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# Fire History and Current Stand Structure Analysis of a Midwestern Black Oak Sand Savanna

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FIRE HISTORY AND CURRENT STAND STRUCTURE ANALYSIS OF A MIDWESTERN BLACK OAK SAND SAVANNA

by

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MAJOR PROFESSOR: Dr. John W. Groninger & Dr. Charles M. Ruffner

Management and restoration of black oak dominated sand savannas often rely on historic vegetative descriptions (settler accounts, surveyor notes, aerial photographs). It is commonly assumed that fire alone maintains savanna structure and composition, however little information is known about the specific fire frequency needed to maintain these systems. The objective of this study was to quantify and correlate characteristics of stand structure with fire history of the Kankakee Sands savannas in northeastern Illinois. Fire history chronologies were determined through dendrochronological methods from 289 dated fire scars identified on 58 black oak (*Quercus velutina*) trees located throughout four wooded sites. Tree and woody structure was characterized in 30 circular plots (0.04 hectares) in three sites and 26 circular plots in one site that were placed at 25-meter intervals along randomly established permanent line transects in the summer of 2007. The structure analysis consisted of the development of tree age-size relationships among presently dominant and suppressed trees in relation to fire history. Variations in tree and woody structure were strongly related to fire dynamics among the four study sites. Specifically, components such as tree density (n = 114; r = 0.46; $P < 0.0001$), basal area (n = 114; r = 0.35; $P < 0.0001$), and total woody stem density (n = 114; r = 0.42; $P < 0.0001$)

all increased as a function of fire-free interval. In addition, sites with shorter fire-free intervals were associated with a higher percentage of hollow tree boles ($n = 104$ $r = -0.31$ $P < 0.0015$) and visible fire scar wounds ($n = 104$ $r = -0.43334$ $P < 0.0001$). While the results of this study suggest fire had a significant role in structuring these four wooded sites, the data also indicated other historic disturbances coupled with individual site characteristics may be integral components in structuring these dynamic systems. For instance, fire-free intervals less than two years maintained conditions of openness, as was referenced to 1939 historic aerial photographs, but eliminated potential future canopy trees. Under these conditions, a dramatic shift in community structure toward prairie vegetation is likely, as no smaller trees were present to assume canopy dominance. Fire-free intervals greater than two years were associated with transition to closed canopy forests. Therefore, management considerations pertaining to fire with the addition of other historic disturbances, including grazing and or selective cutting, are proposed to balance historic canopy openness and promote regeneration of characteristic savanna species.

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# FOREWORD

The ultimate purpose of this research is to improve the management and restoration of black oak sand savannas.

# DEDICATION

I dedicate my master's thesis to my parents. Their hard work and unconditional support has enabled me to achieve all my goals. Thank you mom and dad!

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## *Introduction*

Oak savannas located in the Midwest are among North America's most threatened ecosystems (Nuzzo 1986, Anderson et al. 1999). Currently, less than 0.02 % of the 11-13 million hectares estimated at the time of settlement remain (Nuzzo 1986). Most of the remaining Midwestern savannas not subjected to row cropping or urban development have transitioned into closed canopy forests as a result of fire suppression (Auclair 1976, Taft 1997, Anderson & Bowles 1999, Wolf 2004). A degraded or overgrown savanna lacks the characteristic canopy cover of up to 25-50% (Belsky 1990, McPherson 1997, Taft 1997, Anderson et al. 1997). As the canopy closes, habitat becomes unfavorable for species such as Red-headed woodpeckers (*Melanerpes erythrocephalus*) that are highly dependent on open savanna structure (Brawn 1998). Therefore, management activities concerned with canopy structural manipulation (i.e. tree removal) of overgrown savannas have become a high priority among practitioners and researchers (Anderson & Bowles 1999 and Nielsen et al. 2003). Yet, few valuable reference areas (i.e. intact, large, remnant savannas) exist; therefore information from remnant savannas is needed to help develop a framework for restoration and identify management goals. For example, despite fire being widely documented as a major influence in wooded systems (Abrams 1992, McPherson 1997), the relationship between fire frequency and oak savanna structure is poorly understood (Peterson and Reich 2001). Fire and structural manipulation have been proven to effectively restore the open canopy of savannas (Nielson et al. 2003). However, management procedures to maintain savanna structure (canopy cover up to 25-50 %) while enabling stable canopies (i.e. regeneration of multiple age classes) over long temporal scales are lacking.

Black oak sand savannas have been classified as Eastern Sand Savannas (Haney & Apfelbaum 1995). These savannas are the most common of all the remaining savanna communities due to their unattractiveness to row crop agriculture and their greater vulnerability to fire (Haney & Apfelbaum 1990, Anderson and Bowles 1999, Faber-Langendoen & Davis 1995, Will-Wolf & Stearns 1999). They are characterized as dry soil savannas that developed on formations of sandy, low nutrient, parched soils of glacial moraines, sandy lake beds, outwash plains, and dune systems (Nuzzo 1986, Will-Wolf &Stearns 1999). Although *Quercus velutina* (black oak) is short lived with an estimated maximum longevity of 150-175 years (Fowles 1965, Guyette et al. 2004), it is the dominant tree within these sand systems. Other oaks including *Quercus alba* (white oak), *Quercus ellipsoidalis* (northern pin oak), and *Quercus macrocarpa* (bur oak) may be present, along with other non-oak species, depending upon environmental gradients and disturbance history within a site (Whitford & Whitford 1971, Johnson & Ebinger 1992, Ebinger et al. 2006). Throughout the upper Midwest, black oak sand savannas are located in northern and central Illinois, southern Wisconsin, southern Michigan, northwestern Indiana, northwestern Ohio, eastern Iowa, and southern Minnesota (Gordon 1966, Homoya 1994, Coles & Taylor 1995, Johnson & Ebinger 1995, Haney & Apfelbaum 1995).

Native Americans' frequent use of fire (Guyette et al. 2006) likely maintained the structure of these systems prior to Euro- (Henderson and Long 1984) and African-American settlement. However, other historic disturbance components such as interactions between fire and grazing (Anderson 1982, Abrams 1992) and/or Native American use of trees may have been just as important. Therefore, understanding the dynamics of those relationships may be critical in managing these systems.

Fire's role in sand savannas is based on few long-term burning experiments (Haney et al. 2008). Of those studies, the majority are based on less than 30 years of data (Faber-Langendoen & Davis 1995, Peterson and Reich 2001, and Abella et al. 2004, Haney et al. 2008) and only one study containing up to 50 years of data (Henderson and Long 1984). Collectively, these studies reported stem density and canopy cover decreases with fire frequencies that ranged from three to six fires per decade. Others have concluded fire intensity may be just as influential in structuring black oak sand savannas that have had a history of fire suppression (Henderson & Long 1984, Haney et al. 2008). In a black oak sand savanna in western Indiana, Haney et al. (2008) concluded three low intensity fires per decade can maintain the open canopy structure created by high intensity fire, but may not further reduce canopy cover or basal area and could allow an increase in the number of saplings. The short-term application of high-intensity fire was more effective than low-intensity fire in reducing oak canopy cover and basal area in a fire suppressed savanna. Furthermore, their data suggested the cumulative effects of frequent low-intensity fires may eventually alter stand structure, but a longer time frame is needed to evaluate this effect. Haney concluded that four fires per decade are necessary to stabilize the sapling and shrub layer and prevent dominance by non-oak species.

The present study related fire history to current stand structure and vigor across four wooded sites, totaling 396 hectares in northeastern Illinois. This region has been speculated to have maintained a frequent fire regime since presettlement times (Phillippe et al. in review). Inferring past conditions to current structure and composition is often difficult (Egan & Howell 2001) and visual assumptions alone are primarily inaccurate for oak savanna ecosystems when relating past land uses with time of tree establishment. These assumptions can inhibit our understanding of their functionality and ability to successfully restore and maintain these systems (Karnitz & Asbjornsen 2006). Therefore, the primary objectives of this study were to (1) document current stand structure, (2) reconstruct the post settlement fire history through dendroecological methods, and (3) compare and correlate fire history with stand vigor and structure. Specifically, I postulated there was a strong relationship between fire frequency and stand structure and tree vigor in these systems. For instance, differences in current stand structure among the four sites will be indicative of the variation in historic fire regimes. In addition, I speculated cohort establishment would have likely occurred during fire free periods.

Lastly, I hypothesized lower fire frequencies (less than three year fire-free intervals) can maintain open canopies of black oak sand savannas. Ultimately, the results of this study will increase the understanding and improve the application of prescribed fire for the development of fire regime parameters in relation to tree density management, cohort recruitment, and herbaceous richness referenced to overstory characteristics.

## ***Methods***

### *Study Site*

Kankakee Sands is comprised of over 4,000 hectares of black oak sand savanna located in northeastern Illinois and northwestern Indiana (Figure 1). The unique sand dune habitat and consistent disturbance throughout pre- and post-settlement has sustained distinct animal and plant populations. Numerous state and federally designated rare plant species can be found throughout the region including the largest Illinois population of *Platanthera ciliaris* (orange-fringed orchid), the only Illinois population of *Baptisia tinctoria* (yellow false indigo), and *Viola primulifolia* (primrose violet). Distinct reptilian, and mammalian species that occur throughout the region include *Terrapene ornatata* (ornate box turtle), *Ophisaurus attenuatus* (western glass lizard), *Cnemidophorus sexlineatus* (Six-lined racerunner), and the only Illinois gopher species *Geomys bursarius* (plains pocket gopher). Populations of *Melanerpes erythrocephalus* (Red-headed woodpecker) are stable throughout Kankakee Sands (Brawn 1998) even though throughout their range, they are declining at an annual rate of 2.5% (Sauer et al. 2001). A study by Phillippe et al. (2003) inventoried the woody overstory and ground layer vegetation in five wooded sites of Pembroke Township in 2002. The ground layer vegetation survey resulted in 574 total plant species while the overstory tree species composition was dominated by *Quercus velutina* (black oak) with few occurrences of *Quercus alba* (white oak) and even fewer occurrences of *Quercus palustris* (pin oak). Also, based on their ARC/INFO analyses of the digitized 1939, 1968, and 1988 aerial photographs, they concluded the five wooded sites were all very open in 1939. In 1939, the sites contained 26.9 ha of woody overstory of the 100 ha of total area measured. By 1988, some of the sites transitioned into open woodlands and others to closed canopy forests that combined, increased to a total of 41.4 ha of woody overstory since 1939.

The savannas of Kankakee Sands represent very high-quality sand savannas. In 1978 the Illinois Natural Areas Inventory identified these savannas as state significant natural areas (White 1978). The Nature Conservancy (2005) identified Kankakee Sands as an important eco-region site. The United States Fish and Wildlife Service (1996) identified Kankakee Sands as having the greatest concentration of high-quality black oak sand savannas in the nation. However, the entire region is not protected and some areas are degraded with high tree densities of *Robinia pseudoacacia*, *Sassafras albidum*, and exotic herbaceous species. The Illinois and Indiana chapters of The Nature Conservancy and Department of Natural Resources of both states are the primary land management agencies protecting a total of approximately 2,500 ha of black oak sand savanna. Management efforts have been limited primarily to land acquisition and prescribed burning with some thinning of undesirable trees species such as *Robinia pseudoacacia* and *Sassafras albidum*, exotic invasive weed control through herbicide application, and fence construction to prohibit access to all terrain vehicles.

This study was conducted within Kankakee Sands in the wooded areas of Pembroke Township (41° 04’ N, 87° 37’ W) that is located in the moraine and sand deposits of Kankakee County, Illinois (Figure 1). Elevations at the site ranged between 203 meters and 212 meters above sea level. The 30-year (1971-2001) mean annual temperature was 9.9°C, averaging between highs of 23.6°C (July) to lows of -5°C (January). The 30-year (1971-2001) mean annual precipitation was 980 mm, with the month of May having the greatest mean amount at 115 mm (Midwest Regional Climate Center 2008). Pembroke Township is located at the western edge of the former glacial lake, Lake Watseka, which drained about 14,500 years ago (William & Frye 1970). During the last glacial retreat, an enormous amount of glacier melt-water broke through the existing glacial deposits that acted as dams resulting in massive flooding in the Kankakee, Vermilion, and Fox River valleys. The Kankakee Torrent scoured the Illinois River basin to bedrock, transporting sand and gravel along the Kankakee and Illinois River valleys. Over time, these exposed sand deposits were transported by the prevailing westerly winds, forming the series of dunes and swales found throughout Pembroke Township (King 1981). All of the study plots were established on Oakville with small areas of Morocco soil. Oakville soils are characterized as excessively drained with a dark grayish brown surface horizon with 152.4 cm of fine sand extending into the soil profile. Morocco soils are somewhat poorly drained, located lower on the landscape, and are commonly associated with Oakville (Paschke 1979).

The extensive sandy soils in this region were better adapted for grazing rather than general row-crop agriculture (White 1999). During the mid 1800's to early 1900's thousands of cattle were annually sent to the Kankakee Sands region to graze. The cattle supplied beef for the growing city of Chicago, located 65 miles to the north. One particular cattle baron, Lemuel Milk controlled over 65,000 acres (White 1999). Post-settlement disturbances that included frequent fires, grazing, and sporadic tree cutting for firewood may have contributed to the maintenance of the black oak sand savanna compositional and structural characteristics throughout the region (Phillippe et al. in review).

*Experimental Design*

*Site Tree Structure and Vigor*

Permanent study plots were established on five sites within Pembroke Township by the Illinois Natural History Survey (INHS) in the summer of 2002 (Philippe et al. 2003). Four of those sites (Big Dune, Mskoda, Bentley-Crawford, Leesville) were re-inventoried for this study in the summer of 2007 (Table 1, Figure 1). The fifth study site, Sweet Fern, was in private ownership and was excluded from this study because permission to collect tree-cross sections was not granted. The INHS inventoried and recorded very detailed lists of ground layer vegetation of each plot located among the sites. Therefore, references between herbaceous vegetation with stand structure and fire history could be analyzed; this was the premise for re-inventorying the 2002 INHS plots. At each site, 30 circular (0.04 ha) plots were placed at 25 meter intervals along permanent line transects randomly selected along cardinal compass directions (Phillippe et al. 2003). Six plots in Mskoda (24-30) measured by Phillippe et al. (2003) were the only plots omitted from the study site because they were located in an area that has not been burned since The Nature Conservancy purchased the property in 2000. In total, 114 plots, 30 from each site (24 from Mskoda) located in Pembroke Township were surveyed in this study.

Structure characteristics were determined through the identification and measurement of all living trees ≥ 10.0 cm diameter at breast height (dbh), and all living oak grubs and saplings < 10.0 cm dbh in each plot. Only the largest stem of an oak grub or sapling was measured from a multi-stemmed clump. Combined all woody sapling and shrub canopy cover within each plot was measured to the nearest percent. Additional measurements were taken within each plot to characterize site vigor and to provide baseline information for future studies. Each tree was recorded as alive or dead. Live crown ratio was computed by measuring the top live crown height (m) minus the lower crown height (m) with a clinometer, using 20 m as a baseline. Crown volume ($m^3$) was calculated by multiplying the North-South crown width (m) with the East-West crown width (m) then multiplying by the live crown (m). Finally, the crown volume index ($m^3$) was calculated by dividing the crown volume ($m^3$) by the tree's dbh (cm). Other tree vigor measurements included estimated percentage of crown loss compared to overall live crown (multiple views of canopy, distanced far enough away to see canopy silhouette), total number of dead branches or stubs ≥ 7.6 cm at the point of tree branch attachment, occurrence of visible fire scar wounds, and incidence of hollow bole. Nine plots within Big Dune and one plot in Leesville were treeless. Therefore, plots without trees were not used in the statistical analyses which resulted in 104 plots. Among the measurements listed, this information was used to calculate both the plot and site characteristics that included live stem density of trees (stems/ha), saplings (stems/ha), all woody stems (stems/ha) tree basal area ($m^2$/ha), importance value (IV), relative dominance, and relative density. The importance value is the sum of the relative density (stems/ha), relative dominance (basal area $m^2$/ha), and relative frequency (total stems) (McIntosh 1957).

