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# Equations for Total, Wood, and Saw-Log Volume for Thirteen California Hardwoods

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## Abstract

Volume equations for thirteen species of California hardwoods were developed from measurements of 766 sample trees from all parts of the state. The species included: bigleaf maple (*Acer macrophyllum* Pursh), Pacific madrone (*Arbutus menziesii* Pursh), giant chinkapin (*Castanopsis chrysophylla* (Dougl.) A. DC.), tanoak (*Lithocarpus densiflorus* (Hook. & Arn.) Rehd.), coast live oak (*Quercus agrifolia* Née), canyon live oak (*Quercus chrysolepis* Liebm.), blue oak (*Quercus douglasii* Hook. & Arn.), Engelmann oak (*Quercus engelmannii* Greene), Oregon white oak (*Quercus garryana* Dougl. ex Hook), California black oak (*Quercus kelloggii* Newb.), California white oak or valley Oak (*Quercus lobata* Née), interior live oak (*Quercus wislizeni* A. DC.), and California-laurel (*Umbellularia californica* (Hook. & Arn.) Nutt.).

Measurements were taken of standing trees using a Spiegel Relaskop. English and metric equations for three utilization standards were developed for each species: (1) total tree volume (all stem and branch wood plus stump and bark); (2) wood volume (all wood inside bark from stump to 10 cm (4 in) top outside bark); and (3) saw-log volume for trees 28 cm (11 in) diameter at breast height and larger (straight sections from stump to 23 cm (9 in) top outside bark). Diameter and height were found to be good predictors of total volume and wood volume. An indicator variable representing whether or not the first segment was merchantable, in addition to diameter and height, was found to be a good predictor of saw-log volume for eight of the species.

Keywords: Volume equations, volume measurement, hardwoods, California.

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## Introduction

There is a vast hardwood resource in California. It is estimated[1] that together all hardwood species occupy 5-6 million hectares (12-15 million acres). Hardwood forest types cover 1.1 million hectares (2.8 million acres) of the 6.6 million hectares (16.3 million acres) of commercial forest lands (excluding parks and wilderness areas) in California. In addition, hardwood trees account for 10 percent or more of the stocking on 1.1 million hectares (2.7 million acres) of commercial conifer types (Bolsinger 1979). In a recent study the gross volume of hardwoods in the hardwood forests and woodlands in four central coast counties alone was estimated at 24.7 million cords or 56 million cubic meters of wood (two billion cubic feet at 80 cubic feet of wood per standard cord) (Pillsbury and Brockhaus 1981). We have estimated that hardwoods amount to about 26 percent of the total wood volume in California's forests (approximately 18 billion cubic feet).

In the past, little has been done to manage native California hardwoods because of the limited market for most hardwood products. The selective cutting of conifers in mixed stands has led to a 34-percent increase in cubic-foot volume of oaks and a 29-percent decrease in conifers since 1953 (Bolsinger 1979).

With the increasing demand for hardwood for fuel, energy, wood fiber, lumber, and noncohsumptive uses such as wildlife, watershed protection, and aesthetics (Asher,[2] Barrett, 1979, Bolsinger 1979, Crail, [3]Smith 1981, Tillman 1978, Verner 1979), information on the distribution and volume of California's hardwoods is needed to manage the resource. Estimates of standing tree volumes are needed to inventory forests for management purposes, forest valuation, and taxation.

## Background

Only a few volume equations have been published for native California hardwoods and all have been developed for local or regional use. Existing equations have been reported by several authors: Wiant and Berry (1965)—tanoak; Hornibrook and others (1950)—California black oak, Oregon white oak, Pacific madrone, and tanoak; Pillsbury and Stephens (1978)—coast live oak, blue oak, and tanoak; Harrington and others (1979)—California white oak. Local volume equations have been developed by McDonald (1983) for Pacific madrone, tanoak, and California black oak. Pillsbury and Stephens (1978) developed a methodology to estimate volume in standing trees with multiple stems and irregular forms.

Reliable volume equations already exist for red alder (*Alnus rubra* Bong.), a commercial hardwood in California and the Pacific Northwest (Browne 1962, Curtis and others 1968, Johnson and others 1949, Skinner 1959, Turnbull and others 1963). Volume equations for bigleaf maple also exist, but were developed for use in British Columbia (Browne 1962).

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[1] Personal communication, 1982, Charles L. Bolsinger, Pacific Northwest Forest and Range Experiment Station, Portland, Oregon.

[2] Presentation at the Hardwood Inventory and Utilization workshop, 1982, "Hardwood utilization and marketing in southern California," by James E. Asher, Natural Resources Management Department, California Polytechnic State University, San Luis Obispo.

[3] Presentation at the Hardwood Inventory and Utilization workshop, 1982. "Demand for hardwoods as a raw material for pulping processes," by Miles Crail, Natural Resources Management Department, California Polytechnic State University, San Luis Obispo.

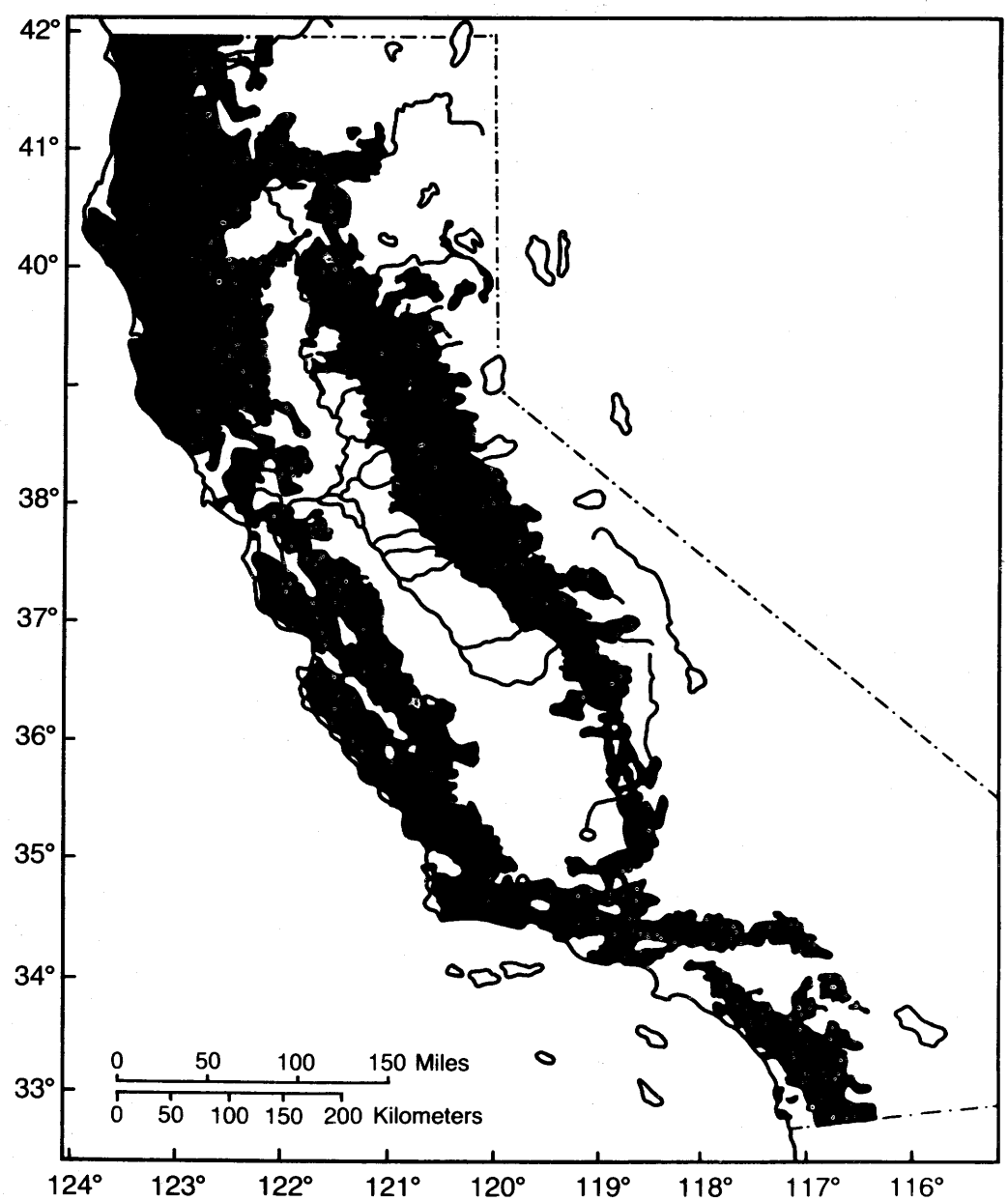



Figure 1.—Geographic range of the thirteen hardwood species in California (after Plumb 1979 and Griffin and Critchfield 1972).

None of the equations, except those for red alder, are considered suitable for a statewide forest inventory because of the inconsistency in measurement standards and the possibility that they may be unreliable outside of the area for which they were developed. In this study, volume equations for thirteen major hardwood species were developed (fig. 1) from data collected on sample trees distributed throughout their natural ranges in California. Equations were developed for: (1) total tree volume (all stem and branch wood plus stump and bark); (2) wood volume (wood inside bark from stump to 10 cm (4 in) top outside bark); and (3) saw-log volume for trees 28 cm (11 in) diameter at breast height (d.b.h.) and larger.[4]

[4] All measurements were taken in metric units. English units shown in the text are rounded to the nearest unit.

The species included in this study are:

| Scientific name/author | Common name |
|---|---|
| *Acer macrophyllum* Pursh | Bigleaf maple |
| *Arbutus menziesii* Pursh | Pacific madrone |
| *Castanopsis chrysophylla* (Dougl.) A. DC. | Giant chinkapin |
| *Lithocarpus densiflorus* (Hook. & Arn.) Rehd. | Tanoak |
| *Quercus agrifolia* Née | Coast live oak |
| *Quercus chrysolepis* Liebm. | Canyon live oak |
| *Quercus douglasii* Hook. & Arn. | Blue oak |
| *Quercus engelmannii* Greene | Engelmann oak |
| *Quercus garryana* Dougl. ex Hook. | Oregon white oak |
| *Quercus kelloggii* Newb. | California black oak |
| *Quercus lobata* Née | California white oak (valley oak) |
| *Quercus wislizeni* A. DC. | Interior live oak |
| *Umbellularia californica* (Hook. & Arn.) Nutt. | California-laurel |

## Methodology

### Utilization Standards and Measured Variables

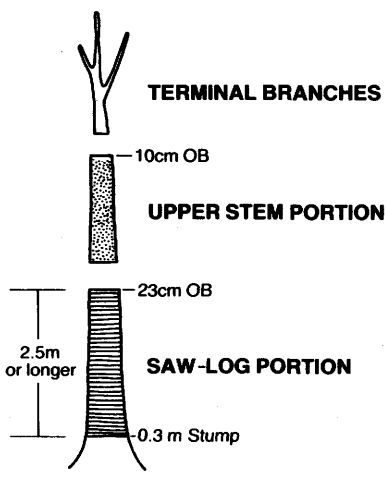
The volume equations developed for each species are expressed in cubic feet and cubic meters for three utilization standards (fig. 2).

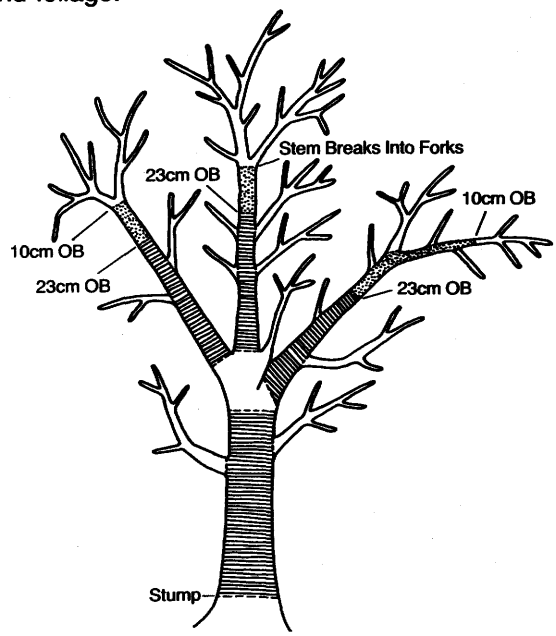
1. Total volume: includes all stem and branch wood plus stump and bark; excludes roots and foliage.

2. Wood volume: computed from stump height (0.3 m (1 ft)) to a 10-cm (4-in) top outside bark; excludes roots, bark, and foliage.

3. Saw-log volume: computed for trees 28 cm (11 in) d.b.h. and larger; volume computed from stump height to a 23-cm (9-in) top outside bark for straight sections 2.5 m (8 ft) long; excludes roots, bark, and foliage.

Figure 2.—Tree segments used in volume assessment. OB = outside bark.



**Sample Design**

Each species was sampled throughout its natural range in California based on maps developed by Griffin and Critchfield (1972). The state was divided into six geographic regions: northern coast, northern interior, central coast, central interior, southern coast, and southern interior.[5] The percentage of trees sampled in each region was proportional to the approximate area each species occupies in the region.

Trees were sampled in areas of varying site qualities, stand densities, and topography. Trees were not sampled east of the Sierra Nevada and Cascade Range because few hardwoods occur there.

A desirable sample size for each species was 60 trees, for a total of approximately 780 trees to be measured statewide for the 13 species studied. Experience has shown that a sample of this size is normally satisfactory for estimating regression coefficients and testing for adequacy of the model for the three utilization standards.

**Sample Tree Selection**

In sample areas, trees were selected to represent a range of diameters, heights, growth forms, stand structures, and topography. Sound trees 12.7 cm (5 in) in diameter, or larger, at breast height were selected. Decadent trees and trees with major defects were avoided.

**Tree and Site Measurements**

Sample tree variables measured in the field are summarized in table 1. Total height was measured from ground level to the tip of the tree. Habit class ratings developed by Pillsbury and Stephens (1978) were assigned to each tree sampled (fig. 3). A numerical

[5] Unpublished Master's Thesis, 1982, Michael L. Kirkley, California Polytechnic State University, San Luis Obispo.

**Table 1—Summary and measurement description of sample tree variables**

| Variable | Units | Measurement description |
|---|---|---|
| Diameter at breast height | cm | Diameter of main stem at 1.37 meters (4.5 ft) measured to the nearest tenth with a D-tape. |
| Stump diameter | cm | Diameter of main stem at 0.3 meters (1 ft) measured to the nearest tenth with a D-tape. |
| Height | m | To the terminal-most leader determined by Relaskop on the uphill side to the nearest tenth. |
| Single bark thickness | cm | Measured to the nearest tenth at breast height (1.37 m) (4.5 ft) with a ruler. |
| Habit class | class 1-5 | Defined by branching pattern. 1 = conifer-like form; 5 = multi-branching form with many forks (fig. 3). |
| Stand density | $m^2$/ha | Cross-sectional area of trees at d.b.h. measured using a Relaskop (basal area factor of 4). |
| Site quality | class | H = high; M = medium; L = low |

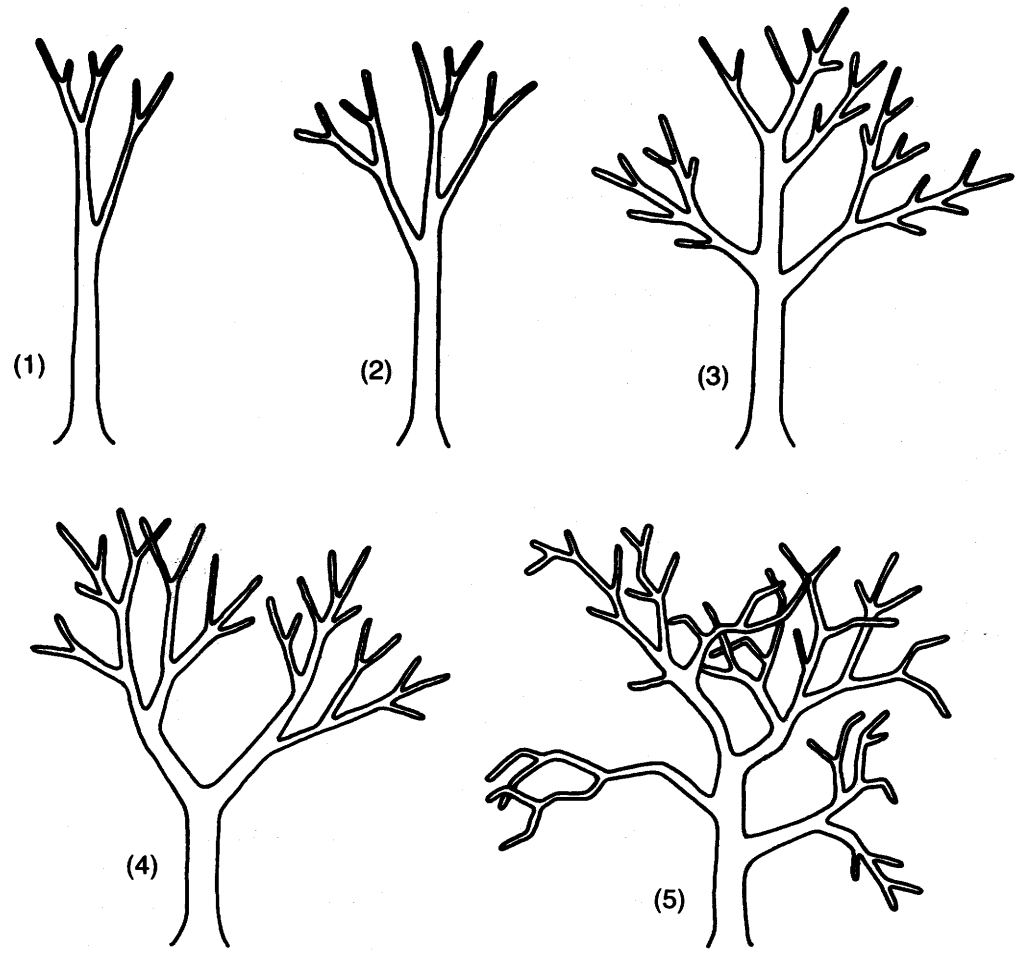



Figure 3.—Five habit classes were used for evaluating tree form and branching complexity (from Pillsbury and Stephens 1978).

rating of one to five was recorded to indicate the complexity of branching: a rating of one indicated an excurrent growth form with one main bole and one or two lateral branches, and a rating of five indicated a deliquescent growth form with complex branching (fig. 3). Stump diameters were measured to compute the volume of the first segment; bark thickness was measured to develop relationships between diameter at inside bark (d.i.b.) and diameter at outside bark (d.o.b.) for computing underbark volume and developing wood and saw-log volume equations.

Basal area per hectare and site quality data were recorded to describe the range of stand densities and sites of the sample trees. In areas with recent logging activity basal area was computed by counting both standing trees and stumps to estimate basal area prior to timber harvesting. Site quality was a subjective rating of high, medium, and low. Stand density, associated vegetation, soil depth, and tree form were used as guides to estimate site quality.

**Tree Volume Measurement**

For volume measurement, the branching pattern was defined on a segment basis. Segment length and the diameters at each end were measured using a Spiegel Relaskop (Dilworth 1981). Segment length was determined from coordinates measured at both ends of each segment. Each tree was divided into segments based on four criteria:

1. Segments were defined as the distance from fork to fork in trees with very complex branching pattern such as segment 11, figure 4.

2. If a branch had sweep or crook, segments were meaured to obtain a straight log length such as in segments 3 and 5.

3. Segments were defined if abrupt changes in taper were apparent such as in segments 16 and 17.

4. If a tree had an excurrent growth form the maximum segment length was approximately 3 m (10 ft).

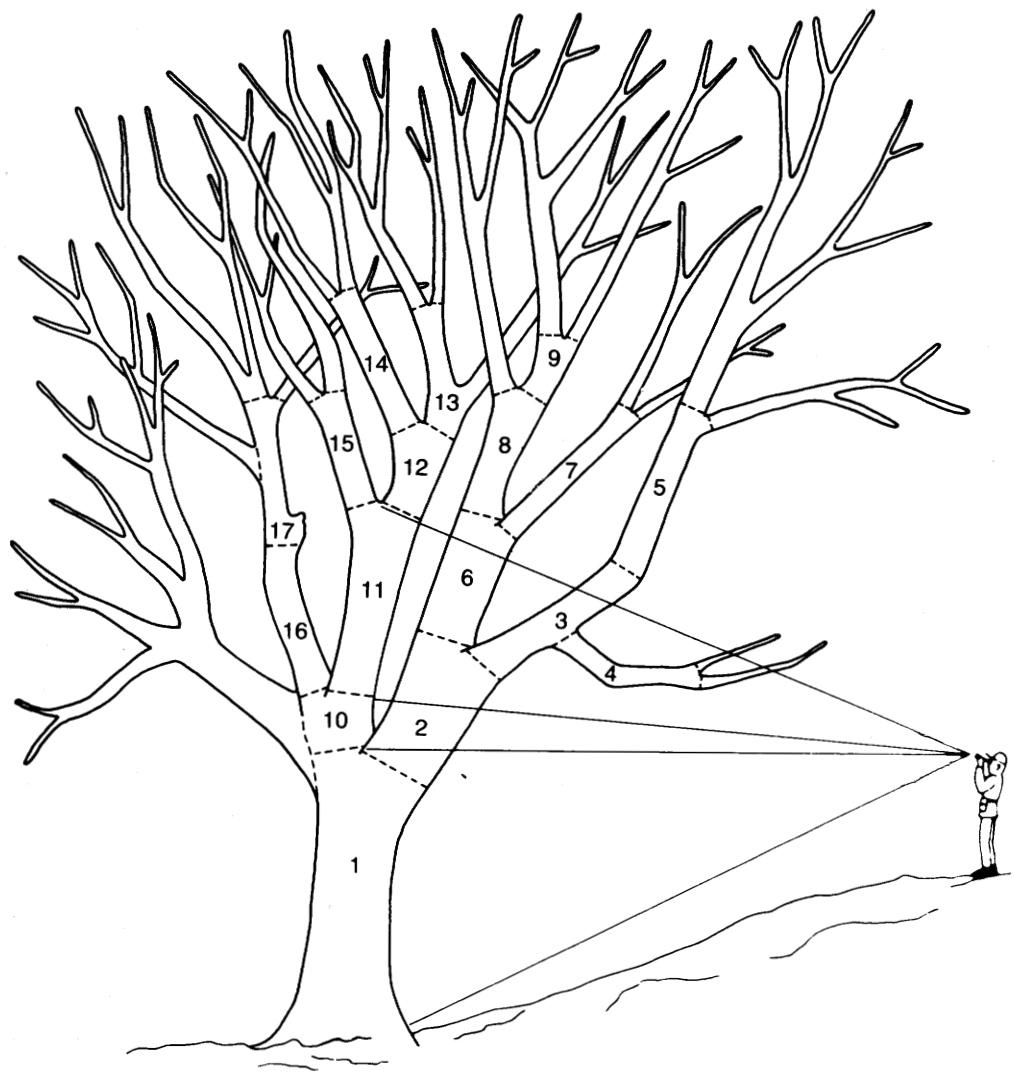



Figure 4.—Tree volumes were calculated from segment lengths and diameters.

Saw-log tree segments had to be at least 2.5 m (8 ft) long, with a small end diameter of 23 cm (9 in). If swelling was present on the stem, diameter measurements were taken slightly above or below the abnormality. Branches not growing vertically were assigned an angle (estimated to the nearest 5 degrees from horizontal) and segment length was calculated. Segments growing less than 30 degrees from horizontal were measured by projecting their length to the ground and measuring with a cloth tape held parallel to the branch angle. Terminal branches were measured from a 10-cm (4-in) diameter to the tip. All terminal branches were tallied and an average length to the nearest 0.5 m (20 in) was recorded.

**Computation of Sample Tree Data**

Segment volumes were computed from Relaskop coordinate and diameter measurements in cubic meters using Smalian's formula. Segment volumes were summed to obtain gross volume for each tree up to a 10-cm (4-in) top. Terminal branch volume was computed as a paraboloid.

Regression equations estimating d.i.b. from d.o.b. were developed for each species using bark thickness sample data (table 2). With the exception of tanoak, it was assumed that the d.i.b.: d.o.b. ratio remained constant at all heights in upper stem diameters. Previous work by Pillsbury and Stephens (1978) showed that this relationship did not hold with tanoak. A separate study was done to examine how the d.i.b.: d.o.b. ratio changed at increasing heights in tanoak. A sample of 50 trees was measured in Santa Cruz and Monterey Counties. Bark thickness and d.o.b. measurements were made at 0.3 m (1 ft), 1.37 m (4.5 ft), 2.74 m (9 ft), and 5.18 m (17 ft) on standing trees. The results of the study show that the wood tapers more with height than the bark does. A multiple regression equation was developed for tanoak to estimate d.i.b. at any height ($DIB_h$) using $DOB_h$ and its height above ground (H):

$DIB_h = -4.36852 + 0.95354\ (DOB_h) + 0.18307\ (H)$
$N = 201$ height points on 50 trees; $R^2 = 0.962$; $SE = 1.16$.

**Error and Outlier Analysis**

A simple linear regression model using tree basal area times height (volume of a cylinder) to estimate volume was computed and plotted to analyze the data for linearity and detect any outliers. Also, d.b.h. was plotted against both volume and total height, and total height was plotted against volume to detect possible errors in the data sets. This was necessary to guard against compensation errors (for example, a case where basal area is too small and height too large, but basal area times height appears normal).

Extreme values were analyzed using a t-test. Lund's (1975) standardized residuals were computed and compared to tables for an approximate test for outliers. A total of 13 trees out of 779 trees sampled (1.7 percent) was determined to be outliers and were dropped from the analyses.

**Table 2—Equations for estimating diameter inside bark based on measured diameter outside bark for 13 California hardwoods**

| | N | $R^2$ | SE |
|---|---|---|---|
| BIGLEAF MAPLE | | | |
| DIB = 0.21235 + 0.94782 (DOB) | 61 | 0.995 | 0.94 |
| CALIFORNIA BLACK OAK | | | |
| DIB = -0.68133 + 0.95767 (DOB) | 60 | .997 | 1.20 |
| BLUE OAK | | | |
| DIB = -0.44003 + 0.94403 (DOB) | 60 | .995 | .99 |
| CANYON LIVE OAK | | | |
| DIB = -0.48584 + 0.96147 (DOB) | 57 | .996 | .81 |
| GIANT CHINKAPIN | | | |
| DIB = 0.39534 + 0.90182 (DOB) | 60 | .986 | 1.53 |
| COAST LIVE OAK | | | |
| DIB = -1.92379 + 0.93475 (DOB) | 60 | .992 | 1.47 |
| ENGLEMANN OAK | | | |
| DIB = -1.99573 + 0.92472 (DOB) | 61 | .992 | 1.23 |
| INTERIOR LIVE OAK | | | |
| DIB = 0.12237 + 0.92953 (DOB) | 58 | .995 | 1.27 |
| CALIFORNIA-LAUREL | | | |
| DIB = -0.32491 + 0.96579 (DOB) | 60 | .998 | .67 |
| PACIFIC MADRONE | | | |
| DIB = -0.03425 + 0.98155 (DOB) | 60 | .999 | .46 |
| OREGON WHITE OAK | | | |
| DIB = -0.78034 + 0.95956 (DOB) | 60 | .995 | 1.19 |
| CALIFORNIA WHITE OAK | | | |
| DIB = -0.97254 + 0.93545 (DOB) | 60 | .995 | 1.35 |
| TANOAK | | | |
| $DIB_h$ = -4.36852 + 0.95354 ($DOB_h$) + 0.18307 (H) | | | |
| N = 201 height points on 50 trees; $R^2$ = 0.962; SE = 1.16 | | | |

SE = Standard error of estimate in cm.
DIB = diameter inside bark (cm).
DOB = diameter outside bark (cm).
$DIB_h$ = diameter inside bark at any height.
$DOB_h$ = diameter outside bark at any height.
H = $^h$height above ground.

## Analysis

### Development of Volume Equations

Multiple regression equations were developed for total, wood, and saw-log volume from sample tree variables. Volume equations were developed for the 13 species in units of cubic feet and cubic meters. A $\log_{10}$ transformation of volume and tree variables was used in developing the regression model to linearize the data and equalize the variation about the regression line.

**Total and wood volume equations.**—Tree volume was tested as a function of diameter at breast height, total height, stand density, and habit class. Diameter at breast height and total tree height were found to be the best predictors of total volume and wood volume. Stand density and habit class contributed little to the prediction of total and wood volume and were dropped from the model.

Multiple coefficient of determination ($R^2$) values exceeded 0.92 in all total and wood volume equations, indicating a strong relationship (tables 3 and 4).

**Table 3—English equations for total, wood, and saw-log volumes for California hardwoods**

| Species | | Equation | $R^2$ | N | SE |
|---|---|---|---|---|---|
| BIGLEAF MAPLE | | TVOL = $.0101786350\,(DBH^{2.22462})\,(HT^{0.57561})$ | 0.944 | 61 | 45.4 |
| | | WVOL = $.0034214162\,(DBH^{2.35347})\,(HT^{0.69586})$ | .924 | 61 | 48.4 |
| | | SVOL = $.0004236332\,(DBH^{2.10316})\,(HT^{1.08584})\,(IV^{0.40017})$ | .767 | 26 | 53.7 |
| CALIFORNIA BLACK OAK | | TVOL = $.0070538108\,(DBH^{1.97437})\,(HT^{0.85034})$ | .971 | 59 | 43.1 |
| | | WVOL = $.0036795695\,(DBH^{2.12635})\,(HT^{0.83339})$ | .962 | 60 | 45.2 |
| | | SVOL = $.0012478663\,(DBH^{2.68099})\,(HT^{0.42441})\,(IV^{0.28385})$ | .929 | 38 | 47.7 |
| BLUE OAK | | TVOL = $.0125103008\,(DBH^{2.33089})\,(HT^{0.46100})$ | .971 | 60 | 43.0 |
| | | WVOL = $.0042324071\,(DBH^{2.53987})\,(HT^{0.50591})$ | .970 | 60 | 44.1 |
| | | SVOL = $.0036912408\,(DBH^{1.79732})\,(HT^{0.83884})\,(IV^{0.15958})$ | .826 | 32 | 46.0 |
| CANYON LIVE OAK | | TVOL = $.0097438611\,(DBH^{2.20527})\,(HT^{0.61190})$ | .978 | 58 | 41.8 |
| | | WVOL = $.0031670596\,(DBH^{2.32519})\,(HT^{0.74348})$ | .980 | 58 | 42.0 |
| | * | SVOL = $.0006540144(DBH^{2.24437})\,(HT^{0.81358})\,(IV^{0.43381})$ | .884 | 68 | 48.4 |
| GIANT CHINKAPIN | | TVOL = $.0120372263\,(DBH^{2.02232})\,(HT^{0.68638})$ | .960 | 60 | 44.4 |
| | | WVOL = $.0055212937\,(DBH^{2.07202})\,(HT^{0.77467})$ | .958 | 60 | 45.0 |
| | | SVOL = $.0018985111\,(DBH^{2.38285})\,(HT^{0.77105})$ | .880 | 40 | 46.2 |
| COAST LIVE OAK | | TVOL = $.0065261029\,(DBH^{2.31958})\,(HT^{0.62528})$ | .968 | 60 | 44.1 |
| | | WVOL = $.0024574847\,(DBH^{2.53284})\,(HT^{0.60764})$ | .971 | 59 | 44.1 |
| | * | SVOL = $.0006540144\,(DBH^{2.24437})\,(HT^{0.81358})\,(IV^{0.43381})$ | .884 | 68 | 48.4 |
| ENGELMANN OAK | | TVOL = $.0191453191\,(DBH^{2.40248})\,(HT^{0.28060})$ | .965 | 61 | 43.4 |
| | | WVOL = $.0053866353\,(DBH^{2.61268})\,(HT^{0.31103})$ | .966 | 61 | 43.9 |

**Table 3—English equations for total, wood, and saw-log volumes for California hardwoods, continued**

| Species | | Equation | $R^2$ | N | SE |
|---|---|---|---|---|---|
| INTERIOR | TVOL | $= .0136818837\,(DBH^{2.02989})\,(HT^{0.63257})$ | 0.971 | 58 | 42.7 |
| LIVE OAK | WVOL | $= .0041192264\,(DBH^{2.14915})\,(HT^{0.77843})$ | .967 | 58 | 44.0 |
| * | SVOL | $= .0006540144\,(DBH^{2.24437})\,(HT^{0.81358})\,(IV^{0.43381})$ | .884 | 68 | 48.4 |
| CALIFORNIA | TVOL | $= .0057821322\,(DBH^{1.94553})\,(HT^{0.88389})$ | .967 | 60 | 43.8 |
| LAUREL | WVOL | $= .0016380753\,(DBH^{2.05910})\,(HT^{1.05293})$ | .959 | 60 | 46.0 |
| | SVOL | $= .0007741517\,(DBH^{2.23009})\,(HT^{1.03700})$ | .913 | 30 | 45.1 |
| PACIFIC | TVOL | $= .0067322665\,(DBH^{1.96628})\,(HT^{0.83458})$ | .967 | 60 | 43.4 |
| MADRONE | WVOL | $= .0025616425\,(DBH^{1.99295})\,(HT^{1.01532})$ | .959 | 58 | 44.8 |
| | SVOL | $= .0006181530\,(DBH^{1.72635})\,(HT^{1.26462})\,(IV^{0.37867})$ | .905 | 32 | 45.9 |
| OREGON | TVOL | $= .0072695058\,(DBH^{2.14321})\,(HT^{0.74220})$ | .961 | 60 | 44.6 |
| WHITE OAK | WVOL | $= .0024277027\,(DBH^{2.25575})\,(HT^{0.87108})$ | .958 | 60 | 44.6 |
| | SVOL | $= .0008281647\,(DBH^{2.10651})\,(HT^{0.91215})\,(IV^{0.32652})$ | .838 | 32 | 49.6 |
| TANOAK | TVOL | $= .0058870024\,(DBH^{1.94165})\,(HT^{0.86562})$ | .973 | 60 | 42.9 |
| | WVOL | $= .0005774970\,(DBH^{2.19576})\,(HT^{1.14078})$ | .961 | 59 | 46.3 |
| | SVOL | $= .0002526443\,(DBH^{2.30949})\,(HT^{1.21069})$ | .906 | 37 | 48.0 |
| CALIFORNIA | TVOL | $= .0042870077\,(DBH^{2.33631})\,(HT^{0.74872})$ | .990 | 59 | 40.6 |
| WHITE OAK | WVOL | $= .0009684363\,(DBH^{2.39565})\,(HT^{0.98878})$ | .990 | 59 | 41.0 |
| | SVOL | $= .0001880044\,(DBH^{1.87346})\,(HT^{1.62443})$ | .929 | 37 | 47.0 |

SE = the standard error of the estimate in cubic feet.
TVOL = total tree volume in cubic feet.
WVOL = wood volume in cubic feet.
SVOL = saw-log volume in cubic feet.
DBH = diameter at breast height in inches.
HT = total height in feet.
IV = an indicator variable (1 = non-merchantable first segment; 10 = merchantable first segment).
* Combined equation for sawlog volumes for canyon live oak, interior live oak, and coast live oak.

