	460	0	0	0	0	- 1466	3,875	0	- 1530	4,335	0
Coulter pine	0	0	0	0	0	0	1,537	376	0	1,537	376	0
Jeffrey pine	117	1,211	0	1,153	1,264	988	3,647	5,442	120	4,917	7,917	1,108
Sugar pine	164	1,477	0	5,692	4,519	5,471	4,354	5,421	8,292	10,210	11,417	13,762
Ponderosa pine	335	777	0	23,868	9,967	12,231	26,503	21,888	12,387	50,705	32,631	24,618
Bigcone Douglas-fir	0	0	0	0	0	0	228	229	0	228	229	0
Douglas-fir	0	0	0	10,005	1,149	1,324	3,253	372	461	13,257	1,521	1,785
Giant sequoia	0	0	0	670	9	0	273	55	0	943	64	0
Total	7,123	7,172	0	68,445	29,240	45,874	59,004	51,133	33,731	134,571	87,544	79,605
Hardwoods:												
Bigleaf maple	0	0	0	0	0	0	3	9	0	3	9	0
White alder	0	0	0	171	87	0	135	532	102	306	619	102
Pacific madrone	0	0	0	0	0	0	69	63	0	69	63	0
Oregon ash	- 2	51	0	0	0	0	0	0	0	- 2	51	0
Tanoak	0	0	0	0	0	0	34	21	0	34	21	0
Quaking aspen	0	0	0	0	0	0	- 176	293	0	- 176	293	0
Coast live oak	0	0	0	0	0	0	20	7	0	20	7	0
Canyon live oak	437	425	0	7	86	0	4,563	1,516	238	5,008	2,027	238
California black oak	- 21	347	0	- 112	1,162	0	6,498	5,192	134	6,365	6,702	134
Valley oak	0	0	0	0	0	0	141	237	0	141	237	0
Interior live oak	0	0	0	0	0	0	58	14	0	58	14	0
Total	415	824	0	66	1,335	0	11,345	7,884	475	11,826	10,042	475
All species	7,538	7,995	0	68,511	30,575	45,874	70,348	59,016	34,206	146,397	97,587	80,080

0 = none found

[a] Totals may be off because of rounding, data subject to sampling error.

[b] Board foot growth, mortality, and removal volume are not available for National Forests.

[c] Negative net annual growth is the result of annual mortality exceeding gross annual growth.

Table 30--Changes in timberland area outside National Forests, by owner class, San Joaquin and Southern Resource Area, California, 1984, 1994 [a] [b]

Description of change	Other public	Forest industry	Other private	All owners
		Thousand acres		
Timberland area published in 1984 [c]	50	167	303	520
New estimate of timberland area for 1984, based on remeasured plots only [d]	63	169	329	561
Adjustments to 1984 area:				
Reclassification of Native American ownership (from public to private)	- 9	--	9	--
Updates to owner or land class [e]	--	- 37	34	- 3
Adjusted timberland area for 1984 [f]	**54**	**132**	**372**	**558**
Area change (during 1984 -94) due to:				
Changes in land use --				
Timberland to rights-of-way	--	- 8	- 7	- 14
Changes in inventory area--				
To reserved timberland [g]	--	--	- 13	- 13
Changes in ownership--				
From other public	--	--	--	--
From forest industry	--	--	--	--
From other private	--	6	- 6	--
Net change	--	6	- 6	--
Timberland area in 1994, based on remeasured plots only [f]	**54**	**130**	**347**	**531**
Timberland area in 1994, based on all sample plots [h]	53	146	369	568

-- = none found or less than 500 acres.

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Negative values are losses of timberland and positive values are gains in timberland. Losses are shown by the 1984 owner, and gains are shown by the 1994 owner.

[c] Source: Hiserote and others 1986.

[d] The modified sampling design for the 1991-94 inventory produced a different set of plots for the sample, which includes existing plots that were remeasured and new plots. Only remeasured plots were used to create this table. The 1984 data were recompiled by using the current (1994) procedures. Updates to the original classification of owner and land class were incorporated into the new version of the 1984 data. The adjusted 1984 data also reflect the new Bureau of Census (1990) land area figures.