*Site Tree Age*

To quantify the tree age structure of each site, increment cores were extracted with an increment borer from a total of 154 black oaks located in the four stands. Tree cores were taken to Southern Illinois University Carbondale for dendrochronological analysis. The tree cores were glued on core mounts and sanded using progressively finer sand paper (150-600 grit). Preliminary ages were determined under a stereomicroscope (10x) after the standard dendrochronological analysis (Stokes & Smiley 1968) was performed on the cross-sections for the fire history analysis. Age to pith could only be confirmed on 63 of the 154 cores and four cross-sections were omitted due to extensive decay. Therefore, age distribution graphs were created from a total of 114 trees.

*Fire History*

In January of 2008, sixty-one *Quercus velutina* (black oak) cross-sections were collected from randomly selected living trees in the same four sites inventoried in the summer of 2007 (Bentley/Crawford-15, Big Dune-15, Leesville-16, and Mskoda-15). Living trees were visually inspected and chosen based on criteria that ensured a usable specimen. First, trees were sounded with an axe and when sounding was inconclusive, an increment borer was used to core questionable trees. In a few instances, initially chosen trees were hollow and then the nearest tree was collected. These measures were taken to ensure useable samples for the fire history analysis and thereby limited additional tree removal. A chainsaw was used to cut each tree down and then cross-sections were removed near the ground line. Two cross-sections were collected from freshly cut stumps of trees that were illegally removed from the Leesville site. Geographic locations (GPS coordinates, latitude/longitude) were recorded for each tree used in the analysis.

All of the cross-sections were taken to the tree ring laboratory at Southern Illinois University Carbondale for dendrochronological analysis. Prior to sanding, the samples air dried. After further visual examination in the lab, cross-sections with extensive decay were excluded. Surfaces of each sample were planed with an electric planer, sanded using progressively finer sandpaper (from 60 – 1200 grit), and then finished with fine steel wool to expose cell structure of the annual rings under a 10x stereomicroscope. Visual cross-dating procedures called skeleton plots were created by identifying signature years through graphically expressing the width of each annual ring of every cross-section (Stokes & Smiley 1968). Each annual ring of 35 sections was measured with a stereomicroscope using the computer program *Measure J2X* (Voorhees 2000) and a Velmex measuring system. The quality-control program COFECHA (Holmes 1983, Grissino-Mayer & Holmes 1993) was used to check cross-dating and measurement and a master chronology was created using the ARSTAN program (Cook & Holmes 1984). The tree-ring chronology was then compared with a *Quercus alba* chronology from Kankakee State Park (Duvick 1980), which was located within 33 km of all stands sampled.

Lastly, once the annual rings of each sample were accurately dated, fire scars were identified and given corresponding calendar years. Fire scars were identified by the presence of charcoal, vascular cambium injury, and/or a disruption of an annual ring that showed healing in later years (Smith et al. 1999, Wolf 2004). Calendar dates of fire scars were assigned according to the season and year of cambial injury with dormant season fires dated to the following growing season (Baisan & Swetnam 1990, Guyette et al. 2006). Seasonality of the scar is based on the injury location within the annual ring and designated as early growing season (spring), middle (summer), late growing (early fall), or dormant season wood. Finally, the fire scar dates and seasonality information were compiled using the fire history program, FHX2 (Grissino-Mayer 2001) to perform statistical analyses on fire occurrences. Weibull median fire intervals (WFI) and mean fire intervals (MFI) were calculated for all four stands. The start date for determining MFI and WFI was set at 1930 when at least one tree from each site was present.

*Statistical Analyses*

To characterize tree vigor and structure of each site, variables were analyzed using the Least Square Means function in a one-way ANOVA of the GLM procedure in the Statistical Analysis Software (SAS Inc. 2003). Specifically, factors that characterized stand structure included tree density (stems/ha), oak sapling density (stems/ha), all woody stem density (stems/ha), small diameter tree density (stems/ha), tree basal area ($m^2$/ha), shrub canopy cover (%), mean dbh (cm), mean age (years), min age (years), max age (years). Factors that characterized tree vigor of each site included mean number of dead branches (branches/ha), canopy volume index ($m^3$/ha), mean canopy loss (%), percentage of trees with hollow boles, and percent of trees with visible fire scars. To determine the relationships between fire history and current stand structure and tree vigor, Pearson's correlation coefficients were used to test for correlations between response variables in SAS (SAS Inc. 2003). For instance, structural and tree vigor characteristics of each plot in the four sites were correlated with each site's corresponding Weibull fire median interval.

## ***Results***

*Vigor*

Among the characteristics of tree vigor measured in the four study sites, incidence of hollow boles and visible fire scar wounds on tree boles where the two attributes most strongly related with the fire regimes. Shorter fire-free intervals were associated with a higher percentage of hollow trees ($n = 104$ $r = -0.31$ $P < 0.0015$) and fire scar wounds ($n = 104$ $r = -0.43$ $P < 0.0001$; Table 4). The remaining tree vigor measurements which included canopy loss ($n = 104$ $r = 0.10$ $P < 0.30$), crown volume index ($n = 104$ $r = 0.02$ $P < 0.88$), and number of dead branches ($n = 104$ $r = -0.07$ $P < 0.5$; Table 4) lacked a strong relationship with fire frequency.

*Composition*

Over story-stems at Kankakee Sands consisted of fire tolerant *Quercus* species (*Q. velutina, Q. alba, Q. palustris)*. Specifically, black oak dominated all the stands with an IV of 244.6 out of 300 (82%) while white oak (17%) and pin oak were (1%) were respectively less abundant. Furthermore, mesophytic tree (dbh >10 cm) species that are fire sensitive and shade tolerant such as maple (*Acer*) or cherry (*Prunus*) (Nowacki & Abrams 2008) were not present in any of the plots.

*Fire History*

Across the four sites, 64 out of the 77 years since 1930 had a recorded fire event (Figure 1). The cross-sections contained 290 fire scars with the first fire scar recorded in 1907 and the last in 2007 (Figure 2). From 1930 to 2007, the four sites had 129 fire intervals that ranged from one to ten years (Figure 3, Table 2). First scarring occurred before 45 years of age for 92% of the trees and 66% of those trees were initially scarred when <10 years of age (at breast height). Of the 289 fire scars recorded, 156 (54%) occurred during the dormant season, 98 (34%) in the early growing season, seven (2.4%) in the middle growing season, and five (1.7%) in the late growing season.  The seasonality of 23 (8%) fire scars could not be determined.

*Structure*

Stand structure was strongly correlated with fire frequency. Shorter fire-free intervals were associated with low tree density ($n = 114$, $r = 0.46$, $P < 0.0001$), sapling/grub density ($n = 114$, $r = 0.37$, $P < 0.0001$), total stem density of all woody vegetation ($n = 114$, $r = 0.42$, $P < 0.0001$), total tree basal area ($n = 114$, $r = 0.35$, $P < 0.0001$) and total percent canopy cover of all woody saplings and shrubs ($n = 114$, $r = 0.37$, $P < 0.0001$) (Table 3, Figures 4-6). Also, shorter fire-free intervals corresponded with larger and older trees, whereas smaller diameter ($n = 104$, $r = -0.50$, $P < 0.0001$) and younger trees ($n = 114$, $r = -0.28$, $P < 0.0026$) were associated with longer fire-free intervals.

The diameter distribution of cohorts in the four sites was very different (Figure 4). Big Dune not only had the fewest trees, but also the fewest size classes with no trees under 25 cm (dbh). The majority of trees occupied the 35 - 39.9 cm size class and had an average 38.6 cm (± 0.9) dbh which was over 10 cm larger than the other stands. Over 150 trees/ha were represented within the

20-30 cm class in Bentley Crawford. Tree diameter classes of Mskoda were mostly distributed between 10-40 cm. Leesville contained over 50 trees/ha of mostly smaller-sized trees in the 10-15 cm size class and had a similar number of trees in the remaining size classes. Besides Big Dune where mean diameter was greatest, mean dbh among the other stands did not differ from one another ($P > 0.05$; Table 3).

### *Age Structure*

The age diameter graph (Figure 5) indicated the site Big Dune was an even-aged stand with an average tree age of 67 years ($\pm$ 4). The age distributions of both the Mskoda and Leesville sites resembled a two aged stand. Bentley Crawford had a consistent recruitment of cohorts over a 25 year time period. Among all the sites, various age/diameter relationships existed (e.g., 35-40 cm dbh ranged from 39-128 years). Although 52% of the trees sampled (n = 114) were recruited during one of the 13 non-fire years, sites with mean fire-free intervals that ranged between two and three years (Bentley Crawford, Mskoda, Leesville) supported higher tree densities (Table 3).

## ***Discussion***

Results of the fire history analysis in relation to the current stand structure suggested that fire played a significant role in the structural development the four wooded sites at Kankakee Sands. However, the contemporary composition and variations in structure among the four sites may have resulted from other disturbances in combination with fire.

*Historical fire presence in Kankakee Sands*

The first dendrochronological fire history analysis of four sites in Kankakee Sands indicated a frequent fire presence on the landscape from 1930-2007, even though this time period was typically associated with fire suppression elsewhere throughout the eastern U.S. (Brose et al. 2001, Shumway et al. 2001, Nowacki & Abrams 2008). The fire events of the last 77 years in the four sites were likely recorded since there were a high percentage of young and small diameter trees initially scarred. Others have indicated that smaller sized and younger trees are very accurate in recording fire events since they are highly susceptible to fire scarring (Guyette et al. 2006).  The high frequency of fire scars in the dormant season suggests human activity was the primary source of ignitions (McClain & Elzinga 1994). Ignition from lightening is highly unlikely in the Midwest because of the humid climate and associated rainfall that usually accompanies lightening storms (Sauer 1975, Stewart 2002, Anderson 2006). Burning garbage is common among residents of adjoining lands (Rob Littiken, Kankakee Sands land manager, The Nature Conservancy Illinois, personal communication, 15, January 2007), which is thought to be the source of many wildfires at Kankakee Sands. Other sources of ignition, especially in the early part of the fire history record may have included the intentional use of fire to maintain and improve pasture which has been reported in other studies as a widespread practice of that era (McClain & Elzinga 1994, Wolf 2004, Nowacki & Abrams 2008).

*Factors Influencing Stand Dynamics*

Data from this study suggested that fire return intervals shorter than three years prevented the establishment of mesophytic, fire intolerant canopy trees. The lack of long fire-free periods favored fire tolerant species, specifically black oak which is adapted to thrive in nutrient poor soils while under a frequent disturbance regime (Korstian 1927, Fowells 1965). Black oak is also noted for vigorously re-sprouting after a fire (Cole & Taylor 1995). In northwest Indiana, Haney et al. (2008) reported that once non-oak species are established in eastern sand savannas, they may be difficult to remove with low intensity prescribed burns at a rate of three fires per decade. Abella et al. (2004) concluded that five fires per decade considerably reduced smaller size classes of black cherry (*Prunus serotina*) and sassafras (*Sassafras albidum)* in an oak savanna in northwestern Ohio.

Fire frequency was strongly related to the current tree and woody structure of the four sites. For instance, the fire data indicated that the shorter fire-free intervals were associated with sites that had lower tree densities, lower total stem densities of woody vegetation, fewer oak saplings, fewer small trees (10 -15 cm dbh), less shrub canopy cover, and lower total tree basal area. These results are supported by similar findings of a high-fire frequency regime in a dry sand savanna at the Cedar Creek Natural History Area, where frequent fire treatments (11 or more in 32 years) resulted in suppressed bur oak (*Quercus macrocarpa*) and northern pin oak (*Quercus ellipsoidalis*) recruitment, low overstory tree density and basal area, and the absence of both a sapling stratum and canopy recruitment (Peterson & Reich 2001).

In addition, a study by Johnson & Ebinger (1992) indicated that tree and shrub density decreased in black oak sand savannas that were burned for three consecutive years from 1987-89 within the Kankakee Sands region. Conversely, longer fire-free intervals or lack of fire have long been associated with significant structural changes including higher tree density, basal area, and canopy cover (Stout 1944, Cooper 1960, Abrams 1986, Faber-Langendoen & Davis 1995).

This study also supported similar relationships between longer fire intervals and sites associated with transition to closed canopy forests. Leesville, the site with the longest fire-free interval (2.32 yrs.), had a large number of young trees of several size classes which indicated the potential for stable canopy recruitment. Personal observations of stumps, some with different stages of decay, numerous wood burning stoves (stovepipes extending from homes), and woodpiles suggests that this area has been repeatedly cut, presumably by surrounding residents for firewood for many years.

Although, the tree diameter distribution at Big Dune, Mskoda, and Bentley Crawford were consistent with an even-aged structure for these sites, the age diameter relationships suggest a diversity of age distributions. Big Dune was indeed an even-aged site, but Mskoda and Bentley Crawford were not. Mskoda, as well as Leesville, have two distinct recruitment cohorts suggesting two-aged structures were evident. In contrast, Bentley Crawford's diameter distribution resembled that of the two-aged site Mskoda, but showed evidence of continuous recruitment over a 25 year time period.

The diversity of diameter distributions in this study may be attributable to within-site heterogeneity of site productivity. Particularly, almost all of the sites including Leesville, Mskoda, and Bentley Crawford appeared to have some productive and unproductive microsites within them that produced a wide range of growth rates. These relationships suggest the uniqueness of individual sites and elucidate limitations of using diameter distributions to infer disturbance regimes in these systems. Analyses of the age and diameter distributions can help explain potential past land-use disturbances (Oliver 1981, Groven et al. 2002) that may have affected the development and current structure of the four sites in Kankakee Sands. Pulses of recruitment may indicate a release of cohorts from a major disturbance, possibly intensive grazing (Mast et al. 1998) or logging (Abrams & Downs 1990).

Fire frequency was also strongly correlated with high incidences of hollow tree boles and visible fire scars. Most of the cross-sections used in the fire history analysis were initially scarred when they were small and young. A tree with an open scar or wound can be more susceptible to scarring during subsequent fires (McClaren 1988) and prolonged exposure of sapwood provides opportunities for infection by many wood-inhabiting microorganisms such as decay fungi (Smith and Sutherland 1999). Additionally, the heartwood of black oak (*Quercus velutina*) is susceptible to decay (USDA Forest Products Laboratory 1987).

Therefore, it is not surprising that sites with the most frequent occurrence of hollow tree boles and open wounds were the sites with the highest fire frequency. This strong association explains how fire, over time, reduces the number of trees and other woody plants. However, recurring fires in Bentley Crawford still allowed cohort recruitment throughout 1941-1967. These cohorts may be the result of a less severe fire regime which allowed an increase of canopy tree recruitment. Overtime, enhanced shade from tree density and canopy cover decreased grass and ground layer biomass which resulted in cooler fires and more trees. This fire regime appeared to allow additional recruitment of saplings and was not able to reduce canopy cover or basal area. A study by Haney et al. (2008) in a black oak sand savanna in northwestern Indiana found similar results, determining that low-intensity fires (3 fires/decade) were unable to decrease canopy cover or basal area and may allow sapling density to increase.