**Table 4—Metric equations for total, wood, and saw-log volumes for California hardwoods**

| Species | | Equation | $R^2$ | N | SE |
|---|---|---|---|---|---|
| BIGLEAF | | TVOL = $.0000718042\,(DBH^{2.22462})\,(HT^{0.57561})$ | 0.944 | 61 | 1.29 |
| MAPLE | | WVOL = $.0000246916\,(DBH^{2.35347})\,(HT^{0.69586})$ | .924 | 61 | 1.37 |
| | | SVOL = $.0000061361\,(DBH^{2.10316})\,(HT^{1.08584})\,(IV^{0.40017})$ | .767 | 26 | 1.52 |
| CALIFORNIA | | TVOL = $.0000870843\,(DBH^{1.97437})\,(HT^{0.85034})$ | .971 | 59 | 1.22 |
| BLACK OAK | | WVOL = $.0000386403\,(DBH^{2.12635})\,(HT^{0.83339})$ | .962 | 60 | 1.28 |
| | | SVOL = $.0000048067\,(DBH^{2.68099})\,(HT^{0.42441})\,(IV^{0.28385})$ | .929 | 38 | 1.35 |
| BLUE | | TVOL = $.0000697541\,(DBH^{2.33089})\,(HT^{0.46100})$ | .971 | 60 | 1.22 |
| OAK | | WVOL = $.0000204861\,(DBH^{2.53987})\,(HT^{0.50591})$ | .970 | 60 | 1.25 |
| | | SVOL = $.0000530200\,(DBH^{1.79732})\,(HT^{0.83884})\,(IV^{0.15958})$ | .826 | 32 | 1.31 |
| CANYON | | TVOL = $.0000730718\,(DBH^{2.20527})\,(HT^{0.61190})$ | .978 | 58 | 1.18 |
| LIVE OAK | | WVOL = $.0000248325\,(DBH^{2.32519})\,(HT^{0.74348})$ | .980 | 58 | 1.19 |
| | * | SVOL = $.0000060095(DBH^{2.24437})\,(HT^{0.81358})\,(IV^{0.43381})$ | .884 | 68 | 1.37 |
| GIANT | | TVOL = $.0001169607\,(DBH^{2.02232})\,(HT^{0.68638})$ | .960 | 60 | 1.26 |
| CHINKAPIN | | WVOL = $.0000568840\,(DBH^{2.07202})\,(HT^{0.77467})$ | .958 | 60 | 1.27 |
| | | SVOL = $.0000145764\,(DBH^{2.38285})\,(HT^{0.77105})$ | .880 | 40 | 1.31 |
| COAST | | TVOL = $.0000446992\,(DBH^{2.31958})\,(HT^{0.62528})$ | .968 | 60 | 1.25 |
| LIVE OAK | | WVOL = $.0000135114\,(DBH^{2.53284})\,(HT^{0.60764})$ | .971 | 59 | 1.25 |
| | * | SVOL = $.0000060095\,(DBH^{2.24437})\,(HT^{0.81358})\,(IV^{0.43381})$ | .884 | 68 | 1.37 |
| ENGELMANN | | TVOL = $.0000805935\,(DBH^{2.40248})\,(HT^{0.28060})$ | .965 | 61 | 1.23 |
| OAK | | WVOL = $.0000193268\,(DBH^{2.61268})\,(HT^{0.31103})$ | .966 | 61 | 1.24 |

**Table 4—Metric equations for total, wood, and saw-log volumes for California hardwoods, continued**

| Species | | Equation | $R^2$ | N | SE |
|---|---|---|---|---|---|
| INTERIOR | TVOL | $= .0001238312\,(DBH^{2.02989})\,(HT^{0.63257})$ | 0.971 | 58 | 1.21 |
| LIVE OAK | WVOL | $= .0000396716\,(DBH^{2.14915})\,(HT^{0.77843})$ | .967 | 58 | 1.24 |
| * | SVOL | $= .0000060095\,(DBH^{2.24437})\,(HT^{0.81358})\,(IV^{0.43381})$ | .884 | 68 | 1.37 |
| CALIFORNIA | TVOL | $= .0000763133\,(DBH^{1.94553})\,(HT^{0.88389})$ | .967 | 60 | 1.24 |
| LAUREL | WVOL | $= .0000237733\,(DBH^{2.05910})\,(HT^{1.05293})$ | .959 | 60 | 1.30 |
| | SVOL | $= .0000094003\,(DBH^{2.23009})\,(HT^{1.03700})$ | .913 | 30 | 1.28 |
| PACIFIC | TVOL | $= .0000821921\,(DBH^{1.96628})\,(HT^{0.83458})$ | .967 | 60 | 1.23 |
| MADRONE | WVOL | $= .0000378129\,(DBH^{1.99295})\,(HT^{1.01532})$ | .959 | 58 | 1.27 |
| | SVOL | $= .0000157319\,(DBH^{1.72635})\,(HT^{1.26462})\,(IV^{0.37867})$ | .905 | 32 | 1.30 |
| OREGON | TVOL | $= .0000674342\,(DBH^{2.14321})\,(HT^{0.74220})$ | .961 | 60 | 1.26 |
| WHITE OAK | WVOL | $= .0000236325\,(DBH^{2.25575})\,(HT^{0.87108})$ | .958 | 60 | 1.30 |
| | SVOL | $= .0000097284\,(DBH^{2.10651})\,(HT^{0.91215})\,(IV^{0.32652})$ | .838 | 32 | 1.41 |
| TANOAK | TVOL | $= .0000763045\,(DBH^{1.94165})\,(HT^{0.86562})$ | .973 | 60 | 1.22 |
| | WVOL | $= .0000081905\,(DBH^{2.19576})\,(HT^{1.14078})$ | .961 | 59 | 1.31 |
| | SVOL | $= .0000035019\,(DBH^{2.30949})\,(HT^{1.21069})$ | .906 | 37 | 1.36 |
| CALIFORNIA | TVOL | $= .0000334750\,(DBH^{2.33631})\,(HT^{0.74872})$ | .990 | 59 | 1.15 |
| WHITE OAK | WVOL | $= .0000095166\,(DBH^{2.39565})\,(HT^{0.98878})$ | .990 | 59 | 1.16 |
| | SVOL | $= .0000063968\,(DBH^{1.87346})\,(HT^{1.62443})$ | .929 | 37 | 1.33 |

SE = the standard error of the estimate in cubic meters.
TVOL = total tree volume in cubic meters.
WVOL = wood volume in cubic meters.
SVOL = saw-log volume in cubic meters.
DBH = diameter at breast height in centimeters.
HT = total height in meters.
IV = an indicator variable (1 = non-merchantable first segment; 10 = merchantable first segment).
* Combined equation for sawlog volumes for canyon live oak, interior live oak, and coast live oak.

**Saw-log volume equations.**—A qualitative indicator variable was used to break the saw-log data into two subsets: trees with a merchantable (straight, at least 2.5 m (8 ft) long, and free of defect) first segment, and trees without a merchantable first segment. A code of "1" means the first segment in nonmerchantable and a code of "10" means it is merchantable. The addition of the indicator variable helped reduce the variation in saw-log equations for 8 of the 13 species (tables 3 and 4). This improved the precision of the saw-log volume equation. Species that forked below 2.5 m (8 ft) commonly had sweep, crook, and a multiple branching pattern, resulting in segment lengths shorter than 2.5 m (8 ft) and an overall lower proportion of saw-log volume.

Of the eight species where an indicator variable was included in the model, trees with a merchantable first segment had an average of 2.3 times more volume than trees without a merchantable first segment. The regression model incorporating the indicator variable was not used for tanoak, chinkapin, and California-laurel because these species usually have merchantable first logs. Also it was not used for California white oak because the indicator variable added little to reduce variation in predicting saw-log volume.

Saw-log equations were not developed for Engelmann oak, which has a very complex growth form with few straight sections. Little or no saw-log volume can be expected in unmanaged native stands of this species.

**Test To Combine Regression Lines**

Because of the size and irregular form of the live oak species (canyon, coast, and interior), many trees measured did not have any saw-log volume. As a result the sample size for developing saw-log equations for the live oak species was small. These species were observed to have similar growth forms and an F-test supported combining the data sets. The three live oak data sets were therefore combined to produce one equation for saw-log volume (tables 3 and 4).

**Verification of Tree Volume**

Most of the sample trees were on private property and were not felled at the time of Relaskop measurement. Pillsbury and Stephens' (1978) method was used to check tree volumes. They cut and measured 61 trees to check the accuracy of the volumes based on Relaskop measurements of standing trees. They developed a simple linear regression equation ($\log_{10}$ transformation) relating standing tree volume to cut tree volume and obtained a multiple coefficient of determination of 0.990 (SE = 1.17). To validate their equation for use in this study, 10 additional sample trees spanning the range of diameters at breast height were measured. Standing tree measurements were made by the techniques previously discussed in this report. Then each tree was felled and measured with tape and caliper. A simple linear regression ($\log_{10}$ transformation) was developed relating standing tree volume to cut tree volume and compared to the Pillsbury and Stephens (1978) equation. An F-test supported combining the two data sets as one population at the 0.99 probability level. All standing volumes were corrected using the Pillsbury and Stephens (1978) equation:

$$\text{Corrected Volume } (M^3) = 1.166\ (\text{Standing Volume } (M^3))^{0.9947}$$

The standing tree volumes are increased by approximately 15 percent using this equation, indicating that the technique used to measure standing tree volume tends to underestimate tree volume.

## Reliability of the Equations

The average aggregate difference in percent is -2.1 for total volume, -2.8 for wood volume, and -5.8 for saw-log volume. An independent test was made using total volumes of 76 felled trees in three central coast counties. The average aggregate difference for the 76 trees is 17.0 percent.

The reliability of the equations can be measured by the relative deviation of individual tree volumes from the regression surface (MacLean and Berger 1976). A measure of this residual variation is the root mean squared error; that is, the root of the mean squared difference between the predicted and actual values. This comparison, expressed as a percent of the mean volume, is shown in table 5. The root mean squared error difference for 76 trees of known volume in three central coast counties is shown in table 6. The root mean squared errors range from about 20 to 55 for the various utilization standards shown in tables 5 and 6. These values are higher than those reported for conifers (MacLean and Berger 1976) and illustrate the greater variability in volume that occurs for a given diameter and height for many hardwoods.

**Table 5—Root mean squared errors of standard volume equations for total, wood, and saw-log utilization standards**

| Species | Root mean squared error | | | | | |
|---|---|---|---|---|---|---|
| | Total volume | | Wood volume | | Sawlog volume | |
| | *N* | *Percent* | *N* | *Percent* | *N* | *Percent* |
| Bigleaf maple | 61 | 36 | 61 | 46 | 24 | 31 |
| California black oak | 59 | 50 | 60 | 56 | 38 | 21 |
| Blue oak | 60 | 27 | 60 | 30 | 32 | 36 |
| Canyon live oak | 58 | 52 | 58 | 53 | —n/a— | |
| Giant chinkapin | 60 | 45 | 60 | 46 | 40 | 20 |
| Coast live oak | 60 | 36 | 59 | 39 | —n/a— | |
| Engelmann oak | 61 | 30 | 61 | 34 | —n/a— | |
| Interior live oak | 58 | 28 | 58 | 38 | —n/a— | |
| California-laurel | 60 | 24 | 60 | 26 | 30 | 20 |
| Pacific madrone | 60 | 38 | 58 | 39 | 32 | 24 |
| Oregon white oak | 60 | 41 | 60 | 47 | 32 | 36 |
| Tanoak | 60 | 38 | 59 | 54 | 37 | 27 |
| California white oak | 59 | 20 | 59 | 22 | 37 | 22 |
| Combined: Canyon, interior and coast live oaks | —n/a— | | —n/a— | | 85 | 64 |

n/a = not applicable.

**Table 6—Results of a test of equations for 76 trees of known total volume from Monterey, San Luis Obispo, and Santa Cruz Counties**

| Species | Root mean squared error | |
|---|---|---|
| | *Number of trees* | *Percent* |
| Blue oak | 26 | 42 |
| Coast live oak | 35 | 50 |
| Tanoak | 15 | 24 |

### Use of the Equations

Following is an example showing calculations in English units of total, wood, and saw-log volumes for a blue oak tree with these dimensions: d.b.h. = 25.5 inches; and total height = 47 feet. It has a merchantable first segment:

TVOL = .0125103008 $(25.5^{2.33089})$ x $(47^{0.46100})$ = 140 cubic feet;
WVOL = .0042324071 $(25.5^{2.53987})$ x $(47^{0.50591})$ = 110 cubic feet; and
SVOL = .0036912408 $(25.5^{1.79732})$ x $(47^{0.83884})$ x $(10^{0.15958})$ = 45 cubic feet.

Although other hardwood volume equations are available, most have been developed for regional or local use and incorporate various utilization standards. Volume equations developed for local areas may provide better estimates of tree volumes in those areas than the equations for the entire state. Field checking may be necessary to compare the accuracy of the statewide equations to local or regional sites if this use is desired.

### Volume Tables and Range of Data

In the appendix are tables showing calculated volumes for selected diameters and heights for each of the 13 hardwood species studied. The range of measurements used to develop the equations is shown on each table.

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## Appendix

Tables 7 through 19 are in English measurement; tables 20 through 32 are in metric measurement.

### Table 7--Total tree, wood, and saw-log volume for giant chinkapin

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |
| INCHES | CUBIC FEET | | | | | | | | | | | | | |
| 5: | | | | | | | | | | | | | | |
| TVOL | 2 | 3 | 4 | 5 | | | | | | | | | | |
| WVOL | 2 | 2 | 3 | 3 | | | | | | | | | | |
| SVOL | 1 | 1 | 2 | 2 | | | | | | | | | | |
| 7: | | | | | | | | | | | | | | |
| TVOL | 5 | 6 | 8 | 9 | 10 | 11 | | | | | | | | |
| WVOL | 3 | 4 | 5 | 6 | 7 | 8 | | | | | | | | |
| SVOL | 2 | 3 | 3 | 4 | 5 | 5 | | | | | | | | |
| 9: | | | | | | | | | | | | | | |
| TVOL | 8 | 11 | 13 | 15 | 17 | 19 | 21 | 22 | | | | | | |
| WVOL | 5 | 7 | 9 | 11 | 12 | 14 | 16 | 17 | | | | | | |
| SVOL | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | | | | | |
| 11: | | | | | | | | | | | | | | |
| TVOL | 12 | 16 | 19 | 23 | 26 | 28 | 31 | 34 | 36 | 39 | 41 | | | |
| WVOL | 8 | 11 | 14 | 16 | 19 | 21 | 24 | 26 | 28 | 30 | 32 | | | |
| SVOL | 6 | 8 | 10 | 12 | 14 | 15 | 17 | 18 | 20 | 22 | 23 | | | |
| 13: | | | | | | | | | | | | | | |
| TVOL | 17 | 22 | 27 | 32 | 36 | 40 | 44 | 47 | 51 | 54 | 58 | | | |
| WVOL | 11 | 16 | 20 | 23 | 27 | 30 | 33 | 37 | 40 | 43 | 46 | | | |
| SVOL | 9 | 12 | 15 | 17 | 20 | 23 | 25 | 28 | 30 | 32 | 34 | | | |
| 15: | | | | | | | | | | | | | | |
| TVOL | | 30 | 36 | 42 | 48 | 53 | 58 | 63 | 68 | 72 | 77 | 81 | 86 | 90 |
| WVOL | | 21 | 26 | 31 | 36 | 41 | 45 | 49 | 53 | 58 | 62 | 66 | 69 | 73 |
| SVOL | | 17 | 21 | 25 | 28 | 32 | 35 | 39 | 42 | 45 | 48 | 51 | 54 | 57 |
| 17: | | | | | | | | | | | | | | |
| TVOL | | 38 | 47 | 54 | 62 | 68 | 75 | 81 | 87 | 93 | 99 | 105 | 110 | 115 |
| WVOL | | 27 | 34 | 41 | 47 | 53 | 58 | 64 | 69 | 75 | 80 | 85 | 90 | 95 |
| SVOL | | 22 | 28 | 33 | 38 | 43 | 48 | 52 | 57 | 61 | 65 | 69 | 73 | 77 |
| 19: | | | | | | | | | | | | | | |
| TVOL | | | 58 | 68 | 77 | 86 | 94 | 102 | 109 | 117 | 124 | 131 | 138 | 145 |
| WVOL | | | 43 | 51 | 59 | 66 | 73 | 80 | 87 | 94 | 101 | 107 | 113 | 120 |
| SVOL | | | 36 | 43 | 50 | 56 | 62 | 68 | 74 | 79 | 85 | 90 | 96 | 101 |
| 21: | | | | | | | | | | | | | | |
| TVOL | | | 71 | 83 | 94 | 105 | 115 | 125 | 134 | 143 | 152 | 160 | 169 | 177 |
| WVOL | | | 53 | 63 | 72 | 81 | 90 | 99 | 107 | 116 | 124 | 132 | 139 | 147 |
| SVOL | | | 46 | 55 | 63 | 71 | 79 | 86 | 94 | 101 | 108 | 115 | 121 | 128 |
| 23: | | | | | | | | | | | | | | |
| TVOL | | | 86 | 100 | 113 | 126 | 138 | 150 | 161 | 172 | 183 | 193 | 203 | 213 |
| WVOL | | | 64 | 76 | 87 | 98 | 109 | 120 | 130 | 140 | 149 | 159 | 168 | 178 |
| SVOL | | | 57 | 68 | 78 | 88 | 98 | 107 | 116 | 125 | 134 | 142 | 151 | 159 |
| 25: | | | | | | | | | | | | | | |
| TVOL | | | 102 | 119 | 134 | 149 | 164 | 177 | 191 | 204 | 216 | 228 | 240 | 252 |
| WVOL | | | 76 | 90 | 104 | 117 | 130 | 142 | 154 | 166 | 178 | 189 | 200 | 211 |
| SVOL | | | 70 | 83 | 96 | 108 | 119 | 131 | 142 | 153 | 163 | 174 | 184 | 194 |
| 27: | | | | | | | | | | | | | | |
| TVOL | | | | 138 | 157 | 174 | 191 | 207 | 223 | 238 | 253 | 267 | 281 | 294 |
| WVOL | | | | 106 | 122 | 137 | 152 | 167 | 181 | 195 | 208 | 222 | 235 | 248 |
| SVOL | | | | 100 | 115 | 129 | 143 | 157 | 170 | 183 | 196 | 208 | 221 | 233 |
| 29: | | | | | | | | | | | | | | |
| TVOL | | | | 160 | 181 | 202 | 221 | 240 | 257 | 275 | 292 | 308 | 324 | 340 |
| WVOL | | | | 123 | 141 | 159 | 176 | 193 | 210 | 226 | 241 | 257 | 272 | 287 |
| SVOL | | | | 118 | 136 | 153 | 170 | 186 | 202 | 217 | 232 | 247 | 262 | 276 |
| 31: | | | | | | | | | | | | | | |
| TVOL | | | | 183 | 208 | 231 | 253 | 274 | 295 | 315 | 334 | 353 | 371 | 389 |
| WVOL | | | | 141 | 162 | 183 | 203 | 222 | 241 | 259 | 277 | 295 | 312 | 330 |
| SVOL | | | | 139 | 160 | 180 | 199 | 218 | 237 | 255 | 272 | 290 | 307 | 324 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/ TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOL = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK ABOVE A 1-FOOT STUMP.

# Table 8--Total tree, wood, and saw-log volume for California-laurel

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |
| INCHES | CUBIC FEET | | | | | | | | | | | | |
| 5: | | | | | | | | | | | | | |
| TVOL | 2 | 3 | 3 | 4 | 5 | 6 | 6 | | | | | | |
| WVOL | 1 | 2 | 2 | 3 | 3 | 4 | 5 | | | | | | |
| SVOL | 1 | 1 | 1 | 2 | 2 | 2 | 3 | | | | | | |
| 7: | | | | | | | | | | | | | |
| TVOL | 4 | 5 | 7 | 8 | 10 | 11 | 12 | 14 | 15 | | | | |
| WVOL | 2 | 3 | 4 | 6 | 7 | 8 | 9 | 10 | 11 | | | | |
| SVOL | 1 | 2 | 3 | 3 | 4 | 5 | 6 | 6 | 7 | | | | |
| 9: | | | | | | | | | | | | | |
| TVOL | 6 | 8 | 11 | 13 | 15 | 18 | 20 | 22 | 24 | | | | |
| WVOL | 4 | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | | | | |
| SVOL | 2 | 4 | 5 | 6 | 7 | 9 | 10 | 11 | 12 | | | | |
| 11: | | | | | | | | | | | | | |
| TVOL | 9 | 12 | 16 | 19 | 23 | 26 | 30 | 33 | 36 | 39 | 42 | 45 | 48 |
| WVOL | 5 | 8 | 11 | 14 | 17 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | 42 |
| SVOL | 4 | 6 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | 25 | 27 |
| 13: | | | | | | | | | | | | | |
| TVOL | 12 | 17 | 22 | 27 | 32 | 36 | 41 | 45 | 50 | 54 | 58 | 63 | 67 |
| WVOL | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 37 | 41 | 45 | 50 | 54 | 59 |
| SVOL | 5 | 8 | 11 | 14 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | 37 | 40 |
| 15: | | | | | | | | | | | | | |
| TVOL | | 23 | 29 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 77 | 83 | 89 |
| WVOL | | 16 | 21 | 27 | 32 | 38 | 44 | 49 | 55 | 61 | 67 | 73 | 79 |
| SVOL | | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 39 | 43 | 47 | 51 | 55 |
| | | | | | | | | | | | | | |
| TVOL | | 29 | 37 | 45 | 53 | 61 | 69 | 76 | 84 | 91 | 99 | 106 | 113 |
| WVOL | | 20 | 27 | 34 | 42 | 49 | 56 | 64 | 71 | 79 | 87 | 94 | 102 |
| SVOL | | 15 | 20 | 25 | 30 | 35 | 40 | 46 | 51 | 56 | 62 | 67 | 72 |
| 19: | | | | | | | | | | | | | |
| TVOL | | 36 | 46 | 56 | 66 | 76 | 86 | 95 | 104 | 113 | 122 | 131 | 140 |
| WVOL | | 25 | 34 | 43 | 52 | 62 | 71 | 80 | 90 | 99 | 109 | 118 | 128 |
| SVOL | | 19 | 25 | 32 | 38 | 45 | 52 | 58 | 65 | 72 | 79 | 86 | 92 |
| 21: | | | | | | | | | | | | | |
| TVOL | | 44 | 56 | 69 | 81 | 92 | 104 | 115 | 127 | 138 | 149 | 160 | 170 |
| WVOL | | 31 | 42 | 53 | 64 | 76 | 87 | 99 | 110 | 122 | 134 | 145 | 157 |
| SVOL | | 23 | 32 | 40 | 48 | 56 | 65 | 73 | 82 | 90 | 99 | 107 | 116 |
| 23: | | | | | | | | | | | | | |
| TVOL | | 52 | 67 | 82 | 96 | 110 | 124 | 138 | 151 | 164 | 177 | 190 | 203 |
| WVOL | | 37 | 51 | 64 | 78 | 91 | 105 | 119 | 133 | 147 | 161 | 175 | 190 |
| SVOL | | 29 | 39 | 49 | 59 | 69 | 79 | 90 | 100 | 110 | 121 | 131 | 142 |
| 25: | | | | | | | | | | | | | |
| TVOL | | 61 | 79 | 96 | 113 | 130 | 146 | 162 | 178 | 193 | 209 | 224 | 239 |
| WVOL | | 44 | 60 | 76 | 92 | 109 | 125 | 141 | 158 | 175 | 191 | 208 | 225 |
| SVOL | | 35 | 47 | 59 | 71 | 83 | 95 | 108 | 120 | 133 | 145 | 158 | 171 |
| 27: | | | | | | | | | | | | | |
| TVOL | | | 92 | 112 | 131 | 151 | 169 | 188 | 206 | 224 | 242 | 260 | 278 |
| WVOL | | | 71 | 89 | 108 | 127 | 146 | 166 | 185 | 205 | 224 | 244 | 264 |
| SVOL | | | 55 | 70 | 84 | 99 | 113 | 128 | 143 | 158 | 173 | 188 | 203 |
| 29: | | | | | | | | | | | | | |
| TVOL | | | 106 | 129 | 151 | 173 | 195 | 216 | 237 | 258 | 279 | 299 | 319 |
| WVOL | | | 82 | 103 | 125 | 147 | 170 | 192 | 214 | 237 | 260 | 283 | 306 |
| SVOL | | | 65 | 82 | 99 | 116 | 133 | 150 | 168 | 185 | 202 | 220 | 237 |
| 31: | | | | | | | | | | | | | |
| TVOL | | | | 146 | 172 | 197 | 222 | 246 | 270 | 294 | 317 | 340 | 364 |
| WVOL | | | | 119 | 144 | 169 | 195 | 220 | 246 | 272 | 298 | 324 | 351 |
| SVOL | | | | 95 | 114 | 134 | 154 | 174 | 194 | 215 | 235 | 255 | 276 |
| 33: | | | | | | | | | | | | | |
| TVOL | | | | 165 | 194 | 222 | 250 | 278 | 305 | 332 | 358 | 384 | 411 |
| WVOL | | | | 135 | 163 | 192 | 221 | 250 | 280 | 309 | 339 | 369 | 399 |
| SVOL | | | | 109 | 132 | 154 | 177 | 200 | 223 | 247 | 270 | 293 | 317 |
| 35: | | | | | | | | | | | | | |
| TVOL | | | | 185 | 218 | 249 | 281 | 311 | 342 | 372 | 402 | 431 | 460 |
| WVOL | | | | 152 | 184 | 217 | 250 | 283 | 316 | 349 | 383 | 416 | 450 |
| SVOL | | | | 124 | 150 | 176 | 202 | 228 | 255 | 281 | 308 | 334 | 361 |
| 37: | | | | | | | | | | | | | |
| TVOL | | | | 206 | 243 | 278 | 313 | 347 | 381 | 414 | 448 | 480 | 513 |
| WVOL | | | | 171 | 207 | 243 | 280 | 317 | 354 | 392 | 429 | 467 | 505 |
| SVOL | | | | 141 | 170 | 199 | 229 | 259 | 288 | 318 | 348 | 379 | 409 |
| 39: | | | | | | | | | | | | | |
| TVOL | | | | 229 | 269 | 308 | 346 | 384 | 422 | 459 | 496 | 532 | 568 |
| WVOL | | | | 190 | 231 | 271 | 312 | 353 | 395 | 436 | 478 | 520 | 563 |
| SVOL | | | | 158 | 191 | 224 | 257 | 291 | 324 | 358 | 392 | 426 | 460 |
| 41: | | | | | | | | | | | | | |
| TVOL | | | | 252 | 296 | 339 | 382 | 424 | 465 | 506 | 546 | 587 | 626 |
| WVOL | | | | 211 | 256 | 301 | 346 | 392 | 438 | 484 | 530 | 577 | 624 |
| SVOL | | | | 177 | 214 | 251 | 288 | 325 | 363 | 400 | 438 | 476 | 514 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOL = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK ABOVE A 1-FOOT STUMP.

