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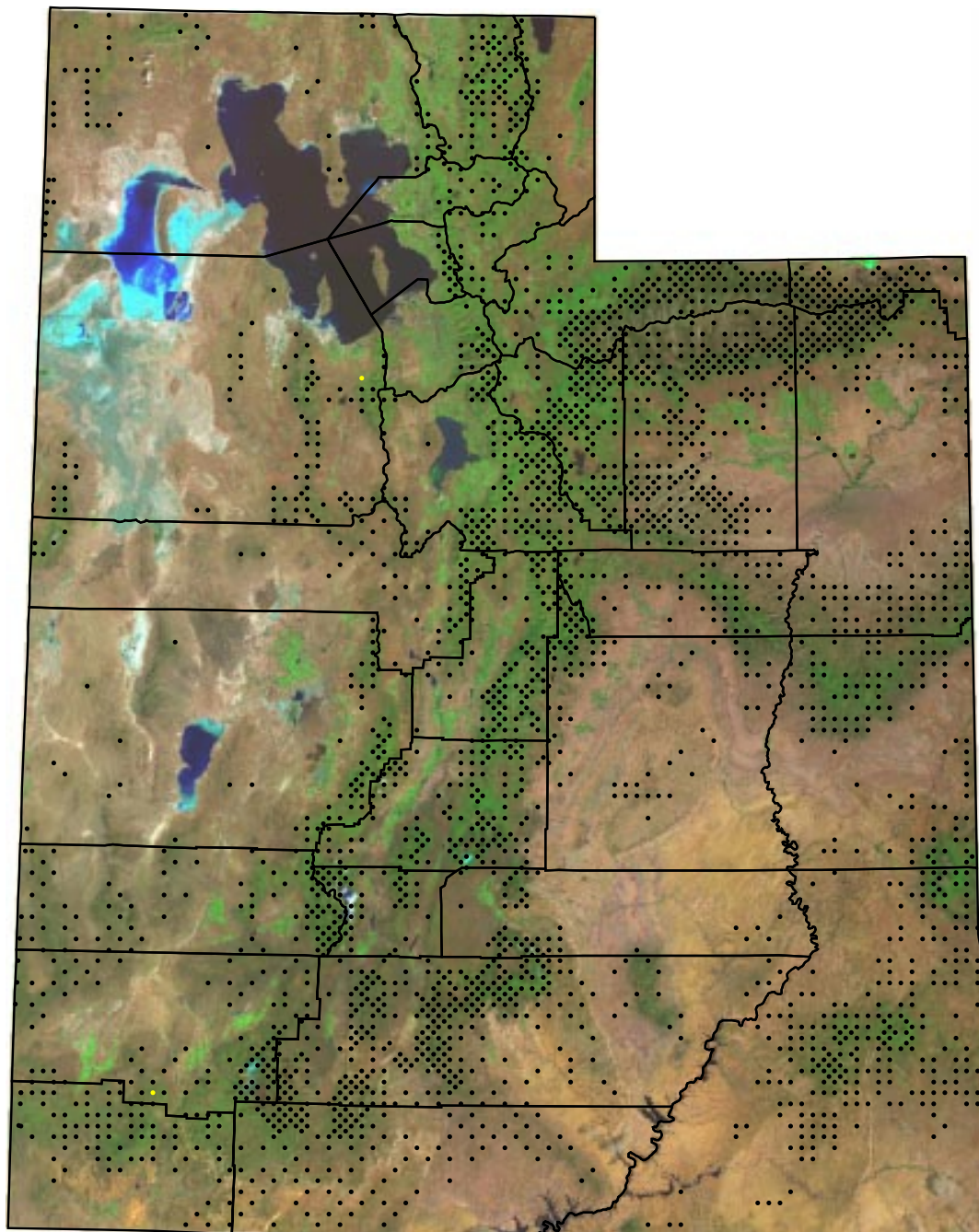
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Comprehensive Inventory of Utah's Forest Resources, 1993

Renee A. O'Brien



Abstract

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This report presents the results of an inventory of Utah's forest lands, completed in 1995. It is the first of its kind for the Interior West States in that it includes all forested lands, regardless of ownership or administrative status. It also includes information on a multitude of forest ecosystem attributes.

Included in this report are tables and highlights of area, numbers of trees, biomass, volume, growth, mortality, successional stage, understory vegetation, removals, and net change. Much of the information is organized by forest type, species, diameter class, or owner. The report also explains inventory design and inventory terminology, and discusses data reliability.

Roughly 29 percent of the area of Utah is forest land, and about 83 percent of the forest land is administered by government agencies. Only about 5 percent of the forest land in Utah is reserved from being utilized for wood products. The most common forest type is pinyon-juniper, composing 49 percent of the total forest land. The tree species estimated to have the highest percent of the total number of trees is Gambel oak, with 25 percent. The tree species estimated to compose the largest percent of biomass is Utah juniper, with 24 percent of the total biomass and 25 percent of the total cubic foot volume. The total volume of wood in live trees in Utah is estimated to be over 15.3 billion cubic feet. The area of timberland not reserved from harvesting is about 4.9 million acres, or 31 percent of the forest land. The net volume of growing stock on nonreserved timberland is over 7.4 billion cubic feet, with almost 78 percent of that on lands administered by the National Forest System.

Keywords: Forest land area, forest inventory, numbers of trees, biomass, volume, growth, mortality, successional stage, forest type, double sampling.

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Cover: Landsat TM image of Utah from Edwards and others (1995) and Homer and others (1997) with field plot and county overlay.

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Highlights

Area

- The total land area of Utah is over 54 million acres. Roughly 29 percent or 15.7 million acres is forest land.
- Pinyon-juniper and pure juniper forest types combined occupy almost 9.2 million acres, or 58 percent of the forest land.
- About 39 percent of the forest land is administered by the USDI Bureau of Land Management, 36 percent is administered by the USDA Forest Service, 6 percent is State owned, 2 percent is in other public ownership, and 17 percent is privately owned.
- At the time the inventory was completed in 1995, only about 5 percent of the forest land in Utah was in reserved status such as Wilderness or National Parks.

Biomass and Volume

- The total biomass in live trees in Utah forests is estimated to be 333.4 million tons.
- Total volume of wood in live trees in Utah is estimated to be in excess of 15.3 billion cubic feet.
- Utah juniper makes up 24 percent of the total biomass, and 25 percent of the total volume.

Growth and Mortality

- Gross annual growth of all trees on forest land in Utah totaled about 255 million cubic feet in 1992. Mortality reduced gross growth by almost 50 percent to about 129 million cubic feet of net annual growth.
- Aspen alone accounted for 25 percent of the net growth.

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Comprehensive Inventory of Utah's Forest Resources, 1993

Renee A. O'Brien

Introduction

This report summarizes the findings of a Statewide inventory of Utah's forest resources, completed in 1995 by the USDA Forest Service, Interior West Resource Inventory, Monitoring, and Evaluation (IWRIME) Program, as part of their Forest Inventory and Analysis (FIA) activity. This inventory is significantly different in many ways from previous inventories of Utah forests. The inventory was conducted on all lands having a minimum tree stocking of 10 percent, regardless of the species of tree present or the ownership or administrative status of the land. This includes wilderness areas and other areas in reserved status. For these reasons, this report is the first of its kind for the Interior West States.

This resulting report emphasizes a more ecological approach to presenting forest land resource information, including species diversity, forest health, and land use issues, as well as the more traditional estimates such as volume, growth, mortality, and removals. Other information includes the occurrence and cover of forbs, graminoids, and shrubs; estimates of biomass; and occurrence and distribution of habitat types. Scientific and common names for the plant species included in this report are listed in appendix A.

This inventory was made possible through a major cooperative effort between many Federal and State agencies. IWRIME has not traditionally conducted inventories on National Forest lands in the West, but in Utah, a cooperative agreement and funding from the Forest Service, Intermountain Region made possible an expanded inventory that included National Forest System lands. The field work, data compilation, and analysis were done and partially funded by the IWRIME program. The USDA Forest Service, Intermountain Region, and the USDI Bureau of Land Management also provided significant funding. Other cooperators include USDI Fish and Wildlife Service's GAP Analysis Program at Utah State University, and the National Park Service; the Uintah-Ouray Indian Reservation; and the Utah State Department of Natural Resources, Division of Forestry, Fire, and State Lands. The inventory was conducted between 1991 and 1995. Data for northern Utah have already been reported by O'Brien (1996), and Brown and O'Brien (1997).

Comparison with forest statistics previously reported for Utah (Van Hooser and Green 1983) should be restricted to area numbers. Methods for obtaining area data are fairly consistent over time, but estimation of other attributes such as volume or growth can vary due to procedural and definition changes.

Methods

In previous inventories, forest lands producing less than 20 cubic feet per acre per year and lands reserved from timber harvest were not field sampled. Detailed inventory data were collected only for tree species normally favored for commercial timber harvest. These species, such as ponderosa pine, lodgepole pine, and Douglas-fir were collectively known as “timber species.” Since the early 1980’s IWRIME has expanded its inventory to include other tree species such as pinyon, juniper, and oak, collectively known as “woodland species.” In Utah, a location was classified as timberland if there existed a minimum of 5 percent stocking of timber species. For current and future reporting, the more ecological and all-encompassing term “forest land” is preferred instead of timberland and woodland. However, some mensuration and silvicultural definitions and techniques that were developed for timberland species are not available for woodland species. Therefore, the separate terms will be used occasionally in this report.

IWRIME uses a two-phase or double sampling procedure (Cochran 1963) for State inventories. The first, or photo interpretive, phase is based on a grid of sample points systematically located every 1,000 meters across all lands in the State. Forestry technicians used maps and aerial photos to obtain ownership and vegetation cover type on 221,463 photo points in Utah. This information was then used for stratification of field plots. Field crews conducted the second, or field, phase of the inventory on a subsample of the phase one points that occurred on forest land (USDA Forest Service 1994). For this inventory, forest land was defined as land with at least 10 percent stocking of trees; or lands currently nonstocked but formerly having such stocking, where human activity does not preclude natural succession to forest. All conifers of any size except pinyon, juniper, and yew automatically qualify as trees, as do aspen, cottonwood, and paper birch. Other species such as pinyon, juniper, maple, mountain mahogany, and oak were classified as either trees or shrubs, depending on whether or not they have the capacity to produce at least one stem 3 inches or larger in diameter at root collar, and 8 feet or more in length to a minimum branch diameter of 1.5 inches. The sampling intensity on lands outside National Forests was one field plot every 5,000 meters, or about every 3 miles. For the most part, the sampling intensity on National Forest System land was double that of outside lands. A total of 8,385 field plots were sampled, of which 2,767 were forested.

IWRIME inventories provide a probability-based sample of forest resources across all ownerships that can be used for planning and analyses at local, State, regional, and national levels. The sample was designed to meet national standards for precision in State and regional estimates of forest attributes.

A measure of the variability of inventory statistics is provided by standard errors, listed in table 2 for estimates of area, volume, growth, and mortality on forest land for the entire State. All tables (1-112) are found at the end of this report. A 95 percent confidence interval can be computed for any estimate by multiplying the estimate’s percent standard error (SE) by 1.96, multiplying that product times the estimate, and then adding and subtracting that product from the estimate to get the bounds. The 95 percent confidence interval for total forest land area is between 15.4 million and 16.1 million acres. Similarly, forest land volume ranged from 14.8 billion to 15.9 billion cubic feet, net annual growth on forest land ranged from 109.5 million

to 147.9 million cubic feet, and annual mortality on forest land ranged from 108.7 million to 143.8 million cubic feet.

Users may compute statistical confidence for subdivisions of the reported data using the formula below. Because sampling error increases as the area or volume considered decreases, users should aggregate data cells as much as possible. Sampling errors obtained from this method are only approximations of reliability because this process assumes constant variance across all subdivisions of totals. The formula is:

$$\tilde{SE}_g = \frac{SE_t \sqrt{\hat{Y}_t}}{\sqrt{\hat{Y}_g}}$$

where:

$\tilde{SE}_g$ = approximate percent standard error of $\hat{Y}_g$

SE_t = percent standard error of $\hat{Y}_t$

$\hat{Y}$ = table variable of interest

g = table cell or group of cells of interest

t = totals from table 2

Overview of Tables

Land area, number of trees, wood volume and biomass, growth, mortality, and removals are the primary categories for which statistics are tabulated and presented in the FIA tables. There are five groups of summary tables:

- Tables 1-27 are for **all forest land**, both reserved and nonreserved.
- Tables 28-44 are for **nonreserved forest land**, which is forest land not withdrawn from tree utilization through statute or administrative designation.
- Tables 45-82 are for **nonreserved timberland**, that is nonreserved forest land where timber species—those species traditionally used for industrial wood products—make up at least 10 percent stocking.
- Tables 83-90 are for **nonreserved woodland**, meaning forest land where timber species make up less than 10 percent stocking.
- Tables 91-112 are a core set of tables comparable to similar sets presented by other FIA groups across the Nation, and used in the Resources Planning Act Assessment to **represent lands traditionally referred to as “commercial timberland.”** These core tables are for nonreserved timberland that has a minimum productivity of 20 cubic feet per acre per year.

Highlights presented in the following sections are for total forest land and for nonreserved timberland.

Highlights of Inventory Results for Total Forest Land

Area

Utah encompasses over 54 million acres (table 2). Roughly 29 percent of the area or 15.7 million acres is forest land (fig. 1). Of the forest land, 39 percent is administered by the USDI Bureau of Land Management, and 36 percent is administered by the USDA Forest Service (fig. 2). About 6 percent is State owned, 2 percent is in other public ownership, and 17 percent is privately owned. About 5 percent of the forest land in Utah was in reserved status such as Wilderness, Research Natural Areas, or National Parks at the time the inventory was completed in 1995. Any ownership or land status changes that happened after 1995 are not included in this report. Unless otherwise indicated, lands of both reserved and nonreserved status are included in the statistics in this report.

The following area variables describe the structure and composition of Utah forests. Some of the variables were originally developed to describe forests in terms of growing-stock and timber production, and consequently had to be adapted for use in describing all trees on all forest land.

Forest type—Forest type refers to the predominant tree species in a stand, based on tree stocking, and is one indicator of forest diversity. A map of Utah forest types based on Edwards and others (1995) and Homer and others (1997) is presented in figure 3. Table 3 shows the pinyon-juniper type

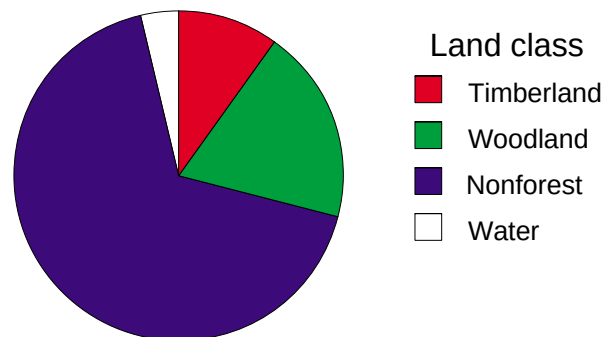


Figure 1—Distribution of land area by land class, Utah, 1993.

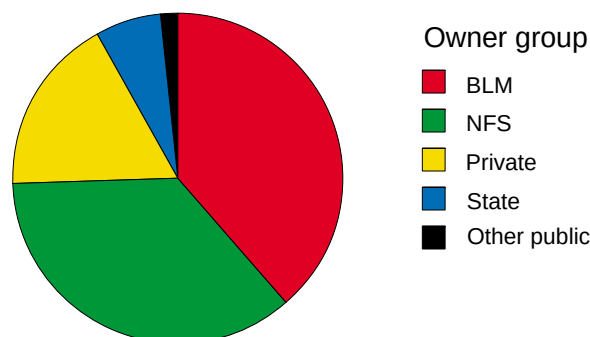


Figure 2—Distribution of forest land area by owner group, Utah, 1993.

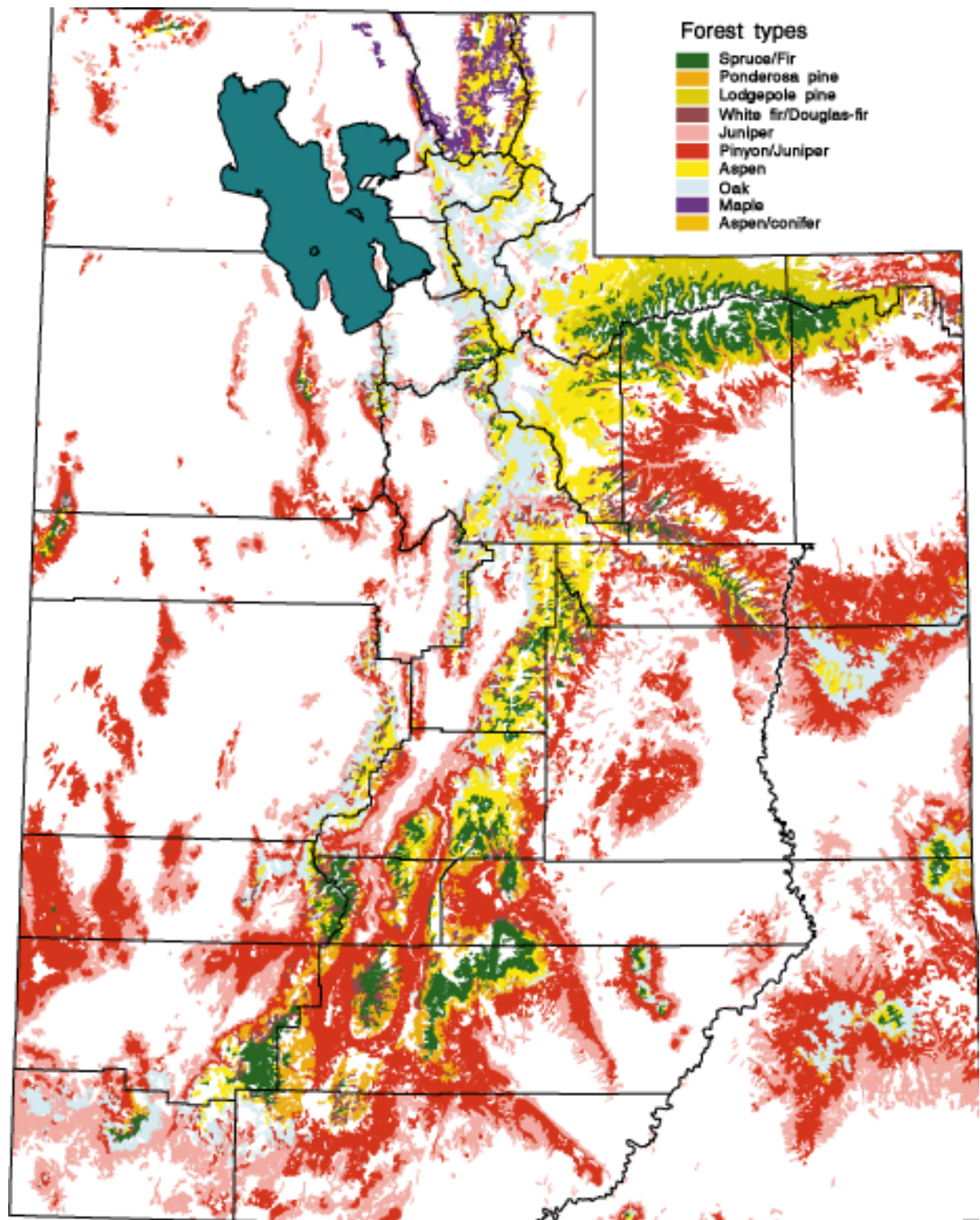


Figure 3— General distribution of major forest types in Utah, based on Edwards and others, 1995, and Homer and others, 1997.

is by far the most abundant forest type in the State, covering almost 7.8 million acres, or 49 percent of the forest land. Another 1.4 million acres—almost 9 percent—of Utah forest land is pure juniper. Together, the pinyon-juniper and juniper types compose 58 percent of Utah's forest land, with 97 percent being nonreserved. Figure 4 displays area and land status by forest types. Aspen is the second most abundant forest type with over 1.4 million acres, or 9 percent. Douglas-fir makes up 7 percent of the area; Gambel oak and spruce-fir, 5 percent each; ponderosa pine, 4 percent; and lodgepole pine, Engelmann spruce, and white fir, 3 percent each. Maple, mountain mahogany, limber pine, blue spruce, and cottonwood combined make up the remaining 3 percent of the forest land.

Stand age—Figure 5 shows area of forest land by stand age class. Stand age is an important forest attribute but is difficult to quantify and should be used carefully. Stand age for timberland is computed using ages of growing-stock trees, weighted by trees per acre. Stand age for woodland is usually based on the age of one selected site tree. Based on these criteria, 40 percent of all forest stands in Utah are estimated to be between 50 and 100 years old (table 11).

Stand-size class—Another variable, stand-size class, classifies forest land based on the predominant stocking by size of all live trees present (tables 4 through 7) and can give an idea of the structure of Utah forests. Figure 6, which shows distribution of forest land area by stand-size class and owner group, illustrates that relatively few stands are composed mostly of small trees, such as stands that have been clear cut or burned.

Stocking condition—Many factors influence the rate at which trees grow and thrive, or die. One of those factors is the stocking (relative density) of trees. Table 9 presents five categories of stocking condition that range from nonstocked to overstocked. Overstocking causes tree growth to slow, which makes trees more susceptible to insects and disease. About 2.2 million acres, or 14 percent of the forest land in Utah, is estimated to be overstocked. Figure 7 shows area by stocking condition for five predominant timberland forest types.

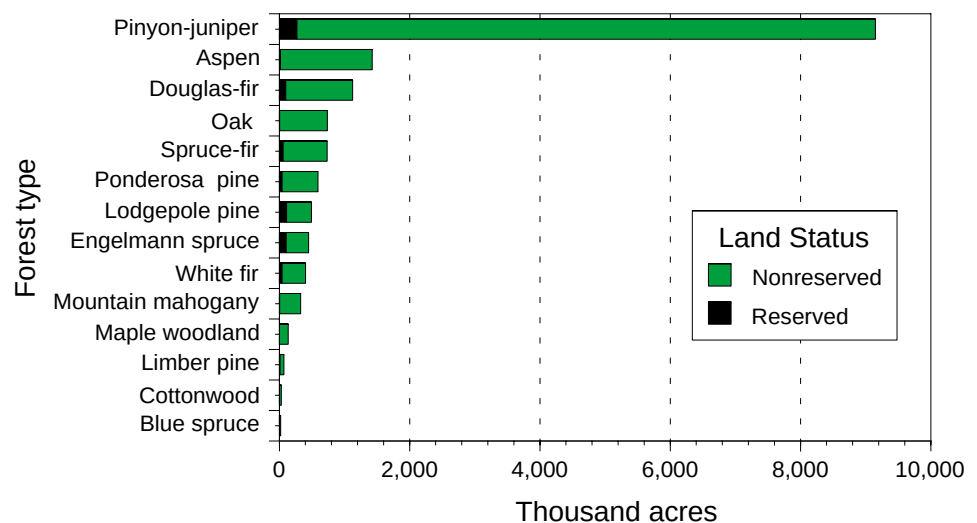


Figure 4—Area of forest land by forest type and land status, Utah, 1993.



Figure 5—Area of forest land by stand age class, Utah, 1993.

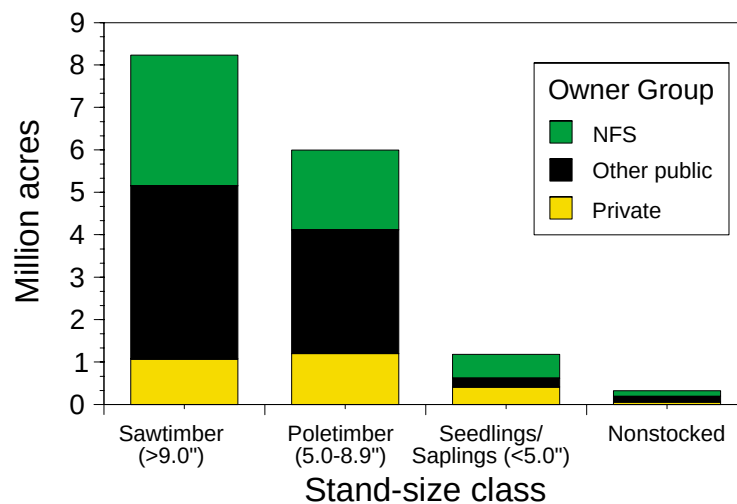


Figure 6—Area of forest land by stand-size class and owner group, Utah, 1993.

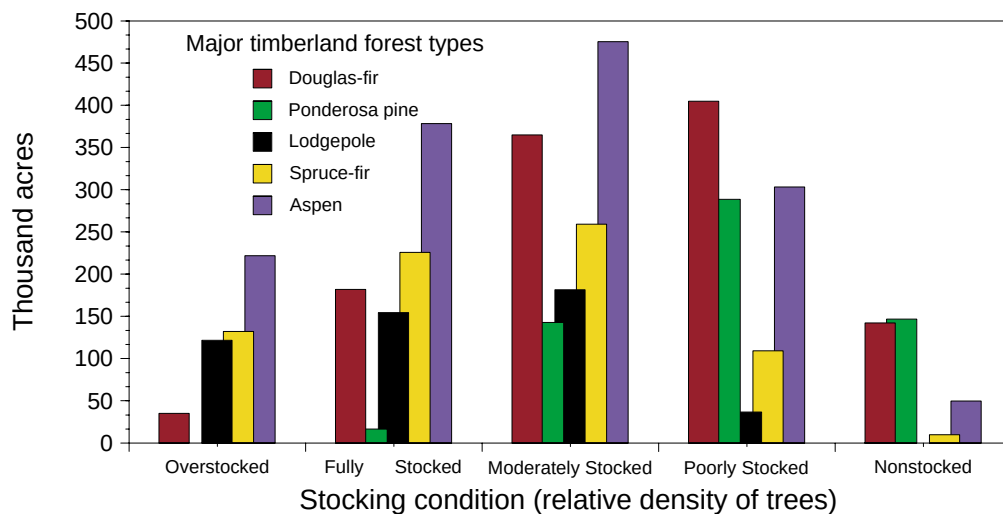


Figure 7—Area by stocking condition and major timberland forest type, Utah, 1993.

Habitat type—Habitat type describes lands in terms of their potential to produce similar plant communities at successional climax. The climax plant community, which is the theoretical end result of plant succession, reflects the integration of environmental factors that affect vegetation such as soils, climate, and landform. Habitat type classifications are named for the predominant overstory and understory plant species at the time of successional climax. In Utah, habitat type classifications have been defined for most Utah forest types traditionally considered to be timberland (Mauk and Henderson 1984). However, because well-defined successional states are not known for aspen, classification schemes for aspen describe existing vegetation and are called community types instead of habitat types (Mueggler 1988). All timberland plots visited by IWRIME field crews were classified by habitat or community type. Most woodland types remain unclassified in Utah.

Table 13 presents area of forest land by habitat type series and forest type (with woodland types listed as “unclassified”) and gives a general indication of forest successional status for timberland in the entire State. It is estimated that 30 percent of all timberland is in the subalpine fir habitat type series, and another 20 percent is in the aspen community type series. Over 59 percent of Engelmann spruce forest type and 41 percent of lodgepole forest type occur on subalpine fir habitat types.

By summarizing inventory data by habitat type, Utah forest land can be categorized in a way that theoretically will not change with disturbance or advancing succession. The use of potential vegetation to classify forests is not intended to indicate an abundance of climax vegetation in the current Utah landscape, nor is it meant to suggest that climax conditions should be a management goal. In fact, most forest landscapes reflect some form of disturbance and various stages of succession. Fire is a natural disturbance that affects the successional stage of forests. Forest management activities do so as well.

Distance to road, and history of disturbance—Every plot visited by IWRIME field crews was assigned a “distance to road” category (fig. 8). Based on this information, an estimated 24 percent of the forested area of Utah is less than 0.5 mile from an improved road, 21 percent is between 0.5 and 1 mile, 35 percent is between 1 and 3 miles, 11 percent is between 3 and 5 miles, and only 9 percent is greater than 5 miles from an improved road (table 10).

Field crews also make a subjective field assessment of the predominant human or natural disturbance on each plot that impacts the entire condition. Of Utah forest land, 74 percent was categorized as having no significant visible disturbance. Some 8 percent had evidence of tree cutting, 5 percent showed disease damage, 4 percent had evidence of fire, about 2 percent had been chained, and another 2 percent had evidence of insect damage. The remaining 5 percent of forest land had evidence of other damage, road building, or land clearing (table 10).

Number of Trees

The composition of the forest by individual tree species is another measure of forest diversity. Figure 9 displays the distribution of number of live trees on Utah forest land by species. Gambel oak makes up an estimated 25 percent of the trees in Utah; aspen and Utah juniper each 15 percent; twoneedle pinyon, 12 percent; subalpine fir, 7 percent; lodgepole pine, 5 percent;

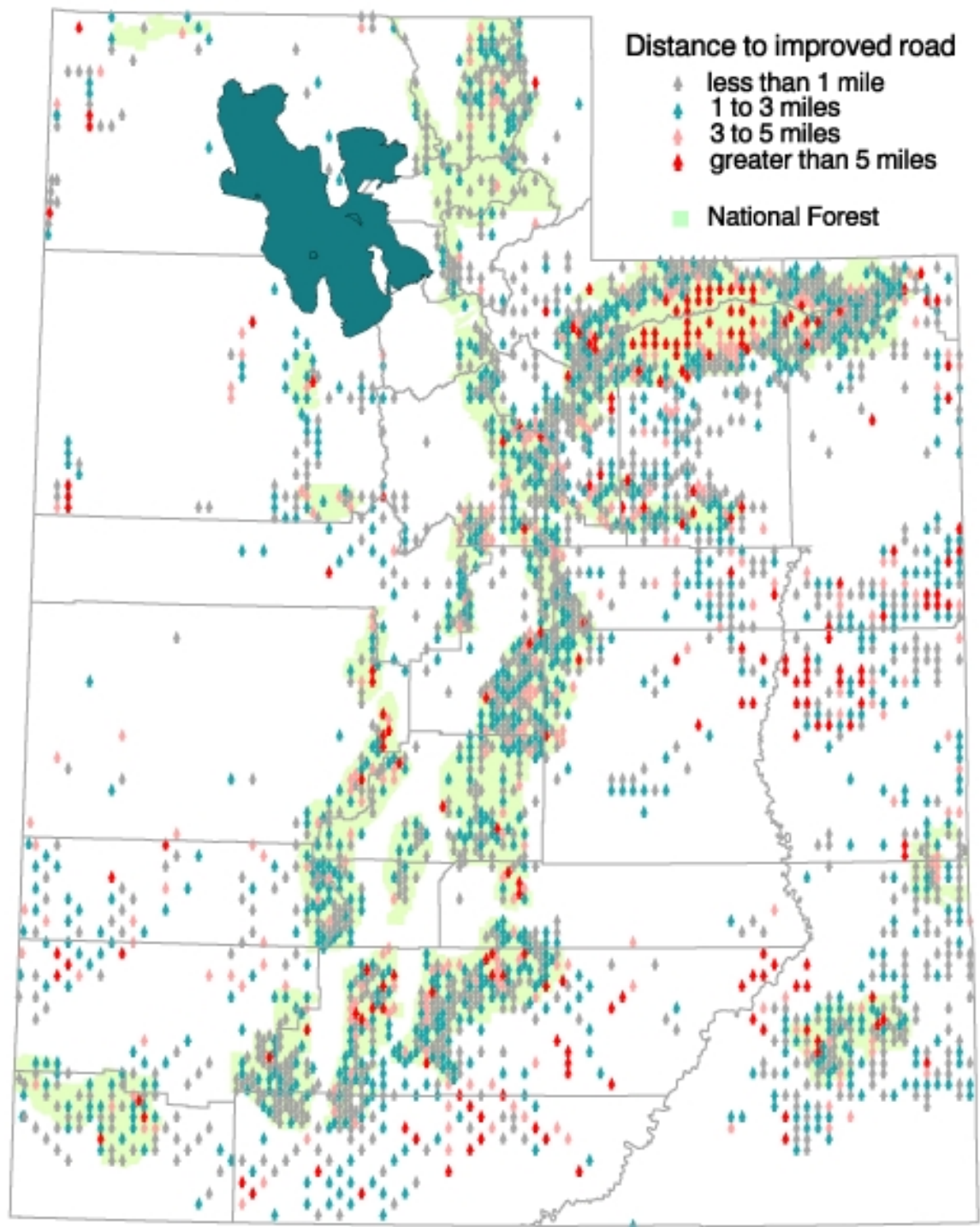


Figure 8—Distribution of field plots by distance to improved roads, Utah 1993.

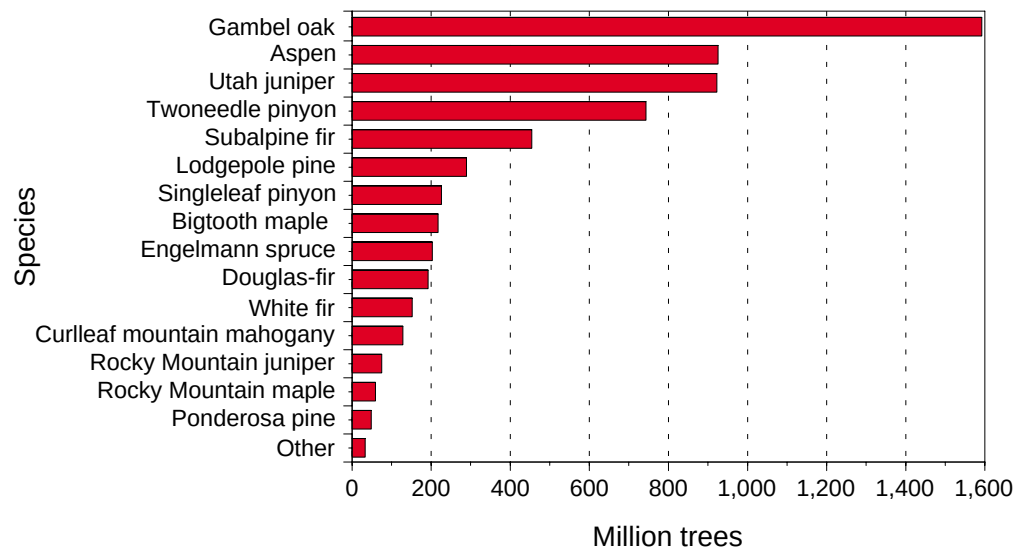


Figure 9—Number of live trees on forest land by species, Utah, 1993.

singleleaf pinyon, 4 percent; bigtooth maple, Engelmann spruce, and Douglas-fir, each 3 percent; white fir and curleaf mountain mahogany, each 2 percent; with traces of Rocky Mountain juniper, Rocky Mountain maple, ponderosa pine, limber pine, cottonwood, blue spruce, and bristlecone pine composing the remainder (table 14).

Size distribution of individual trees indicates structural diversity. Figure 10 displays number of trees on forest land by diameter class, showing many more small than large trees. In terms of sheer numbers, 66 percent of all live trees are less than 5 inches in diameter.