[e] The classification of owner or land class assigned to a plot in 1984 was verified during the 1994 inventory. In some cases, updates were made to the 1984 data when new or more accurate information was available.

[f] Use the adjusted 1984 data and the 1994 remeasured plot data (bold type in table) when analyzing for periodic change.

[g] This area entered the By-Day Creek Ecological Reserve, managed by the California State Fish and Game.

[h] All sample plots include remeasured plots and plots that are new to the inventory. All sample plots are used for the current estimates of area displayed in tables 1-29.

Table 31--Changes in net volume of growing stock on timberland outside National Forests, by species group and owner class, San Joaquin and Southern Resource Area, California, 1984, 1994 [a b c]

Description of change	Softwood species				Hardwood species			
	Other public	Forest industry	Other private	All owners	Other public	Forest industry	Other private	All owners
	Million cubic feet							
Volume published in 1984 [d]	98	598	589	1,285	30	79	191	300
New estimate of volume for 1984, based on remeasured plots only [e]	119	578	635	1,332	35	67	224	326
Adjustments to 1984 volume:								
Reclassification of Native American ownership (from public to private)	- 7	--	7	--	-13	--	13	--
Updates to owner or land class [f]	- 6	- 178	184	--	10	- 29	19	--
Adjusted volume for 1984 [g]	**106**	**400**	**826**	**1,332**	**32**	**38**	**256**	**326**
Volume changes due to:								
Change in inventory area--								
To reserved timberland [h]	--	--	- 23	- 23	--	--	--	--
From reserved timberland	--	--	--	--	--	--	--	--
Net change	--	--	- 23	- 23	--	--	--	--
Changes in owner--								
From other public	--	--	--	--	--	--	--	--
From forest industry	--	--	--	--	--	--	--	--
From other private	--	38	- 38	--	--	--	--	--
Net change	--	38	- 38	--	--	--	--	--
Growth, mortality, and harvest--								
Periodic gross growth	26	181	244	451	9	7	58	73
Periodic mortality	- 24	- 26	- 71	- 121	- 5	- 3	- 22	- 31
Periodic removals	--	-121	-171	-292	--	--	- 7	- 7
Net change	2	34	2	38	4	4	29	35
Total volume in 1994, [g] based on remeasured plots only	**107**	**472**	**767**	**1,346**	**35**	**41**	**285**	**361**
Total volume in 1994, based on all sample plots [i]	108	516	782	1,406	33	47	286	366

-- = none found or less than 500,000 cubic feet

[a] Includes growing-stock trees ≥ 5 inches d.b.h.

[b] Totals may be off because of rounding; data subject to sampling error.

[c] Negative values are losses of volume and positive values are gains in volume. Losses are shown by the 1984 owner and gains are shown by the 1994 owner.

[d] Source: Hiserote and others 1986.

[e] The modified sampling design for the 1991-94 inventory produced a different set of plots for the sample, which includes existing plots that were remeasured and new plots. Only remeasured plots were used to create this table. The 1984 data were recompiled by using the current (1994) procedures. Updates to the original classification of owner and land class were incorporated into the new version of the 1984 data. The adjusted 1984 data also reflect the new Bureau of Census (1990) land area figures.

[f] The classification of owner or land class assigned to a plot in 1984 was verified during the 1994 inventory. In some cases, updates were made to the 1984 data when new or more accurate information was available.

[g] Use the adjusted 1984 data and the 1994 remeasured plot data (bold type in table) when analyzing for periodic change.

[h] This area entered the By-Day Creek Ecological Reserve, managed by the California State Fish and Game.

[i] All sample plots include remeasured plots and plots that are new to the inventory. All sample plots are used for the current estimates of volume displayed in tables 1-29.