## Table 9--Total tree, wood, and saw-log volume for tanoak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |
| INCHES | CUBIC FEET | | | | | | | | | | | | |
| 5: | | | | | | | | | | | | | |
| TVOL | 2 | 3 | 3 | 4 | 5 | 5 | 6 | | | | | | |
| WVOL | 1 | 1 | 1 | 2 | 2 | 3 | 3 | | | | | | |
| SVOL | 0 | 1 | 1 | 1 | 1 | 2 | 2 | | | | | | |
| 7: | | | | | | | | | | | | | |
| TVOL | 3 | 5 | 6 | 8 | 9 | 10 | 11 | 13 | 14 | 15 | | | |
| WVOL | 1 | 2 | 3 | 4 | 4 | 5 | 6 | 7 | 8 | 9 | | | |
| SVOL | 1 | 1 | 2 | 3 | 3 | 4 | 5 | 5 | 6 | 7 | | | |
| 9: | | | | | | | | | | | | | |
| TVOL | 6 | 8 | 10 | 12 | 15 | 17 | 19 | 21 | 23 | 25 | 26 | | |
| WVOL | 2 | 3 | 5 | 6 | 8 | 9 | 11 | 12 | 14 | 15 | 17 | | |
| SVOL | 2 | 2 | 4 | 5 | 6 | 7 | 8 | 9 | 11 | 12 | 13 | | |
| 11: | | | | | | | | | | | | | |
| TVOL | 8 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 | |
| WVOL | 3 | 5 | 8 | 10 | 12 | 14 | 17 | 19 | 21 | 24 | 26 | 29 | |
| SVOL | 2 | 4 | 6 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | 23 | |
| 13: | | | | | | | | | | | | | |
| TVOL | 11 | 16 | 21 | 25 | 30 | 34 | 38 | 42 | 46 | 50 | 54 | 58 | |
| WVOL | 5 | 8 | 11 | 14 | 17 | 21 | 24 | 27 | 31 | 34 | 38 | 42 | |
| SVOL | 4 | 6 | 8 | 11 | 13 | 16 | 19 | 22 | 25 | 28 | 31 | 34 | |
| 15: | | | | | | | | | | | | | |
| TVOL | | 21 | 28 | 33 | 39 | 45 | 50 | 56 | 61 | 66 | 71 | 76 | |
| WVOL | | 11 | 15 | 19 | 24 | 28 | 33 | 37 | 42 | 47 | 52 | 57 | |
| SVOL | | 8 | 11 | 15 | 19 | 23 | 26 | 31 | 35 | 39 | 43 | 48 | |
| 17: | | | | | | | | | | | | | |
| TVOL | | 27 | 35 | 43 | 50 | 57 | 64 | 71 | 78 | 84 | 91 | 97 | 104 |
| WVOL | | 14 | 20 | 25 | 31 | 37 | 43 | 49 | 56 | 62 | 68 | 75 | 82 |
| SVOL | | 11 | 15 | 20 | 25 | 30 | 35 | 41 | 46 | 52 | 58 | 64 | 70 |
| 19: | | | | | | | | | | | | | |
| TVOL | | 34 | 44 | 53 | 62 | 71 | 79 | 88 | 96 | 105 | 113 | 121 | 129 |
| WVOL | | 18 | 25 | 32 | 40 | 47 | 55 | 63 | 71 | 79 | 87 | 96 | 104 |
| SVOL | | 14 | 20 | 26 | 32 | 39 | 46 | 53 | 60 | 67 | 75 | 82 | 90 |
| 21: | | | | | | | | | | | | | |
| TVOL | | 41 | 53 | 64 | 75 | 86 | 97 | 107 | 117 | 127 | 137 | 147 | 157 |
| WVOL | | 22 | 31 | 40 | 49 | 59 | 69 | 78 | 88 | 99 | 109 | 119 | 130 |
| SVOL | | 18 | 25 | 33 | 41 | 49 | 58 | 66 | 75 | 85 | 94 | 104 | 113 |
| 23: | | | | | | | | | | | | | |
| TVOL | | | 63 | 77 | 90 | 103 | 115 | 128 | 140 | 152 | 164 | 175 | 187 |
| WVOL | | | 38 | 49 | 60 | 72 | 84 | 96 | 108 | 120 | 133 | 146 | 158 |
| SVOL | | | 31 | 40 | 50 | 60 | 71 | 82 | 93 | 104 | 116 | 128 | 140 |
| 25: | | | | | | | | | | | | | |
| TVOL | | | 74 | 90 | 106 | 121 | 135 | 150 | 164 | 178 | 192 | 206 | 220 |
| WVOL | | | 46 | 59 | 72 | 86 | 100 | 115 | 130 | 145 | 160 | 175 | 190 |
| SVOL | | | 37 | 49 | 61 | 73 | 86 | 99 | 113 | 127 | 141 | 155 | 170 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |
| INCHES | CUBIC FEET | | | | | | | | | | | | |
| 27: | | | | | | | | | | | | | |
| TVOL | | | 86 | 105 | 123 | 140 | 157 | 174 | 191 | 207 | 223 | 239 | 255 |
| WVOL | | | 54 | 70 | 86 | 102 | 119 | 136 | 153 | 171 | 189 | 207 | 225 |
| SVOL | | | 44 | 58 | 73 | 88 | 103 | 119 | 135 | 151 | 168 | 185 | 203 |
| 29: | | | | | | | | | | | | | |
| TVOL | | | 99 | 120 | 141 | 161 | 181 | 200 | 219 | 238 | 257 | 275 | 293 |
| WVOL | | | 63 | 81 | 100 | 120 | 139 | 159 | 180 | 200 | 221 | 242 | 264 |
| SVOL | | | 52 | 69 | 86 | 103 | 121 | 140 | 159 | 178 | 198 | 218 | 239 |
| 31: | | | | | | | | | | | | | |
| TVOL | | | | 137 | 160 | 183 | 206 | 228 | 249 | 271 | 292 | 313 | 334 |
| WVOL | | | | 94 | 116 | 138 | 161 | 184 | 208 | 232 | 256 | 280 | 305 |
| SVOL | | | | 80 | 100 | 120 | 142 | 163 | 185 | 208 | 231 | 255 | 279 |
| 33: | | | | | | | | | | | | | |
| TVOL | | | | 155 | 181 | 207 | 232 | 257 | 282 | 306 | 330 | 353 | 377 |
| WVOL | | | | 108 | 133 | 159 | 185 | 211 | 238 | 266 | 294 | 322 | 350 |
| SVOL | | | | 93 | 115 | 139 | 164 | 189 | 214 | 240 | 267 | 294 | 322 |
| 35: | | | | | | | | | | | | | |
| TVOL | | | | 173 | 203 | 232 | 260 | 288 | 316 | 343 | 370 | 396 | 422 |
| WVOL | | | | 123 | 152 | 181 | 210 | 241 | 271 | 303 | 334 | 366 | 398 |
| SVOL | | | | 106 | 132 | 159 | 187 | 216 | 245 | 275 | 306 | 337 | 369 |
| 37: | | | | | | | | | | | | | |
| TVOL | | | | 193 | 226 | 258 | 290 | 321 | 352 | 382 | 412 | 441 | 470 |
| WVOL | | | | 139 | 171 | 204 | 238 | 272 | 307 | 342 | 377 | 414 | 450 |
| SVOL | | | | 121 | 150 | 181 | 213 | 246 | 279 | 313 | 348 | 383 | 419 |
| 39: | | | | | | | | | | | | | |
| TVOL | | | | 214 | 250 | 286 | 321 | 355 | 389 | 423 | 456 | 489 | 521 |
| WVOL | | | | 156 | 192 | 229 | 267 | 305 | 344 | 384 | 424 | 464 | 505 |
| SVOL | | | | 136 | 170 | 205 | 240 | 277 | 315 | 354 | 393 | 433 | 474 |
| 41: | | | | | | | | | | | | | |
| TVOL | | | | 236 | 276 | 315 | 354 | 392 | 429 | 466 | 503 | 539 | 574 |
| WVOL | | | | 174 | 214 | 256 | 298 | 341 | 384 | 428 | 473 | 518 | 564 |
| SVOL | | | | 153 | 191 | 230 | 270 | 311 | 354 | 397 | 441 | 486 | 532 |
| 43: | | | | | | | | | | | | | |
| TVOL | | | | 258 | 302 | 346 | 388 | 430 | 471 | 511 | 551 | 591 | 630 |
| WVOL | | | | 193 | 238 | 284 | 331 | 378 | 426 | 475 | 525 | 575 | 626 |
| SVOL | | | | 171 | 213 | 256 | 301 | 348 | 395 | 443 | 492 | 542 | 593 |
| 45: | | | | | | | | | | | | | |
| TVOL | | | | 282 | 330 | 378 | 424 | 469 | 514 | 558 | 602 | 645 | |
| WVOL | | | | 214 | 263 | 314 | 365 | 418 | 471 | 525 | 580 | 636 | |
| SVOL | | | | 189 | 236 | 285 | 335 | 386 | 438 | 492 | 547 | 602 | |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOL = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK ABOVE A 1-FOOT STUMP.

## Table 10--Total tree, wood, and saw-log volume for California white oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
| INCHES | CUBIC FEET | | | | | | | | | | | |
| 5: | | | | | | | | | | | | |
| TVOL | 2 | 2 | 3 | | | | | | | | | |
| WVOL | 1 | 1 | 2 | | | | | | | | | |
| SVOL | 0 | 1 | 2 | | | | | | | | | |
| 7: | | | | | | | | | | | | |
| TVOL | 4 | 5 | 6 | 8 | 9 | 10 | 11 | | | | | |
| WVOL | 2 | 3 | 4 | 5 | 6 | 7 | 8 | | | | | |
| SVOL | 1 | 2 | 3 | 4 | 6 | 7 | 9 | | | | | |
| 9: | | | | | | | | | | | | |
| TVOL | 7 | 9 | 12 | 14 | 16 | 17 | 19 | 21 | | | | |
| WVOL | 4 | 5 | 7 | 9 | 11 | 12 | 14 | 16 | | | | |
| SVOL | 1 | 3 | 5 | 7 | 9 | 11 | 14 | 17 | | | | |
| 11: | | | | | | | | | | | | |
| TVOL | 11 | 15 | 18 | 22 | 25 | 28 | 31 | 34 | | | | |
| WVOL | 6 | 9 | 12 | 14 | 17 | 20 | 23 | 26 | | | | |
| SVOL | 2 | 4 | 7 | 10 | 13 | 17 | 21 | 25 | | | | |
| 13: | | | | | | | | | | | | |
| TVOL | 16 | 22 | 27 | 32 | 37 | 41 | 46 | 50 | 54 | 58 | | |
| WVOL | 9 | 13 | 17 | 22 | 26 | 30 | 34 | 39 | 43 | 47 | | |
| SVOL | 3 | 6 | 9 | 13 | 18 | 23 | 28 | 34 | 41 | 48 | | |
| 15: | | | | | | | | | | | | |
| TVOL | | 31 | 38 | 45 | 51 | 58 | 64 | 70 | 75 | 81 | 86 | 92 |
| WVOL | | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 | 78 |
| SVOL | | 8 | 12 | 17 | 23 | 30 | 37 | 45 | 53 | 62 | 72 | 82 |
| 17: | | | | | | | | | | | | |
| TVOL | | 41 | 51 | 60 | 69 | 77 | 85 | 93 | 101 | 108 | 116 | 123 |
| WVOL | | 25 | 33 | 41 | 49 | 57 | 65 | 73 | 82 | 90 | 98 | 106 |
| SVOL | | 10 | 15 | 22 | 29 | 38 | 47 | 57 | 67 | 79 | 91 | 103 |
| 19: | | | | | | | | | | | | |
| TVOL | | 53 | 66 | 78 | 89 | 100 | 111 | 121 | 131 | 141 | 150 | 159 |
| WVOL | | 32 | 43 | 54 | 64 | 75 | 85 | 96 | 106 | 117 | 127 | 138 |
| SVOL | | 12 | 19 | 27 | 36 | 46 | 58 | 70 | 83 | 97 | 112 | 127 |
| 21: | | | | | | | | | | | | |
| TVOL | | 67 | 83 | 98 | 113 | 127 | 140 | 153 | 165 | 178 | 190 | 201 |
| WVOL | | 41 | 55 | 68 | 82 | 95 | 108 | 122 | 135 | 149 | 162 | 175 |
| SVOL | | 14 | 23 | 32 | 44 | 56 | 70 | 84 | 100 | 117 | 135 | 153 |
| 23: | | | | | | | | | | | | |
| TVOL | | | 103 | 122 | 140 | 157 | 173 | 189 | 205 | 220 | 235 | 249 |
| WVOL | | | 68 | 85 | 102 | 118 | 135 | 152 | 168 | 185 | 201 | 218 |
| SVOL | | | 27 | 38 | 52 | 66 | 83 | 100 | 119 | 138 | 160 | 182 |
| 25: | | | | | | | | | | | | |
| TVOL | | | 125 | 148 | 170 | 190 | 210 | 230 | 249 | 267 | 285 | 303 |
| WVOL | | | 83 | 104 | 124 | 144 | 165 | 185 | 205 | 226 | 246 | 266 |
| SVOL | | | 31 | 45 | 60 | 78 | 97 | 117 | 139 | 162 | 186 | 212 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
| INCHES | CUBIC FEET | | | | | | | | | | | |
| 27: | | | | | | | | | | | | |
| TVOL | | | 150 | 177 | 203 | 228 | 252 | 275 | 298 | 320 | 341 | 362 |
| WVOL | | | 100 | 124 | 149 | 174 | 198 | 223 | 247 | 271 | 296 | 320 |
| SVOL | | | 36 | 52 | 70 | 90 | 111 | 135 | 160 | 187 | 215 | 245 |
| 29: | | | | | | | | | | | | |
| TVOL | | | 177 | 209 | 240 | 269 | 298 | 325 | 352 | 378 | 403 | 428 |
| WVOL | | | 118 | 148 | 177 | 206 | 235 | 264 | 293 | 322 | 351 | 380 |
| SVOL | | | 41 | 59 | 80 | 103 | 127 | 154 | 183 | 214 | 246 | 280 |
| 31: | | | | | | | | | | | | |
| TVOL | | | 207 | 245 | 280 | 315 | 348 | 380 | 411 | 441 | 471 | 500 |
| WVOL | | | 139 | 173 | 208 | 242 | 276 | 310 | 344 | 378 | 412 | 446 |
| SVOL | | | 47 | 67 | 91 | 116 | 144 | 175 | 208 | 242 | 279 | 318 |
| 33: | | | | | | | | | | | | |
| TVOL | | | | 283 | 324 | 364 | 402 | 440 | 476 | 511 | 545 | 579 |
| WVOL | | | | 201 | 241 | 281 | 320 | 360 | 399 | 439 | 478 | 518 |
| SVOL | | | | 76 | 102 | 131 | 162 | 197 | 233 | 272 | 314 | 357 |
| 35: | | | | | | | | | | | | |
| TVOL | | | | 325 | 372 | 418 | 462 | 504 | 546 | 586 | 626 | 664 |
| WVOL | | | | 232 | 278 | 323 | 369 | 414 | 460 | 505 | 551 | 596 |
| SVOL | | | | 84 | 114 | 146 | 181 | 220 | 260 | 304 | 350 | 399 |
| 37: | | | | | | | | | | | | |
| TVOL | | | | 370 | 424 | 476 | 526 | 574 | 621 | 667 | 712 | 756 |
| WVOL | | | | 265 | 317 | 369 | 421 | 473 | 525 | 577 | 629 | 681 |
| SVOL | | | | 94 | 126 | 162 | 201 | 244 | 289 | 337 | 389 | 443 |
| 39: | | | | | | | | | | | | |
| TVOL | | | | 418 | 479 | 538 | 595 | 649 | 703 | 755 | 806 | 855 |
| WVOL | | | | 300 | 360 | 419 | 478 | 537 | 596 | 655 | 714 | 773 |
| SVOL | | | | 103 | 139 | 179 | 222 | 269 | 319 | 372 | 429 | 489 |
| 41: | | | | | | | | | | | | |
| TVOL | | | | 470 | 539 | 605 | 668 | 730 | 790 | 848 | 905 | 961 |
| WVOL | | | | 339 | 405 | 472 | 539 | 605 | 672 | 738 | 805 | 871 |
| SVOL | | | | 114 | 153 | 196 | 244 | 295 | 350 | 409 | 471 | 537 |
| 43: | | | | | | | | | | | | |
| TVOL | | | | 525 | 602 | 676 | 747 | 816 | 883 | 948 | 1012 | 1074 |
| WVOL | | | | 379 | 454 | 529 | 604 | 679 | 753 | 828 | 902 | 976 |
| SVOL | | | | 124 | 167 | 215 | 267 | 323 | 383 | 447 | 515 | 587 |
| 45: | | | | | | | | | | | | |
| TVOL | | | | 584 | 670 | 752 | 831 | 907 | 982 | 1054 | 1125 | 1195 |
| WVOL | | | | 423 | 507 | 590 | 673 | 757 | 840 | 923 | 1006 | 1088 |
| SVOL | | | | 135 | 182 | 234 | 290 | 352 | 417 | 487 | 561 | 639 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOL = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK ABOVE A 1-FOOT STUMP.

## Table 11--Total tree, wood, and saw-log volume for bigleaf maple

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |
| INCHES | CUBIC FEET | | | | | | | | | | | | | |
| 5: | | | | | | | | | | | | | | |
| TVOL | 2 | 3 | 3 | 3 | | | | | | | | | | |
| WVOL | 1 | 2 | 2 | 2 | | | | | | | | | | |
| SVOLI | 1 | 1 | 2 | 2 | | | | | | | | | | |
| SVOLX | 0 | 1 | 1 | 1 | | | | | | | | | | |
| 7: | | | | | | | | | | | | | | |
| TVOL | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | | |
| WVOL | 3 | 4 | 4 | 5 | 6 | 6 | 7 | | | | | | | |
| SVOLI | 2 | 3 | 4 | 4 | 5 | 6 | 7 | | | | | | | |
| SVOLX | 1 | 1 | 1 | 2 | 2 | 3 | 3 | | | | | | | |
| 9: | | | | | | | | | | | | | | |
| TVOL | 8 | 10 | 11 | 13 | 14 | 16 | 17 | 18 | | | | | | |
| WVOL | 5 | 6 | 8 | 9 | 10 | 12 | 13 | 14 | | | | | | |
| SVOLI | 3 | 4 | 6 | 8 | 9 | 11 | 13 | 14 | | | | | | |
| SVOLX | 1 | 2 | 2 | 3 | 4 | 4 | 5 | 6 | | | | | | |
| 11: | | | | | | | | | | | | | | |
| TVOL | 12 | 15 | 18 | 20 | 22 | 24 | 26 | 28 | 30 | | | | | |
| WVOL | 8 | 10 | 13 | 15 | 17 | 19 | 20 | 22 | 24 | | | | | |
| SVOLI | 4 | 7 | 9 | 12 | 14 | 17 | 19 | 22 | 24 | | | | | |
| SVOLX | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | |
| 13: | | | | | | | | | | | | | | |
| TVOL | 17 | 22 | 26 | 29 | 32 | 35 | 38 | 41 | 43 | | | | | |
| WVOL | 12 | 15 | 19 | 22 | 25 | 28 | 30 | 33 | 35 | | | | | |
| SVOLI | 6 | 9 | 13 | 16 | 20 | 24 | 27 | 31 | 35 | | | | | |
| SVOLX | 2 | 4 | 5 | 7 | 8 | 9 | 11 | 12 | 14 | | | | | |
| 15: | | | | | | | | | | | | | | |
| TVOL | | 30 | 35 | 40 | 44 | 49 | 52 | 56 | 60 | 63 | | | | |
| WVOL | | 21 | 26 | 31 | 35 | 39 | 42 | 46 | 49 | 53 | | | | |
| SVOLI | | 13 | 17 | 22 | 27 | 32 | 37 | 42 | 47 | 52 | | | | |
| SVOLX | | 5 | 7 | 9 | 11 | 13 | 15 | 17 | 19 | 21 | | | | |
| 17: | | | | | | | | | | | | | | |
| TVOL | | 39 | 46 | 53 | 59 | 64 | 69 | 74 | 79 | 83 | | | | |
| WVOL | | 29 | 35 | 41 | 46 | 52 | 57 | 62 | 66 | 71 | | | | |
| SVOLI | | 17 | 23 | 29 | 35 | 42 | 48 | 55 | 61 | 68 | | | | |
| SVOLX | | 7 | 9 | 11 | 14 | 17 | 19 | 22 | 24 | 27 | | | | |
| 19: | | | | | | | | | | | | | | |
| TVOL | | 50 | 60 | 68 | 75 | 82 | 89 | 95 | 101 | 107 | 112 | | | |
| WVOL | | 37 | 46 | 53 | 60 | 67 | 74 | 80 | 86 | 92 | 98 | | | |
| SVOLI | | 21 | 29 | 36 | 44 | 52 | 61 | 69 | 77 | 86 | 94 | | | |
| SVOLX | | 8 | 11 | 14 | 18 | 21 | 24 | 27 | 31 | 34 | 38 | | | |
| 21: | | | | | | | | | | | | | | |
| TVOL | | 63 | 74 | 85 | 94 | 103 | 111 | 119 | 126 | 133 | 140 | 147 | | |
| WVOL | | 47 | 58 | 67 | 76 | 85 | 93 | 101 | 109 | 117 | 124 | 131 | | |
| SVOLI | | 26 | 35 | 45 | 55 | 65 | 75 | 85 | 95 | 106 | 116 | 127 | | |
| SVOLX | | 10 | 14 | 18 | 22 | 26 | 30 | 34 | 38 | 42 | 46 | 50 | | |
| 23: | | | | | | | | | | | | | | |
| TVOL | | | 91 | 104 | 115 | 126 | 136 | 145 | 154 | 163 | 171 | 179 | 187 | |
| WVOL | | | 71 | 83 | 95 | 105 | 116 | 126 | 135 | 144 | 153 | 162 | 171 | |
| SVOLI | | | 43 | 54 | 66 | 78 | 91 | 103 | 116 | 128 | 141 | 154 | 167 | |
| SVOLX | | | 17 | 22 | 26 | 31 | 36 | 41 | 46 | 51 | 56 | 61 | 66 | |
| 25: | | | | | | | | | | | | | | |
| TVOL | | | 110 | 125 | 138 | 151 | 163 | 175 | 186 | 196 | 206 | 216 | 225 | 235 |
| WVOL | | | 87 | 101 | 115 | 128 | 141 | 153 | 164 | 176 | 187 | 197 | 208 | 218 |
| SVOLI | | | 51 | 65 | 79 | 93 | 108 | 123 | 138 | 153 | 168 | 183 | 198 | 214 |
| SVOLX | | | 20 | 26 | 31 | 37 | 43 | 49 | 55 | 61 | 67 | 73 | 79 | 85 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |
| INCHES | CUBIC FEET | | | | | | | | | | | | | |
| 27: | | | | | | | | | | | | | | |
| TVOL | | | 130 | 148 | 164 | 179 | 194 | 207 | 220 | 233 | 245 | 256 | 267 | 278 |
| WVOL | | | 104 | 122 | 138 | 154 | 169 | 183 | 197 | 211 | 224 | 237 | 249 | 261 |
| SVOLI | | | 60 | 76 | 93 | 110 | 127 | 144 | 162 | 180 | 197 | 215 | 233 | 251 |
| SVOLX | | | 24 | 30 | 37 | 44 | 51 | 57 | 64 | 71 | 79 | 86 | 93 | 100 |
| 29: | | | | | | | | | | | | | | |
| TVOL | | | 152 | 173 | 193 | 210 | 227 | 243 | 258 | 273 | 287 | 300 | 314 | 326 |
| WVOL | | | 123 | 144 | 163 | 182 | 200 | 217 | 233 | 249 | 265 | 280 | 295 | 309 |
| SVOLI | | | 70 | 89 | 108 | 128 | 148 | 168 | 188 | 209 | 229 | 250 | 271 | 292 |
| SVOLX | | | 28 | 35 | 43 | 51 | 59 | 67 | 75 | 83 | 91 | 100 | 108 | 116 |
| 31: | | | | | | | | | | | | | | |
| TVOL | | | 177 | 201 | 223 | 244 | 264 | 282 | 300 | 317 | 333 | 349 | 364 | 378 |
| WVOL | | | 144 | 168 | 191 | 213 | 234 | 253 | 273 | 291 | 310 | 327 | 345 | 362 |
| SVOLI | | | 80 | 102 | 124 | 147 | 170 | 193 | 216 | 240 | 264 | 288 | 312 | 336 |
| SVOLX | | | 32 | 41 | 49 | 58 | 68 | 77 | 86 | 96 | 105 | 115 | 124 | 134 |
| 33: | | | | | | | | | | | | | | |
| TVOL | | | 203 | 231 | 257 | 280 | 303 | 324 | 344 | 364 | 382 | 401 | 418 | 435 |
| WVOL | | | 167 | 195 | 221 | 247 | 271 | 294 | 316 | 338 | 359 | 379 | 399 | 419 |
| SVOLI | | | 91 | 116 | 142 | 168 | 194 | 220 | 247 | 274 | 301 | 328 | 356 | 383 |
| SVOLX | | | 36 | 46 | 56 | 67 | 77 | 88 | 98 | 109 | 120 | 131 | 142 | 153 |
| 35: | | | | | | | | | | | | | | |
| TVOL | | | 232 | 263 | 293 | 320 | 345 | 369 | 393 | 415 | 436 | 457 | 476 | 496 |
| WVOL | | | 192 | 224 | 254 | 283 | 311 | 337 | 363 | 388 | 412 | 436 | 459 | 481 |
| SVOLI | | | 103 | 132 | 160 | 190 | 219 | 249 | 279 | 310 | 341 | 372 | 403 | 434 |
| SVOLX | | | 41 | 52 | 64 | 75 | 87 | 99 | 111 | 123 | 136 | 148 | 160 | 173 |
| 37: | | | | | | | | | | | | | | |
| TVOL | | | 262 | 298 | 331 | 362 | 391 | 418 | 444 | 469 | 493 | 517 | 539 | 561 |
| WVOL | | | 219 | 255 | 290 | 323 | 354 | 384 | 414 | 442 | 470 | 497 | 523 | 548 |
| SVOLI | | | 116 | 148 | 180 | 213 | 246 | 280 | 314 | 348 | 383 | 418 | 453 | 488 |
| SVOLX | | | 46 | 59 | 72 | 85 | 98 | 111 | 125 | 139 | 152 | 166 | 180 | 194 |
| 39: | | | | | | | | | | | | | | |
| TVOL | | | 295 | 335 | 372 | 407 | 439 | 470 | 499 | 528 | 555 | 581 | 606 | 631 |
| WVOL | | | 247 | 289 | 328 | 365 | 401 | 435 | 468 | 500 | 532 | 562 | 592 | 621 |
| SVOLI | | | 130 | 165 | 201 | 238 | 275 | 313 | 351 | 389 | 428 | 466 | 506 | 545 |
| SVOLX | | | 52 | 66 | 80 | 95 | 110 | 125 | 140 | 155 | 170 | 186 | 201 | 217 |
| 41: | | | | | | | | | | | | | | |
| TVOL | | | 329 | 375 | 416 | 455 | 491 | 525 | 558 | 590 | 620 | 649 | 677 | |
| WVOL | | | 278 | 325 | 369 | 411 | 451 | 489 | 527 | 563 | 598 | 632 | 666 | |
| SVOLI | | | 144 | 184 | 224 | 265 | 306 | 348 | 390 | 432 | 475 | 518 | 562 | |
| SVOLX | | | 57 | 73 | 89 | 105 | 122 | 138 | 155 | 172 | 189 | 206 | 224 | |
| 43: | | | | | | | | | | | | | | |
| TVOL | | | 366 | 416 | 462 | 505 | 546 | 584 | 621 | 656 | 689 | 722 | 753 | |
| WVOL | | | 311 | 364 | 413 | 460 | 504 | 548 | 589 | 630 | 669 | 707 | 745 | |
| SVOLI | | | 159 | 203 | 247 | 292 | 338 | 384 | 431 | 478 | 525 | 573 | 621 | |
| SVOLX | | | 63 | 81 | 98 | 116 | 135 | 153 | 171 | 190 | 209 | 228 | 247 | |
| 45: | | | | | | | | | | | | | | |
| TVOL | | | 405 | 461 | 512 | 559 | 604 | 646 | 687 | 725 | 763 | 798 | 833 | |
| WVOL | | | 347 | 405 | 460 | 512 | 561 | 609 | 656 | 701 | 744 | 787 | 829 | |
| SVOLI | | | 175 | 223 | 272 | 322 | 372 | 423 | 474 | 526 | 578 | 630 | 683 | |
| SVOLX | | | 70 | 89 | 108 | 128 | 148 | 168 | 189 | 209 | 230 | 251 | 272 | |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

## Table 12--Total tree, wood, and saw-log volume for California black oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |
| INCHES | CUBIC FEET | | | | | | | | | | | | | |
| 5: | | | | | | | | | | | | | | |
| TVOL | 2 | 3 | 4 | 5 | 6 | 6 | | | | | | | | |
| WVOL | 1 | 2 | 2 | 3 | 3 | 4 | | | | | | | | |
| SVOLI | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | | |
| SVOLX | 0 | 0 | 0 | 0 | 1 | 1 | | | | | | | | |
| 7: | | | | | | | | | | | | | | |
| TVOL | 4 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | | |
| WVOL | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | | | | | |
| SVOLI | 2 | 2 | 2 | 2 | 3 | 3 | 3 | | | | | | | |
| SVOLX | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | | |
| 9: | | | | | | | | | | | | | | |
| TVOL | 7 | 10 | 12 | 15 | 18 | 20 | 22 | 25 | 27 | | | | | |
| WVOL | 5 | 7 | 9 | 10 | 12 | 14 | 15 | 17 | 18 | | | | | |
| SVOLI | 3 | 4 | 4 | 5 | 5 | 5 | 6 | 6 | 6 | | | | | |
| SVOLX | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | | | | | |
| 11: | | | | | | | | | | | | | | |
| TVOL | 10 | 14 | 18 | 22 | 26 | 30 | 33 | 37 | 40 | 44 | | | | |
| WVOL | 7 | 10 | 13 | 16 | 18 | 21 | 23 | 26 | 28 | 30 | | | | |
| SVOLI | 5 | 6 | 7 | 8 | 8 | 9 | 10 | 10 | 10 | 11 | | | | |
| SVOLX | 3 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 6 | | | | |
| 13: | | | | | | | | | | | | | | |
| TVOL | 14 | 20 | 26 | 31 | 36 | 41 | 46 | 51 | 56 | 61 | 65 | | | |
| WVOL | 10 | 15 | 19 | 22 | 26 | 30 | 33 | 37 | 40 | 43 | 46 | | | |
| SVOLI | 8 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 16 | 17 | 18 | | | |
| SVOLX | 4 | 5 | 6 | 6 | 7 | 7 | 8 | 8 | 9 | 9 | 9 | | | |
| 15: | | | | | | | | | | | | | | |
| TVOL | 19 | 27 | 34 | 41 | 48 | 55 | 61 | 68 | 74 | 81 | 87 | | | |
| WVOL | 14 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 54 | 59 | 63 | | | |
| SVOLI | 12 | 14 | 16 | 18 | 19 | 21 | 22 | 23 | 24 | 25 | 26 | | | |
| SVOLX | 6 | 8 | 8 | 9 | 10 | 11 | 11 | 12 | 13 | 13 | 14 | | | |
| 17: | | | | | | | | | | | | | | |
| TVOL | 24 | 34 | 44 | 53 | 62 | 70 | 79 | 87 | 95 | 103 | 111 | | | |
| WVOL | 18 | 26 | 33 | 40 | 46 | 52 | 59 | 65 | 71 | 76 | 82 | | | |
| SVOLI | 17 | 20 | 23 | 25 | 27 | 29 | 31 | 32 | 34 | 35 | 36 | | | |
| SVOLX | 9 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 18 | 19 | | | |
| 19: | | | | | | | | | | | | | | |
| TVOL | | 43 | 54 | 66 | 77 | 88 | 98 | 108 | 119 | 129 | 138 | | | |
| WVOL | | 33 | 42 | 50 | 58 | 66 | 74 | 82 | 89 | 97 | 104 | | | |
| SVOLI | | 27 | 31 | 34 | 37 | 39 | 41 | 43 | 45 | 47 | 49 | | | |
| SVOLX | | 14 | 16 | 18 | 19 | 20 | 21 | 23 | 24 | 25 | 26 | | | |
| 21: | | | | | | | | | | | | | | |
| TVOL | | 52 | 66 | 80 | 94 | 107 | 119 | 132 | 144 | 157 | 169 | | | |
| WVOL | | 41 | 52 | 62 | 72 | 82 | 92 | 101 | 111 | 120 | 129 | | | |
| SVOLI | | 36 | 40 | 44 | 48 | 51 | 54 | 57 | 59 | 62 | 64 | | | |
| SVOLX | | 19 | 21 | 23 | 25 | 27 | 28 | 30 | 31 | 32 | 33 | | | |
| 23: | | | | | | | | | | | | | | |
| TVOL | | 62 | 79 | 96 | 112 | 128 | 143 | 158 | 173 | 187 | 202 | | | |
| WVOL | | 49 | 63 | 75 | 88 | 100 | 112 | 123 | 134 | 145 | 156 | | | |
| SVOLI | | 45 | 51 | 56 | 61 | 65 | 69 | 72 | 76 | 79 | 82 | | | |
| SVOLX | | 24 | 27 | 29 | 32 | 34 | 36 | 38 | 39 | 41 | 43 | | | |
| 25: | | | | | | | | | | | | | | |
| TVOL | | | 93 | 113 | 132 | 150 | 169 | 186 | 204 | 221 | 238 | 255 | 271 | 288 |
| WVOL | | | 75 | 90 | 105 | 119 | 133 | 147 | 160 | 174 | 187 | 200 | 212 | 225 |
| SVOLI | | | 64 | 71 | 76 | 81 | 86 | 91 | 95 | 99 | 102 | 106 | 109 | 113 |
| SVOLX | | | 33 | 37 | 40 | 42 | 45 | 47 | 49 | 51 | 53 | 55 | 57 | 59 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |
| INCHES | CUBIC FEET | | | | | | | | | | | | | |
| 27: | | | | | | | | | | | | | | |
| TVOL | | | 109 | 132 | 154 | 175 | 196 | 217 | 237 | 257 | 277 | 297 | 316 | 335 |
| WVOL | | | 88 | 106 | 123 | 140 | 157 | 173 | 189 | 204 | 220 | 235 | 250 | 265 |
| SVOLI | | | 79 | 87 | 94 | 100 | 106 | 111 | 116 | 121 | 126 | 130 | 134 | 138 |
| SVOLX | | | 41 | 45 | 49 | 52 | 55 | 58 | 61 | 63 | 65 | 68 | 70 | 72 |
| 29: | | | | | | | | | | | | | | |
| TVOL | | | 125 | 152 | 177 | 202 | 226 | 250 | 273 | 296 | 319 | 341 | 364 | 386 |
| WVOL | | | 102 | 123 | 144 | 163 | 183 | 201 | 220 | 238 | 256 | 274 | 291 | 308 |
| SVOLI | | | 96 | 105 | 114 | 121 | 128 | 135 | 141 | 147 | 152 | 158 | 163 | 168 |
| SVOLX | | | 50 | 55 | 59 | 63 | 67 | 70 | 73 | 76 | 79 | 82 | 85 | 87 |
| 31: | | | | | | | | | | | | | | |
| TVOL | | | | 173 | 202 | 230 | 258 | 285 | 312 | 338 | 364 | 389 | 415 | 440 |
| WVOL | | | | 142 | 166 | 188 | 210 | 232 | 253 | 274 | 295 | 315 | 335 | 355 |
| SVOLI | | | | 126 | 136 | 145 | 153 | 161 | 169 | 176 | 182 | 189 | 195 | 200 |
| SVOLX | | | | 65 | 71 | 75 | 80 | 84 | 88 | 91 | 95 | 98 | 101 | 104 |
| 33: | | | | | | | | | | | | | | |
| TVOL | | | | 196 | 228 | 260 | 292 | 322 | 353 | 382 | 412 | 441 | 469 | 498 |
| WVOL | | | | 162 | 189 | 215 | 240 | 265 | 289 | 313 | 337 | 360 | 383 | 406 |
| SVOLI | | | | 149 | 161 | 171 | 181 | 191 | 200 | 208 | 216 | 223 | 230 | 237 |
| SVOLX | | | | 77 | 84 | 89 | 94 | 99 | 104 | 108 | 112 | 116 | 120 | 123 |
| 35: | | | | | | | | | | | | | | |
| TVOL | | | | 220 | 256 | 292 | 328 | 362 | 396 | 429 | 462 | 495 | 527 | 559 |
| WVOL | | | | 184 | 214 | 244 | 272 | 300 | 328 | 355 | 382 | 408 | 434 | 460 |
| SVOLI | | | | 174 | 188 | 201 | 212 | 223 | 234 | 243 | 252 | 261 | 269 | 277 |
| SVOLX | | | | 91 | 98 | 104 | 111 | 116 | 122 | 127 | 131 | 136 | 140 | 144 |
| 37: | | | | | | | | | | | | | | |
| TVOL | | | | 245 | 286 | 326 | 366 | 404 | 442 | 479 | 516 | 552 | 588 | 624 |
| WVOL | | | | 207 | 241 | 274 | 306 | 338 | 369 | 400 | 430 | 459 | 489 | 517 |
| SVOLI | | | | 202 | 218 | 233 | 247 | 259 | 271 | 282 | 293 | 303 | 313 | 322 |
| SVOLX | | | | 105 | 114 | 121 | 128 | 135 | 141 | 147 | 152 | 158 | 163 | 168 |
| 39: | | | | | | | | | | | | | | |
| TVOL | | | | 272 | 318 | 362 | 406 | 448 | 490 | 532 | 573 | 613 | 653 | 692 |
| WVOL | | | | 232 | 270 | 307 | 343 | 378 | 413 | 447 | 481 | 514 | 546 | 579 |
| SVOLI | | | | 233 | 251 | 268 | 284 | 299 | 312 | 325 | 337 | 349 | 360 | 371 |
| SVOLX | | | | 121 | 131 | 140 | 148 | 155 | 162 | 169 | 175 | 182 | 187 | 193 |
| 41: | | | | | | | | | | | | | | |
| TVOL | | | | 300 | 351 | 400 | 448 | 495 | 541 | 587 | 632 | 676 | 720 | 764 |
| WVOL | | | | 258 | 300 | 341 | 381 | 421 | 459 | 497 | 534 | 571 | 608 | 644 |
| SVOLI | | | | 266 | 287 | 307 | 325 | 341 | 357 | 372 | 386 | 399 | 412 | 424 |
| SVOLX | | | | 138 | 150 | 160 | 169 | 178 | 186 | 193 | 201 | 208 | 214 | 221 |
| 43: | | | | | | | | | | | | | | |
| TVOL | | | | | | 439 | 492 | 544 | 595 | 645 | 694 | 743 | 791 | 839 |
| WVOL | | | | | | 377 | 422 | 465 | 508 | 550 | 591 | 632 | 672 | 712 |
| SVOLI | | | | | | 349 | 369 | 388 | 406 | 422 | 438 | 453 | 468 | 482 |
| SVOLX | | | | | | 181 | 192 | 202 | 211 | 220 | 228 | 236 | 243 | 251 |
| 45: | | | | | | | | | | | | | | |
| TVOL | | | | | | 480 | 538 | 595 | 650 | 705 | 759 | 813 | 866 | 918 |
| WVOL | | | | | | 416 | 465 | 513 | 560 | 606 | 651 | 696 | 741 | 785 |
| SVOLI | | | | | | 394 | 417 | 438 | 458 | 477 | 495 | 512 | 529 | 544 |
| SVOLX | | | | | | 205 | 217 | 228 | 238 | 248 | 258 | 266 | 275 | 283 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

