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CALIFORNIA FOREST AND RANGE EXPERIMENT STATION

FOREST SERVICE
U.S. DEPARTMENT OF AGRICULTURE
IN COOPERATION WITH THE UNIVERSITY OF CALIFORNIA
BERKELEY

Technical Note No. 16

July 7, 1941

CALIFORNIA FOREST STATISTICS

compiled by

Divisions of Forest Economics and Forest Survey

These statistics were compiled for the most part in 1938 in order to assist the Joint Congressional Committee on Forestry in its investigations of the forest lands of the United States^{1/}. Some of the broader statistics are published in the appendix of the Committee's report along with comparable data for other parts of the country, but because a considerable portion of the detailed regional breakdown could not be included, it is deemed advisable to make this information available for those especially interested in California conditions.

Fifteen tables are presented; tables 1 - 4 deal with forest areas; tables 5 - 12 with timber stands, including growth and drain; and tables 13 - 15 with lumber distribution and consumption.

A word of caution: The data are approximate only; there is no claim for preciseness and estimates are subject to continual change. Yet it is felt no better information is available, and until the detailed forest survey, which is now in only its initial planning phases, is completed for California, truly accurate figures will be non-existent.

In the compilation of these data, reference was made to a large mass of statistics, authorities in particular subjects, and earlier reports. The tables are footnoted to indicate source of information, but three reports referred to deserve special mention. By the "Capper report" is meant an unpublished manuscript prepared in 1931 entitled, "Report to accompany statistical data on forest areas, stands, growth, drain for California." The

^{1/} For report of this committee see Senate Doc. 32, 77th Cong., 1st session. 1941.

"Range report" means data prepared for Senate Doc. 199, 74th Congress, 2d session entitled, "The western range." The "1934 Report to National Resources Board" consists partly of a tabular presentation of land use data by counties prepared by the Forest Service for the Lands Committee Report of the National Resources Board.

In studying the following tables, careful attention should be paid to definition of terms, particularly to the meaning of commercial and non-commercial forest land, as stated in footnotes 1 and 2, table 2.

A list of the tables follows:

<u>Table No.</u>	<u>Subject</u>
1. -	Land area by major classes of land use.
2. -	Forest land areas by broad classes of forest.
3. -	Commercial forest land areas by character of growth by subregions.
4. -	Ownership of commercial forest land areas by subregions and type of stands.
5. -	Stand of sawtimber by type of stands on total commercial forest land area. All softwoods. 1936.
6. -	Stand of sawtimber by species, on total commercial forest land area. All softwoods. 1936.
7. -	Stand of cordwood (excluding bark) on sawtimber, cordwood and re-stocking areas by subregions.
8. -	Total stand (cubic feet) on the commercial forest land areas by type of material, and by subregions.
9. -	Stands of pulpwood species by kind of wood and by subregions.
10. -	Ownership of stand of sawtimber on total commercial forest land area by subregions.
11. -	Current annual growth on commercial forest areas by subregions, ownership and type of growth.
12. -	Current annual growth and drain.
13. -	Distribution of California lumber production to other states, 1922-1938.
14. -	Amount and origin of lumber consumed in California, 1920-1938.
15. -	Estimated average annual consumption of principal forest products used in California.

Table 1. - Land area by major classes of land use.
(Thousands of acres)

Region	: Total : All forest : Crop land :		Pasture and range :	
	area :	land :	: in farms :	Total : In farms :Not in farms: Other
Entire state	1/ 99,617	2/ 48,159	3/ 8,663	4/ 21,852 5/ 15,837 6/ 6,015 7/ 20,943

1/ 1935 Census.

2/ Data from Report to National Resources Board, 1934. Includes 19,706 timberlands; 17,869 woodland and chaparral; 4,503 farm woodland; and 6,081 estimated area in parks, primitive areas, etc. under some form of forest cover. About 25,000 of this classification may also be considered as grazable land.

3/ 1935 Census.

4/ Obtained as remainder of State total after deducting other items in table. Difference between this figure and area of grazable area in Range Report may be accounted for in grazable forest land.

5/ Remainder of 29,003 farm lands in 1934 Report to National Resources Board after taking out 8,663 crop lands and 4,503 farm woodlands.

6/ Obtained as remainder of total "Pasture and Range" after deducting part "In Farms."

7/ Includes 4,630 urban, roads, etc., and 676 estimated area in parks, primitive areas, etc. of high mountain barrens from 1934 Report to National Resources Board. Also includes 15,634 ungrazable desert from Range Report.