Table 32--Changes in net volume of sawtimber on timberland outside National Forests, by species group and owner class, San Joaquin and Southern Resource Area, California, 1984, 1994 [a b c]

Description of change	Softwood species				Hardwoods species			
	Other public	Forest industry	Other private	All owners	Other public	Forest industry	Other private	All owners
	Million board feet, Scribner rule							
Volume published in 1984 [d]	473	2,913	2,864	6,250	69	163	316	548
New estimate of volume for 1984, based on remeasured plots only [e]	528	3,152	2,795	6,475	85	140	435	660
Adjustments to 1984 volume:								
Reclassification of Native American ownership (from public to private)	- 30	--	30	--	- 27	--	27	--
Updates to owner or land class [f]	31	- 945	895	- 19	16	- 62	46	--
Adjusted volume for 1984 [g]	**529**	**2,207**	**3,720**	**6,456**	**74**	**78**	**508**	**660**
Volume changes due to:								
Changes in inventory area--								
To reserved timberland [h]	--	--	-103	-103	--	--	--	--
From reserved timberland	--	--	--	--	--	--	--	--
Net change	--	--	-103	-103	--	--	--	--
Changes in ownership--								
From other public	--	--	--	--	--	--	--	--
From forest industry	--	--	--	--	--	--	--	--
From other private	--	180	- 180	--	--	--	--	--
Net changes	--	180	- 180	--	--	--	--	--
Growth, mortality, and harvest--								
Periodic gross growth	139	940	1,269	2,348	21	10	108	139
Periodic mortality	- 129	- 67	- 325	- 521	- 6	- 6	- 36	- 48
Periodic removals	--	- 654	- 977	-1,631	--	--	- 22	- 22
Net change	11	219	- 33	197	15	4	51	71
Total volume in 1994, [g] based on remeasured plots only	**529**	**2,207**	**3,720**	**6,456**	**89**	**82**	**559**	**731**
Total volume in 1994, based on all sample plots [i]	527	2,404	3,834	6,765	61	94	540	695

-- = none found or less than 500,000 board feet

[a] Includes sawtimber softwood trees ≥ 9 inches d.b.h. and sawtimber hardwood trees ≥ 11 inches d.b.h.

[b] Totals may be off because of rounding; data subject to sampling error.

[c] Negative values are losses of volume and positive values are gains in volume. Losses are shown by the 1984 owner and gains are shown by the 1994 owner.

[d] Source: Hiserote and others 1986.

[e] The modified sampling design for the 1991-94 inventory produced a different set of plots for the sample, which includes existing plots that were remeasured and new plots Only remeasured plots were used to create this table. The 1984 data were recompiled by using the current (1994) procedures. Updates to the original classification of owner and land class were incorporated into the new version of the 1984 data. The adjusted 1984 data also reflect the new Bureau of Census (1990) land area figures.

[f] The classification of owner or land class assigned to a plot in 1984 was verified during the 1994 inventory. In some cases, updates were made to the 1984 data when new or more accurate information was available.

[g] Use the adjusted 1984 data and the 1994 remeasured plot data (bold type in table) when analyzing for periodic change.

[h] This area entered the By-Day Creek Ecological Reserve, managed by the California State Fish and Game.

[i] All sample plots include remeasured plots and plots that are new to the inventory. All sample plots are used for the current estimates of volume displayed in tables 1-29.

Table 33--Area, net volume of growing stock, and net volume of sawtimber on timberland outside National Forests, by forest type, San Joaquin and Southern Resource Areas, California, 1984, 1994 [a] [b]

Forest type	Outside National Forests					
	1981-84			1991-94		
	Area	Growing stock	Sawtimber	Area	Growing stock	Sawtimber
	Thousand acres	*Million cubic feet*	*Million board feet*	*Thousand acres*	*Million cubic feet*	*Million board feet*
Softwood types:						
Mixed conifer--						
Mixed conifer	233	769	3,504	227	906	4,191
Mixed conifer / hardwood	53	215	872	46	221	950
Total	286	984	4,376	273	1,127	5,140
Ponderosa / Jeffrey pine--						
Ponderosa pine	53	150	656	40	116	488
Ponderosa pine / hardwood	27	39	143	12	11	37
Jeffrey pine	23	39	170	23	50	232
Total	104	229	968	76	176	757
Other softwood types--						
White fir	12	79	398	5	9	41
Lodgepole pine	14	82	428	14	73	356
Coulter pine	3	3	8	3	5	19
Total	29	164	834	23	87	416
Total, softwood types	418	1,376	6,178	371	1,390	6,313
Hardwood types:						
White alder	8	23	88	4	29	136
Quaking aspen	0	0	0	13	11	40
Canyon live oak	26	71	137	49	130	333
Canyon live oak / softwood	25	37	159	30	45	144
California black oak	43	97	222	32	84	182
California black oak / softwood	13	44	206	11	10	18
Interior live oak	6	1	1	10	5	10
Interior live oak / softwood	0	0	0	6	1	0
Total, hardwood types	121	273	813	154	313	864
Nonstocked [c]	19	9	32	5	3	10
Total, all types	558	1,658	7,022	531	1,707	7,187

0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data are summarized from remeasured plots only. All data from the 1981-84 inventory were recompiled with the same procedures and methods used in the 1991-94 inventory. See text for discussion of data used for change analysis.