## Table 13--Total tree and wood volume for Engelmann oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | |
|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 |
| INCHES | CUBIC FEET | | | | | |
| 5: | | | | | | |
| TVOL | 2 | 2 | 3 | | | |
| WVOL | 1 | 1 | 1 | | | |
| 7: | | | | | | |
| TVOL | 5 | 5 | 6 | 6 | 6 | |
| WVOL | 2 | 3 | 3 | 3 | 3 | |
| 9: | | | | | | |
| TVOL | 9 | 10 | 11 | 11 | 12 | |
| WVOL | 4 | 5 | 5 | 6 | 6 | |
| 11: | | | | | | |
| TVOL | 14 | 16 | 17 | 18 | 19 | 20 |
| WVOL | 7 | 8 | 9 | 10 | 10 | 11 |
| 13: | | | | | | |
| TVOL | 21 | 24 | 26 | 27 | 29 | 30 |
| WVOL | 11 | 13 | 14 | 15 | 16 | 16 |
| 15: | | | | | | |
| TVOL | | 33 | 36 | 38 | 40 | 42 |
| WVOL | | 18 | 20 | 22 | 23 | 24 |
| 17: | | | | | | |
| TVOL | | 45 | 49 | 52 | 55 | 57 |
| WVOL | | 25 | 28 | 30 | 32 | 33 |
| 19: | | | | | | |
| TVOL | | 59 | 64 | 68 | 71 | 74 |
| WVOL | | 34 | 37 | 40 | 42 | 44 |
| 21: | | | | | | |
| TVOL | | 75 | 81 | 86 | 91 | 95 |
| WVOL | | 44 | 48 | 52 | 55 | 58 |
| 23: | | | | | | |
| TVOL | | 93 | 101 | 107 | 113 | 118 |
| WVOL | | 56 | 61 | 66 | 70 | 73 |
| 25: | | | | | | |
| TVOL | | 114 | 123 | 131 | 138 | 144 |
| WVOL | | 70 | 76 | 82 | 86 | 91 |
| 27: | | | | | | |
| TVOL | | 137 | 148 | 158 | 166 | 173 |
| WVOL | | 85 | 93 | 100 | 106 | 111 |
| 29: | | | | | | |
| TVOL | | 162 | 176 | 187 | 197 | 206 |
| WVOL | | 103 | 112 | 120 | 127 | 134 |
| 31: | | | | | | |
| TVOL | | 190 | 206 | 220 | 231 | 241 |
| WVOL | | 122 | 134 | 143 | 152 | 159 |
| 33: | | | | | | |
| TVOL | | 221 | 240 | 255 | 269 | 281 |
| WVOL | | 144 | 157 | 169 | 179 | 187 |
| 35: | | | | | | |
| TVOL | | 255 | 276 | 294 | 309 | 323 |
| WVOL | | 168 | 184 | 197 | 208 | 218 |
| 37: | | | | | | |
| TVOL | | 291 | 316 | 336 | 354 | 369 |
| WVOL | | 194 | 212 | 227 | 241 | 253 |
| 39: | | | | | | |
| TVOL | | 330 | 358 | 381 | 401 | 419 |
| WVOL | | 223 | 244 | 261 | 276 | 290 |
| 41: | | | | | | |
| TVOL | | | 404 | 430 | 453 | 473 |
| WVOL | | | 278 | 297 | 315 | 330 |
| 43: | | | | | | |
| TVOL | | | 453 | 482 | 507 | 530 |
| WVOL | | | 314 | 337 | 357 | 374 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

## Table 14--Total tree, wood, and saw-log volume for blue oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| INCHES | CUBIC FEET | | | | | | | | |
| 5: | | | | | | | | | |
| TVOL | 2 | | | | | | | | |
| WVOL | 1 | | | | | | | | |
| SVOLI | 1 | | | | | | | | |
| SVOLX | 1 | | | | | | | | |
| 7: | | | | | | | | | |
| TVOL | 5 | 6 | 6 | 7 | | | | | |
| WVOL | 3 | 3 | 4 | 4 | | | | | |
| SVOLI | 2 | 3 | 4 | 5 | | | | | |
| SVOLX | 2 | 2 | 3 | 3 | | | | | |
| 9: | | | | | | | | | |
| TVOL | 8 | 10 | 11 | 13 | 14 | 15 | | | |
| WVOL | 5 | 6 | 7 | 8 | 9 | 10 | | | |
| SVOLI | 3 | 5 | 6 | 7 | 9 | 10 | | | |
| SVOLX | 2 | 3 | 4 | 5 | 6 | 7 | | | |
| 11: | | | | | | | | | |
| TVOL | 13 | 16 | 18 | 20 | 22 | 24 | 25 | | |
| WVOL | 9 | 10 | 12 | 14 | 15 | 16 | 17 | | |
| SVOLI | 5 | 7 | 9 | 11 | 12 | 14 | 16 | | |
| SVOLX | 3 | 5 | 6 | 7 | 9 | 10 | 11 | | |
| 13: | | | | | | | | | |
| TVOL | 20 | 24 | 27 | 30 | 33 | 35 | 37 | 39 | |
| WVOL | 13 | 16 | 18 | 21 | 23 | 25 | 26 | 28 | |
| SVOLI | 7 | 9 | 12 | 14 | 17 | 19 | 21 | 23 | |
| SVOLX | 5 | 6 | 8 | 10 | 12 | 13 | 15 | 16 | |
| 15: | | | | | | | | | |
| TVOL | 27 | 33 | 38 | 42 | 46 | 49 | 52 | 55 | 58 |
| WVOL | 19 | 23 | 27 | 30 | 33 | 35 | 38 | 40 | 42 |
| SVOLI | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 |
| SVOLX | 6 | 8 | 11 | 13 | 15 | 17 | 19 | 21 | 23 |
| 17: | | | | | | | | | |
| TVOL | 37 | 44 | 51 | 56 | 61 | 65 | 70 | 73 | 77 |
| WVOL | 26 | 32 | 36 | 41 | 45 | 48 | 52 | 55 | 58 |
| SVOLI | 11 | 15 | 19 | 23 | 27 | 31 | 34 | 38 | 41 |
| SVOLX | 7 | 10 | 13 | 16 | 19 | 21 | 24 | 26 | 29 |
| 19: | | | | | | | | | |
| TVOL | 48 | 57 | 66 | 73 | 79 | 85 | 90 | 95 | 100 |
| WVOL | 34 | 42 | 48 | 54 | 59 | 64 | 69 | 73 | 77 |
| SVOLI | 13 | 18 | 23 | 28 | 33 | 37 | 42 | 46 | 50 |
| SVOLX | 9 | 13 | 16 | 20 | 23 | 26 | 29 | 32 | 35 |
| 21: | | | | | | | | | |
| TVOL | 60 | 72 | 83 | 92 | 100 | 107 | 114 | 120 | 126 |
| WVOL | 44 | 54 | 62 | 70 | 77 | 83 | 89 | 94 | 99 |
| SVOLI | 16 | 22 | 28 | 34 | 39 | 45 | 50 | 55 | 60 |
| SVOLX | 11 | 15 | 19 | 23 | 27 | 31 | 35 | 38 | 42 |
| 23: | | | | | | | | | |
| TVOL | 74 | 90 | 102 | 113 | 123 | 132 | 141 | 149 | 156 |
| WVOL | 55 | 68 | 79 | 88 | 97 | 104 | 112 | 119 | 125 |
| SVOLI | 18 | 26 | 33 | 40 | 46 | 53 | 59 | 65 | 71 |
| SVOLX | 13 | 18 | 23 | 28 | 32 | 37 | 41 | 45 | 49 |
| 25: | | | | | | | | | |
| TVOL | 90 | 109 | 124 | 138 | 150 | 161 | 171 | 181 | 190 |
| WVOL | 68 | 84 | 97 | 109 | 119 | 129 | 138 | 147 | 155 |
| SVOLI | 21 | 30 | 38 | 46 | 54 | 61 | 68 | 76 | 83 |
| SVOLX | 15 | 21 | 27 | 32 | 37 | 42 | 47 | 52 | 57 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| INCHES | CUBIC FEET | | | | | | | | |
| 27: | | | | | | | | | |
| TVOL | | 130 | 149 | 165 | 179 | 192 | 205 | 216 | 227 |
| WVOL | | 102 | 118 | 132 | 145 | 157 | 168 | 178 | 188 |
| SVOLI | | 35 | 44 | 53 | 62 | 70 | 79 | 87 | 95 |
| SVOLX | | 24 | 30 | 37 | 43 | 49 | 54 | 60 | 66 |
| 29: | | | | | | | | | |
| TVOL | | 154 | 176 | 195 | 212 | 227 | 242 | 255 | 268 |
| WVOL | | 123 | 142 | 159 | 174 | 188 | 201 | 214 | 225 |
| SVOLI | | 39 | 50 | 60 | 70 | 80 | 89 | 99 | 108 |
| SVOLX | | 27 | 35 | 42 | 49 | 55 | 62 | 68 | 75 |
| 31: | | | | | | | | | |
| TVOL | | 180 | 205 | 227 | 247 | 265 | 282 | 298 | 313 |
| WVOL | | 145 | 168 | 188 | 206 | 223 | 238 | 253 | 267 |
| SVOLI | | 44 | 56 | 68 | 79 | 90 | 101 | 111 | 122 |
| SVOLX | | 31 | 39 | 47 | 55 | 62 | 70 | 77 | 84 |
| 33: | | | | | | | | | |
| TVOL | | 208 | 237 | 263 | 286 | 307 | 327 | 345 | 362 |
| WVOL | | 170 | 197 | 220 | 242 | 261 | 279 | 297 | 313 |
| SVOLI | | 50 | 63 | 76 | 89 | 101 | 113 | 125 | 136 |
| SVOLX | | 34 | 44 | 53 | 61 | 70 | 78 | 86 | 94 |
| 35: | | | | | | | | | |
| TVOL | | 238 | 272 | 302 | 328 | 352 | 375 | 396 | 415 |
| WVOL | | 198 | 228 | 256 | 280 | 303 | 324 | 344 | 363 |
| SVOLI | | 55 | 70 | 85 | 99 | 112 | 125 | 138 | 151 |
| SVOLX | | 38 | 49 | 59 | 68 | 78 | 87 | 96 | 105 |
| 37: | | | | | | | | | |
| TVOL | | 271 | 310 | 343 | 374 | 401 | 426 | 450 | 473 |
| WVOL | | 227 | 263 | 295 | 323 | 349 | 374 | 397 | 418 |
| SVOLI | | 61 | 77 | 93 | 109 | 124 | 139 | 153 | 167 |
| SVOLX | | 42 | 54 | 65 | 75 | 86 | 96 | 106 | 116 |
| 39: | | | | | | | | | |
| TVOL | | 307 | 350 | 388 | 422 | 453 | 482 | 509 | 534 |
| WVOL | | 260 | 301 | 337 | 369 | 399 | 427 | 453 | 478 |
| SVOLI | | 67 | 85 | 103 | 120 | 136 | 152 | 168 | 184 |
| SVOLX | | 46 | 59 | 71 | 83 | 94 | 105 | 116 | 127 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

## Table 15--Total tree, wood, and saw-log volume for Pacific madrone

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| INCHES | CUBIC FEET | | | | | | | | | | |
| 5: | | | | | | | | | | | |
| TVOL | 2 | 3 | 3 | 4 | | | | | | | |
| WVOL | 1 | 2 | 3 | 3 | | | | | | | |
| SVOLI | 1 | 2 | 3 | 3 | | | | | | | |
| SVOLX | 0 | 1 | 1 | 1 | | | | | | | |
| 7: | | | | | | | | | | | |
| TVOL | 4 | 5 | 7 | 8 | 9 | | | | | | |
| WVOL | 3 | 4 | 5 | 7 | 8 | | | | | | |
| SVOLI | 2 | 3 | 5 | 6 | 8 | | | | | | |
| SVOLX | 1 | 1 | 2 | 3 | 3 | | | | | | |
| 9: | | | | | | | | | | | |
| TVOL | 6 | 9 | 11 | 13 | 15 | 18 | 20 | | | | |
| WVOL | 4 | 6 | 9 | 11 | 13 | 15 | 17 | | | | |
| SVOLI | 3 | 5 | 7 | 9 | 12 | 14 | 17 | | | | |
| SVOLX | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | | |
| 11: | | | | | | | | | | | |
| TVOL | 9 | 13 | 16 | 20 | 23 | 26 | 29 | 32 | 35 | 38 | |
| WVOL | 6 | 10 | 13 | 16 | 19 | 23 | 26 | 29 | 33 | 36 | |
| SVOLI | 4 | 7 | 10 | 13 | 16 | 20 | 24 | 27 | 31 | 35 | |
| SVOLX | 2 | 3 | 4 | 5 | 7 | 8 | 10 | 11 | 13 | 15 | |
| 13: | | | | | | | | | | | |
| TVOL | 13 | 18 | 23 | 27 | 32 | 36 | 40 | 45 | 49 | 53 | 57 |
| WVOL | 9 | 13 | 18 | 23 | 27 | 32 | 36 | 41 | 46 | 50 | 55 |
| SVOLI | 5 | 9 | 13 | 17 | 22 | 27 | 32 | 37 | 42 | 47 | 53 |
| SVOLX | 2 | 4 | 5 | 7 | 9 | 11 | 13 | 15 | 18 | 20 | 22 |
| 15: | | | | | | | | | | | |
| TVOL | 17 | 24 | 30 | 36 | 42 | 48 | 54 | 59 | 65 | 70 | 75 |
| WVOL | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 55 | 61 | 67 | 73 |
| SVOLI | 7 | 12 | 17 | 22 | 28 | 34 | 40 | 47 | 54 | 60 | 68 |
| SVOLX | 3 | 5 | 7 | 9 | 12 | 14 | 17 | 20 | 22 | 25 | 28 |
| 17: | | | | | | | | | | | |
| TVOL | 22 | 30 | 38 | 46 | 54 | 61 | 69 | 76 | 83 | 89 | 96 |
| WVOL | 15 | 23 | 31 | 39 | 46 | 54 | 62 | 70 | 78 | 86 | 94 |
| SVOLI | 9 | 15 | 21 | 28 | 35 | 42 | 50 | 58 | 67 | 75 | 84 |
| SVOLX | 4 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 28 | 31 | 35 |
| 19: | | | | | | | | | | | |
| TVOL | 27 | 38 | 48 | 58 | 67 | 76 | 85 | 94 | 103 | 111 | 120 |
| WVOL | 19 | 29 | 38 | 48 | 58 | 68 | 77 | 87 | 97 | 107 | 117 |
| SVOLI | 11 | 18 | 25 | 34 | 42 | 51 | 61 | 71 | 81 | 91 | 102 |
| SVOLX | 4 | 7 | 11 | 14 | 18 | 21 | 25 | 30 | 34 | 38 | 42 |
| 21: | | | | | | | | | | | |
| TVOL | 33 | 46 | 58 | 70 | 82 | 93 | 104 | 115 | 125 | 135 | 146 |
| WVOL | 23 | 35 | 47 | 59 | 71 | 83 | 95 | 107 | 119 | 131 | 143 |
| SVOLI | 13 | 21 | 30 | 40 | 50 | 61 | 72 | 84 | 96 | 108 | 121 |
| SVOLX | 5 | 9 | 13 | 17 | 21 | 26 | 30 | 35 | 40 | 45 | 50 |
| 23: | | | | | | | | | | | |
| TVOL | 39 | 55 | 70 | 84 | 98 | 111 | 124 | 137 | 150 | 162 | 174 |
| WVOL | 28 | 42 | 56 | 70 | 85 | 99 | 113 | 128 | 142 | 157 | 171 |
| SVOLI | 15 | 24 | 35 | 47 | 59 | 71 | 85 | 98 | 112 | 127 | 141 |
| SVOLX | 6 | 10 | 15 | 20 | 25 | 30 | 35 | 41 | 47 | 53 | 59 |
| 25: | | | | | | | | | | | |
| TVOL | 46 | 65 | 82 | 99 | 115 | 131 | 146 | 161 | 176 | 191 | 205 |
| WVOL | 33 | 49 | 66 | 83 | 100 | 117 | 134 | 151 | 168 | 185 | 202 |
| SVOLI | 17 | 28 | 41 | 54 | 68 | 82 | 98 | 113 | 130 | 146 | 163 |
| SVOLX | 7 | 12 | 17 | 23 | 28 | 34 | 41 | 47 | 54 | 61 | 68 |
| 27: | | | | | | | | | | | |
| TVOL | | 75 | 95 | 115 | 134 | 152 | 170 | 188 | 205 | 222 | 239 |
| WVOL | | 58 | 77 | 97 | 117 | 136 | 156 | 176 | 196 | 216 | 236 |
| SVOLI | | 32 | 46 | 62 | 78 | 94 | 112 | 129 | 148 | 167 | 186 |
| SVOLX | | 13 | 19 | 26 | 32 | 39 | 47 | 54 | 62 | 70 | 78 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| INCHES | - - - - - - - - - - - - - - - - - - - - CUBIC FEET- - - - - - - - - - - - - - - - - - - - | | | | | | | | | | |
| 29: | | | | | | | | | | | |
| TVOL | | 86 | 110 | 132 | 154 | 175 | 196 | 216 | 236 | 255 | 275 |
| WVOL | | 66 | 89 | 112 | 134 | 157 | 180 | 203 | 226 | 249 | 272 |
| SVOLI | | 37 | 53 | 70 | 88 | 107 | 126 | 146 | 167 | 189 | 211 |
| SVOLX | | 15 | 22 | 29 | 37 | 45 | 53 | 61 | 70 | 79 | 88 |
| 31: | | | | | | | | | | | |
| TVOL | | 98 | 125 | 151 | 176 | 200 | 223 | 246 | 269 | 291 | 313 |
| WVOL | | 76 | 102 | 128 | 154 | 180 | 206 | 232 | 258 | 284 | 310 |
| SVOLI | | 41 | 59 | 78 | 98 | 120 | 142 | 164 | 188 | 212 | 236 |
| SVOLX | | 17 | 25 | 33 | 41 | 50 | 59 | 69 | 79 | 89 | 99 |
| 33: | | | | | | | | | | | |
| TVOL | | | | 171 | 199 | 226 | 253 | 279 | 304 | 329 | 354 |
| WVOL | | | | 144 | 174 | 203 | 233 | 262 | 292 | 322 | 351 |
| SVOLI | | | | 87 | 110 | 133 | 158 | 183 | 209 | 236 | 263 |
| SVOLX | | | | 36 | 46 | 56 | 66 | 77 | 87 | 99 | 110 |
| 35: | | | | | | | | | | | |
| TVOL | | | | 191 | 223 | 254 | 283 | 313 | 342 | 370 | 398 |
| WVOL | | | | 162 | 196 | 229 | 262 | 295 | 328 | 362 | 395 |
| SVOLI | | | | 96 | 121 | 147 | 175 | 203 | 232 | 261 | 292 |
| SVOLX | | | | 40 | 51 | 62 | 73 | 85 | 97 | 109 | 122 |
| 37: | | | | | | | | | | | |
| TVOL | | | | | 249 | 283 | 316 | 349 | 381 | 412 | 444 |
| WVOL | | | | | 218 | 255 | 292 | 330 | 367 | 404 | 441 |
| SVOLI | | | | | 134 | 162 | 192 | 223 | 255 | 287 | 321 |
| SVOLX | | | | | 56 | 68 | 80 | 93 | 107 | 120 | 134 |
| 39: | | | | | | | | | | | |
| TVOL | | | | | 276 | 314 | 351 | 387 | 422 | 457 | 492 |
| WVOL | | | | | 243 | 284 | 325 | 366 | 407 | 449 | 490 |
| SVOLI | | | | | 146 | 178 | 210 | 244 | 279 | 315 | 351 |
| SVOLX | | | | | 61 | 74 | 88 | 102 | 117 | 132 | 147 |
| 41: | | | | | | | | | | | |
| TVOL | | | | | 304 | 346 | 387 | 427 | 466 | 505 | |
| WVOL | | | | | 268 | 313 | 359 | 404 | 450 | 496 | |
| SVOLI | | | | | 159 | 194 | 229 | 266 | 304 | 343 | |
| SVOLX | | | | | 67 | 81 | 96 | 111 | 127 | 144 | |
| 43: | | | | | | | | | | | |
| TVOL | | | | | 334 | 380 | 425 | 469 | 512 | 554 | |
| WVOL | | | | | 295 | 345 | 395 | 445 | 495 | 545 | |
| SVOLI | | | | | 173 | 210 | 249 | 289 | 330 | 373 | |
| SVOLX | | | | | 72 | 88 | 104 | 121 | 138 | 156 | |
| 45: | | | | | | | | | | | |
| TVOL | | | | | 365 | 416 | 465 | 513 | 560 | 606 | |
| WVOL | | | | | 323 | 377 | 432 | 487 | 542 | 597 | |
| SVOLI | | | | | 187 | 228 | 269 | 313 | 357 | 403 | |
| SVOLX | | | | | 78 | 95 | 113 | 131 | 149 | 169 | |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

## Table 16--Total tree, wood, and saw-log volume for Oregon white oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |
| INCHES | CUBIC FEET | | | | | | | | | | | | | |
| 5: | | | | | | | | | | | | | | |
| TVOL | 2 | 3 | 4 | 4 | 5 | | | | | | | | | |
| WVOL | 1 | 2 | 2 | 3 | 3 | | | | | | | | | |
| SVOLI | 1 | 1 | 2 | 2 | 2 | | | | | | | | | |
| SVOLX | 0 | 1 | 1 | 1 | 1 | | | | | | | | | |
| 7: | | | | | | | | | | | | | | |
| TVOL | 4 | 6 | 7 | 9 | 10 | 11 | 12 | 13 | | | | | | |
| WVOL | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | |
| SVOLI | 2 | 2 | 3 | 4 | 4 | 5 | 6 | 6 | | | | | | |
| SVOLX | 1 | 1 | 1 | 2 | 2 | 2 | 3 | 3 | | | | | | |
| 9: | | | | | | | | | | | | | | |
| TVOL | 7 | 10 | 12 | 15 | 17 | 19 | 21 | 23 | 25 | 26 | 28 | | | |
| WVOL | 5 | 7 | 9 | 10 | 12 | 14 | 16 | 17 | 19 | 21 | 22 | | | |
| SVOLI | 3 | 4 | 5 | 6 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | | |
| SVOLX | 1 | 2 | 2 | 3 | 4 | 4 | 5 | 5 | 6 | 6 | 7 | | | |
| 11: | | | | | | | | | | | | | | |
| TVOL | 11 | 15 | 19 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 43 | | | |
| WVOL | 7 | 10 | 13 | 16 | 19 | 22 | 25 | 27 | 30 | 33 | 35 | | | |
| SVOLI | 4 | 6 | 8 | 10 | 11 | 13 | 15 | 17 | 18 | 20 | 22 | | | |
| SVOLX | 2 | 3 | 4 | 5 | 5 | 6 | 7 | 8 | 9 | 9 | 10 | | | |
| 13: | | | | | | | | | | | | | | |
| TVOL | 16 | 22 | 27 | 32 | 37 | 42 | 46 | 50 | 54 | 58 | 62 | | | |
| WVOL | 11 | 15 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 47 | 51 | | | |
| SVOLI | 6 | 9 | 11 | 14 | 16 | 19 | 21 | 24 | 26 | 28 | 31 | | | |
| SVOLX | 3 | 4 | 5 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | | |
| 15: | | | | | | | | | | | | | | |
| TVOL | 22 | 30 | 37 | 44 | 50 | 56 | 62 | 68 | 74 | 79 | 84 | | | |
| WVOL | 15 | 21 | 27 | 33 | 39 | 44 | 50 | 55 | 60 | 66 | 71 | | | |
| SVOLI | 8 | 12 | 15 | 19 | 22 | 25 | 29 | 32 | 35 | 38 | 42 | | | |
| SVOLX | 4 | 6 | 7 | 9 | 10 | 12 | 14 | 15 | 17 | 18 | 20 | | | |
| 17: | | | | | | | | | | | | | | |
| TVOL | 29 | 39 | 49 | 57 | 66 | 74 | 81 | 89 | 96 | 103 | 110 | | | |
| WVOL | 20 | 28 | 36 | 44 | 51 | 59 | 66 | 73 | 80 | 87 | 94 | | | |
| SVOLI | 11 | 15 | 20 | 24 | 29 | 33 | 37 | 42 | 46 | 50 | 54 | | | |
| SVOLX | 5 | 7 | 9 | 11 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | | | |
| 19: | | | | | | | | | | | | | | |
| TVOL | 37 | 50 | 62 | 73 | 84 | 94 | 103 | 113 | 122 | 131 | 140 | | | |
| WVOL | 25 | 36 | 46 | 56 | 66 | 75 | 85 | 94 | 103 | 112 | 120 | | | |
| SVOLI | 13 | 19 | 25 | 31 | 36 | 42 | 47 | 53 | 58 | 63 | 68 | | | |
| SVOLX | 6 | 9 | 12 | 15 | 17 | 20 | 22 | 25 | 27 | 30 | 32 | | | |
| 21: | | | | | | | | | | | | | | |
| TVOL | 46 | 62 | 77 | 90 | 104 | 116 | 128 | 140 | 151 | 162 | 173 | | | |
| WVOL | 32 | 45 | 58 | 70 | 83 | 94 | 106 | 118 | 129 | 140 | 151 | | | |
| SVOLI | 16 | 24 | 31 | 38 | 45 | 52 | 58 | 65 | 71 | 78 | 84 | | | |
| SVOLX | 8 | 11 | 15 | 18 | 21 | 24 | 27 | 31 | 34 | 37 | 40 | | | |
| 23: | | | | | | | | | | | | | | |
| TVOL | 56 | 75 | 93 | 110 | 126 | 141 | 156 | 170 | 184 | 197 | 210 | 223 | 236 | 248 |
| WVOL | 39 | 55 | 71 | 86 | 101 | 116 | 130 | 144 | 158 | 172 | 185 | 199 | 212 | 225 |
| SVOLI | 20 | 29 | 38 | 46 | 54 | 63 | 71 | 79 | 87 | 94 | 102 | 110 | 118 | 125 |
| SVOLX | 9 | 14 | 18 | 22 | 26 | 29 | 33 | 37 | 41 | 45 | 48 | 52 | 55 | 59 |
| 25: | | | | | | | | | | | | | | |
| TVOL | 67 | 90 | 111 | 131 | 150 | 169 | 186 | 203 | 220 | 236 | 252 | 267 | 282 | 297 |
| WVOL | 47 | 67 | 86 | 104 | 122 | 140 | 157 | 174 | 191 | 207 | 224 | 240 | 256 | 272 |
| SVOLI | 24 | 34 | 45 | 55 | 65 | 75 | 84 | 94 | 103 | 113 | 122 | 131 | 140 | 149 |
| SVOLX | 11 | 16 | 21 | 26 | 31 | 35 | 40 | 44 | 49 | 53 | 57 | 62 | 66 | 70 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 | 150 |
| INCHES | CUBIC FEET | | | | | | | | | | | | | |
| 27: | | | | | | | | | | | | | | |
| TVOL | | 106 | 131 | 155 | 177 | 199 | 220 | 240 | 259 | 278 | 297 | 315 | 333 | 350 |
| WVOL | | 80 | 102 | 124 | 146 | 166 | 187 | 207 | 227 | 247 | 266 | 285 | 304 | 323 |
| SVOLI | | 40 | 53 | 64 | 76 | 88 | 99 | 110 | 121 | 132 | 143 | 154 | 165 | 176 |
| SVOLX | | 19 | 25 | 30 | 36 | 41 | 47 | 52 | 57 | 62 | 68 | 73 | 78 | 83 |
| 29: | | | | | | | | | | | | | | |
| TVOL | | 124 | 153 | 181 | 207 | 232 | 256 | 279 | 302 | 324 | 346 | 367 | 388 | 408 |
| WVOL | | 93 | 120 | 146 | 171 | 196 | 220 | 243 | 267 | 290 | 313 | 335 | 358 | 380 |
| SVOLI | | 47 | 61 | 75 | 89 | 102 | 115 | 128 | 141 | 154 | 167 | 179 | 192 | 204 |
| SVOLX | | 22 | 29 | 35 | 42 | 48 | 54 | 60 | 67 | 73 | 79 | 85 | 90 | 96 |
| 31: | | | | | | | | | | | | | | |
| TVOL | | 143 | 177 | 208 | 239 | 267 | 295 | 322 | 349 | 374 | 399 | 423 | 447 | 471 |
| WVOL | | 109 | 140 | 170 | 199 | 227 | 255 | 283 | 310 | 337 | 363 | 390 | 416 | 441 |
| SVOLI | | 54 | 70 | 86 | 102 | 117 | 132 | 147 | 162 | 177 | 192 | 206 | 221 | 235 |
| SVOLX | | 26 | 33 | 41 | 48 | 55 | 62 | 70 | 77 | 84 | 90 | 97 | 104 | 111 |
| 33: | | | | | | | | | | | | | | |
| TVOL | | 163 | 202 | 238 | 273 | 306 | 338 | 369 | 398 | 428 | 456 | 484 | 512 | 538 |
| WVOL | | 125 | 161 | 195 | 229 | 262 | 294 | 326 | 357 | 388 | 419 | 449 | 479 | 508 |
| SVOLI | | 62 | 80 | 98 | 116 | 134 | 151 | 168 | 185 | 202 | 219 | 235 | 252 | 268 |
| SVOLX | | 29 | 38 | 46 | 55 | 63 | 71 | 79 | 87 | 95 | 103 | 111 | 119 | 126 |
| 35: | | | | | | | | | | | | | | |
| TVOL | | 185 | 229 | 270 | 309 | 347 | 383 | 418 | 452 | 485 | 518 | 549 | 580 | 611 |
| WVOL | | 143 | 184 | 223 | 261 | 299 | 336 | 372 | 408 | 443 | 478 | 512 | 547 | 580 |
| SVOLI | | 70 | 91 | 111 | 132 | 151 | 171 | 190 | 210 | 229 | 248 | 266 | 285 | 303 |
| SVOLX | | 33 | 43 | 53 | 62 | 71 | 81 | 90 | 99 | 108 | 117 | 126 | 134 | 143 |
| 37: | | | | | | | | | | | | | | |
| TVOL | | 208 | 258 | 304 | 349 | 391 | 431 | 471 | 509 | 547 | 583 | 619 | 654 | 688 |
| WVOL | | 162 | 208 | 253 | 296 | 339 | 381 | 422 | 462 | 502 | 542 | 581 | 620 | 658 |
| SVOLI | | 79 | 102 | 125 | 148 | 170 | 192 | 214 | 236 | 257 | 278 | 299 | 320 | 341 |
| SVOLX | | 37 | 48 | 59 | 70 | 80 | 91 | 101 | 111 | 121 | 131 | 141 | 151 | 161 |
| 39: | | | | | | | | | | | | | | |
| TVOL | | 233 | 289 | 341 | 390 | 437 | 483 | 527 | 570 | 612 | 653 | 693 | 732 | 770 |
| WVOL | | 182 | 234 | 285 | 334 | 381 | 429 | 475 | 520 | 566 | 610 | 654 | 698 | 741 |
| SVOLI | | 88 | 114 | 140 | 165 | 190 | 215 | 239 | 263 | 287 | 311 | 335 | 358 | 381 |
| SVOLX | | 41 | 54 | 66 | 78 | 90 | 101 | 113 | 124 | 135 | 147 | 158 | 169 | 180 |
| 41: | | | | | | | | | | | | | | |
| TVOL | | 260 | 321 | 379 | 434 | 487 | 538 | 587 | 635 | 681 | 726 | 771 | 815 | 857 |
| WVOL | | 204 | 262 | 319 | 373 | 427 | 480 | 532 | 583 | 633 | 683 | 732 | 781 | 829 |
| SVOLI | | 98 | 127 | 155 | 184 | 211 | 239 | 266 | 293 | 319 | 346 | 372 | 398 | 424 |
| SVOLX | | 46 | 60 | 73 | 87 | 100 | 113 | 125 | 138 | 150 | 163 | 175 | 188 | 200 |
| 43: | | | | | | | | | | | | | | |
| TVOL | | 288 | 356 | 420 | 481 | 539 | 595 | 650 | 703 | 754 | 805 | 854 | 902 | 949 |
| WVOL | | 227 | 292 | 355 | 416 | 475 | 534 | 592 | 649 | 705 | 760 | 815 | 870 | 924 |
| SVOLI | | 108 | 140 | 172 | 203 | 234 | 264 | 294 | 323 | 353 | 382 | 411 | 440 | 468 |
| SVOLX | | 51 | 66 | 81 | 96 | 110 | 124 | 139 | 153 | 166 | 180 | 194 | 207 | 221 |
| 45: | | | | | | | | | | | | | | |
| TVOL | | 317 | 392 | 463 | 530 | 594 | 656 | 716 | 775 | 831 | 887 | 941 | 994 | 1047 |
| WVOL | | 252 | 324 | 393 | 461 | 527 | 592 | 656 | 719 | 781 | 842 | 903 | 964 | 1023 |
| SVOLI | | 119 | 154 | 189 | 223 | 257 | 290 | 323 | 356 | 388 | 420 | 452 | 484 | 515 |
| SVOLX | | 56 | 73 | 89 | 105 | 121 | 137 | 152 | 168 | 183 | 198 | 213 | 228 | 243 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

