# THE PLACE OF OAK TREES IN FORESTS OF THE UNITED STATES—A BRIEF SUMMARY OF FOREST INVENTORY DATA

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**Extended abstract**—Oaks (*Quercus*) can be found growing in the Americas, Europe, Asia, and Africa. About 600 species have been identified worldwide (Oswalt and Olson, 2016). Native to the Northern Hemisphere, oaks are found from the cold latitudes of North America to the tropics in Asia and the Americas. In North America, oaks are widely distributed and found in both the Western and Eastern United States, with only two species (chinkapin (*Q. muehlenbergii* Engelm.) and bur oak (*Q. macrocarpa* Michx.)) common to both regions. Oak species richness (the number of oak species) in the Eastern United States is highest in the South near the shared borders of Alabama, Florida, and Georgia and declines as you travel north and west. Using data from the U.S. Department of Agriculture, Forest Service, Forest Inventory and Analysis (FIA) program, the distribution and importance of oaks across the United States (U.S.) are explored and summarized.

The FIA database is a long-term record of information on U.S. forest resources based on field samples distributed across the landscape. The forest inventory conducted by FIA is a year-round effort to collect and disseminate information and statistics on the extent, condition, status, and trends of forest resources across all ownerships (Oswalt and others 2014). Fixed-area plots were installed in locations with accessible forest land cover (see Bechtold and Patterson 2005 for detailed discussion of the annual FIA program). Field crews collected data on >300 variables, including land ownership, forest type, tree species, tree size, tree condition, and other site attributes (e.g., slope, aspect, disturbance, land use) (Oswalt and others 2014). Plot intensity for field collected data was approximately one plot for every 6,000 acres (2 400 ha) of land (approximately 130,000 forested plots nationally).

Data were assembled from the Forest Service FIA database (FIADB) version 1.7.2.00 in August 2017. Over 300,000 plots were pulled from the FIADB that included approximately 150,000 forested plots and approximately 55,000 plots with oak represented (at least 1 stem with 1 inch DBH or greater) in the sampled trees. Data from the Caribbean and Pacific islands were not included in the analysis. Data assembled represented the most recent inventory (10-year remeasurement cycle in the West and 5-7 year cycle in the East).

According to recent data, over 765 million acres of forest land (not including low productivity woodland) exist in the United States, of which about 62 percent are in private holdings (supported by Oswalt and others 2014). Located within the over 750 million acres of forest land in the United States, 377 different unique tree species (see www.fia.fs.fed.us/library/field-guides-methods-proc/index.php for FIA tree definition and lists of sampled species) and 51 different species belonging to *Quercus* were recorded. In fact, the *Quercus* genus is represented by a greater number of unique species than any other genera in the FIA database (excluding island inventories). However, oaks fall behind Pinus with respect to total number of estimated stems growing in forests of the continental United States. In total, there is an estimated 43 billion oak stems (1 inch DBH or greater) growing across the United States which represents about 11 percent of the total U.S. tree population. White oak (*Q. alba* L.) represented 19 percent of all oak biomass, the most of all oaks, while Oglethorpe oak (*Q. oglethorpensis* Duncan) represented the least (<0.001 percent of all oak biomass).

A total of 150 different forest communities or FIA forest types were recorded across the continental United States. Oak was a primary component of 28 different forest types. The white oak–red oak–hickory type was the most common recorded (7 percent of total forest land area. NOTE: loblolly pine (*Pinus taeda* L.) represented the most common forest type with nearly 8 percent of total forest land area). The mixed oak–pine type of longleaf pine oak currently occupies the least area (0.01 percent of total forest land area).

Oaks are an important component of U.S. forests, particularly in the eastern half of the country. Oak tree species play and important role in the ecology and economy of the forests they are found within and the surrounding

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areas. It is imperative that these communities be monitored over time to understand the landscapes they exist in and to better understand how these communities are changing. The FIA program is unique in that consistent data is collected across the United States to facilitate such monitoring.

## LITERATURE CITED


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