Dead trees are an important component of forest ecosystems, providing habitat for many species of wildlife and functioning as nutrient sinks. There

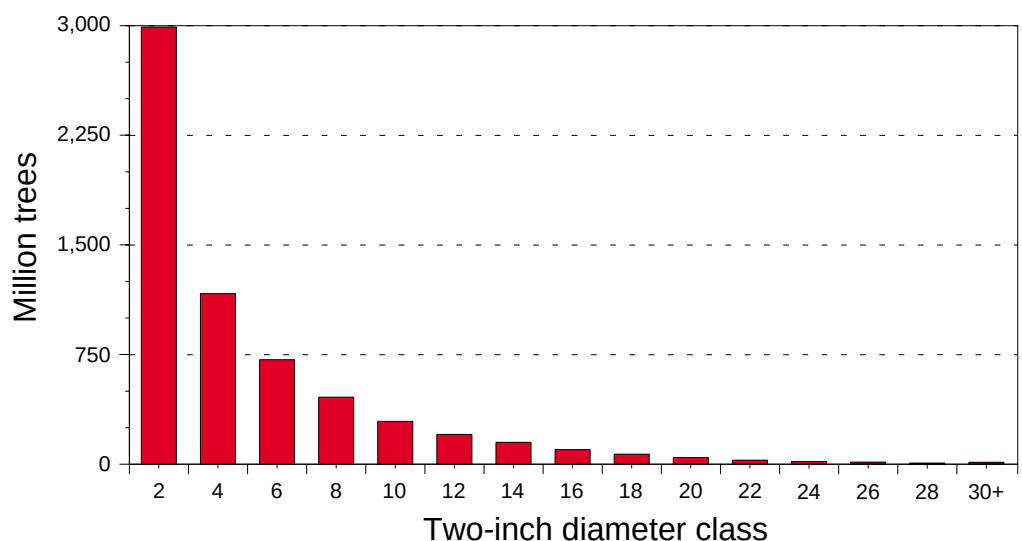


Figure 10—Number of live trees on forest land by 2 inch diameter class, Utah, 1993.

are roughly 250 million standing dead trees (snags) of all species in Utah (table 15). The number includes snags of all diameters and degree of decay. Many wildlife species are dependent on snags, but the species, size, and density of snags required vary according to the species of wildlife. Large snags are generally scarce, making them more valuable than smaller snags. Considering snags 11 inches in diameter or larger, Utah forests average 3.8 large snags per acre. Of the very large snags (19 inches in diameter or larger), Utah has only about 0.6 per acre. The most abundant species of snag overall is aspen. The most abundant species of snag in the 19 inch and larger category is Utah juniper. The most abundant timber species of snag in the 19 inch and larger category is Engelmann spruce.

These numbers represent averages over the total forest land area. Standing dead trees were only actually tallied on 44 percent of the total forest land area, and 61 percent of timber land area. Snags are difficult to sample adequately (Bull and others 1990). They are fewer in number and may be less randomly distributed than live trees—occurring in patches because of fire, disease, insect outbreaks, and so forth.

Biomass and Volume

The total biomass in live trees in Utah forests is estimated to be 333.4 million tons. Biomass includes boles, bark, and branches of all live trees including saplings. Biomass is presented by species in figure 11, and by species and diameter class in table 16. The species estimated to have the greatest total biomass is Utah juniper, with 24 percent of the total biomass in the State.

Total volume of wood in live trees in Utah is estimated to be in excess of 15.3 billion cubic feet. This includes trees 3.0 inches in diameter at root collar and larger for woodland species, and 5.0 inches diameter at breast height and larger for timber species. Figure 12 shows cubic foot volume for the predominant species, table 18 shows cubic foot volume by species and owner, and

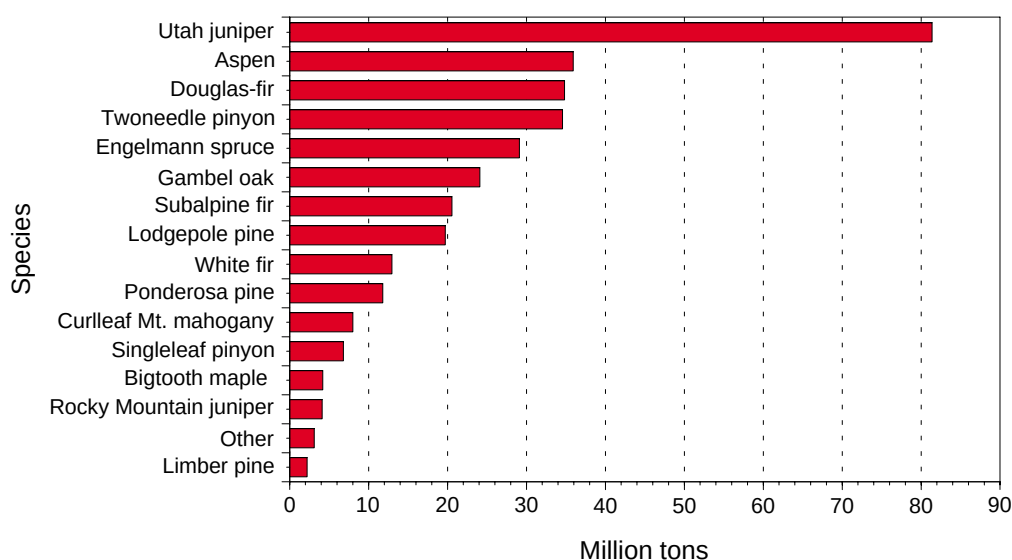


Figure 11—Oven-dry weight of biomass of all live trees by species on forest land, Utah, 1993.

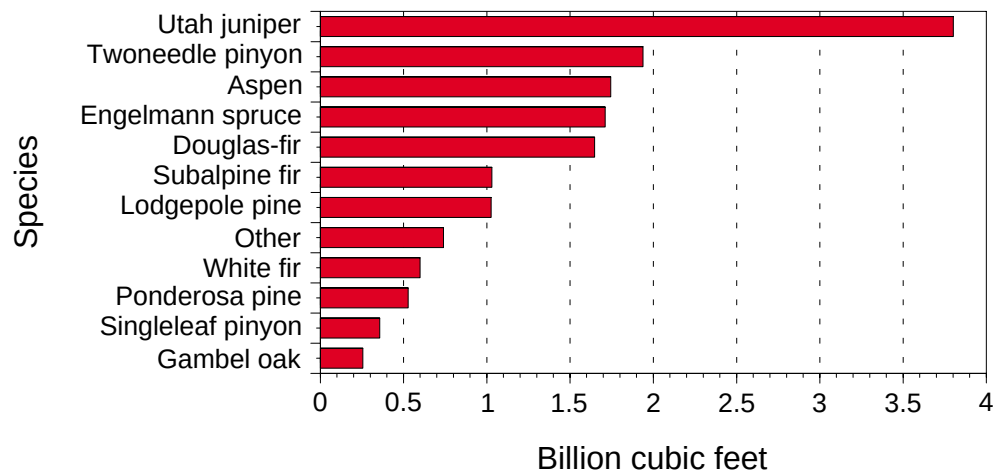


Figure 12—Net cubic foot volume by predominant species on all forest land, Utah, 1993.

table 19 shows volume by species and diameter class. The species estimated to have the most cubic foot volume is Utah juniper, with 25 percent of the total. Biomass and volume equation sources are documented in appendix B.

Growth and Mortality

Growth, as reported here, is the average annual growth over 10 years based on increment core measurements. It is reported for the year prior to the year of inventory. Gross annual growth of all trees on forest land in Utah totaled about 255 million cubic feet in 1992. Net annual growth is the difference between gross growth and losses due to mortality. Mortality is the average annual net volume of trees that have died in the 5 years prior to the year of inventory. Mortality reduced gross growth by almost 50 percent, to about 129 million cubic feet of net annual growth. About 53 percent of the net annual growth in the State occurred on lands under National Forest System management. Aspen alone accounted for 25 percent of the net growth.

Tree mortality in Utah was high for some species and size classes (table 24). For example, mortality exceeded growth for the year prior to the inventory year (1993) for subalpine fir, meaning that the overall net annual growth of subalpine fir trees is negative (table 22). The only other species with overall negative growth is cottonwood. However, almost all species have negative growth in some diameter classes. Insects were probably the primary cause of death, followed by disease. Exact cause of death is often unknown, or is the result of a combination of factors.

Risk of insect attack—The risk of damage by insects is currently an issue of concern in Utah forests. In an attempt to assess the magnitude of the problem, hazard ratings for risk of attack by four bark beetle species—Douglas-fir beetle, mountain pine beetle, western pine beetle, and spruce beetle—were adapted for use in Utah forests from Steele and others (1996) and applied to the inventory data. Plots in spruce, spruce-fir, lodgepole pine, Douglas-fir, and ponderosa pine forest types were assigned classes of hazard ratings, and estimates of the area of high, moderate, or low risk of attack by bark beetles were calculated for Utah forests.

The area of each forest type in each risk category is presented in table 12. The table also includes the acreage of each forest type where 80 percent of the trees are already dead, and are consequently now at low risk of attack, and the area of each type that was not evaluated because the stands did not have trees that met the minimum size criteria.

Of the spruce and spruce-fir types combined, 48 percent of the stands are at moderate to high risk of attack by bark beetles. Also, 77 percent of the lodgepole, 73 percent of the ponderosa, and 73 percent of the Douglas-fir type are at moderate to high risk. Moderate to high risk conditions indicate the possibility of bark beetle population increases, which in turn can cause significant tree mortality and changes in stand structure over a short period.

Aspen decline—Information from various sources (Bartos 1995; Bartos and Campbell 1998; USDA Forest Service 1996) indicates that aspen is declining in much of its range. Aspen forests are unique because they reproduce primarily by suckering from the parent root system. Often a disturbance or dieback is necessary to stimulate regeneration of the stands. Because these self-regenerating stands have existed for thousands of years, even minor amounts of aspen in stands probably indicate that a site was at one time dominated by aspen. Based on this assumption, an estimated 2.9 million acres in Utah were at some point aspen forest type. By comparison, only about 1.4 million acres, 49 percent of the area estimated to have been dominated by aspen currently has the required aspen stocking to be considered aspen forest type. These acreage comparisons support the hypothesis that aspen dominance in Utah forests may be decreasing.

Understory Vegetation and Ground Cover

In addition to information about the forest overstory, the average crown canopy cover of shrubs, forbs, and graminoids (grasslike plants) by layer, as well as percent bare ground, were recorded for each field location. Also recorded were the name, percent crown canopy cover, and height layer of up to 4 species in each life-form that had 5 percent or more cover. Table 26 presents, by forest type, the life-form cover percentages, the percent bare ground, the total number of species recorded, the most common understory species encountered with 5 percent cover or greater, and the number of locations and acres summarized.

The most common species occurring with 5 percent cover or greater in every forest type were shrubs. The highest average percent bare ground is found in the juniper woodland forest type. The highest percent average cover of shrubs (34 percent) occurred in the ponderosa pine and Gambel oak types, compared to the lowest average shrub cover (16 percent) in the spruce-fir type. The highest amount of average forb cover (27 percent) was found in the aspen forest type. Ponderosa pine had the lowest average forb cover (6 percent), followed by 7 percent in the limber/bristlecone pine and juniper types. The highest amount of average grass cover (25 percent) was also found in the aspen type, and the lowest (8 percent) in pinyon-juniper woodland.

The percent of ground covered by cryptobiotic soil crusts was also assessed. Cryptobiotic soil crusts, consisting of cyanobacteria, mosses, and lichens, are important in semiarid areas for soil stability and retention of soil moisture and nutrients. These crusts were found to occur with more than 5 percent cover on about 15 percent of the pinyon-juniper type, 7 percent of the juniper type, and less than 1 percent of oak and ponderosa types in Utah.

Figure 13 shows the 10 most common shrub species, and figure 14 the 10 most common herbaceous (grass and forb) species encountered with 5 percent cover or greater on Utah forest land, by the estimated percent area of occurrence. The species to be encountered most often with 5 percent or greater cover on all forest land is mountain snowberry, found on 19 percent of the forest land area. Big sagebrush was the second most common with 17 percent, and Oregon grape was third with 6 percent. Cheatgrass is an exotic annual species of concern because of its ability to out-compete native grasses and form a monoculture in some situations. It is estimated to occur with 5 percent canopy cover or greater on 3 percent of the forest land area.

Some species, such as Gambel oak, occur on forest land in both tree and shrub form. On Utah inventory plots where the majority of plants of a species were tree form, they were measured as trees. On other sites where they did not achieve tree form, they were recorded as shrubs.

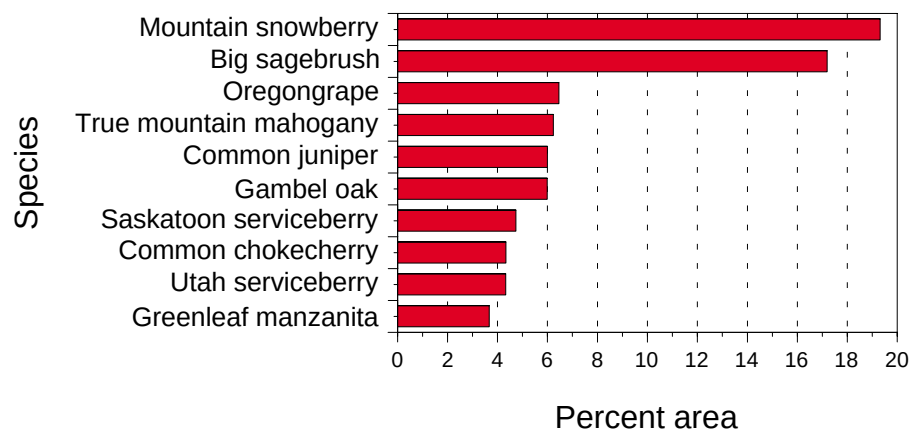


Figure 13—Occurrence of 10 common shrub species on forest land, Utah, 1993.

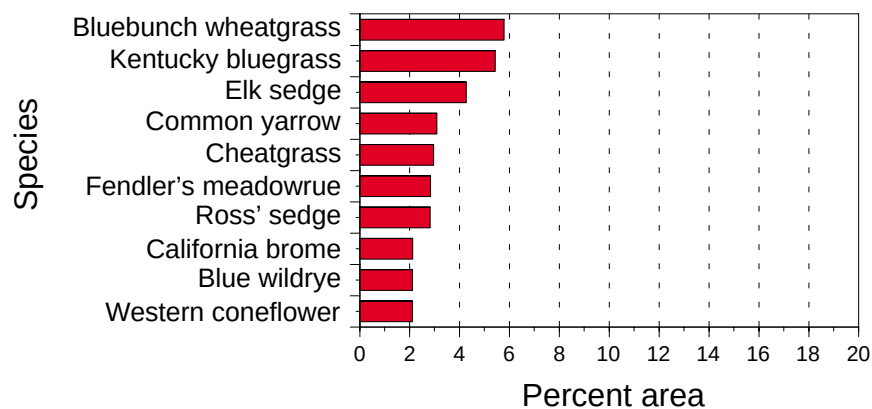


Figure 14—Occurrence of 10 common herbaceous species on forest land, Utah, 1993.

Highlights of Inventory Results for Nonreserved Timberland

Area, Volume, and Net Growth

Because of the importance of wood products, some additional summaries on timberland not reserved from timber harvest are useful. About 31 percent (4.9 million acres) of the forest land in Utah is nonreserved timberland. Figure 15 presents the area of nonreserved timberland by owner group and productivity class. Most of the lands capable of producing more than 50 cubic feet per acre per year are on National Forests (table 49). Figure 16 shows the distribution of timberland by owner group and stand volume class.

The total net volume of growing stock on nonreserved timberland is over 7.4 billion cubic feet, with almost 78 percent of that occurring on lands administered by National Forest System. The species comprising the greatest percentage of growing-stock volume is aspen, with 22 percent.

The volume of sawtimber trees on nonreserved timberland in Utah is estimated to be about 22.5 billion board feet (Scribner rule) (table 57). Engelmann spruce and Douglas-fir species combined account for 51 percent of the total sawtimber volume. Figure 17 shows sawtimber volume by species for nonreserved timberland.

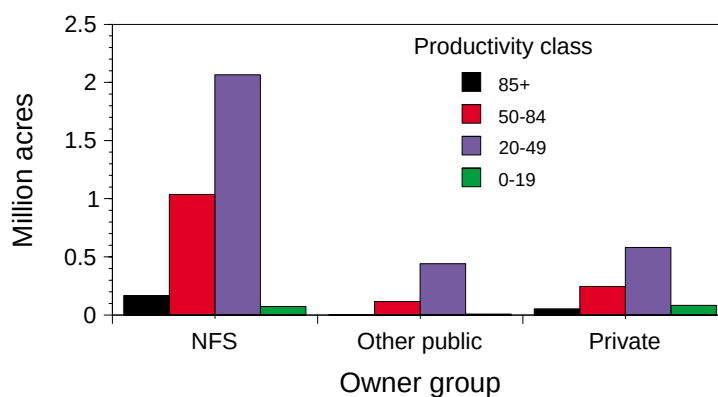


Figure 15—Area of nonreserved timberland by owner group and productivity class, Utah, 1993.

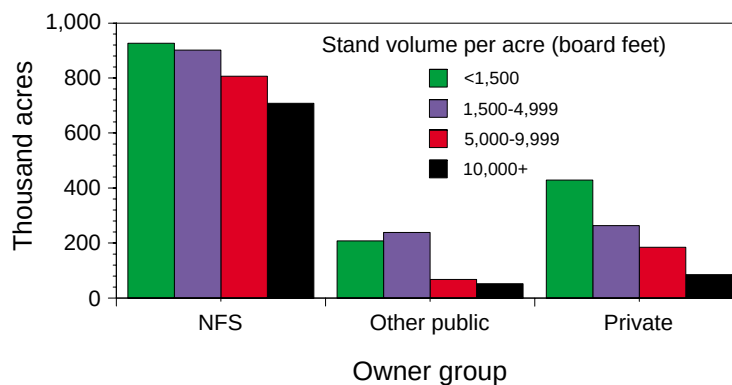


Figure 16—Distribution of nonreserved timberland by owner group and stand volume class, Utah, 1991.

Net annual growth of growing-stock trees on nonreserved timberland totaled almost 78 million cubic feet (table 68). Figure 18 shows gross growth, mortality, and removals of growing-stock volume for selected species on nonreserved timberland.

Removals

The net volume of growing-stock trees removed from the inventory by harvesting, cultural operations, land clearing, and changes in land use is known as removals. Removals include both the volume processed and the volume harvested or killed but not utilized. Removals as reported here are based on data from 1 year—1992. Over 9.4 million cubic feet of wood, exclusive of land clearing volume and including 40.5 million board feet (Scribner rule), were removed from Utah's nonreserved timberland in 1992 (numbers modified from McLain 1997). Figure 19 shows volume harvested by product and owner group (tables 80-82). Almost 93 percent of the removals were for timber products, 2 percent were for fuelwood, and over 5 percent were not utilized and were left in the woods as logging residues.

Sawlogs dominated products harvested and accounted for 82 percent of removals. Fiberwood, which in Utah is manufactured into excelsior, made up

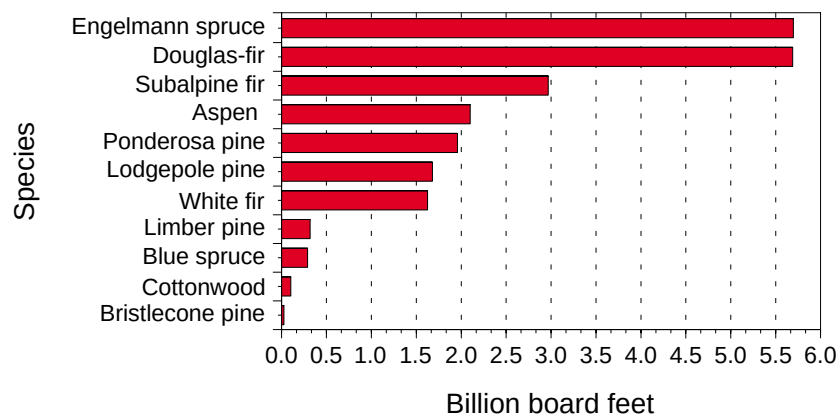


Figure 17—Sawtimber volume by species for nonreserved timberland, Utah, 1993.

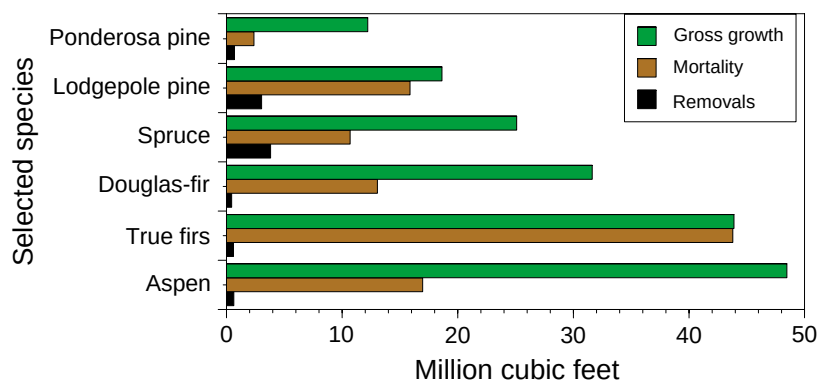


Figure 18—Gross growth, mortality, and removals of selected species of growing-stock on nonreserved timberland, Utah, 1992.

6 percent of removals. Posts and poles made up just over 2 percent of removals, as did house logs.

Spruce accounted for 40 percent and lodgepole pine for 32 percent of the volume removed (table 80) even though each is only 20 and 10 percent, respectively, of the growing-stock volume inventory on nonreserved timberland (table 58). National Forests supplied 70 percent of the volume removed, and nonindustrial private owners supplied 23 percent. The other 7 percent came from other public land.

Components of Change

Removals and mortality are both components of change that reduce the amount of growing stock on Utah's nonreserved timberlands. Figure 20 shows net annual growth compared to removals. Because growth is annual, based on an average over 10 years, and removals data are collected for 1 year, figure 20 does not necessarily imply a trend. What it does illustrate is that both lodgepole pine and true firs had more wood volume removed in 1 year (1992) than the average annual net growth. This result is due mostly to the high mortality in the two species. Total growing-stock volume removed was only 12 percent of total net annual growth of all species of growing-stock trees on nonreserved timberland in Utah.

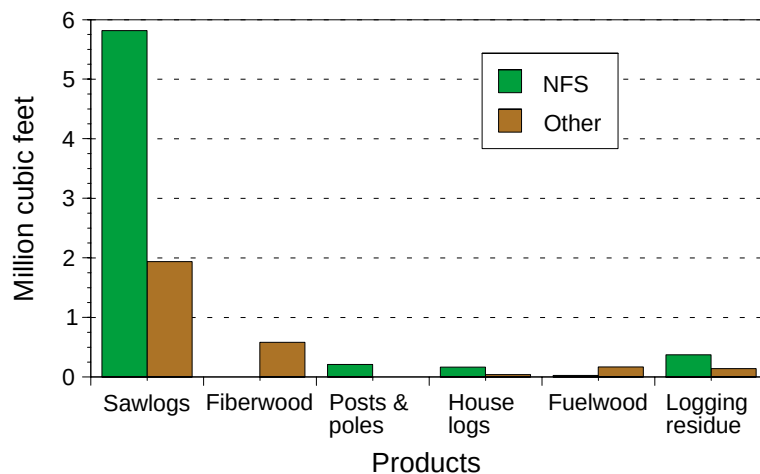


Figure 19—Volume harvested from nonreserved timberland by product and owner group, Utah, 1992.

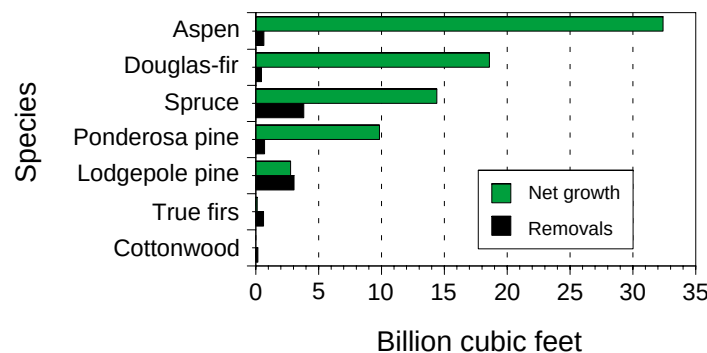


Figure 20—Net annual growth compared to removals by species on nonreserved timberland, Utah, 1992. Cottonwood has a small negative net growth.

Standard Forest Inventory and Analysis Terminology

Basal area—The cross-sectional area of a tree expressed in square feet. For timber species the calculation is based on diameter at breast height (d.b.h.); for woodland species it is based on diameter at root collar (d.r.c.).

Biomass—Oven dry weight of trees at least 1 inch in diameter. Includes boles, bark, and branches.

Christmas tree grade—Pinyon species are classified as Christmas trees using the following guidelines:

Premium—Excellent conical form with no gaps in branches and a straight bole.

Standard—Good conical form with small gaps in branches and bole slightly malformed.

Utility—Conical in form with branches missing and bole bent or malformed.

Cull—Not meeting one of the above classifications or over 12 feet in height.

Cord—A stack of wood equivalent to 128 cubic feet of wood and air space having standard dimensions of 4 by 4 by 8 feet. An average conversion factor of 75 cubic feet of solid wood per cord is used.

Crown cover—Percentage of the ground surface covered by a vertical projection of tree crowns. Synonymous with canopy cover.

Cull trees—Live timber species trees that are unmerchantable now or prospectively (see Rough trees and Rotten trees).

Cull volume—Portions of the volume in a timber species tree that are not usable for wood products because of rot, missing material, dead material, or other cubic-foot defect.

Diameter at breast height (d.b.h.)—Diameter of the stem measured 4.5 feet above the ground.

Diameter at root collar (d.r.c.)—Diameter equivalent for a woodland species, taken at the point nearest the ground line that represents the basal area of the tree stem or stems.

Diameter classes—Tree diameters, either d.b.h. or d.r.c., grouped into 2 inch classes, with the even inch the midpoint for the class.

Diameter outside bark (d.o.b.)—Tree diameter measurement taken over the bark.

Distance to road—The distance from a sample site to the nearest improved road, which could be accessed from the site. Improved roads are permanent, maintained roads.

Excelsior fiberwood—A material of curled shreds of wood used for stuffing or packing.

Farmer/rancher-owned lands—Lands owned by a person who operates a farm or a ranch and who either does the work or directly supervises the work.

Fenceposts—Juniper and oak species are evaluated for post potential using the following criteria:

Line post—A 7-foot minimum length with a 5- to 7-inch diameter butt, 2.5-inch minimum small-end diameter, and reasonably straight and solid.

Corner post—An 8-foot minimum length with a 7- to 9-inch diameter butt, 2.5-inch minimum small-end diameter, and reasonably straight and solid.

Forest industry lands—Lands owned by companies or individuals operating a primary wood-processing plant, either within the State's boundaries or in nearby States or Provinces.

Forest lands—at least 10 percent stocked by forest trees of any size, including lands that formerly had such tree cover and that will be regenerated naturally or artificially. The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of trees must have a crown width of at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, and clearings in forest areas are classified as forest if they are less than 120 feet wide.

Forest trees—Woody plants having a well-developed stem or stems, usually more than 12 feet tall at maturity, with a generally well-defined crown.

Forest type—A classification of forest land based on and named for the tree species presently forming a plurality of live-tree stocking.

Gross annual growth—The average annual increase in the net volume of trees.

Gross volume in board feet—The board-foot volume in the sawlog portion of a sawtimber tree. Volume is computed from a 1 foot stump to a minimum sawlog top of 7 inches d.o.b. for softwoods, or 9 inches d.o.b. for hardwoods; or to the point where the central stem breaks into limbs.

Growing-stock trees—Live timber species trees meeting specified standards of quality and vigor; excludes cull trees.

Growing-stock volume—Net cubic-foot volume in live pole-timber-size and sawtimber-size growing-stock trees from a 1 foot stump to a minimum 4 inch top (of central stem) outside bark or to the point where the central stem breaks into limbs.

Growth—See Net annual growth.

Hardwood trees—Trees that are usually broad leaved and deciduous.

Indian Trust—Indian lands held in trust by the Federal Government for a Native American tribe or individual.

Industrial wood—All commercial roundwood products except fuelwood.

Land area—The area of dry land and land temporarily or partially covered by water such as marshes, swamps, river flood plains, streams, sloughs, estuaries, and canals less than 120 feet wide; and lakes, reservoirs, and ponds less than 1 acre.

Logging residue—The unused portions within the merchantable sections of growing-stock trees cut or killed during logging.

Mill or plant residue—Wood material from mills or other primary manufacturing plants that is not utilized for the mill's or plant's primary product. Mill or plant residue includes bark, slabs, edgings, trimmings, miscuts,

sawdust, and shavings. Much of the mill and plant residue is used as fuel and as the raw material for such products as pulp, pelletized fuel, fiberwood, mulch, and animal bedding. Mill or plant residue includes bark and the following components:

Coarse residue—Wood material suitable for chipping, such as slabs, edgings, and trim.

Fine residue—Wood material unsuitable for chipping, such as sawdust and shavings.

Miscellaneous Federal lands—Lands administered by Federal agencies other than the Forest Service, U.S. Department of Agriculture, or the Bureau of Land Management, U.S. Department of the Interior.

Mortality—The net volume of trees that have died during a specified period.

National Forest lands—Public lands administered by the Forest Service, U.S. Department of Agriculture.

Net annual growth—Gross annual growth minus average annual mortality.

Net dead volume—For woodland species, net volume of dead trees plus net volume of dead material in live trees.

Net volume in board feet—The gross board-foot volume in the sawlog portion of growing-stock trees, less deductions for cull volume.

Net volume in cubic feet—For timber species, gross cubic-foot volume in the merchantable portion of trees, less deductions for cull volume. Volume is computed for the merchantable stem from a 1 foot stump to a minimum 4 inch top d.o.b., or to the point where the central stem breaks into limbs. For woodland species, gross cubic-foot volume less deductions for dead, missing, and rotten material. Volume is calculated for trees 3.0 inches and larger d.r.c. to a stem or branch top of 1.5 inches d.o.b.

Nonforest lands—Lands that do not currently qualify as forest land.

Nonindustrial private—All private ownerships except forest industry.

Nonstocked areas—Forest land less than 10 percent stocked with live trees.

Other private lands—Privately owned lands other than forest industry or Indian Trust.

Other public lands—Public lands administered by agencies other than the Forest Service, U.S. Department of Agriculture. Includes lands administered by other Federal, State, county, and local government agencies, including lands leased by these agencies for more than 50 years.

Other removals—The net volume of growing-stock trees removed from the inventory by cultural operations, such as timber-stand improvement, by land clearing, and by changes in land use, such as a shift to wilderness.

Poletimber stands—Stands at least 10 percent stocked with growing-stock trees, in which half or more of the stocking is sawtimber or poletimber trees or both, with poletimber stocking exceeding that of sawtimber (see Stocking).

Poletimber trees—Live timber species trees at least 5 inches d.b.h., but smaller than sawtimber.

Potential growth—The average net annual cubic-foot growth per acre at culmination of mean annual growth attainable in fully stocked natural stands.

Primary wood-processing plants—Plants using roundwood products, such as sawlogs, pulpwood bolts, and veneer logs.

Productivity—Potential yield capability of a stand (in cubic feet per acre per year) calculated here as a function of site index.

Productivity class—A classification of forest land that reflects biological potential. For timberlands, the index used is the potential net annual growth at culmination of mean annual increment in fully stocked natural stands. Woodland is classified as “high site” where sustained wood production is likely, or as “low site” where the continuous production of wood is unlikely.

Removals—The net volume of growing-stock trees removed from the inventory by harvesting, cultural operations, land clearing, and changes in land use.

Reserved forest land—Forest land withdrawn from tree utilization through statute or administrative designation.

Residue—See Mill or plant residue.

Rotten trees—Live poletimber or sawtimber trees with more than 67 percent of the total cubic-foot volume cull and with more than half of the cull volume attributable to rotten or missing material.

Rough trees—Live poletimber or sawtimber trees with more than 67 percent of the total cubic-foot volume cull and with less than half of the cull volume attributable to rotten or missing material.

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

Saplings—Live timber species trees 1 to 4.9 inches d.b.h. or woodland tree species 1 to 2.9 inches d.r.c.

Sapling and seedling stands—Timberland stands at least 10 percent stocked on which more than half of the stocking is saplings or seedlings, or both.

Sawlog portion—That part of the bole of sawtimber trees between a 1 foot stump and the sawlog top.

Sawlog top—The point on the bole of sawtimber trees above which a sawlog cannot be produced. The minimum sawlog top is 7 inches d.o.b. for softwoods and 9 inches d.o.b. for hardwoods.

Sawtimber stands—Stands at least 10 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

Sawtimber trees—Live timber species trees meeting regional size and defect specifications. Softwood trees must be at least 9 inches d.b.h. and hardwood trees 11 inches d.b.h.

Sawtimber volume—Net volume in board feet of the sawlog portion of live sawtimber trees.

Seedlings—Established live timber species trees less than 1 inch d.b.h. or woodland species less than 1 inch d.r.c.

Site index—Expected height (in feet) of a tree on a site at age 50 (or 80 for aspen and cottonwood) calculated from height-to-age equations. Trees selected for site index calculations are dominant or codominant within the stand, age 30 to 200 years, showing high vigor.

Snags—Standing dead trees.

Softwood trees—Coniferous trees that are usually evergreen and have scalelike or linear needlelike leaves.

Standard error—An expression of the degree of confidence that can be placed on an estimated total or average obtained by statistical sampling methods. Standard errors do not include technique errors that occur in photo work, field measurements, or compilation. The standard established in FSH 4809.11 for commercial forest land is 3 percent sampling error at 1 million acres, and 10 percent at 1 billion cubic feet of growing stock volume. The standard for noncommercial forest land is 10 percent sampling error at 1 million acres.

Stand-size classes—A classification of forest land based on the predominant size of trees present (see Sawtimber stands, Poletimber stands, and Sapling and seedling stands).

Stocking—An expression of the extent to which growing space is effectively utilized by present or potential growing-stock trees.

Stocking condition—A categorization of timberland reflecting the degree to which the site is being utilized by growing-stock trees and other conditions affecting current and prospective timber growth (see Stocking). The concept was adapted for woodland, with basal area classes used as stocking condition surrogates:

Overstocked—For timberland, sites at least 60 percent stocked with growing-stock trees, but overstocked with live trees, including live cull trees. For woodland, basal area greater than 160 square feet.

Fully stocked—For timberland, sites at least 60 percent stocked with growing-stock trees and not overstocked. For woodland, between 111 and 160 square feet basal area per acre.

Medium to fully stocked—For timberland, sites 35 to 60 percent stocked with growing-stock trees. Includes areas where other trees, inhibiting vegetation, or surface conditions prevent occupancy by growing-stock trees. For woodland, between 61 and 110 square feet basal area per acre.