[c] Nonstocked areas are less than 10 percent stocked with live trees. Recent clearcuts scheduled for planting are included.

Table 34--Net volume of growing stock and net volume of sawtimber on timberland outside National Forests, by species and year, San Joaquin and Southern Resource Areas, California, 1984, 1994 [a] [b]

Species	Outside National Forests			
	1981-84		1991-94	
	Growing stock	Sawtimber	Growing stock	Sawtimber
	Million cubic feet	*Million board feet*	*Million cubic feet*	*Million board feet*
Softwoods:				
White fir	353	1,678	287	1,380
Red fir	30	148	22	102
Incense-cedar	222	853	265	1,008
Lodgepole pine	48	261	46	231
Coulter pine	4	14	7	28
Jeffrey pine	107	514	128	631
Sugar pine	141	794	141	778
Ponderosa pine	354	1,698	358	1,798
Bigcone Douglas-fir	12	62	11	49
Douglas-fir	57	319	76	424
Giant sequoia	4	23	5	26
California-nutmeg	--	0	1	0
Total	1,332	6,362	1,346	6,456
Hardwoods:				
Bigleaf maple	2	1	2	1
White alder	19	78	21	86
Pacific madrone	3	5	3	5
Walnut	1	0	1	0
Quaking aspen	3	10	4	11
Canyon live oak	77	106	100	141
California black oak	211	442	216	465
Valley oak	6	18	7	21
Interior live oak	2	1	3	1
Other hardwoods	1	0	2	0
Total	326	660	361	731
All species	1,658	7,022	1,707	7,187

-- = less than 500,000 cubic feet , 0 = none found

[a] Totals may be off because of rounding; data subject to sampling error.

[b] Data are from remeasured plots only. All data from the 1981-84 inventory were recompiled with the same procedures and methods used in the 1991-94 inventory. See text for discussion of data used for change analysis.

Table 35--Timber harvest volume, by year and county, San Joaquin and Southern Resource Areas, California, 1948-77 [a]