Although structural characteristics of the four sites was not known at the start of 1930, age structures of each site and the ARC/INFO aerial photograph analyses by INHS (Philippe et al. in review) indicated that the substantial structural differences between sites with similar fire regimes suggest that fire alone may not be able to maintain a stable open canopy. For instance, fire intervals of less than two years at Big Dune were able to maintain a presettlement black oak sand savanna tree density of 49.2 trees/ha ($\pm$ 7 S.E.) (Haney et al. 2008). But this frequent fire regime eliminated potential future canopy trees. Under these conditions, a dramatic shift in community structure into a prairie/shrub community is likely, because black oak is a relatively short lived tree, rarely exceeding 150 years (Fowells 1965, Guyette et al. 2004). Particularly, the four sites within Kankakee Sands were much younger, only three trees sampled were over 100 years; the oldest tree cored was 128 years. The high fire frequency regime at each site coupled with black oak's tendency of heart-rot made it difficult to definitively provide a maximum tree age.

All of the sites had fire-free intervals less than three years; however, some sites were associated with transition to closed canopy forests. Other natural areas throughout the region have also experienced similar canopy conversions. At Howes Prairie in the Indiana Dune National Lakeshore which is located less than 70 miles away from all four study sites, Cole & Taylor (1995) reported an extreme increase of canopy cover and tree density over the last 150 years. The mean fire return interval was no longer than 6.9 years and as short as 4.6 years from the time period 1900-1972. However, the majority of increased canopy cover came from fire intolerant species such as *Prunus serotina*; whereas, the fours sites in Kankakee Sands had a much more frequent fire regime that maintained and enhanced oak dominance while preventing canopy recruitment of shade tolerant woody species. Even though this fire regime sustained an oak canopy, this frequency was unable to impede oak ingrowth and reduce tree density which was evident from the historic aerial photographs analysis (Phillippe et al. in review), multiple cohorts, and high tree density. While Cole & Taylor (1995) concluded the absent of fire was primarily responsible for the extreme rate of canopy change in the Indiana Dunes Lakeshore, they also suggested the quick canopy conversion maybe the result of increased atmospheric nitrate and sulfate deposition. The increased deposition rate of nitrate and sulfate ions could have accelerated succession since nitrogen is the limiting factor in succession in the dune system (Olson 1958). Furthermore, the substantial range of tree age diameter distributions in Kankakee Sands suggested the uniqueness of individual sites may have also influenced structural development.

*Historic Large Herbivores, Land Use, and Fire*

The distinctive tree structure, composition, and distribution of savannas in the Midwest have been widely credited to a combination of interactions between topography and disturbances specifically fire, grazing, and drought (Curtis & McIntosh 1951, Rogers & Anderson 1979, Abrams 1992, Olson 1996, Anderson & Bowles 1999, Will-Wolf & Stearns 1999, Peterson & Reich 2001, Karnitz & Asbjornsen 2006). Historically, bison were documented in Kankakee Sands: "in the season are seen herds of two hundred and even four hundred wild cattle (bison)..." was noted by French explorers as they traveled through the Kankakee River Valley during the Voyage of Cavelier de La Salle (1679) (White 1999). Even though the last documented bison in Illinois was killed in 1837, large cattle barons grazed over 170,000 acres within the Kankakee Sands region in the mid-1800's to supply the growing Chicago beef market (White 1999). Grazing was evident in the 1939 aerial photograph based on distinct lines (fencing) and cattle paths on the landscape. In addition, data from the U.S. Department of Agriculture (2008) indicated that there was a 75% decline of pastured cows in Kankakee County Illinois from 1930 to 2007. During this period, the Illinois Natural History

Survey (INHS) concluded that the same sites' woody overstory extent almost doubled from 26.9 ha in 1939 to 41.35 ha (41.35 %) in 1988 (Philippe et al. in review; Figure 6). Although, the fire history results from this study indicated a high fire frequency regime since 1930 in all of the sites (Figure 2 & 6). Therefore, these data suggest that grazing may have had a larger impact in the past, when present stand structure was developing, than evident from current land-use patterns.

A recent study indicated grazing in combination with fire reduced midstory woody vegetation in the initial stages of restoring savannas in Wisconsin (Harrington & Kathol 2008). While large ungulates reduce fuel loads and midstory vegetation through consumption and trampling, they maintain open canopies while reducing the severity of fires, thus allowing a longer fire interval to regenerate future canopy trees if they escape herbivory (Trollope 1984, Savage & Swetnam 1990, Kaufmann et al. 1994).

Native Americans regularly used fire and tree girdling as management tools for a multitude of purposes including land clearing, promotion of mast and fruit trees, vegetation control, and pasturage for large ungulates (Abrams and Nowacki 2008). Numerous artifacts have been found throughout the Kankakee Sands region, documenting human activity throughout the last 8,000 years. Prior to and during European and African-American settlement, the Potawatomi Indians controlled much of the Kankakee Sands region. Until the 1860's, the region was sparsely populated that consisted of remaining Potawatomi Indians and white fur-traders (Warwick 2007). Thereafter in the early 1860's, a unique community and refuge for ex-slaves (currently the town of Hopkins Park) was started by Joseph Tetter and his 18 children who escaped slavery from North Carolina. Again, another wave of African-American immigration from Chicago to the region occurred during the Great Depression. Over the last 160 years, African-American settlers and their descendents have influenced the dynamics of the savannas in Kankakee Sands. Throughout this time period residents have burned, grazed, and cut trees (Philippe et al. in review), that affected, and in some areas, maintained the structural and compositional characteristics of these rare black oak sand savannas. For instance, removing canopy trees (black oak), as was particularly evident at Leesville did result in cohort recruitment. It is speculated that people have been removing trees for many decades at Leesville; and in combination with fire, tree cutting sustained an open stable canopy which may be a keystone disturbance in the absence of grazing.

Results from the INHS herbaceous inventory in 2002 indicated that the site with the lowest species richness was Big Dune and the site with the highest species richness was Bentley Crawford (Philippe et al. 2003). Moreover, the two sites that had the highest average cover of *Schizachyrium scoparium* (little bluestem) and *Carex pensylvanica* (Penn sedge) had the most fire (Big Dune and Mskoda). Frequent fires have been shown to favor warm season grasses in prairie ecosystems (Collins 1987) and in the Bentley Crawford and Leesville sites, both having had the fewest fire events, supported the highest species richness. The increased level of shade in Bentley Crawford may have released forbs from competition with $C_4$ grasses (Leach & Givnish 1999) since the site was associated with the highest species richness. In addition, past disturbances in Leesville from potential tree cutting in combination with a longer fire regime appeared to not only result in a stable canopy, but also supported the second highest herbaceous richness. Although many factors can influence the species richness of a site (Leach & Givnish 2004), the differences in herbaceous richness of the four sites in Kankakee Sands (Philippe et al. 2003) in relation to the frequency of fire within those sites, supports relationships found in other savanna and grasslands studies (Collins 1987, Leach & Givnish 1999).

Savannas have often been described as transitional communities that formed a structural continuum between forest and prairies (Peterson & Reich 2001). Their distribution and maintenance depended heavily on disturbances (Karnitz & Asbjornsen 2006). These dynamic systems may have frequently transitioned from barrens to closed canopy forests depending on frequency and intensity of disturbances, particularly fire, which Native Americans used for maintaining and improving pasture for large game as well as stand manipulation (Abrams & Nowacki 2008). However, few Midwest oak savanna studies exist pertaining to interactions of fire with other historic disturbances such as grazing and/or tree removal. Primarily, focus has been directed towards implications of using fire for initial restoration and management activities in oak savanna and woodland plant communities. While this study supports previous findings that fire is a substantial factor in structuring oak savannas, the data also lead us to suggest other disturbances coupled with individual site characteristics may be integral components in managing the unique structure of this system.

*Implications for Management and Restoration*

Single disturbance based management such as frequent prescribed fire has drastic consequences to fire-sensitive insects if refugia are not maintained (Panzer 2002). A patch burn grazing management scheme has proven to be successful in managing for diversity and habitat conservation in grassland ecosystems (Weir et al. 2007). An adapted form of this management scheme may also prove to be applicable in oak savannas.

If the goal of resource managers and researchers is to restore and maintain sustainable savanna habitat that is often referenced to presettlement conditions (Schulte & Mladenoff 2001, Whitney & DeCant 2001, Asbjornsen et al. 2005), or referenced in this study of post- Euro- or African-American settlement, then more of a holistic approach that incorporates presettlement disturbances such as grazing in combination with fire and/or selective tree removal ought to be an integral part in the management plan . Attention concerning the productivity of site in relation to disturbance regimes should also be considered when developing management schemes. Traditional single disturbance based management lacks the other essential disturbance components that may be vital to this dynamic ecosystem as it has been proven to be so in other savannas and ecosystems throughout the world (Burrow et al. 1990, Werner et al. 1990, Archibald et al. 2005). Management activities that incorporate grazing and/or selective tree removal would allow fire to be implemented less frequently while still maintaining an open canopy and enabling regeneration of the next canopy trees. Ultimately, other management considerations and scientific research pertaining to grazing and/or selective tree removal need to be further investigated and implemented to facilitate the functionality and long-term viability of black oak sand savannas.

**Table 1** Site description of the four wooded sites measured in Kankakee Sands.

| | **Sites** | | | |
|---|---|---|---|---|
| | Big Dune | Mskoda | Bentley Crawford | Leesville |
| Size (ha) | 27 | 268 | 26 | 75 |
| Ownership | The Nature Conservancy | The Nature Conservancy | The Nature Conservancy | Illinois Department of Natural Resources |
| GPS Location (latitude/longitude) | $41^{o}$ 04'N, $87^{o}$ 38W | $41^{o}$ 04'N, $87^{o}$ 39W | $41^{o}$ 05'N, $87^{o}$ 34W | $41^{o}$ 01'N, $87^{o}$ 32W |

**Table 2** Fire regimes of the four wooded sites within Kankakee Sands. Weibull median fire interval calculated by FHX2 (Grissino-Mayer 2001) for the time period 1930-2007.

| | **Sites** | | | |
|---|---|---|---|---|
| | Big Dune | Mskoda | Bentley Crawford | Leesville |
| Tree cross-sections included in analysis (n) | 14 | 12 | 15 | 14 |
| Total fire scars (n) | 80 | 78 | 86 | 46 |
| Total fire events (years) | 42 | 34 | 31 | 26 |
| Total number of different fire-free intervals (years) | 5 | 6 | 5 | 6 |
| Min fire-free interval (years) | 1 | 1 | 1 | 1 |
| Max fire-free interval (years) | 10 | 6 | 7 | 8 |
| Mean fires per decade | 6 | 5 | 4 | 4 |
| Weibull median fire interval (years) | 1.45 | 2.02 | 2.24 | 2.32 |

**Table 3** Structural components of each tree were measured for each plot (plot = 0.04 ha) and site (± 1 standard error) in 2007 within the four wooded sites of Kankakee Sands. Means with the same letter were not different (P>0.05).

| | **Sites** | | | |
|---|---|---|---|---|
| Site<br>Weibull median fire interval | Big Dune<br>1.45 | Mskoda<br>2.02 | Bentley Crawford<br>2.24 | Leesville<br>2.32 |
| Tree density (stems/ha) | 42.5 ± 7.3[c] | 144.8 ± 7.3[b] | 245 ± 22.2[a] | 107.5 ± 13.6[b] |
| Oak sapling density (stems/ha) | 550.8 ± 115[c] | 1189.6 ± 256.1[b] | 1060.8 ± 171.3[b] | 1882.5 ± 198.5[a] |
| All woody stem density (stems/ha) | 593.3 ± 118.7[c] | 1355.2 ± 258.5[b] | 1326.7 ± 177.8[b] | 1973.3 ± 198.2[a] |
| Tree density (<15cm dbh) (stems/ha) | 0[c] | 20.8 ± 5.6[b] | 20.8 ± 6.1[b] | 43.3 ± 10.4[a] |
| Tree basal area ($m^2$/ha) | 4.9 ± 0.8[b] | 7.5 ± 0.9[b] | 13.5 ± 0.9[a] | 7 ± 1[b] |
| Shrub canopy cover (%) | 7.5 ± 2[b] | 27.9 ± 3.6[a] | 35.6 ± 6.5[a] | 24.2 ± 3.3[a] |
| Mean dbh (cm) (Stand survey) | 38.6 ± 0.9[b] | 26.2 ± 1.3[a] | 26.7 ± 0.7[a] | 27.6 ± 2.1[a] |
| Mean age (years) | 66.8 ± 3.5[a] | 44.9 ± 2.5[c] | 57.3 ± 2.1[b] | 52.4 ± 5.2[bc] |
| Minimum age (years) | 30 | 26 | 37 | 27 |
| Maximum age (years) | 128 | 74 | 89 | 108 |

**Table 4** Vigor of each tree was measured for each plot (plot = 0.04 ha) and site (± 1 standard error) in 2007 within the four wooded sites of Kankakee Sands. Means with the same letter were not different (P>0.05).

| | Sites | | | |
|---|---|---|---|---|
| | Big Dune | Mskoda | Bentley Crawford | Leesville |
| Mean number of dead branches (branches/ha) | 176.4 ± 17.4[a] | 180 ± 19.7[a] | 156.1 ± 9.9[a] | 169.2 ± 15.4[a] |
| Canopy volume index ($m^3$) | 3001.5 ± 332.4[a] | 1506.9 ± 76.26[b] | 1776.9 ± 99.4 [b] | 2473.3 ± 247.1[ac] |
| Mean canopy loss (%) | 15.7 ± 2.9[a] | 18.2 ± 3.1[a] | 19.1 ± 1.7[a] | 19.4 ± 3[a] |
| Percent of trees with hollow boles | 21.3 ± 7.2[a] | 21.6 ± 5.8[a] | 4.3 ± 1.2[b] | 3.7 ± 2.2[a] |
| Percent of trees with visible fire scars | 72.1 ± 6.5[a] | 56.5 ± 6.4[a] | 36.1 ± 3.3[b] | 39.7 ± 5.8[b] |

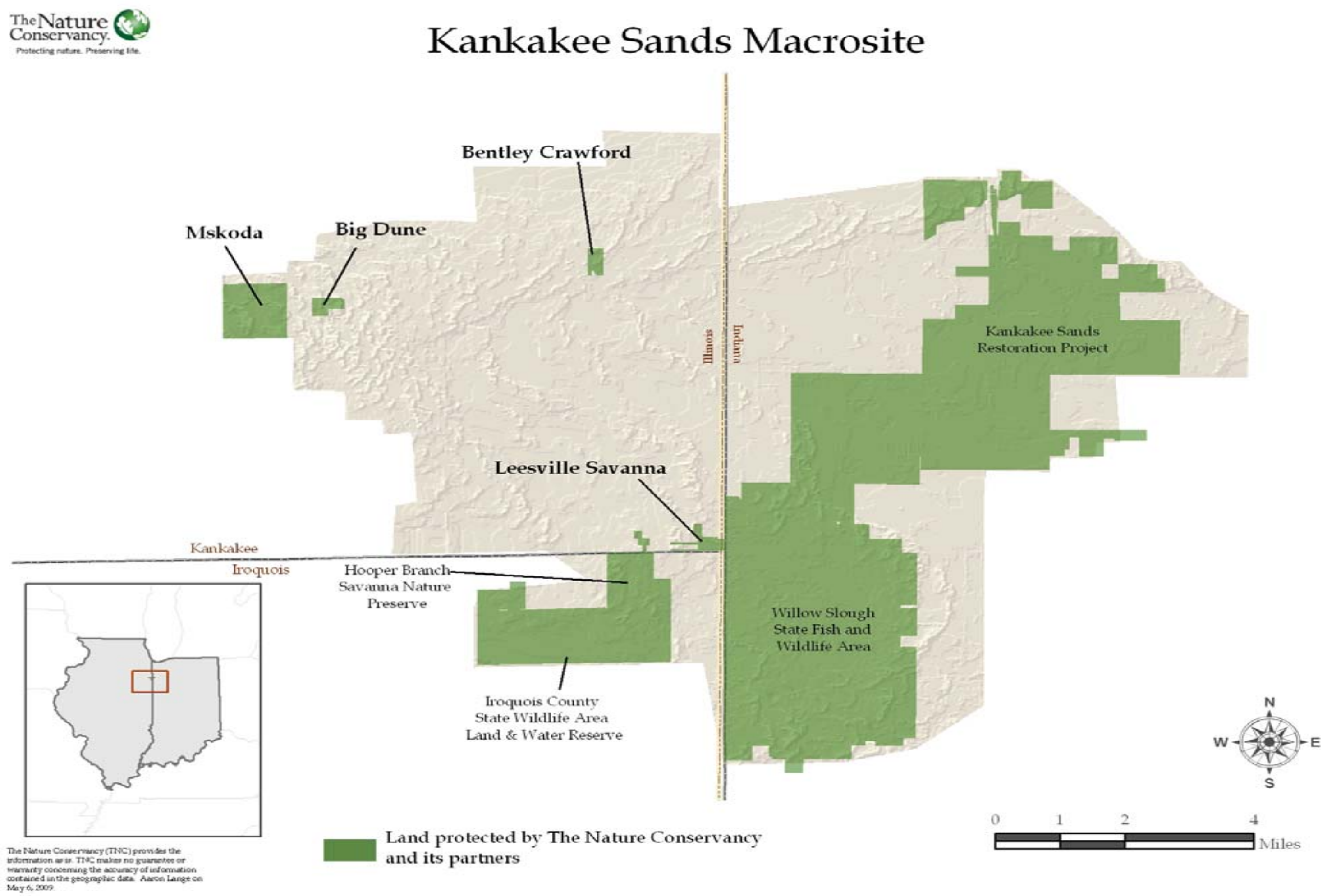


**Fig. 1** Locations of the four wooded sites within the Kankakee Sands macrosite in Northeastern Illinois and Northwestern Indiana.