Poorly stocked—For timberland, sites less than 35 percent stocked with growing-stock trees. For woodland, between 1 and 60 square feet basal area per acre.

Nonstocked—For timberland, sites less than 10 percent stocked with growing-stock trees. For woodland, less than 1 square foot basal area per acre.

Timberland—Forest land where timber species make up at least 10 percent stocking.

Timber species—Tree species traditionally used for industrial wood products. In the Interior West States, these include aspen, cottonwood, and paper birch hardwood species, and all softwood species except pinyon and juniper.

Timber stand improvement—Treatments such as thinning, pruning, release cutting, girdling, weeding, or poisoning of unwanted trees to improve growing conditions for the remaining trees.

Upper-stem portion—That part of the main stem or fork of sawtimber trees above the sawlog top to a minimum top diameter of 4 inches outside bark or to the point where the main stem or fork breaks into limbs.

Water—Streams, sloughs, estuaries, and canals more than 120 feet wide, and lakes, reservoirs, and ponds larger than 1 acre at mean high water level.

Wilderness—An area of undeveloped land currently included in the Wilderness System, managed to preserve its natural conditions and retain its primeval character and influence.

Woodland—Forest land where timber species make up less than 10 percent stocking.

Woodland average stand diameter class—A woodland stand classification based on the quadratic mean diameter (the diameter corresponding to the tree of average basal area d.r.c.) of the woodland component of the stand.

Woodland profile—A classification of woodland that combines slope, volume per acre, site class, and tree crown cover.

Woodland species—Tree species not usually converted into industrial wood products. Common uses are fuelwood, fenceposts, and Christmas trees.

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Appendix A: Common and Scientific Plant Names

Tree Species

Aspen (*Populus tremuloides*)
Bigtooth maple (*Acer grandidentatum*)
Blue spruce (*Picea pungens*)
Bristlecone pine (*Pinus aristata*)
Cottonwood (*Populus sp.*)
Curlleaf mountain mahogany (*Cercocarpus ledifolius*)
Douglas-fir (*Pseudotsuga menziesii*)
Engelmann spruce (*Picea engelmannii*)
Gambel oak (*Quercus gambelii*)
Limber pine (*Pinus flexilis*)
Lodgepole pine (*Pinus contorta*)
Paper birch (*Betula papyrifera*)
Ponderosa pine (*Pinus ponderosa*)
Rocky Mountain juniper (*Juniperus scopulorum*)
Rocky Mountain maple (*Acer glabrum*)
Singleleaf pinyon (*Pinus monophylla*)
Subalpine fir (*Abies lasiocarpa*)
True mountain mahogany (*Cercocarpus montanus*)
Twoneedle pinyon (*Pinus edulis*)
Utah juniper (*Juniperus osteosperma*)
White fir (*Abies concolor*)
Yew (*Taxus sp.*)

Shrub Species

Big sagebrush (*Artemisia tridentata*)
Common chokecherry (*Prunus virginiana*)
Common juniper (*Juniperus communis*)
Gambel oak (*Quercus gambelii*)
Gooseberry currant (*Ribes montigenum*)
Greenleaf manzanita (*Arctostaphylos patula*)
Grouse whortleberry (*Vaccinium scoparium*)
Mountain snowberry (*Symphoricarpos oreophilus*)
Oregongrape (*Mahonia repens*)
Saskatoon serviceberry (*Amelanchier alnifolia*)
Skunkbush sumac (*Rhus trilobata*)
True mountain mahogany (*Cercocarpus montanus*)
Utah serviceberry (*Amelanchier utahensis*)

Forb Species

Common yarrow (*Achillea millefolium*)
Fendler's meadowrue (*Thalictrum fendleri*)
Western coneflower (*Rudbeckia occidentalis*)

Grass Species

Blue wildrye (*Elymus glaucus*)
Bluebunch wheatgrass (*Pseudoroegneria spicata*)
California brome (*Bromus carinatus*)
Cheatgrass (*Bromus tectorum*)
Elk sedge (*Carex geyeri*)
Kentucky bluegrass (*Poa pratensis*)
Ross' sedge (*Carex rossii*)

Appendix B: Volume and Biomass Equation Sources

Volume

Chojnacky (1985) was used for oak, maple, and mountain mahogany volume estimation.

Chojnacky (1994) was used for pinyon and juniper volume estimation.

Edminster and others (1980) was used for ponderosa pine volume estimation.

Edminster and others (1982) was used for aspen volume estimation.

Kemp (1958) was used for cottonwood volume estimation.

Myers (1964) was used for lodgepole, bristlecone, and limber pine volume estimation.

Myers and Carleton (1972) was used for Douglas-fir, subalpine fir, white fir, Engelmann spruce, and blue spruce volume estimation.

Biomass

Chojnacky (1984) was used for mountain mahogany biomass estimation.

Chojnacky (1992) was used for oak and maple biomass estimation.

Chojnacky and Moisen (1993) was used for pinyon and juniper biomass estimation.

Van Hooser and Chojnacky (1983) was used for all timber species biomass estimation.

Forest Inventory and Analysis Tables

Total Forest Land

Table 1—Total area by ownership class and land class, Utah, 1993.

Ownership class	Land class														
	Nonreserved					Reserved					Total				
	Forest land			Total		Forest land			Total						
	Timberland	Woodland	Total forest land	Nonforest	Water	Forest land	Nonforest	Water	Forest land	Nonforest	Water	Forest land	Nonforest	Water	Total area
----- Acres -----															
Land															
Public															
National Forest	3,342,185	1,833,474	5,175,659	2,083,271	8,073	466,387	363,571	—	829,958	—	5,642,046	2,446,842	8,073	8,096,961	
Bureau of Land Management	340,653	5,726,667	6,067,320	16,716,823	—	4,097	22,533	—	26,630	—	6,071,417	16,739,356	—	22,810,773	
National Park	—	—	—	—	—	237,703	1,698,186	6,563	1,942,453	6,563	237,703	1,698,186	6,563	1,942,453	
Miscellaneous Federal	241	1,022	1,263	38,910	—	—	—	—	40,174	—	1,263	1,817,533	—	1,818,797	
State	223,485	772,813	996,298	3,137,406	—	13,341	77,812	—	91,153	—	1,009,640	3,215,218	—	4,224,857	
County and municipal	1,072	4,698	5,770	14,492	—	—	—	—	—	—	5,770	14,492	—	20,261	
Total public	3,907,636	8,338,675	12,246,311	21,990,901	8,073	721,528	3,940,725	6,563	4,668,817	—	12,967,840	25,931,626	14,636	38,914,102	
Private															
Indian Trust	82,628	397,193	479,821	1,738,394	6,580	47,091	32,623	—	79,715	—	526,913	1,771,017	6,580	2,304,510	
Other private	878,757	1,338,772	2,217,529	8,956,179	39,296	1,525	12,245	—	13,770	—	2,219,054	8,968,424	39,296	11,226,774	
Total private	961,384	1,735,965	2,697,349	10,694,573	45,876	48,616	44,868	—	93,485	—	2,745,967	10,739,441	45,876	13,531,284	
Total land area	4,869,021	10,074,640	14,943,661	32,685,474	53,949	770,146	3,985,593	6,563	4,762,302	—	15,713,806	36,671,067	60,512	52,445,386	
Water ^a	—	—	—	—	1,893,255	—	—	—	—	—	—	—	1,893,255	1,893,255	
Total land and water ^b	4,869,021	10,074,640	14,943,661	32,685,474	1,947,205	770,146	3,985,593	6,563	4,762,302	—	15,713,806	36,671,067	1,953,768	54,338,641	

^a1990 Decennial Census as updated by IWRIME.

^bSource: U.S. Bureau of the Census, 1991.

Area

Table 2—Percent standard error for area, volume, growth, and mortality on forest land, Utah.

Land class	Attribute	Area (acres)	Volume (thousand)	Percent standard error
Forest land^a	Area, 1993	15,713,806		±1.1
	All live, Net volume (cubic feet), 1993		15,376,060	±1.8
	All live, Annual growth (cubic feet), 1992		128,692	±7.6
	All live, Annual mortality (cubic feet), 1992		126,225	±7.1
Nonreserved forest land:				
Timberland	Area, 1993	4,869,021		±1.9
	Net volume, 1993:			
	Growing stock (cubic feet)		7,418,858	±2.8
	Sawtimber - International ¼-inch rule (board feet)		26,262,173	±3.3
	Sawtimber - Scribner rule (board feet)		22,457,992	±3.3
	Net annual growth, 1992:			
	Growing stock (cubic feet)		77,975	±10.5
	Sawtimber - International ¼-inch rule (board feet)		340,555	±11.8
	Sawtimber - Scribner rule (board feet)		287,010	±12.1
	Annual mortality, 1992:			
	Growing stock (cubic feet)		104,134	±6.9
	Sawtimber - International ¼-inch rule (board feet)		381,274	±7.9
	Sawtimber - Scribner rule (board feet)		326,155	±8.0
Woodland	Area, 1993	10,074,640		±1.7
	All live, Net volume (cubic feet), 1993		6,375,684	±2.8
	All live, Annual growth (cubic feet), 1992		45,974	±4.5
	All live, Annual mortality (cubic feet), 1992		6,273	±21.6
Reserved forest land:				
Timberland	Area, 1993	490,124		±5.1
	Net volume, Growing stock (cubic feet), 1993		923,707	±8.3
	Annual growth, Growing stock (cubic feet), 1992		-3	±100.0
	Annual mortality, Growing stock (cubic feet), 1992		14,543	±36.1
Woodland	Area, 1993	280,022		±13.2
	All live, Net volume (cubic feet), 1993		154,032	±18.7
	All live, Annual growth (cubic feet), 1992		854	±22.7
	All live, Annual mortality (cubic feet), 1992		85	±98.5

^aIncludes cull volume on timberland that is not reported in growing stock numbers.

Table 3—Area of forest land by forest type, owner group, and land class, Utah, 1993.

Forest type	National Forest			Owner group								
				Other public		Nonindustrial private		All owners				
	Nonreserved	Reserved	Total	Nonreserved	Reserved	Total	Nonreserved	Reserved	Total			
	----- Acres -----											
Aspen	841,636	6,583	848,220	102,846	—	102,846	465,133	11,773	476,906	1,409,616	18,356	1,427,973
Blue spruce	20,820	—	20,820	—	—	—	—	—	—	20,820	—	20,820
Cottonwood	7,092	—	7,092	5,018	—	5,018	16,688	—	16,688	28,798	—	28,798
Douglas-fir	471,894	68,041	539,934	310,635	13,829	324,463	246,343	17,659	264,002	1,028,871	99,529	1,128,400
Engelmann spruce	318,340	106,329	424,669	—	—	—	27,898	—	27,898	346,238	106,329	452,567
Juniper	139,388	17,040	156,429	915,004	8,893	923,897	302,075	—	302,075	1,356,467	25,933	1,382,400
Limber pine	58,253	12,151	70,404	2,321	—	2,321	—	—	—	60,574	12,151	72,725
Lodgepole pine	352,686	111,824	464,509	—	—	—	29,359	—	29,359	382,044	111,824	493,868
Maple woodland	46,292	—	46,292	7,335	—	7,335	82,877	—	82,877	136,504	—	136,504
Mountain mahogany	152,863	5,214	158,078	89,145	—	89,145	83,191	—	83,191	325,200	5,214	330,414
Oak	273,794	—	273,794	65,003	5,056	70,059	395,183	—	395,183	733,980	5,056	739,036
Pinyon-juniper	1,221,136	37,132	1,258,268	5,428,712	187,502	5,616,214	872,640	19,184	891,825	7,522,489	243,819	7,766,307
Ponderosa pine	387,700	10,952	398,652	103,605	29,868	133,473	62,312	—	62,312	553,617	40,819	594,436
Spruce-fir	602,178	52,950	655,128	7,396	4,939	12,336	68,387	—	68,387	677,962	57,889	735,851
White fir	281,586	38,171	319,757	33,630	5,056	38,685	45,265	—	45,265	360,481	43,227	403,707
All types ^a	5,175,659	466,387	5,642,046	7,070,652	255,141	7,325,793	2,697,350	48,617	2,745,966	14,943,661	770,145	15,713,806

^aOn this and all subsequent tables, totals may vary due to rounding.

Table 4—Area of forest land by forest type, stand-size class, and productivity class, Utah, 1993.

Forest type and stand-size class	Productivity class					
	120-164	85-119	50-84	20-49	0-19	Total
	----- Acres -----					
Aspen						
Sawtimber	—	6,728	80,709	177,680	2,997	268,114
Poletimber	—	10,107	137,289	617,666	86,301	851,363
Sapling/seedling	—	4,173	33,341	212,832	34,362	284,707
Nonstocked	—	—	—	20,767	3,023	23,790
Total	—	21,008	251,339	1,028,944	126,683	1,427,973
Blue spruce						
Sawtimber	—	—	14,220	—	—	14,220
Poletimber	—	—	—	3,069	—	3,069
Sapling/seedling	—	—	—	3,531	—	3,531
Nonstocked	—	—	—	—	—	—
Total	—	—	14,220	6,600	—	20,820
Cottonwood						
Sawtimber	—	—	—	20,756	4,491	25,247
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	3,550	—	—	3,550
Nonstocked	—	—	—	—	—	—
Total	—	—	3,550	20,756	4,491	28,798
Douglas-fir						
Sawtimber	4,173	41,288	304,234	468,573	—	818,268
Poletimber	—	—	32,992	50,378	—	83,370
Sapling/seedling	—	—	29,241	76,946	5,044	111,231
Nonstocked	—	—	9,582	105,948	—	115,530
Total	4,173	41,288	376,049	701,846	5,044	1,128,400
Engelmann spruce						
Sawtimber	—	50,143	129,756	242,819	—	422,718
Poletimber	—	—	7,082	3,300	—	10,383
Sapling/seedling	—	—	3,300	16,166	—	19,466
Nonstocked	—	—	—	—	—	—
Total	—	50,143	140,138	262,286	—	452,567
Juniper						
Sawtimber	—	—	—	—	734,100	734,100
Poletimber	—	—	—	—	632,438	632,438
Sapling/seedling	—	—	—	—	5,609	5,609
Nonstocked	—	—	—	—	10,253	10,253
Total	—	—	—	—	1,382,400	1,382,400
Limber pine						
Sawtimber	—	—	—	52,148	6,093	58,241
Poletimber	—	—	—	5,577	—	5,577
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	5,905	3,003	8,908
Total	—	—	—	63,629	9,096	72,725
Lodgepole pine						
Sawtimber	—	—	23,702	235,180	—	258,882
Poletimber	—	—	2,719	133,589	6,115	142,423
Sapling/seedling	—	—	3,069	83,125	6,369	92,563
Nonstocked	—	—	—	—	—	—
Total	—	—	29,489	451,894	12,484	493,868
Maple woodland						
Sawtimber	—	—	—	—	7,341	7,341
Poletimber	—	—	—	—	87,037	87,037
Sapling/seedling	—	—	—	—	42,127	42,127
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	136,504	136,504

(con.)

Table 4 (Con.)

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Mountain mahogany						
Sawtimber	-	-	-	-	74,101	74,101
Poletimber	-	-	-	-	248,713	248,713
Sapling/seedling	-	-	-	-	7,600	7,600
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	330,414	330,414
Oak						
Sawtimber	-	-	-	-	-	-
Poletimber	-	-	-	-	447,637	447,637
Sapling/seedling	-	-	-	-	291,398	291,398
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	739,036	739,036
Pinyon-juniper						
Sawtimber	-	-	-	-	4,254,896	4,254,896
Poletimber	-	-	-	-	3,330,888	3,330,888
Sapling/seedling	-	-	-	-	155,564	155,564
Nonstocked	-	-	-	-	24,959	24,959
Total	-	-	-	-	7,766,307	7,766,307
Ponderosa pine						
Sawtimber	-	-	97,270	319,643	-	416,914
Poletimber	-	-	3,020	20,639	-	23,659
Sapling/seedling	-	-	9,816	28,943	-	38,759
Nonstocked	-	-	-	115,105	-	115,105
Total	-	-	110,106	484,330	-	594,436
Spruce-fir						
Sawtimber	2,748	90,930	246,265	174,754	3,542	518,239
Poletimber	-	-	55,535	59,091	-	114,626
Sapling/seedling	-	-	15,784	66,692	10,636	93,112
Nonstocked	-	-	-	9,873	-	9,873
Total	2,748	90,930	317,583	310,411	14,178	735,851
White fir						
Sawtimber	-	44,868	189,084	120,112	-	354,065
Poletimber	-	-	6,583	-	-	6,583
Sapling/seedling	-	-	20,470	14,055	-	34,525
Nonstocked	-	-	8,534	-	-	8,534
Total	-	44,868	224,672	134,167	-	403,707
All types						
Sawtimber	6,921	233,957	1,085,240	1,811,667	5,087,561	8,225,346
Poletimber	-	10,107	245,220	893,309	4,839,129	5,987,765
Sapling/seedling	-	4,173	118,571	502,291	558,709	1,183,743
Nonstocked	-	-	18,117	257,598	41,237	316,952
Total	6,921	248,237	1,467,147	3,464,864	10,526,637	15,713,806

Table 5—Area of National Forest System forest land by forest type, stand-size class, and productivity class, Utah, 1993.

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Aspen						
Sawtimber	—	6,728	39,578	138,585	2,997	187,887
Poletimber	—	1,900	113,709	342,610	21,094	479,313
Sapling/seedling	—	4,173	24,721	122,422	17,686	169,003
Nonstocked	—	—	—	8,994	3,023	12,017
Total	—	12,800	178,009	612,611	44,800	848,220
Blue spruce						
Sawtimber	—	—	14,220	—	—	14,220
Poletimber	—	—	—	3,069	—	3,069
Sapling/seedling	—	—	—	3,531	—	3,531
Nonstocked	—	—	—	—	—	—
Total	—	—	14,220	6,600	—	20,820
Cottonwood						
Sawtimber	—	—	—	3,542	—	3,542
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	3,550	—	—	3,550
Nonstocked	—	—	—	—	—	—
Total	—	—	3,550	3,542	—	7,092
Douglas-fir						
Sawtimber	4,173	30,379	188,386	209,122	—	432,060
Poletimber	—	—	10,390	30,989	—	41,378
Sapling/seedling	—	—	8,618	18,902	—	27,519
Nonstocked	—	—	—	38,977	—	38,977
Total	4,173	30,379	207,393	297,990	—	539,934
Engelmann spruce						
Sawtimber	—	34,960	129,756	230,104	—	394,820
Poletimber	—	—	7,082	3,300	—	10,383
Sapling/seedling	—	—	3,300	16,166	—	19,466
Nonstocked	—	—	—	—	—	—
Total	—	34,960	140,138	249,571	—	424,669
Juniper						
Sawtimber	—	—	—	—	55,190	55,190
Poletimber	—	—	—	—	93,033	93,033
Sapling/seedling	—	—	—	—	5,609	5,609
Nonstocked	—	—	—	—	2,597	2,597
Total	—	—	—	—	156,429	156,429
Limber pine						
Sawtimber	—	—	—	49,826	6,093	55,919
Poletimber	—	—	—	5,577	—	5,577
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	5,905	3,003	8,908
Total	—	—	—	61,308	9,096	70,404
Lodgepole pine						
Sawtimber	—	—	17,633	218,188	—	235,821
Poletimber	—	—	2,719	127,291	6,115	136,125
Sapling/seedling	—	—	3,069	83,125	6,369	92,563
Nonstocked	—	—	—	—	—	—
Total	—	—	23,421	428,604	12,484	464,509
Maple woodland						
Sawtimber	—	—	—	—	7,341	7,341
Poletimber	—	—	—	—	30,055	30,055
Sapling/seedling	—	—	—	—	8,896	8,896
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	46,292	46,292

(con.)

Table 5 (Con.)

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Mountain mahogany						
Sawtimber	-	-	-	-	45,521	45,521
Poletimber	-	-	-	-	109,778	109,778
Sapling/seedling	-	-	-	-	2,779	2,779
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	158,078	158,078
Oak						
Sawtimber	-	-	-	-	-	-
Poletimber	-	-	-	-	194,839	194,839
Sapling/seedling	-	-	-	-	78,956	78,956
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	273,794	273,794
Pinyon-juniper						
Sawtimber	-	-	-	-	603,041	603,041
Poletimber	-	-	-	-	635,232	635,232
Sapling/seedling	-	-	-	-	19,996	19,996
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	1,258,268	1,258,268
Ponderosa pine						
Sawtimber	-	-	71,447	233,816	-	305,264
Poletimber	-	-	3,020	20,639	-	23,659
Sapling/seedling	-	-	-	23,507	-	23,507
Nonstocked	-	-	-	46,222	-	46,222
Total	-	-	74,468	324,184	-	398,652
Spruce-fir						
Sawtimber	2,748	78,695	208,264	169,815	3,542	463,064
Poletimber	-	-	47,644	59,091	-	106,736
Sapling/seedling	-	-	3,069	61,750	10,636	75,455
Nonstocked	-	-	-	9,873	-	9,873
Total	2,748	78,695	258,977	300,530	14,178	655,128
White fir						
Sawtimber	-	34,370	157,267	80,798	-	272,436
Poletimber	-	-	6,583	-	-	6,583
Sapling/seedling	-	-	18,148	14,055	-	32,204
Nonstocked	-	-	8,534	-	-	8,534
Total	-	34,370	190,533	94,854	-	319,757
All types						
Sawtimber	6,921	185,132	826,551	1,333,797	723,724	3,076,126
Poletimber	-	1,900	191,148	592,565	1,090,145	1,875,758
Sapling/seedling	-	4,173	64,476	343,459	150,927	563,034
Nonstocked	-	-	8,534	109,971	8,623	127,128
Total	6,921	191,205	1,090,709	2,379,793	1,973,419	5,642,046

Table 6—Area of other publicly owned forest land by forest type, stand-size class, and productivity class, Utah, 1993.

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Aspen						
Sawtimber	—	—	17,279	21,369	—	38,648
Poletimber	—	—	8,132	33,991	5,832	47,955
Sapling/seedling	—	—	2,321	11,467	2,454	16,243
Nonstocked	—	—	—	—	—	—
Total	—	—	27,732	66,828	8,287	102,846
Blue spruce						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Cottonwood						
Sawtimber	—	—	—	5,018	—	5,018
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	5,018	—	5,018
Douglas-fir						
Sawtimber	—	—	58,245	165,633	—	223,879
Poletimber	—	—	6,766	12,373	—	19,138
Sapling/seedling	—	—	—	35,848	—	35,848
Nonstocked	—	—	9,582	36,016	—	45,599
Total	—	—	74,593	249,870	—	324,463
Engelmann spruce						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Juniper						
Sawtimber	—	—	—	—	575,850	575,850
Poletimber	—	—	—	—	348,047	348,047
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	923,897	923,897
Limber pine						
Sawtimber	—	—	—	2,321	—	2,321
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	2,321	—	2,321
Lodgepole pine						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Maple woodland						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	7,335	7,335
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	7,335	7,335

(con.)

Table 6 (Con.)

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Mountain mahogany						
Sawtimber	-	-	-	-	15,415	15,415
Poletimber	-	-	-	-	68,910	68,910
Sapling/seedling	-	-	-	-	4,821	4,821
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	89,145	89,145
Oak						
Sawtimber	-	-	-	-	-	-
Poletimber	-	-	-	-	51,651	51,651
Sapling/seedling	-	-	-	-	18,408	18,408
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	70,059	70,059
Pinyon-juniper						
Sawtimber	-	-	-	-	3,109,659	3,109,659
Poletimber	-	-	-	-	2,375,912	2,375,912
Sapling/seedling	-	-	-	-	116,516	116,516
Nonstocked	-	-	-	-	14,128	14,128
Total	-	-	-	-	5,616,214	5,616,214
Ponderosa pine						
Sawtimber	-	-	17,615	46,974	-	64,590
Poletimber	-	-	-	-	-	-
Sapling/seedling	-	-	-	-	-	-
Nonstocked	-	-	-	68,883	-	68,883
Total	-	-	17,615	115,857	-	133,473
Spruce-fir						
Sawtimber	-	-	-	4,939	-	4,939
Poletimber	-	-	2,454	-	-	2,454
Sapling/seedling	-	-	-	4,942	-	4,942
Nonstocked	-	-	-	-	-	-
Total	-	-	2,454	9,881	-	12,336
White fir						
Sawtimber	-	5,056	6,510	24,798	-	36,364
Poletimber	-	-	-	-	-	-
Sapling/seedling	-	-	2,321	-	-	2,321
Nonstocked	-	-	-	-	-	-
Total	-	5,056	8,832	24,798	-	38,685
All types						
Sawtimber	-	5,056	99,650	271,054	3,700,923	4,076,682
Poletimber	-	-	17,352	46,364	2,850,352	2,914,068
Sapling/seedling	-	-	4,643	52,257	149,534	206,434
Nonstocked	-	-	9,582	104,899	14,128	128,609
Total	-	5,056	131,227	474,573	6,714,937	7,325,793

Table 7—Area of nonindustrial private forest land by forest type, stand-size class, and productivity class, Utah, 1993.

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Aspen						
Sawtimber	—	—	23,852	17,726	—	41,578
Poletimber	—	8,207	15,448	241,064	59,375	324,094
Sapling/seedling	—	—	6,298	78,942	14,221	99,461
Nonstocked	—	—	—	11,773	—	11,773
Total	—	8,207	45,598	349,505	73,596	476,906
Blue spruce						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Cottonwood						
Sawtimber	—	—	—	12,196	4,491	16,688
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	12,196	4,491	16,688
Douglas-fir						
Sawtimber	—	10,910	57,603	93,818	—	162,330
Poletimber	—	—	15,836	7,017	—	22,853
Sapling/seedling	—	—	20,623	22,197	5,044	47,864
Nonstocked	—	—	—	30,955	—	30,955
Total	—	10,910	94,063	153,986	5,044	264,002
Engelmann spruce						
Sawtimber	—	15,183	—	12,715	—	27,898
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	15,183	—	12,715	—	27,898
Juniper						
Sawtimber	—	—	—	—	103,061	103,061
Poletimber	—	—	—	—	191,358	191,358
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	7,655	7,655
Total	—	—	—	—	302,075	302,075
Limber pine						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Lodgepole pine						
Sawtimber	—	—	6,068	16,992	—	23,061
Poletimber	—	—	—	6,298	—	6,298
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	6,068	23,290	—	29,359
Maple woodland						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	56,981	56,981
Sapling/seedling	—	—	—	—	25,896	25,896
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	82,877	82,877

(con.)

Table 7 (Con.)

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Mountain mahogany						
Sawtimber	-	-	-	-	13,165	13,165
Poletimber	-	-	-	-	70,026	70,026
Sapling/seedling	-	-	-	-	-	-
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	83,191	83,191
Oak						
Sawtimber	-	-	-	-	-	-
Poletimber	-	-	-	-	201,148	201,148
Sapling/seedling	-	-	-	-	194,035	194,035
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	395,183	395,183
Pinyon-juniper						
Sawtimber	-	-	-	-	542,197	542,197
Poletimber	-	-	-	-	319,744	319,744
Sapling/seedling	-	-	-	-	19,053	19,053
Nonstocked	-	-	-	-	10,831	10,831
Total	-	-	-	-	891,825	891,825
Ponderosa pine						
Sawtimber	-	-	8,207	38,853	-	47,060
Poletimber	-	-	-	-	-	-
Sapling/seedling	-	-	9,816	5,436	-	15,252
Nonstocked	-	-	-	-	-	-
Total	-	-	18,023	44,289	-	62,312
Spruce-fir						
Sawtimber	-	12,235	38,001	-	-	50,236
Poletimber	-	-	5,436	-	-	5,436
Sapling/seedling	-	-	12,715	-	-	12,715
Nonstocked	-	-	-	-	-	-
Total	-	12,235	56,152	-	-	68,387
White fir						
Sawtimber	-	5,442	25,307	14,516	-	45,265
Poletimber	-	-	-	-	-	-
Sapling/seedling	-	-	-	-	-	-
Nonstocked	-	-	-	-	-	-
Total	-	5,442	25,307	14,516	-	45,265
All types						
Sawtimber	-	43,770	159,038	206,816	662,914	1,072,538
Poletimber	-	8,207	36,720	254,379	898,632	1,197,938
Sapling/seedling	-	-	49,452	106,575	258,248	414,276
Nonstocked	-	-	-	42,728	18,487	61,214
Total	-	51,977	245,211	610,498	1,838,281	2,745,966

Table 8—Area of forest land by stand volume and owner group, Utah, 1993.

Stand volume per acre ^a	Owner group			Total
	National Forest	Other public	Nonindustrial private	
	----- Acres -----			
	2,884,166	6,924,353	2,213,555	12,022,075
1,500 to 4,999 board feet	960,598	262,298	262,967	1,485,863
5,000 to 9,999 board feet	911,805	77,059	184,558	1,173,372
10,000 board feet or more	885,477	62,083	84,936	1,032,496
Total	5,642,046	7,325,793	2,745,966	15,713,806

^aInternational 1/4-inch rule.

Table 9—Area of forest land by forest type and stocking condition, Utah, 1993.

Forest type	Stocking condition					Total
	Overstocked	Fully stocked	Medium to fully stocked	Poorly stocked	Nonstocked	
----- Acres -----						
Aspen	221,699	378,298	475,175	303,046	49,756	1,427,973
Blue spruce	–	3,542	3,542	13,736	–	20,820
Cottonwood	–	–	8,568	20,229	–	28,798
Douglas-fir	35,085	181,774	364,771	404,656	142,113	1,128,400
Engelmann spruce	34,158	113,511	181,595	123,303	–	452,567
Juniper	166,034	163,301	445,594	594,620	12,850	1,382,400
Limber pine	–	3,606	29,547	24,049	15,522	72,725
Lodgepole pine	121,564	154,302	181,418	36,584	–	493,868
Maple woodland	23,457	19,209	31,294	48,106	14,438	136,504
Mountain mahogany	25,525	111,084	118,069	75,736	–	330,414
Oak	25,527	73,579	90,265	480,105	69,560	739,036
Pinyon-juniper	1,342,701	1,724,977	2,311,221	2,311,549	75,860	7,766,307
Ponderosa pine	–	16,489	142,674	288,521	146,752	594,436
Spruce-fir	132,083	225,656	259,008	109,230	9,873	735,851
White fir	56,353	92,178	148,977	79,511	26,688	403,707
All types	2,184,187	3,261,505	4,791,719	4,912,983	563,412	15,713,806

Table 10—Area of forest land by field location history and distance to road, Utah, 1993.

Field location history	Distance to road					Total
	Less than ½ mile	½ to 1 mile	1 to 3 miles	3 to 5 miles	Greater than 5 miles	
	----- Acres -----					
None	2,409,486	2,542,990	4,081,293	1,364,938	1,248,846	11,647,553
Tree cutting	527,436	297,997	299,964	72,446	30,829	1,228,673
Animal damage	65,511	19,494	42,302	3,847	7,173	138,327
Insect damage	106,381	81,453	133,962	33,998	17,121	372,915
Disease damage	152,085	126,425	285,947	92,830	54,238	711,524
Weather damage	30,154	33,698	107,855	36,068	–	207,774
Wind damage	19,771	11,544	29,969	6,075	7,845	75,204
Fire evidence	167,545	76,122	264,860	68,581	48,359	625,468
Other land clearing	8,690	13,643	18,375	–	–	40,708
Road building	74,541	9,625	6,325	14,398	3,542	108,432
Chaining	103,496	83,657	104,797	32,366	20,434	344,749
Other	83,739	9,850	76,699	3,542	8,816	182,646
Mining	5,982	6,854	11,307	–	5,691	29,834
Total	3,754,816	3,313,352	5,463,655	1,729,089	1,452,893	15,713,806

Table 11—Area of forest land by forest type and stand-age class, Utah, 1993.

Forest type	Nonstocked/ Unclassified	Stand-age class														Total
		1-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	401-450	451-500	501-550	551-600	601-650	651-700	
		Acres														
Aspen	23,790	348,038	932,382	120,766	2,997	-	-	-	-	-	-	-	-	-	-	1,427,973
Blue spruce	-	3,069	14,209	3,542	-	-	-	-	-	-	-	-	-	-	-	20,820
Cottonwood	-	3,550	-	21,706	3,542	-	-	-	-	-	-	-	-	-	-	28,798
Douglas-fir	115,530	131,057	397,977	284,570	92,843	63,584	25,491	17,348	-	-	-	-	-	-	-	1,128,400
Engelmann spruce	-	19,466	90,119	204,308	91,357	23,065	16,015	8,237	-	-	-	-	-	-	-	452,567
Juniper	10,253	155,725	694,552	295,456	97,880	45,006	17,536	27,274	14,390	7,252	5,691	-	-	11,383	-	1,382,400
Limber pine	8,908	-	10,166	40,324	4,173	6,833	-	2,321	-	-	-	-	-	-	-	72,725
Lodgepole pine	-	70,932	182,629	135,902	80,303	24,102	-	-	-	-	-	-	-	-	-	493,868
Maple woodland	-	80,476	52,478	3,550	-	-	-	-	-	-	-	-	-	-	-	136,504
Mountain mahogany	-	126,256	162,426	26,865	5,691	5,634	3,542	-	-	-	-	-	-	-	-	330,414
Oak	-	342,956	290,440	98,307	7,332	-	-	-	-	-	-	-	-	-	-	739,036
Pinyon-juniper	24,959	813,856	2,629,171	1,603,278	1,077,571	615,987	497,906	267,152	96,225	74,975	35,795	20,236	3,760	5,436	-	7,766,307
Ponderosa pine	115,105	64,735	235,266	87,442	50,195	19,096	13,536	6,040	3,020	-	-	-	-	-	-	594,436
Spruce-fir	9,873	82,410	330,354	247,877	49,071	16,265	-	-	-	-	-	-	-	-	-	735,851
White fir	8,534	48,420	189,681	98,971	44,155	8,297	5,648	-	-	-	-	-	-	-	-	403,707
All types	316,952	2,290,949	6,211,850	3,272,865	1,607,110	827,868	579,675	328,372	113,635	82,228	35,795	25,927	3,760	5,436	11,383	15,713,806

Table 12—Area at risk of attack by bark beetles by forest type and risk category, Utah, 1993.

Forest type	Acres				Not evaluated	Total
	Low	Moderate	High	80 percent dead		
Spruce and spruce-fir	299,026	525,609	51,782	11,011	321,809	1,209,237
Lodgepole pine	65,772	342,758	35,932	37,029	12,377	493,868
Douglas-fir	197,675	384,245	442,564	16,824	87,092	1,128,400
Ponderosa pine	128,203	215,116	217,695	6,260	27,162	594,436
Total	690,676	1,467,728	747,973	71,124	448,440	3,425,941

Table 13—Area of forest land by habitat type series and forest type, Utah, 1993.