Year	County [b]										
	Alpine, Mono,and Inyo	Amador	Calaveras	Fresno	Kern and Tulare	Los Angeles and San Bernardino	Madera	Mariposa and Merced	Riverside and San Diego	Tuolumne	Total
	Thousand board feet, local scale [c]										
1948	12,799	14,826	155,884	40,755	65,287	2,875	18,628	22,386	1,550	164,840	499,830
1949	15,389	8,961	139,218	42,909	50,350	2,008	10,288	18,370	101	142,976	430,570
1950	14,194	17,109	185,819	43,043	103,657	2,560	40,541	5,185	700	162,789	575,597
1951	800	42,114	155,584	32,011	59,195	2,808	38,967	16,736	1,162	173,824	523,201
1952	22,034	22,805	108,157	62,761	55,548	3,450	39,208	12,068	1,471	143,626	471,128
1953	24,723	16,161	150,262	66,893	41,792	7,110	41,861	14,830	304	164,829	528,765
1954	22,563	23,474	128,195	64,976	35,414	23,254	26,095	15,055	263	117,075	456,364
1955	7,536	34,275	112,977	67,606	54,560	22,487	56,153	8,519	520	155,128	519,761
1956	23,055	35,552	125,183	86,304	48,740	12,596	72,768	13,725	4,493	132,135	554,551
1957	43,589	34,759	107,589	58,768	28,416	16,410	45,424	14,104	30	148,032	497,121
1958	28,024	39,088	98,925	68,326	39,041	9,348	61,964	5,558	2,396	114,203	466,873
1959	27,967	12,680	116,249	60,166	51,821	23,723	74,746	15,254	360	134,856	517,822
1960	16,676	16,178	74,188	52,534	39,968	11,805	64,020	18,593	3,818	74,186	371,966
1961	13,300	60,668	105,790	40,765	42,680	24,101	61,436	1,378	15	133,755	483,888
1962	11,607	43,786	73,563	74,989	63,707	9,332	59,724	6,504	7,840	26,988	378,040
1963	25,210	21,681	97,600	48,660	84,965	27,489	55,683	4,481	138	122,801	488,708
1964	8,098	36,076	54,627	74,017	88,000	9,303	62,630	19,853	190	110,146	462,940
1965	4,202	40,814	75,099	76,251	69,955	19,440	52,982	8,406	60	145,595	492,804
1966	4,019	11,462	50,581	87,980	70,922	11,062	70,312	10,506	100	191,725	508,669
1967	3,004	35,203	60,162	84,011	83,013	2,892	68,589	8,745	3,075	178,816	527,510
1968	15,630	25,405	85,137	104,256	98,025	450	60,898	1,188	325	189,012	580,326
1969	11,857	26,856	45,020	137,242	89,616	479	63,923	17,283	76	157,759	550,111
1970	9,210	12,849	72,016	109,840	79,192	5,284	77,043	11,004	51	153,861	530,350
1971	8,034	29,891	55,731	86,944	149,823	7,091	74,545	10,578	101	160,168	582,906
1972	25,284	38,893	47,767	88,520	155,211	18,895	82,009	7,782	352	150,666	615,379
1973	14,819	36,761	51,743	99,831	145,190	13,673	69,598	8,757	21	39,829	480,222
1974	5,620	35,043	21,071	121,284	77,637	9,641	58,882	1,606	3,628	165,966	500,378
1975	2,212	40,232	35,977	136,304	82,657	20,586	64,289	15,977	70	120,722	519,026
1976	8,424	39,503	60,378	94,448	86,235	11,055	52,413	20,516	1,265	184,520	558,757
1977	10,955	61,610	78,543	81,750	61,733	16,927	69,215	9,265	0	174,308	564,306

[a] The harvest data in this table include no cull, fuelwood, hardwood chips or logs, poles, pilings, or posts.
[b] Some counties were combined in the data we received from the California State Board of Equalization
[c] Various log rules were used in California; no attempt was made to convert the data to a common base; however, most timber companies in the San Joaquin and Southern Resource Areas use the short-log (16-log) Scribner rule.

Source: California Department of Forestry 1948-77.

Table 36--Timber harvest volume, by year, owner group, and county, San Joaquin and Southern Resource Areas, California, 1978-95 [a]