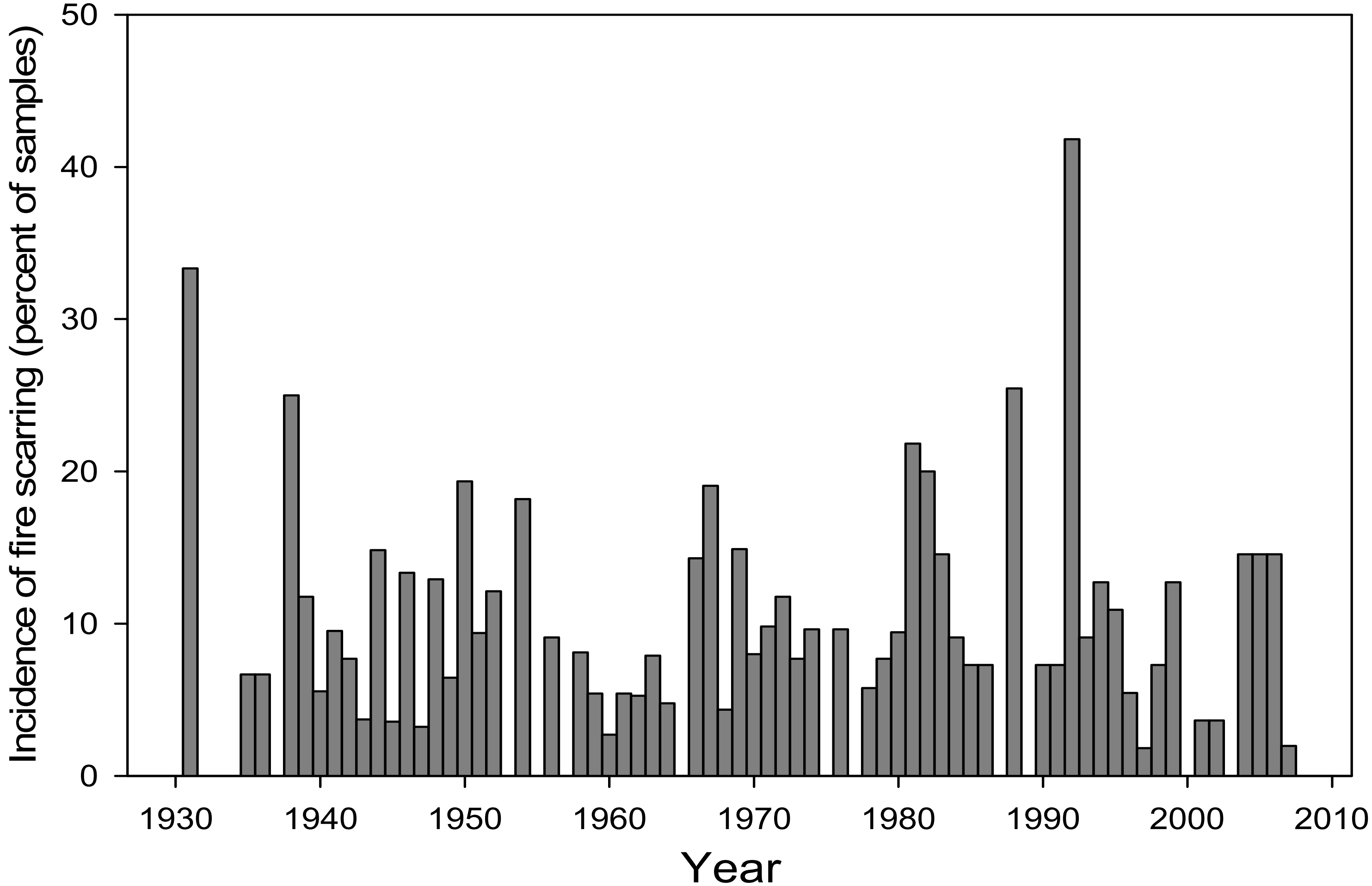


**Fig. 2** Composite fire history obtained from 58 tree cross-sections in four wooded sites in Kankakee Sands for the time period 1930-2007. Bars represent the percent of samples that had a fire scar in the particular year of all the samples.

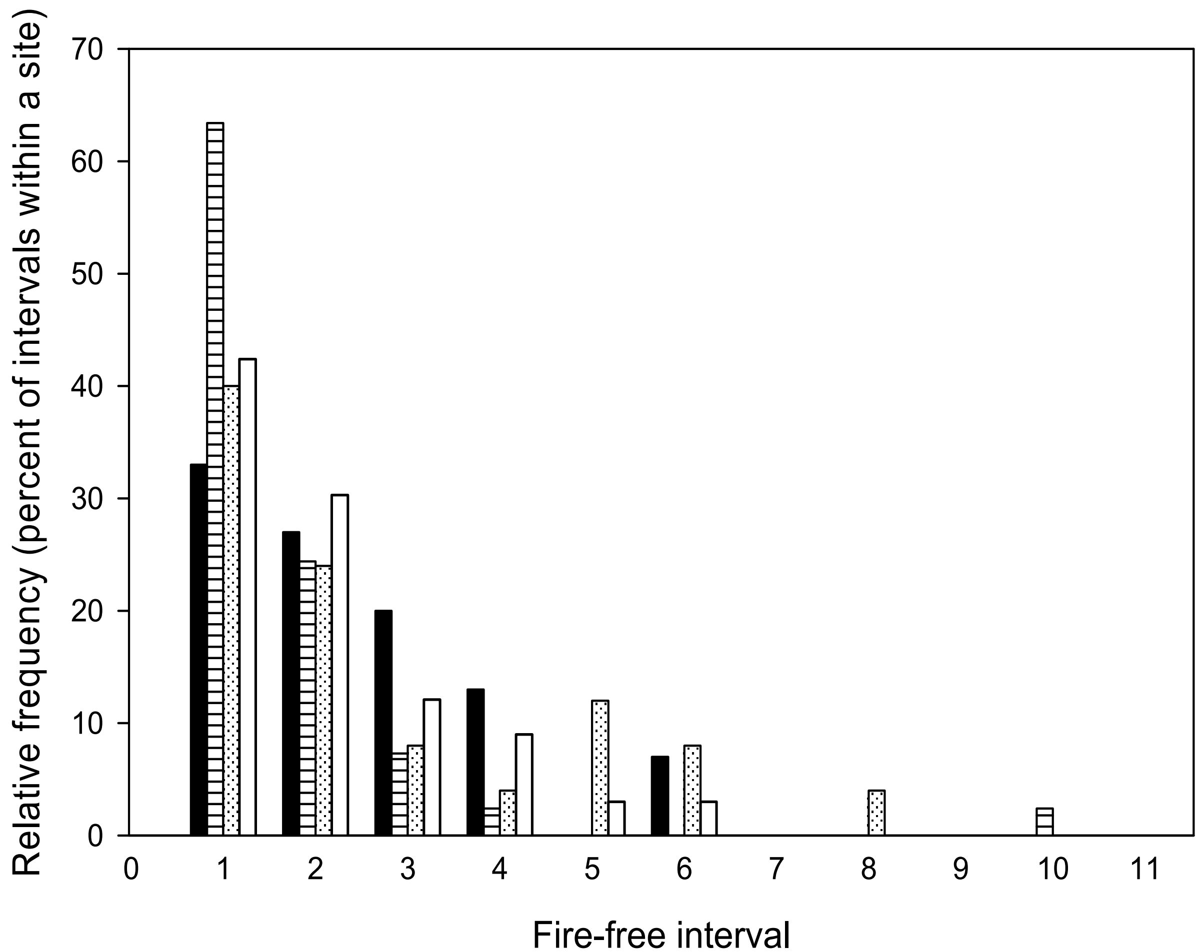


**Fig. 3** Fire-free interval distribution obtained from 58 cross-sections indicating fire occurrences in the four wooded sites in Kankakee Sands. Bentley Crawford=black, Big Dune=horizontal lines, Leesville=dotted hash, Mskoda=white.