Habitat type series	Forest type												All types			
	Aspen	Blue spruce	Cottonwood	Douglas-fir	Engelmann spruce	Juniper	Limber pine	Lodgepole pine	Maple woodland	Mountain mahogany	Oak	Pinyon- juniper		Ponderosa pine	Spruce-fir	White fir
	Acres															
Aspen	928,399	—	—	27,084	3,542	—	—	—	9,078	—	—	—	—	21,592	24,307	1,014,002
Blue spruce	13,515	13,222	—	11,238	—	—	—	—	—	—	—	—	5,577	—	—	43,551
Douglas-fir	91,502	—	—	723,735	3,058	—	—	—	7,933	—	—	—	78,873	3,022	17,363	925,486
Engelmann spruce	8,727	—	—	10,482	140,238	—	—	7,293	67,735	—	—	—	—	8,797	—	243,271
Limber pine	—	—	—	23,366	—	—	—	28,156	—	—	—	—	6,040	—	—	57,563
Lodgepole pine	5,717	—	—	—	—	—	—	—	170,013	—	—	—	3,069	—	—	178,799
Ponderosa pine	22,320	—	—	3,020	—	—	—	—	—	—	—	—	412,246	3,020	—	440,607
Subalpine fir	222,627	3,531	—	158,963	268,668	—	18,476	204,335	—	—	—	—	3,020	651,081	14,716	1,545,418
White fir	79,042	4,068	—	125,437	14,834	—	11,085	—	—	—	—	—	64,022	17,513	347,322	663,323
Unclassified	56,124	—	28,798	45,074	22,228	1,382,400	7,715	34,773	136,504	330,414	739,036	7,766,307	21,589	30,825	—	10,601,786
All types	1,427,973	20,820	28,798	1,128,400	452,567	1,382,400	72,725	493,868	136,504	330,414	739,036	7,766,307	594,436	735,851	403,707	15,713,806

Number of Trees

Table 14—Number of live trees on forest land by species and diameter class, Utah, 1993.

Species	Diameter class (inches)																All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
-----Thousand trees-----																	
Blue spruce	3,138	1,513	1,603	1,271	678	336	257	182	171	56	126	46	50	41	28	9,495	
Bristlecone pine	-	181	405	334	38	153	117	70	38	62	14	8	-	12	5	1,439	
Douglas-fir	53,565	37,713	26,823	21,949	13,707	10,915	9,004	6,856	4,286	2,794	1,844	1,047	758	374	672	192,307	
Engelmann spruce	61,490	44,677	22,699	19,289	14,722	13,051	9,599	6,508	3,633	3,125	1,861	1,059	570	246	351	202,881	
Limber pine	5,139	3,911	3,305	1,798	694	853	616	647	288	234	134	125	55	21	107	17,926	
Lodgepole pine	104,610	75,424	46,373	28,602	17,325	8,578	4,538	2,039	1,195	589	157	33	23	5	8	289,499	
Ponderosa pine	8,155	10,555	7,614	4,661	4,080	3,059	2,559	2,519	1,593	1,111	885	440	428	313	364	48,335	
Rocky Mountain juniper ^a	25,011	15,208	10,904	8,519	5,904	3,404	1,977	1,110	1,187	814	603	84	216	66	96	75,104	
Singleleaf pinyon ^a	106,825	49,105	27,525	17,784	10,789	5,915	3,851	2,285	1,026	461	314	-	-	110	-	225,989	
Subalpine fir	251,316	88,599	48,315	28,979	16,765	8,745	4,984	2,839	1,632	876	648	277	229	78	70	454,352	
Twoneedle pinyon ^a	275,546	143,606	104,567	74,950	51,294	38,033	23,049	13,430	7,768	4,490	2,313	1,872	957	673	513	743,062	
Utah juniper ^a	195,671	106,399	109,248	98,778	86,399	76,116	71,325	52,975	40,514	28,607	17,372	12,760	10,146	5,210	10,623	922,143	
White fir	68,947	30,163	17,241	12,018	8,412	4,661	3,708	2,466	1,733	1,017	699	290	315	102	205	151,978	
Softwood total	1,159,410	607,055	426,623	318,933	230,808	173,820	135,585	93,926	65,065	44,236	26,970	18,043	13,746	7,251	13,042	3,334,512	
Aspen	340,419	240,081	175,464	96,909	41,977	17,918	7,875	3,279	996	272	73	44	4	12	-	925,324	
Bigtooth maple ^a	151,589	38,032	16,850	5,407	2,413	1,380	1,040	222	350	40	-	-	-	-	-	217,323	
Cottonwood	-	301	245	406	385	265	211	57	55	141	134	82	59	35	51	2,427	
Curleaf min. mahogany ^a	32,377	21,113	25,040	20,025	14,313	8,048	3,709	1,522	1,511	454	156	156	8	13	15	128,460	
Gambel oak ^a	1,258,520	250,415	65,278	14,828	2,265	731	-	94	22	-	14	-	-	-	-	1,592,167	
Rocky Mountain maple ^a	45,295	8,702	3,574	1,035	505	121	60	19	-	-	-	-	-	-	-	59,311	
True mtn. mahogany ^a	723	363	251	272	91	-	-	-	-	-	-	-	-	-	-	1,700	
Hardwood total	1,828,923	559,007	286,702	138,881	61,949	28,463	12,896	5,193	2,934	907	377	281	71	60	66	2,926,713	
All species	2,988,333	1,166,062	713,325	457,814	292,757	202,284	148,481	99,119	67,999	45,143	27,347	18,324	13,817	7,311	13,108	6,261,224	

^aDiameter taken at root collar rather than at breast height.

Table 15—Number of standing dead trees on forest land by species and diameter class, Utah, 1993.

Species	Diameter class (inches)														All classes	
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
	Thousand trees															
Blue spruce	(a)	-	77	45	31	-	66	15	13	-	9	13	-	-	268	
Bristlecone pine	(a)	-	-	62	-	-	-	28	-	24	-	16	-	-	130	
Douglas-fir	(a)	2,998	1,404	1,964	1,797	1,154	585	570	366	197	133	96	62	131	11,456	
Engelmann spruce	(a)	1,974	1,041	1,527	1,547	1,176	829	738	435	268	134	108	67	48	9,891	
Limber pine	(a)	298	450	100	306	67	190	120	106	23	38	26	-	22	1,745	
Lodgepole pine	(a)	8,804	8,770	6,129	3,032	1,386	1,106	521	127	94	16	10	-	-	29,995	
Ponderosa pine	(a)	135	304	312	197	212	89	158	131	47	36	78	73	101	1,873	
Rocky Mountain juniper ^b	302	39	272	287	48	74	-	-	11	-	-	-	-	-	1,032	
Singleleaf pinyon ^b	182	214	384	477	471	122	97	127	38	-	-	-	-	-	2,112	
Subalpine fir	(a)	8,539	7,003	5,449	2,933	1,827	820	535	260	119	92	36	7	40	27,659	
Twoneedle pinyon ^b	1,077	2,424	3,453	4,036	4,002	2,125	1,275	223	425	199	239	-	-	226	19,705	
Utah juniper ^b	543	3,023	3,361	5,925	4,557	3,893	3,837	2,099	1,974	711	324	80	288	109	30,725	
White fir	(a)	2,230	1,809	746	577	349	214	202	109	72	43	-	6	20	6,377	
Softwood total	2,104	30,679	28,328	27,059	19,498	12,385	9,107	5,335	3,995	1,753	1,063	462	503	698	142,969	
Aspen	(a)	32,156	12,024	3,323	1,714	722	146	324	68	9	32	-	-	-	50,518	
Bigtooth maple ^b	3,999	1,790	392	206	-	-	-	-	-	-	-	-	-	-	6,387	
Cottonwood	(a)	273	121	101	114	-	38	25	35	39	42	-	17	11	815	
Curleaf mtn. mahogany ^b	1,940	2,488	1,974	2,195	812	390	161	-	28	-	-	-	-	-	9,988	
Gambel oak ^b	28,451	6,084	684	118	41	-	-	-	19	17	-	-	-	-	35,413	
Rocky Mountain maple ^b	1,430	442	60	-	-	34	-	-	-	-	-	-	-	-	1,967	
True mtn. mahogany ^b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hardwood total	35,820	43,232	15,255	5,942	2,682	1,146	346	349	150	65	74	-	17	11	105,089	
All species	37,924	73,910	43,584	33,001	22,180	13,532	9,453	5,684	4,145	1,818	1,137	462	520	709	248,058	

^aDo not have calculations made below 5" diameter.

^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Biomass

Table 16—Total oven-dry weight of biomass of all live trees on forest land by species and diameter class, Utah, 1993.

Species	Diameter class (inches)																All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
Thousand tons																	
Blue spruce	19	33	59	107	106	86	102	104	128	46	153	69	85	82	80	1,260	
Bristlecone pine	—	4	16	22	8	32	41	33	28	37	13	8	—	19	7	268	
Douglas-fir	295	924	1,266	2,402	2,608	3,417	4,104	4,475	3,779	3,063	2,459	1,716	1,399	807	2,118	34,832	
Engelmann spruce	369	961	928	1,720	2,467	3,503	3,858	3,694	2,746	2,957	2,138	1,438	910	492	924	29,105	
Limber pine	26	78	134	170	118	220	228	286	164	174	125	139	82	32	235	2,209	
Lodgepole pine	523	1,508	2,791	3,391	3,688	2,842	2,044	1,230	885	539	165	43	33	12	17	19,712	
Ponderosa pine	41	211	344	350	586	742	990	1,388	1,219	1,127	1,183	734	834	774	1,280	11,804	
Rocky Mountain juniper ^b	121	177	306	452	518	542	400	283	415	335	263	46	147	50	69	4,125	
Singleleaf pinyon ^b	489	493	743	997	1,045	884	798	564	334	209	161	—	—	85	—	6,802	
Subalpine fir	1,382	1,905	2,011	2,645	2,881	2,381	1,968	1,615	1,192	801	721	375	361	140	172	20,551	
Twonneedle pinyon ^b	1,288	1,423	2,604	3,738	4,355	5,199	4,338	3,399	2,468	1,712	1,063	1,079	699	575	623	34,565	
Utah juniper ^b	928	1,035	2,380	4,035	5,594	7,230	9,216	8,865	8,909	7,602	5,575	4,914	4,577	2,627	7,889	81,376	
White fir	379	649	674	1,138	1,405	1,260	1,476	1,360	1,284	913	814	402	486	186	539	12,965	
Softwood total	5,860	9,400	14,258	21,168	25,380	28,338	29,564	27,296	23,551	19,515	14,834	10,962	9,613	5,882	13,953	259,574	
Aspen	681	2,281	5,702	8,467	7,206	5,159	3,317	1,905	772	254	85	60	7	23	—	35,921	
Bigtooth maple ^b	919	659	793	517	337	275	334	89	221	32	—	—	—	—	—	4,177	
Cottonwood	—	3	5	18	50	45	61	25	33	95	97	88	81	57	111	768	
Curleaf mtn. mahogany ^b	64	226	706	1,135	1,500	1,379	942	577	793	324	130	172	11	21	34	8,013	
Gambel oak ^b	14,951	3,675	3,089	1,677	402	221	—	45	22	—	21	—	—	—	—	24,104	
Rocky Mountain maple ^b	174	140	180	115	103	32	20	11	—	—	—	—	—	—	—	774	
True mtn. mahogany ^b	(^a)	4	8	14	9	—	—	—	—	—	—	—	—	—	—	35	
Hardwood total	16,790	6,988	10,483	11,942	9,607	7,112	4,674	2,652	1,842	705	332	320	99	101	145	73,792	
All species	22,650	16,388	24,741	33,110	34,987	35,450	34,238	29,948	25,393	20,220	15,166	11,282	9,712	5,983	14,098	333,366	

^aLess than 500 tons.

^bDiameter taken at root collar rather than at breast height.

Volume

Table 17—Net volume of all live trees on forest land by forest type and stand-size class, Utah, 1993.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
----- Thousand cubic feet -----					
Aspen	524,844	1,159,958	79,841	1,881	1,766,524
Blue spruce	34,981	1,105	867	—	36,953
Cottonwood	19,281	—	541	—	19,822
Douglas-fir	1,483,481	157,054	67,182	50,701	1,758,418
Engelmann spruce	1,098,131	27,458	4,915	—	1,130,504
Juniper	456,265	203,446	106	866	660,683
Limber pine	63,403	5,478	—	1,679	70,560
Lodgepole pine	712,947	246,418	37,465	—	996,830
Maple woodland	6,830	101,401	14,000	—	122,232
Mountain mahogany	52,223	112,826	272	—	165,322
Oak	—	189,722	29,891	—	219,613
Pinyon-juniper	3,511,339	1,850,664	3,763	188	5,365,955
Ponderosa pine	475,772	17,488	13,958	60,122	567,340
Spruce-fir	1,473,823	226,372	36,100	5,403	1,741,699
White fir	720,739	9,892	18,855	4,119	753,606
All types	10,634,060	4,309,283	307,757	124,960	15,376,060

Table 18—Net volume of all live trees on forest land by species and owner group, Utah, 1993.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Blue spruce	68,607	—	4,766	73,372
Bristlecone pine	7,877	3,584	—	11,461
Douglas-fir	993,271	300,957	353,500	1,647,728
Engelmann spruce	1,633,131	6,082	71,653	1,710,865
Limber pine	88,342	7,291	13,029	108,661
Lodgepole pine	940,797	652	83,936	1,025,385
Ponderosa pine	382,078	77,497	68,043	527,618
Rocky Mountain juniper	112,691	54,388	17,852	184,931
Singleleaf pinyon	38,238	298,456	20,533	357,227
Subalpine fir	893,380	19,592	117,831	1,030,803
Twoneedle pinyon	462,878	1,237,783	237,615	1,938,276
Utah juniper	581,919	2,746,460	473,243	3,801,622
White fir	485,886	49,107	63,606	598,599
Softwood total	6,689,096	4,801,849	1,525,605	13,016,549
Aspen	1,222,814	127,204	393,565	1,743,583
Bigtooth maple	29,629	7,965	97,914	135,507
Cottonwood	4,488	7,723	18,580	30,792
Curlleaf mtn. mahogany	82,674	55,703	30,502	168,879
Gambel oak	109,047	39,084	107,066	255,197
Rocky Mountain maple	21,456	1,132	2,272	24,859
True mtn. mahogany	46	646	—	693
Hardwood total	1,470,154	239,458	649,899	2,359,511
All species	8,159,250	5,041,306	2,175,504	15,376,060

Table 19--Net volume of all live trees on forest land by species and diameter class, Utah, 1993.

Species	Diameter class (inches)														All classes
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
	Thousand cubic feet														
Blue spruce	(a)	2,534	5,176	6,369	5,439	6,645	6,784	8,337	2,918	9,718	4,352	5,240	5,014	4,847	73,372
Bristlecone pine	(a)	434	1,129	473	1,359	2,303	1,124	1,628	1,445	272	432	-	715	147	11,461
Douglas-fir	(a)	49,059	110,622	127,112	172,454	210,323	232,540	191,276	152,885	118,333	83,293	65,083	37,072	97,676	1,647,728
Engelmann spruce	(a)	43,238	97,709	149,916	219,753	248,689	240,780	174,893	185,497	129,680	87,790	53,144	27,931	51,846	1,710,865
Limber pine	(a)	4,043	9,785	6,797	12,404	13,005	15,177	7,960	9,174	6,872	7,548	2,967	1,717	11,210	108,661
Lodgepole pine	(a)	128,956	208,335	233,334	171,227	122,980	72,444	46,350	27,853	8,857	1,528	1,825	719	977	1,025,385
Ponderosa pine	(a)	11,735	16,621	29,928	38,164	48,570	67,543	56,338	50,126	54,057	32,588	35,286	33,681	52,981	527,618
Rocky Mountain juniper ^b	5,209	10,769	17,884	21,851	24,865	19,540	14,023	21,391	17,998	14,189	2,542	7,886	2,864	3,919	184,931
Singleleaf pinyon ^b	17,509	34,548	53,696	60,767	54,220	49,829	35,737	21,167	13,337	10,901	-	-	5,517	-	357,227
Subalpine fir	(a)	96,844	152,567	180,867	151,131	126,207	104,537	74,005	48,370	41,349	19,542	18,931	7,401	9,053	1,030,803
Twonneedle pinyon ^b	50,606	119,207	196,830	247,709	312,229	266,613	213,505	157,848	110,532	69,785	70,716	46,924	34,158	41,614	1,938,276
Utah juniper ^b	30,684	84,914	158,611	236,253	321,200	418,372	418,964	426,049	366,596	274,417	247,621	238,905	137,422	441,615	3,801,622
White fir	(a)	26,088	54,689	72,165	67,401	79,755	72,120	68,719	44,689	39,501	18,628	22,720	8,442	23,682	598,599
Softwood total	104,007	612,370	1,083,654	1,373,540	1,551,845	1,612,831	1,495,279	1,255,960	1,031,421	777,931	576,581	498,910	302,653	739,567	13,016,549
Aspen	(a)	327,488	480,093	390,472	261,872	152,397	82,778	33,442	9,683	3,063	1,488	304	504	-	1,743,583
Bigtooth maple ^b	23,019	31,248	21,893	14,624	12,332	15,559	4,256	10,990	1,586	-	-	-	-	-	135,507
Cottonwood	(a)	268	417	1,441	1,401	3,068	1,208	920	4,084	2,994	3,858	3,509	2,703	4,919	30,792
Curleaf mtn. mahogany ^b	5,898	17,411	26,643	33,862	27,636	19,517	11,248	14,278	5,683	2,490	2,936	243	437	598	188,879
Gambel oak ^b	89,539	88,242	53,840	13,567	7,186	-	1,627	657	-	538	-	-	-	-	255,197
Rocky Mountain maple ^b	4,867	7,229	5,106	4,808	1,426	898	526	-	-	-	-	-	-	-	24,859
True mtn. mahogany ^b	93	175	271	154	-	-	-	-	-	-	-	-	-	-	693
Hardwood total	123,416	472,062	588,263	458,928	311,853	191,440	101,642	60,287	21,036	9,084	8,282	4,057	3,643	5,517	2,359,511
All species	227,423	1,084,432	1,671,917	1,832,468	1,863,699	1,804,271	1,596,921	1,316,247	1,052,457	787,015	584,863	502,967	306,296	745,083	15,376,060

^aDo not have calculations made below 5" diameter.^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Table 20—Net volume of all live trees on forest land by species and forest type, Utah, 1993.

Species	Forest type											All types				
	Aspen	Blue spruce	Cottonwood	Douglas-fir	Engelmann spruce	Juniper	Limber pine	Lodgepole pine	Maple woodland	Mountain mahogany	Oak		Pinyon-juniper	Ponderosa pine	Spruce-fir	White fir
Blue spruce	23,967	31,097	-	4,669	-	-	-	291	-	-	-	-	1,041	8,077	4,231	73,372
Bristlecone pine	-	-	-	-	-	-	341	-	-	-	-	-	-	6,495	4,626	11,461
Douglas-fir	86,343	1,355	875	1,236,697	31,751	35	7,838	3,051	-	4,637	-	31,806	29,163	107,179	106,999	1,647,728
Engelmann spruce	41,337	638	-	29,841	930,278	-	10,416	84,002	-	-	-	-	1,637	606,312	6,404	1,710,865
Limber pine	3,414	-	-	34,065	6,359	133	37,501	-	-	3,711	-	28	2,413	7,078	13,959	108,661
Lodgepole pine	22,368	-	-	10,083	70,142	-	-	870,714	-	-	-	-	-	52,078	-	1,025,385
Ponderosa pine	20,712	751	-	29,942	462	-	2,367	-	-	-	268	2,446	416,592	3,157	50,922	527,618
Rocky Mountain juniper	7,630	-	198	27,673	-	10,605	1,351	119	21	8,374	6,533	63,174	43,123	1,051	15,079	184,931
Singleleaf pinyon	-	-	-	2,910	-	-	-	-	-	10,076	51	339,938	4,253	-	-	357,227
Subalpine fir	133,260	-	-	72,662	45,101	-	3,040	26,966	-	-	-	-	1,501	747,589	685	1,030,803
Twonneedle pinyon	374	-	-	83,187	-	-	579	-	-	3,496	3,309	1,823,921	21,270	-	2,139	1,938,276
Utah juniper	707	-	-	38,995	-	637,825	760	-	-	26,523	17,486	3,055,599	21,238	-	2,488	3,801,622
White fir	45,645	-	-	65,587	3,325	159	2,522	-	-	682	-	1,259	7,902	5,990	465,528	598,599
Softwood total	385,757	33,841	1,073	1,636,311	1,087,417	648,757	66,715	985,143	21	57,499	27,647	5,318,170	550,132	1,545,006	673,060	13,016,549
Aspen	1,347,920	3,112	-	95,801	43,087	7,169	2,392	11,687	110	-	28	-	3,518	185,933	42,826	1,743,583
Bigtooth maple	14,762	-	-	310	-	2,425	-	-	90,200	4,601	17,698	-	-	-	5,511	135,507
Cottonwood	893	-	18,749	-	-	-	-	-	-	-	-	3,247	1,229	6,545	128	30,792
Curleaf mtn. mahogany	108	-	-	19,548	-	164	1,295	-	242	102,787	1,413	32,078	3,062	2,842	5,339	168,879
Gambel oak	15,576	-	-	5,330	-	2,168	158	-	13,446	364	171,303	11,767	9,398	979	24,709	255,197
Rocky Mountain maple	1,509	-	-	1,118	-	-	-	-	18,212	71	1,524	-	-	393	2,032	24,859
True mtn. mahogany	-	-	-	-	-	-	-	-	-	-	-	693	-	-	-	693
Hardwood total	1,380,768	3,112	18,749	122,107	43,087	11,926	3,845	11,687	122,211	107,823	191,966	47,784	17,208	196,693	80,546	2,359,511
All species	1,766,524	36,953	19,822	1,758,418	1,130,504	660,683	70,560	996,830	122,232	165,322	219,613	5,365,955	567,340	1,741,699	753,606	15,376,060

Growth

Table 21—Net annual growth of all live trees on forest land by species and owner group, Utah, 1992.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
-----Thousand cubic feet-----				
Blue spruce	996	—	96	1,093
Bristlecone pine	107	77	—	185
Douglas-fir	11,382	1,175	7,403	19,960
Engelmann spruce	13,524	105	256	13,885
Limber pine	915	76	233	1,223
Lodgepole pine	5,137	19	—122	5,034
Ponderosa pine	8,896	418	1,397	10,711
Rocky Mountain juniper	910	317	155	1,382
Singleleaf pinyon	534	3,242	203	3,979
Subalpine fir	—10,564	788	—758	—10,533
Twoneedle pinyon	4,036	7,364	1,626	13,027
Utah juniper	2,819	13,061	2,551	18,431
White fir	7,165	41	663	7,869
Softwood total	45,858	26,681	13,705	86,244
Aspen	17,537	2,048	12,096	31,680
Bigtooth maple	580	101	1,599	2,281
Cottonwood	52	—593	—626	—1,166
Curlleaf mtn. mahogany	743	495	301	1,538
Gambel oak	3,282	1,179	3,254	7,715
Rocky Mountain maple	155	101	135	391
True mtn. mahogany	1	8	—	9
Hardwood total	22,350	3,339	16,759	42,447
All species	68,208	30,021	30,464	128,692

Table 22—Net annual growth of all live trees on forest land by species and diameter class, Utah, 1992.

Species	Diameter class (inches)														All classes
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
----- Thousand cubic feet -----															
Blue spruce	(^a) 461	202	227	227	186	115	147	-46	61	95	-98	-170	-127	40	1,093
Bristlecone pine	(^a) 13	52	9	9	22	28	12	19	12	3	6	-	7	1	185
Douglas-fir	(^a) 3,935	4,207	3,402	3,402	2,144	2,423	2,613	524	421	798	-311	-190	33	-40	19,960
Engelmann spruce	(^a) 2,637	2,410	2,407	2,407	2,180	2,470	1,715	596	38	-355	-34	108	-187	-102	13,885
Limber pine	(^a) 392	295	69	69	-120	239	234	105	71	71	-6	35	16	-177	1,223
Lodgepole pine	(^a) 8,624	1,628	-656	-656	522	-1,360	-1,384	-1,653	-449	69	-323	9	3	3	5,034
Ponderosa pine	(^a) 1,422	1,099	1,593	1,593	1,384	1,441	1,698	580	732	666	128	340	96	-468	10,711
Rocky Mountain juniper ^b	124	173	191	175	239	148	81	94	73	43	7	22	7	6	1,382
Singleleaf pinyon ^b	1,004	669	834	650	274	315	43	90	49	37	-	-	14	-	3,979
Subalpine fir	(^a) 7,074	448	-4,145	-4,145	-3,115	-3,453	-2,228	-1,801	-1,529	-552	-698	-116	50	-467	-10,533
Twoneedle pinyon ^b	2,665	2,326	2,549	2,045	1,156	1,286	732	637	-207	-647	187	129	82	85	13,027
Utah juniper ^b	1,277	1,353	1,764	2,079	2,362	2,434	1,722	1,343	1,200	784	598	509	280	725	18,431
White fir	(^a) 2,237	1,879	1,897	1,897	721	539	27	435	170	-136	-64	227	-64	2	7,869
Softwood total	5,069	31,316	17,560	9,752	7,956	6,624	5,412	924	642	875	-607	903	211	-393	86,244
Aspen	(^a) 19,040	7,823	4,877	4,877	524	521	118	-828	-378	41	-63	1	5	-	31,680
Bigtooth maple ^b	1,443	421	192	-46	98	99	22	44	7	-	-	-	-	-	2,281
Cottonwood	(^a) -26	-35	-195	-195	-89	30	17	-109	-137	-254	-250	51	-93	-77	-1,166
Curleaf mtn. mahogany ^b	229	260	291	245	213	127	59	66	25	8	11	1	1	1	1,538
Gambel oak ^b	5,963	1,309	567	72	-2	-	8	2	-	1	-207	-	-	-	7,715
Rocky Mountain maple ^b	267	13	53	38	12	5	2	-	-	-	-	-	-	-	391
True mtn. mahogany ^b	2	2	3	1	-	-	-	-	-	-	-	-	-	-	9
Hardwood total	7,905	21,020	8,894	4,993	757	782	227	-825	-484	-204	-509	53	-86	-76	42,447
All species	12,974	52,336	26,455	14,745	8,712	7,406	5,639	99	158	671	-1,115	956	125	-469	128,692

^aDo not have calculations made below 5" diameter.

^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Mortality

Table 23—Annual mortality of all live trees on forest land by species and owner group, Utah, 1992.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
-----Thousand cubic feet-----				
Blue spruce	708	—	—	708
Bristlecone pine	—	—	—	—
Douglas-fir	7,812	5,882	1,107	14,801
Engelmann spruce	11,671	—	924	12,594
Limber pine	960	—	—	960
Lodgepole pine	16,526	—	1,224	17,749
Ponderosa pine	1,542	998	—	2,540
Rocky Mountain juniper	—	87	—	87
Singleleaf pinyon	5	511	—	517
Subalpine fir	37,232	283	4,921	42,435
Twoneedle pinyon	195	3,922	372	4,489
Utah juniper	86	370	153	610
White fir	5,818	953	1,122	7,893
Softwood total	82,553	13,007	9,823	105,384
Aspen	13,599	658	3,607	17,865
Bigtooth maple	157	—	217	374
Cottonwood	—	671	851	1,521
Curleaf mtn. mahogany	85	44	—	129
Gambel oak	527	315	—	842
Rocky Mountain maple	111	—	—	111
True mtn. mahogany	—	—	—	—
Hardwood total	14,479	1,688	4,675	20,842
All species	97,032	14,695	14,498	126,225

Table 24--Annual mortality of all live trees on forest land by species and diameter class, Utah, 1992.

Species	Diameter class (inches)															All classes
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
	-----Thousand cubic feet-----															
Blue spruce	(a)	-	-	-	-	-	-	163	-	-	132	227	185	-	708	
Bristlecone pine	(a)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Douglas-fir	(a)	500	310	855	2,247	1,967	1,560	2,364	1,483	492	1,144	845	326	709	14,801	
Engelmann spruce	(a)	110	392	982	1,915	1,292	1,493	1,412	1,661	1,378	741	317	436	466	12,594	
Limber pine	(a)	56	74	136	309	-	-	-	-	-	114	-	-	272	960	
Lodgepole pine	(a)	797	3,270	4,370	1,644	2,687	1,970	2,042	635	-	334	-	-	-	17,749	
Ponderosa pine	(a)	-	178	197	174	78	-	572	92	-	214	-	191	846	2,540	
Rocky Mountain juniper ^b	(a)	-	32	55	-	-	-	-	-	-	-	-	-	-	87	
Singleleaf pinyon ^b	5	57	-	109	205	-	140	-	-	-	-	-	-	-	517	
Subalpine fir	(a)	2,398	5,255	9,757	6,957	6,069	4,101	3,006	2,174	1,009	886	286	-	536	42,435	
Twoneedle pinyon ^b	8	86	312	716	1,276	319	288	-	605	879	-	-	-	-	4,489	
Utah juniper ^b	16	-	42	55	-	-	208	289	-	-	-	-	-	-	610	
White fir	(a)	404	556	712	1,179	1,344	1,327	750	379	571	294	-	146	231	7,893	
Softwood total	30	4,409	10,421	17,944	15,907	13,755	11,087	10,597	7,029	4,329	3,858	1,675	1,283	3,061	105,384	
Aspen	(a)	3,980	4,792	2,394	3,253	1,168	643	1,088	469	-	77	-	-	-	17,865	
Bigtooth maple ^b	60	67	68	179	-	-	-	-	-	-	-	-	-	-	374	
Cottonwood	(a)	36	41	216	105	-	-	120	206	285	291	-	121	101	1,521	
Curleaf mtn. mahogany ^b	8	20	30	71	-	-	-	-	-	-	-	-	-	-	129	
Gambel oak ^b	403	144	-	41	47	-	-	-	-	-	207	-	-	-	842	
Rocky Mountain maple ^b	12	99	-	-	-	-	-	-	-	-	-	-	-	-	111	
True mtn. mahogany ^b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Hardwood total	482	4,347	4,930	2,901	3,406	1,168	643	1,207	675	285	575	-	121	101	20,842	
All species	512	8,756	15,351	20,845	19,312	14,923	11,731	11,805	7,704	4,614	4,433	1,675	1,404	3,161	126,222	

^aDo not have calculations made below 5" diameter.

^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Table 25—Annual mortality of all live trees on forest land by species and cause of death, Utah, 1992.

Species	Cause of death						Total
	Insects	Disease	Fire	Animal	Weather	Suppression Unknown	Human caused
	----- Thousand cubic feet -----						
Blue spruce	410	185	-	-	-	113	-
Bristlecone pine	-	-	-	-	-	-	-
Douglas-fir	9,693	3,256	257	-	378	1,168	49
Engelmann spruce	7,750	1,284	413	-	1,644	1,345	158
Limber pine	546	413	-	-	-	-	-
Lodgepole pine	13,595	1,396	422	109	685	1,543	-
Ponderosa pine	1,412	468	293	-	92	161	115
Rocky Mountain juniper	55	-	32	-	-	-	-
Singleleaf pinyon	352	-	-	-	-	164	-
Subalpine fir	13,549	18,182	250	-	5,122	4,940	319
Twoneedle pinyon	1,000	2,461	-	11	123	722	-
Utah juniper	42	22	-	-	86	399	61
White fir	2,569	3,549	-	-	349	1,382	45
Softwood total	50,972	31,216	1,668	119	8,479	11,937	747
Aspen	1,308	12,264	178	55	1,270	2,565	224
Bigtooth maple	-	221	35	-	-	118	-
Cottonwood	-	-	530	105	206	680	-
Curleaf mtn. mahogany	8	44	-	-	12	65	-
Gambel oak	73	125	7	-	4	618	-
Rocky Mountain maple	-	49	-	-	-	62	-
True mtn. mahogany	-	-	-	-	-	-	-
Hardwood total	1,389	12,704	750	160	1,492	4,108	224
All species	52,361	43,920	2,418	279	9,972	16,046	971
							126,225

Understory Cover

Table 26—Average percent crown canopy cover by life form, average percent bare ground, total number and most common understory species recorded by forest type, number of locations, and number of acres, Utah, 1993.

Forest type	Average percent shrub cover	Average percent forb cover	Average percent grass cover	Average percent bare ground	Total number of different species recorded ^a	Most common understory species	Number of locations	Acres summarized
Pinyon-juniper	21	9	8	15	118	Big sagebrush	970	7,335,118
Aspen	31	27	25	4	223	Mountain snowberry	354	1,384,865
Juniper	18	7	12	25	54	Big sagebrush	193	1,336,090
Douglas-fir	32	11	10	7	165	Mountain snowberry	235	1,089,226
Oak	34	15	23	7	69	Mountain snowberry	125	725,872
Spruce-fir/Bristlecone	16	17	11	4	151	Gooseberry currant	205	724,837
Ponderosa pine	34	6	10	10	82	Greenleaf manzanita	143	581,600
Lodgepole pine	22	10	11	4	88	Grouse whortleberry	137	487,510
Engelmann/Blue spruce	19	14	10	5	102	Grouse whortleberry	125	464,341
White fir	30	10	9	6	89	Mountain snowberry	109	403,707
Mountain mahogany	33	9	17	11	42	Gambel oak	49	330,414
Maple woodland	21	19	19	4	29	Common choke cherry	28	133,756
Limber pine	24	7	9	8	30	Common juniper	21	72,725
Cottonwood	22	12	16	4	24	Skunkbush sumac	6	28,798
No data ^b	—	—	—	—	—	—	77	614,946
Total							2,777	15,713,805

^aTo be recorded, species had to have 5% or greater cover on a plot.

^bNo understory information was collected on these plots, in most instances because of snow cover.

County

Table 27—Area, volume, growth, and mortality of live trees on forest land by county, Utah, 1993.

County	Area	Volume	Growth	Mortality
	-- Acres --	--- Thousand cubic feet ---		
Beaver	676,902	554,549	6,687	1,441
Box Elder	310,389	202,027	2,103	312
Cache	307,302	501,885	3,580	5,356
Carbon	405,064	428,884	5,579	2,440
Daggett	269,249	258,105	3,363	2,256
Davis	25,728	20,110	186	325
Duchesne	934,780	1,158,011	8,051	9,406
Emery	474,865	475,370	1,066	5,749
Garfield	1,590,950	1,531,363	14,090	10,878
Grand	778,820	659,720	3,607	5,834
Iron	824,481	824,329	2,064	10,049
Juab	408,874	340,965	1,570	3,233
Kane	1,244,746	962,320	7,158	2,796
Millard	437,856	318,108	3,730	423
Morgan	134,450	123,146	3,692	662
Piute	233,798	271,512	3,170	1,966
Rich	94,324	147,549	1,506	1,391
Salt Lake	105,976	98,714	1,288	1,351
San Juan	1,483,045	1,199,400	11,362	3,344
Sanpete	463,899	612,003	4,950	8,320
Sevier	644,262	711,675	6,193	6,193
Summit	643,958	1,045,751	10,765	11,101
Tooele	441,084	290,041	1,572	2,327
Uintah	909,750	872,071	2,533	10,510
Utah	504,244	482,663	3,163	8,128
Wasatch	454,625	559,107	8,786	5,884
Washington	602,274	436,254	3,982	1,950
Wayne	200,940	180,208	777	1,649
Weber	107,171	110,222	2,118	953
Total	15,713,806	15,376,060	128,692	126,225

Nonreserved Forest Land

Table 28—Area of nonreserved forest land by forest type, stand-size class, and productivity class, Utah, 1993.