Table 2. - Forest land areas by broad classes of forest.
(Thousands of acres)

Region	Total forest land	Commercial land ^{1/}		Non-commercial forest land ^{2/}	
		:	:	:	:
		Total	Commercial	Withdrawn from	Chiefly valuable for other
		:	:	:	:
		forest land	forest land	timber use	purposes than timber
		:	:	:	:
Entire State	48,159	3/13,655	34,504	4/1,567	5/32,937

1/ Land available and capable of producing timber of commercial quantity and quality under present or reasonably conceivable future conditions.

2/ Non-commercial forest land:

- (a) Commercially valuable land in parks, preserves, etc., withdrawn from timber use.
- (b) Land chiefly valuable for purposes other than timber production, such as pinon-juniper, chaparral, remote and inaccessible alpine ranges, and other areas which appear to be permanently out of the commercial timber-producing class because of low productivity or extreme inaccessibility. Much of the area has an important value in protecting watersheds, preventing or reducing soil erosion, protecting wildlife, providing game cover, etc.

3/ Kevin's estimate for Pine Region (plus area of State land unaccounted for) and Person's estimate for Redwood Region.

4/ Capper Revision figure of 1,516 plus Federal and State additions of 51,000 acres.

5/ Includes 6,051 timberlands (Douglas fir and white fir, and other timberlands outside Kevin's working circles and in southern California) and 26,886 other forest land (subalpine types, wood-land and chaparral, and pinon-juniper lands).

Table 3. - Commercial forest land areas by character of growth by subregions.

(Thousands of acres)

Region	Sawtimber		Fair to		Poor to non- restocking
	Total area	Total growth	Second growth	Old growth	
Entire State	13,655	9,810	8,653	1,157	278
Pine region ^{1/}	12,255	8,910	7,803	1,107	278
Redwood region ^{2/}	1,400	900	850	50	-
					209
					3,558
					109
					2,958
					400

^{1/} Total area from Kevin's working circle estimate plus unlisted area of State land, Proportions of individual items from Copper Revision.

^{2/} Total area and individual items from Person's 1936 estimate.

Table 4. - Ownership of commercial forest land areas by subregions and type of stands.

(Thousands of acres)

	Total	Federal	State	Private
		Nat'l.	County &	1/
	Total	Forest	Municipal	Farm
		Res.		and other
<u>Pine Region^{2/}</u>				
Commercial stands	12,255	6,696	41	270
Valuable for other purposes	3,294	2,432	13	24
Subtotal	15,549	9,128	54	304
<u>Redwood Region^{3/}</u>				
Commercial stands	1,400	-	4	56
Valuable for other purposes	975	-	-	35
Subtotal	2,375	-	4	91
<u>California</u>				
Commercial stands	13,655	6,696	45	326
Valuable for other purposes	4,269	2,432	13	69
Subtotal	17,924	9,128	58	395

1/ Forest areas owned by farmers estimated at 5 percent of the private forest area in the pine region, on the basis of data obtained in the Land-Use Study of the Sierra Nevada Foothills. For the "Stands valuable for other purposes" and for the Redwood Region, 4 percent of the private forest land was estimated to be in farm ownership.

2/ Commercial forest areas in private and national forest ownership from Kevin's report on timber-working circles. Areas of State land and areas valuable for other purposes based on Capper Revision Report.

3/ Areas for redwood region from Person's 1936 estimate, and from Capper Revision Report.

Table 5. - Stand of sawtimber by type of stands on total commercial forest-land area. All softwoods. 1936.
Millions of feet B.M. lumber tally.

	State totals			Pine region ^{1/}			Redwood region ^{1/}		
	: Old	: Second	:	: Total	: Old	: growth	: Total	: Old	: Second
	: Total	: growth	: growth	: Total	: Old	: growth	: Total	: growth	: growth
Now commercially available	170,244	163,554	6,690	123,984	3/118,304	4/5,680	46,260	7/45,250	8/1,010
More valuable for other purposes ^{1/}	45,430	45,160	270	34,670	5/34,400	6/270	10,760	9/10,760	10/
Total, merchantable size and stand	2/215,674	208,714	6,960	158,654	152,704	5,950	57,020	56,010	1,010

1/ "More valuable for other purposes" consists of the Douglas fir type in both pine and redwood regions, and one-half of the true fir type in pine region, (see note 5/).

2/ Much below Capper, due chiefly to new figures for Commercial Old Growth, as indicated in notes 3/ and 7/.