Year	Owner group	County [b]										
		Alpine, Mono, and Inyo	Amador	Calaveras	Fresno	Kern and Tulare	Los Angeles and San Bernardino	Madera	Mariposa and Merced	Riverside and San Diego	Tuolumne	Total
		Thousand board feet, local scale [c]										
1978	Private	3,830	21,424	52,364	7,210	9,810	2,190	3,969	7,313	103	47,359	155,572
	Public	3,903	12,314	22,156	80,121	84,008	190	71,672	8,315	0	110,903	393,582
	Total	7,733	33,738	74,520	87,331	93,818	2,380	75,641	15,628	103	158,262	549,154
1979	Private	4,436	17,508	42,097	10,803	4,885	1,770	27,262	12,601	0	51,280	172,642
	Public	5,197	16,351	9,289	92,186	80,973	413	59,810	10,933	3,938	86,093	365,183
	Total	9,633	33,859	51,386	102,989	85,858	2,183	87,072	23,534	3,938	137,373	537,825
1980	Private	1,686	12,645	27,645	14,826	7,914	0	2,958	5,075	0	50,101	122,850
	Public	10,444	10,596	3,837	41,983	50,947	59	59,496	6,985	0	66,600	250,947
	Total	12,130	23,241	31,482	56,809	58,861	59	62,454	12,060	0	116,701	373,797
1981	Private	3,789	34,055	26,205	10,614	327	1,613	2,740	1,211	0	26,391	106,945
	Public	1,739	5,699	8,687	46,160	37,943	331	35,615	7,826	0	37,538	181,538
	Total	5,528	39,754	34,892	56,774	38,270	1,944	38,355	9,037	0	63,929	288,483
1982	Private	146	28,471	29,522	14,712	0	0	2,347	305	113	0	75,616
	Public	28,687	1,128	8,666	45,444	57,719	0	5,024	11,662	0	56,274	214,604
	Total	28,833	29,599	38,188	60,156	57,719	0	7,371	11,967	113	56,274	290,220
1983	Private	3,052	27,151	63,383	18,145	1,040	0	15,622	1,536	0	15,438	145,367
	Public	20,816	5,607	20,936	57,870	69,600	86	28,552	17,351	0	68,339	289,157
	Total	23,868	32,758	84,319	76,015	70,640	86	44,174	18,887	0	83,777	434,524
1984	Private	3,671	8,706	21,192	16,904	2,633	0	3,747	451	0	47,203	104,507
	Public	4,816	5,648	37,113	70,630	70,972	87	18,805	13,856	0	48,089	270,016
	Total	8,487	14,354	58,305	87,534	73,605	87	22,552	14,307	0	95,292	374,523
1985	Private	9,389	18,269	54,666	12,083	7,093	0	240	172	0	29,960	131,872
	Public	11,531	4,532	2,476	67,849	75,872	0	48,756	10,579	0	81,493	303,088
	Total	20,920	22,801	57,142	79,932	82,965	0	48,996	10,751	0	111,453	434,960
1986	Private	1,795	26,427	69,539	8,687	4,293	0	68	4,925	0	55,725	171,459
	Public	9,662	8,584	18,247	69,234	71,623	0	74,644	11,860	7	123,898	387,759
	Total	11,457	35,011	87,786	77,921	75,916	0	74,712	16,785	7	179,623	559,218
1987	Private	1,114	28,128	56,207	18,994	1,371	154	48	6,769	0	61,497	174,282
	Public	9,825	20,469	30,061	66,331	51,489	410	72,016	7,407	67	78,923	336,998
	Total	10,939	48,597	86,268	85,325	52,860	564	72,064	14,176	67	140,420	511,280
1988	Private	572	17,559	65,483	3,243	3,224	942	21	14,483	0	14,165	119,692
	Public	16,013	14,063	33,830	78,085	52,191	461	62,109	71,744	0	120,855	449,351
	Total	16,585	31,622	99,313	81,328	55,415	1,403	62,130	86,227	0	135,020	569,043
1989	Private	86	65,935	126,527	14,675	8,368	384	657	8,421	0	66,840	291,893
	Public	8,197	35,715	7,950	74,997	57,862	0	67,056	76,019	0	64,057	391,853
	Total	8,283	101,650	134,477	89,672	66,230	384	67,713	84,440	0	130,897	683,746
1990	Private	745	70,661	141,918	11,345	5,194	0	3,797	10,645	0	54,923	299,228
	Public	415	11,947	22,363	48,264	40,917	0	76,009	5,322	0	97,592	302,829
	Total	1,160	82,608	164,281	59,609	46,111	0	79,806	15,967	0	152,515	602,057
1991	Private	270	46,149	79,314	10,664	3,593	0	7,532	8,872	0	49,253	205,647
	Public	503	15,645	15,452	36,197	63,917	0	26,901	33,110	0	83,716	275,441
	Total	773	61,794	94,766	46,861	67,510	0	34,433	41,982	0	132,969	481,088
1992	Private	115	29,900	54,104	12,821	2,860	75	2,994	10,149	0	48,069	161,087
	Public	8,943	13,466	10,624	45,894	44,871	0	38,654	9,940	0	63,297	235,689
	Total	9,058	43,366	64,728	58,715	47,731	75	41,648	20,089	0	111,366	396,776
1993	Private	77	25,583	61,348	11,414	19,831	141	3,924	3,556	0	50,786	176,660
	Public	4,544	760	19,453	30,063	27,867	0	18,056	2,948	0	61,531	165,222
	Total	4,621	26,343	80,801	41,477	47,698	141	21,980	6,504	0	112,317	341,882
1994	Private	18	25,707	47,964	11,152	8,475	27	3,594	2,829	0	55,193	154,959
	Public	4,025	678	2,516	8,797	7,230	0	9,258	208	0	38,379	71,091
	Total	4,043	26,385	50,480	19,949	15,705	27	12,852	3,037	0	93,572	226,050
1995	Private	27	22,262	51,340	13,535	2,261	63	3,836	4,497	0	48,430	146,251
	Public	9,989	272	3,019	26,936	8,535	0	1,170	91	0	30,308	80,320
	Total	10,016	22,534	54,359	40,471	10,796	63	5,006	4,588	0	78,738	226,571