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
----- Acres -----						
Aspen						
Sawtimber	—	6,728	80,709	177,680	2,997	268,114
Poletimber	—	10,107	130,706	617,666	86,301	844,779
Sapling/seedling	—	4,173	33,341	212,832	34,362	284,707
Nonstocked	—	—	—	8,994	3,023	12,017
Total	—	21,008	244,755	1,017,171	126,683	1,409,616
Blue spruce						
Sawtimber	—	—	14,220	—	—	14,220
Poletimber	—	—	—	3,069	—	3,069
Sapling/seedling	—	—	—	3,531	—	3,531
Nonstocked	—	—	—	—	—	—
Total	—	—	14,220	6,600	—	20,820
Cottonwood						
Sawtimber	—	—	—	20,756	4,491	25,247
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	3,550	—	—	3,550
Nonstocked	—	—	—	—	—	—
Total	—	—	3,550	20,756	4,491	28,798
Douglas-fir						
Sawtimber	4,173	34,223	273,566	424,437	—	736,399
Poletimber	—	—	32,992	50,378	—	83,370
Sapling/seedling	—	—	29,241	76,946	5,044	111,231
Nonstocked	—	—	9,582	88,289	—	97,871
Total	4,173	34,223	345,381	640,050	5,044	1,028,871
Engelmann spruce						
Sawtimber	—	45,206	129,756	154,573	—	329,535
Poletimber	—	—	7,082	3,300	—	10,383
Sapling/seedling	—	—	3,300	3,020	—	6,320
Nonstocked	—	—	—	—	—	—
Total	—	45,206	140,138	160,893	—	346,238
Juniper						
Sawtimber	—	—	—	—	708,167	708,167
Poletimber	—	—	—	—	632,438	632,438
Sapling/seedling	—	—	—	—	5,609	5,609
Nonstocked	—	—	—	—	10,253	10,253
Total	—	—	—	—	1,356,467	1,356,467
Limber pine						
Sawtimber	—	—	—	39,997	6,093	46,090
Poletimber	—	—	—	5,577	—	5,577
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	5,905	3,003	8,908
Total	—	—	—	51,478	9,096	60,574
Lodgepole pine						
Sawtimber	—	—	23,702	139,803	—	163,504
Poletimber	—	—	2,719	117,143	6,115	125,977
Sapling/seedling	—	—	3,069	83,125	6,369	92,563
Nonstocked	—	—	—	—	—	—
Total	—	—	29,489	340,071	12,484	382,044
Maple woodland						
Sawtimber	—	—	—	—	7,341	7,341
Poletimber	—	—	—	—	87,037	87,037
Sapling/seedling	—	—	—	—	42,127	42,127
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	136,504	136,504

(con.)

Table 28 (Con.)

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
----- Acres -----						
Mountain mahogany						
Sawtimber	-	-	-	-	68,886	68,886
Poletimber	-	-	-	-	248,713	248,713
Sapling/seedling	-	-	-	-	7,600	7,600
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	325,200	325,200
Oak						
Sawtimber	-	-	-	-	-	-
Poletimber	-	-	-	-	442,582	442,582
Sapling/seedling	-	-	-	-	291,398	291,398
Nonstocked	-	-	-	-	-	-
Total	-	-	-	-	733,980	733,980
Pinyon-juniper						
Sawtimber	-	-	-	-	4,115,498	4,115,498
Poletimber	-	-	-	-	3,226,467	3,226,467
Sapling/seedling	-	-	-	-	155,564	155,564
Nonstocked	-	-	-	-	24,959	24,959
Total	-	-	-	-	7,522,489	7,522,489
Ponderosa pine						
Sawtimber	-	-	87,275	293,758	-	381,033
Poletimber	-	-	3,020	20,639	-	23,659
Sapling/seedling	-	-	9,816	28,943	-	38,759
Nonstocked	-	-	-	110,165	-	110,165
Total	-	-	100,111	453,505	-	553,617
Spruce-fir						
Sawtimber	2,748	77,790	246,265	164,878	3,542	495,223
Poletimber	-	-	55,535	59,091	-	114,626
Sapling/seedling	-	-	15,784	49,256	3,073	68,113
Nonstocked	-	-	-	-	-	-
Total	2,748	77,790	317,583	273,226	6,615	677,962
White fir						
Sawtimber	-	34,598	177,054	114,097	-	325,750
Poletimber	-	-	-	-	-	-
Sapling/seedling	-	-	17,078	9,118	-	26,197
Nonstocked	-	-	8,534	-	-	8,534
Total	-	34,598	202,667	123,216	-	360,481
All types						
Sawtimber	6,921	198,545	1,032,547	1,529,979	4,917,016	7,685,008
Poletimber	-	10,107	232,053	876,862	4,729,653	5,848,676
Sapling/seedling	-	4,173	115,179	466,772	551,146	1,137,270
Nonstocked	-	-	18,117	213,353	41,237	272,707
Total	6,921	212,825	1,397,896	3,086,966	10,239,052	14,943,661

Table 29—Area of nonreserved forest land by stand volume and owner group, Utah, 1993.

Stand volume per acre ^a	Owner group			Total
	National Forest	Other public	Nonindustrial private	
	----- Acres -----			
Less than 1,500 board feet	2,759,731	6,713,024	2,164,939	11,637,694
1,500 to 4,999 board feet	901,543	238,475	262,967	1,402,985
5,000 to 9,999 board feet	806,560	67,181	184,508	1,058,249
10,000 board feet or more	707,825	51,972	84,936	844,733
Total	5,175,659	7,070,652	2,697,350	14,943,661

^aInternational 1/4-inch rule.

Table 30–Area of nonreserved forest land by forest type and stocking condition, Utah, 1993.

Forest type	Stocking condition					Total
	Overstocked	Fully stocked	Medium to fully stocked	Poorly stocked	Nonstocked	
	----- Acres -----					
Aspen	221,699	378,298	468,592	303,046	37,983	1,409,616
Blue spruce	–	3,542	3,542	13,736	–	20,820
Cottonwood	–	–	8,568	20,229	–	28,798
Douglas-fir	29,070	175,699	316,109	383,539	124,454	1,028,871
Engelmann spruce	27,585	97,065	119,668	101,920	–	346,238
Juniper	166,034	159,909	436,701	580,972	12,850	1,356,467
Limber pine	–	3,606	23,472	17,973	15,522	60,574
Lodgepole pine	91,971	113,200	140,288	36,584	–	382,044
Maple woodland	23,457	19,209	31,294	48,106	14,438	136,504
Mountain mahogany	25,525	111,084	118,069	70,522	–	325,200
Oak	20,472	73,579	90,265	480,105	69,560	733,980
Pinyon-juniper	1,300,403	1,712,426	2,222,201	2,229,259	58,200	7,522,489
Ponderosa pine	–	16,489	131,604	268,648	136,876	553,617
Spruce-fir	125,018	214,644	254,072	84,228	–	677,962
White fir	46,947	80,949	131,323	74,574	26,688	360,481
All types	2,078,181	3,159,698	4,495,768	4,713,443	496,571	14,943,661

Table 31–Area of nonreserved forest land by field location history and distance to road, Utah, 1993.

Field location history	Distance to road					Total
	Less than ½ mile	½ to 1 mile	1 to 3 miles	3 to 5 miles	Greater than 5 miles	
	----- Acres -----					
None	2,365,699	2,475,109	3,910,051	1,259,007	1,016,905	11,026,771
Tree cutting	527,436	297,997	286,884	72,446	24,256	1,209,020
Animal damage	65,511	19,494	42,302	3,847	7,173	138,327
Insect damage	106,381	81,453	133,962	33,998	17,121	372,915
Disease damage	152,085	126,425	265,522	92,830	29,555	666,415
Weather damage	25,215	33,698	107,855	29,485	–	196,251
Wind damage	19,771	11,544	29,969	–	2,908	64,192
Fire evidence	167,545	76,122	240,621	58,708	20,403	563,400
Other land clearing	8,690	13,643	18,375	–	–	40,708
Road building	74,541	9,625	6,325	14,398	3,542	108,432
Chaining	103,496	83,657	104,797	32,366	20,434	344,749
Other	83,739	9,850	76,699	3,542	8,816	182,646
Mining	5,982	6,854	11,307	–	5,691	29,834
Total	3,706,090	3,245,472	5,234,668	1,600,626	1,156,804	14,943,661

Table 32—Area of nonreserved forest land by forest type and stand-age class, Utah, 1993.

Forest type	Nonstocked/ Unclassified	Stand-age class														All classes
		1-50	51-100	101-150	151-200	201-250	251-300	301-350	351-400	401-450	451-500	501-550	551-600	601-650	651-700	
----- Acres -----																
Aspen	12,017	348,038	925,799	120,766	2,997	-	-	-	-	-	-	-	-	-	-	1,409,616
Blue spruce	-	3,069	14,209	3,542	-	-	-	-	-	-	-	-	-	-	-	20,820
Cottonwood	-	3,550	-	21,706	3,542	-	-	-	-	-	-	-	-	-	-	28,798
Douglas-fir	97,871	131,057	378,902	264,424	57,259	63,584	18,426	17,348	-	-	-	-	-	-	-	1,028,871
Engelmann spruce	-	6,320	85,182	168,143	55,164	12,113	16,015	3,300	-	-	-	-	-	-	-	346,238
Juniper	10,253	155,725	675,684	288,391	97,880	45,006	17,536	27,274	14,390	7,252	-	5,691	-	-	11,383	1,356,467
Limber pine	8,908	-	10,166	28,173	4,173	6,833	-	2,321	-	-	-	-	-	-	-	60,574
Lodgepole pine	-	70,932	159,609	114,520	30,964	6,019	-	-	-	-	-	-	-	-	-	382,044
Maple woodland	-	80,476	52,478	3,550	-	-	-	-	-	-	-	-	-	-	-	136,504
Mountain mahogany	-	126,256	157,211	26,865	5,691	5,634	3,542	-	-	-	-	-	-	-	-	325,200
Oak	-	342,956	290,440	93,252	7,332	-	-	-	-	-	-	-	-	-	-	733,980
Pinyon-juniper	24,959	800,685	2,562,515	1,543,582	1,043,211	586,260	482,600	251,250	93,592	68,607	35,795	20,236	3,760	5,436	-	7,522,489
Ponderosa pine	110,165	59,799	214,201	82,503	50,195	19,096	8,597	6,040	3,020	-	-	-	-	-	-	553,617
Spruce-fir	-	64,973	316,716	230,936	49,071	16,265	-	-	-	-	-	-	-	-	-	677,962
White fir	8,534	40,092	172,828	86,941	38,140	8,297	5,648	-	-	-	-	-	-	-	-	360,481
All types	272,707	2,233,930	6,015,941	3,077,295	1,445,620	769,106	552,365	307,534	111,002	75,860	35,795	25,927	3,760	5,436	11,383	14,943,661

Number of Trees

Table 33—Number of live trees on nonreserved forest land by species and diameter class, Utah, 1993.

Species	Diameter class (inches)																All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
	Thousand trees																
Blue spruce	3,138	1,513	1,603	1,271	678	336	257	182	171	56	126	46	50	41	28	9,495	
Bristlecone pine	—	181	405	90	38	65	73	33	38	45	—	8	—	12	5	994	
Douglas-fir	50,689	35,064	25,691	20,796	12,910	10,430	8,578	6,188	3,714	2,563	1,617	871	728	322	542	180,705	
Engelmann spruce	46,688	37,347	18,916	14,657	11,996	10,835	7,799	5,273	3,152	2,434	1,633	965	513	217	298	162,724	
Limber pine	5,139	3,911	2,774	1,661	516	611	616	483	146	212	111	125	55	21	91	16,472	
Lodgepole pine	92,970	66,711	40,511	22,109	12,587	5,684	2,585	1,028	625	250	83	—	12	5	—	245,160	
Ponderosa pine	6,942	9,948	7,034	4,512	3,440	2,782	2,346	2,394	1,542	941	838	415	399	277	340	44,148	
Rocky Mountain juniper ^a	22,895	14,221	10,026	7,914	5,381	3,181	1,787	1,022	1,116	711	571	84	115	66	96	69,187	
Singleleaf pinyon ^a	106,322	49,105	27,525	17,717	10,722	5,848	3,851	2,285	1,026	461	314	—	—	110	—	225,285	
Subalpine fir	237,064	82,696	45,890	27,145	16,241	8,485	4,792	2,662	1,557	876	581	246	195	78	70	428,578	
Twonedle pinyon ^a	265,494	141,531	101,535	73,011	50,240	37,201	21,977	13,061	7,695	4,250	2,286	1,872	957	673	513	722,297	
Utah juniper ^a	190,695	105,209	107,721	96,792	84,755	74,215	70,186	51,363	39,210	27,678	16,799	11,894	10,034	4,956	10,401	901,908	
White fir	63,260	26,278	15,983	11,123	7,580	4,318	3,344	2,009	1,536	858	584	261	216	92	197	137,638	
Softwood total	1,091,295	573,716	405,616	298,799	217,084	163,991	128,190	87,983	61,528	41,334	25,543	16,789	13,274	6,870	12,580	3,144,592	
Aspen	332,670	238,128	174,345	96,113	40,759	17,494	7,516	3,160	996	272	73	44	4	12	—	911,585	
Bigtooth maple ^a	151,589	38,032	16,850	5,407	2,413	1,380	1,040	222	350	40	—	—	—	—	—	217,323	
Cottonwood	—	301	245	406	385	265	211	57	55	141	134	82	59	35	51	2,427	
Curleaf mtn. mahogany ^a	31,264	20,537	24,988	20,025	14,261	7,890	3,664	1,470	1,511	454	156	156	8	13	15	126,411	
Gambel oak ^a	1,218,500	244,217	62,027	13,018	2,074	612	—	94	—	—	—	—	—	—	—	1,540,542	
Rocky Mountain maple ^a	43,320	8,702	3,574	1,035	505	121	60	19	—	—	—	—	—	—	—	57,336	
True mtn. mahogany ^a	723	363	251	272	91	—	—	—	—	—	—	—	—	—	—	1,700	
Hardwood total	1,778,066	550,280	282,279	136,275	60,489	27,762	12,491	5,022	2,911	907	363	281	71	60	66	2,857,324	
All species	2,869,362	1,123,996	687,895	435,074	277,573	191,753	140,681	93,005	64,439	42,241	25,906	17,071	13,345	6,930	12,646	6,001,917	

^aDiameter taken at root collar rather than at breast height.

Biomass

Table 34—Total oven-dry weight of biomass of all live trees on nonreserved forest land by species and diameter class, Utah, 1993.

Species	Diameter class (inches)																All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
	Thousand tons																
Blue spruce	19	33	59	107	106	86	102	104	128	46	153	69	85	82	80	1,260	
Bristlecone pine	—	4	16	6	8	12	21	14	28	29	—	8	—	19	7	172	
Douglas-fir	279	859	1,218	2,294	2,457	3,269	3,914	4,056	3,237	2,809	2,135	1,431	1,339	684	1,682	31,662	
Engelmann spruce	280	803	795	1,345	2,078	2,965	3,207	3,081	2,396	2,337	1,901	1,318	820	436	814	24,576	
Limber pine	26	78	112	156	95	155	228	218	92	152	107	139	82	32	213	1,884	
Lodgepole pine	465	1,334	2,452	2,653	2,663	1,919	1,170	669	485	232	93	—	21	12	—	14,169	
Ponderosa pine	35	199	315	340	489	668	897	1,312	1,178	940	1,114	682	764	662	1,146	10,741	
Rocky Mountain juniper ^a	114	165	273	410	474	513	354	264	385	289	250	46	75	50	69	3,731	
Singleleaf pinyon ^a	486	493	743	995	1,040	876	798	564	334	209	161	—	—	85	—	6,783	
Subalpine fir	1,304	1,778	1,925	2,500	2,791	2,306	1,892	1,504	1,137	801	652	325	300	140	172	19,527	
Twoneedle pinyon ^a	1,239	1,405	2,526	3,655	4,267	5,089	4,146	3,302	2,438	1,632	1,044	1,079	699	575	623	33,720	
Utah juniper ^a	904	1,020	2,352	3,960	5,497	7,065	9,071	8,594	8,643	7,352	5,402	4,586	4,525	2,503	7,773	79,248	
White fir	348	565	615	1,048	1,244	1,164	1,306	1,092	1,107	768	676	361	316	167	519	11,297	
Softwood total	5,497	8,736	13,401	19,469	23,210	26,087	27,107	24,774	21,588	17,596	13,688	10,043	9,026	5,449	13,099	238,770	
Aspen	665	2,262	5,656	8,404	6,974	5,012	3,136	1,830	772	254	85	60	7	23	—	35,142	
Bigtooth maple ^a	919	659	793	517	337	275	334	89	221	32	—	—	—	—	—	4,177	
Cottonwood	—	3	5	18	50	45	61	25	33	95	97	88	81	57	111	768	
Curlleaf mtn. mahogany ^a	60	218	704	1,135	1,494	1,351	930	560	793	324	130	172	11	21	34	7,937	
Gambel oak ^a	14,452	3,590	2,876	1,468	368	180	—	45	—	—	—	—	—	—	—	22,979	
Rocky Mountain maple ^a	163	140	180	115	103	32	20	11	—	—	—	—	—	—	—	763	
True mtn. mahogany ^a	(^b)	4	8	14	9	—	—	—	—	—	—	—	—	—	—	35	
Hardwood total	16,260	6,876	10,222	11,670	9,333	6,896	4,481	2,560	1,820	705	312	320	99	101	145	71,800	
All species	21,758	15,612	23,623	31,139	32,543	32,983	31,587	27,335	23,408	18,301	14,000	10,363	9,125	5,550	13,244	310,571	

^aDiameter taken at root collar rather than at breast height

^bLess than 500 tons.

Volume

Table 35—Net volume of all live trees on nonreserved forest land by forest type and stand-size class, Utah, 1993.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
----- Thousand cubic feet -----					
Aspen	524,844	1,150,853	79,841	1,881	1,757,420
Blue spruce	34,981	1,105	867	—	36,953
Cottonwood	19,281	—	541	—	19,822
Douglas-fir	1,313,385	157,054	67,182	50,701	1,588,321
Engelmann spruce	877,635	27,458	2,781	—	907,874
Juniper	446,657	203,446	106	866	651,075
Limber pine	52,734	5,478	—	1,679	59,891
Lodgepole pine	431,949	212,157	37,465	—	681,572
Maple woodland	6,830	101,401	14,000	—	122,232
Mountain mahogany	51,418	112,826	272	—	164,516
Oak	—	180,332	29,891	—	210,223
Pinyon-juniper	3,403,923	1,823,851	3,763	188	5,231,726
Ponderosa pine	426,103	17,488	13,958	56,401	513,950
Spruce-fir	1,409,613	226,372	32,152	—	1,668,137
White fir	614,615	—	16,618	4,119	635,352
All types	9,613,969	4,219,822	299,437	115,836	14,249,064

Table 36—Net volume of all live trees on nonreserved forest land by species and owner group, Utah, 1993.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Blue spruce	68,607	—	4,766	73,372
Bristlecone pine	6,328	1,628	—	7,956
Douglas-fir	857,089	283,508	353,500	1,494,097
Engelmann spruce	1,384,990	6,082	71,653	1,462,725
Limber pine	73,063	7,291	13,029	93,382
Lodgepole pine	634,448	652	83,936	719,036
Ponderosa pine	355,180	52,932	68,043	476,155
Rocky Mountain juniper	105,756	43,029	17,852	166,637
Singleleaf pinyon	38,238	297,577	20,533	356,348
Subalpine fir	846,231	19,592	117,831	983,654
Twoneedle pinyon	445,879	1,208,812	237,503	1,892,195
Utah juniper	549,608	2,679,293	472,936	3,701,836
White fir	418,616	35,016	63,606	517,238
Softwood total	5,784,033	4,635,412	1,525,186	11,944,631
Aspen	1,189,497	125,763	393,565	1,708,825
Bigtooth maple	29,629	7,965	97,914	135,507
Cottonwood	4,488	7,723	18,580	30,792
Curleaf mtn. mahogany	81,452	55,526	30,502	167,480
Gambel oak	107,342	21,870	107,066	236,277
Rocky Mountain maple	21,456	1,132	2,272	24,859
True mtn. mahogany	46	646	—	693
Hardwood total	1,433,909	220,625	649,899	2,304,433
All species	7,217,943	4,856,037	2,175,085	14,249,064

Table 37—Net volume of all live trees on nonreserved forest land by species and diameter class, Utah, 1993.

Species	Diameter class (inches)															All classes
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand cubic feet -----																
Blue spruce	(^a)	2,534	5,176	6,369	5,439	6,645	6,784	8,337	2,918	9,718	4,352	5,240	5,014	4,847	73,372	
Bristlecone pine	(^a)	434	313	473	637	1,156	722	1,628	1,299	-	432	-	715	147	7,956	
Douglas-fir	(^a)	47,540	105,796	119,588	164,967	200,555	210,737	162,924	139,999	101,954	69,328	62,184	31,010	77,515	1,494,097	
Engelmann spruce	(^a)	37,674	77,523	127,194	189,775	208,285	201,759	153,970	148,518	115,670	80,466	49,152	25,281	47,458	1,462,725	
Limb pine	(^a)	3,311	8,922	5,537	8,706	13,005	12,127	4,927	7,853	5,926	7,548	2,967	1,717	10,835	93,382	
Lodgepole pine	(^a)	114,323	163,807	168,134	116,152	70,230	40,680	25,937	13,069	4,822	-	1,164	719	-	719,036	
Ponderosa pine	(^a)	10,575	16,137	24,992	34,177	43,610	63,570	54,226	41,122	50,742	30,106	31,899	28,398	46,601	476,155	
Rocky Mountain juniper ^b	4,868	9,614	16,153	20,056	23,466	17,203	13,133	19,750	15,392	13,467	2,542	4,210	2,864	3,919	166,637	
Singleleaf pinyon ^b	17,509	34,548	53,588	60,479	53,737	49,829	35,737	21,167	13,337	10,901	-	-	5,517	-	356,348	
Subalpine fir	(^a)	92,989	145,332	175,264	146,211	121,189	97,122	70,361	48,370	37,260	16,533	16,569	7,401	9,053	983,654	
Twoneedle pinyon ^b	50,008	115,662	192,619	242,768	305,558	254,876	207,384	156,078	105,349	68,480	70,716	46,924	34,158	41,614	1,892,195	
Utah juniper ^b	30,228	83,849	155,644	232,351	314,192	411,803	406,340	413,457	354,557	266,082	230,911	236,525	130,680	435,216	3,701,836	
White fir	(^a)	23,576	50,130	63,562	62,141	70,550	57,303	58,989	37,494	32,337	16,535	14,337	7,555	22,730	517,238	
Softwood total	102,612	576,628	991,142	1,246,767	1,425,157	1,468,937	1,353,398	1,151,748	929,279	717,359	529,469	471,171	281,027	699,936	11,944,631	
Aspen	(^a)	325,069	476,757	378,314	255,179	145,334	79,689	33,442	9,683	3,063	1,488	304	504	-	1,708,825	
Bigtooth maple ^b	23,019	31,248	21,893	14,624	12,332	15,559	4,256	10,990	1,586	-	-	-	-	-	135,507	
Cottonwood	(^a)	268	417	1,441	1,401	3,068	1,208	920	4,084	2,994	3,858	3,509	2,703	4,919	30,792	
Curleaf mtn. mahogany ^b	5,711	17,377	26,643	33,751	27,096	19,247	10,992	14,278	5,683	2,490	2,936	243	437	598	167,480	
Gambel oak ^b	87,482	81,825	47,117	12,389	5,837	-	1,627	-	-	-	-	-	-	-	236,277	
Rocky Mountain maple ^b	4,867	7,229	5,106	4,808	1,426	898	526	-	-	-	-	-	-	-	24,859	
True mtn. mahogany ^b	93	175	271	154	-	-	-	-	-	-	-	-	-	-	693	
Hardwood total	121,171	463,192	578,204	445,481	303,270	184,107	98,298	59,630	21,036	8,546	8,282	4,057	3,643	5,517	2,304,433	
All species	223,783	1,039,820	1,569,347	1,692,249	1,728,427	1,653,043	1,451,696	1,211,378	950,315	725,905	537,752	475,228	284,670	705,453	14,249,064	

^aDo not have calculations made below 5" diameter.^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Table 38—Net volume of all live trees on nonreserved forest land by species and forest type, Utah, 1993.

Species	Forest type														All types	
	Aspen	Blue spruce	Cottonwood	Douglas-fir	Engelmann spruce	Juniper	Limber pine	Lodgepole pine	Maple woodland	Mountain mahogany	Oak	Pinyon-juniper	Ponderosa pine	Spruce-fir		White fir
	Thousand cubic feet															
Blue spruce	23,967	31,097	—	4,669	—	—	—	291	—	—	—	—	1,041	8,077	4,231	73,372
Bristlecone pine	—	—	—	—	—	—	341	—	—	—	—	—	—	4,539	3,076	7,956
Douglas-fir	85,341	1,355	875	1,121,342	26,133	35	5,832	3,051	—	4,637	—	—	21,365	94,079	98,247	1,494,097
Engelmann spruce	41,337	638	—	24,783	758,016	—	8,403	42,196	—	—	—	—	822	583,076	3,452	1,462,725
Limber pine	3,414	—	—	30,980	4,310	133	30,851	—	—	3,711	—	28	2,413	7,078	10,465	93,382
Lodgepole pine	22,368	—	—	8,173	35,892	—	—	601,125	—	—	—	—	—	51,478	—	719,036
Ponderosa pine	20,712	751	—	27,031	462	—	2,367	—	—	—	268	—	392,809	3,094	26,619	476,155
Rocky Mountain juniper	7,630	—	198	26,566	—	10,605	1,351	119	21	8,374	6,533	57,370	32,015	1,051	14,804	166,637
Singleleaf pinyon	—	—	—	2,910	—	—	—	—	—	10,076	51	339,059	4,253	—	—	356,348
Subalpine fir	133,260	—	—	62,089	40,542	—	3,040	24,242	—	—	—	—	1,501	718,296	685	983,654
Twonедle pinyon	374	—	—	77,098	—	—	579	—	—	3,496	3,309	1,784,631	20,568	—	2,139	1,892,195
Utah juniper	707	—	—	37,228	—	628,423	760	—	—	26,523	17,486	2,968,190	20,031	—	2,488	3,701,836
White fir	43,280	—	—	56,903	3,325	—	2,522	—	—	682	—	1,259	6,963	5,822	396,482	517,238
Softwood total	382,390	33,841	1,073	1,479,772	868,680	639,196	56,046	671,024	21	57,499	27,647	5,184,385	503,780	1,476,589	562,688	11,944,631
Aspen	1,342,182	3,112	—	83,902	39,194	7,169	2,392	10,548	110	—	28	—	3,518	180,964	35,704	1,708,825
Bigtooth maple	14,762	—	—	310	—	2,425	—	—	90,200	4,601	17,698	—	—	—	5,511	135,507
Cottonwood	893	—	18,749	—	—	—	—	—	—	—	—	3,247	1,229	6,545	128	30,792
Curleaf mtn. mahogany	108	—	—	19,548	—	164	1,295	—	242	101,981	1,413	32,078	2,645	2,666	5,339	167,480
Gambel oak	15,576	—	—	3,671	—	2,122	158	—	13,446	364	161,913	11,324	2,777	979	23,949	236,277
Rocky Mountain maple	1,509	—	—	1,118	—	—	—	—	18,212	71	1,524	—	—	393	2,032	24,859
True mtn. mahogany	—	—	—	—	—	—	—	—	—	—	—	693	—	—	—	693
Hardwood total	1,375,030	3,112	18,749	108,549	39,194	11,879	3,845	10,548	122,211	107,017	182,576	47,341	10,170	191,547	72,664	2,304,433
All species	1,757,420	36,953	19,822	1,588,321	907,874	651,075	59,891	681,572	122,232	164,516	210,223	5,231,726	513,950	1,668,137	635,352	14,249,064

Growth

Table 39—Net annual growth of all live trees on nonreserved forest land by species and owner group, Utah, 1992.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Blue spruce	996	—	96	1,093
Bristlecone pine	96	19	—	115
Douglas-fir	10,676	1,071	7,403	19,150
Engelmann spruce	13,030	105	256	13,391
Limber pine	804	76	233	1,113
Lodgepole pine	2,934	19	—122	2,830
Ponderosa pine	8,556	33	1,397	9,986
Rocky Mountain juniper	859	252	155	1,266
Singleleaf pinyon	534	3,234	203	3,971
Subalpine fir	—6,399	788	—758	—6,369
Twoneedle pinyon	3,900	7,223	1,625	12,748
Utah juniper	2,709	12,751	2,549	18,009
White fir	6,184	—117	663	6,730
Softwood total	44,877	25,452	13,702	84,031
Aspen	18,763	2,019	12,096	32,878
Bigtooth maple	580	101	1,599	2,281
Cottonwood	52	—593	—626	—1,166
Curlleaf mtn. mahogany	730	493	301	1,524
Gambel oak	3,232	1,255	3,254	7,741
Rocky Mountain maple	155	101	135	391
True mtn. mahogany	1	8	—	9
Hardwood total	23,514	3,385	16,759	43,657
All species	68,391	28,837	30,460	127,688

Table 40—Net annual growth of all live trees on nonreserved forest land by species and diameter class, Utah, 1992.

Species	Diameter class (inches)															All classes
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
	----- Thousand cubic feet -----															
Blue spruce	(^a) 461	202	227	186	115	147	-46	61	95	-98	-170	-127	40	1,093		
Bristlecone pine	(^a) 13	11	9	9	22	8	19	10	-	6	-	7	1	115		
Douglas-fir	(^a) 3,846	4,056	3,075	2,203	2,260	2,235	974	290	675	-195	-235	150	-184	19,150		
Engelmann spruce	(^a) 2,354	2,121	2,107	2,564	2,210	1,702	467	56	132	-59	82	-217	-129	13,391		
Limber pine	(^a) 343	260	22	30	239	177	60	61	58	-6	35	16	-181	1,113		
Lodgepole pine	(^a) 7,821	662	-931	188	-1,359	-1,436	-1,561	-268	41	-334	6	3	-	2,830		
Ponderosa pine	(^a) 1,354	1,085	1,542	1,295	1,296	1,626	557	627	626	102	319	48	-492	9,986		
Rocky Mountain juniper ^b	118	155	173	159	229	132	76	90	63	7	11	7	6	1,266		
Singleleaf pinyon ^b	1,004	669	832	647	270	315	43	90	49	37	-	14	-	3,971		
Subalpine fir	(^a) 6,447	543	-2,867	-1,644	-2,606	-1,863	-927	-1,529	-621	-741	-144	50	-467	-6,369		
Twoneedle pinyon ^b	2,649	2,265	2,518	2,056	1,102	1,215	706	629	-226	-651	187	129	82	85		
Utah juniper ^b	1,268	1,336	1,731	2,046	2,307	2,396	1,667	1,292	1,161	761	560	505	266	714		
White fir	(^a) 2,070	1,733	1,632	534	546	-22	269	62	-27	-97	115	-70	-12	6,730		
Softwood total	5,038	29,134	15,926	9,724	9,273	6,780	5,064	1,913	418	1,165	-668	653	229	-620	84,031	
Aspen	(^a) 18,983	8,160	4,657	4,657	766	454	334	-321	-138	41	-63	1	5	-	32,878	
Bigtooth maple ^b	1,443	421	192	-46	98	99	22	44	7	-	-	-	-	2,281		
Cottonwood	(^a) -26	-35	-195	-89	-89	30	17	-109	-137	-254	-250	51	-93	-77	-1,166	
Curleaf mtn. mahogany ^b	225	259	291	244	208	126	57	66	25	8	11	1	1	1	1,524	
Gambel oak ^b	5,958	1,222	500	63	-10	-	8	-	-	-	-	-	-	-	7,741	
Rocky Mountain maple ^b	267	13	53	38	12	5	2	-	-	-	-	-	-	-	391	
True mtn. mahogany ^b	2	2	3	1	-	-	-	-	-	-	-	-	-	-	9	
Hardwood total	7,895	20,875	9,163	4,763	986	714	441	-321	-243	-205	-302	53	-86	-76	43,657	
All species	12,934	50,009	25,090	14,486	10,259	7,494	5,506	1,592	175	960	-970	706	143	-695	127,688	

^aDo not have calculations made below 5" diameter.

^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Mortality

Table 41—Annual mortality of all live trees on nonreserved forest land by species and owner group, Utah, 1992.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Blue spruce	708	—	—	708
Bristlecone pine	—	—	—	—
Douglas-fir	6,624	5,715	1,107	13,446
Engelmann spruce	9,065	—	924	9,988
Limber pine	756	—	—	756
Lodgepole pine	14,649	—	1,224	15,873
Ponderosa pine	1,542	837	—	2,379
Rocky Mountain juniper	—	87	—	87
Singleleaf pinyon	5	511	—	517
Subalpine fir	31,362	283	4,921	36,566
Twoneedle pinyon	195	3,839	372	4,406
Utah juniper	86	370	153	610
White fir	5,349	748	1,122	7,219
Softwood total	70,340	12,391	9,823	92,554
Aspen	11,801	658	3,607	16,066
Bigtooth maple	157	—	217	374
Cottonwood	—	671	851	1,521
Curlleaf mtn. mahogany	85	44	—	129
Gambel oak	527	20	—	546
Rocky Mountain maple	111	—	—	111
True mtn. mahogany	—	—	—	—
Hardwood total	12,681	1,393	4,675	18,748
All species	83,021	13,784	14,498	111,302

Table 42—Annual mortality of all live trees on nonreserved forest land by species and diameter class, Utah, 1992.