3/ Kevin Working Circle figures 5 percent overrun for lumber tally, as representing present lumbering stands.

4/ Capper, -6 years cut-over reserve stands estimated; not included in Working Circles (Kevin).

5/ Capper Douglas fir type, and one-half true fir estimated as not included in Working Circles (Kevin).

6/ Capper, - no cut-over reserve added; cutting negligible.

7/ Person, 1936 estimate decreased by 1936 cut, and lumber tally overrun added. Overrun not believed valid for redwood by Person, because of radical differences between Humboldt log rule (used in redwood region) and Scribner, but used for consistency with instructions.

8/ One-half of Capper only. Person thinks Capper much too high. Although diameter limit in redwood average 30 inches, less cut-over reserve (if any) is left than in pine because everything left was knocked down, prior to 1935.

9/ Capper report without change.

10/ No second growth given in Capper for redwood region Douglas fir type, because of practically no logging.

Table 6. - Stand of sawtimber by species, on total commercial forest land area. All softwoods. 1936.
Millions of feet B.M. lumber tally.

	State totals			Pine region			Redwood region		
	Total	Commercial: purposes	Other	Total	Commercial: purposes	Other	Total	Commercial: purposes	Other
Ponderosa pine	54,451	54,251	200	54,451	1/ 54,251	200			
Sugar pine	21,983	21,883	100	21,983	2/ 21,883	100			
Incense cedar	7,600	7,570	30	7,600	3/ 7,570	30			
White fir	32,740	25,550	7,190	30,400	3/ 23,410	6,990			200
Red fir	8,000	250	7,750	8,000	250	7,750			
Douglas fir	51,400	21,540	29,860	35,920	16,620	19,300			
Redwood	39,150	39,150							
Other	350	50	300	300		5/ 300			
Grand totals	215,674	170,244	45,430	158,654	123,984	34,670	57,020	46,260	10,760

1/ Including Jeffrey pine.

2/ Blister Rust estimate, 1937, believed much the most accurate we have on this species, in absence of a Forest Survey in this Region. No adjustment for cut because spring, 1937, same as fall, 1936.

Ponderosa pine and "All Other" taken at same percentage as sugar pine of respective volumes in Exp. Sta. 1932 revision of species stands, showing two pines separately and "All Other" for Pine Region on basis of Seofield 1932 estimate for State Board of Equalization checked by Wohlenberg judgment from Internal Revenue data; "All Other" being adjusted to Pine Region old growth total (Table 1).

"All Other" separated into species by comparison with the only estimate by detailed species in this Region, C. S. Smith's Study of Lumber Industry in California (M.S. 1914), with judgment adjustments for cut since that time and other factors of present amount. Species segregated on judgment basis of Redwood 85 percent of old growth commercial stand (Person) and 75 percent of second growth; Douglas fir 10 percent of old growth stands and 20 percent of second growth.

3/ Abies concolor.

4/ Abies grandis.

5/ Chiefly lodgepole pine, with various subalpines higher up.

6/ 38,400 old growth.

7/ Chiefly Sitka spruce, western hemlock, etc.

Table 7. - Stand of cordwood (excluding bark)^{1/} on sawtimber, cordwood and restocking areas by subregions^{2/}.

(Thousands of cords)

Subregion	Saw timber areas		Cordwood areas		Restocking areas	
	Total	: Softwood:Hardwood	Total	: Softwood:Hardwood	Total	: Softwood:Hardwood
Pine region	78,706	78,562	78,562	144	144	-
Redwood region	85,533	85,533	85,533	0	0	-
California total	164,229	164,095	164,095	144	144	-

^{1/} Includes all trees below sawtimber size, and tops and limbs (only tops in softwoods) of sawtimber trees.

^{2/} Figures based on Tables 35 and 36 of Capper Revision Report, 1931. Capper Report figures for tops and limbs reduced to 79 percent for pine region and to 70 percent for the redwood region on the basis of revised timber stand estimates.

Table 8. - Total stand (cubic feet) on the commercial forest land areas by type of material,
and by subregions.

(Million cubic feet)

Subregion	All material ^{1/}		Sawtimber trees ^{2/}		Cordwood trees	
	Total	: Softwood :Hardwood:	Total	: Softwood :Hardwood:	Total	: Softwood :Hardwood
Pine region	41,977.5	41,977.5	-	40,357.7	40,357.7	-
Redwood region	21,154.7	21,154.7	-	20,730.8	20,730.8	-
California total	63,132.2	63,132.2	-	61,088.5	61,088.5	-
					2,043.7	2,043.7

^{1/} Sawtimber estimates (Table 5) in board feet converted to cubic feet in the ratio of 212 cubic feet per M. B.F.; cordwood (Table 7) converted to cubic feet in the ratio of 106 cubic feet per cord, (as in Capper Report).