## Table 17--Total tree, wood, and saw-log volume for canyon live oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |
| INCHES | CUBIC FEET | | | | | | | | | | | | |
| 5: | | | | | | | | | | | | | |
| TVOL | 2 | 3 | 3 | 4 | 4 | | | | | | | | |
| WVOL | 1 | 2 | 2 | 2 | 3 | | | | | | | | |
| SVOLI | 1 | 1 | 1 | 2 | 2 | | | | | | | | |
| SVOLX | 0 | 0 | 0 | 1 | 1 | | | | | | | | |
| 7: | | | | | | | | | | | | | |
| TVOL | 4 | 6 | 7 | 8 | 9 | 10 | 10 | 11 | | | | | |
| WVOL | 3 | 4 | 5 | 5 | 6 | 7 | 8 | 8 | | | | | |
| SVOLI | 2 | 2 | 3 | 3 | 4 | 4 | 5 | 5 | | | | | |
| SVOLX | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 | | | | | |
| 9: | | | | | | | | | | | | | |
| TVOL | 8 | 10 | 12 | 14 | 15 | 17 | 18 | 19 | 21 | | | | |
| WVOL | 5 | 7 | 8 | 10 | 11 | 12 | 14 | 15 | 16 | | | | |
| SVOLI | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 10 | | | | |
| SVOLX | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 4 | 4 | | | | |
| 11: | | | | | | | | | | | | | |
| TVOL | 12 | 15 | 18 | 21 | 24 | 26 | 28 | 30 | 32 | | | | |
| WVOL | 8 | 10 | 13 | 15 | 18 | 20 | 22 | 24 | 26 | | | | |
| SVOLI | 4 | 6 | 8 | 9 | 11 | 12 | 14 | 15 | 16 | | | | |
| SVOLX | 2 | 2 | 3 | 3 | 4 | 5 | 5 | 6 | 6 | | | | |
| 13: | | | | | | | | | | | | | |
| TVOL | 17 | 22 | 27 | 31 | 34 | 38 | 41 | 44 | 47 | 49 | 52 | | |
| WVOL | 11 | 15 | 19 | 23 | 26 | 29 | 32 | 35 | 38 | 41 | 43 | | |
| SVOLI | 6 | 9 | 11 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | 28 | | |
| SVOLX | 2 | 3 | 4 | 5 | 6 | 7 | 7 | 8 | 9 | 9 | 10 | | |
| 15: | | | | | | | | | | | | | |
| TVOL | 24 | 31 | 37 | 42 | 47 | 51 | 56 | 60 | 64 | 68 | 72 | | |
| WVOL | 16 | 22 | 27 | 32 | 36 | 40 | 45 | 49 | 53 | 57 | 60 | | |
| SVOLI | 9 | 12 | 16 | 19 | 22 | 25 | 27 | 30 | 33 | 35 | 38 | | |
| SVOLX | 3 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | | |
| 17: | | | | | | | | | | | | | |
| TVOL | 31 | 40 | 48 | 55 | 62 | 68 | 74 | 79 | 84 | 89 | 94 | | |
| WVOL | 21 | 29 | 36 | 42 | 48 | 54 | 60 | 65 | 71 | 76 | 81 | | |
| SVOLI | 12 | 16 | 21 | 25 | 29 | 33 | 36 | 40 | 43 | 47 | 50 | | |
| SVOLX | 4 | 6 | 8 | 9 | 11 | 12 | 13 | 15 | 16 | 17 | 19 | | |
| 19: | | | | | | | | | | | | | |
| TVOL | 40 | 52 | 62 | 71 | 79 | 87 | 94 | 101 | 108 | 114 | 120 | 127 | 132 |
| WVOL | 28 | 37 | 46 | 55 | 63 | 70 | 77 | 85 | 91 | 98 | 105 | 111 | 117 |
| SVOLI | 15 | 21 | 26 | 32 | 37 | 42 | 47 | 51 | 56 | 60 | 65 | 69 | 73 |
| SVOLX | 6 | 8 | 10 | 12 | 14 | 15 | 17 | 19 | 21 | 22 | 24 | 25 | 27 |
| 21: | | | | | | | | | | | | | |
| TVOL | 50 | 64 | 77 | 88 | 98 | 108 | 117 | 126 | 134 | 142 | 150 | 158 | 165 |
| WVOL | 35 | 47 | 58 | 69 | 79 | 88 | 98 | 107 | 115 | 124 | 132 | 140 | 148 |
| SVOLI | 19 | 26 | 33 | 40 | 46 | 52 | 58 | 64 | 70 | 75 | 81 | 86 | 92 |
| SVOLX | 7 | 10 | 12 | 15 | 17 | 19 | 21 | 24 | 26 | 28 | 30 | 32 | 34 |
| 23: | | | | | | | | | | | | | |
| TVOL | 61 | 79 | 94 | 107 | 120 | 132 | 143 | 154 | 164 | 174 | 184 | 193 | 202 |
| WVOL | 43 | 58 | 72 | 85 | 97 | 109 | 121 | 132 | 143 | 153 | 163 | 173 | 183 |
| SVOLI | 23 | 32 | 41 | 49 | 57 | 64 | 71 | 79 | 86 | 93 | 99 | 106 | 113 |
| SVOLX | 9 | 12 | 15 | 18 | 21 | 24 | 26 | 29 | 32 | 34 | 37 | 39 | 41 |
| 25: | | | | | | | | | | | | | |
| TVOL | 74 | 94 | 113 | 129 | 144 | 159 | 172 | 185 | 197 | 209 | 221 | 232 | 243 |
| WVOL | 52 | 71 | 88 | 103 | 118 | 133 | 147 | 160 | 173 | 186 | 198 | 210 | 222 |
| SVOLI | 28 | 39 | 49 | 59 | 68 | 77 | 86 | 95 | 103 | 112 | 120 | 128 | 136 |
| SVOLX | 10 | 14 | 18 | 22 | 25 | 28 | 32 | 35 | 38 | 41 | 44 | 47 | 50 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |
| INCHES | CUBIC FEET | | | | | | | | | | | | |
| 27: | | | | | | | | | | | | | |
| TVOL | 87 | 112 | 134 | 153 | 171 | 188 | 204 | 219 | 234 | 248 | 262 | 275 | 287 |
| WVOL | 63 | 85 | 105 | 124 | 142 | 159 | 175 | 191 | 207 | 222 | 237 | 251 | 266 |
| SVOLI | 33 | 46 | 58 | 70 | 81 | 92 | 102 | 113 | 123 | 133 | 142 | 152 | 161 |
| SVOLX | 12 | 17 | 21 | 26 | 30 | 34 | 38 | 41 | 45 | 49 | 52 | 56 | 59 |
| 29: | | | | | | | | | | | | | |
| TVOL | 102 | 131 | 156 | 179 | 200 | 220 | 239 | 257 | 274 | 290 | 306 | 322 | 336 |
| WVOL | 74 | 100 | 124 | 146 | 167 | 187 | 207 | 226 | 244 | 262 | 280 | 297 | 314 |
| SVOLI | 39 | 54 | 68 | 82 | 95 | 108 | 120 | 132 | 144 | 156 | 167 | 178 | 189 |
| SVOLX | 14 | 20 | 25 | 30 | 35 | 40 | 44 | 49 | 53 | 57 | 62 | 66 | 70 |
| 31: | | | | | | | | | | | | | |
| TVOL | | 152 | 181 | 208 | 232 | 255 | 277 | 297 | 317 | 336 | 355 | 372 | 390 |
| WVOL | | 117 | 144 | 170 | 195 | 219 | 242 | 264 | 285 | 306 | 327 | 347 | 366 |
| SVOLI | | 63 | 79 | 95 | 110 | 125 | 140 | 154 | 167 | 181 | 194 | 207 | 220 |
| SVOLX | | 23 | 29 | 35 | 41 | 46 | 51 | 57 | 62 | 67 | 72 | 76 | 81 |
| 33: | | | | | | | | | | | | | |
| TVOL | | 174 | 208 | 238 | 266 | 293 | 318 | 341 | 364 | 386 | 407 | 428 | 447 |
| WVOL | | 135 | 167 | 197 | 226 | 253 | 280 | 305 | 330 | 354 | 378 | 401 | 424 |
| SVOLI | | 72 | 91 | 110 | 127 | 144 | 161 | 177 | 193 | 208 | 223 | 238 | 253 |
| SVOLX | | 27 | 34 | 40 | 47 | 53 | 59 | 65 | 71 | 77 | 82 | 88 | 93 |
| 35: | | | | | | | | | | | | | |
| TVOL | | 198 | 237 | 271 | 303 | 333 | 362 | 389 | 415 | 439 | 464 | 487 | 509 |
| WVOL | | 155 | 191 | 226 | 259 | 290 | 320 | 350 | 378 | 406 | 433 | 460 | 486 |
| SVOLI | | 83 | 104 | 125 | 145 | 164 | 183 | 202 | 220 | 238 | 255 | 272 | 289 |
| SVOLX | | 30 | 38 | 46 | 53 | 61 | 68 | 74 | 81 | 87 | 94 | 100 | 106 |
| 37: | | | | | | | | | | | | | |
| TVOL | | 224 | 268 | 307 | 343 | 377 | 409 | 439 | 469 | 497 | 524 | 550 | 576 |
| WVOL | | 176 | 218 | 257 | 294 | 330 | 365 | 398 | 431 | 462 | 493 | 523 | 553 |
| SVOLI | | 93 | 118 | 142 | 164 | 186 | 208 | 229 | 249 | 269 | 289 | 308 | 327 |
| SVOLX | | 34 | 44 | 52 | 61 | 69 | 76 | 84 | 92 | 99 | 106 | 114 | 121 |
| 39: | | | | | | | | | | | | | |
| TVOL | | 252 | 300 | 344 | 385 | 423 | 459 | 493 | 526 | 558 | 588 | 618 | 647 |
| WVOL | | 199 | 246 | 291 | 333 | 373 | 412 | 450 | 487 | 522 | 557 | 591 | 625 |
| SVOLI | | 105 | 133 | 159 | 185 | 210 | 234 | 257 | 280 | 303 | 325 | 347 | 368 |
| SVOLX | | 39 | 49 | 59 | 68 | 77 | 86 | 95 | 103 | 112 | 120 | 128 | 136 |
| 41: | | | | | | | | | | | | | |
| TVOL | | | | 385 | 430 | 472 | 513 | 551 | 588 | 623 | 657 | 690 | 722 |
| WVOL | | | | 326 | 374 | 419 | 463 | 505 | 547 | 587 | 626 | 664 | 702 |
| SVOLI | | | | 178 | 207 | 235 | 261 | 288 | 314 | 339 | 364 | 388 | 412 |
| SVOLX | | | | 66 | 76 | 86 | 96 | 106 | 115 | 125 | 134 | 143 | 152 |
| 43: | | | | | | | | | | | | | |
| TVOL | | | | 427 | 478 | 525 | 569 | 612 | 653 | 692 | 730 | 766 | 802 |
| WVOL | | | | 365 | 418 | 468 | 517 | 565 | 611 | 655 | 699 | 742 | 784 |
| SVOLI | | | | 198 | 230 | 261 | 291 | 320 | 349 | 377 | 405 | 432 | 459 |
| SVOLX | | | | 73 | 85 | 96 | 107 | 118 | 128 | 139 | 149 | 159 | 169 |
| 45: | | | | | | | | | | | | | |
| TVOL | | | | 472 | 528 | 580 | 630 | 677 | 722 | 765 | 807 | 847 | 887 |
| WVOL | | | | 405 | 464 | 521 | 575 | 628 | 679 | 728 | 777 | 825 | 872 |
| SVOLI | | | | 220 | 255 | 289 | 322 | 355 | 386 | 417 | 448 | 478 | 508 |
| SVOLX | | | | 81 | 94 | 106 | 119 | 131 | 142 | 154 | 165 | 176 | 187 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

## Table 18--Total tree, wood, and saw-log volume for coast live oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |
| INCHES | CUBIC FEET | | | | | | | | | | | | |
| 5: | | | | | | | | | | | | | |
| TVOL | 2 | 2 | 3 | | | | | | | | | | |
| WVOL | 1 | 1 | 1 | | | | | | | | | | |
| SVOLI | 1 | 1 | 1 | | | | | | | | | | |
| SVOLX | 0 | 0 | 0 | | | | | | | | | | |
| 7: | | | | | | | | | | | | | |
| TVOL | 4 | 5 | 6 | 7 | 8 | 8 | | | | | | | |
| WVOL | 2 | 3 | 3 | 4 | 4 | 4 | | | | | | | |
| SVOLI | 2 | 2 | 3 | 3 | 4 | 4 | | | | | | | |
| SVOLX | 1 | 1 | 1 | 1 | 1 | 2 | | | | | | | |
| 9: | | | | | | | | | | | | | |
| TVOL | 7 | 9 | 11 | 12 | 14 | 15 | 17 | | | | | | |
| WVOL | 4 | 5 | 6 | 7 | 8 | 8 | 9 | | | | | | |
| SVOLI | 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | | | | |
| SVOLX | 1 | 1 | 2 | 2 | 3 | 3 | 3 | | | | | | |
| 11: | | | | | | | | | | | | | |
| TVOL | 11 | 14 | 17 | 20 | 22 | 24 | 26 | | | | | | |
| WVOL | 7 | 8 | 10 | 11 | 13 | 14 | 15 | | | | | | |
| SVOLI | 4 | 6 | 8 | 9 | 11 | 12 | 14 | | | | | | |
| SVOLX | 2 | 2 | 3 | 3 | 4 | 5 | 5 | | | | | | |
| 13: | | | | | | | | | | | | | |
| TVOL | 16 | 21 | 25 | 29 | 32 | 36 | 39 | 42 | 45 | 47 | | | |
| WVOL | 10 | 13 | 15 | 18 | 20 | 22 | 23 | 25 | 27 | 28 | | | |
| SVOLI | 6 | 9 | 11 | 14 | 16 | 18 | 20 | 22 | 24 | 26 | | | |
| SVOLX | 2 | 3 | 4 | 5 | 6 | 7 | 7 | 8 | 9 | 9 | | | |
| 15: | | | | | | | | | | | | | |
| TVOL | 23 | 29 | 35 | 40 | 45 | 50 | 54 | 58 | 62 | 66 | | | |
| WVOL | 14 | 18 | 22 | 25 | 28 | 31 | 34 | 36 | 38 | 41 | | | |
| SVOLI | 9 | 12 | 16 | 19 | 22 | 25 | 27 | 30 | 33 | 35 | | | |
| SVOLX | 3 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | | | |
| 17: | | | | | | | | | | | | | |
| TVOL | 30 | 39 | 47 | 54 | 60 | 66 | 72 | 78 | 83 | 88 | 93 | 98 | 102 |
| WVOL | 20 | 25 | 30 | 35 | 39 | 42 | 46 | 49 | 53 | 56 | 59 | 62 | 65 |
| SVOLI | 12 | 16 | 21 | 25 | 29 | 33 | 36 | 40 | 43 | 47 | 50 | 54 | 57 |
| SVOLX | 4 | 6 | 8 | 9 | 11 | 12 | 13 | 15 | 16 | 17 | 19 | 20 | 21 |
| 19: | | | | | | | | | | | | | |
| TVOL | 39 | 51 | 61 | 70 | 78 | 86 | 93 | 101 | 107 | 114 | 120 | 127 | 133 |
| WVOL | 26 | 34 | 40 | 46 | 51 | 56 | 61 | 66 | 70 | 74 | 78 | 82 | 86 |
| SVOLI | 15 | 21 | 26 | 32 | 37 | 42 | 47 | 51 | 56 | 60 | 65 | 69 | 73 |
| SVOLX | 6 | 8 | 10 | 12 | 14 | 15 | 17 | 19 | 21 | 22 | 24 | 25 | 27 |
| 21: | | | | | | | | | | | | | |
| TVOL | 50 | 64 | 76 | 88 | 99 | 108 | 118 | 127 | 136 | 144 | 152 | 160 | 167 |
| WVOL | 34 | 43 | 52 | 59 | 66 | 73 | 79 | 85 | 90 | 95 | 101 | 106 | 111 |
| SVOLI | 19 | 26 | 33 | 40 | 46 | 52 | 58 | 64 | 70 | 75 | 81 | 86 | 92 |
| SVOLX | 7 | 10 | 12 | 15 | 17 | 19 | 21 | 24 | 26 | 28 | 30 | 32 | 34 |
| 23: | | | | | | | | | | | | | |
| TVOL | 61 | 79 | 94 | 109 | 122 | 134 | 146 | 157 | 167 | 178 | 188 | 197 | 207 |
| WVOL | 43 | 55 | 65 | 74 | 83 | 91 | 99 | 106 | 113 | 120 | 127 | 133 | 139 |
| SVOLI | 23 | 32 | 41 | 49 | 57 | 64 | 71 | 79 | 86 | 93 | 99 | 106 | 113 |
| SVOLX | 9 | 12 | 15 | 18 | 21 | 24 | 26 | 29 | 32 | 34 | 37 | 39 | 41 |
| 25: | | | | | | | | | | | | | |
| TVOL | 74 | 96 | 115 | 132 | 148 | 163 | 177 | 190 | 203 | 216 | 228 | 239 | 251 |
| WVOL | 53 | 67 | 80 | 92 | 103 | 113 | 122 | 131 | 140 | 148 | 157 | 164 | 172 |
| SVOLI | 28 | 39 | 49 | 59 | 68 | 77 | 86 | 95 | 103 | 112 | 120 | 128 | 136 |
| SVOLX | 10 | 14 | 18 | 22 | 25 | 28 | 32 | 35 | 38 | 41 | 44 | 47 | 50 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 | 140 |
| INCHES | - - - - - - - - - - - - - - - - - - - - - - CUBIC FEET- - - - - - - - - - - - - - - - - - - - - - | | | | | | | | | | | | |
| 27: | | | | | | | | | | | | | |
| TVOL | | 114 | 137 | 157 | 176 | 194 | 211 | 227 | 243 | 258 | 272 | 286 | 300 |
| WVOL | | 82 | 98 | 112 | 125 | 137 | 149 | 160 | 170 | 180 | 190 | 200 | 209 |
| SVOLI | | 46 | 58 | 70 | 81 | 92 | 102 | 113 | 123 | 133 | 142 | 152 | 161 |
| SVOLX | | 17 | 21 | 26 | 30 | 34 | 38 | 41 | 45 | 49 | 52 | 56 | 59 |
| 29: | | | | | | | | | | | | | |
| TVOL | | 135 | 162 | 186 | 208 | 229 | 249 | 268 | 287 | 304 | 321 | 338 | 354 |
| WVOL | | 98 | 117 | 134 | 150 | 164 | 178 | 191 | 204 | 216 | 228 | 239 | 250 |
| SVOLI | | 54 | 68 | 82 | 95 | 108 | 120 | 132 | 144 | 156 | 167 | 178 | 189 |
| SVOLX | | 20 | 25 | 30 | 35 | 40 | 44 | 49 | 53 | 57 | 62 | 66 | 70 |
| 31: | | | | | | | | | | | | | |
| TVOL | | 158 | 189 | 217 | 243 | 268 | 291 | 313 | 335 | 355 | 375 | 394 | 413 |
| WVOL | | 116 | 138 | 159 | 177 | 195 | 211 | 227 | 242 | 256 | 270 | 283 | 296 |
| SVOLI | | 63 | 79 | 95 | 110 | 125 | 140 | 154 | 167 | 181 | 194 | 207 | 220 |
| SVOLX | | 23 | 29 | 35 | 41 | 46 | 51 | 57 | 62 | 67 | 72 | 76 | 81 |
| 33: | | | | | | | | | | | | | |
| TVOL | | 182 | 218 | 251 | 281 | 310 | 336 | 362 | 387 | 411 | 434 | 456 | 477 |
| WVOL | | 136 | 162 | 186 | 208 | 228 | 247 | 266 | 283 | 300 | 316 | 332 | 347 |
| SVOLI | | 72 | 91 | 110 | 127 | 144 | 161 | 177 | 193 | 208 | 223 | 238 | 253 |
| SVOLX | | 27 | 34 | 40 | 47 | 53 | 59 | 65 | 71 | 77 | 82 | 88 | 93 |
| 35: | | | | | | | | | | | | | |
| TVOL | | 209 | 250 | 287 | 322 | 355 | 386 | 415 | 443 | 471 | 497 | 522 | 547 |
| WVOL | | 158 | 188 | 216 | 241 | 265 | 287 | 308 | 329 | 348 | 367 | 385 | 403 |
| SVOLI | | 83 | 104 | 125 | 145 | 164 | 183 | 202 | 220 | 238 | 255 | 272 | 289 |
| SVOLX | | 30 | 38 | 46 | 53 | 61 | 68 | 74 | 81 | 87 | 94 | 100 | 106 |
| 37: | | | | | | | | | | | | | |
| TVOL | | 238 | 284 | 327 | 366 | 404 | 439 | 472 | 504 | 535 | 565 | 594 | 623 |
| WVOL | | 182 | 217 | 248 | 277 | 305 | 330 | 355 | 378 | 401 | 423 | 444 | 464 |
| SVOLI | | 93 | 118 | 142 | 164 | 186 | 208 | 229 | 249 | 269 | 289 | 308 | 327 |
| SVOLX | | 34 | 44 | 52 | 61 | 69 | 76 | 84 | 92 | 99 | 106 | 114 | 121 |
| 39: | | | | | | | | | | | | | |
| TVOL | | | 321 | 369 | 414 | 456 | 496 | 534 | 570 | 605 | 639 | 672 | 703 |
| WVOL | | | 248 | 284 | 317 | 348 | 377 | 405 | 432 | 458 | 483 | 507 | 530 |
| SVOLI | | | 133 | 159 | 185 | 210 | 234 | 257 | 280 | 303 | 325 | 347 | 368 |
| SVOLX | | | 49 | 59 | 68 | 77 | 86 | 95 | 103 | 112 | 120 | 128 | 136 |
| 41: | | | | | | | | | | | | | |
| TVOL | | | 361 | 415 | 465 | 512 | 557 | 599 | 640 | 679 | 717 | 754 | 790 |
| WVOL | | | 281 | 322 | 360 | 395 | 428 | 460 | 491 | 520 | 548 | 575 | 602 |
| SVOLI | | | 149 | 178 | 207 | 235 | 261 | 288 | 314 | 339 | 364 | 388 | 412 |
| SVOLX | | | 55 | 66 | 76 | 86 | 96 | 106 | 115 | 125 | 134 | 143 | 152 |
| 43: | | | | | | | | | | | | | |
| TVOL | | | 403 | 463 | 519 | 572 | 622 | 669 | 715 | 759 | 801 | 842 | 882 |
| WVOL | | | 317 | 363 | 406 | 446 | 483 | 519 | 553 | 586 | 618 | 649 | 679 |
| SVOLI | | | 166 | 198 | 230 | 261 | 291 | 320 | 349 | 377 | 405 | 432 | 459 |
| SVOLX | | | 61 | 73 | 85 | 96 | 107 | 118 | 128 | 139 | 149 | 159 | 169 |
| 45: | | | | | | | | | | | | | |
| TVOL | | | 448 | 515 | 577 | 635 | 691 | 744 | 794 | 843 | 890 | 936 | 980 |
| WVOL | | | 356 | 408 | 455 | 500 | 542 | 582 | 621 | 658 | 694 | 728 | 762 |
| SVOLI | | | 183 | 220 | 255 | 289 | 322 | 355 | 386 | 417 | 448 | 478 | 508 |
| SVOLX | | | 68 | 81 | 94 | 106 | 119 | 131 | 142 | 154 | 165 | 176 | 187 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

## Table 19--Total tree, wood, and saw-log volume for interior live oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
| INCHES | CUBIC FEET | | | | | | | | | | | |
| 5: | | | | | | | | | | | | |
| TVOL | 2 | 3 | 4 | | | | | | | | | |
| WVOL | 1 | 2 | 2 | | | | | | | | | |
| SVOLI | 1 | 1 | 1 | | | | | | | | | |
| SVOLX | 0 | 0 | 0 | | | | | | | | | |
| 7: | | | | | | | | | | | | |
| TVOL | 5 | 6 | 7 | 8 | 9 | 10 | | | | | | |
| WVOL | 3 | 4 | 5 | 6 | 7 | 7 | | | | | | |
| SVOLI | 2 | 2 | 3 | 3 | 4 | 4 | | | | | | |
| SVOLX | 1 | 1 | 1 | 1 | 1 | 2 | | | | | | |
| 9: | | | | | | | | | | | | |
| TVOL | 8 | 10 | 12 | 14 | 16 | 17 | 19 | 20 | | | | |
| WVOL | 5 | 7 | 8 | 10 | 11 | 13 | 14 | 15 | | | | |
| SVOLI | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | | | |
| SVOLX | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 4 | | | | |
| 11: | | | | | | | | | | | | |
| TVOL | 12 | 15 | 18 | 21 | 24 | 26 | 28 | 31 | | | | |
| WVOL | 7 | 10 | 13 | 15 | 17 | 19 | 22 | 24 | | | | |
| SVOLI | 4 | 6 | 8 | 9 | 11 | 12 | 14 | 15 | | | | |
| SVOLX | 2 | 2 | 3 | 3 | 4 | 5 | 5 | 6 | | | | |
| 13: | | | | | | | | | | | | |
| TVOL | 17 | 21 | 26 | 30 | 33 | 37 | 40 | 43 | | | | |
| WVOL | 11 | 14 | 18 | 21 | 25 | 28 | 31 | 34 | | | | |
| SVOLI | 6 | 9 | 11 | 14 | 16 | 18 | 20 | 22 | | | | |
| SVOLX | 2 | 3 | 4 | 5 | 6 | 7 | 7 | 8 | | | | |
| 15: | | | | | | | | | | | | |
| TVOL | 22 | 29 | 34 | 40 | 44 | 49 | 53 | 58 | | | | |
| WVOL | 14 | 20 | 25 | 29 | 34 | 38 | 42 | 46 | | | | |
| SVOLI | 9 | 12 | 16 | 19 | 22 | 25 | 27 | 30 | | | | |
| SVOLX | 3 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | | | | |
| 17: | | | | | | | | | | | | |
| TVOL | 29 | 37 | 44 | 51 | 57 | 63 | 69 | 74 | 79 | | | |
| WVOL | 19 | 26 | 32 | 38 | 44 | 50 | 55 | 60 | 65 | | | |
| SVOLI | 12 | 16 | 21 | 25 | 29 | 33 | 36 | 40 | 43 | | | |
| SVOLX | 4 | 6 | 8 | 9 | 11 | 12 | 13 | 15 | 16 | | | |
| 19: | | | | | | | | | | | | |
| TVOL | 36 | 46 | 56 | 64 | 72 | 79 | 86 | 93 | 99 | | | |
| WVOL | 24 | 33 | 41 | 48 | 56 | 63 | 70 | 77 | 83 | | | |
| SVOLI | 15 | 21 | 26 | 32 | 37 | 42 | 47 | 51 | 56 | | | |
| SVOLX | 6 | 8 | 10 | 12 | 14 | 15 | 17 | 19 | 21 | | | |
| 21: | | | | | | | | | | | | |
| TVOL | 44 | 57 | 68 | 78 | 88 | 97 | 106 | 114 | 122 | 129 | | |
| WVOL | 29 | 40 | 51 | 60 | 69 | 78 | 87 | 95 | 103 | 111 | | |
| SVOLI | 19 | 26 | 33 | 40 | 46 | 52 | 58 | 64 | 70 | 75 | | |
| SVOLX | 7 | 10 | 12 | 15 | 17 | 19 | 21 | 24 | 26 | 28 | | |
| 23: | | | | | | | | | | | | |
| TVOL | 53 | 68 | 82 | 94 | 106 | 117 | 127 | 137 | 146 | 155 | | |
| WVOL | 36 | 49 | 61 | 73 | 84 | 95 | 105 | 116 | 125 | 135 | | |
| SVOLI | 23 | 32 | 41 | 49 | 57 | 64 | 71 | 79 | 86 | 93 | | |
| SVOLX | 9 | 12 | 15 | 18 | 21 | 24 | 26 | 29 | 32 | 34 | | |
| 25: | | | | | | | | | | | | |
| TVOL | 63 | 81 | 97 | 112 | 125 | 138 | 151 | 162 | 173 | 184 | 195 | 205 |
| WVOL | 43 | 59 | 74 | 87 | 101 | 114 | 126 | 138 | 150 | 162 | 173 | 184 |
| SVOLI | 28 | 39 | 49 | 59 | 68 | 77 | 86 | 95 | 103 | 112 | 120 | 128 |
| SVOLX | 10 | 14 | 18 | 22 | 25 | 28 | 32 | 35 | 38 | 41 | 44 | 47 |

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (FEET) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
| INCHES | CUBIC FEET | | | | | | | | | | | |
| 27: | | | | | | | | | | | | |
| TVOL | | 95 | 114 | 131 | 147 | 162 | 176 | 190 | 203 | 215 | 227 | 239 |
| WVOL | | 69 | 87 | 103 | 119 | 134 | 149 | 163 | 177 | 191 | 204 | 217 |
| SVOLI | | 46 | 58 | 70 | 81 | 92 | 102 | 113 | 123 | 133 | 142 | 152 |
| SVOLX | | 17 | 21 | 26 | 30 | 34 | 38 | 41 | 45 | 49 | 52 | 56 |
| 29: | | | | | | | | | | | | |
| TVOL | | 109 | 131 | 151 | 170 | 187 | 203 | 219 | 234 | 249 | 263 | 277 |
| WVOL | | 81 | 101 | 120 | 139 | 156 | 173 | 190 | 206 | 222 | 238 | 253 |
| SVOLI | | 54 | 68 | 82 | 95 | 108 | 120 | 132 | 144 | 156 | 167 | 178 |
| SVOLX | | 20 | 25 | 30 | 35 | 40 | 44 | 49 | 53 | 57 | 62 | 66 |
| 31: | | | | | | | | | | | | |
| TVOL | | 125 | 150 | 173 | 194 | 214 | 233 | 251 | 268 | 285 | 301 | 317 |
| WVOL | | 93 | 117 | 139 | 160 | 180 | 200 | 219 | 238 | 256 | 274 | 292 |
| SVOLI | | 63 | 79 | 95 | 110 | 125 | 140 | 154 | 167 | 181 | 194 | 207 |
| SVOLX | | 23 | 29 | 35 | 41 | 46 | 51 | 57 | 62 | 67 | 72 | 76 |
| 33: | | | | | | | | | | | | |
| TVOL | | 142 | 171 | 196 | 220 | 243 | 264 | 285 | 305 | 324 | 342 | 360 |
| WVOL | | 107 | 133 | 159 | 183 | 206 | 229 | 251 | 272 | 293 | 314 | 334 |
| SVOLI | | 72 | 91 | 110 | 127 | 144 | 161 | 177 | 193 | 208 | 223 | 238 |
| SVOLX | | 27 | 34 | 40 | 47 | 53 | 59 | 65 | 71 | 77 | 82 | 88 |
| 35: | | | | | | | | | | | | |
| TVOL | | 160 | 192 | 221 | 248 | 274 | 298 | 321 | 343 | 365 | 385 | 405 |
| WVOL | | 121 | 151 | 180 | 208 | 234 | 260 | 285 | 309 | 333 | 356 | 379 |
| SVOLI | | 83 | 104 | 125 | 145 | 164 | 183 | 202 | 220 | 238 | 255 | 272 |
| SVOLX | | 30 | 38 | 46 | 53 | 61 | 68 | 74 | 81 | 87 | 94 | 100 |
| 37: | | | | | | | | | | | | |
| TVOL | | 179 | 215 | 248 | 278 | 307 | 334 | 359 | 384 | 408 | 431 | 454 |
| WVOL | | 136 | 171 | 203 | 234 | 264 | 293 | 321 | 348 | 375 | 401 | 427 |
| SVOLI | | 93 | 118 | 142 | 164 | 186 | 208 | 229 | 249 | 269 | 289 | 308 |
| SVOLX | | 34 | 44 | 52 | 61 | 69 | 76 | 84 | 92 | 99 | 106 | 114 |
| 39: | | | | | | | | | | | | |
| TVOL | | 200 | 239 | 276 | 309 | 341 | 371 | 400 | 428 | 454 | 480 | 505 |
| WVOL | | 153 | 191 | 227 | 262 | 295 | 328 | 359 | 390 | 420 | 450 | 478 |
| SVOLI | | 105 | 133 | 159 | 185 | 210 | 234 | 257 | 280 | 303 | 325 | 347 |
| SVOLX | | 39 | 49 | 59 | 68 | 77 | 86 | 95 | 103 | 112 | 120 | 128 |
| 41: | | | | | | | | | | | | |
| TVOL | | | 265 | 305 | 343 | 378 | 411 | 443 | 473 | 503 | 531 | 559 |
| WVOL | | | 213 | 253 | 292 | 329 | 365 | 400 | 434 | 468 | 501 | 533 |
| SVOLI | | | 149 | 178 | 207 | 235 | 261 | 288 | 314 | 339 | 364 | 388 |
| SVOLX | | | 55 | 66 | 76 | 86 | 96 | 106 | 115 | 125 | 134 | 143 |
| 43: | | | | | | | | | | | | |
| TVOL | | | 292 | 336 | 377 | 416 | 453 | 488 | 521 | 554 | 585 | 615 |
| WVOL | | | 236 | 280 | 323 | 364 | 404 | 443 | 481 | 518 | 554 | 590 |
| SVOLI | | | 166 | 198 | 230 | 261 | 291 | 320 | 349 | 377 | 405 | 432 |
| SVOLX | | | 61 | 73 | 85 | 96 | 107 | 118 | 128 | 139 | 149 | 159 |
| 45: | | | | | | | | | | | | |
| TVOL | | | 320 | 369 | 414 | 456 | 496 | 535 | 572 | 607 | 642 | 675 |
| WVOL | | | 260 | 309 | 356 | 402 | 446 | 489 | 530 | 571 | 611 | 651 |
| SVOLI | | | 183 | 220 | 255 | 289 | 322 | 355 | 386 | 417 | 448 | 478 |
| SVOLX | | | 68 | 81 | 94 | 106 | 119 | 131 | 142 | 154 | 165 | 176 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 1-FOOT STUMP TO A 4-INCH TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 8 FEET LONG TO A 9-INCH TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 1-FOOT STUMP.