Species	Diameter class (inches)														All classes	
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
	----- Thousand cubic feet -----															
Blue spruce	(^a)	-	-	-	-	-	-	163	-	-	132	227	185	-	708	-
Bristlecone pine	(^a)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Douglas-fir	(^a)	500	310	855	2,051	1,967	1,560	1,642	1,483	492	873	845	159	709	13,446	-
Engelmann spruce	(^a)	110	200	809	1,085	1,131	1,122	1,412	1,333	827	741	317	436	466	9,988	-
Limber pine	(^a)	56	74	136	105	-	-	-	-	-	114	-	-	272	756	-
Lodgepole pine	(^a)	797	3,270	3,815	1,414	2,243	1,810	1,827	363	-	334	-	-	-	15,873	-
Ponderosa pine	(^a)	-	178	35	174	78	-	572	92	-	214	-	191	846	2,379	-
Rocky Mountain juniper ^b	-	-	32	55	-	-	-	-	-	-	-	-	-	-	87	-
Singleleaf pinyon ^b	5	57	-	109	205	-	140	-	-	-	-	-	-	-	517	-
Subalpine fir	(^a)	2,313	4,957	8,238	5,375	5,107	3,607	2,077	2,174	1,009	886	286	-	536	36,566	-
Twoneedle pinyon ^b	8	86	288	657	1,276	319	288	-	605	879	-	-	-	-	4,406	-
Utah juniper ^b	16	-	42	55	-	-	208	289	-	-	-	-	-	-	610	-
White fir	(^a)	403	466	712	1,179	1,140	1,122	750	379	397	294	-	146	231	7,219	-
Softwood total	30	4,322	9,818	15,476	12,865	11,984	9,857	8,732	6,429	3,603	3,587	1,675	1,117	3,061	92,554	-
Aspen	(^a)	3,980	4,373	2,394	2,870	1,168	394	581	228	-	77	-	-	-	16,066	-
Bigtooth maple ^b	60	67	68	179	-	-	-	-	-	-	-	-	-	-	374	-
Cottonwood	(^a)	36	41	216	105	-	-	120	206	285	291	-	121	101	1,521	-
Curleaf mtn. mahogany ^b	8	20	30	71	-	-	-	-	-	-	-	-	-	-	129	-
Gambel oak ^b	315	144	-	41	47	-	-	-	-	-	-	-	-	-	546	-
Rocky Mountain maple ^b	12	99	-	-	-	-	-	-	-	-	-	-	-	-	111	-
True mtn. mahogany ^b	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hardwood total	394	4,347	4,512	2,901	3,022	1,168	394	701	434	285	369	-	121	101	18,748	-
All species	423	8,669	14,331	18,377	15,887	13,152	10,250	9,432	6,863	3,888	3,955	1,675	1,237	3,161	111,302	-

^aDo not have calculations made below 5" diameter.

^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Table 43—Annual mortality of all live trees on nonreserved forest land by species and cause of death, Utah, 1992.

Species	Cause of death								Total
	Insects	Disease	Fire	Animal	Weather	Suppression	Unknown	Human caused	
	<i>Thousand cubic feet</i>								
Blue spruce	410	185	—	—	—	—	113	—	708
Bristlecone pine	—	—	—	—	—	—	—	—	—
Douglas-fir	8,545	3,256	257	—	378	—	961	49	13,446
Engelmann spruce	6,481	1,284	413	—	466	—	1,186	158	9,988
Limber pine	546	210	—	—	—	—	—	—	756
Lodgepole pine	12,504	1,086	177	109	454	—	1,543	—	15,873
Ponderosa pine	1,412	468	293	—	92	—	—	115	2,379
Rocky Mountain juniper	55	—	32	—	—	—	—	—	87
Singleleaf pinyon	352	—	—	—	—	—	164	—	517
Subalpine fir	13,549	14,332	250	—	3,189	73	4,854	319	36,566
Twoneedle pinyon	1,000	2,378	—	11	123	172	722	—	4,406
Utah juniper	42	22	—	—	86	—	399	61	610
White fir	2,274	3,374	—	—	349	—	1,177	45	7,219
Softwood total	47,170	26,594	1,423	119	5,137	245	11,119	747	92,554
Aspen	1,308	10,668	178	55	1,068	—	2,565	224	16,066
Bigtooth maple	—	221	35	—	—	—	118	—	374
Cottonwood	—	—	530	105	206	—	680	—	1,521
Curlleaf mtn. mahogany	8	44	—	—	12	—	65	—	129
Gambel oak	73	125	7	—	4	14	323	—	546
Rocky Mountain maple	—	49	—	—	—	—	62	—	111
True mtn. mahogany	—	—	—	—	—	—	—	—	—
Hardwood total	1,389	11,107	750	160	1,291	14	3,813	224	18,748
All species	48,559	37,701	2,173	279	6,427	259	14,932	971	111,302

County

Table 44—Area, volume, growth and mortality of live trees on nonreserved forest land by county, Utah

County	Area	Volume	Growth	Mortality
	-- -Acres -- -	----- Thousand cubic feet -----		
Beaver	676,902	554,549	6,687	1,441
Box Elder	304,994	188,436	1,935	253
Cache	270,306	408,682	2,428	4,954
Carbon	405,064	428,884	5,579	2,440
Daggett	269,249	258,105	3,363	2,256
Davis	25,728	20,110	186	325
Duchesne	767,685	849,029	7,352	5,707
Emery	474,651	475,320	1,066	5,749
Garfield	1,499,557	1,450,894	13,596	10,305
Grand	727,105	658,179	3,596	5,834
Iron	812,658	794,352	1,972	9,700
Juab	398,849	318,564	3,254	1,125
Kane	1,219,361	946,974	6,999	2,728
Millard	437,856	318,108	3,730	423
Morgan	134,450	123,146	3,692	662
Piute	233,798	271,512	3,170	1,966
Rich	94,324	147,549	1,506	1,391
Salt Lake	76,503	88,549	1,104	1,264
San Juan	1,419,602	1,142,768	11,014	3,344
Sanpete	463,899	612,003	4,950	8,320
Sevier	643,831	711,581	6,192	6,193
Summit	552,850	806,793	9,173	9,729
Tooele	421,334	269,420	2,333	730
Uintah	874,188	839,103	2,340	10,510
Utah	489,969	450,764	5,560	5,127
Wasatch	454,625	559,107	8,786	5,884
Washington	520,859	273,967	3,285	340
Wayne	166,294	172,394	723	1,649
Weber	107,171	110,222	2,118	953
Total	14,943,661	14,249,064	127,688	111,302

Nonreserved Timberland

Area

Table 45—Area of nonreserved timberland by forest type, stand-size class, and productivity class, Utah, 1993.

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Aspen						
Sawtimber	—	6,728	80,709	177,680	2,997	268,114
Poletimber	—	10,107	130,706	617,666	86,301	844,779
Sapling/seedling	—	4,173	33,341	212,832	34,362	284,707
Nonstocked	—	—	—	8,994	3,023	12,017
Total	—	21,008	244,755	1,017,171	126,683	1,409,616
Blue spruce						
Sawtimber	—	—	14,220	—	—	14,220
Poletimber	—	—	—	3,069	—	3,069
Sapling/seedling	—	—	—	3,531	—	3,531
Nonstocked	—	—	—	—	—	—
Total	—	—	14,220	6,600	—	20,820
Cottonwood						
Sawtimber	—	—	—	20,756	4,491	25,247
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	3,550	—	—	3,550
Nonstocked	—	—	—	—	—	—
Total	—	—	3,550	20,756	4,491	28,798
Douglas-fir						
Sawtimber	4,173	34,223	273,566	424,437	—	736,399
Poletimber	—	—	32,992	50,378	—	83,370
Sapling/seedling	—	—	29,241	76,946	5,044	111,231
Nonstocked	—	—	9,582	88,289	—	97,871
Total	4,173	34,223	345,381	640,050	5,044	1,028,871
Engelmann spruce						
Sawtimber	—	45,206	129,756	154,573	—	329,535
Poletimber	—	—	7,082	3,300	—	10,383
Sapling/seedling	—	—	3,300	3,020	—	6,320
Nonstocked	—	—	—	—	—	—
Total	—	45,206	140,138	160,893	—	346,238
Limber pine						
Sawtimber	—	—	—	39,997	6,093	46,090
Poletimber	—	—	—	5,577	—	5,577
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	5,905	3,003	8,908
Total	—	—	—	51,478	9,096	60,574
Lodgepole pine						
Sawtimber	—	—	23,702	139,803	—	163,504
Poletimber	—	—	2,719	117,143	6,115	125,977
Sapling/seedling	—	—	3,069	83,125	6,369	92,563
Nonstocked	—	—	—	—	—	—
Total	—	—	29,489	340,071	12,484	382,044
Ponderosa pine						
Sawtimber	—	—	87,275	293,758	—	381,033
Poletimber	—	—	3,020	20,639	—	23,659
Sapling/seedling	—	—	9,816	28,943	—	38,759
Nonstocked	—	—	—	110,165	—	110,165
Total	—	—	100,111	453,505	—	553,617
Spruce-fir						
Sawtimber	2,748	77,790	246,265	164,878	3,542	495,223
Poletimber	—	—	55,535	59,091	—	114,626
Sapling/seedling	—	—	15,784	49,256	3,073	68,113
Nonstocked	—	—	—	—	—	—
Total	2,748	77,790	317,583	273,226	6,615	677,962
White fir						
Sawtimber	—	34,598	177,054	114,097	—	325,750
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	17,078	9,118	—	26,197
Nonstocked	—	—	8,534	—	—	8,534
Total	—	34,598	202,667	123,216	—	360,481
All types						
Sawtimber	6,921	198,545	1,032,547	1,529,979	17,123	2,785,115
Poletimber	—	10,107	232,053	876,862	92,416	1,211,439
Sapling/seedling	—	4,173	115,179	466,772	48,847	634,971
Nonstocked	—	—	18,117	213,353	6,026	237,495
Total	6,921	212,825	1,397,896	3,086,966	164,412	4,869,021

^aOn tables 45 through 79, nonreserved timberland includes (traditional timber types) all productivity classes, and excludes juniper, pinyon-juniper, oak, mountain mahogany, and maple.

Table 46--Area of National Forest nonreserved timberland by forest type, stand-size class, and productivity class, Utah, 1993.

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Aspen						
Sawtimber	—	6,728	39,578	138,585	2,997	187,887
Poletimber	—	1,900	107,126	342,610	21,094	472,730
Sapling/seedling	—	4,173	24,721	122,422	17,686	169,003
Nonstocked	—	—	—	8,994	3,023	12,017
Total	—	12,800	171,426	612,611	44,800	841,636
Blue spruce						
Sawtimber	—	—	14,220	—	—	14,220
Poletimber	—	—	—	3,069	—	3,069
Sapling/seedling	—	—	—	3,531	—	3,531
Nonstocked	—	—	—	—	—	—
Total	—	—	14,220	6,600	—	20,820
Cottonwood						
Sawtimber	—	—	—	3,542	—	3,542
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	3,550	—	—	3,550
Nonstocked	—	—	—	—	—	—
Total	—	—	3,550	3,542	—	7,092
Douglas-fir						
Sawtimber	4,173	23,314	162,657	173,875	—	364,019
Poletimber	—	—	10,390	30,989	—	41,378
Sapling/seedling	—	—	8,618	18,902	—	27,519
Nonstocked	—	—	—	38,977	—	38,977
Total	4,173	23,314	181,664	262,743	—	471,894
Engelmann spruce						
Sawtimber	—	30,024	129,756	141,858	—	301,637
Poletimber	—	—	7,082	3,300	—	10,383
Sapling/seedling	—	—	3,300	3,020	—	6,320
Nonstocked	—	—	—	—	—	—
Total	—	30,024	140,138	148,178	—	318,340
Limber pine						
Sawtimber	—	—	—	37,676	6,093	43,769
Poletimber	—	—	—	5,577	—	5,577
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	5,905	3,003	8,908
Total	—	—	—	49,157	9,096	58,253
Lodgepole pine						
Sawtimber	—	—	17,633	122,810	—	140,444
Poletimber	—	—	2,719	110,845	6,115	119,679
Sapling/seedling	—	—	3,069	83,125	6,369	92,563
Nonstocked	—	—	—	—	—	—
Total	—	—	23,421	316,780	12,484	352,686
Ponderosa pine						
Sawtimber	—	—	71,447	222,865	—	294,312
Poletimber	—	—	3,020	20,639	—	23,659
Sapling/seedling	—	—	—	23,507	—	23,507
Nonstocked	—	—	—	46,222	—	46,222
Total	—	—	74,468	313,232	—	387,700
Spruce-fir						
Sawtimber	2,748	65,555	208,264	164,878	3,542	444,987
Poletimber	—	—	47,644	59,091	—	106,736
Sapling/seedling	—	—	3,069	44,314	3,073	50,456
Nonstocked	—	—	—	—	—	—
Total	2,748	65,555	258,977	268,284	6,615	602,178
White fir						
Sawtimber	—	29,156	145,237	74,783	—	249,176
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	14,757	9,118	—	23,875
Nonstocked	—	—	8,534	—	—	8,534
Total	—	29,156	168,528	83,902	—	281,586
All types						
Sawtimber	6,921	154,775	788,792	1,080,872	12,632	2,043,993
Poletimber	—	1,900	177,981	576,119	27,209	783,209
Sapling/seedling	—	4,173	61,084	307,940	27,128	400,325
Nonstocked	—	—	8,534	100,098	6,026	114,658
Total	6,921	160,848	1,036,392	2,065,029	72,995	3,342,185

Table 47—Area of other publicly owned nonreserved timberland by forest type, stand-size class, and productivity class, Utah, 1993.

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
	----- Acres -----					
Aspen						
Sawtimber	—	—	17,279	21,369	—	38,648
Poletimber	—	—	8,132	33,991	5,832	47,955
Sapling/seedling	—	—	2,321	11,467	2,454	16,243
Nonstocked	—	—	—	—	—	—
Total	—	—	27,732	66,828	8,287	102,846
Blue spruce						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Cottonwood						
Sawtimber	—	—	—	5,018	—	5,018
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	5,018	—	5,018
Douglas-fir						
Sawtimber	—	—	53,306	156,744	—	210,050
Poletimber	—	—	6,766	12,373	—	19,138
Sapling/seedling	—	—	—	35,848	—	35,848
Nonstocked	—	—	9,582	36,016	—	45,599
Total	—	—	69,654	240,980	—	310,635
Engelmann spruce						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Limber pine						
Sawtimber	—	—	—	2,321	—	2,321
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	2,321	—	2,321
Lodgepole pine						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Ponderosa pine						
Sawtimber	—	—	7,621	32,041	—	39,661
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	63,944	—	63,944
Total	—	—	7,621	95,984	—	103,605
Spruce-fir						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	2,454	—	—	2,454
Sapling/seedling	—	—	—	4,942	—	4,942
Nonstocked	—	—	—	—	—	—
Total	—	—	2,454	4,942	—	7,396
White fir						
Sawtimber	—	—	6,510	24,798	—	31,308
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	2,321	—	—	2,321
Nonstocked	—	—	—	—	—	—
Total	—	—	8,832	24,798	—	33,630
All types						
Sawtimber	—	—	84,716	242,291	—	327,008
Poletimber	—	—	17,352	46,364	5,832	69,548
Sapling/seedling	—	—	4,643	52,257	2,454	59,354
Nonstocked	—	—	9,582	99,960	—	109,542
Total	—	—	116,294	440,872	8,287	565,452

Table 48—Area of nonindustrial private nonreserved timberland by forest type, stand-size class, and productivity class, Utah, 1993.

Forest type and stand-size class	Productivity class					Total
	120-164	85-119	50-84	20-49	0-19	
----- Acres -----						
Aspen						
Sawtimber	—	—	23,852	17,726	—	41,578
Poletimber	—	8,207	15,448	241,064	59,375	324,094
Sapling/seedling	—	—	6,298	78,942	14,221	99,461
Nonstocked	—	—	—	—	—	—
Total	—	8,207	45,598	337,732	73,596	465,133
Blue spruce						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Cottonwood						
Sawtimber	—	—	—	12,196	4,491	16,688
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	12,196	4,491	16,688
Douglas-fir						
Sawtimber	—	10,910	57,603	93,818	—	162,330
Poletimber	—	—	15,836	7,017	—	22,853
Sapling/seedling	—	—	20,623	22,197	5,044	47,864
Nonstocked	—	—	—	13,295	—	13,295
Total	—	10,910	94,063	136,327	5,044	246,343
Engelmann spruce						
Sawtimber	—	15,183	—	12,715	—	27,898
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	15,183	—	12,715	—	27,898
Limber pine						
Sawtimber	—	—	—	—	—	—
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	—	—	—	—
Lodgepole pine						
Sawtimber	—	—	6,068	16,992	—	23,061
Poletimber	—	—	—	6,298	—	6,298
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	—	6,068	23,290	—	29,359
Ponderosa pine						
Sawtimber	—	—	8,207	38,853	—	47,060
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	9,816	5,436	—	15,252
Nonstocked	—	—	—	—	—	—
Total	—	—	18,023	44,289	—	62,312
Spruce-fir						
Sawtimber	—	12,235	38,001	—	—	50,236
Poletimber	—	—	5,436	—	—	5,436
Sapling/seedling	—	—	12,715	—	—	12,715
Nonstocked	—	—	—	—	—	—
Total	—	12,235	56,152	—	—	68,387
White fir						
Sawtimber	—	5,442	25,307	14,516	—	45,265
Poletimber	—	—	—	—	—	—
Sapling/seedling	—	—	—	—	—	—
Nonstocked	—	—	—	—	—	—
Total	—	5,442	25,307	14,516	—	45,265
All types						
Sawtimber	—	43,770	159,038	206,816	4,491	414,115
Poletimber	—	8,207	36,720	254,379	59,375	358,682
Sapling/seedling	—	—	49,452	106,575	19,265	175,292
Nonstocked	—	—	—	13,295	—	13,295
Total	—	51,977	245,211	581,066	83,131	961,384

Table 49—Area of nonreserved timberland by stand volume and owner group, Utah, 1993.

Stand volume per acre ^a	Owner group			
	National Forest	Other		Nonindustrial private
		public	private	
		----- Acres -----		
less than 1,500 board feet	926,256	207,824	428,973	1,563,054
1,500 to 4,999 board feet	901,543	238,475	262,967	1,402,985
5,000 to 9,999 board feet	806,560	67,181	184,508	1,058,249
10,000 board feet or more	707,825	51,972	84,936	844,733
Total	3,342,185	565,452	961,384	4,869,021

^aInternational 1/4-inch rule.

Table 50—Number of growing stock trees on nonreserved timberland by species and diameter class, Utah, 1993.

Species	Diameter class (inches at breast height)																All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
	----- Thousand trees -----																
Douglas-fir	44,704	31,604	24,058	20,012	12,117	9,779	8,023	5,885	3,407	2,296	1,415	844	671	288	499	165,603	
Ponderosa pine	6,472	9,610	6,983	4,267	3,343	2,782	2,179	2,345	1,400	859	800	406	371	267	304	42,388	
Lodgepole pine	88,144	65,370	40,071	21,841	12,351	5,502	2,559	1,011	521	239	74	—	12	5	—	237,700	
Bristlecone pine	—	181	258	90	38	65	73	33	38	34	—	8	—	6	—	825	
Limber pine	4,769	3,758	2,530	1,661	469	578	586	330	134	187	111	125	24	21	83	15,364	
Subalpine fir	204,603	77,811	44,188	26,517	15,961	8,121	4,662	2,644	1,498	848	534	200	183	67	65	387,902	
White fir	56,209	25,156	15,242	10,554	7,267	4,046	3,268	1,912	1,511	773	514	216	193	81	170	127,111	
Engelmann spruce	43,229	35,906	18,762	14,501	11,654	10,582	7,628	5,220	3,081	2,400	1,554	951	499	202	280	156,448	
Blue spruce	2,769	1,329	1,603	1,033	678	336	257	182	171	56	126	46	50	41	28	8,705	
Softwood total	450,899	250,724	153,696	100,477	63,876	41,791	29,236	19,562	11,760	7,691	5,128	2,796	2,004	977	1,428	1,142,045	
Aspen	308,774	215,881	165,239	89,914	38,024	15,783	6,531	2,757	920	211	52	13	4	—	—	844,102	
Cottonwood	—	301	152	—	107	45	211	57	22	129	41	75	52	35	41	1,268	
Hardwood total	308,774	216,182	165,391	89,914	38,131	15,828	6,742	2,814	942	340	93	88	56	35	41	845,370	
All species	759,674	466,906	319,086	190,390	102,007	57,619	35,978	22,376	12,702	8,031	5,221	2,884	2,060	1,012	1,469	1,987,415	

Table 51—Number of cull and hard dead trees on nonreserved timberland by owner group, and softwoods and hardwoods, Utah, 1993.

Owner group	Species group	Cull trees			Sound trees			Other		Total
		Rough	Rotten	Total	dead trees	dead trees	----- Thousand trees -----	dead trees	dead trees	
National Forest	Softwoods	6,082	1,791	7,873	96,038	1,476		1,476		105,386
	Hardwoods	3,363	8,923	12,286	54,634	5,396		5,396		72,315
	Total	9,444	10,714	20,158	150,671	6,872		6,872		177,701
Other public	Softwoods	1,168	404	1,572	5,690	3,125		3,125		10,386
	Hardwoods	1,007	1,009	2,016	5,040	2,151		2,151		9,208
	Total	2,175	1,413	3,588	10,730	5,275		5,275		19,594
Nonindustrial private	Softwoods	1,912	172	2,084	6,217	408		408		8,710
	Hardwoods	3,685	2,570	6,255	16,520	3,096		3,096		25,870
	Total	5,597	2,742	8,339	22,737	3,504		3,504		34,580
Total	Softwoods	9,162	2,367	11,529	107,945	5,009		5,009		124,482
	Hardwoods	8,055	12,502	20,557	76,194	10,643		10,643		107,393
	Total	17,217	14,868	32,086	184,139	15,652		15,652		231,875

Volume

Table 52—Net volume of growing stock on nonreserved timberland by forest type and stand-size class, Utah, 1993.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
----- Thousand cubic feet -----					
Aspen	507,854	1,103,373	72,836	646	1,684,710
Blue spruce	34,624	1,105	867	—	36,596
Cottonwood	18,068	—	451	—	18,519
Douglas-fir	1,192,570	153,403	48,262	12,518	1,406,753
Engelmann spruce	869,062	27,458	2,781	—	899,301
Limber pine	48,728	5,204	—	652	54,584
Lodgepole pine	429,344	212,084	37,049	—	678,477
Ponderosa pine	382,594	16,317	10,569	15,813	425,292
Spruce-fir	1,391,603	222,947	29,733	—	1,644,283
White fir	558,010	—	10,741	1,593	570,344
All types	5,432,457	1,741,891	213,288	31,222	7,418,858

Table 53—Net volume of sawtimber (International ¼-inch rule) on nonreserved timberland by forest type and stand-size class, Utah, 1993.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
----- Thousand board feet -----					
Aspen	1,779,210	1,443,662	169,559	—	3,392,431
Blue spruce	162,942	2,605	—	—	165,547
Cottonwood	82,730	—	2,269	—	85,000
Douglas-fir	5,475,564	323,857	206,707	60,935	6,067,062
Engelmann spruce	3,794,076	69,273	12,141	—	3,875,489
Limber pine	216,299	7,965	—	2,030	226,294
Lodgepole pine	1,552,392	241,816	39,464	—	1,833,673
Ponderosa pine	1,822,828	37,180	47,852	77,347	1,985,207
Spruce-fir	5,867,541	483,699	96,740	—	6,447,980
White fir	2,131,908	—	45,075	6,508	2,183,490
All types	22,885,490	2,610,057	619,806	146,820	26,262,173

Table 54—Net volume of sawtimber (Scribner rule) on nonreserved timberland by forest type and stand-size class, Utah, 1993.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/seedling	Nonstocked	
----- Thousand board feet -----					
Aspen	1,520,807	1,237,420	145,823	—	2,904,050
Blue spruce	143,420	2,122	—	—	145,542
Cottonwood	73,531	—	1,888	—	75,418
Douglas-fir	4,674,151	276,517	175,825	51,677	5,178,171
Engelmann spruce	3,231,791	58,831	10,264	—	3,300,886
Limber pine	187,078	6,853	—	1,823	195,754
Lodgepole pine	1,322,873	206,943	33,910	—	1,563,726
Ponderosa pine	1,585,137	32,092	40,970	67,422	1,725,621
Spruce-fir	5,014,263	415,938	83,715	—	5,513,916
White fir	1,811,229	—	38,277	5,404	1,854,909
All types	19,564,279	2,236,716	530,671	126,326	22,457,992

Table 55—Net volume of growing stock on nonreserved timberland by species and owner group, Utah, 1993.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Blue spruce	68,607	—	4,387	72,994
Bristlecone pine	5,880	1,628	—	7,508
Douglas-fir	841,493	253,635	347,574	1,442,702
Engelmann spruce	1,377,649	6,082	70,790	1,454,520
Limber pine	67,544	7,291	12,775	87,610
Lodgepole pine	631,749	559	81,047	713,356
Ponderosa pine	350,081	50,861	66,965	467,907
Subalpine fir	839,421	19,319	115,403	974,143
White fir	411,473	34,195	61,340	507,008
Softwood total	4,593,897	373,571	760,281	5,727,749
Aspen	1,156,922	121,896	385,979	1,664,797
Cottonwood	3,255	4,833	18,223	26,312
Hardwood total	1,160,178	126,729	404,202	1,691,109
All species	5,754,075	500,300	1,164,483	7,418,858

Table 56—Net volume of sawtimber (International ¼-inch rule) on nonreserved timberland by species and owner group, Utah, 1993.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand board feet -----				
Blue spruce	311,049	—	21,932	332,980
Bristlecone pine	22,996	8,389	—	31,386
Douglas-fir	3,934,580	1,165,128	1,562,097	6,661,806
Engelmann spruce	6,298,333	24,522	344,727	6,667,583
Limber pine	279,312	34,946	52,202	366,461
Lodgepole pine	1,619,173	2,286	348,616	1,970,075
Ponderosa pine	1,644,888	263,537	339,972	2,248,397
Subalpine fir	2,957,585	71,611	457,841	3,487,037
White fir	1,539,186	129,909	239,257	1,908,353
Softwood total	18,607,102	1,700,329	3,366,646	23,674,077
Aspen	1,910,000	209,092	351,288	2,470,380
Cottonwood	13,044	21,065	83,607	117,716
Hardwood total	1,923,044	230,158	434,895	2,588,097
All species	20,530,146	1,930,487	3,801,540	26,262,173

Table 57—Net volume of sawtimber (Scribner rule) on nonreserved timberland by species and owner group, Utah, 1993.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand board feet -----				
Blue spruce	273,067	—	17,713	290,780
Bristlecone pine	19,705	7,104	—	26,808
Douglas-fir	3,366,809	991,360	1,331,566	5,689,735
Engelmann spruce	5,381,937	21,441	293,778	5,697,156
Limber pine	241,915	30,271	45,377	317,564
Lodgepole pine	1,379,984	1,956	297,000	1,678,940
Ponderosa pine	1,427,635	231,403	298,750	1,957,788
Subalpine fir	2,515,620	61,354	391,539	2,968,513
White fir	1,312,014	108,749	205,276	1,626,040
Softwood total	15,918,686	1,453,639	2,880,999	20,253,324
Aspen	1,623,015	177,250	300,083	2,100,347
Cottonwood	11,456	17,994	74,870	104,321
Hardwood total	1,634,471	195,244	374,953	2,204,668
All species	17,553,157	1,648,882	3,255,953	22,457,992

Table 58—Net volume of growing stock on nonreserved timberland by species and diameter class, Utah, 1993.

Species	Diameter class (inches at breast height)														All classes
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand cubic feet -----															
Blue spruce	2,534	4,798	6,369	5,439	6,645	6,784	8,337	2,918	9,718	4,352	5,240	5,014	4,847	5,014	72,994
Bristlecone pine	407	313	473	637	1,156	722	1,628	1,219	—	432	—	521	—	521	7,508
Douglas-fir	46,469	104,275	116,099	159,981	193,728	204,901	156,056	131,290	95,032	68,625	60,727	29,978	75,541	29,978	1,442,702
Engelmann spruce	37,643	77,403	126,074	188,936	207,475	201,228	153,176	148,040	114,080	80,079	48,840	24,793	46,753	24,793	1,454,520
Limber pine	3,111	8,922	5,361	8,617	12,488	8,798	4,783	7,689	5,926	7,548	2,141	1,717	10,507	1,717	87,610
Lodgepole pine	114,032	163,391	167,172	114,228	70,022	40,524	24,594	12,882	4,630	—	1,164	719	—	719	713,356
Ponderosa pine	10,511	15,614	24,749	34,177	42,820	63,367	52,053	39,899	50,222	29,910	31,246	28,081	45,257	28,081	467,907
Subalpine fir	92,286	144,537	174,487	144,435	120,269	96,987	69,636	47,853	36,215	15,426	16,220	7,039	8,752	7,039	974,143
White fir	23,256	49,275	62,567	60,495	70,170	56,617	58,735	36,394	30,943	15,668	13,929	7,294	21,665	7,294	507,008
Softwood total	330,249	568,528	683,351	716,945	724,773	679,929	528,998	428,185	346,767	222,041	179,506	105,156	213,323	213,323	5,727,749
Aspen	320,726	468,802	370,516	244,747	138,908	76,224	32,504	8,710	2,632	724	304	—	—	—	1,664,797
Cottonwood	246	—	678	627	3,068	1,208	547	3,912	1,724	3,730	3,315	2,703	4,554	2,703	26,312
Hardwood total	320,972	468,802	371,195	245,374	141,976	77,432	33,052	12,622	4,355	4,454	3,619	2,703	4,554	2,703	1,691,109
All species	651,221	1,037,329	1,054,545	962,319	866,749	757,361	562,049	440,807	351,122	226,495	183,125	107,859	217,877	107,859	7,418,858

Table 59—Net volume of sawtimber (International 1/4-inch rule) on nonreserved timberland by species and diameter class, Utah, 1993.

Species	Diameter class (inches at breast height)												All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand board feet -----													
Blue spruce	23,728	24,716	32,495	33,942	42,081	14,852	51,431	23,709	29,133	28,441	28,452	332,980	
Bristlecone pine	1,777	2,113	4,677	3,226	8,389	6,100	-	2,253	-	2,850	-	31,386	
Douglas-fir	443,913	744,329	971,158	1,071,376	833,823	714,367	527,718	389,807	347,482	173,242	444,591	6,661,806	
Engelmann spruce	505,295	878,912	1,020,970	1,010,447	774,095	761,678	600,315	431,454	269,382	141,001	274,034	6,667,583	
Limber pine	19,379	34,796	57,016	42,677	23,994	38,861	30,800	39,914	11,628	9,335	58,060	366,461	
Lodgepole pine	656,739	523,114	348,764	212,263	127,845	66,746	24,281	-	6,351	3,973	-	1,970,075	
Ponderosa pine	78,736	144,959	207,849	323,923	276,119	215,091	271,581	162,194	168,562	153,240	246,142	2,248,397	
Subalpine fir	702,657	670,223	585,650	482,383	348,235	243,108	189,416	83,193	90,030	40,252	51,890	3,487,037	
White fir	223,582	270,029	329,406	265,600	269,952	160,221	133,729	67,191	59,066	31,697	97,879	1,908,353	
Softwood total	2,655,808	3,293,190	3,557,986	3,445,837	2,704,534	2,221,023	1,829,272	1,199,715	981,634	584,031	1,201,047	23,674,077	
Aspen	(a) 1,164,146	691,547	387,275	387,275	165,516	43,774	13,063	3,560	1,500	-	-	2,470,380	
Cottonwood	(a) 3,203	15,306	5,879	5,879	2,643	18,167	7,810	16,713	14,852	12,188	20,956	117,716	
Hardwood total	(a) 1,167,349	706,853	393,154	393,154	168,159	61,941	20,872	20,273	16,351	12,188	20,956	2,588,097	
All species	2,655,808	4,460,539	4,264,839	3,838,991	2,872,693	2,282,964	1,850,144	1,219,988	997,985	596,219	1,222,003	26,262,173	

^aHardwoods are not considered sawtimber until they are 11 inches d.b.h.**Table 60**—Net volume of sawtimber (Scribner rule) on nonreserved timberland by species and diameter class, Utah, 1993.

Species	Diameter class (inches at breast height)												All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand board feet -----													
Blue spruce	21,655	21,066	26,785	27,549	34,229	12,573	45,652	21,512	26,682	26,309	26,767	290,780	
Bristlecone pine	1,536	1,858	3,997	2,726	7,104	5,068	—	1,954	—	2,566	—	26,808	
Douglas-fir	399,038	633,206	804,220	872,928	683,203	602,347	460,097	348,143	313,260	158,287	415,005	5,689,735	
Engelmann spruce	450,281	742,781	839,552	821,807	636,129	654,998	530,847	387,483	245,415	130,480	257,383	5,697,156	
Limber pine	16,848	29,808	48,238	35,872	20,206	33,120	26,773	35,079	10,437	8,358	52,825	317,564	
Lodgepole pine	564,868	443,074	293,325	179,274	109,754	57,951	21,351	—	5,723	3,621	—	1,678,940	
Ponderosa pine	59,562	119,235	178,181	281,398	241,754	189,135	240,119	143,612	149,534	136,193	219,063	1,957,788	
Subalpine fir	627,369	565,925	482,385	391,450	285,943	206,732	166,592	74,648	81,890	37,099	48,481	2,968,513	
White fir	203,170	231,817	274,139	217,225	218,944	133,063	115,475	59,641	52,627	28,846	91,093	1,626,040	
Softwood total	2,344,327	2,788,770	2,950,821	2,830,230	2,237,267	1,894,987	1,606,907	1,072,073	885,566	531,760	1,110,618	20,253,324	
Aspen	(a) 996,904	583,257	326,860	140,540	37,293	11,162	3,046	—	1,285	—	—	2,100,347	
Cottonwood	(a) 2,602	12,580	5,015	2,277	15,847	6,948	14,941	13,504	11,173	19,433	19,433	104,321	
Hardwood total	(a) 999,506	595,837	331,876	142,818	53,140	18,110	17,986	14,790	11,173	19,433	2,204,668		
All species	2,344,327	3,788,276	3,546,658	3,162,105	2,380,084	1,948,126	1,625,017	1,090,059	900,356	542,932	1,130,051	22,457,992	

^aHardwoods are not considered sawtimber until they are 11 inches d.b.h.

Table 61—Net volume of timber on nonreserved timberland by class of timber, and softwoods and hardwoods, Utah, 1993.

Class of timber	Softwoods	Hardwoods	Total
	----- <i>Thousand cubic feet</i> -----		
Sawtimber trees			
Sawlog portion	4,319,982	394,808	4,714,790
Upper-stem portion	508,990	135,333	644,323
Total	4,828,972	530,141	5,359,113
Poetimber trees	898,777	1,160,968	2,059,745
All growing-stock trees	5,727,749	1,691,109	7,418,858
Rough cull trees	36,875	12,920	49,795
Rotten cull trees	18,388	25,034	43,422
Salvable dead trees	872,720	219,796	1,092,515
All timber	6,655,732	1,948,859	8,604,590

Table 62—Net volume of growing stock on nonreserved timberland by species and forest type, Utah, 1993.