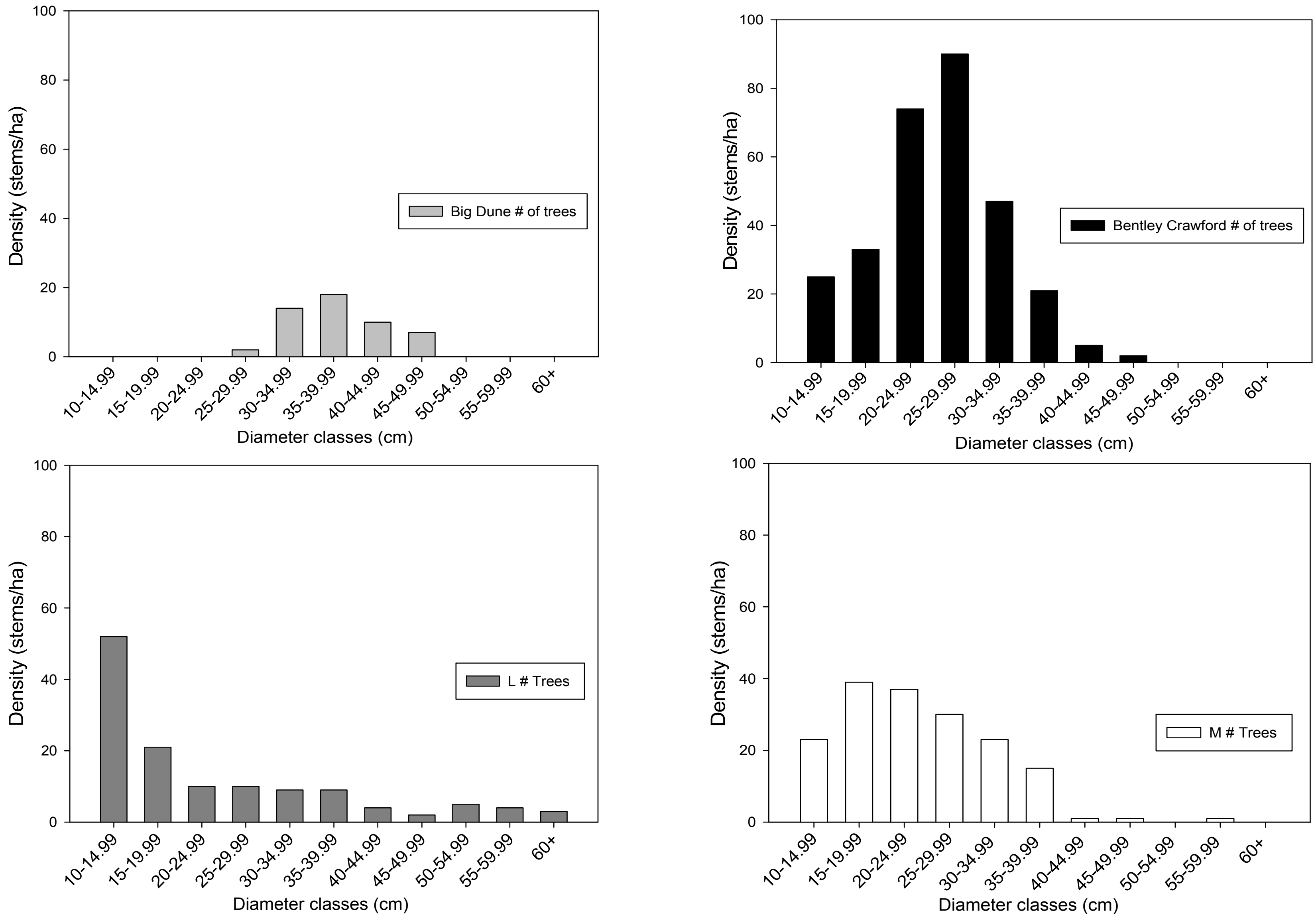


**Fig. 4** Tree distribution by 0.05-m diameter size classes of the four wooded sites in Kankakee Sands.

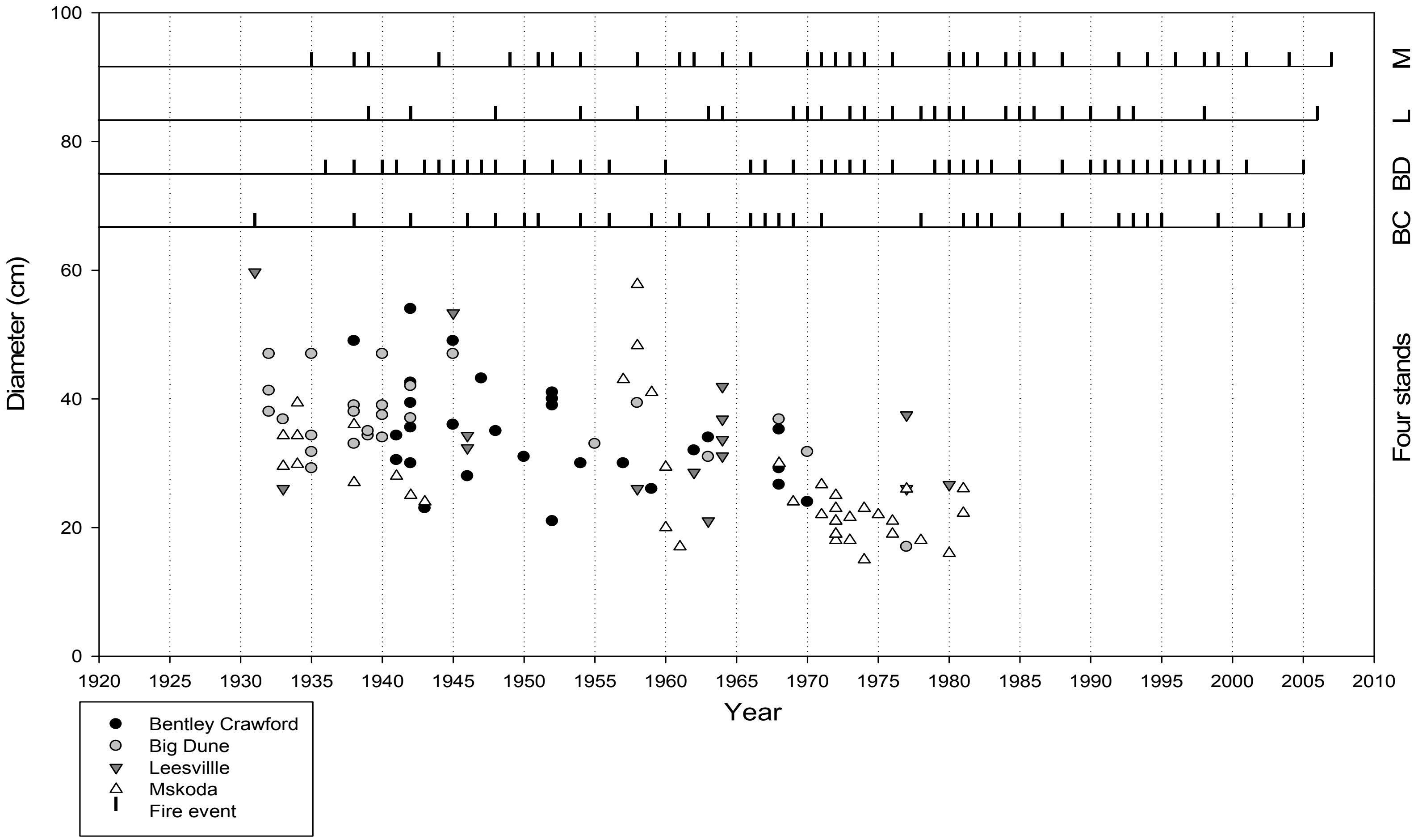


**Fig. 5** Year of fire occurrence and tree origin versus stem diameter in 2007 for black oaks in the four wooded sites in Kankakee Sands. (BC, n=30; BD, n=28; M, n=40; L, n=16).

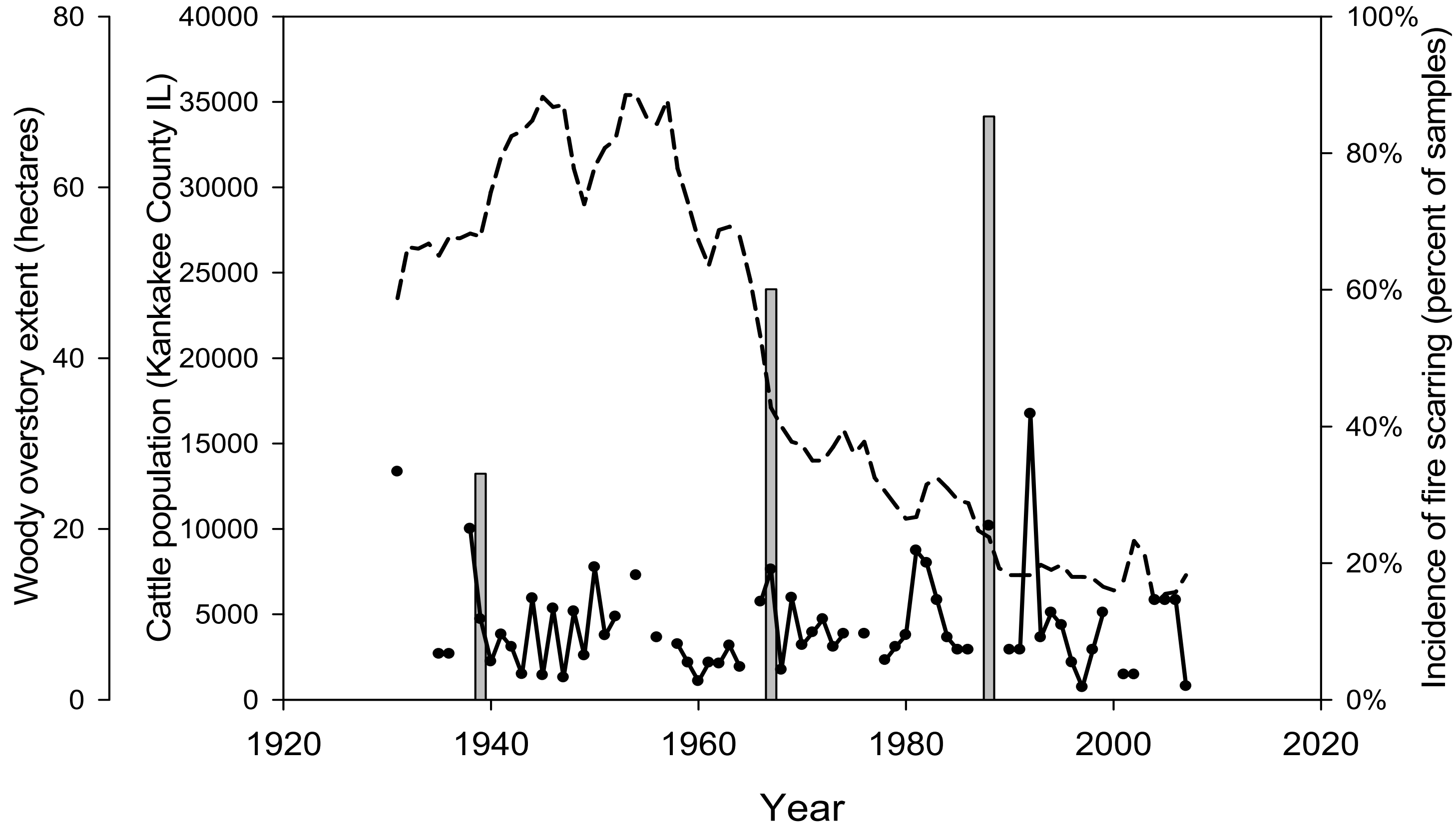


**Fig. 6** Fire history across four wooded sites in Kankakee Sands (solid line), cattle population of Kankakee County, IL (dashed line), and aerial photograph analysis of woody overstory extent for 1939, 1967, and 1988 in same wooded sites used for fire history analysis, (gray bars) (Phillippe et al. in review). The United States Department of Agriculture National Statistics Service (2008) was used to determine the population of non-feedlot cattle from 1926 to 2007 in Kankakee County Illinois.

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# APPENDICES

# APPENDIX A

## 2007 Field season: tree structure, composition, and vigor raw data

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OF H | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | 1 | 2 | 1 | Q. vel. | 26.20 cm | 5.33 m | 10.67 m | 4.57 m | AL | 10 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 2 | | |
| M | 1 | 3 | 1 | Q. vel. | 31.60 cm | 5.49 m | 20.73 m | 10.36 m | AL | 5 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 1 | 3 | 2 | Q. vel. | 39.00 cm | 5.94 m | 21.34 m | 4.57 m | AL | 3 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 1 | 3 | 3 | Q. vel. | 35.00 cm | 7.01 m | 21.03 m | 2.44 m | AL | 3 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 1 | 1 | 1 | *Q. vel.* | 37.90 cm | 7.77 m | 21.34 m | 9.14 m | AS | 15 | N | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | 65 | 40 |
| M | 1 | 1 | 2 | Q. vel. | 30.50 cm | 7.77 m | 21.34 m | 11.28 m | AS | 5 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 1 | 4 | 1 | Q. vel. | 29.40 cm | 5.03 m | 22.25 m | 6.71 m | AS | 15 | N | 4 | 1 | 0 | 1 | 40 | Y | N | Y | 0 | | |
| M | 2 | 5 | 1 | Q. vel. | 37.60 cm | 6.40 m | 21.34 m | 6.10 m | AS | 10 | N | 5 | 1 | 0 | 1 | 40 | N | N | N | 0 | 43 | 20 |
| M | 2 | 7 | 1 | Q. vel. | 13.60 cm | 3.66 m | 13.41 m | 3.66 m | AS | 3 | N | 1 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 2 | 6 | 1 | Q. vel. | 32.50 cm | 4.11 m | 16.76 m | 7.62 m | DT | 60 | N | 9 | 1 | 0 | 1 | 60 | Y | Y | Y | 0 | | |
| M | 3 | 8 | 1 | Q. vel. | 39.40 cm | 8.23 m | 15.85 m | 4.27 m | AS | 30 | Y | 15 | 0 | 0 | 1 | 0 | Y | N | N | 0 | 2 | 20 |
| M | 4 | 9 | 1 | Q. vel. | 28.90 cm | 7.32 m | 15.54 m | 3.35 m | AS | 20 | Y | 5 | 3 | 1 | 1 | 10 | N | N | N | 0 | 27 | 40 |
| M | 4 | 10 | 1 | Q. vel. | 49.00 cm | 10.06 m | 18.29 m | 5.79 m | AS | 15 | Y | 15 | 0 | 0 | 0 | 0 | N | N | Y | 0 | | |
| M | 4 | 11 | 1 | Q. vel. | 19.60 cm | 4.27 m | 13.72 m | 3.96 m | AS | 5 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 4 | 12 | 1 | Q. vel. | 26.70 cm | 7.32 m | 15.85 m | 7.01 m | AS | 20 | N | 9 | 1 | 1 | 1 | 10 | N | N | N | 0 | | |
| M | 5 | 13 | 2 | Q. vel. | 6.50 cm | 1.22 m | 5.49 m | 2.13 m | AL | 5 | N | 3 | 1 | 0 | 1 | 50 | N | N | Y | 1 | | |
| M | 5 | 16 | 1 | Q. vel. | 13.80 cm | 4.27 m | 13.41 m | 6.71 m | AL | 30 | N | 3 | 1 | 0 | 0 | 20 | N | N | Y | 0 | | |
| M | 5 | 13 | 1 | Q. vel. | 17.60 cm | 4.11 m | 11.89 m | 4.27 m | AS | 15 | N | 7 | 0 | 1 | 1 | 0 | N | N | N | 0 | 31 | 30 |
| M | 5 | 14 | 1 | Q. vel. | 18.20 cm | 5.03 m | 16.15 m | 3.05 m | AS | 5 | Y | 6 | 0 | 1 | 1 | 2 | Y | N | N | 2 | | |
| M | 5 | 15 | 1 | Q. vel. | 16.60 cm | 5.03 m | 17.07 m | 6.40 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 5 | 17 | 1 | Q. vel. | 8.70 cm | 1.37 m | 12.50 m | 9.14 m | AS | 85 | N | 12 | 1 | 1 | 0 | 5 | N | N | N | 0 | | |
| M | 5 | 18 | 1 | Q. vel. | 22.80 cm | 4.42 m | 17.07 m | 5.79 m | AS | 50 | Y | 10 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 5 | 19 | 1 | Q. vel. | 22.30 cm | 8.08 m | 17.07 m | 6.10 m | AS | 50 | Y | 9 | 1 | 0 | 0 | 15 | Y | N | Y | 0 | | |
| M | 5 | 20 | 1 | Q. vel. | 22.60 cm | 7.32 m | 15.54 m | 3.05 m | AS | 25 | N | 8 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 6 | 21 | 1 | Q. vel. | 15.80 cm | 2.90 m | 17.68 m | 5.18 m | AS | 10 | Y | 3 | 1 | 0 | 1 | 15 | N | N | N | 0 | 15 | 20 |
| M | 6 | 21 | 2 | Q. vel. | 14.70 cm | 3.51 m | 15.54 m | 5.18 m | AS | 10 | Y | 4 | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| M | 6 | 22 | 1 | Q. vel. | 18.10 cm | 3.81 m | 14.94 m | 3.66 m | AS | 20 | N | 5 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| M | 6 | 22 | 2 | Q. vel. | 14.20 cm | 3.81 m | 14.63 m | 5.49 m | AS | 35 | N | 5 | 1 | 0 | 1 | 15 | N | N | Y | 0 | | |
| M | 6 | 23 | 1 | Q. vel. | 29.60 cm | 9.75 m | 18.29 m | 6.10 m | AS | 20 | Y | 15 | 0 | 1 | 0 | 10 | Y | N | N | 0 | | |
| M | 6 | 24 | 1 | Q. vel. | 20.10 cm | 5.94 m | 15.54 m | 5.79 m | AS | 35 | Y | 11 | 1 | 0 | 1 | 50 | N | Y | N | 0 | | |
| M | 6 | 25 | 1 | Q. vel. | 12.80 cm | 3.20 m | 15.54 m | 9.45 m | AS | 65 | N | 4 | 0 | 0 | 1 | 5 | N | N | N | 0 | | |
| M | 6 | 26 | 1 | Q. vel. | 16.90 cm | 4.11 m | 17.07 m | 7.62 m | AS | 20 | N | 6 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 6 | 27 | 1 | Q. vel. | 24.60 cm | 4.72 m | 17.98 m | 4.88 m | AS | 10 | N | 9 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 6 | 27 | 1 | Q. vel. | 21.50 cm | 5.18 m | 14.02 m | 6.71 m | AS | 10 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 6 | 29 | 1 | Q. vel. | 7.20 cm | 1.37 m | 6.10 m | 4.57 m | AS | 60 | N | 8 | 1 | 0 | 1 | 50 | N | Y | N | 0 | | |
| M | 6 | 28 | 1 | Q. vel. | 27.80 cm | #DIV/0! | 0.00 m | 0.00 m | D | | N | | 1 | 0 | 1 | 100 | Y | N | N | | | |
| M | 7 | 30 | 1 | Q. vel. | 21.70 cm | 6.86 m | 17.07 m | 6.40 m | AS | 15 | Y | 8 | 1 | 1 | 1 | 5 | N | N | N | 0 | 13 | 40 |
| M | 7 | 31 | 1 | Q. vel. | 20.90 cm | 7.77 m | 15.85 m | 3.66 m | AS | 10 | Y | 9 | 2 | 0 | 1 | 30 | N | N | N | 0 | | |
| M | 7 | 32 | 1 | Q. vel. | 18.10 cm | 5.03 m | 13.11 m | 6.10 m | AS | 35 | N | 6 | 2 | 0 | 1 | 20 | N | N | N | 0 | | |
| M | 7 | 33 | 1 | Q. vel. | 18.50 cm | 5.33 m | 12.19 m | 7.62 m | AS | 10 | N | 4 | 2 | 0 | 1 | 20 | N | N | N | 0 | | |
| M | 7 | 34 | 1 | Q. vel. | 22.10 cm | 6.40 m | 17.37 m | 4.57 m | AS | 15 | N | 6 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 7 | 35 | 1 | Q. vel. | 12.60 cm | 2.59 m | 13.11 m | 4.88 m | AS | 15 | N | 7 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| M | 7 | 36 | 1 | Q. vel. | 24.70 cm | 6.40 m | 16.76 m | 8.23 m | AS | 30 | N | 8 | 1 | 1 | 1 | 10 | N | N | N | 0 | | |
| M | 8 | 44 | 1 | Q. vel. | 24.80 cm | 5.94 m | 17.68 m | 10.36 m | AL | 40 | N | 7 | 1 | 0 | 1 | 50 | N | N | N | 0 | | |
| M | 8 | 37 | 1 | Q. vel. | 17.80 cm | 5.03 m | 14.63 m | 7.32 m | AS | 15 | N | 4 | 2 | 0 | 1 | 45 | N | N | N | 0 | 22 | 70 |
| M | 8 | 38 | 1 | Q. vel. | 14.90 cm | 4.57 m | 14.63 m | 7.01 m | AS | 10 | Y | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 8 | 39 | 1 | Q. vel. | 12.60 cm | 3.35 m | 11.89 m | 4.57 m | AS | 30 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 8 | 40 | 1 | Q. vel. | 20.30 cm | 5.18 m | 18.29 m | 6.10 m | AS | 5 | Y | 3 | 1 | 0 | 1 | 20 | N | N | N | 0 | | |
| M | 8 | 41 | 1 | Q. vel. | 16.10 cm | 4.42 m | 14.33 m | 3.66 m | AS | 15 | N | 2 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| M | 8 | 42 | 1 | Q. vel. | 23.80 cm | 5.49 m | 22.25 m | 8.84 m | AS | 15 | Y | 6 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 8 | 43 | 1 | Q. vel. | 15.80 cm | 5.49 m | 17.07 m | 7.92 m | AS | 20 | N | 8 | 0 | 1 | 1 | 1 | N | N | N | 0 | | |
| M | 9 | 45 | 2 | Q. vel. | 27.60 cm | 5.18 m | 17.68 m | 10.97 m | AL | 60 | N | 18 | 1 | 0 | 1 | 50 | N | N | Y | 0 | | |
| M | 9 | 45 | 1 | Q. vel. | 27.10 cm | 4.42 m | 21.64 m | 10.06 m | AS | 55 | N | 12 | 1 | 0 | 1 | 40 | N | Y | Y | 0 | 46 | 55 |
| M | 9 | 47 | 1 | Q. vel. | 19.50 cm | 5.03 m | 17.07 m | 7.01 m | AS | 20 | Y | 6 | 0 | 1 | 1 | 1 | Y | N | N | 0 | | |
| M | 9 | 52 | 1 | Q. vel. | 38.40 cm | 9.14 m | 23.47 m | 4.57 m | AS | 25 | N | 13 | 1 | 0 | 1 | 25 | N | Y | N | 0 | | |
| M | 9 | 46 | 1 | Q. vel. | 22.00 cm | #DIV/0! | 0.00 m | 0.00 m | D | | N | | 1 | 0 | 1 | 75 | Y | N | N | | | |
| M | 9 | 48 | 1 | Q. vel. | 9.30 cm | #DIV/0! | 0.00 m | 0.00 m | D | | N | | 1 | 0 | 1 | 1 | N | N | N | | | |
| M | 9 | 49 | 1 | Q. vel. | 21.40 cm | #DIV/0! | 0.00 m | 0.00 m | D | | N | | 0 | 0 | 0 | 1 | N | N | N | | | |
| M | 9 | 51 | 1 | Q. vel. | 29.00 cm | #DIV/0! | 0.00 m | 0.00 m | D | | N | | 1 | 0 | 1 | 75 | Y | N | N | | | |
| M | 9 | 50 | 1 | Q. vel. | 26.40 cm | 4.88 m | 11.58 m | 6.71 m | DT | 70 | Y | 10 | 1 | 1 | 1 | 5 | Y | N | Y | 0 | | |
| M | 10 | 55 | 1 | Q. vel. | 14.40 cm | 0.76 m | 3.66 m | 3.66 m | AD | 99 | N | 20 | 1 | 0 | 1 | 45 | N | N | N | 0 | | |
| M | 10 | 56 | 1 | Q. vel. | 34.40 cm | 3.35 m | 17.98 m | 8.53 m | AL | 85 | N | 20 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 10 | 56 | 2 | Q. vel. | 36.90 cm | 7.47 m | 21.34 m | 6.71 m | AS | 30 | Y | 18 | 1 | 0 | 1 | 20 | N | N | N | 0 | | |
| M | 10 | 53 | 1 | Q. vel. | 16.83 cm | #DIV/0! | 0.00 m | 0.00 m | D | | | | | | | | | | | | | |
| M | 10 | 54 | 1 | Q. vel. | 18.00 cm | #DIV/0! | 0.00 m | 0.00 m | D | | | | 1 | | 1 | | Y | Y | | | 46 | 40 |
| M | 10 | 57 | 1 | Q. vel. | 16.50 cm | #DIV/0! | 0.00 m | 0.00 m | D | | | | 1 | | 1 | | N | N | | | | |