## Table 20--Total tree, wood, and saw-log volume for giant chinkapin

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
| CENTIMETERS | CUBIC METERS | | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | | |
| TVOL | 0.03 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 | | | | | | | |
| WVOL | .02 | .03 | .04 | .05 | .05 | .06 | .07 | | | | | | | |
| SVOL | .01 | .01 | .02 | .02 | .03 | .03 | .04 | | | | | | | |
| 20: | | | | | | | | | | | | | | |
| TVOL | .11 | .17 | .23 | .28 | .32 | .36 | .40 | 0.44 | 0.48 | | | | | |
| WVOL | .07 | .11 | .15 | .19 | .23 | .26 | .30 | .33 | .36 | | | | | |
| SVOL | .04 | .07 | .10 | .12 | .15 | .17 | .19 | .21 | .23 | | | | | |
| 30: | | | | | | | | | | | | | | |
| TVOL | .24 | .39 | .51 | .63 | .73 | .83 | .92 | 1.01 | 1.09 | 1.17 | 1.25 | 1.33 | | |
| WVOL | .15 | .26 | .36 | .45 | .53 | .61 | .69 | .77 | .84 | .91 | .98 | 1.05 | | |
| SVOL | .11 | .19 | .26 | .33 | .39 | .45 | .50 | .56 | .61 | .66 | .71 | .76 | | |
| 40: | | | | | | | | | | | | | | |
| TVOL | | .70 | .92 | 1.12 | 1.30 | 1.48 | 1.64 | 1.80 | 1.95 | 2.10 | 2.24 | 2.38 | | |
| WVOL | | .48 | .65 | .81 | .97 | 1.11 | 1.26 | 1.39 | 1.53 | 1.65 | 1.78 | 1.91 | | |
| SVOL | | .38 | .52 | .65 | .77 | .89 | 1.00 | 1.11 | 1.22 | 1.32 | 1.42 | 1.52 | | |
| 50: | | | | | | | | | | | | | | |
| TVOL | | | 1.44 | 1.76 | 2.05 | 2.32 | 2.58 | 2.83 | 3.06 | 3.29 | 3.52 | 3.73 | 3.94 | 4.15 |
| WVOL | | | 1.03 | 1.29 | 1.54 | 1.77 | 1.99 | 2.21 | 2.42 | 2.63 | 2.83 | 3.03 | 3.22 | 3.41 |
| SVOL | | | .89 | 1.11 | 1.31 | 1.51 | 1.70 | 1.89 | 2.07 | 2.24 | 2.41 | 2.58 | 2.75 | 2.91 |
| 60: | | | | | | | | | | | | | | |
| TVOL | | | 2.08 | 2.54 | 2.96 | 3.35 | 3.73 | 4.09 | 4.43 | 4.76 | 5.09 | 5.40 | 5.70 | 6.00 |
| WVOL | | | 1.51 | 1.89 | 2.24 | 2.58 | 2.91 | 3.23 | 3.53 | 3.83 | 4.13 | 4.42 | 4.70 | 4.98 |
| SVOL | | | 1.37 | 1.71 | 2.03 | 2.34 | 2.63 | 2.92 | 3.19 | 3.46 | 3.73 | 3.99 | 4.24 | 4.49 |
| 70: | | | | | | | | | | | | | | |
| TVOL | | | | 3.47 | 4.04 | 4.58 | 5.09 | 5.58 | 6.05 | 6.51 | 6.95 | 7.37 | 7.79 | 8.20 |
| WVOL | | | | 2.59 | 3.08 | 3.55 | 4.00 | 4.44 | 4.86 | 5.28 | 5.68 | 6.08 | 6.47 | 6.85 |
| SVOL | | | | 2.47 | 2.93 | 3.37 | 3.80 | 4.21 | 4.61 | 5.00 | 5.38 | 5.76 | 6.12 | 6.48 |
| 80: | | | | | | | | | | | | | | |
| TVOL | | | | 4.54 | 5.30 | 6.00 | 6.67 | 7.31 | 7.93 | 8.52 | 9.10 | 9.66 | 10.20 | 10.74 |
| WVOL | | | | 3.42 | 4.07 | 4.68 | 5.28 | 5.85 | 6.41 | 6.96 | 7.49 | 8.01 | 8.53 | 9.03 |
| SVOL | | | | 3.39 | 4.03 | 4.64 | 5.22 | 5.79 | 6.34 | 6.88 | 7.40 | 7.91 | 8.42 | 8.91 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOL = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK ABOVE A 0.3-METER STUMP.

## Table 21--Total tree, wood, and saw-log volume for California-laurel

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 |
| CENTIMETERS | CUBIC METERS | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | |
| TVOL | 0.02 | 0.03 | 0.05 | 0.06 | 0.07 | 0.09 | 0.10 | 0.11 | | | | | |
| WVOL | .01 | .02 | .03 | .04 | .05 | .06 | .07 | .08 | | | | | |
| SVOL | .00 | .01 | .02 | .02 | .03 | .03 | .04 | .04 | | | | | |
| 20: | | | | | | | | | | | | | |
| TVOL | .07 | .13 | .18 | .23 | .28 | .33 | .38 | .43 | 0.48 | 0.52 | | | |
| WVOL | .04 | .07 | .11 | .16 | .20 | .24 | .28 | .32 | .36 | .41 | | | |
| SVOL | .02 | .05 | .07 | .10 | .12 | .15 | .18 | .20 | .23 | .25 | | | |
| 30: | | | | | | | | | | | | | |
| TVOL | .15 | .28 | .40 | .51 | .63 | .73 | .84 | .95 | 1.05 | 1.15 | 1.25 | 1.36 | 1.45 |
| WVOL | .08 | .17 | .26 | .36 | .45 | .55 | .65 | .74 | .84 | .94 | 1.04 | 1.14 | 1.24 |
| SVOL | .06 | .12 | .18 | .24 | .31 | .37 | .43 | .50 | .56 | .63 | .69 | .76 | .83 |
| 40: | | | | | | | | | | | | | |
| TVOL | | .49 | .70 | .90 | 1.09 | 1.29 | 1.47 | 1.66 | 1.84 | 2.02 | 2.20 | 2.37 | 2.55 |
| WVOL | | .31 | .48 | .65 | .82 | .99 | 1.17 | 1.34 | 1.52 | 1.70 | 1.88 | 2.06 | 2.24 |
| SVOL | | .23 | .34 | .46 | .58 | .70 | .83 | .95 | 1.07 | 1.20 | 1.32 | 1.44 | 1.57 |
| 50: | | | | | | | | | | | | | |
| TVOL | | .75 | 1.08 | 1.39 | 1.69 | 1.98 | 2.27 | 2.56 | 2.84 | 3.12 | 3.39 | 3.66 | 3.93 |
| WVOL | | .49 | .76 | 1.03 | 1.30 | 1.57 | 1.85 | 2.13 | 2.41 | 2.69 | 2.97 | 3.26 | 3.55 |
| SVOL | | .37 | .56 | .76 | .96 | 1.16 | 1.36 | 1.56 | 1.76 | 1.97 | 2.17 | 2.38 | 2.58 |
| 60: | | | | | | | | | | | | | |
| TVOL | | 1.07 | 1.53 | 1.98 | 2.41 | 2.83 | 3.24 | 3.65 | 4.05 | 4.44 | 4.83 | 5.22 | 5.60 |
| WVOL | | .72 | 1.10 | 1.49 | 1.89 | 2.29 | 2.69 | 3.10 | 3.50 | 3.92 | 4.33 | 4.74 | 5.16 |
| SVOL | | .56 | .85 | 1.14 | 1.44 | 1.74 | 2.04 | 2.34 | 2.65 | 2.95 | 3.26 | 3.57 | 3.88 |
| 70: | | | | | | | | | | | | | |
| TVOL | | 1.45 | 2.07 | 2.67 | 3.25 | 3.82 | 4.38 | 4.92 | 5.46 | 6.00 | 6.52 | 7.05 | 7.56 |
| WVOL | | .99 | 1.51 | 2.05 | 2.59 | 3.14 | 3.69 | 4.25 | 4.81 | 5.38 | 5.95 | 6.52 | 7.09 |
| SVOL | | .78 | 1.20 | 1.61 | 2.03 | 2.45 | 2.88 | 3.30 | 3.73 | 4.17 | 4.60 | 5.03 | 5.47 |
| 80: | | | | | | | | | | | | | |
| TVOL | | | | 3.46 | 4.21 | 4.95 | 5.67 | 6.38 | 7.08 | 7.78 | 8.46 | 9.14 | 9.80 |
| WVOL | | | | 2.70 | 3.41 | 4.13 | 4.86 | 5.60 | 6.34 | 7.08 | 7.83 | 8.58 | 9.33 |
| SVOL | | | | 2.17 | 2.73 | 3.30 | 3.88 | 4.45 | 5.03 | 5.61 | 6.19 | 6.78 | 7.36 |
| 90: | | | | | | | | | | | | | |
| TVOL | | | | | 5.30 | 6.23 | 7.13 | 8.03 | 8.91 | 9.78 | 10.64 | 11.49 | 12.33 |
| WVOL | | | | | 4.35 | 5.27 | 6.20 | 7.13 | 8.08 | 9.02 | 9.98 | 10.93 | 11.89 |
| SVOL | | | | | 3.56 | 4.30 | 5.04 | 5.79 | 6.54 | 7.30 | 8.05 | 8.81 | 9.58 |
| 100: | | | | | | | | | | | | | |
| TVOL | | | | | 6.50 | 7.64 | 8.76 | 9.85 | 10.94 | 12.00 | 13.06 | 14.10 | 15.14 |
| WVOL | | | | | 5.40 | 6.55 | 7.70 | 8.86 | 10.03 | 11.21 | 12.39 | 13.58 | 14.78 |
| SVOL | | | | | 4.50 | 5.43 | 6.37 | 7.32 | 8.27 | 9.23 | 10.19 | 11.15 | 12.11 |
| 110: | | | | | | | | | | | | | |
| TVOL | | | | | 7.83 | 9.20 | 10.54 | 11.86 | 13.16 | 14.45 | 15.72 | 16.97 | 18.22 |
| WVOL | | | | | 6.57 | 7.97 | 9.37 | 10.78 | 12.21 | 13.64 | 15.08 | 16.53 | 17.98 |
| SVOL | | | | | 5.56 | 6.72 | 7.88 | 9.06 | 10.23 | 11.41 | 12.60 | 13.79 | 14.98 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOL = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK ABOVE A 0.3-METER STUMP.

## Table 22--Total tree, wood, and saw-log volume for tanoak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 |
| CENTIMETERS | - - - - - - - - - - - - - - - - - - - - CUBIC METERS - - - - - - - - - - - - - - - - - - - - | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | |
| TVOL | 0.02 | 0.03 | 0.04 | 0.06 | 0.07 | 0.08 | 0.09 | 0.10 | | | | | |
| WVOL | .00 | .01 | .02 | .02 | .03 | .03 | .04 | .05 | | | | | |
| SVOL | .00 | .01 | .01 | .01 | .02 | .02 | .03 | .03 | | | | | |
| 20: | | | | | | | | | | | | | |
| TVOL | .07 | .12 | .17 | .22 | .27 | .31 | .36 | .40 | 0.44 | 0.49 | | | |
| WVOL | .02 | .05 | .07 | .10 | .13 | .16 | .19 | .22 | .25 | .29 | | | |
| SVOL | .01 | .03 | .05 | .07 | .09 | .12 | .14 | .17 | .19 | .22 | | | |
| 30: | | | | | | | | | | | | | |
| TVOL | .15 | .27 | .38 | .48 | .59 | .69 | .79 | .88 | .98 | 1.07 | 1.16 | | |
| WVOL | .05 | .11 | .18 | .24 | .32 | .39 | .46 | .54 | .62 | .69 | .77 | | |
| SVOL | .03 | .08 | .13 | .18 | .24 | .30 | .36 | .42 | .49 | .55 | .62 | | |
| 40: | | | | | | | | | | | | | |
| TVOL | | .46 | .66 | .85 | 1.03 | 1.20 | 1.37 | 1.54 | 1.71 | 1.87 | 2.03 | 2.19 | 2.35 |
| WVOL | | .21 | .33 | .46 | .59 | .73 | .87 | 1.01 | 1.16 | 1.31 | 1.46 | 1.61 | 1.76 |
| SVOL | | .15 | .25 | .36 | .47 | .58 | .70 | .82 | .95 | 1.08 | 1.21 | 1.34 | 1.48 |
| 50: | | | | | | | | | | | | | |
| TVOL | | .72 | 1.02 | 1.30 | 1.58 | 1.85 | 2.12 | 2.38 | 2.63 | 2.88 | 3.13 | 3.38 | 3.62 |
| WVOL | | .34 | .54 | .75 | .97 | 1.19 | 1.42 | 1.65 | 1.89 | 2.13 | 2.38 | 2.63 | 2.88 |
| SVOL | | .26 | .42 | .60 | .78 | .97 | 1.17 | 1.38 | 1.59 | 1.80 | 2.03 | 2.25 | 2.48 |
| 60: | | | | | | | | | | | | | |
| TVOL | | | 1.45 | 1.86 | 2.25 | 2.64 | 3.02 | 3.39 | 3.75 | 4.11 | 4.46 | 4.81 | 5.16 |
| WVOL | | | .81 | 1.12 | 1.44 | 1.78 | 2.12 | 2.47 | 2.82 | 3.18 | 3.55 | 3.92 | 4.29 |
| SVOL | | | .64 | .91 | 1.19 | 1.48 | 1.79 | 2.10 | 2.42 | 2.75 | 3.09 | 3.43 | 3.78 |
| 70: | | | | | | | | | | | | | |
| TVOL | | | 1.95 | 2.51 | 3.04 | 3.56 | 4.07 | 4.57 | 5.06 | 5.54 | 6.02 | 6.49 | 6.96 |
| WVOL | | | 1.13 | 1.57 | 2.02 | 2.49 | 2.97 | 3.46 | 3.96 | 4.46 | 4.98 | 5.50 | 6.02 |
| SVOL | | | .91 | 1.29 | 1.70 | 2.11 | 2.55 | 3.00 | 3.46 | 3.93 | 4.41 | 4.89 | 5.39 |
| 80: | | | | | | | | | | | | | |
| TVOL | | | | | 3.94 | 4.62 | 5.28 | 5.92 | 6.56 | 7.18 | 7.80 | 8.41 | 9.01 |
| WVOL | | | | | 2.71 | 3.34 | 3.98 | 4.64 | 5.31 | 5.99 | 6.67 | 7.37 | 8.07 |
| SVOL | | | | | 2.31 | 2.88 | 3.47 | 4.08 | 4.70 | 5.34 | 6.00 | 6.66 | 7.34 |
| 90: | | | | | | | | | | | | | |
| TVOL | | | | | 4.96 | 5.80 | 6.63 | 7.44 | 8.24 | 9.03 | 9.81 | 10.57 | 11.33 |
| WVOL | | | | | 3.52 | 4.33 | 5.16 | 6.01 | 6.87 | 7.75 | 8.64 | 9.54 | 10.46 |
| SVOL | | | | | 3.03 | 3.78 | 4.55 | 5.35 | 6.17 | 7.01 | 7.87 | 8.75 | 9.64 |
| 100: | | | | | | | | | | | | | |
| TVOL | | | | | 6.08 | 7.12 | 8.14 | 9.13 | 10.11 | 11.08 | 12.03 | 12.97 | 13.90 |
| WVOL | | | | | 4.43 | 5.46 | 6.50 | 7.57 | 8.66 | 9.77 | 10.89 | 12.03 | 13.18 |
| SVOL | | | | | 3.87 | 4.82 | 5.81 | 6.83 | 7.87 | 8.95 | 10.04 | 11.16 | 12.29 |
| 110: | | | | | | | | | | | | | |
| TVOL | | | | | 7.32 | 8.57 | 9.79 | 10.99 | 12.17 | 13.33 | 14.48 | 15.61 | 16.73 |
| WVOL | | | | | 5.46 | 6.73 | 8.02 | 9.34 | 10.68 | 12.04 | 13.43 | 14.83 | 16.25 |
| SVOL | | | | | 4.82 | 6.01 | 7.24 | 8.51 | 9.81 | 11.15 | 12.51 | 13.90 | 15.32 |
| 120: | | | | | | | | | | | | | |
| TVOL | | | | | 8.66 | 10.14 | 11.59 | 13.01 | 14.41 | 15.78 | 17.14 | 18.48 | |
| WVOL | | | | | 6.61 | 8.14 | 9.71 | 11.30 | 12.93 | 14.58 | 16.25 | 17.95 | |
| SVOL | | | | | 5.89 | 7.34 | 8.85 | 10.40 | 12.00 | 13.63 | 15.30 | 17.00 | |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOL = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK ABOVE A 0.3-METER STUMP.

## Table 23--Total tree, wood, and saw-log volume for California white oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 |
| CENTIMETERS | - - - - - - - - - - - - - - - - - - - - CUBIC METERS - - - - - - - - - - - - - - - - - - - - | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | |
| TVOL | 0.02 | 0.03 | 0.04 | 0.05 | | | | | | | | | |
| WVOL | .01 | .01 | .02 | .03 | | | | | | | | | |
| SVOL | .00 | .01 | .02 | .03 | | | | | | | | | |
| 20: | | | | | | | | | | | | | |
| TVOL | .08 | .14 | .19 | .24 | 0.28 | 0.32 | 0.36 | 0.40 | | | | | |
| WVOL | .04 | .07 | .11 | .15 | .18 | .22 | .25 | .29 | | | | | |
| SVOL | .01 | .03 | .06 | .10 | .14 | .19 | .25 | .31 | | | | | |
| 30: | | | | | | | | | | | | | |
| TVOL | .22 | .36 | .49 | .61 | .72 | .82 | .92 | 1.02 | 1.12 | | | | |
| WVOL | .10 | .19 | .29 | .38 | .48 | .57 | .67 | .76 | .86 | | | | |
| SVOL | .02 | .07 | .13 | .21 | .30 | .41 | .53 | .65 | .79 | | | | |
| 40: | | | | | | | | | | | | | |
| TVOL | | .11 | .96 | 1.19 | 1.41 | 1.61 | 1.81 | 2.00 | 2.18 | 2.36 | 2.54 | | |
| WVOL | | .39 | .58 | .76 | .95 | 1.14 | 1.33 | 1.52 | 1.71 | 1.89 | 2.08 | | |
| SVOL | | .12 | .23 | .36 | .52 | .70 | .90 | 1.12 | 1.36 | 1.61 | 1.88 | | |
| 50: | | | | | | | | | | | | | |
| TVOL | | 1.19 | 1.62 | 2.00 | 2.37 | 2.72 | 3.05 | 3.37 | 3.68 | 3.98 | 4.28 | | |
| WVOL | | .66 | .98 | 1.31 | 1.63 | 1.95 | 2.27 | 2.59 | 2.91 | 3.23 | 3.55 | | |
| SVOL | | .18 | .35 | .55 | .79 | 1.07 | 1.37 | 1.70 | 2.06 | 2.45 | 2.86 | | |
| 60: | | | | | | | | | | | | | |
| TVOL | | 1.83 | 2.47 | 3.07 | 3.63 | 4.16 | 4.67 | 5.16 | 5.63 | 6.10 | 6.55 | 6.99 | 7.42 |
| WVOL | | 1.02 | 1.52 | 2.02 | 2.52 | 3.02 | 3.51 | 4.01 | 4.50 | 5.00 | 5.49 | 5.99 | 6.48 |
| SVOL | | .25 | .49 | .78 | 1.12 | 1.50 | 1.93 | 2.40 | 2.90 | 3.44 | 4.02 | 4.63 | 5.27 |
| 70: | | | | | | | | | | | | | |
| TVOL | | | 3.55 | 4.40 | 5.20 | 5.96 | 6.69 | 7.39 | 8.07 | 8.74 | 9.38 | 10.02 | 10.63 |
| WVOL | | | 2.20 | 2.92 | 3.64 | 4.36 | 5.08 | 5.80 | 6.52 | 7.23 | 7.95 | 8.66 | 9.37 |
| SVOL | | | .65 | 1.04 | 1.49 | 2.00 | 2.57 | 3.20 | 3.87 | 4.59 | 5.36 | 6.18 | 7.03 |
| 80: | | | | | | | | | | | | | |
| TVOL | | | 4.85 | 6.01 | 7.10 | 8.14 | 9.14 | 10.10 | 11.03 | 11.94 | 12.82 | 13.68 | 14.53 |
| WVOL | | | 3.03 | 4.02 | 5.02 | 6.01 | 7.00 | 7.99 | 8.97 | 9.96 | 10.94 | 11.93 | 12.91 |
| SVOL | | | .83 | 1.33 | 1.91 | 2.57 | 3.31 | 4.11 | 4.97 | 5.90 | 6.89 | 7.93 | 9.03 |
| 90: | | | | | | | | | | | | | |
| TVOL | | | | | 9.35 | 10.72 | 12.03 | 13.30 | 14.53 | 15.72 | 16.88 | 18.02 | 19.13 |
| WVOL | | | | | 6.65 | 7.97 | 9.28 | 10.59 | 11.90 | 13.20 | 14.51 | 15.81 | 17.11 |
| SVOL | | | | | 2.39 | 3.21 | 4.12 | 5.12 | 6.20 | 7.36 | 8.59 | 9.89 | 11.26 |
| 100: | | | | | | | | | | | | | |
| TVOL | | | | | 11.96 | 13.71 | 15.39 | 17.01 | 18.58 | 20.10 | 21.59 | 23.04 | 24.47 |
| WVOL | | | | | 8.56 | 10.26 | 11.94 | 13.63 | 15.31 | 17.00 | 18.67 | 20.35 | 22.03 |
| SVOL | | | | | 2.91 | 3.91 | 5.02 | 6.24 | 7.55 | 8.96 | 10.46 | 12.05 | 13.72 |
| 110: | | | | | | | | | | | | | |
| TVOL | | | | | 14.95 | 17.14 | 19.23 | 21.25 | 23.21 | 25.12 | 26.98 | 28.79 | 30.57 |
| WVOL | | | | | 10.76 | 12.89 | 15.01 | 17.13 | 19.24 | 21.35 | 23.46 | 25.57 | 27.68 |
| SVOL | | | | | 3.47 | 4.67 | 6.00 | 7.46 | 9.03 | 10.71 | 12.51 | 14.41 | 16.41 |
| 120: | | | | | | | | | | | | | |
| TVOL | | | | | 18.32 | 21.00 | 23.57 | 26.04 | 28.45 | 30.78 | 33.06 | 35.28 | 37.46 |
| WVOL | | | | | 13.25 | 15.87 | 18.49 | 21.10 | 23.70 | 26.30 | 28.90 | 31.50 | 34.09 |
| SVOL | | | | | 4.09 | 5.50 | 7.06 | 8.78 | 10.63 | 12.61 | 14.72 | 16.96 | 19.31 |
| 130: | | | | | | | | | | | | | |
| TVOL | | | | | 22.09 | 25.32 | 28.41 | 31.40 | 34.30 | 37.11 | 39.86 | 42.54 | 45.17 |
| WVOL | | | | | 16.06 | 19.23 | 22.39 | 25.55 | 28.71 | 31.86 | 35.01 | 38.16 | 41.30 |
| SVOL | | | | | 4.75 | 6.39 | 8.21 | 10.20 | 12.35 | 14.65 | 17.10 | 19.70 | 22.43 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOL = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK ABOVE A 0.3-METER STUMP.

## Table 24--Total tree, wood, and saw-log volume for bigleaf maple

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
| CENTIMETERS | CUBIC METERS | | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | | |
| TVOL | 0.02 | 0.03 | 0.04 | 0.05 | 0.06 | | | | | | | | | |
| WVOL | .01 | .02 | .03 | .03 | .04 | | | | | | | | | |
| SVOLT | .01 | .01 | .02 | .03 | .04 | | | | | | | | | |
| SVOLX | .00 | .01 | .01 | .01 | .01 | | | | | | | | | |
| 20: | | | | | | | | | | | | | | |
| TVOL | .11 | .16 | .20 | .24 | .27 | 0.30 | 0.32 | 0.35 | | | | | | |
| WVOL | .06 | .10 | .13 | .16 | .19 | .21 | .24 | .26 | | | | | | |
| SVOLI | .03 | .06 | .09 | .12 | .16 | .19 | .23 | .26 | | | | | | |
| SVOLX | .01 | .02 | .04 | .05 | .06 | .08 | .09 | .11 | | | | | | |
| 30: | | | | | | | | | | | | | | |
| TVOL | .26 | .39 | .49 | .58 | .66 | .73 | .80 | .86 | 0.92 | | | | | |
| WVOL | .16 | .26 | .34 | .42 | .49 | .55 | .62 | .68 | .73 | | | | | |
| SVOLI | .06 | .14 | .21 | .29 | .37 | .45 | .54 | .62 | .71 | | | | | |
| SVOLX | .03 | .05 | .09 | .12 | .15 | .18 | .21 | .25 | .28 | | | | | |
| 40: | | | | | | | | | | | | | | |
| TVOL | | .74 | .93 | 1.10 | 1.25 | 1.39 | 1.52 | 1.64 | 1.75 | 1.86 | 1.97 | | | |
| WVOL | | .51 | .67 | .82 | .96 | 1.09 | 1.21 | 1.33 | 1.44 | 1.55 | 1.66 | | | |
| SVOLI | | .25 | .39 | .54 | .68 | .83 | .98 | 1.14 | 1.29 | 1.45 | 1.61 | | | |
| SVOLX | | .10 | .16 | .21 | .27 | .33 | .39 | .45 | .51 | .58 | .64 | | | |
| 50: | | | | | | | | | | | | | | |
| TVOL | | 1.21 | 1.53 | 1.81 | 2.05 | 2.28 | 2.49 | 2.69 | 2.88 | 3.06 | 3.23 | 3.40 | | |
| WVOL | | .86 | 1.14 | 1.39 | 1.62 | 1.84 | 2.05 | 2.25 | 2.44 | 2.62 | 2.80 | 2.98 | | |
| SVOLI | | .40 | .63 | .86 | 1.09 | 1.33 | 1.57 | 1.82 | 2.07 | 2.32 | 2.57 | 2.83 | | |
| SVOLX | | .16 | .25 | .34 | .43 | .53 | .63 | .72 | .82 | .92 | 1.02 | 1.12 | | |
| 60: | | | | | | | | | | | | | | |
| TVOL | | | 2.30 | 2.71 | 3.08 | 3.42 | 3.74 | 4.04 | 4.32 | 4.59 | 4.85 | 5.10 | 5.34 | 5.57 |
| WVOL | | | 1.74 | 2.13 | 2.49 | 2.82 | 3.14 | 3.45 | 3.74 | 4.03 | 4.31 | 4.57 | 4.84 | 5.09 |
| SVOLI | | | .92 | 1.26 | 1.60 | 1.95 | 2.31 | 2.67 | 3.03 | 3.40 | 3.77 | 4.15 | 4.52 | 4.90 |
| SVOLX | | | .37 | .50 | .64 | .78 | .92 | 1.06 | 1.21 | 1.35 | 1.50 | 1.65 | 1.80 | 1.95 |
| 70: | | | | | | | | | | | | | | |
| TVOL | | | | | 4.34 | 4.82 | 5.27 | 5.69 | 6.09 | 6.47 | 6.84 | 7.19 | 7.53 | 7.86 |
| WVOL | | | | | 3.58 | 4.06 | 4.52 | 4.96 | 5.38 | 5.79 | 6.19 | 6.58 | 6.95 | 7.32 |
| SVOLI | | | | | 2.22 | 2.70 | 3.19 | 3.69 | 4.20 | 4.70 | 5.22 | 5.73 | 6.26 | 6.78 |
| SVOLX | | | | | .88 | 1.08 | 1.27 | 1.47 | 1.67 | 1.87 | 2.08 | 2.28 | 2.49 | 2.70 |
| 80: | | | | | | | | | | | | | | |
| TVOL | | | | | 5.84 | 6.49 | 7.09 | 7.66 | 8.20 | 8.71 | 9.20 | 9.67 | 10.13 | 10.57 |
| WVOL | | | | | 4.90 | 5.56 | 6.19 | 6.79 | 7.37 | 7.93 | 8.47 | 9.00 | 9.52 | 10.02 |
| SVOLI | | | | | 2.94 | 3.58 | 4.23 | 4.89 | 5.56 | 6.23 | 6.91 | 7.59 | 8.28 | 8.98 |
| SVOLX | | | | | 1.17 | 1.42 | 1.68 | 1.95 | 2.21 | 2.48 | 2.75 | 3.02 | 3.30 | 3.57 |
| 90: | | | | | | | | | | | | | | |
| TVOL | | | | | 7.60 | 8.44 | 9.22 | 9.96 | 10.65 | 11.32 | 11.96 | 12.57 | 13.17 | 13.74 |
| WVOL | | | | | 6.46 | 7.33 | 8.16 | 8.96 | 9.72 | 10.46 | 11.18 | 11.88 | 12.56 | 13.22 |
| SVOLI | | | | | 3.76 | 4.58 | 5.42 | 6.26 | 7.12 | 7.98 | 8.85 | 9.73 | 10.61 | 11.50 |
| SVOLX | | | | | 1.50 | 1.82 | 2.16 | 2.49 | 2.83 | 3.18 | 3.52 | 3.87 | 4.22 | 4.58 |
| 100: | | | | | | | | | | | | | | |
| TVOL | | | | | 9.60 | 10.66 | 11.65 | 12.59 | 13.47 | 14.31 | 15.12 | 15.89 | 16.64 | 17.37 |
| WVOL | | | | | 8.28 | 9.40 | 10.46 | 11.48 | 12.46 | 13.41 | 14.33 | 15.22 | 16.09 | 16.95 |
| SVOLI | | | | | 4.69 | 5.72 | 6.76 | 7.82 | 8.88 | 9.96 | 11.05 | 12.14 | 13.24 | 14.35 |
| SVOLX | | | | | 1.87 | 2.28 | 2.69 | 3.11 | 3.54 | 3.96 | 4.40 | 4.83 | 5.27 | 5.71 |
| 110: | | | | | | | | | | | | | | |
| TVOL | | | | | 11.87 | 13.18 | 14.41 | 15.56 | 16.65 | 17.69 | 18.69 | 19.65 | 20.57 | 21.47 |
| WVOL | | | | | 10.36 | 11.76 | 13.09 | 14.37 | 15.59 | 16.78 | 17.93 | 19.05 | 20.14 | 21.21 |
| SVOLI | | | | | 5.73 | 6.99 | 8.26 | 9.55 | 10.86 | 12.17 | 13.50 | 14.84 | 16.18 | 17.54 |
| SVOLX | | | | | 2.28 | 2.78 | 3.29 | 3.80 | 4.32 | 4.84 | 5.37 | 5.90 | 6.44 | 6.98 |
| 120: | | | | | | | | | | | | | | |
| TVOL | | | | | 14.40 | 16.00 | 17.48 | 18.88 | 20.20 | 21.47 | 22.68 | 23.84 | 24.97 | |
| WVOL | | | | | 12.71 | 14.43 | 16.07 | 17.63 | 19.14 | 20.59 | 22.00 | 23.38 | 24.72 | |
| SVOLI | | | | | 6.89 | 8.39 | 9.92 | 11.47 | 13.04 | 14.62 | 16.21 | 17.82 | 19.43 | |
| SVOLX | | | | | 2.74 | 3.34 | 3.95 | 4.56 | 5.19 | 5.82 | 6.45 | 7.09 | 7.73 | |
| 130: | | | | | | | | | | | | | | |
| TVOL | | | | | 17.21 | 19.12 | 20.89 | 22.56 | 24.14 | 25.65 | 27.10 | 28.49 | 29.83 | |
| WVOL | | | | | 15.35 | 17.42 | 19.40 | 21.29 | 23.10 | 24.86 | 26.57 | 28.22 | 29.84 | |
| SVOLI | | | | | 8.15 | 9.93 | 11.74 | 13.57 | 15.43 | 17.30 | 19.18 | 21.08 | 23.00 | |
| SVOLX | | | | | 3.24 | 3.95 | 4.67 | 5.40 | 6.14 | 6.88 | 7.63 | 8.39 | 9.15 | |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