Species	Forest type										All types
	Aspen	Blue spruce	Cottonwood	Douglas-fir	Engelmann spruce	Limber pine	Lodgepole pine	Ponderosa pine	Spruce-fir	White fir	
----- Thousand cubic feet -----											
Blue spruce	23,967	31,097	-	4,669	-	-	291	1,041	8,077	3,853	72,994
Bristlecone pine	-	-	-	-	-	313	-	-	4,312	2,882	7,508
Douglas-fir	83,073	1,156	875	1,112,010	25,940	5,613	3,051	19,735	93,369	97,880	1,442,702
Engelmann spruce	41,337	638	-	24,456	753,150	8,403	42,196	822	580,065	3,452	1,454,520
Limber pine	3,414	-	-	30,657	3,844	30,244	-	2,413	6,611	10,427	87,610
Lodgepole pine	21,940	-	-	8,081	35,598	-	598,542	-	49,195	-	713,356
Ponderosa pine	20,712	751	-	27,031	462	2,367	-	388,466	2,628	25,491	467,907
Subalpine fir	131,424	-	-	61,012	40,279	3,040	23,933	1,501	712,269	685	974,143
White fir	42,117	-	-	56,022	3,325	2,326	-	6,722	5,822	390,674	507,008
Softwood total	367,984	33,642	875	1,323,937	862,598	52,307	668,013	420,701	1,462,349	535,344	5,727,749
Aspen	1,315,833	2,954	-	82,816	36,703	2,277	10,464	3,362	175,388	35,000	1,664,797
Cottonwood	893	-	17,644	-	-	-	-	1,229	6,545	-	26,312
Hardwood total	1,316,726	2,954	17,644	82,816	36,703	2,277	10,464	4,592	181,934	35,000	1,691,109
All species	1,684,710	36,596	18,519	1,406,753	899,301	54,584	678,477	425,292	1,644,283	570,344	7,418,858

Table 63—Net volume of sawtimber (International 1/4-inch rule) on nonreserved timberland by species and forest type, Utah, 1993.

Species	Forest type										
	Aspen	Blue spruce	Cottonwood	Douglas-fir	Engelmann spruce	Limber pine	Lodgepole pine	Ponderosa pine	Spruce-fir	White fir	All types
	----- Thousand board feet -----										
Blue spruce	101,266	148,863	-	21,128	-	-	-	5,139	39,907	16,677	332,980
Bristlecone pine	-	-	-	-	-	-	-	-	18,940	12,446	31,386
Douglas-fir	362,502	5,891	5,177	5,162,254	112,690	24,667	14,326	77,004	442,937	454,358	6,661,806
Engelmann spruce	181,699	2,919	-	116,175	3,400,047	37,768	174,715	3,619	2,736,416	14,225	6,667,583
Limber pine	16,748	-	-	128,216	15,236	130,384	-	10,131	21,869	43,877	366,461
Lodgepole pine	61,066	-	-	6,270	151,325	-	1,583,764	-	167,651	-	1,970,075
Ponderosa pine	106,452	4,089	-	129,821	2,266	11,824	-	1,858,803	13,489	121,652	2,248,397
Subalpine fir	483,852	-	-	237,874	112,028	11,270	56,196	5,862	2,576,550	3,403	3,487,037
White fir	140,893	-	-	213,839	15,190	8,663	-	18,960	25,137	1,485,670	1,908,353
Softwood total	1,454,478	161,762	5,177	6,015,576	3,808,783	224,577	1,829,000	1,979,519	6,042,896	2,152,308	23,674,077
Aspen	1,934,750	3,785	-	51,486	66,706	1,717	4,672	-	376,081	31,182	2,470,380
Cottonwood	3,203	-	79,823	-	-	-	-	5,688	29,002	-	117,716
Hardwood total	1,937,953	3,785	79,823	51,486	66,706	1,717	4,672	5,688	405,083	31,182	2,588,097
All species	3,392,431	165,547	85,000	6,067,062	3,875,489	226,294	1,833,673	1,985,207	6,447,990	2,183,490	26,262,173

Growth

Table 65—Net annual growth of growing stock on nonreserved timberland by species and owner group, Utah, 1992.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Blue spruce	996	—	93	1,089
Bristlecone pine	92	19	—	111
Douglas-fir	10,340	932	7,308	18,580
Engelmann spruce	12,957	105	247	13,309
Limber pine	675	76	230	981
Lodgepole pine	2,907	18	—151	2,774
Ponderosa pine	8,453	—3	1,387	9,837
Subalpine fir	—6,467	785	—782	—6,464
White fir	6,070	—125	634	6,578
Softwood total	36,022	1,806	8,966	46,794
Aspen	18,399	1,980	12,015	32,395
Cottonwood	40	—622	—632	—1,213
Hardwood total	18,439	1,359	11,384	31,181
All species	54,462	3,164	20,349	77,975

Table 66—Net annual growth of sawtimber (International ¼-inch rule) on nonreserved timberland by species and owner group, Utah, 1992.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
	----- Thousand board feet -----			
Blue spruce	3,420	—	478	3,898
Bristlecone pine	373	99	—	472
Douglas-fir	58,112	−1,408	35,443	92,148
Engelmann spruce	69,498	4,913	1,763	76,174
Limber pine	1,645	422	875	2,943
Lodgepole pine	19,647	95	−3	19,739
Ponderosa pine	42,081	−130	7,098	49,050
Subalpine fir	−12,667	3,663	−3,074	−12,077
White fir	26,171	−488	2,555	28,238
Softwood total	208,281	7,166	45,137	260,584
Aspen	58,005	6,625	19,724	84,354
Cottonwood	116	−2,567	−1,932	−4,383
Hardwood total	58,120	4,058	17,792	79,971
All species	266,402	11,224	62,929	340,555

Table 67—Net annual growth of sawtimber (Scribner rule) on nonreserved timberland by species and owner group, Utah, 1992.

Species	Owner group				Total
	National Forest	Other public	Nonindustrial private	Thousand board feet	
Blue spruce	2,980	—	376	376	3,356
Bristlecone pine	323	94	—	—	416
Douglas-fir	48,982	-2,502	29,466	29,466	75,945
Engelmann spruce	57,975	4,761	1,372	1,372	64,108
Limber pine	1,366	376	745	745	2,486
Lodgepole pine	17,173	79	-151	-151	17,101
Ponderosa pine	36,790	-85	6,348	6,348	43,054
Subalpine fir	-11,304	3,098	-2,948	-2,948	-11,154
White fir	21,546	-577	1,956	1,956	22,924
Softwood total	175,831	5,242	37,163	37,163	218,237
Aspen	49,800	5,714	17,015	17,015	72,530
Cottonwood	108	-2,206	-1,660	-1,660	-3,757
Hardwood total	49,909	3,509	15,356	15,356	68,773
All species	225,740	8,751	52,519	52,519	287,010

Table 68—Net annual growth of growing stock on nonreserved timberland by species and diameter class, Utah, 1992.

Species	Diameter class (inches at breast height)															All classes	
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	Thousand cubic feet		All classes	
Blue spruce	461	198	227	136	115	147	-46	61	95	-98	-170	-127	40	1,089	111	1,089	111
Bristlecone pine	13	11	9	9	22	8	19	10	—	6	—	6	—	—	—	—	—
Douglas-fir	3,724	3,998	2,943	2,477	2,138	2,142	884	183	606	-202	-249	139	-204	18,580	136	18,580	136
Engelmann spruce	2,353	2,120	2,096	2,556	2,202	1,696	459	51	116	-63	79	-221	-136	13,309	136	13,309	136
Limber pine	325	260	20	29	210	109	58	59	58	-6	26	16	-184	981	184	981	184
Lodgepole pine	7,818	657	-941	168	-1,361	-1,438	-1,574	-270	39	-334	6	3	—	2,774	—	2,774	—
Ponderosa pine	1,336	1,064	1,517	1,295	1,288	1,624	524	615	621	100	312	45	-505	9,837	505	9,837	505
Subalpine fir	6,440	535	-2,874	-1,661	-2,615	-1,864	-934	-1,534	-631	-752	-148	46	-470	-6,464	470	-6,464	470
White fir	2,050	1,718	1,616	496	542	-29	267	51	-41	-106	111	-73	-23	6,578	23	6,578	23
Softwood total	24,519	10,561	4,612	5,557	2,540	2,395	-343	-774	862	-1,455	-33	-166	-1,483	46,794	1,483	46,794	1,483
Aspen	18,933	8,075	4,567	639	393	299	-331	-148	37	-71	1	—	—	32,395	—	32,395	—
Cottonwood	-27	-41	-203	-97	30	17	-113	-139	-267	-251	50	-93	-80	-1,213	80	-1,213	80
Hardwood total	18,907	8,034	4,364	541	423	316	-444	-286	-230	-322	51	-93	-80	31,181	80	31,181	80
All species	43,426	18,596	8,976	6,098	2,963	2,711	-786	-1,060	632	-1,777	18	-259	-1,563	77,975	1,563	77,975	1,563

Table 69—Net annual growth of sawtimber (International 1/4-inch rule) on nonreserved timberland by species and diameter class, Utah, 1992.

Species	Diameter class (inches at breast height)												All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
	Thousand board feet												
Blue spruce	2,590	1,035	616	762	213	337	576	484	876	694	249	3,898	
Bristlecone pine	47	50	112	47	99	52	—	33	—	32	—	472	
Douglas-fir	39,462	16,087	13,862	12,965	5,829	1,827	4,129	710	1,191	904	−1,014	92,148	
Engelmann spruce	35,240	14,977	12,343	9,115	2,714	1,039	1,489	250	758	−1,095	−655	76,174	
Limber pine	308	434	1,312	653	326	326	332	12	152	90	−1,002	2,943	
Lodgepole pine	39,860	3,821	−5,468	−7,334	−8,243	−1,367	221	−1,807	35	20	—	19,739	
Ponderosa pine	13,950	7,952	7,676	9,438	3,216	3,515	3,451	594	1,721	285	−2,748	49,050	
Subalpine fir	34,371	−4,351	−11,468	−8,781	−4,485	−7,365	−2,903	−3,912	−694	301	−2,788	−12,077	
White fir	20,795	4,004	3,136	−216	862	40	−191	−383	518	−301	−25	28,238	
Softwood total	186,623	44,010	22,120	16,648	103	−1,597	7,103	−6,407	421	−458	−7,983	260,584	
Aspen	(a)	82,476	2,758	1,670	−1,618	−765	175	−348	6	—	—	84,354	
Cottonwood	(a)	−486	144	74	−548	−686	−1,213	−1,126	227	−404	−365	−4,383	
Hardwood total	(a)	81,990	2,902	1,744	−2,166	−1,452	−1,037	−1,474	232	−404	−365	79,971	
All species	186,623	126,000	25,022	18,393	−2,063	−3,048	6,066	−7,880	654	−862	−8,348	340,555	

^aHardwoods are not considered sawtimber until they are 11 inches d.b.h.

Table 70—Net annual growth of sawtimber (Scribner rule) on nonreserved timberland by species and diameter class, Utah, 1992.

Species	Diameter class (inches at breast height)													All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+			
	Thousand board feet													
Blue spruce	2,338	812	483	599	-171	299	562	-409	-767	-633	242	3,356		
Bristlecone pine	39	41	93	39	94	49	-	31	-	30	-	416		
Douglas-fir	33,245	12,288	10,506	9,978	4,693	2,029	4,197	-283	-852	932	-788	75,945		
Engelmann spruce	30,323	11,516	9,469	7,100	2,349	1,497	1,966	531	842	-938	-546	64,108		
Limber pine	239	339	1,087	549	290	305	312	35	142	84	-897	2,486		
Lodgepole pine	34,259	3,042	-4,645	-5,966	-7,081	-1,140	207	-1,626	33	18	-	17,101		
Ponderosa pine	11,562	7,134	6,873	8,438	2,915	3,149	3,085	541	1,538	263	-2,444	43,054		
Subalpine fir	29,565	-4,896	-10,013	-7,405	-3,763	-5,957	-2,336	-3,450	-583	293	-2,609	-11,154		
White fir	17,785	2,765	2,238	-361	564	5	-107	-232	508	-263	21	22,924		
Softwood total	159,356	33,042	16,092	12,970	-110	236	7,886	-4,861	861	-214	-7,022	218,237		
Aspen	(a)	70,677	2,469	1,509	-1,340	-645	152	-297	5	-	-	72,530		
Cottonwood	(a)	-376	134	69	-470	-585	-1,061	-986	216	-361	-335	-3,757		
Hardwood total	(a)	70,301	2,603	1,577	-1,810	-1,230	-909	-1,284	221	-361	-335	68,773		
All species	159,356	103,343	18,695	14,548	-1,920	-994	6,977	-6,144	1,082	-575	-7,357	287,010		

^aHardwoods are not considered sawtimber until they are 11 inches d.b.h.

Mortality

Table 71—Annual mortality of growing stock on nonreserved timberland by species and owner group, Utah, 1992.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Blue spruce	708	—	—	708
Bristlecone pine	—	—	—	—
Douglas-fir	6,624	5,327	1,107	13,058
Engelmann spruce	9,065	—	924	9,988
Limber pine	756	—	—	756
Lodgepole pine	14,649	—	1,224	15,873
Ponderosa pine	1,542	837	—	2,379
Subalpine fir	31,362	283	4,921	36,566
White fir	5,349	748	1,122	7,219
Softwood total	70,054	7,195	9,298	86,546
Aspen	11,801	658	3,607	16,066
Cottonwood	—	671	851	1,521
Hardwood total	11,801	1,329	4,457	17,587
All species	81,855	8,524	13,755	104,134

Table 72—Annual mortality of sawtimber (International ¼-inch rule) on nonreserved timberland by species and owner group, Utah, 1992.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand board feet -----				
Blue spruce	3,832	—	—	3,832
Bristlecone pine	—	—	—	—
Douglas-fir	31,200	28,130	4,164	63,493
Engelmann spruce	44,400	—	4,411	48,811
Limber pine	2,953	—	—	2,953
Lodgepole pine	48,198	—	5,293	53,491
Ponderosa pine	7,021	4,568	—	11,589
Subalpine fir	114,211	437	22,804	137,452
White fir	21,751	2,965	3,750	28,466
Softwood total	273,565	36,100	40,421	350,086
Aspen	21,565	—	3,973	25,538
Cottonwood	—	2,763	2,886	5,649
Hardwood total	21,565	2,763	6,859	31,187
All species	295,130	38,863	47,281	381,274

Table 73—Annual mortality of sawtimber (Scribner rule) on nonreserved timberland by species and owner group, Utah, 1992.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
	----- Thousand board feet -----			
Blue spruce	3,400	—	—	3,400
Bristlecone pine	—	—	—	—
Douglas-fir	26,831	24,080	3,424	54,335
Engelmann spruce	38,007	—	3,847	41,854
Limber pine	2,647	—	—	2,647
Lodgepole pine	41,164	—	4,665	45,829
Ponderosa pine	6,172	4,054	—	10,226
Subalpine fir	97,208	369	19,500	117,076
White fir	18,322	2,573	3,176	24,071
Softwood total	233,751	31,076	34,612	299,439
Aspen	18,391	—	3,383	21,774
Cottonwood	—	2,388	2,554	4,942
Hardwood total	18,391	2,388	5,937	26,716
All species	252,142	33,464	40,549	326,155

Table 74—Annual mortality of growing stock on nonreserved timberland by species and diameter class, Utah, 1992.

Species	Diameter class (inches at breast height)														All classes
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand cubic feet -----															
Blue spruce	-	-	-	-	-	-	163	-	-	132	227	185	-	708	-
Bristlecone pine	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Douglas-fir	500	310	855	1,663	1,967	1,560	1,642	1,483	492	873	845	159	709	13,058	13,058
Engelmann spruce	110	200	809	1,085	1,131	1,122	1,412	1,333	827	741	317	436	466	9,988	9,988
Limber pine	56	74	136	105	-	-	-	-	-	114	-	-	272	756	756
Lodgepole pine	797	3,270	3,815	1,414	2,243	1,810	1,827	363	-	334	-	-	-	15,873	15,873
Ponderosa pine	-	178	35	174	78	-	572	92	-	214	-	191	846	2,379	2,379
Subalpine fir	2,313	4,957	8,238	5,375	5,107	3,607	2,077	2,174	1,009	886	286	-	536	36,566	36,566
White fir	403	466	712	1,179	1,140	1,122	750	379	397	294	-	146	231	7,219	7,219
Softwood total	4,179	9,457	14,600	10,995	11,665	9,221	8,443	5,824	2,724	3,587	1,675	1,117	3,061	86,546	86,546
Aspen	3,980	4,373	2,394	2,870	1,168	394	581	228	-	77	-	-	-	16,066	16,066
Cottonwood	36	41	216	105	-	-	120	206	285	291	-	121	101	1,521	1,521
Hardwood total	4,016	4,414	2,610	2,975	1,168	394	701	434	285	369	-	121	101	17,587	17,587
All species	8,194	13,871	17,210	13,970	12,833	9,614	9,144	6,258	3,009	3,955	1,675	1,237	3,161	104,134	104,134

Table 75—Annual mortality of sawtimber (International 1/4-inch rule) on nonreserved timberland by species and diameter class, Utah, 1992.

Species	Diameter class (inches at breast height)												All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand board feet -----													
Blue spruce	-	-	-	-	825	-	-	697	1,243	1,066	-	3,832	
Bristlecone pine	-	-	-	-	-	-	-	-	-	-	-	-	
Douglas-fir	3,106	8,012	9,779	8,163	8,735	8,141	2,739	4,910	4,846	930	4,132	63,493	
Engelmann spruce	3,277	5,290	5,487	5,565	7,151	6,889	4,223	3,970	1,760	2,467	2,733	48,811	
Limber pine	533	305	-	-	-	-	-	613	-	-	1,501	2,953	
Lodgepole pine	13,800	6,106	10,965	9,362	9,576	1,876	-	1,807	-	-	-	53,491	
Ponderosa pine	95	762	384	-	3,070	480	-	1,144	-	1,025	4,630	11,589	
Subalpine fir	33,848	24,914	24,739	17,780	10,381	10,961	5,233	4,779	1,604	-	3,213	137,452	
White fir	2,681	5,295	5,522	5,250	3,451	1,684	1,673	1,215	-	652	1,042	28,466	
Softwood total	57,340	50,683	56,876	46,120	43,188	30,032	13,867	19,135	9,454	6,141	17,252	350,086	
Aspen	(a)	13,381	5,829	1,955	2,845	1,148	-	380	-	-	-	25,538	
Cottonwood	(a)	527	-	-	577	960	1,289	1,298	-	536	462	5,649	
Hardwood total	(a)	13,908	5,829	1,955	3,422	2,108	1,289	1,678	-	536	462	31,187	
All species	57,340	64,590	62,705	48,075	46,610	32,140	15,156	20,813	9,454	6,677	17,714	381,274	

^aHardwoods are not considered sawtimber until they are 11 inches d.b.h.

Table 76—Annual mortality of sawtimber (Scribner rule) on nonreserved timberland by species and diameter class, Utah, 1992.

Species	Diameter class (inches at breast height)												All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand board feet -----													
Blue spruce	-	-	-	-	663	-	-	617	1,125	996	-	3,400	
Bristlecone pine	-	-	-	-	-	-	-	-	-	-	-	-	
Douglas-fir	2,821	6,748	8,121	6,664	7,252	6,899	2,403	4,358	4,386	859	3,825	54,335	
Engelmann spruce	2,898	4,395	4,533	4,532	5,908	5,963	3,612	3,555	1,614	2,274	2,569	41,854	
Limber pine	458	274	-	-	-	-	-	550	-	-	1,365	2,647	
Lodgepole pine	11,997	5,193	9,222	7,840	8,332	1,620	-	1,626	-	-	-	45,829	
Ponderosa pine	84	637	331	-	2,703	422	-	1,012	-	909	4,126	10,226	
Subalpine fir	29,955	21,050	20,424	14,469	8,616	9,183	4,588	4,299	1,471	-	3,022	117,076	
White fir	2,458	4,533	4,540	4,300	2,819	1,406	1,403	1,036	-	606	970	24,071	
Softwood total	50,672	42,830	47,172	37,805	36,293	25,493	12,005	17,052	8,596	5,644	15,877	299,439	
Aspen	(a)	11,507	4,912	1,646	2,407	977	-	325	-	-	-	21,774	
Cottonwood	(a)	414	-	-	497	836	1,133	1,147	-	487	428	4,942	
Hardwood total	(a)	11,921	4,912	1,646	2,904	1,813	1,133	1,472	-	487	428	26,716	
All species	50,672	54,751	52,084	39,451	39,197	27,307	13,138	18,525	8,596	6,131	16,305	326,155	

^aHardwoods are not considered sawtimber until they are 11 inches d.b.h.

Table 77—Annual mortality of growing stock on nonreserved timberland by species and cause of death, Utah, 1992.

	Cause of death								
Species	Insects	Disease	Fire	Animal	Weather	Suppression	Unknown	Human caused	Total
----- Thousand cubic feet -----									
Blue spruce	410	185	—	—	—	—	113	—	708
Bristlecone pine	—	—	—	—	—	—	—	—	—
Douglas-fir	8,447	2,966	257	—	378	—	961	49	13,058
Engelmann spruce	6,481	1,284	413	—	466	—	1,186	158	9,988
Limber pine	546	210	—	—	—	—	—	—	756
Lodgepole pine	12,504	1,086	177	109	454	—	1,543	—	15,873
Ponderosa pine	1,412	468	293	—	92	—	—	115	2,379
Subalpine fir	13,549	14,332	250	—	3,189	73	4,854	319	36,566
White fir	2,274	3,374	—	—	349	—	1,177	45	7,219
Softwood total	45,622	23,905	1,391	109	4,928	73	9,833	686	86,546
Aspen	1,308	10,668	178	55	1,068	—	2,565	224	16,066
Cottonwood	—	—	530	105	206	—	680	—	1,521
Hardwood total	1,308	10,668	707	160	1,274	—	3,246	224	17,587
All species	46,930	34,572	2,098	269	6,202	73	13,079	910	104,134

Table 78—Annual mortality of sawtimber (International ¼-inch rule) on nonreserved timberland by species and cause of death, Utah, 1992.

Species	Cause of death							Human caused	Total
	Insects	Disease	Fire	Animal	Weather	Suppression	Unknown		
----- Thousand board feet -----									
Blue spruce	2,147	1,066	—	—	—	—	619	—	3,832
Bristlecone pine	—	—	—	—	—	—	—	—	—
Douglas-fir	42,064	14,487	605	—	1,129	—	5,208	—	63,493
Engelmann spruce	32,415	6,315	2,063	—	2,392	—	5,626	—	48,811
Limber pine	2,419	533	—	—	—	—	—	—	2,953
Lodgepole pine	39,133	4,086	885	374	1,860	—	7,153	—	53,491
Ponderosa pine	7,483	2,411	1,215	—	480	—	—	—	11,589
Subalpine fir	51,943	53,020	472	—	11,907	—	19,780	329	137,452
White fir	8,886	12,865	—	—	1,538	—	5,177	—	28,466
Softwood total	186,489	94,783	5,240	374	19,307	—	43,564	329	350,086
Aspen	1,760	19,124	—	—	2,635	—	1,606	413	25,538
Cottonwood	—	—	2,236	527	960	—	1,926	—	5,649
Hardwood total	1,760	19,124	2,236	527	3,595	—	3,532	413	31,187
All species	188,249	113,908	7,477	901	22,902	—	47,096	742	381,274

Table 79—Annual mortality of sawtimber (Scribner rule) on nonreserved timberland by species and cause of death, Utah, 1992.

	Cause of death							Human caused	Total
Species	Insects	Disease	Fire	Animal	Weather	Suppression	Unknown		
	----- Thousand board feet -----								
Blue spruce	1,844	996	—	—	—	—	561	—	3,400
Bristlecone pine	—	—	—	—	—	—	—	—	—
Douglas-fir	35,921	12,423	537	—	930	—	4,524	—	54,335
Engelmann spruce	27,792	5,534	1,681	—	2,066	—	4,782	—	41,854
Limber pine	2,189	458	—	—	—	—	—	—	2,647
Lodgepole pine	33,489	3,477	744	328	1,577	—	6,215	—	45,829
Ponderosa pine	6,601	2,131	1,072	—	422	—	—	—	10,226
Subalpine fir	43,925	45,251	396	—	10,235	—	16,963	306	117,076
White fir	7,425	10,789	—	—	1,398	—	4,459	—	24,071
Softwood total	159,186	81,059	4,430	328	16,628	—	37,503	306	299,439
Aspen	1,516	16,312	—	—	2,215	—	1,381	350	21,774
Cottonwood	—	—	1,974	414	836	—	1,718	—	4,942
Hardwood total	1,516	16,312	1,974	414	3,051	—	3,099	350	26,716
All species	160,702	97,371	6,405	741	19,679	—	40,601	656	326,155

Removals

Table 80—Removals from nonreserved timberland by species and product, Utah, 1992.

Species	Product					Logging residue	All products
	Sawlogs	Excelsior fiberwood	Posts & poles	House logs	Fuelwood		
----- Cubic feet -----							
Douglas-fir	410,649	—	—	17,223	—	23,254	451,126
Ponderosa pine	643,259	—	—	18,965	—	35,374	697,598
Lodgepole pine	2,496,790	—	192,614	144,559	24,950	186,727	3,045,640
Spruce	3,579,726	—	14,970	22,061	—	200,538	3,817,295
True fir	586,751	—	—	—	—	31,267	618,018
Cottonwood	—	—	—	—	165,668	—	165,668
Aspen	33,285	580,559	—	—	—	32,657	646,501
Total species	7,750,460	580,559	207,584	202,808	190,618	509,817	9,441,846
----- Board feet, International ¼-inch rule -----							
Douglas-fir	2,203,242	—	—	92,407	—	32,439	2,328,088
Ponderosa pine	3,451,261	—	—	101,752	—	50,206	3,603,219
Lodgepole pine	13,395,958	—	—	775,599	133,864	200,250	14,505,671
Spruce	19,206,204	—	—	118,365	—	273,065	19,597,634
True fir	3,2148,081	—	—	—	—	44,484	3,192,565
Cottonwood	—	—	—	—	888,854	—	888,854
Aspen	178,585	3,114,856	—	—	—	46,538	3,339,979
Total species	41,583,331	3,114,856	—	1,088,123	1,022,718	646,982	47,456,010
----- Board feet, Scribner rule -----							
Douglas-fir	1,880,862	—	—	78,886	—	27,692	1,987,440
Ponderosa pine	2,946,270	—	—	86,864	—	42,859	3,075,993
Lodgepole pine	11,435,853	—	—	662,113	114,277	170,950	12,383,193
Spruce	16,395,940	—	—	101,045	—	233,110	16,730,095
True fir	2,789,289	—	—	—	—	37,975	2,725,427
Cottonwood	—	—	—	—	758,796	—	758,796
Aspen	152,454	2,659,088	—	—	—	39,728	2,851,270
Total species	35,498,831	2,659,088	—	928,908	873,073	552,314	40,512,214

Table 81—Removals from nonreserved timberland by species and owner group, Utah, 1992.

Species	Owner group				All owners
	National Forest	Other public	Nonindustrial private	Total other owners	
----- Cubic feet -----					
Douglas-fir	277,571	4,936	168,619	173,555	451,126
Ponderosa pine	312,290	15,496	369,811	385,307	697,597
Lodgepole pine	2,792,934	231	252,476	252,707	3,045,641
Spruce	2,779,585	7,558	1,030,153	1,037,711	3,817,296
True fir	388,927	—	229,091	229,091	618,018
Cottonwood	—	—	165,668	165,668	165,668
Aspen	29,609	611,390	5,503	616,893	646,502
Total species	6,580,916	639,611	2,221,321	2,860,932	9,441,848
----- Board feet, International ¼-inch rule -----					
Douglas-fir	1,432,021	25,271	870,795	896,066	2,328,087
Ponderosa pine	1,613,130	80,025	1,910,061	1,990,089	3,603,219
Lodgepole pine	13,208,249	—	1,297,422	1,297,422	14,505,671
Spruce	14,241,241	38,959	5,317,432	5,356,391	19,597,632
True fir	2,009,042	—	1,183,523	1,183,523	3,192,565
Cottonwood	—	—	888,854	888,854	888,854
Aspen	152,679	3,158,871	28,430	28,430	3,339,980
Total species	32,656,362	3,303,126	11,496,520	14,799,646	47,456,008
----- Board feet, Scribner rule -----					
Douglas-fir	1,222,487	21,573	743,380	764,953	1,987,440
Ponderosa pine	1,377,096	68,315	1,630,582	1,698,897	3,075,993
Lodgepole pine	11,275,610	—	1,107,583	1,107,583	12,383,193
Spruce	12,157,454	33,259	4,539,382	4,572,641	16,730,095
True fir	1,715,077	—	1,010,350	1,010,350	2,725,427
Cottonwood	—	—	758,796	758,796	758,796
Aspen	130,339	2,696,663	24,270	2,720,933	2,851,272
Total species	27,878,063	2,819,810	9,814,343	12,634,153	40,512,216

Table 82—Removals from nonreserved timberland by product and owner group, Utah, 1992.

Product	Owner group				
	National Forest	Other owners		Total other owners	All owners
		Other public	Nonindustrial private		
----- Cubic feet -----					
Sawlogs	5,815,071	25,351	1,910,039	1,935,390	7,750,461
Excelsior fiberwood	—	580,559	—	580,559	580,559
Posts & poles	207,584	—	—	—	207,584
House logs	164,105	1,161	37,543	38,704	202,809
Total products	6,186,760	607,071	1,947,582	2,554,653	8,741,413
Fuelwood	22,954	—	167,664	167,664	190,618
Logging residue	371,202	32,540	106,075	138,615	509,817
Total removals	6,580,916	639,611	2,221,321	2,860,932	9,441,848
----- Board feet, International ¼-inch rule -----					
Sawlogs	31,199,438	136,015	10,247,877	10,383,892	41,583,330
Excelsior fiberwood	—	3,114,856	—	3,114,856	3,114,856
Posts & poles	—	—	—	—	—
House logs	880,466	6,230	201,427	207,657	1,088,123
Total products	32,079,904	3,257,101	10,449,304	13,706,405	45,786,309
Fuelwood	123,154	—	899,563	899,563	1,022,717
Logging residue	453,303	46,024	147,653	193,677	646,980
Total removals	32,656,361	3,303,125	11,496,520	14,799,645	47,456,006
----- Board feet, Scribner rule -----					
Sawlogs	26,634,317	116,114	8,748,401	8,864,515	35,498,832
Excelsior fiberwood	—	2,659,088	—	2,659,088	2,659,088
Posts & poles	—	—	—	—	—
House logs	751,636	5,318	171,954	177,272	928,908
Total products	27,385,953	2,780,520	8,920,355	11,700,875	39,086,828
Fuelwood	105,134	—	767,938	767,938	873,072
Logging residue	386,975	39,290	126,049	165,339	552,314
Total removals	27,878,062	2,819,810	9,814,342	12,634,152	40,512,214

Nonreserved Woodland Area

Table 83—Area of nonreserved woodland by forest type and owner group, Utah, 1993.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
	----- Acres -----			
Juniper	139,388	915,004	302,075	1,356,467
Maple woodland	46,292	7,335	82,877	136,504
Mountain mahogany	152,863	89,145	83,191	325,200
Oak	273,794	65,003	395,183	733,980
Pinyon-juniper	1,221,136	5,428,712	872,640	7,522,489
All types	1,833,474	6,505,200	1,735,965	10,074,640

Number of trees

Table 84—Number of trees on nonreserved woodland by species and diameter class, Utah, 1993.

Species	Diameter class (inches at root collar)															All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
	<i>Thousand trees</i>															
Douglas-fir	628	696	967	267	618	390	376	263	140	177	111	—	—	—	—	4,634
Limber pine	—	—	125	—	—	—	30	137	—	—	—	—	—	—	—	291
Ponderosa pine	—	—	51	110	51	—	93	—	53	—	—	—	—	—	—	358
Rocky Mountain juniper ^a	9,145	4,186	4,574	4,138	2,812	1,756	857	607	674	336	482	—	—	—	59	29,627
Singleleaf pinyon ^a	105,694	49,105	27,525	17,477	10,722	5,659	3,746	2,285	962	442	314	—	—	110	—	224,040
Twoneedle pinyon ^a	256,606	135,088	96,586	70,534	48,262	35,673	20,691	12,552	7,436	3,980	2,110	1,808	893	648	490	693,356
Utah juniper ^a	184,764	101,546	104,706	94,310	83,550	73,441	69,346	50,873	38,662	27,252	16,550	11,739	9,907	4,914	10,353	881,913
White fir	416	—	139	100	68	129	32	—	—	—	—	—	—	—	—	883
Softwood total	557,253	290,622	234,674	186,935	146,083	117,047	95,169	66,717	47,927	32,187	19,567	13,547	10,800	5,672	10,901	1,835,101
Aspen	2,508	484	197	87	175	305	44	44	—	—	—	—	—	—	—	3,844
Bigtooth maple ^a	136,646	35,926	15,407	4,057	1,905	1,128	819	178	350	—	—	—	—	—	—	196,416
Cottonwood	—	—	93	406	279	220	—	—	—	—	93	—	—	—	—	1,091
Curlleaf mtn. mahogany ^a	28,104	19,015	21,496	16,615	11,942	6,778	3,050	1,019	1,313	353	126	156	—	—	—	109,967
Gambel oak ^a	1,121,297	221,093	53,918	9,126	1,630	297	—	94	—	—	—	—	—	—	—	1,407,455
Rocky Mountain maple ^a	26,935	6,532	2,275	862	505	121	60	—	—	—	—	—	—	—	—	37,290
True mtn. mahogany ^a	723	363	251	272	91	—	—	—	—	—	—	—	—	—	—	1,700
Hardwood total	1,316,213	283,414	93,637	31,426	16,526	8,850	3,973	1,334	1,663	353	218	156	—	—	—	1,757,763
All species	1,873,466	574,035	328,311	218,361	162,609	125,897	99,142	68,051	49,589	32,540	19,786	13,703	10,800	5,672	10,901	3,592,864

^aDiameter taken at root collar rather than at breast height.

Table 85—Net volume on nonreserved woodland by forest type and owner group, Utah, 1993.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
	----- Thousand cubic feet -----			-----
Juniper	82,559	442,792	125,260	650,612
Maple woodland	38,794	7,709	75,729	122,232
Mountain mahogany	74,888	49,035	40,472	164,396
Oak	97,186	15,870	97,166	210,223
Pinyon-juniper	964,609	3,677,535	586,079	5,228,223
All types	1,258,036	4,192,941	924,707	6,375,684

Table 86—Net volume on nonreserved woodland by species and diameter class, Utah, 1993.