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OF H | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | 10 | 58 | 1 | Q. vel. | 29.20 cm | #DIV/0! | 0.00 m | 0.00 m | D | | | | 1 | | 1 | | Y | N | | | | |
| M | 10 | 58 | 2 | Q. vel. | 40.70 cm | #DIV/0! | 0.00 m | 0.00 m | D | | | | 1 | | 1 | | Y | N | | | | |
| M | 11 | 59 | 1 | Q. vel. | 38.50 cm | 9.45 m | 24.38 m | 8.84 m | AS | 20 | N | 12 | 1 | 0 | 1 | 0 | N | Y | N | 0 | 80 | 40 |
| M | 11 | 59 | 2 | Q. vel. | 35.10 cm | 8.08 m | 24.38 m | 10.36 m | AS | 15 | N | 8 | 1 | 0 | 1 | 0 | N | Y | N | 0 | | |
| M | 11 | 60 | 1 | Q. vel. | 35.00 cm | #DIV/0! | 0.00 m | 0.00 m | D | | | | | 1 | | | | | | | | |
| M | 12 | 61 | 1 | Q. vel. | 17.30 cm | 4.42 m | 13.11 m | 5.79 m | AL | 15 | N | 8 | 1 | 0 | 1 | 30 | N | N | Y | 0 | 27 | 15 |
| M | 12 | 62 | 1 | Q. vel. | 22.50 cm | 5.94 m | 18.59 m | 6.40 m | AS | 10 | N | 4 | 0 | 1 | 1 | 2 | N | N | N | 1 | | |
| M | 12 | 64 | 1 | Q. vel. | 28.20 cm | 6.86 m | 17.98 m | 8.84 m | AS | 20 | N | 5 | 1 | 0 | 1 | 60 | Y | N | Y | 0 | | |
| M | 12 | 65 | 1 | Q. vel. | 33.50 cm | 8.23 m | 20.42 m | 11.28 m | AS | 25 | N | 13 | 1 | 0 | 1 | 75 | N | N | Y | 0 | | |
| M | 12 | 63 | 1 | Q. vel. | 27.50 cm | 4.57 m | 17.07 m | 8.23 m | DT | 5 | N | 6 | 1 | 0 | 1 | 50 | N | Y | Y | 0 | | |
| M | 13 | 66 | 1 | Q. vel. | 23.60 cm | 5.94 m | 17.98 m | 6.71 m | AS | 15 | Y | 7 | 1 | 1 | 1 | 0 | N | N | N | 0 | 24 | 5 |
| M | 13 | 67 | 1 | Q. vel. | 32.20 cm | 5.49 m | 18.90 m | 8.23 m | AS | 20 | N | 9 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 14 | 71 | 1 | Q. vel. | 34.60 cm | 5.64 m | 18.59 m | 10.36 m | AL | 20 | N | 11 | 1 | 0 | 1 | 50 | Y | Y | N | 0 | | |
| M | 14 | 68 | 1 | Q. vel. | 32.60 cm | 7.47 m | 21.64 m | 12.80 m | AS | 5 | Y | 7 | 0 | 0 | 0 | 0 | N | N | N | 0 | 49 | 45 |
| M | 14 | 69 | 1 | Q. vel. | 6.70 cm | 1.52 m | 4.88 m | 3.66 m | AS | 20 | N | 5 | 1 | 0 | 1 | 15 | N | Y | N | 0 | | |
| M | 14 | 70 | 1 | Q. vel. | 7.30 cm | 1.83 m | 6.10 m | 4.57 m | AS | 10 | N | 3 | 1 | 0 | 1 | 3 | N | N | N | 0 | | |
| M | 14 | 72 | 1 | Q. vel. | 35.40 cm | 7.77 m | 23.77 m | 9.45 m | AS | 10 | Y | 12 | 1 | 0 | 1 | 40 | N | N | N | 0 | | |
| M | 15 | 77 | 1 | Q. vel. | 26.10 cm | 4.88 m | 19.51 m | 12.80 m | AL | 10 | N | 6 | 0 | 0 | 0 | 0 | N | N | Y | 0 | | |
| M | 15 | 80 | 1 | Q. alba | 11.90 cm | 2.74 m | 10.36 m | 8.53 m | AL | 0 | N | 1 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 15 | 73 | 1 | Q. alba | 32.60 cm | 7.32 m | 17.68 m | 8.53 m | AS | 0 | Y | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | 200 | 55 |
| M | 15 | 73 | 2 | Q. alba | 20.30 cm | 3.66 m | 11.89 m | 4.27 m | AS | 0 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 15 | 74 | 1 | Q. alba | 22.30 cm | 4.57 m | 18.90 m | 3.35 m | AS | 2 | Y | 0 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 15 | 74 | 2 | Q. alba | 20.30 cm | 3.96 m | 18.90 m | 7.32 m | AS | 0 | N | 0 | 0 | 1 | 0 | 0 | N | Y | N | 0 | | |
| M | 15 | 74 | 3 | Q. alba | 18.60 cm | 3.20 m | 12.19 m | 6.10 m | AS | 0 | N | 0 | 1 | 0 | 1 | 55 | N | Y | N | 0 | | |
| M | 15 | 75 | 1 | Q. alba | 34.40 cm | 7.77 m | 23.16 m | 6.71 m | AS | 0 | Y | 2 | 0 | 1 | 0 | 0 | N | N | Y | 1 | | |
| M | 15 | 76 | 1 | Q. vel. | 28.60 cm | 5.03 m | 18.59 m | 7.62 m | AS | 10 | N | 9 | 1 | 0 | 1 | 70 | Y | N | Y | 0 | | |
| M | 15 | 77 | 2 | Q. vel. | 35.50 cm | 6.40 m | 23.47 m | 9.75 m | AS | 0 | N | 1 | 1 | 0 | 1 | 20 | Y | N | Y | 0 | | |
| M | 15 | 78 | 1 | Q. vel. | 36.30 cm | 8.23 m | 23.47 m | 6.10 m | AS | 10 | N | 8 | 2 | 0 | 1 | 10 | Y | Y | N | 0 | | |
| M | 15 | 79 | 1 | Q. alba | 28.20 cm | 5.03 m | 19.81 m | 7.32 m | AS | 0 | Y | 1 | 0 | 2 | 1 | 1 | N | N | N | 0 | | |
| M | 15 | 80 | 2 | Q. alba | 23.20 cm | 6.86 m | 19.20 m | 6.10 m | AS | 0 | N | 1 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 16 | 81 | 2 | Q. alba | 24.10 cm | 5.94 m | 15.85 m | 7.62 m | AL | 2 | Y | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 16 | 81 | 3 | Q. alba | 17.20 cm | 4.57 m | 5.49 m | 2.13 m | AL | 2 | N | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 16 | 81 | 1 | Q. alba | 26.70 cm | 4.57 m | 17.68 m | 4.27 m | AS | 5 | N | 5 | 1 | 0 | 1 | 50 | Y | Y | N | 0 | 115 | 20 |
| M | 16 | 81 | 4 | Q. alba | 28.10 cm | 7.32 m | 18.59 m | 1.52 m | AS | 2 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 16 | 82 | 1 | Q. vel. | 4.00 cm | 1.07 m | 4.27 m | 1.83 m | AS | 5 | N | 2 | 1 | 0 | 1 | 50 | N | Y | N | 0 | | |
| M | 16 | 83 | 1 | Q. vel. | 6.90 cm | 1.52 m | 5.49 m | 1.52 m | AS | 10 | N | 3 | 0 | 1 | 0 | 40 | N | N | N | 0 | | |
| M | 16 | 84 | 1 | Q. vel. | 6.30 cm | 1.83 m | 5.49 m | 1.83 m | AS | 15 | N | 4 | 2 | 0 | 1 | 40 | N | Y | N | 0 | | |
| M | 16 | 85 | 1 | Q. vel. | 4.10 cm | 0.46 m | 3.66 m | 3.05 m | AS | 60 | N | 5 | 1 | 0 | 1 | 80 | N | Y | N | 0 | | |
| M | 16 | 85 | 2 | Q. vel. | 5.20 cm | 1.52 m | 4.27 m | 2.13 m | AS | 50 | N | 5 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 16 | 86 | 1 | Q. alba | 39.60 cm | 11.89 m | 20.73 m | 9.14 m | AS | 2 | Y | 4 | 0 | 1 | 1 | 5 | N | N | N | 0 | | |
| M | 17 | 87 | 1 | Q. alba | 23.90 cm | 4.11 m | 20.73 m | 7.62 m | AL | 20 | N | 10 | 1 | 1 | 1 | 15 | N | N | N | 3 | 120 | 15 |
| M | 17 | 91 | 1 | Q. alba | 26.70 cm | 5.49 m | 12.19 m | 4.57 m | AL | 2 | Y | 2 | 0 | 1 | 0 | 2 | Y | N | N | 0 | | |
| M | 17 | 91 | 2 | Q. alba | 10.80 cm | 1.83 m | 4.57 m | 3.05 m | AL | 10 | N | 4 | 0 | 1 | 0 | 5 | N | N | N | 0 | | |
| M | 17 | 88 | 1 | Q. alba | 26.10 cm | 5.49 m | 19.81 m | 5.79 m | AS | 5 | Y | 5 | 1 | 0 | 1 | 40 | N | N | N | 0 | | |
| M | 17 | 89 | 1 | Q. alba | 24.80 cm | 5.94 m | 17.98 m | 2.74 m | AS | 5 | Y | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 17 | 90 | 1 | Q. alba | 14.00 cm | 3.66 m | 11.58 m | 5.49 m | AS | 2 | N | 1 | 0 | 1 | 0 | 0 | Y | N | N | 0 | | |
| M | 17 | 90 | 2 | Q. alba | 21.20 cm | 5.49 m | 15.54 m | 3.05 m | AS | 2 | N | 1 | 1 | 0 | 1 | 50 | Y | Y | N | 0 | | |
| M | 18 | 92 | 1 | Q. vel. | 11.10 cm | 3.05 m | 9.14 m | 1.22 m | AS | 20 | N | 6 | 1 | 0 | 1 | 20 | N | N | N | 0 | 59 | 15 |
| M | 18 | 93 | 1 | Q. vel. | 7.30 cm | 1.83 m | 7.62 m | 1.22 m | AS | 20 | N | 5 | 1 | 0 | 1 | 20 | N | N | N | 0 | | |
| M | 18 | 94 | 1 | Q. vel. | 23.80 cm | 7.32 m | 16.46 m | 4.27 m | AS | 0 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 19 | 95 | 1 | Q. vel. | 7.10 cm | 1.83 m | 5.49 m | 1.52 m | AS | 2 | N | 2 | 1 | 0 | 1 | 10 | N | N | N | 0 | 51 | 30 |
| M | 19 | 95 | 2 | Q. vel. | 4.30 cm | 0.76 m | 4.57 m | 1.22 m | AS | 5 | N | 3 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 19 | 96 | 1 | Q. vel. | 8.80 cm | 2.74 m | 7.62 m | 1.83 m | AS | 10 | N | 5 | 1 | 0 | 1 | 10 | N | Y | N | 0 | | |
| M | 19 | 97 | 1 | Q. vel. | 17.90 cm | 5.33 m | 15.24 m | 3.96 m | AS | 5 | Y | 2 | 0 | 2 | 0 | 0 | N | N | N | 0 | | |
| M | 19 | 99 | 1 | Q. vel. | 10.20 cm | 4.27 m | 9.75 m | 1.52 m | AS | 10 | N | 3 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 19 | 100 | 1 | Q. vel. | 10.10 cm | 3.51 m | 9.75 m | 1.22 m | AS | 10 | Y | 3 | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| M | 19 | 101 | 1 | Q. vel. | 9.30 cm | 3.05 m | 11.28 m | 1.52 m | AS | 10 | N | 2 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| M | 19 | 102 | 1 | Q. vel. | 11.40 cm | 3.66 m | 11.28 m | 2.13 m | AS | 10 | N | 2 | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| M | 19 | 98 | 1 | Q. vel. | 13.50 cm | 4.57 m | 11.58 m | 3.35 m | AS | 25 | N | 9 | 1 | 0 | 1 | 50 | N | N | N | 0 | | |
| M | 20 | 110 | 1 | Q. vel. | 14.50 cm | 4.27 m | 13.72 m | 3.66 m | AL | 10 | N | 5 | 1 | 0 | 1 | 50 | N | N | Y | 0 | | |
| M | 20 | 103 | 1 | Q. vel. | 7.90 cm | 1.52 m | 7.62 m | 3.05 m | AS | 25 | N | 6 | 2 | 0 | 1 | 30 | N | Y | N | 1 | 82 | 10 |
| M | 20 | 103 | 2 | Q. vel. | 5.80 cm | 0.91 m | 6.71 m | 4.88 m | AS | 25 | N | 9 | 1 | 0 | 1 | 50 | N | Y | N | 1 | | |
| M | 20 | 104 | 1 | Q. vel. | 9.30 cm | 2.13 m | 7.62 m | 3.66 m | AS | 25 | N | 7 | 1 | 1 | 1 | 20 | N | Y | N | 0 | | |
| M | 20 | 104 | 2 | Q. vel. | 7.20 cm | 1.83 m | 6.71 m | 2.74 m | AS | 20 | N | 7 | 1 | 0 | 1 | 60 | N | N | N | 0 | | |
| M | 20 | 105 | 1 | Q. vel. | 28.30 cm | 7.77 m | 18.29 m | 6.10 m | AS | 5 | N | 8 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 20 | 106 | 1 | Q. vel. | 36.80 cm | 8.69 m | 18.90 m | 7.01 m | AS | 5 | Y | 5 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 20 | 107 | 1 | Q. alba | 5.90 cm | 1.83 m | 5.49 m | 3.05 m | AS | 5 | N | 4 | 1 | 0 | 1 | 40 | N | Y | N | 0 | | |
| M | 20 | 108 | 1 | Q. vel. | 8.40 cm | 1.68 m | 8.53 m | 3.05 m | AS | 5 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 20 | 109 | 1 | Q. vel. | 17.30 cm | 3.05 m | 17.37 m | 7.92 m | AS | 5 | N | 7 | 0 | 1 | 0 | 5 | N | N | N | 0 | | |
| M | 20 | 109 | 2 | Q. vel. | 23.00 cm | 6.40 m | 19.51 m | 5.49 m | AS | 5 | N | 3 | 0 | 1 | 1 | 2 | N | N | N | 0 | | |