## Table 25--Total tree, wood, and saw-log volume for California black oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
| CENTIMETERS | CUBIC METERS | | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | | |
| TVOL | 0.02 | 0.04 | 0.05 | 0.07 | 0.08 | 0.10 | 0.11 | | | | | | | |
| WVOL | .01 | .02 | .03 | .04 | .05 | .06 | .07 | | | | | | | |
| SVOLI | .01 | .01 | .01 | .01 | .01 | .02 | .02 | | | | | | | |
| SVOLX | .00 | .00 | .01 | .01 | .01 | .01 | .01 | | | | | | | |
| 20: | | | | | | | | | | | | | | |
| TVOL | .08 | .15 | .21 | .27 | .32 | .38 | .43 | 0.48 | | | | | | |
| WVOL | .06 | .10 | .14 | .18 | .22 | .25 | .29 | .32 | | | | | | |
| SVOLI | .05 | .06 | .07 | .08 | .09 | .10 | .10 | .11 | | | | | | |
| SVOLX | .02 | .03 | .04 | .04 | .05 | .05 | .05 | .06 | | | | | | |
| 30: | | | | | | | | | | | | | | |
| TVOL | .18 | .33 | .47 | .59 | .72 | .84 | .96 | 1.07 | 1.18 | 1.30 | | | | |
| WVOL | .13 | .24 | .33 | .42 | .51 | .59 | .68 | .76 | .83 | .91 | | | | |
| SVOLI | .13 | .18 | .21 | .24 | .27 | .29 | .31 | .32 | .34 | .36 | | | | |
| SVOLX | .07 | .09 | .11 | .13 | .14 | .15 | .16 | .17 | .18 | .19 | | | | |
| 40: | | | | | | | | | | | | | | |
| TVOL | | .58 | .82 | 1.05 | 1.27 | 1.48 | 1.69 | 1.89 | 2.09 | 2.29 | | | | |
| WVOL | | .44 | .61 | .78 | .94 | 1.10 | 1.25 | 1.39 | 1.54 | 1.68 | | | | |
| SVOLI | | .39 | .46 | .52 | .58 | .62 | .66 | .70 | .74 | .77 | | | | |
| SVOLX | | .20 | .24 | .27 | .30 | .32 | .35 | .37 | .38 | .40 | | | | |
| 50: | | | | | | | | | | | | | | |
| TVOL | | | 1.28 | 1.63 | 1.97 | 2.30 | 2.62 | 2.94 | 3.25 | 3.55 | 3.85 | 4.15 | | |
| WVOL | | | .99 | 1.26 | 1.51 | 1.76 | 2.00 | 2.24 | 2.47 | 2.70 | 2.92 | 3.14 | | |
| SVOLI | | | .84 | .95 | 1.05 | 1.13 | 1.21 | 1.28 | 1.34 | 1.40 | 1.46 | 1.52 | | |
| SVOLX | | | .44 | .50 | .54 | .59 | .63 | .66 | .70 | .73 | .76 | .79 | | |
| 60: | | | | | | | | | | | | | | |
| TVOL | | | 1.83 | 2.34 | 2.82 | 3.30 | 3.76 | 4.21 | 4.65 | 5.09 | 5.52 | 5.94 | | |
| WVOL | | | 1.46 | 1.85 | 2.23 | 2.60 | 2.95 | 3.30 | 3.64 | 3.97 | 4.30 | 4.62 | | |
| SVOLI | | | 1.37 | 1.55 | 1.71 | 1.84 | 1.97 | 2.08 | 2.19 | 2.29 | 2.38 | 2.47 | | |
| SVOLX | | | .71 | .81 | .89 | .96 | 1.02 | 1.08 | 1.14 | 1.19 | 1.24 | 1.29 | | |
| 70: | | | | | | | | | | | | | | |
| TVOL | | | | 3.17 | 3.83 | 4.47 | 5.10 | 5.71 | 6.31 | 6.90 | 7.48 | 8.06 | 8.63 | 9.19 |
| WVOL | | | | 2.57 | 3.09 | 3.60 | 4.10 | 4.58 | 5.05 | 5.51 | 5.97 | 6.42 | 6.86 | 7.30 |
| SVOLI | | | | 2.35 | 2.58 | 2.79 | 2.98 | 3.15 | 3.31 | 3.46 | 3.60 | 3.74 | 3.87 | 3.99 |
| SVOLX | | | | 1.22 | 1.34 | 1.45 | 1.55 | 1.64 | 1.72 | 1.80 | 1.88 | 1.95 | 2.01 | 2.08 |
| 80: | | | | | | | | | | | | | | |
| TVOL | | | | 4.12 | 4.98 | 5.82 | 6.63 | 7.43 | 8.21 | 8.98 | 9.74 | 10.49 | 11.23 | 11.96 |
| WVOL | | | | 3.41 | 4.11 | 4.78 | 5.44 | 6.08 | 6.71 | 7.32 | 7.93 | 8.52 | 9.11 | 9.69 |
| SVOLI | | | | 3.36 | 3.69 | 3.99 | 4.26 | 4.50 | 4.74 | 4.95 | 5.16 | 5.35 | 5.54 | 5.71 |
| SVOLX | | | | 1.75 | 1.92 | 2.07 | 2.21 | 2.34 | 2.46 | 2.58 | 2.68 | 2.78 | 2.88 | 2.97 |
| 90: | | | | | | | | | | | | | | |
| TVOL | | | | | 6.29 | 7.34 | 8.37 | 9.38 | 10.36 | 11.33 | 12.29 | 13.23 | 14.17 | 15.09 |
| WVOL | | | | | 5.28 | 6.15 | 6.99 | 7.81 | 8.62 | 9.41 | 10.18 | 10.95 | 11.71 | 12.45 |
| SVOLI | | | | | 5.06 | 5.47 | 5.84 | 6.18 | 6.49 | 6.79 | 7.07 | 7.34 | 7.59 | 7.83 |
| SVOLX | | | | | 2.63 | 2.84 | 3.04 | 3.21 | 3.38 | 3.53 | 3.68 | 3.82 | 3.95 | 4.07 |
| 100: | | | | | | | | | | | | | | |
| TVOL | | | | | | 9.04 | 10.30 | 11.54 | 12.76 | 13.96 | 15.13 | 16.30 | 17.44 | 18.58 |
| WVOL | | | | | | 7.69 | 8.74 | 9.77 | 10.78 | 11.77 | 12.74 | 13.70 | 14.65 | 15.58 |
| SVOLI | | | | | | 7.25 | 7.74 | 8.19 | 8.61 | 9.01 | 9.38 | 9.73 | 10.07 | 10.39 |
| SVOLX | | | | | | 3.77 | 4.03 | 4.26 | 4.48 | 4.69 | 4.88 | 5.06 | 5.24 | 5.40 |
| 110: | | | | | | | | | | | | | | |
| TVOL | | | | | | 10.91 | 12.44 | 13.93 | 15.40 | 16.84 | 18.27 | 19.67 | 21.05 | 22.42 |
| WVOL | | | | | | 9.42 | 10.71 | 11.97 | 13.20 | 14.41 | 15.61 | 16.78 | 17.94 | 19.08 |
| SVOLI | | | | | | 9.36 | 10.00 | 10.58 | 11.12 | 11.63 | 12.11 | 12.56 | 13.00 | 13.41 |
| SVOLX | | | | | | 4.87 | 5.20 | 5.50 | 5.78 | 6.05 | 6.30 | 6.54 | 6.76 | 6.98 |
| 120: | | | | | | | | | | | | | | |
| TVOL | | | | | | | 14.77 | 16.54 | 18.29 | 20.00 | 21.69 | 23.36 | 25.00 | 26.63 |
| WVOL | | | | | | | 12.88 | 14.40 | 15.89 | 17.34 | 18.78 | 20.19 | 21.58 | 22.96 |
| SVOLI | | | | | | | 12.62 | 13.36 | 14.04 | 14.68 | 15.29 | 15.87 | 16.41 | 16.94 |
| SVOLX | | | | | | | 6.57 | 6.95 | 7.30 | 7.64 | 7.95 | 8.25 | 8.54 | 8.81 |
| 130: | | | | | | | | | | | | | | |
| TVOL | | | | | | | | 19.38 | 21.42 | 23.43 | 25.40 | 27.35 | 29.28 | 31.19 |
| WVOL | | | | | | | | 17.07 | 18.83 | 20.56 | 22.26 | 23.93 | 25.59 | 27.22 |
| SVOLI | | | | | | | | 16.56 | 17.40 | 18.20 | 18.95 | 19.66 | 20.34 | 20.99 |
| SVOLX | | | | | | | | 8.61 | 9.05 | 9.47 | 9.86 | 10.23 | 10.58 | 10.92 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

**Table 26--Total tree and wood volume for Engelmann oak**

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | |
|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 |
| CENTIMETERS | - - - - - - - - - - CUBIC METERS - - - - - - - - - - | | | | | | |
| 10: | | | | | | | |
| TVOL | 0.03 | 0.03 | 0.04 | 0.04 | | | |
| WVOL | .01 | .01 | .02 | .02 | | | |
| 20: | | | | | | | |
| TVOL | .15 | .18 | .20 | .22 | .23 | | |
| WVOL | .07 | .08 | .10 | .10 | .11 | | |
| 30: | | | | | | | |
| TVOL | .39 | .47 | .53 | .57 | .61 | .64 | .67 |
| WVOL | .20 | .24 | .28 | .30 | .32 | .34 | .36 |
| 40: | | | | | | | |
| TVOL | | .94 | 1.05 | 1.14 | 1.22 | 1.28 | 1.34 |
| WVOL | | .52 | .59 | .64 | .69 | .73 | .76 |
| 50: | | | | | | | |
| TVOL | | 1.61 | 1.80 | 1.95 | 2.08 | 2.19 | 2.29 |
| WVOL | | .93 | 1.05 | 1.15 | 1.23 | 1.30 | 1.37 |
| 60: | | | | | | | |
| TVOL | | 2.49 | 2.79 | 3.03 | 3.22 | 3.39 | 3.54 |
| WVOL | | 1.49 | 1.69 | 1.85 | 1.98 | 2.10 | 2.20 |
| 70: | | | | | | | |
| TVOL | | 3.61 | 4.04 | 4.38 | 4.67 | 4.91 | 5.13 |
| WVOL | | 2.23 | 2.53 | 2.77 | 2.97 | 3.14 | 3.30 |
| 80: | | | | | | | |
| TVOL | | 4.97 | 5.57 | 6.04 | 6.43 | 6.77 | 7.07 |
| WVOL | | 3.16 | 3.59 | 3.93 | 4.21 | 4.45 | 4.67 |
| 90: | | | | | | | |
| TVOL | | 6.60 | 7.40 | 8.02 | 8.54 | 8.99 | 9.38 |
| WVOL | | 4.31 | 4.88 | 5.34 | 5.72 | 6.06 | 6.36 |
| 100: | | | | | | | |
| TVOL | | | 9.53 | 10.33 | 11.00 | 11.57 | 12.09 |
| WVOL | | | 6.43 | 7.03 | 7.54 | 7.98 | 8.37 |
| 110: | | | | | | | |
| TVOL | | | 11.98 | 12.99 | 13.83 | 14.55 | 15.20 |
| WVOL | | | 8.25 | 9.02 | 9.67 | 10.24 | 10.74 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

## Table 27--Total tree, wood, and saw-log volume for blue oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 |
| CENTIMETERS | - - - - - - - - - - - - - - - - - - CUBIC METERS - - - - - - - - - - - - - - - - - - | | | | | | | | | | |
| 10: | | | | | | | | | | | |
| TVOL | 0.02 | 0.03 | | | | | | | | | |
| WVOL | .01 | .02 | | | | | | | | | |
| SVOLI | .01 | .02 | | | | | | | | | |
| SVOLX | .01 | .01 | | | | | | | | | |
| 20: | | | | | | | | | | | |
| TVOL | .12 | .17 | 0.21 | 0.24 | 0.26 | | | | | | |
| WVOL | .07 | .10 | .13 | .15 | .16 | | | | | | |
| SVOLI | .04 | .08 | .11 | .13 | .16 | | | | | | |
| SVOLX | .03 | .05 | .07 | .09 | .11 | | | | | | |
| 30: | | | | | | | | | | | |
| TVOL | .32 | .44 | .53 | .61 | .67 | 0.73 | 0.79 | 0.84 | | | |
| WVOL | .20 | .29 | .35 | .41 | .46 | .50 | .54 | .58 | | | |
| SVOLI | .09 | .16 | .22 | .28 | .34 | .39 | .44 | .50 | | | |
| SVOLX | .06 | .11 | .15 | .19 | .23 | .27 | .31 | .34 | | | |
| 40: | | | | | | | | | | | |
| TVOL | | .86 | 1.04 | 1.19 | 1.32 | 1.43 | 1.54 | 1.64 | 1.73 | 1.81 | |
| WVOL | | .59 | .73 | .84 | .95 | 1.04 | 1.12 | 1.20 | 1.27 | 1.34 | |
| SVOLI | | .26 | .37 | .47 | .56 | .66 | .75 | .83 | .92 | 1.01 | |
| SVOLX | | .18 | .25 | .32 | .39 | .45 | .52 | .58 | .64 | .70 | |
| 50: | | | | | | | | | | | |
| TVOL | | 1.45 | 1.75 | 2.00 | 2.22 | 2.41 | 2.59 | 2.75 | 2.91 | 3.05 | 3.19 |
| WVOL | | 1.05 | 1.29 | 1.49 | 1.67 | 1.83 | 1.97 | 2.11 | 2.24 | 2.37 | 2.48 |
| SVOLI | | .39 | .55 | .70 | .84 | .98 | 1.11 | 1.25 | 1.37 | 1.50 | 1.63 |
| SVOLX | | .27 | .38 | .48 | .58 | .68 | .77 | .86 | .95 | 1.04 | 1.13 |
| 60: | | | | | | | | | | | |
| TVOL | | 2.22 | 2.68 | 3.06 | 3.39 | 3.69 | 3.96 | 4.21 | 4.45 | 4.67 | 4.88 |
| WVOL | | 1.66 | 2.04 | 2.36 | 2.65 | 2.90 | 3.14 | 3.36 | 3.56 | 3.76 | 3.94 |
| SVOLI | | .54 | .76 | .97 | 1.17 | 1.36 | 1.55 | 1.73 | 1.91 | 2.08 | 2.26 |
| SVOLX | | .37 | .53 | .67 | .81 | .94 | 1.07 | 1.20 | 1.32 | 1.44 | 1.56 |
| 70: | | | | | | | | | | | |
| TVOL | | | 3.84 | 4.38 | 4.86 | 5.28 | 5.67 | 6.03 | 6.37 | 6.69 | 6.99 |
| WVOL | | | 3.02 | 3.50 | 3.92 | 4.29 | 4.64 | 4.97 | 5.27 | 5.56 | 5.83 |
| SVOLI | | | 1.00 | 1.28 | 1.54 | 1.79 | 2.04 | 2.28 | 2.52 | 2.75 | 2.98 |
| SVOLX | | | .69 | .88 | 1.06 | 1.24 | 1.41 | 1.58 | 1.74 | 1.90 | 2.06 |
| 80: | | | | | | | | | | | |
| TVOL | | | 5.24 | 5.98 | 6.63 | 7.21 | 7.74 | 8.24 | 8.70 | 9.13 | 9.54 |
| WVOL | | | 4.24 | 4.91 | 5.50 | 6.03 | 6.52 | 6.97 | 7.40 | 7.80 | 8.19 |
| SVOLI | | | 1.27 | 1.62 | 1.95 | 2.28 | 2.59 | 2.90 | 3.20 | 3.50 | 3.79 |
| SVOLX | | | .88 | 1.12 | 1.35 | 1.58 | 1.79 | 2.01 | 2.22 | 2.42 | 2.62 |
| 90: | | | | | | | | | | | |
| TVOL | | | 6.90 | 7.87 | 8.73 | 9.49 | 10.19 | 10.84 | 11.44 | 12.01 | 12.55 |
| WVOL | | | 5.72 | 6.62 | 7.41 | 8.13 | 8.79 | 9.40 | 9.98 | 10.53 | 11.05 |
| SVOLI | | | 1.57 | 2.00 | 2.42 | 2.81 | 3.20 | 3.58 | 3.95 | 4.32 | 4.68 |
| SVOLX | | | 1.09 | 1.39 | 1.67 | 1.95 | 2.22 | 2.48 | 2.74 | 2.99 | 3.24 |
| 100: | | | | | | | | | | | |
| TVOL | | | 8.82 | 10.07 | 11.16 | 12.13 | 13.03 | 13.86 | 14.63 | 15.36 | 16.05 |
| WVOL | | | 7.48 | 8.65 | 9.69 | 10.62 | 11.48 | 12.29 | 13.04 | 13.76 | 14.44 |
| SVOLI | | | 1.90 | 2.42 | 2.92 | 3.40 | 3.87 | 4.33 | 4.78 | 5.22 | 5.66 |
| SVOLX | | | 1.32 | 1.68 | 2.02 | 2.36 | 2.68 | 3.00 | 3.31 | 3.62 | 3.92 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

## Table 28--Total tree, wood, and saw-log volume for Pacific madrone

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 |
| CENTIMETERS | - - - - - - - - - - - - - - - - - - - - CUBIC METERS - - - - - - - - - - - - - - - - - - - - | | | | | | | | | | | |
| 10: | | | | | | | | | | | | |
| TVOL | 0.02 | 0.03 | 0.05 | 0.06 | 0.07 | | | | | | | |
| WVOL | .01 | .02 | .03 | .05 | .06 | | | | | | | |
| SVOLI | .01 | .02 | .03 | .05 | .06 | | | | | | | |
| SVOLX | .00 | .01 | .01 | .02 | .03 | | | | | | | |
| 20: | | | | | | | | | | | | |
| TVOL | .07 | .13 | .19 | .24 | .28 | 0.33 | 0.38 | | | | | |
| WVOL | .05 | .09 | .14 | .18 | .23 | .28 | .33 | | | | | |
| SVOLI | .03 | .06 | .11 | .15 | .20 | .26 | .31 | | | | | |
| SVOLX | .01 | .03 | .04 | .06 | .09 | .11 | .13 | | | | | |
| 30: | | | | | | | | | | | | |
| TVOL | .16 | .29 | .41 | .52 | .63 | .74 | .84 | 0.94 | 1.03 | 1.13 | 1.22 | |
| WVOL | .10 | .20 | .31 | .41 | .52 | .63 | .73 | .84 | .94 | 1.05 | 1.16 | |
| SVOLI | .05 | .13 | .21 | .31 | .41 | .52 | .63 | .74 | .86 | .99 | 1.11 | |
| SVOLX | .02 | .05 | .09 | .13 | .17 | .22 | .26 | .31 | .36 | .41 | .46 | |
| 40: | | | | | | | | | | | | |
| TVOL | | .52 | .73 | .92 | 1.11 | 1.30 | 1.47 | 1.65 | 1.82 | 1.98 | 2.15 | |
| WVOL | | .36 | .55 | .73 | .92 | 1.11 | 1.30 | 1.49 | 1.67 | 1.86 | 2.05 | |
| SVOLI | | .21 | .35 | .51 | .67 | .85 | 1.03 | 1.22 | 1.42 | 1.62 | 1.83 | |
| SVOLX | | .09 | .15 | .21 | .28 | .35 | .43 | .51 | .59 | .68 | .76 | |
| 50: | | | | | | | | | | | | |
| TVOL | | .80 | 1.13 | 1.43 | 1.73 | 2.01 | 2.29 | 2.55 | 2.82 | 3.08 | 3.33 | 3.58 |
| WVOL | | .57 | .86 | 1.15 | 1.44 | 1.73 | 2.02 | 2.32 | 2.61 | 2.91 | 3.20 | 3.50 |
| SVOLI | | .31 | .52 | .75 | .99 | 1.25 | 1.52 | 1.79 | 2.08 | 2.38 | 2.68 | 3.00 |
| SVOLX | | .13 | .22 | .31 | .41 | .52 | .63 | .75 | .87 | .99 | 1.12 | 1.25 |
| 60: | | | | | | | | | | | | |
| TVOL | | 1.15 | 1.61 | 2.05 | 2.47 | 2.88 | 3.27 | 3.66 | 4.03 | 4.41 | 4.77 | 5.13 |
| WVOL | | .82 | 1.23 | 1.65 | 2.07 | 2.49 | 2.91 | 3.33 | 3.76 | 4.18 | 4.60 | 5.03 |
| SVOLI | | .43 | .71 | 1.02 | 1.36 | 1.71 | 2.08 | 2.46 | 2.85 | 3.26 | 3.68 | 4.10 |
| SVOLX | | .18 | .30 | .43 | .57 | .71 | .87 | 1.03 | 1.19 | 1.36 | 1.54 | 1.72 |
| 70: | | | | | | | | | | | | |
| TVOL | | | 2.18 | 2.78 | 3.34 | 3.89 | 4.43 | 4.95 | 5.46 | 5.96 | 6.46 | 6.94 |
| WVOL | | | 1.67 | 2.24 | 2.81 | 3.38 | 3.96 | 4.53 | 5.11 | 5.68 | 6.26 | 6.84 |
| SVOLI | | | .93 | 1.34 | 1.77 | 2.23 | 2.71 | 3.21 | 3.72 | 4.25 | 4.80 | 5.36 |
| SVOLX | | | .39 | .56 | .74 | .93 | 1.13 | 1.34 | 1.56 | 1.78 | 2.01 | 2.24 |
| 80: | | | | | | | | | | | | |
| TVOL | | | 2.84 | 3.61 | 4.35 | 5.06 | 5.76 | 6.44 | 7.10 | 7.76 | 8.40 | |
| WVOL | | | 2.18 | 2.92 | 3.67 | 4.41 | 5.16 | 5.91 | 6.66 | 7.42 | 8.17 | |
| SVOLI | | | 1.17 | 1.68 | 2.23 | 2.81 | 3.41 | 4.04 | 4.69 | 5.36 | 6.04 | |
| SVOLX | | | .49 | .70 | .93 | 1.17 | 1.43 | 1.69 | 1.96 | 2.24 | 2.53 | |
| 90: | | | | | | | | | | | | |
| TVOL | | | | 4.55 | 5.48 | 6.38 | 7.26 | 8.12 | 8.95 | 9.78 | 10.59 | |
| WVOL | | | | 3.70 | 4.64 | 5.58 | 6.53 | 7.48 | 8.43 | 9.38 | 10.33 | |
| SVOLI | | | | 2.06 | 2.73 | 3.44 | 4.18 | 4.95 | 5.74 | 6.56 | 7.40 | |
| SVOLX | | | | .86 | 1.14 | 1.44 | 1.75 | 2.07 | 2.40 | 2.74 | 3.10 | |
| 100: | | | | | | | | | | | | |
| TVOL | | | | 5.60 | 6.74 | 7.85 | 8.93 | 9.98 | 11.01 | 12.03 | 13.02 | |
| WVOL | | | | 4.56 | 5.72 | 6.89 | 8.05 | 9.22 | 10.40 | 11.57 | 12.74 | |
| SVOLI | | | | 2.47 | 3.28 | 4.13 | 5.01 | 5.94 | 6.89 | 7.87 | 8.88 | |
| SVOLX | | | | 1.03 | 1.37 | 1.73 | 2.10 | 2.48 | 2.88 | 3.29 | 3.71 | |
| 110: | | | | | | | | | | | | |
| TVOL | | | | | 8.13 | 9.47 | 10.77 | 12.04 | 13.29 | 14.51 | | |
| WVOL | | | | | 6.92 | 8.33 | 9.74 | 11.15 | 12.57 | 13.99 | | |
| SVOLI | | | | | 3.86 | 4.86 | 5.91 | 7.00 | 8.12 | 9.28 | | |
| SVOLX | | | | | 1.62 | 2.03 | 2.47 | 2.93 | 3.40 | 3.88 | | |
| 120: | | | | | | | | | | | | |
| TVOL | | | | | 9.65 | 11.24 | 12.78 | 14.29 | 15.76 | 17.21 | | |
| WVOL | | | | | 8.23 | 9.90 | 11.58 | 13.26 | 14.95 | 16.64 | | |
| SVOLI | | | | | 4.49 | 5.65 | 6.87 | 8.13 | 9.44 | 10.79 | | |
| SVOLX | | | | | 1.88 | 2.36 | 2.87 | 3.40 | 3.95 | 4.51 | | |
| 130: | | | | | | | | | | | | |
| TVOL | | | | | 11.30 | 13.15 | 14.96 | 16.72 | 18.45 | 20.15 | | |
| WVOL | | | | | 9.65 | 11.62 | 13.59 | 15.56 | 17.54 | 19.52 | | |
| SVOLI | | | | | 5.15 | 6.49 | 7.89 | 9.34 | 10.84 | 12.38 | | |
| SVOLX | | | | | 2.16 | 2.71 | 3.30 | 3.91 | 4.53 | 5.18 | | |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