Species	Diameter class															All classes
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand cubic feet -----																
Douglas-fir	(^a)	851	762	2,941	3,678	5,607	5,612	4,788	7,244	4,808	-	-	-	-	-	36,291
Limber pine	(^a)	161	-	-	-	517	3,194	-	-	-	-	-	-	-	-	3,873
Ponderosa pine	(^a)	64	414	204	-	-	-	1,181	-	-	-	-	-	-	-	1,863
Rocky Mountain juniper ^b	1,384	4,109	7,903	9,892	12,398	7,840	7,590	10,909	7,373	11,053	-	-	-	2,450	-	82,903
Singleleaf pinyon ^b	17,509	34,548	52,717	60,479	51,449	47,920	35,737	19,569	12,839	10,901	-	-	5,517	-	-	349,185
Twoneedle pinyon ^b	47,564	109,669	185,419	230,104	292,106	236,822	197,707	149,524	97,289	61,200	67,663	43,703	32,397	40,268	1,791,436	1,791,436
Utah juniper ^b	28,656	80,864	150,056	228,505	309,699	404,754	401,906	406,349	346,916	260,835	227,075	233,080	129,422	432,505	3,640,622	3,640,622
White fir	(^a)	160	290	316	1,075	-	-	-	-	-	-	-	-	-	-	1,841
Softwood total	95,114	230,426	397,562	532,441	670,405	703,461	651,746	592,320	471,662	348,798	294,738	276,783	167,336	475,223	5,908,014	5,908,014
Aspen	(^a)	138	275	1,227	4,345	858	-	-	-	-	-	-	-	-	-	6,844
Bigtooth maple ^b	21,713	28,045	16,554	11,557	10,146	12,591	3,329	10,990	-	-	-	-	-	-	-	114,924
Cottonwood	(^a)	-	124	-	233	-	-	-	-	-	-	-	-	-	-	357
Curleaf mtn. mahogany ^b	5,217	14,503	21,945	27,492	22,778	15,559	7,022	12,151	4,318	1,957	2,936	-	-	-	-	135,878
Gambel oak ^b	78,202	69,014	29,733	7,904	2,688	-	1,627	-	-	-	-	-	-	-	-	189,168
Rocky Mountain maple ^b	3,512	4,796	4,367	4,808	1,426	898	-	-	-	-	-	-	-	-	-	19,807
True mtn. mahogany ^b	93	175	271	154	-	-	-	-	-	-	-	-	-	-	-	693
Hardwood total	108,737	116,672	73,268	53,141	41,615	29,906	11,978	23,142	4,318	1,957	2,936	-	-	-	-	467,670
All species	203,851	347,098	470,830	585,582	712,020	733,367	663,724	615,462	475,980	350,755	297,674	276,783	167,336	475,223	6,375,684	6,375,684

^aDo not have calculations made below 5" diameter.

^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Growth

Table 87—Net annual growth on nonreserved woodland by forest type and owner group, Utah, 1992.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
	----- Thousand cubic feet -----			
Juniper	666	2,377	931	3,975
Maple woodland	522	245	1,173	1,940
Mountain mahogany	847	488	583	1,919
Oak	3,020	583	3,200	6,802
Pinyon-juniper	7,252	20,759	3,327	31,339
All types	12,307	24,453	9,214	45,974

Table 88—Net annual growth on nonreserved woodland by species and diameter class, Utah, 1992.

Species	Diameter class																All classes	
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	Thousand cubic feet		-----	
Douglas-fir	(^a)	120	50	127	-288	110	90	69	92	47	-	-	-	-	-		-	419
Limber pine	(^a)	17	-	-	-	29	66	-	-	-	-	-	-	-	-		-	113
Ponderosa pine	(^a)	19	20	25	-	-	-	23	-	-	-	-	-	-	-		-	86
Rocky Mountain juniper ^b	44	73	105	108	135	66	47	56	35	33	-	-	-	3	-		-	704
Singleleaf pinyon ^b	1,004	669	818	647	252	303	183	82	47	37	-	-	14	-	-		-	4,058
Twoneedle pinyon ^b	2,502	2,136	2,459	2,059	981	1,100	653	598	-259	-677	176	120	78	82	-		-	12,007
Utah juniper ^b	1,234	1,290	1,667	2,009	2,273	2,357	1,645	1,264	1,133	744	550	496	263	709	-		-	17,634
White fir	(^a)	18	9	9	32	-	-	-	-	-	-	-	-	-	-		-	68
Softwood total	4,784	4,343	5,129	4,983	3,384	3,965	2,685	2,092	1,050	184	726	615	355	793	-		-	35,088
Aspen	(^a)	8	8	24	66	5	-	-	-	-	-	-	-	-	-		-	111
Bigtooth maple ^b	1,284	400	123	-3	82	80	17	44	-	-	-	-	-	-	-		-	2,027
Cottonwood	(^a)	-	3	-	3	-	-	-	-	-	-	-	-	-	-		-	6
Curleaf mtn. mahogany ^b	215	230	266	213	176	103	37	56	19	6	11	-	-	-	-		-	1,333
Gambel oak ^b	5,515	1,092	335	75	20	-	8	-	-	-	-	-	-	-	-		-	7,044
Rocky Mountain maple ^b	229	27	46	38	12	5	-	-	-	-	-	-	-	-	-		-	357
True mtn. mahogany ^b	2	2	3	1	-	-	-	-	-	-	-	-	-	-	-		-	9
Hardwood total	7,245	1,759	783	348	359	193	62	99	19	6	11	-	-	-	-		-	10,886
All species	12,030	6,102	5,912	5,331	3,743	4,158	2,747	2,191	1,069	190	737	615	355	793	-		-	45,974

^aDo not have calculations made below 5" diameter.

^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Table 89—Annual mortality on nonreserved woodland by forest type and owner group, Utah, 1992.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Juniper	7	202	—	209
Maple woodland	121	—	217	339
Mountain mahogany	15	—	—	15
Oak	272	17	—	290
Pinyon-juniper	235	4,661	525	5,421
All types	650	4,881	743	6,273

Table 90—Annual mortality on nonreserved woodland by species and diameter class, Utah, 1992.

Species	Diameter class											All classes
	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9		
----- Thousand cubic feet -----												
Douglas-fir	(^a)	-	-	-	388	-	-	-	-	-	-	388
Limber pine	(^a)	-	-	-	-	-	-	-	-	-	-	-
Ponderosa pine	(^a)	-	-	-	-	-	-	-	-	-	-	-
Rocky Mountain juniper ^b	(^a)	-	-	-	-	-	-	-	-	-	-	-
Singleleaf pinyon ^b	5	57	-	109	205	-	-	-	-	-	-	376
Twoneedle pinyon ^b	8	86	229	500	1,276	319	288	-	605	879	-	4,190
Utah juniper ^b	16	-	42	55	-	-	208	289	-	-	-	610
White fir	(^a)	-	-	-	-	-	-	-	-	-	-	-
Softwood total	30	143	271	664	1,870	319	496	289	605	879	-	5,565
Aspen	(^a)	-	-	-	-	-	-	-	-	-	-	-
Bigtooth maple ^b	60	37	68	108	-	-	-	-	-	-	-	272
Cottonwood	(^a)	-	-	-	-	-	-	-	-	-	-	-
Curleaf mtn. mahogany ^b	8	7	-	44	-	-	-	-	-	-	-	59
Gambel oak ^b	234	81	-	-	-	-	-	-	-	-	-	316
Rocky Mountain maple ^b	12	49	-	-	-	-	-	-	-	-	-	61
True mtn. mahogany ^b	(^a)	-	-	-	-	-	-	-	-	-	-	-
Hardwood total	313	174	68	152	-	-	-	-	-	-	-	708
All species	343	318	339	816	1,870	319	496	289	605	879	-	6,273

^aDo not have calculations made below 5" diameter.

^bDiameter taken at root collar rather than at breast height and measured to a 3.0" minimum instead of 5.0".

Core

Area, County

Table 91—Area by county and land class, Utah, 1993.

County	Forest land			Nonforest	Water	Total
	Reserved Timberland ^a	timberland ^a	Other forest land ^b			
	----- Acres -----					
Beaver	93,918	—	582,984	981,272	988	1,659,162
Box Elder	24,273	4,496	281,620	3,144,062	852,397	4,306,848
Cache	184,499	30,830	91,973	433,968	9,552	750,822
Carbon	171,155	—	233,909	533,345	11,793	950,202
Daggett	158,773	—	110,476	178,468	15,067	462,784
Davis	11,048	—	14,680	140,414	239,343	405,485
Duchesne	340,614	167,095	427,071	1,139,860	9,386	2,084,026
Emery	139,943	—	334,921	2,374,284	6,422	2,855,571
Garfield	570,576	29,569	990,805	1,719,407	23,090	3,333,446
Grand	203,573	29,432	545,814	1,578,369	7,163	2,364,352
Iron	136,025	8,307	680,148	1,287,888	988	2,113,357
Juab	53,713	10,026	345,136	1,765,332	5,928	2,180,134
Kane	178,509	9,666	1,056,571	1,304,730	80,028	2,629,504
Millard	46,059	—	391,797	3,927,697	4,693	4,370,246
Morgan	66,174	—	68,276	250,065	6,391	390,906
Piute	79,284	—	154,513	251,128	5,193	490,118
Rich	68,375	—	25,949	558,415	42,531	695,270
Salt Lake	44,634	26,081	35,261	364,846	46,189	517,011
San Juan	207,136	8,617	1,267,292	3,518,603	75,881	5,077,529
Sanpete	234,782	—	229,117	539,949	21,887	1,025,734
Sevier	230,875	—	413,388	580,309	3,211	1,227,782
Summit	442,078	91,109	110,771	554,151	6,466	1,204,576
Tooele	38,678	13,167	389,239	3,944,441	278,616	4,664,141
Uintah	279,616	8,890	621,245	1,959,123	10,621	2,879,494
Utah	188,703	14,276	301,266	773,162	92,872	1,370,278
Wasatch	359,497	—	95,128	305,704	13,585	773,914
Washington	36,128	38,564	527,583	950,995	1,976	1,555,245
Wayne	63,786	—	137,154	1,376,208	1,482	1,578,630
Weber	52,182	—	54,989	234,875	80,028	422,074
Total	4,704,609	490,124	10,519,074	36,671,067	1,953,768	54,338,641

^aIncludes forest land with productivity classes 20 and greater.

^bIncludes both reserved and nonreserved forest land with productivity less than 20.

Table 92—Area of reserved timberland and other forest land by forest type, Utah, 1993.

Forest type	Forest land		Total
	Reserved timberland	Other forest land	
----- Acres -----			
Aspen	18,356	126,683	145,039
Blue spruce	—	—	—
Cottonwood	—	4,491	4,491
Douglas-fir	99,529	5,044	104,573
Engelmann spruce	106,329	—	106,329
Juniper	—	1,382,400	1,382,400
Limber pine	12,151	9,096	21,247
Lodgepole pine	111,824	12,484	124,308
Maple woodland	—	136,504	136,504
Mountain mahogany	—	330,414	330,414
Oak	—	739,036	739,036
Pinyon-juniper	—	7,766,307	7,766,307
Ponderosa pine	40,819	—	40,819
Spruce-fir	57,889	6,615	64,504
White fir	43,227	—	43,227
All types	490,124	10,519,074	11,009,197

Table 93—Area of nonreserved timberland^a by county and ownership class, Utah, 1993.

County	Ownership class							Total
	National Forest	Bureau of Land Management	Miscellaneous Federal	State	County and municipal	Indian Trust	Other private	
	----- Acres -----							
Beaver	76,310	14,130	—	1,246	—	—	2,233	93,918
Box Elder	9,038	1,467	—	2,803	—	—	10,965	24,273
Cache	124,299	—	—	13,362	—	—	46,839	184,499
Carbon	19,524	44,686	—	12,183	—	—	94,762	171,155
Daggett	146,860	7,148	—	2,725	—	—	2,040	158,773
Davis	10,161	—	—	29	496	—	362	11,048
Duchesne	240,944	7,833	—	11,419	499	29,276	50,642	340,614
Emery	94,977	20,690	—	4,582	—	—	19,694	139,943
Garfield	542,563	11,538	—	7,746	—	—	8,729	570,576
Grand	23,958	80,611	—	65,888	—	21,990	11,127	203,573
Iron	94,824	3,437	—	2,886	—	—	34,878	136,025
Juab	26,898	15,095	—	2,533	—	3,885	5,302	53,713
Kane	101,906	18,076	—	9,650	—	—	48,876	178,509
Millard	41,127	1,965	—	1,460	—	—	1,508	46,059
Morgan	3,934	134	—	4,393	18	—	57,695	66,174
Piute	71,059	1,474	—	4,657	—	—	2,093	79,284
Rich	34,857	2,150	—	3,766	—	—	27,602	68,375
Salt Lake	27,812	26	—	26	55	—	16,715	44,634
San Juan	163,604	5,728	—	10,513	—	7,156	20,135	207,136
Sanpete	204,738	650	—	3,151	—	—	26,242	234,782
Sevier	210,768	372	—	1,007	—	18	18,710	230,875
Summit	295,063	—	—	6,985	—	—	140,030	442,078
Tooele	7,852	13,380	—	4,178	—	—	13,268	38,678
Uintah	191,689	57,341	241	8,449	—	11,424	10,471	279,616
Utah	147,162	4,896	—	5,433	—	—	31,212	188,703
Wasatch	270,389	170	—	22,639	—	110	66,189	359,497
Washington	4,694	19,585	—	964	—	—	10,885	36,128
Wayne	58,043	5,617	—	126	—	—	—	63,786
Weber	24,136	—	—	2,857	—	—	25,189	52,182
Total	3,269,190	338,199	241	217,656	1,068	73,859	804,394	4,704,609

^aOn this and all subsequent tables, timberland includes nonreserved forest land with productivity class 20 cubic feet per acre year and greater.

Table 94—Area of nonreserved timberland by forest type and owner group, Utah, 1993.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Acres -----				
Aspen	796,837	94,560	391,537	1,282,934
Blue spruce	20,820	—	—	20,820
Cottonwood	7,092	5,018	12,196	24,307
Douglas-fir	471,894	310,635	241,299	1,023,827
Engelmann spruce	318,340	—	27,898	346,238
Limber pine	49,157	2,321	—	51,478
Lodgepole pine	340,202	—	29,359	369,560
Ponderosa pine	387,700	103,605	62,312	553,617
Spruce-fir	595,563	7,396	68,387	671,347
White fir	281,586	33,630	45,265	360,481
All types	3,269,190	557,165	878,253	4,704,609

Table 95—Area of nonreserved timberland by owner group and stand-size class, Utah, 1993.

Owner group	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
	----- Acres -----				
National Forest	2,031,361	756,000	373,197	108,632	3,269,190
Other public	327,008	63,716	56,900	109,542	557,165
Nonindustrial private	409,624	299,307	156,027	13,295	878,253
Total	2,767,992	1,119,023	586,124	231,470	4,704,609

Table 96—Area of nonreserved timberland by owner group and productivity class, Utah, 1993.

Owner group	Productivity class				All classes
	120-164	85-119	50-84	20-49	
	----- Acres -----				
National Forest	6,921	160,848	1,036,392	2,065,029	3,269,190
Other public	—	—	116,294	440,872	557,165
Nonindustrial private	—	51,977	245,211	581,066	878,253
Total	6,921	212,825	1,397,896	3,086,966	4,704,609

Table 97—Area of nonreserved timberland by forest type and stand-size class, Utah, 1993.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
	----- Acres -----				
Aspen	265,117	758,478	250,345	8,994	1,282,934
Blue spruce	14,220	3,069	3,531	—	20,820
Cottonwood	20,756	—	3,550	—	24,307
Douglas-fir	736,399	83,370	106,187	97,871	1,023,827
Engelmann spruce	329,535	10,383	6,320	—	346,238
Limber pine	39,997	5,577	—	5,905	51,478
Lodgepole pine	163,504	119,862	86,194	—	369,560
Ponderosa pine	381,033	23,659	38,759	110,165	553,617
Spruce-fir	491,681	114,626	65,040	—	671,347
White fir	325,750	—	26,197	8,534	360,481
All types	2,767,992	1,119,023	586,124	231,470	4,704,609

Number of Trees

Table 98—Number of live trees on nonreserved timberland by species and diameter class, Utah, 1993.

Species	Diameter class (inches at breast height)																All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand trees -----																	
Blue spruce	3,138	1,513	1,603	1,271	678	336	257	182	171	56	126	46	50	41	28	9,495	
Bristlecone pine	—	181	405	90	38	65	73	33	38	45	—	8	—	12	5	994	
Douglas-fir	50,061	34,065	24,724	20,529	12,292	10,041	8,160	5,925	3,574	2,386	1,506	871	728	322	542	175,726	
Engelmann spruce	46,688	37,347	18,916	14,657	11,996	10,835	7,799	5,273	3,152	2,434	1,633	965	513	217	298	162,724	
Limber pine	4,714	3,911	2,399	1,577	475	547	586	347	133	189	99	117	55	21	88	15,257	
Lodgepole pine	92,236	66,297	39,908	21,792	12,382	5,684	2,585	1,028	625	250	83	—	12	5	—	242,888	
Ponderosa pine	6,942	9,948	6,983	4,402	3,389	2,782	2,253	2,394	1,489	941	838	415	399	277	340	43,790	
Rocky Mountain juniper ^a	13,749	9,149	4,962	3,682	2,371	1,312	891	415	442	375	90	84	115	66	37	37,739	
Singleleaf pinyon ^a	628	—	—	240	—	189	105	—	65	18	—	—	—	—	—	1,246	
Subalpine fir	236,484	82,512	45,890	27,145	16,241	8,485	4,792	2,662	1,557	876	581	246	195	78	70	427,814	
Twoneedle pinyon ^a	8,888	6,443	4,948	2,407	1,978	1,528	1,286	510	259	271	176	64	64	24	24	28,870	
Utah juniper ^a	5,931	3,663	3,015	2,482	1,205	774	840	490	548	426	249	156	127	42	48	19,995	
White fir	62,542	25,975	15,845	11,023	7,512	4,188	3,279	2,009	1,536	858	584	261	216	92	197	136,117	
Softwood total	532,000	281,005	169,598	111,299	70,557	46,766	32,906	21,266	13,587	9,124	5,964	3,234	2,474	1,199	1,675	1,302,655	
Aspen	301,790	216,041	165,253	91,169	39,461	16,860	7,403	3,117	996	272	73	44	4	12	—	842,495	
Bigtooth maple ^a	14,769	2,105	935	1,350	508	253	84	—	—	11	—	—	—	—	—	20,014	
Cottonwood	—	301	152	—	107	45	176	31	55	141	41	48	49	35	40	1,220	
Curleaf mtn. mahogany ^a	3,160	1,522	3,492	3,269	2,281	1,111	567	434	186	91	21	—	8	13	15	16,171	
Gambel oak ^a	95,752	21,376	6,118	2,533	444	315	—	—	—	—	—	—	—	—	—	126,538	
Rocky Mountain maple ^a	16,385	2,170	1,298	173	—	—	—	19	—	—	—	—	—	—	—	20,046	
True mtn. mahogany ^a	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Hardwood total	431,857	243,516	177,248	98,494	42,801	18,584	8,230	3,601	1,236	515	135	92	61	60	55	1,026,484	
All species	963,857	524,520	346,846	209,793	113,359	65,349	41,136	24,867	14,824	9,640	6,099	3,326	2,535	1,259	1,730	2,329,139	

^aDiameter taken at root collar rather than at breast height.

Table 99—Number of growing-stock trees on nonreserved timberland by species and diameter class, Utah, 1993.

Species	Diameter class (inches at breast height)																All classes
	1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
	Thousand trees																
Blue spruce	2,769	1,329	1,603	1,033	678	336	257	182	171	56	126	46	50	41	28	8,705	
Bristlecone pine	—	181	258	90	38	65	73	33	38	34	—	8	—	6	—	825	
Douglas-fir	44,704	31,301	24,058	20,012	12,117	9,779	7,981	5,885	3,407	2,296	1,415	844	671	288	499	165,258	
Engelmann spruce	43,229	35,906	18,762	14,501	11,654	10,582	7,628	5,220	3,081	2,400	1,554	951	499	202	280	156,448	
Limber pine	4,344	3,758	2,280	1,577	428	514	586	330	120	177	99	117	24	21	79	14,452	
Lodgepole pine	87,410	64,956	39,468	21,524	12,146	5,502	2,559	1,011	521	239	74	—	12	5	—	235,427	
Ponderosa pine	6,472	9,610	6,983	4,267	3,343	2,782	2,179	2,345	1,400	859	800	406	371	267	304	42,388	
Subalpine fir	204,023	77,626	44,188	26,517	15,961	8,121	4,662	2,644	1,498	848	534	200	183	67	65	387,137	
White fir	55,906	24,853	15,242	10,554	7,267	4,046	3,234	1,912	1,511	773	514	216	193	81	170	126,472	
Softwood total	448,857	249,521	152,842	100,076	63,630	41,727	29,160	19,562	11,746	7,681	5,116	2,788	2,004	977	1,424	1,137,113	
Aspen	283,931	195,991	158,260	85,774	37,033	15,555	6,488	2,757	920	211	52	13	4	—	—	786,988	
Cottonwood	—	301	152	—	107	45	176	31	22	129	41	41	42	35	31	1,152	
Hardwood total	283,931	196,292	158,412	85,774	37,139	15,600	6,664	2,788	942	340	93	54	46	35	31	788,139	
All species	732,788	445,813	311,254	185,851	100,770	57,327	35,824	22,350	12,688	8,021	5,209	2,841	2,050	1,012	1,455	1,925,252	

Table 100—Net volume of growing stock on nonreserved timberland by species and diameter class, Utah, 1993.

Species	Diameter class (inches at breast height)														All classes
	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+		
----- Thousand cubic feet -----															
Blue spruce	2,534	4,798	6,369	5,439	6,645	6,784	8,337	2,918	9,718	4,352	5,240	5,014	4,847	72,994	
Bristlecone pine	407	313	473	637	1,156	722	1,628	1,219	—	432	—	521	—	7,508	
Douglas-fir	46,469	104,275	116,099	159,981	193,022	204,901	156,056	131,290	95,032	68,625	60,727	29,978	75,541	1,441,997	
Engelmann spruce	37,643	77,403	126,074	188,936	207,475	201,228	153,176	148,040	114,080	80,079	48,840	24,793	46,753	1,454,520	
Limber pine	2,800	8,647	5,110	7,788	12,488	8,798	4,298	7,228	5,408	7,287	2,141	1,717	10,077	83,788	
Lodgepole pine	111,961	160,817	164,815	114,228	70,022	40,524	24,594	12,882	4,630	—	1,164	719	—	706,355	
Ponderosa pine	10,511	15,614	24,749	34,177	42,820	63,367	52,053	39,899	50,222	29,910	31,246	28,081	45,257	467,907	
Subalpine fir	92,286	144,537	174,487	144,433	120,269	96,987	69,636	47,853	36,215	15,426	16,220	7,039	8,752	974,143	
White fir	23,256	49,275	62,567	60,495	69,621	56,617	58,735	36,394	30,943	15,668	13,929	7,294	21,665	506,459	
Softwood total	327,867	565,679	680,743	716,116	723,518	679,929	528,512	427,723	346,248	221,780	179,506	105,156	212,893	5,715,671	
Aspen	311,339	454,083	363,919	242,222	138,372	76,224	32,504	8,710	2,632	724	304	—	—	1,631,032	
Cottonwood	246	—	678	627	2,701	841	547	3,912	1,724	2,260	2,798	2,703	3,633	22,671	
Hardwood total	311,585	454,083	364,597	242,848	141,073	77,065	33,052	12,622	4,355	2,984	3,102	2,703	3,633	1,653,703	
All species	639,452	1,019,762	1,045,341	958,964	864,591	756,994	561,564	440,345	350,603	224,764	182,609	107,859	216,526	7,369,375	

Table 101—Net volume of sawtimber (Scribner rule) on nonreserved timberland by species and diameter class, Utah, 1993.

Species	Diameter class (inches at breast height)											All classes
	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-24.9	25.0-26.9	27.0-28.9	29.0+	
----- Thousand board feet -----												
Blue spruce	21,655	21,066	26,785	27,549	34,229	12,573	45,652	21,512	26,682	26,309	26,767	290,780
Bristlecone pine	1,536	1,858	3,997	2,726	7,104	5,068	—	1,954	—	2,566	—	26,808
Douglas-fir	399,038	633,206	801,425	872,928	683,203	602,347	460,097	348,143	313,260	158,287	415,005	5,686,941
Engelmann spruce	450,281	742,781	839,552	821,807	636,129	654,998	530,847	387,483	245,415	130,480	257,383	5,697,156
Limber pine	16,350	27,088	48,238	35,872	18,183	31,101	24,511	33,993	10,437	8,358	50,686	304,816
Lodgepole pine	557,448	443,074	293,325	179,274	109,754	57,951	21,351	—	5,723	3,621	—	1,671,520
Ponderosa pine	59,562	119,235	178,181	281,398	241,754	189,135	240,119	143,612	149,534	136,193	219,063	1,957,788
Subalpine fir	627,369	565,925	482,385	391,450	285,943	206,732	166,592	74,648	81,890	37,099	48,481	2,968,513
White fir	203,170	231,817	272,110	217,225	218,944	133,063	115,475	59,641	52,627	28,846	91,093	1,624,012
Softwood total	2,336,409	2,786,050	2,945,998	2,830,230	2,235,243	1,892,968	1,604,645	1,070,987	885,566	531,760	1,108,479	20,228,334
Aspen	(^a) 987,475	581,196	326,860	140,540	37,293	11,162	3,046	—	1,285	—	—	2,088,857
Cottonwood	(^a) 2,602	11,170	3,551	2,277	15,847	6,948	9,167	11,446	11,173	15,587	15,587	89,768
Hardwood total	(^a) 990,077	592,365	330,412	142,818	53,140	18,110	12,213	12,731	12,731	15,587	15,587	2,178,625
All species	2,336,409	3,776,127	3,538,364	3,160,641	2,378,061	1,946,108	1,622,755	1,083,200	898,298	542,932	1,124,066	22,406,959

^aHardwoods are not considered sawtimber until they are 11 inches d.b.h.

Table 102—Net volume of growing stock on nonreserved timberland by species and owner group, Utah, 1993.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Blue spruce	68,607	—	4,387	72,994
Bristlecone pine	5,880	1,628	—	7,508
Douglas-fir	841,493	253,635	346,869	1,441,997
Engelmann spruce	1,377,649	6,082	70,790	1,454,520
Limber pine	63,722	7,291	12,775	83,788
Lodgepole pine	624,748	559	81,047	706,355
Ponderosa pine	350,081	50,861	66,965	467,907
Subalpine fir	839,421	19,319	115,403	974,143
White fir	411,473	34,195	60,791	506,459
Softwood total	4,583,074	373,571	759,026	5,715,671
Aspen	1,140,997	121,896	368,139	1,631,032
Cottonwood	3,255	4,833	14,583	22,671
Hardwood total	1,144,252	126,729	382,722	1,653,703
All species	5,727,326	500,300	1,141,748	7,369,375

Table 103—Net volume of sawtimber (Scribner rule) on nonreserved timberland by species and owner group, Utah, 1993.

Species	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand board feet -----				
Blue spruce	273,067	—	17,713	290,780
Bristlecone pine	19,705	7,104	—	26,808
Douglas-fir	3,366,809	991,360	1,328,772	5,686,941
Engelmann spruce	5,381,937	21,441	293,778	5,697,156
Limber pine	229,168	30,271	45,377	304,816
Lodgepole pine	1,372,564	1,956	297,000	1,671,520
Ponderosa pine	1,427,635	231,403	298,750	1,957,788
Subalpine fir	2,515,620	61,354	391,539	2,968,513
White fir	1,312,014	108,749	203,248	1,624,012
Softwood total	15,898,519	1,453,639	2,876,177	20,228,334
Aspen	1,617,045	177,250	294,562	2,088,857
Cottonwood	11,456	17,994	60,317	89,768
Hardwood total	1,628,501	195,244	354,880	2,178,625
All species	17,527,020	1,648,882	3,231,057	22,406,959

Table 104—Net volume of growing stock on nonreserved timberland by forest type and stand-size class, Utah, 1993.

Forest type	Stand-size class				Total
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
	----- Thousand cubic feet -----				
Aspen	506,038	1,075,548	69,042	646	1,651,275
Blue spruce	34,624	1,105	867	—	36,596
Cottonwood	14,427	—	451	—	14,878
Douglas-fir	1,192,570	153,403	47,007	12,518	1,405,498
Engelmann spruce	869,062	27,458	2,781	—	899,301
Limber pine	45,861	5,204	—	652	51,717
Lodgepole pine	429,344	206,087	36,045	—	671,476
Ponderosa pine	382,594	16,317	10,569	15,813	425,292
Spruce-fir	1,390,318	222,947	29,733	—	1,642,998
White fir	558,010	—	10,741	1,593	570,344
All types	5,422,848	1,708,069	207,236	31,222	7,369,375

Table 105—Net volume of sawtimber (Scribner rule) on nonreserved timberland by forest type and stand-size class, Utah, 1993.

Forest type	Stand-size class				All classes
	Sawtimber	Poletimber	Sapling/ seedling	Nonstocked	
	----- Thousand board feet -----				
Aspen	1,516,899	1,229,838	145,823	—	2,892,560
Blue spruce	143,420	2,122	—	—	145,542
Cottonwood	58,978	—	1,888	—	60,865
Douglas-fir	4,674,151	276,517	171,002	51,677	5,173,348
Engelmann spruce	3,231,791	58,831	10,264	—	3,300,886
Limber pine	176,592	6,853	—	1,823	185,268
Lodgepole pine	1,322,873	201,477	31,957	—	1,556,306
Ponderosa pine	1,585,137	32,092	40,970	67,422	1,725,621
Spruce-fir	5,012,001	415,938	83,715	—	5,511,654
White fir	1,811,229	—	38,277	5,404	1,854,909
All types	19,533,071	2,223,667	523,895	126,326	22,406,959

Table 106—Net volume of growing stock on nonreserved timberland by forest type and owner group, Utah, 1993.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand cubic feet -----				
Aspen	1,143,566	131,533	376,177	1,651,275
Blue spruce	36,596	—	—	36,596
Cottonwood	2,992	4,833	7,053	14,878
Douglas-fir	763,804	263,454	378,240	1,405,498
Engelmann spruce	839,003	—	60,297	899,301
Limber pine	49,173	2,545	—	51,717
Lodgepole pine	592,095	—	79,381	671,476
Ponderosa pine	311,530	50,151	63,612	425,292
Spruce-fir	1,508,665	4,965	129,367	1,642,998
White fir	479,904	42,820	47,620	570,344
All types	5,727,326	500,300	1,141,748	7,369,375

Table 107—Net volume of sawtimber (Scribner rule) on nonreserved timberland by forest type and owner group, Utah, 1993.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
----- Thousand board feet -----				
Aspen	2,194,566	278,876	419,118	2,892,560
Blue spruce	145,542	—	—	145,542
Cottonwood	13,703	17,994	29,168	60,865
Douglas-fir	2,804,035	964,470	1,404,844	5,173,348
Engelmann spruce	3,088,416	—	212,470	3,300,886
Limber pine	174,417	10,851	—	185,268
Lodgepole pine	1,283,742	—	272,564	1,556,306
Ponderosa pine	1,237,474	215,701	272,446	1,725,621
Spruce-fir	5,041,933	11,266	458,454	5,511,654
White fir	1,543,193	149,724	161,993	1,854,909
All types	17,527,020	1,648,882	3,231,057	22,406,959

Table 108—Net volume of timber on nonreserved timberland by class of timber, and softwoods and hardwoods, Utah, 1993.

Class of timber	Softwoods	Hardwoods	Total
<i>----- Thousand cubic feet -----</i>			
Sawtimber trees			
Sawlog portion	4,313,739	389,597	4,703,336
Upper-stem portion	508,386	133,841	642,227
Total	4,822,125	523,438	5,345,563
Poletimber trees	893,546	1,130,265	2,023,811
All growing-stock trees	5,715,671	1,653,703	7,369,374
Rough cull trees	36,875	11,599	48,474
Rotten cull trees	18,328	24,152	42,480
Salvable dead trees	866,198	212,310	1,078,508
All timber	6,637,072	1,901,764	8,538,836

Growth

Table 109—Net annual growth of growing stock on nonreserved timberland by forest type and owner group, Utah, 1992.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
-----Thousand cubic feet-----				
Aspen	19,806	2,836	12,559	35,201
Blue spruce	346	–	–	346
Cottonwood	23	–622	–654	–1,252
Douglas-fir	8,676	1,633	6,469	16,778
Engelmann spruce	6,046	–	–131	5,915
Limber pine	423	34	–	458
Lodgepole pine	4,947	–	364	5,311
Ponderosa pine	7,942	–1,254	1,761	8,448
Spruce-fir	129	113	–1,362	–1,119
White fir	6,020	424	1,008	7,452
All types	54,358	3,164	20,015	77,537

Table 110—Net annual growth of sawtimber (Scribner rule) on nonreserved timberland by forest type and owner group, Utah, 1992.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
-----Thousand board feet-----				
Aspen	62,848	11,436	21,327	95,611
Blue spruce	9	—	—	9
Cottonwood	116	–2,206	–1,727	–3,816
Douglas-fir	40,878	2,602	27,973	71,453
Engelmann spruce	31,576	—	–1,311	30,265
Limber pine	789	176	—	965
Lodgepole pine	27,346	—	5,150	32,496
Ponderosa pine	35,141	–5,963	5,343	34,522
Spruce-fir	9,049	–57	–8,420	572
White fir	18,033	2,762	4,369	25,164
All types	225,785	8,751	52,705	287,241

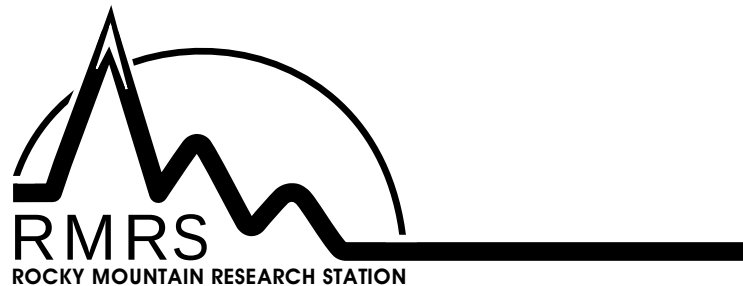
Mortality

Table 111—Annual mortality of growing stock on nonreserved timberland by forest type and owner group, Utah, 1992.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
-----Thousand cubic feet -----				
Aspen	12,878	601	2,638	16,117
Blue spruce	480	—	—	480
Cottonwood	—	671	750	1,420
Douglas-fir	7,722	4,724	2,632	15,079
Engelmann spruce	8,211	—	1,189	9,399
Limber pine	670	—	—	670
Lodgepole pine	12,462	—	776	13,238
Ponderosa pine	1,432	2,091	—	3,523
Spruce-fir	31,602	151	5,141	36,893
White fir	5,825	285	529	6,640
All types	81,282	8,524	13,654	103,460

Table 112—Annual mortality of sawtimber (Scribner rule) on nonreserved timberland by forest type and owner group, Utah, 1992.

Forest type	Owner group			Total
	National Forest	Other public	Nonindustrial private	
-----Thousand board feet -----				
Aspen	26,416	—	2,133	28,550
Blue spruce	2,275	—	—	2,275
Cottonwood	—	2,388	2,126	4,514
Douglas-fir	24,447	20,039	8,435	52,921
Engelmann spruce	29,179	—	4,676	33,855
Limber pine	2,529	—	—	2,529
Lodgepole pine	33,302	—	2,086	35,388
Ponderosa pine	5,398	9,839	—	15,237
Spruce-fir	106,064	369	20,062	126,495
White fir	22,040	829	602	23,470
All types	251,650	33,464	40,121	325,235



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