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OF H | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | 20 | 110 | 2 | Q. vel. | 21.70 cm | 4.57 m | 16.76 m | 6.10 m | AS | 10 | N | 4 | 1 | 1 | 1 | 35 | N | N | Y | 1 | | |
| M | 20 | 111 | 1 | Q. vel. | 21.20 cm | 6.40 m | 15.85 m | 4.27 m | AS | 10 | N | 5 | 1 | 0 | 1 | 55 | N | N | N | 0 | | |
| M | 20 | 112 | 1 | Q. vel. | 27.00 cm | 6.86 m | 15.54 m | 4.88 m | AS | 5 | N | 5 | 1 | 1 | 1 | 35 | N | N | N | 0 | | |
| M | 20 | 113 | 1 | Q. vel. | 12.00 cm | 3.66 m | 11.28 m | 4.27 m | AS | 10 | N | 4 | 1 | 0 | 1 | 50 | N | N | N | 0 | | |
| M | 21 | 118 | 1 | Q. alba | 27.00 cm | 7.32 m | 15.24 m | 4.27 m | AL | 5 | N | 3 | 1 | 0 | 1 | 50 | Y | N | N | 0 | | |
| M | 21 | 114 | 1 | Q. alba | 9.30 cm | 5.49 m | 17.07 m | 6.71 m | AS | 2 | Y | 5 | 1 | 0 | 1 | 60 | N | Y | N | 1 | 200 | 15 |
| M | 21 | 115 | 1 | Q. alba | 27.40 cm | 5.18 m | 18.90 m | 3.96 m | AS | 5 | Y | 7 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 21 | 116 | 1 | Q. vel. | 32.90 cm | 6.40 m | 20.42 m | 9.45 m | AS | 5 | N | 5 | 1 | 1 | 1 | 30 | N | N | Y | 0 | | |
| M | 21 | 117 | 1 | Q. alba | 15.10 cm | 4.42 m | 12.80 m | 6.71 m | AS | 0 | N | 2 | 0 | 2 | 1 | 5 | N | Y | N | 0 | | |
| M | 21 | 119 | 1 | Q. vel. | 59.40 cm | 10.52 m | 20.12 m | 6.71 m | AS | 10 | Y | 8 | 1 | 1 | 1 | 35 | N | N | N | 1 | | |
| M | 22 | 121 | 1 | Q. vel. | 27.90 cm | 5.64 m | 14.02 m | 6.40 m | AL | 5 | N | 6 | 0 | 0 | 0 | 2 | Y | N | N | 0 | | |
| M | 22 | 120 | 1 | Q. vel. | 23.00 cm | 7.01 m | 15.85 m | 3.66 m | AS | 5 | Y | 8 | 0 | 1 | 0 | 5 | N | N | N | 1 | 122 | 10 |
| M | 22 | 121 | 2 | Q. vel. | 30.40 cm | 5.94 m | 18.29 m | 4.88 m | AS | 2 | Y | 5 | 0 | 0 | 0 | 2 | N | N | N | 0 | | |
| M | 23 | 122 | 1 | Q. vel. | 30.00 cm | 6.25 m | 20.73 m | 7.92 m | AL | 15 | Y | 8 | 0 | 0 | 0 | 0 | N | N | N | 0 | 60 | 10 |
| M | 23 | 122 | 2 | Q. vel. | 30.30 cm | 5.33 m | 17.98 m | 9.14 m | AL | 25 | N | 9 | 1 | 0 | 1 | 70 | N | N | N | 1 | | |
| M | 23 | 122 | 3 | Q. vel. | 30.20 cm | 6.25 m | 17.68 m | 9.75 m | AL | 25 | N | 8 | 0 | 0 | 0 | 0 | N | N | Y | 0 | | |
| M | 23 | 123 | 1 | Q. alba | 24.40 cm | 4.42 m | 13.41 m | 5.49 m | AL | 5 | N | 7 | 0 | 1 | 0 | 5 | N | N | N | 0 | | |
| M | 23 | 123 | 2 | Q. alba | 28.00 cm | 4.42 m | 18.59 m | 5.79 m | AL | 2 | Y | 3 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 23 | 124 | 1 | Q. vel. | 23.80 cm | 3.05 m | 19.20 m | 12.50 m | AL | 5 | N | 8 | 0 | 1 | 1 | 0 | N | N | Y | 0 | | |
| M | 23 | 124 | 2 | Q. vel. | 34.00 cm | 7.77 m | 19.20 m | 4.57 m | AL | 5 | Y | 10 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| M | 23 | 126 | 1 | Q. vel. | 21.20 cm | 5.79 m | 15.85 m | 5.18 m | AS | 2 | Y | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 23 | 125 | 1 | Q. vel. | 22.50 cm | 2.74 m | 6.71 m | 3.66 m | DT | 85 | N | 4 | 1 | 0 | 1 | 65 | N | N | N | 0 | | |
| M | 24 | 133 | 1 | Q. vel. | 22.30 cm | 1.37 m | 21.34 m | 15.24 m | AL | 80 | N | 30 | 1 | 0 | 1 | 40 | N | N | Y | 0 | | |
| M | 24 | 128 | 1 | Q. vel. | 19.80 cm | 2.44 m | 19.20 m | 7.01 m | AS | 40 | N | 11 | 2 | 1 | 1 | 60 | N | Y | Y | 0 | | |
| M | 24 | 129 | 1 | Q. vel. | 17.60 cm | 2.44 m | 19.20 m | 9.75 m | AS | 20 | N | 4 | 1 | 0 | 1 | 15 | N | Y | N | 0 | | |
| M | 24 | 130 | 1 | Q. vel. | 17.10 cm | 2.29 m | 21.34 m | 12.50 m | AS | 10 | N | 10 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| M | 24 | 131 | 1 | Q. alba | 18.20 cm | 2.29 m | 17.98 m | 11.89 m | AS | 10 | N | 3 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| M | 24 | 132 | 1 | Q. alba | 19.20 cm | 5.03 m | 15.24 m | 5.18 m | AS | 5 | N | 4 | 3 | 0 | 1 | 20 | N | N | N | 0 | | |
| M | 24 | 134 | 1 | Q. vel. | 34.00 cm | 9.14 m | 23.16 m | 6.71 m | AS | 10 | N | 9 | 1 | 0 | 1 | 15 | N | N | N | 0 | | |
| M | 24 | 135 | 1 | Q. alba | 17.30 cm | 3.81 m | 14.94 m | 7.62 m | AS | 0 | N | 2 | 1 | 0 | 1 | 60 | N | N | N | 0 | | |
| M | 24 | 135 | 2 | Q. alba | 17.00 cm | 2.44 m | 13.41 m | 8.84 m | AS | 10 | N | 3 | 1 | 0 | 1 | 40 | N | N | N | 0 | | |
| M | 24 | 136 | 1 | Q. vel. | 25.70 cm | 4.11 m | 20.12 m | 9.14 m | AS | 10 | N | 5 | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| M | 24 | 136 | 2 | Q. vel. | 26.60 cm | 5.03 m | 21.34 m | 6.40 m | AS | 15 | N | 8 | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| M | 24 | 137 | 1 | Q. vel. | 22.10 cm | 6.86 m | 16.76 m | 4.57 m | AS | 5 | N | 8 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 24 | 138 | 1 | Q. vel. | 14.80 cm | 4.88 m | 13.41 m | 7.01 m | AS | 5 | N | 5 | 3 | 0 | 1 | 45 | N | N | N | 0 | | |
| M | 24 | 139 | 1 | Q. vel. | 19.60 cm | 4.88 m | 13.72 m | 6.10 m | AS | 15 | N | 6 | 3 | 0 | 1 | 60 | N | N | N | 0 | | |
| M | 24 | 127 | 1 | Q. vel. | 22.40 cm | #DIV/0! | 0.00 m | 0.00 m | D | | N | | | | | | | | | | 120 | 10 |
| M | 25 | 140 | 1 | Q. vel. | 38.30 cm | 6.86 m | 19.20 m | 3.66 m | AS | 45 | Y | 25 | 1 | 1 | 1 | 45 | N | N | N | 0 | 30 | 15 |
| M | 25 | 141 | 1 | Q. vel. | 28.60 cm | 8.69 m | 20.42 m | 5.18 m | AS | 20 | N | 14 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| M | 26 | 142 | 1 | Q. vel. | 17.60 cm | 5.49 m | 14.94 m | 4.57 m | AS | 10 | Y | 3 | 0 | 1 | 1 | 0 | N | N | N | 0 | 15 | 5 |
| M | 26 | 143 | 1 | Q. vel. | 17.50 cm | 3.96 m | 9.45 m | 1.83 m | AS | 0 | N | 0 | 0 | 1 | 1 | 1 | N | N | N | 0 | | |
| M | 27 | 144 | 1 | Q. vel. | 17.10 cm | 4.11 m | 12.80 m | 4.57 m | AS | 15 | N | 6 | 1 | 1 | 1 | 2 | N | N | N | 0 | 12 | 5 |
| M | 27 | 145 | 1 | Q. vel. | 32.30 cm | 7.92 m | 17.68 m | 3.96 m | AS | 3 | N | 6 | 1 | 0 | 1 | 10 | N | N | Y | 0 | | |
| M | 27 | 146 | 1 | Q. vel. | 9.20 cm | 3.05 m | 7.62 m | 3.05 m | AS | 0 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 28 | 147 | 1 | Q. vel. | 23.20 cm | 5.03 m | 17.07 m | 7.62 m | AL-DT | 40 | N | 4 | 1 | 0 | 1 | 40 | N | N | N | 0 | 8 | 1 |
| M | 28 | 147 | 2 | Q. vel. | 30.00 cm | 2.74 m | 16.46 m | 7.62 m | AL-DT | 60 | N | 3 | 1 | 0 | 1 | 50 | Y | N | N | 0 | | |
| M | 28 | 147 | 3 | Q. vel. | 27.10 cm | 5.03 m | 17.07 m | 9.14 m | AL-DT | 40 | N | 5 | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| M | 28 | 148 | 1 | Q. vel. | 20.20 cm | 5.03 m | 18.90 m | 3.66 m | AS | 20 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| M | 28 | 149 | 1 | Q. vel. | 13.00 cm | 2.29 m | 9.14 m | 3.05 m | AS | 20 | N | 5 | 1 | 1 | 1 | 5 | N | N | N | 0 | | |
| M | 28 | 150 | 1 | Q. vel. | 30.40 cm | 4.11 m | 20.73 m | 9.75 m | AS | 20 | N | 4 | 0 | 2 | 0 | 0 | N | N | N | 1 | | |
| M | 28 | 150 | 2 | Q. vel. | 30.30 cm | 3.66 m | 20.73 m | 6.10 m | AS | 20 | N | 4 | 1 | 1 | 1 | 5 | N | N | N | 1 | | |
| M | 29 | 155 | 1 | Q. vel. | 40.00 cm | 9.45 m | 23.77 m | 3.05 m | AL | 5 | N | 5 | 1 | 0 | 1 | 30 | N | N | Y | 0 | | |
| M | 29 | 157 | 1 | Q. vel. | 34.50 cm | 5.94 m | 13.72 m | 3.05 m | AL | 30 | N | 6 | 1 | 0 | 1 | 40 | N | N | Y | 0 | | |
| M | 29 | 158 | 1 | Q. vel. | 22.00 cm | 3.35 m | 12.19 m | 2.13 m | AL | 10 | N | 3 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| M | 29 | 159 | 1 | Q. vel. | 28.90 cm | 2.74 m | 12.19 m | 4.57 m | AL-DT | 50 | N | 6 | 1 | 0 | 1 | 75 | N | Y | Y | 0 | | |
| M | 29 | 160 | 1 | Q. vel. | 32.20 cm | 5.03 m | 15.24 m | 4.57 m | AL-DT | 50 | N | 8 | 1 | 0 | 1 | 60 | N | Y | Y | 0 | | |
| M | 29 | 152 | 1 | Q. vel. | 13.40 cm | 3.96 m | 15.24 m | 3.66 m | AS | 3 | N | 1 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 29 | 153 | 1 | Q. vel. | 17.70 cm | 4.57 m | 18.90 m | 3.66 m | AS | 3 | N | 1 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 29 | 154 | 1 | Q. vel. | 18.60 cm | 4.57 m | 17.68 m | 3.05 m | AS | 5 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 29 | 156 | 1 | Q. vel. | 13.50 cm | 4.57 m | 12.19 m | 3.05 m | AS | 5 | N | 2 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 29 | 151 | 1 | Q. vel. | 18.30 cm | 3.66 m | 15.24 m | 2.44 m | DT | 40 | N | 3 | 1 | 0 | 1 | 60 | N | N | N | 0 | 95 | 40 |
| M | 30 | 175 | 3 | Q. vel. | 14.10 cm | 3.66 m | 19.20 m | 5.49 m | AL | 40 | N | 7 | 1 | 0 | 1 | 1 | N | N | N | 0 | | |
| M | 30 | 161 | 1 | Q. vel. | 12.20 cm | 2.59 m | 18.29 m | 5.79 m | AS | 20 | N | 5 | 0 | 1 | 0 | 0 | N | Y | N | 0 | 50 | 40 |
| M | 30 | 161 | 2 | Q. vel. | 13.80 cm | 3.05 m | 18.29 m | 6.10 m | AS | 20 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 162 | 1 | Q. vel. | 13.60 cm | 2.74 m | 18.59 m | 7.01 m | AS | 10 | N | 3 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 162 | 2 | Q. vel. | 16.00 cm | 2.74 m | 18.59 m | 7.01 m | AS | 10 | N | 4 | 1 | 1 | 1 | 5 | N | N | N | 0 | | |
| M | 30 | 163 | 1 | Q. vel. | 11.30 cm | 1.83 m | 14.94 m | 8.53 m | AS | 40 | N | 6 | 1 | 0 | 1 | 15 | N | N | N | 0 | | |
| M | 30 | 164 | 1 | Q. vel. | 10.20 cm | 2.44 m | 16.46 m | 7.62 m | AS | 25 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 164 | 2 | Q. vel. | 13.80 cm | 2.44 m | 16.46 m | 6.10 m | AS | 15 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 165 | 1 | Q. vel. | 13.20 cm | 2.74 m | 18.29 m | 3.05 m | AS | 5 | N | 1 | 0 | 0 | 0 | 0 | N | N | N | 2 | | |