## Table 29--Total tree, wood, and saw-log volume for Oregon white oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
| CENTIMETERS | CUBIC METERS | | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | | |
| TVOL | 0.02 | 0.04 | 0.05 | 0.06 | 0.07 | 0.08 | | | | | | | | |
| WVOL | .01 | .02 | .03 | .04 | .05 | .05 | | | | | | | | |
| SVOLI | .01 | .01 | .02 | .03 | .03 | .04 | | | | | | | | |
| SVOLX | .00 | .01 | .01 | .01 | .01 | .02 | | | | | | | | |
| 20: | | | | | | | | | | | | | | |
| TVOL | .09 | .16 | .21 | .26 | .31 | .35 | 0.40 | 0.44 | 0.48 | | | | | |
| WVOL | .05 | .10 | .14 | .18 | .22 | .25 | .29 | .32 | .36 | | | | | |
| SVOLI | .03 | .06 | .08 | .11 | .13 | .16 | .18 | .21 | .23 | | | | | |
| SVOLX | .01 | .03 | .04 | .05 | .06 | .07 | .09 | .10 | .11 | | | | | |
| 30: | | | | | | | | | | | | | | |
| TVOL | .22 | .37 | .50 | .62 | .74 | .84 | .95 | 1.04 | 1.14 | 1.23 | 1.32 | 1.41 | | |
| WVOL | .13 | .24 | .34 | .44 | .54 | .63 | .72 | .81 | .90 | .98 | 1.07 | 1.15 | | |
| SVOLI | .07 | .14 | .20 | .26 | .32 | .37 | .43 | .48 | .54 | .59 | .65 | .70 | | |
| SVOLX | .03 | .06 | .09 | .12 | .15 | .18 | .20 | .23 | .25 | .28 | .31 | .33 | | |
| 40: | | | | | | | | | | | | | | |
| TVOL | | .69 | .93 | 1.16 | 1.37 | 1.56 | 1.75 | 1.94 | 2.11 | 2.28 | 2.45 | 2.62 | | |
| WV[illegible] | | .46 | .66 | .85 | 1.03 | 1.20 | 1.38 | 1.55 | 1.71 | 1.88 | 2.04 | 2.20 | | |
| SVOLI | | .25 | .36 | .47 | .58 | .68 | .79 | .89 | .99 | 1.09 | 1.19 | 1.28 | | |
| SVOLX | | .12 | .17 | .22 | .27 | .32 | .37 | .42 | .47 | .51 | .56 | .61 | | |
| 50: | | | | | | | | | | | | | | |
| TVOL | | 1.12 | 1.51 | 1.87 | 2.20 | 2.52 | 2.83 | 3.12 | 3.41 | 3.69 | 3.96 | 4.22 | | |
| WVOL | | .77 | 1.09 | 1.40 | 1.70 | 1.99 | 2.28 | 2.56 | 2.84 | 3.11 | 3.38 | 3.64 | | |
| SVOLI | | .40 | .58 | .75 | .93 | 1.09 | 1.26 | 1.42 | 1.58 | 1.74 | 1.90 | 2.06 | | |
| SVOLX | | .19 | .27 | .36 | .44 | .52 | .59 | .67 | .75 | .82 | .90 | .97 | | |
| 60: | | | | | | | | | | | | | | |
| TVOL | | 1.65 | 2.23 | 2.76 | 3.26 | 3.73 | 4.18 | 4.62 | 5.04 | 5.45 | 5.85 | 6.24 | 6.62 | 6.99 |
| WVOL | | 1.15 | 1.64 | 2.11 | 2.56 | 3.01 | 3.44 | 3.86 | 4.28 | 4.69 | 5.10 | 5.50 | 5.90 | 6.29 |
| SVOLI | | .59 | .85 | 1.11 | 1.36 | 1.60 | 1.85 | 2.09 | 2.32 | 2.56 | 2.79 | 3.02 | 3.25 | 3.47 |
| SVOLX | | .28 | .40 | .52 | .64 | .76 | .87 | .98 | 1.09 | 1.21 | 1.31 | 1.42 | 1.53 | 1.64 |
| 70: | | | | | | | | | | | | | | |
| TVOL | | | 3.10 | 3.84 | 4.53 | 5.19 | 5.82 | 6.42 | 7.01 | 7.58 | 8.13 | 8.68 | 9.21 | 9.73 |
| WVOL | | | 2.33 | 2.99 | 3.63 | 4.26 | 4.87 | 5.47 | 6.06 | 6.64 | 7.22 | 7.78 | 8.35 | 8.90 |
| SVOLI | | | 1.18 | 1.53 | 1.88 | 2.22 | 2.55 | 2.89 | 3.21 | 3.54 | 3.86 | 4.18 | 4.49 | 4.81 |
| SVOLX | | | .56 | .72 | .89 | 1.05 | 1.20 | 1.36 | 1.51 | 1.67 | 1.82 | 1.97 | 2.12 | 2.27 |
| 80: | | | | | | | | | | | | | | |
| TVOL | | | 4.13 | 5.11 | 6.03 | 6.91 | 7.74 | 8.55 | 9.33 | 10.09 | 10.83 | 11.55 | 12.26 | 12.95 |
| WVOL | | | 3.15 | 4.04 | 4.91 | 5.75 | 6.58 | 7.39 | 8.19 | 8.98 | 9.75 | 10.52 | 11.28 | 12.03 |
| SVOLI | | | 1.56 | 2.03 | 2.49 | 2.94 | 3.38 | 3.82 | 4.26 | 4.69 | 5.11 | 5.53 | 5.95 | 6.37 |
| SVOLX | | | .74 | .96 | 1.17 | 1.39 | 1.60 | 1.80 | 2.01 | 2.21 | 2.41 | 2.61 | 2.81 | 3.00 |
| 90: | | | | | | | | | | | | | | |
| TVOL | | | 5.31 | 6.58 | 7.76 | 8.89 | 9.97 | 11.01 | 12.01 | 12.99 | 13.94 | 14.87 | 15.78 | 16.67 |
| WVOL | | | 4.10 | 5.27 | 6.40 | 7.50 | 8.58 | 9.64 | 10.68 | 11.71 | 12.72 | 13.72 | 14.71 | 15.70 |
| SVOLI | | | 2.00 | 2.60 | 3.19 | 3.77 | 4.34 | 4.90 | 5.46 | 6.01 | 6.55 | 7.09 | 7.63 | 8.16 |
| SVOLX | | | .94 | 1.23 | 1.50 | 1.78 | 2.05 | 2.31 | 2.57 | 2.83 | 3.09 | 3.34 | 3.60 | 3.85 |
| 100: | | | | | | | | | | | | | | |
| TVOL | | | 6.66 | 8.25 | 9.73 | 11.14 | 12.49 | 13.79 | 15.05 | 16.28 | 17.47 | 18.64 | 19.78 | 20.90 |
| WVOL | | | 5.20 | 6.68 | 8.12 | 9.52 | 10.88 | 12.23 | 13.55 | 14.85 | 16.13 | 17.40 | 18.66 | 19.91 |
| SVOLI | | | 2.50 | 3.25 | 3.98 | 4.71 | 5.42 | 6.12 | 6.81 | 7.50 | 8.18 | 8.85 | 9.53 | 10.19 |
| SVOLX | | | 1.18 | 1.53 | 1.88 | 2.22 | 2.55 | 2.88 | 3.21 | 3.54 | 3.86 | 4.17 | 4.49 | 4.81 |
| 110: | | | | | | | | | | | | | | |
| TVOL | | | 8.17 | 10.12 | 11.94 | 13.67 | 15.32 | 16.92 | 18.47 | 19.97 | 21.43 | 22.86 | 24.26 | 25.63 |
| WVOL | | | 6.45 | 8.29 | 10.07 | 11.80 | 13.49 | 15.16 | 16.80 | 18.41 | 20.00 | 21.58 | 23.14 | 24.68 |
| SVOLI | | | 3.06 | 3.97 | 4.87 | 5.75 | 6.62 | 7.48 | 8.33 | 9.16 | 10.00 | 10.82 | 11.64 | 12.46 |
| SVOLX | | | 1.44 | 1.87 | 2.30 | 2.71 | 3.12 | 3.53 | 3.93 | 4.32 | 4.71 | 5.10 | 5.49 | 5.87 |
| 120: | | | | | | | | | | | | | | |
| TVOL | | | 9.85 | 12.19 | 14.38 | 16.47 | 18.47 | 20.39 | 22.25 | 24.06 | 25.83 | 27.55 | 29.23 | 30.89 |
| WVOL | | | 7.85 | 10.09 | 12.25 | 14.36 | 16.42 | 18.45 | 20.44 | 22.40 | 24.34 | 26.26 | 28.16 | 30.03 |
| SVOLI | | | 3.67 | 4.77 | 5.85 | 6.91 | 7.95 | 8.98 | 10.00 | 11.01 | 12.01 | 13.00 | 13.99 | 14.96 |
| SVOLX | | | 1.73 | 2.25 | 2.76 | 3.26 | 3.75 | 4.23 | 4.71 | 5.19 | 5.66 | 6.13 | 6.59 | 7.06 |
| 130: | | | | | | | | | | | | | | |
| TVOL | | | 11.69 | 14.47 | 17.08 | 19.55 | 21.92 | 24.20 | 26.42 | 28.56 | 30.66 | 32.70 | 34.71 | 36.67 |
| WVOL | | | 9.40 | 12.08 | 14.67 | 17.20 | 19.67 | 22.10 | 24.48 | 26.84 | 29.16 | 31.46 | 33.73 | 35.98 |
| SVOLI | | | 4.35 | 5.65 | 6.92 | 8.18 | 9.41 | 10.63 | 11.84 | 13.03 | 14.21 | 15.39 | 16.55 | 17.71 |
| SVOLX | | | 2.05 | 2.66 | 3.26 | 3.86 | 4.44 | 5.01 | 5.58 | 6.14 | 6.70 | 7.26 | 7.81 | 8.35 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

## Table 30--Total tree, wood, and saw-log volume for canyon live oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 |
| CENTIMETERS | CUBIC METERS | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | |
| TVOL | 0.02 | 0.04 | 0.04 | 0.05 | 0.06 | 0.07 | | | | | | | |
| WVOL | .01 | .02 | .03 | .03 | .04 | .05 | | | | | | | |
| SVOLI | .01 | .01 | .02 | .02 | .03 | .03 | | | | | | | |
| SVOLX | .00 | .00 | .01 | .01 | .01 | .01 | | | | | | | |
| 20: | | | | | | | | | | | | | |
| TVOL | .11 | .16 | .21 | .25 | .28 | .32 | .35 | .38 | 0.41 | | | | |
| WVOL | .06 | .10 | .13 | .17 | .20 | .23 | .25 | .28 | .31 | | | | |
| SVOLI | .03 | .06 | .08 | .10 | .12 | .14 | .16 | .18 | .20 | | | | |
| SVOLX | .01 | .02 | .03 | .04 | .05 | .05 | .06 | .07 | .07 | | | | |
| 30: | | | | | | | | | | | | | |
| TVOL | .26 | .40 | .51 | .60 | .69 | .78 | .85 | .92 | .99 | 1.06 | | | |
| WVOL | .15 | .26 | .35 | .43 | .51 | .58 | .65 | .72 | .78 | .85 | | | |
| SVOLI | .08 | .14 | .20 | .25 | .31 | .35 | .40 | .45 | .49 | .54 | | | |
| SVOLX | .03 | .05 | .07 | .09 | .11 | .13 | .15 | .16 | .18 | .20 | | | |
| 40: | | | | | | | | | | | | | |
| TVOL | | .75 | .96 | 1.14 | 1.31 | 1.46 | 1.61 | 1.74 | 1.87 | 2.00 | 2.12 | 2.23 | |
| WVOL | | .50 | .68 | .84 | .99 | 1.13 | 1.27 | 1.40 | 1.53 | 1.65 | 1.77 | 1.89 | |
| SVOLI | | .28 | .38 | .49 | .58 | .68 | .77 | .85 | .94 | 1.02 | 1.11 | 1.19 | |
| SVOLX | | .10 | .14 | .18 | .21 | .25 | .28 | .31 | .35 | .38 | .41 | .44 | |
| 50: | | | | | | | | | | | | | |
| TVOL | | 1.22 | 1.56 | 1.87 | 2.14 | 2.39 | 2.63 | 2.85 | 3.06 | 3.27 | 3.46 | 3.65 | |
| WVOL | | .84 | 1.13 | 1.41 | 1.66 | 1.90 | 2.13 | 2.35 | 2.57 | 2.78 | 2.98 | 3.18 | |
| SVOLI | | .46 | .63 | .80 | .96 | 1.11 | 1.26 | 1.41 | 1.55 | 1.69 | 1.82 | 1.96 | |
| SVOLX | | .17 | .23 | .30 | .35 | .41 | .47 | .52 | .57 | .62 | .67 | .72 | |
| 60: | | | | | | | | | | | | | |
| TVOL | | 1.82 | 2.34 | 2.79 | 3.20 | 3.57 | 3.93 | 4.26 | 4.58 | 4.89 | 5.18 | 5.46 | 5.74 |
| WVOL | | 1.28 | 1.73 | 2.15 | 2.53 | 2.90 | 3.26 | 3.60 | 3.92 | 4.24 | 4.56 | 4.86 | 5.16 |
| SVOLI | | .69 | .95 | 1.21 | 1.45 | 1.68 | 1.90 | 2.12 | 2.33 | 2.54 | 2.75 | 2.95 | 3.15 |
| SVOLX | | .25 | .35 | .44 | .53 | .62 | .70 | .78 | .86 | .94 | 1.01 | 1.09 | 1.16 |
| 70: | | | | | | | | | | | | | |
| TVOL | | 2.56 | 3.29 | 3.92 | 4.49 | 5.02 | 5.52 | 5.99 | 6.43 | 6.86 | 7.28 | 7.67 | 8.06 |
| WVOL | | 1.84 | 2.48 | 3.07 | 3.63 | 4.15 | 4.66 | 5.14 | 5.62 | 6.07 | 6.52 | 6.96 | 7.38 |
| SVOLI | | .97 | 1.35 | 1.71 | 2.04 | 2.37 | 2.69 | 3.00 | 3.30 | 3.59 | 3.88 | 4.17 | 4.45 |
| SVOLX | | .36 | .50 | .63 | .75 | .87 | .99 | 1.10 | 1.21 | 1.32 | 1.43 | 1.53 | 1.64 |
| 80: | | | | | | | | | | | | | |
| TVOL | | | 4.41 | 5.26 | 6.03 | 6.74 | 7.41 | 8.04 | 8.64 | 9.21 | 9.77 | 10.30 | 10.82 |
| WVOL | | | 3.38 | 4.19 | 4.95 | 5.67 | 6.35 | 7.02 | 7.66 | 8.28 | 8.89 | 9.49 | 10.07 |
| SVOLI | | | 1.82 | 2.30 | 2.76 | 3.20 | 3.63 | 4.04 | 4.45 | 4.85 | 5.24 | 5.62 | 6.00 |
| SVOLX | | | .67 | .85 | 1.02 | 1.18 | 1.34 | 1.49 | 1.64 | 1.79 | 1.93 | 2.07 | 2.21 |
| 90: | | | | | | | | | | | | | |
| TVOL | | | 5.72 | 6.82 | 7.82 | 8.74 | 9.60 | 10.42 | 11.20 | 11.95 | 12.66 | 13.36 | 14.03 |
| WVOL | | | 4.45 | 5.51 | 6.51 | 7.45 | 8.36 | 9.23 | 10.07 | 10.89 | 11.69 | 12.48 | 13.24 |
| SVOLI | | | 2.37 | 3.00 | 3.59 | 4.17 | 4.73 | 5.27 | 5.80 | 6.32 | 6.83 | 7.33 | 7.82 |
| SVOLX | | | .87 | 1.10 | 1.32 | 1.54 | 1.74 | 1.94 | 2.14 | 2.33 | 2.51 | 2.70 | 2.88 |
| 100: | | | | | | | | | | | | | |
| TVOL | | | 7.21 | 8.60 | 9.86 | 11.03 | 12.12 | 13.15 | 14.13 | 15.07 | 15.98 | 16.85 | 17.70 |
| WVOL | | | 5.69 | 7.04 | 8.31 | 9.52 | 10.68 | 11.79 | 12.87 | 13.92 | 14.94 | 15.94 | 16.92 |
| SVOLI | | | 3.00 | 3.80 | 4.55 | 5.28 | 5.99 | 6.67 | 7.34 | 8.00 | 8.65 | 9.28 | 9.90 |
| SVOLX | | | 1.11 | 1.40 | 1.68 | 1.94 | 2.20 | 2.46 | 2.70 | 2.95 | 3.18 | 3.42 | 3.65 |
| 110: | | | | | | | | | | | | | |
| TVOL | | | | | 12.17 | 13.60 | 14.95 | 16.22 | 17.44 | 18.60 | 19.71 | 20.79 | 21.83 |
| WVOL | | | | | 10.38 | 11.88 | 13.33 | 14.72 | 16.06 | 17.37 | 18.65 | 19.89 | 21.11 |
| SVOLI | | | | | 5.64 | 6.54 | 7.41 | 8.26 | 9.10 | 9.91 | 10.71 | 11.49 | 12.27 |
| SVOLX | | | | | 2.08 | 2.41 | 2.73 | 3.04 | 3.35 | 3.65 | 3.94 | 4.23 | 4.52 |
| 120: | | | | | | | | | | | | | |
| TVOL | | | | | 14.74 | 16.48 | 18.11 | 19.65 | 21.12 | 22.53 | 23.88 | 25.19 | 26.45 |
| WVOL | | | | | 12.70 | 14.55 | 16.31 | 18.02 | 19.67 | 21.27 | 22.83 | 24.36 | 25.85 |
| SVOLI | | | | | 6.85 | 7.95 | 9.01 | 10.05 | 11.06 | 12.05 | 13.02 | 13.97 | 14.91 |
| SVOLX | | | | | 2.52 | 2.93 | 3.32 | 3.70 | 4.07 | 4.44 | 4.79 | 5.15 | 5.49 |
| 130: | | | | | | | | | | | | | |
| TVOL | | | | | 17.59 | 19.66 | 21.61 | 23.45 | 25.20 | 26.88 | 28.49 | 30.05 | 31.56 |
| WVOL | | | | | 15.30 | 17.52 | 19.65 | 21.70 | 23.69 | 25.62 | 27.50 | 29.34 | 31.14 |
| SVOLI | | | | | 8.20 | 9.51 | 10.79 | 12.02 | 13.23 | 14.42 | 15.58 | 16.72 | 17.85 |
| SVOLX | | | | | 3.02 | 3.50 | 3.97 | 4.43 | 4.87 | 5.31 | 5.74 | 6.16 | 6.57 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

## Table 31--Total tree, wood, and saw-log volume for coast live oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 | 42 |
| CENTIMETERS | CUBIC METERS | | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | | |
| TVOL | 0.02 | 0.03 | 0.04 | 0.04 | | | | | | | | | | |
| WVOL | .01 | .01 | .02 | .02 | | | | | | | | | | |
| SVOLI | .01 | .01 | .02 | .02 | | | | | | | | | | |
| SVOLX | .00 | .00 | .01 | .01 | | | | | | | | | | |
| 20: | | | | | | | | | | | | | | |
| TVOL | .09 | .14 | .18 | .22 | 0.25 | 0.28 | 0.31 | | | | | | | |
| WVOL | .05 | .08 | .10 | .12 | .14 | .15 | .17 | | | | | | | |
| SVOLI | .03 | .06 | .08 | .10 | .12 | .14 | .16 | | | | | | | |
| SVOLX | .01 | .02 | .03 | .04 | .05 | .05 | .06 | | | | | | | |
| 30: | | | | | | | | | | | | | | |
| TVOL | .24 | .37 | .47 | .56 | .65 | .73 | .80 | 0.87 | 0.94 | | | | | |
| WVOL | .15 | .22 | .28 | .34 | .39 | .43 | .47 | .51 | .55 | | | | | |
| SVOLI | .08 | .14 | .20 | .25 | .31 | .35 | .40 | .45 | .49 | | | | | |
| SVOLX | .03 | .05 | .07 | .09 | .11 | .13 | .15 | .16 | .18 | | | | | |
| 40: | | | | | | | | | | | | | | |
| TVOL | | .71 | .92 | 1.10 | 1.26 | 1.42 | 1.56 | 1.70 | 1.83 | 1.95 | 2.07 | | | |
| WVOL | | .46 | .59 | .70 | .80 | .89 | .98 | 1.06 | 1.14 | 1.22 | 1.29 | | | |
| SVOLI | | .28 | .38 | .49 | .58 | .68 | .77 | .85 | .94 | 1.02 | 1.11 | | | |
| SVOLX | | .10 | .14 | .18 | .21 | .25 | .28 | .31 | .35 | .38 | .41 | | | |
| 50: | | | | | | | | | | | | | | |
| TVOL | | 1.20 | 1.54 | 1.84 | 2.12 | 2.38 | 2.62 | 2.85 | 3.06 | 3.27 | 3.47 | 3.67 | 3.86 | |
| WVOL | | .81 | 1.03 | 1.23 | 1.41 | 1.57 | 1.73 | 1.87 | 2.01 | 2.15 | 2.27 | 2.40 | 2.52 | |
| SVOLI | | .46 | .63 | .80 | .96 | 1.11 | 1.26 | 1.41 | 1.55 | 1.69 | 1.82 | 1.96 | 2.09 | |
| SVOLX | | .17 | .23 | .30 | .35 | .41 | .47 | .52 | .57 | .62 | .67 | .72 | .77 | |
| 60: | | | | | | | | | | | | | | |
| TVOL | | 1.83 | 2.35 | 2.82 | 3.24 | 3.63 | 4.00 | 4.34 | 4.68 | 4.99 | 5.30 | 5.60 | 5.88 | 6.16 |
| WVOL | | 1.28 | 1.64 | 1.95 | 2.23 | 2.50 | 2.74 | 2.97 | 3.19 | 3.40 | 3.61 | 3.80 | 3.99 | 4.18 |
| SVOLI | | .69 | .95 | 1.21 | 1.45 | 1.68 | 1.90 | 2.12 | 2.33 | 2.54 | 2.75 | 2.95 | 3.15 | 3.34 |
| SVOLX | | .25 | .35 | .44 | .53 | .62 | .70 | .78 | .86 | .94 | 1.01 | 1.09 | 1.16 | 1.23 |
| 70: | | | | | | | | | | | | | | |
| TVOL | | 2.61 | 3.36 | 4.03 | 4.63 | 5.19 | 5.71 | 6.21 | 6.69 | 7.14 | 7.58 | 8.00 | 8.41 | 8.81 |
| WVOL | | 1.89 | 2.42 | 2.88 | 3.30 | 3.69 | 4.05 | 4.39 | 4.72 | 5.03 | 5.33 | 5.62 | 5.90 | 6.17 |
| SVOLI | | .97 | 1.35 | 1.71 | 2.04 | 2.37 | 2.69 | 3.00 | 3.30 | 3.59 | 3.88 | 4.17 | 4.45 | 4.72 |
| SVOLX | | .36 | .50 | .63 | .75 | .87 | .99 | 1.10 | 1.21 | 1.32 | 1.43 | 1.53 | 1.64 | 1.74 |
| 80: | | | | | | | | | | | | | | |
| TVOL | | | 4.58 | 5.49 | 6.31 | 7.07 | 7.79 | 8.47 | 9.11 | 9.73 | 10.33 | 10.91 | 11.47 | 12.01 |
| WVOL | | | 3.39 | 4.04 | 4.63 | 5.17 | 5.68 | 6.16 | 6.62 | 7.05 | 7.48 | 7.88 | 8.27 | 8.66 |
| SVOLI | | | 1.82 | 2.30 | 2.76 | 3.20 | 3.63 | 4.04 | 4.45 | 4.85 | 5.24 | 5.62 | 6.00 | 6.38 |
| SVOLX | | | .67 | .85 | 1.02 | 1.18 | 1.34 | 1.49 | 1.64 | 1.79 | 1.93 | 2.07 | 2.21 | 2.35 |
| 90: | | | | | | | | | | | | | | |
| TVOL | | | 6.03 | 7.21 | 8.29 | 9.29 | 10.23 | 11.13 | 11.98 | 12.79 | 13.58 | 14.34 | 15.07 | 15.79 |
| WVOL | | | 4.57 | 5.45 | 6.24 | 6.97 | 7.65 | 8.30 | 8.92 | 9.51 | 10.07 | 10.62 | 11:15 | 11.66 |
| SVOLI | | | 2.37 | 3.00 | 3.59 | 4.17 | 4.73 | 5.27 | 5.80 | 6.32 | 6.83 | 7.33 | 7.82 | 8.30 |
| SVOLX | | | .87 | 1.10 | 1.32 | 1.54 | 1.74 | 1.94 | 2.14 | 2.33 | 2.51 | 2.70 | 2.88 | 3.06 |
| 100: | | | | | | | | | | | | | | |
| TVOL | | | | 9.21 | 10.59 | 11.87 | 13.07 | 14.21 | 15.29 | 16.33 | 17.34 | 18.31 | 19.25 | 20.16 |
| WVOL | | | | 7.11 | 8.15 | 9.10 | 10.00 | 10.84 | 11.64 | 12.41 | 13.15 | 13.87 | 14.56 | 15.23 |
| SVOLI | | | | 3.80 | 4.55 | 5.28 | 5.99 | 6.67 | 7.34 | 8.00 | 8.65 | 9.28 | 9.90 | 10.52 |
| SVOLX | | | | 1.40 | 1.68 | 1.94 | 2.20 | 2.46 | 2.70 | 2.95 | 3.18 | 3.42 | 3.65 | 3.87 |
| 110: | | | | | | | | | | | | | | |
| TVOL | | | | 11.49 | 13.21 | 14.80 | 16.30 | 17.72 | 19.08 | 20.37 | 21.63 | 22.83 | 24.01 | 25.15 |
| WVOL | | | | 9.06 | 10.37 | 11.59 | 12.72 | 13.80 | 14.82 | 15.80 | 16.75 | 17.66 | 18.54 | 19.39 |
| SVOLI | | | | 4.70 | 5.64 | 6.54 | 7.41 | 8.26 | 9.10 | 9.91 | 10.71 | 11.49 | 12.27 | 13.03 |
| SVOLX | | | | 1.73 | 2.08 | 2.41 | 2.73 | 3.04 | 3.35 | 3.65 | 3.94 | 4.23 | 4.52 | 4.80 |
| 120: | | | | | | | | | | | | | | |
| TVOL | | | | 14.06 | 16.16 | 18.11 | 19.95 | 21.68 | 23.34 | 24.93 | 26.46 | 27.94 | 29.38 | 30.77 |
| WVOL | | | | 11.29 | 12.93 | 14.44 | 15.86 | 17.20 | 18.48 | 19.70 | 20.88 | 22.01 | 23.11 | 24.17 |
| SVOLI | | | | 5.72 | 6.85 | 7.95 | 9.01 | 10.05 | 11.06 | 12.05 | 13.02 | 13.97 | 14.91 | 15.84 |
| SVOLX | | | | 2.11 | 2.52 | 2.93 | 3.32 | 3.70 | 4.07 | 4.44 | 4.79 | 5.15 | 5.49 | 5.83 |
| 130: | | | | | | | | | | | | | | |
| TVOL | | | | 16.93 | 19.46 | 21.81 | 24.02 | 26.11 | 28.10 | 30.02 | 31.86 | 33.64 | 35.37 | 37.05 |
| WVOL | | | | 13.83 | 15.84 | 17.69 | 19.43 | 21.07 | 22.63 | 24.13 | 25.57 | 26.96 | 28.30 | 29.60 |
| SVOLI | | | | 6.84 | 8.20 | 9.51 | 10.79 | 12.02 | 13.23 | 14.42 | 15.58 | 16.72 | 17.85 | 18.96 |
| SVOLX | | | | 2.52 | 3.02 | 3.50 | 3.97 | 4.43 | 4.87 | 5.31 | 5.74 | 6.16 | 6.57 | 6.98 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

## Table 32--Total tree, wood, and saw-log volume for interior live oak

| DIAMETER AT BREAST HEIGHT OUTSIDE BARK 1/ | TOTAL HEIGHT (METERS) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 39 |
| CENTIMETERS | CUBIC METERS | | | | | | | | | | | | |
| 10: | | | | | | | | | | | | | |
| TVOL | 0.03 | 0.04 | 0.05 | 0.06 | | | | | | | | | |
| WVOL | .01 | .02 | .03 | .04 | | | | | | | | | |
| SVOLI | .01 | .01 | .02 | .02 | | | | | | | | | |
| SVOLX | .00 | .00 | .01 | .01 | | | | | | | | | |
| 20: | | | | | | | | | | | | | |
| TVOL | .11 | .17 | .22 | .26 | 0.30 | 0.34 | 0.37 | | | | | | |
| WVOL | .06 | .10 | .14 | .17 | .20 | .24 | .27 | | | | | | |
| SVOLI | .03 | .06 | .08 | .10 | .12 | .14 | .16 | | | | | | |
| SVOLX | .01 | .02 | .03 | .04 | .05 | .05 | .06 | | | | | | |
| 30: | | | | | | | | | | | | | |
| TVOL | .25 | .38 | .50 | .59 | .68 | .77 | .85 | 0.92 | 0.99 | | | | |
| WVOL | .14 | .24 | .33 | .41 | .49 | .56 | .63 | .70 | .77 | | | | |
| SVOLI | .08 | .14 | .20 | .25 | .31 | .35 | .40 | .45 | .49 | | | | |
| SVOLX | .03 | .05 | .07 | .09 | .11 | .13 | .15 | .16 | .18 | | | | |
| 40: | | | | | | | | | | | | | |
| TVOL | | .69 | .89 | 1.07 | 1.23 | 1.38 | 1.52 | 1.65 | 1.78 | | | | |
| WVOL | | .44 | .61 | .76 | .91 | 1.04 | 1.18 | 1.31 | 1.43 | | | | |
| SVOLI | | .28 | .38 | .49 | .58 | .68 | .77 | .85 | .94 | | | | |
| SVOLX | | .10 | .14 | .18 | .21 | .25 | .28 | .31 | .35 | | | | |
| 50: | | | | | | | | | | | | | |
| TVOL | | 1.08 | 1.40 | 1.68 | 1.93 | 2.17 | 2.39 | 2.60 | 2.80 | 2.99 | | | |
| WVOL | | .72 | .98 | 1.23 | 1.46 | 1.69 | 1.90 | 2.11 | 2.31 | 2.51 | | | |
| SVOLI | | .46 | .63 | .80 | .96 | 1.11 | 1.26 | 1.41 | 1.55 | 1.69 | | | |
| SVOLX | | .17 | .23 | .30 | .35 | .41 | .47 | .52 | .57 | .62 | | | |
| 60: | | | | | | | | | | | | | |
| TVOL | | 1.57 | 2.02 | 2.43 | 2.79 | 3.14 | 3.46 | 3.76 | 4.05 | 4.33 | 4.60 | | |
| WVOL | | 1.06 | 1.45 | 1.82 | 2.17 | 2.50 | 2.81 | 3.12 | 3.42 | 3.71 | 4.00 | | |
| SVOLI | | .69 | .95 | 1.21 | 1.45 | 1.68 | 1.90 | 2.12 | 2.33 | 2.54 | 2.75 | | |
| SVOLX | | .25 | .35 | .44 | .53 | .62 | .70 | .78 | .86 | .94 | 1.01 | | |
| 70: | | | | | | | | | | | | | |
| TVOL | | | 2.77 | 3.32 | 3.82 | 4.29 | 4.73 | 5.14 | 5.54 | 5.92 | 6.29 | 6.65 | 6.99 |
| WVOL | | | 2.03 | 2.53 | 3.02 | 3.48 | 3.92 | 4.35 | 4.77 | 5.17 | 5.57 | 5.96 | 6.34 |
| SVOLI | | | 1.35 | 1.71 | 2.04 | 2.37 | 2.69 | 3.00 | 3.30 | 3.59 | 3.88 | 4.17 | 4.45 |
| SVOLX | | | .50 | .63 | .75 | .87 | .99 | 1.10 | 1.21 | 1.32 | 1.43 | 1.53 | 1.64 |
| 80: | | | | | | | | | | | | | |
| TVOL | | | 3.63 | 4.35 | 5.01 | 5.62 | 6.20 | 6.74 | 7.27 | 7.77 | 8.25 | 8.72 | 9.17 |
| WVOL | | | 2.70 | 3.38 | 4.02 | 4.63 | 5.22 | 5.79 | 6.35 | 6.89 | 7.42 | 7.94 | 8.45 |
| SVOLI | | | 1.82 | 2.30 | 2.76 | 3.20 | 3.63 | 4.04 | 4.45 | 4.85 | 5.24 | 5.62 | 6.00 |
| SVOLX | | | .67 | .85 | 1.02 | 1.18 | 1.34 | 1.49 | 1.64 | 1.79 | 1.93 | 2.07 | 2.21 |
| 90: | | | | | | | | | | | | | |
| TVOL | | | 4.61 | 5.53 | 6.36 | 7.14 | 7.87 | 8.57 | 9.23 | 9.87 | 10.48 | 11.07 | 11.65 |
| WVOL | | | 3.48 | 4.35 | 5.18 | 5.96 | 6.73 | 7.46 | 8.18 | 8.88 | 9.56 | 10.23 | 10.89 |
| SVOLI | | | 2.37 | 3.00 | 3.59 | 4.17 | 4.73 | 5.27 | 5.80 | 6.32 | 6.83 | 7.33 | 7.82 |
| SVOLX | | | .87 | 1.10 | 1.32 | 1.54 | 1.74 | 1.94 | 2.14 | 2.33 | 2.51 | 2.70 | 2.88 |
| 100: | | | | | | | | | | | | | |
| TVOL | | | 5.70 | 6.84 | 7.88 | 8.84 | 9.75 | 10.61 | 11.43 | 12.22 | 12.98 | 13.71 | 14.42 |
| WVOL | | | 4.36 | 5.46 | 6.49 | 7.48 | 8.43 | 9.36 | 10.26 | 11.13 | 11.99 | 12.83 | 13.66 |
| SVOLI | | | 3.00 | 3.80 | 4.55 | 5.28 | 5.99 | 6.67 | 7.34 | 8.00 | 8.65 | 9.28 | 9.90 |
| SVOLX | | | 1.11 | 1.40 | 1.68 | 1.94 | 2.20 | 2.46 | 2.70 | 2.95 | 3.18 | 3.42 | 3.65 |
| 110: | | | | | | | | | | | | | |
| TVOL | | | | 8.30 | 9.56 | 10.73 | 11.83 | 12.87 | 13.87 | 14.83 | 15.75 | 16.64 | 17.50 |
| WVOL | | | | 6.70 | 7.97 | 9.18 | 10.35 | 11.49 | 12.59 | 13.66 | 14.72 | 15.75 | 16.76 |
| SVOLI | | | | 4.70 | 5.64 | 6.54 | 7.41 | 8.26 | 9.10 | 9.91 | 10.71 | 11.49 | 12.27 |
| SVOLX | | | | 1.73 | 2.08 | 2.41 | 2.73 | 3.04 | 3.35 | 3.65 | 3.94 | 4.23 | 4.52 |
| 120: | | | | | | | | | | | | | |
| TVOL | | | | 9.91 | 11.41 | 12.81 | 14.12 | 15.36 | 16.55 | 17.69 | 18.79 | 19.85 | 20.88 |
| WVOL | | | | 8.07 | 9.60 | 11.07 | 12.48 | 13.85 | 15.18 | 16.47 | 17.74 | 18.99 | 20.21 |
| SVOLI | | | | 5.72 | 6.85 | 7.95 | 9.01 | 10.05 | 11.06 | 12.05 | 13.02 | 13.97 | 14.91 |
| SVOLX | | | | 2.11 | 2.52 | 2.93 | 3.32 | 3.70 | 4.07 | 4.44 | 4.79 | 5.15 | 5.49 |
| 130: | | | | | | | | | | | | | |
| TVOL | | | | 11.66 | 13.42 | 15.06 | 16.61 | 18.07 | 19.47 | 20.81 | 22.10 | 23.35 | 24.57 |
| WVOL | | | | 9.59 | 11.41 | 13.15 | 14.82 | 16.45 | 18.03 | 19.57 | 21.07 | 22.55 | 24.00 |
| SVOLI | | | | 6.84 | 8.20 | 9.51 | 10.79 | 12.02 | 13.23 | 14.42 | 15.58 | 16.72 | 17.85 |
| SVOLX | | | | 2.52 | 3.02 | 3.50 | 3.97 | 4.43 | 4.87 | 5.31 | 5.74 | 6.16 | 6.57 |

NOTE: BLOCK INDICATES RANGE OF DATA.

1/TVOL = TOTAL ABOVEGROUND VOLUME OF WOOD AND BARK; EXCLUDES FOLIAGE.

WVOL = VOLUME OF WOOD FROM A 0.3 METER STUMP TO A 10-CENTIMETER TOP OUTSIDE BARK; EXCLUDES BARK AND FOLIAGE.

SVOLI = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITH A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.

SVOLX = SAW-LOG VOLUME IN STRAIGHT MERCHANTABLE SECTIONS AT LEAST 2.5 METERS LONG TO A 23-CENTIMETER TOP OUTSIDE BARK IN TREES WITHOUT A MERCHANTABLE FIRST SECTION ABOVE A 0.3-METER STUMP.