[a] The harvest data in this table include no cull, fuelwood, hardwood chips or logs, poles, pilings, or posts.
[b] Some counties were combined in the data we received from the California State Board of Equalization
[c] Various log rules were used in California; no attempt was made to convert the data to a common base; however, most timber companies in the San Joaquin and Southern Resource Areas use the short-log (16-foot) Scribner rule.
Source: California State Board of Equalization, Timber Tax Division 1978-95.

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Metric Equivalents

1 acre = 0.405 hectare
1 acre = 4046.86 square meters
1,000 acres = 404.7 hectares
1,000 cubic feet = 28.3 cubic meters
1 cubic foot per acre = 0.07 cubic meter per hectare
1 foot = 0.3048 meter
1 inch = 2.54 centimeters
1 mile = 1.609 kilometers

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Appendix A

Reference documentation for the 1991-94 inventory of California. Note that these are unpublished, in-house documents.

1. Field instructions for the 1991-94 inventory of California, 1992. 219 p. On file with: Pacific Resource Inventory, Monitoring, and Evaluation (PRIME) program, Pacific Northwest Research Station, Portland, Oregon.

2. California photo-interpretation manual for California, 1981. On file with: Pacific Resource Inventory, Monitoring, and Evaluation (PRIME) program, Pacific Northwest Research Station, Portland, Oregon.

3. California inventory procedures and techniques documentation for the 1991-94 forest inventory. On file with: Pacific Resource Inventory, Monitoring, and Evaluation (PRIME) program, Pacific Northwest Research Station, Portland, Oregon.

4. Forest Inventory and Analysis User's Guide, U.S. Department of Agriculture, Forest Service, Region 5. June, 1995. On file with: Land Management Planning Staff (Remote Sensing Lab Team), Sacramento, California.

Appendix B

For more information about National Forest inventory procedures, contact the timber management staff at the following addresses:

For California--
USDA Forest Service, Pacific Southwest Region
Land Management Planning: Remote Sensing Lab
1920 20th St.
Sacramento, CA 95814

For the eastern edge of California adjacent to Nevada--
USDA Forest Service, Intermountain Region
Timber Management
324 25th Street (Federal Building)
Ogden, UT 84401

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Waddell, Karen L.; Bassett, Patricia M. 1997. Timber resource statistics for the San Joaquin and southern resource areas of California. Resour. Bull. PNW-RB-224. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 51 p.

This report is a summary of timber resource statistics for the San Joaquin and Southern Resource Areas of California, which includes Alpine, Amador, Calaveras, Fresno, Imperial, Inyo, Kern, Kings, Los Angeles, Madera, Mariposa, Merced, Mono, Orange, Riverside, San Bernardino, San Diego, San Joaquin, Stanislaus, Tulare, and Tuolumne Counties. Data were collected as part of a statewide multiresource inventory. The inventory sampled private and public lands except reserved areas and National Forests. The National Forest System provided data from regional inventories of the Angeles, Cleveland, El Dorado, Inyo, Los Padres, San Bernardino, Sequoia, Sierra, Stanislaus, and Toiyabe National Forests, and the Lake Tahoe Basin Management Unit. Area information for parks and other reserves was obtained directly from the organizations managing these areas. Statistical tables summarize all ownerships and provide estimates of land area, timber volume, growth, mortality, and harvest. Estimates of periodic change of timberland area and timber volume are presented for all ownerships outside National Forests.

Keywords: Forest surveys, forest inventory, statistics (forest), timber resources, resources (forest), periodic change, trends, Alpine County, Amador County, Calaveras County, Fresno County, Imperial County, Inyo County, Kern County, Kings County, Los Angeles County, Madera County, Mariposa County, Merced County, Mono County, Orange County, Riverside County, San Bernardino County, San Diego County, San Joaquin County, Stanislaus County, Tulare County, Tuolumne County, California.

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