^{2/} Includes tops and limbs (only tops in softwoods) as well as portion of tree suitable for saw logs.

Table 9. - Stands of pulpwood species by kind of wood and by subregions.

(Thousands of cords)

Kind of wood	Total	Pine region	Redwood region
White and red fir			
Sawtimber ^{1/}	81,480	76,800	4,680
Cordwood ^{2/}	22,554	19,047	3,507
Total	104,034	95,847	8,187
Douglas fir			
Sawtimber ^{1/}	102,800	71,840	30,960
Cordwood ^{2/}	40,968	17,788	23,180
Total	143,768	89,628	54,140
Totals			
Sawtimber ^{1/}	184,280	148,640	35,640
Cordwood ^{2/}	63,522	36,835	26,687
Total	247,802	185,475	62,327

^{1/} Sawtimber stands in Table 6 converted to cords in ratio of 2 cords per M board feet.

^{2/} Includes small trees and tops of trees on sawtimber areas, and cordwood on cordwood areas. The percentages of the total sawtimber stand (Table 6) accounted for by fir and Douglas fir were used in calculating the proportion of the cordwood stand (Table 7) represented by fir and Douglas fir.

Table 10. - Ownership of stand of sawtimber on total commercial forest land area by subregions.

(Million feet, board measure)

Subregion	Total	Federally owned and managed			State			Private	
		Total	National	Indian	Other	County	Municipal	Farm	Industrial
Pine region									
Commercial stands	123,984	62,619	61,554	1,065	-	190		1,500	59,675
Valuable for other purposes	34,670	24,935	24,985	-	-	50		200	9,435
Subtotal	158,654	87,604	86,539	1,065	-	240		1,700	69,110
Redwood region									
Commercial stands	46,260	204	-	204	-	535		900	44,621
Valuable for other purposes	10,760	1,648	-	1,648	-	-		200	8,912
Subtotal	57,020	1,852	-	1,852	-	535		1,100	53,533
California									
Commercial stands	170,244	62,823	61,554	1,269	-	725		2,400	104,296
Valuable for other purposes	45,430	26,633	24,985	1,648	-	50		400	18,347
Total	215,674	89,456	86,539	2,917	-	775		2,800	122,643

1/ No data available for farm timberlands; the Agricultural Census includes woodland and chaparral in addition to commercial timber. Commercial stands in farm woodlands estimated at 2.5 percent of the private timber volume in the pine region on the basis of data obtained in the Land-use study of the Sierra Nevada foothills. In Yuba County, e.g., 5 percent of the timber area and an estimated 2.5 percent of the timber stand is in farm woodlands. For the redwood region and for stands "valuable for other purposes," farm woodlands were estimated to contain about 2 percent of the private timber stands.

Table 11. - Current annual growth on commercial forest areas by subregions, ownership, and type of growth.

Subregion and ownership	Combined sawtimber and cordwood growth ^{1/}		Sawtimber growth ^{2/}		Cordwood growth	
	Total	: Softwood	: Hardwood	Total	: Softwood	: Hardwood
	Million	: Million	: Million	: Million	: Thousand	: Thousand
	cubic feet	: cubic feet	: cubic feet	: cubic feet	: cords	: cords
Pine region						
National forest	57.1	-	168.9	168.9	201.6	201.6
Private	64.3	-	168.6	168.6	266.5	266.5
	121.4	121.4	337.5	337.5	468.1	468.1
Redwood region						
Private	33.2	-	76.7	76.7	159.9	159.9
Total for State						
National forest	57.1	-	168.9	168.9	201.6	201.6
Private	97.5	-	245.3	245.3	426.4	426.4
Total	154.6	154.6	414.2	414.2	628.0	628.0

^{1/} Total growth calculated on the basis of the growth rates given in the Capper Revision Report, 1931, and stand on areas of commercial forest given in Table 8.

^{2/} For the pine region, growth in old stands estimated (by Dunning) to be entirely on cordwood trees, losses balancing growth on sawtimber trees; growth in second-growth stands estimated to be 89 percent on sawtimber trees and 11 percent on cordwood trees; growth on restocking areas estimated to be 50 percent on cordwood trees. For the redwood region, growth in old stands estimated to be entirely on sawtimber trees; growth in second-growth stands estimated to be 90 percent on sawtimber trees; growth in restocking areas estimated to be 10 percent on sawtimber trees.

Table 12. - Current annual growth and drain.^{1/}

Item	: Combined saw- : :timber and cord-: Sawtimber : wood only	
	<u>Million cubic feet</u>	<u>Million board feet</u>
Total growth	154.6	414.2
Total drain	501.3	2,649.3
From fire	25.3	110.5
From insects	125.1	620.0
From disease	-	-
From all wood utilization ^{2/}	350.9	1,918.8
Ratio drain to growth	3.2	6.4

^{1/} Data are an approximate average for the period 1935-40.

^{2/} In 1936 wood cut for lumber only totalled 283.3 million cubic feet or 1,647.5 million board feet. In 1940, the total lumber cut was 1,958.2 million board feet.

Table 13. - Distribution of California lumber production to other states, 1922-1938^{1/}.

: California:		: Out of State shipments:		: Out of State shipments by regions																			
: production:		: Total		: Ratio to :		: production:		: Atlantic:		: Lake		: Central		: Prairie		: South		: Mt.		: Rocky		: Nevada &:	
M bd.ft.	M bd.ft.	Percent	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.	M bd.ft.
1922	1,723,763	429,733	24.9	81,011	71,972	91,812	67,812	26,777	19,455	12,731	58,163												
1924	1,986,533	659,193	32.2	120,648	105,544	146,004	91,433	43,283	25,996	26,178	80,107												
1926	2,187,950	748,072	34.2	128,635	97,599	165,855	65,662	79,841	28,133	24,090	158,257												
1928	1,949,555	819,627	42.0	145,279	118,299	203,796	73,635	75,357	30,614	28,823	143,818												
1930	1,514,833	465,987	30.8	117,934	66,268	94,621	48,101	31,568	25,473	16,360	65,662												
1932	681,197	233,510	34.3	57,835	33,374	55,946	17,341	16,308	13,843	12,731	26,132												
1934	1,015,505	301,658	29.7	83,464	44,780	48,269	28,400	20,994	12,155	20,506	43,090												
1936	1,647,537	586,757	35.6	128,629	104,991	96,861	74,775	50,450	26,220	47,082	57,749												
1938	1,461,961	463,244	31.7	75,731	91,789	83,851	50,328	46,061	24,324	43,999	47,161												
Average	1,574,317	520,865	33.1	104,352	81,624	109,668	57,499	43,404	22,913	25,834	75,571												

^{1/} Source of data: "Lumber distribution and consumption," U. S. Bureau of the Census and U. S. Forest Service, 1934, 1936, and 1938.

Table 14. - Amount and origin of lumber consumed in California, 1920-1938^{1/}.

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^{1/} Source of data: "Lumber distribution and consumption;" U. S. Bureau of the Census and U. S. Forest Service, 1934, 1936, and 1938.

Table 15. - Estimated average annual consumption of principal forest products used in California^{1/}.

Product	Quantity used		Ratio to	Quantity derived	
	Board		total	within California	
	footage	footage ^{2/}	wood consumption	Total	Ratio to consumption
	M bd.ft.	M cu.ft.	Percent	M cu.ft.	Percent
Lumber	2,641,000	528,000	78.0	180,000	34.1
Shingles and lath	80,000	16,000	2.4	3,000	18.8
Veneer	60,000	12,000	1.8	3,000	25.0
Cooperage	50,000	10,000	1.5	5,000	50.0
Hewed ties	20,000	4,000	0.6	4,000	100.0
Poles	-	3,500	0.5	200	5.7
Piling	-	3,500	0.5	-	0.0
Mine props	-	1,200	0.2	1,200	100.0
Posts	-	6,000 ^{3/}	0.9	6,000	100.0
Stakes	-	400	0.1	400	100.0
Shakes	-	200	-	150	75.0
Fuel	-	40,000 ^{3/}	5.9	40,000	100.0
Pulp and paper	-	51,300 ^{4/}	7.6	-	0.0
Total	-	676,100	100.0	242,950	35.9

^{1/} Source of data: Capper Report Revision 1931; Report on "Future wood requirements in California," 1935, and Census Reports.

^{2/} Board footage converted to cubic footage in the ratio of 5:1.

^{3/} Includes wood cut in non-commercial forest areas.

^{4/} Estimated annual consumption of 500,000 tons of paper calculated to require 1.14 cords per ton.