| M | 30 | 166 | 1 | Q. vel. | 13.10 cm | 2.29 m | 17.07 m | 2.13 m | AS | 3 | N | 1 | 0 | 0 | 0 | 0 | N | Y | N | 0 | | |
| M | 30 | 166 | 2 | Q. vel. | 17.00 cm | 2.13 m | 17.07 m | 1.52 m | AS | 3 | N | 1 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 166 | 3 | Q. vel. | 14.90 cm | 4.42 m | 18.29 m | 3.05 m | AS | 20 | N | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 167 | 1 | Q. vel. | 14.90 cm | 5.03 m | 17.68 m | 3.05 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 167 | 2 | Q. vel. | 13.20 cm | 3.66 m | 17.68 m | 3.66 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 168 | 1 | Q. vel. | 17.10 cm | 4.57 m | 16.15 m | 4.27 m | AS | 30 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 1 | | |
| M | 30 | 168 | 2 | Q. vel. | 15.20 cm | 3.66 m | 16.15 m | 4.27 m | AS | 15 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 169 | 1 | Q. vel. | 12.70 cm | 4.57 m | 15.24 m | 2.44 m | AS | 5 | N | 2 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 170 | 1 | Q. vel. | 18.30 cm | 3.81 m | 12.19 m | 3.66 m | AS | 3 | N | 1 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 171 | 1 | Q. vel. | 11.50 cm | 3.66 m | 13.11 m | 2.13 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OF H | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | 30 | 172 | 1 | Q. vel. | 12.50 cm | 2.13 m | 15.85 m | 3.05 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | Y | N | 0 | | |
| M | 30 | 172 | 2 | Q. vel. | 11.20 cm | 1.83 m | 15.24 m | 7.01 m | AS | 3 | N | 1 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 172 | 3 | Q. vel. | 10.40 cm | 2.59 m | 15.24 m | 3.66 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 173 | 1 | Q. vel. | 10.00 cm | 2.59 m | 15.24 m | 6.10 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 174 | 1 | Q. vel. | 10.70 cm | 2.13 m | 14.63 m | 5.49 m | AS | 5 | N | 2 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 175 | 1 | Q. vel. | 28.20 cm | 5.94 m | 21.95 m | 7.32 m | AS | 5 | N | 4 | 0 | 1 | 0 | 0 | Y | N | N | 0 | | |
| M | 30 | 175 | 2 | Q. vel. | 25.80 cm | 5.03 m | 21.95 m | 6.10 m | AS | 5 | N | 3 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| M | 30 | 176 | 1 | Q. vel. | 10.80 cm | 2.13 m | 16.46 m | 8.53 m | AS | 20 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| M | 30 | 177 | 1 | Q. vel. | 15.00 cm | 2.74 m | 18.29 m | 7.01 m | AS | 20 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| BD | 1 | 178 | 1 | Q. vel. | 32.50 cm | 5.49 m | 18.59 m | 8.53 m | AS | 20 | N | 8 | 0 | 4 | 0 | 0 | N | N | N | 1 | 38 | 1 |
| BD | 1 | 179 | 1 | Q. vel. | 30.80 cm | 4.42 m | 18.90 m | 13.11 m | AS | 10 | N | 6 | 0 | 1 | 0 | 0 | N | N | N | 1 | | |
| BD | 1 | 179 | 2 | Q. vel. | 33.10 cm | 6.40 m | 18.29 m | 6.71 m | AL | 20 | N | 11 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BD | 1 | 180 | 1 | Q. vel. | 43.50 cm | 8.23 m | 19.51 m | 6.40 m | AL | 20 | N | 15 | 1 | 0 | 1 | 25 | Y | Y | N | 0 | | |
| BD | 1 | 181 | 1 | Q. vel. | 34.10 cm | 6.86 m | 20.12 m | 9.14 m | AS | 10 | N | 8 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BD | 1 | 182 | 1 | Q. vel. | 46.10 cm | 8.38 m | 21.95 m | 6.40 m | AS | 10 | Y | 8 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BD | 1 | 183 | 1 | Q. vel. | 41.20 cm | 13.26 m | 20.12 m | 3.96 m | AS | 5 | Y | 6 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BD | 2 | 184 | 1 | Q. vel. | 45.80 cm | 6.86 m | 17.98 m | 6.71 m | AS | 25 | N | 14 | 1 | 0 | 1 | 40 | Y | N | Y | 0 | 10 | 1 |
| BD | 3 | 184 | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 17 | 3 |
| BD | 4 | 185 | 1 | Q. vel. | 31.50 cm | 4.57 m | 21.03 m | 12.80 m | AS | 5 | N | 6 | 1 | 0 | 1 | 30 | N | Y | Y | 0 | 18 | 1 |
| BD | 5 | 186 | 1 | Q. vel. | 49.60 cm | 13.72 m | 21.95 m | 1.83 m | AS | 15 | N | 15 | 1 | 0 | 1 | 5 | N | N | N | 0 | 50 | 3 |
| BD | 5 | 187 | 1 | Q. vel. | 32.90 cm | 6.55 m | 20.73 m | 11.89 m | AL | 10 | N | 6 | 0 | 1 | 0 | 5 | Y | N | N | 0 | | |
| BD | 5 | 188 | 1 | Q. vel. | 45.50 cm | 12.19 m | 21.95 m | 6.40 m | AS | 15 | N | 11 | 0 | 0 | 0 | 0 | N | N | N | 1 | | |
| BD | 6 | 189 | 1 | Q. vel. | 35.60 cm | 9.14 m | 17.37 m | 3.66 m | AS | 25 | N | 20 | 1 | 0 | 1 | 15 | N | Y | N | 0 | 83 | 15 |
| BD | 6 | 190 | 1 | Q. vel. | 42.30 cm | 8.23 m | 21.34 m | 6.10 m | AS | 25 | N | 9 | 3 | 1 | 1 | 60 | Y | N | Y | 1 | | |
| BD | 6 | 191 | 1 | Q. vel. | 34.10 cm | 10.06 m | 18.29 m | 4.88 m | AS | 0 | Y | 2 | 0 | 2 | 0 | 0 | N | N | N | 0 | | |
| BD | 6 | 192 | 1 | Q. vel. | 27.80 cm | 8.69 m | 13.41 m | 6.71 m | AL | 0 | Y | 1 | 0 | 0 | 0 | 0 | Y | N | N | 0 | | |
| BD | 7 | 192 | 1 | Q. vel. | 39.80 cm | 3.51 m | 8.53 m | 7.32 m | AL/DT | 90 | N | 20 | 1 | 0 | 1 | 65 | N | N | Y | 0 | 72 | 10 |
| BD | 7 | 192 | 2 | Q. vel. | 32.30 cm | 8.38 m | 18.90 m | 9.14 m | AS | 45 | N | 12 | 1 | 0 | 1 | 70 | N | N | Y | 0 | | |
| BD | 7 | 193 | 1 | Q. vel. | 38.50 cm | 9.60 m | 21.64 m | 8.53 m | AS | 5 | N | 5 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| BD | 8 | | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 18 | 2 |
| BD | 9 | | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 10 | 1 |
| BD | 10 | | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 34 | 25 |
| BD | 11 | 194 | 1 | Q. vel. | 38.00 cm | 8.23 m | 19.20 m | 6.10 m | AS | 5 | Y | 7 | 0 | 1 | 0 | 0 | N | N | N | 0 | 18 | 1 |
| BD | 11 | 195 | 1 | Q. vel. | 35.00 cm | 3.96 m | 17.68 m | 7.01 m | AS | 15 | N | 7 | 1 | 0 | 1 | 60 | Y | N | Y | 0 | | |
| BD | 12 | 196 | 1 | Q. vel. | 36.00 cm | 9.14 m | 22.25 m | 10.67 m | AS | 0 | Y | 2 | 0 | 1 | 0 | 5 | N | N | N | 0 | 17 | 1 |
| BD | 13 | | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 13 | 5 |
| BD | 14 | 197 | 1 | Q. vel. | 35.20 cm | 4.42 m | 17.37 m | 10.97 m | AS | 45 | N | 11 | 0 | 3 | 1 | 40 | Y | N | N | 0 | 18 | 1 |
| BD | 14 | 198 | 1 | Q. vel. | 39.00 cm | 6.86 m | 17.98 m | 10.06 m | AS | 15 | N | 4 | 1 | 0 | 1 | 80 | N | N | N | 0 | | |
| BD | 15 | | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 14 | 2 |
| BD | 16 | 199 | 1 | Q. vel. | 38.60 cm | 5.94 m | 20.42 m | 4.27 m | AL | 25 | N | 5 | 1 | 0 | 1 | 40 | Y | N | N | 0 | 70 | 50 |
| BD | 17 | 200 | 1 | Q. vel. | 38.70 cm | 6.86 m | 28.65 m | 12.80 m | AS | 1 | N | 3 | 0 | 2 | 0 | 1 | N | N | N | 0 | 31 | 3 |
| BD | 17 | 200 | 2 | Q. vel. | 33.80 cm | 6.71 m | 26.21 m | 18.90 m | AL | 1 | Y | 3 | 0 | 1 | 1 | 1 | N | N | N | 0 | | |
| BD | 18 | 201 | 1 | Q. vel. | 44.60 cm | 9.30 m | 23.47 m | 8.23 m | AS | 1 | Y | 2 | 0 | 1 | 0 | 0 | N | N | N | 0 | 27 | 1 |
| BD | 18 | 202 | 1 | Q. vel. | 35.50 cm | 7.77 m | 17.37 m | 4.27 m | AS | 1 | Y | 3 | 1 | 0 | 1 | 60 | N | N | N | 0 | | |
| BD | 19 | 203 | 1 | Q. vel. | 39.30 cm | 9.60 m | 23.47 m | 6.10 m | AS | 5 | N | 7 | 0 | 0 | 0 | 0 | N | N | N | 0 | 37 | 3 |
| BD | 19 | 203 | 2 | Q. vel. | 32.20 cm | 7.32 m | 20.12 m | 7.32 m | AL | 5 | N | 6 | 1 | 0 | 1 | 20 | N | N | Y | 0 | | |
| BD | 19 | 204 | 1 | Q. vel. | 35.10 cm | 6.71 m | 16.46 m | 12.50 m | AS | 10 | N | 7 | 1 | 0 | 1 | 65 | N | N | N | 1 | | |
| BD | 20 | 205 | 1 | Q. vel. | 40.60 cm | 9.60 m | 23.16 m | 5.49 m | AS | 5 | N | 4 | 1 | 1 | 1 | 15 | N | Y | N | 0 | 17 | 1 |
| BD | 20 | 206 | 1 | Q. vel. | 35.20 cm | 7.77 m | 23.16 m | 7.92 m | AS | 1 | Y | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BD | 20 | 206 | 2 | Q. vel. | 38.80 cm | 7.77 m | 23.16 m | 7.92 m | AS | 1 | Y | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BD | 21 | 207 | 1 | Q. vel. | 46.20 cm | 12.34 m | 23.77 m | 6.40 m | AS | 1 | Y | 5 | 0 | 1 | 0 | 20 | N | Y | N | 0 | 74 | 15 |
| BD | 22 | | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 15 | 30 |
| BD | 23 | 208 | 1 | Q. vel. | 42.00 cm | 9.14 m | 24.08 m | 5.18 m | AS | 5 | N | 3 | 1 | 0 | 1 | 60 | N | Y | N | 1 | 12 | 20 |
| BD | 23 | 209 | 1 | Q. vel. | 37.20 cm | 7.77 m | 16.76 m | 6.10 m | DT | 40 | N | 7 | 0 | 1 | 0 | 0 | N | Y | N | 0 | | |
| BD | 24 | 210 | 1 | Q. vel. | 43.20 cm | 13.11 m | 24.69 m | 9.45 m | AL | 15 | Y | 15 | 0 | 0 | 0 | 0 | N | N | N | N | ? | ? |
| BD | 24 | 210 | 2 | Q. vel. | 48.30 cm | 13.11 m | 24.69 m | 5.79 m | AS | 15 | Y | 11 | 0 | 0 | 0 | 0 | N | N | N | N | | |
| BD | 24 | 211 | 1 | Q. vel. | 32.20 cm | 7.32 m | 12.19 m | 6.71 m | AS | 25 | N | 5 | 1 | 0 | 1 | 75 | N | N | N | N | | |
| BD | 25 | 212 | 1 | Q. vel. | 25.70 cm | 2.13 m | 10.97 m | 2.44 m | DT | 60 | N | 5 | 1 | 0 | 1 | 60 | N | N | N | 0 | 31 | 5 |
| BD | 25 | 213 | 1 | Q. vel. | 39.20 cm | 5.33 m | 17.68 m | 10.06 m | AL | 30 | N | 4 | 1 | 0 | 0 | 60 | N | N | N | 2 | | |
| BD | 26 | 214 | 1 | Q. vel. | 43.00 cm | 9.91 m | 24.08 m | 3.35 m | AS | 5 | Y | 9 | 0 | 1 | 0 | 0 | N | N | N | 0 | 17 | 1 |
| BD | 26 | 214 | 2 | Q. vel. | 43.30 cm | 10.82 m | 25.60 m | 3.66 m | AS | 5 | Y | 9 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BD | 26 | 215 | 1 | Q. vel. | 30.30 cm | 4.42 m | 12.50 m | 7.01 m | DT | 60 | Y | 6 | 1 | 0 | 1 | 35 | Y | N | Y | 1 | | |
| BD | 27 | 216 | 1 | Q. vel. | 34.70 cm | 8.38 m | 20.73 m | 9.45 m | AS | 5 | Y | 5 | 1 | 0 | 1 | 45 | N | Y | N | 1 | 48 | 7 |
| BD | 27 | 217 | 1 | Q. vel. | 34.80 cm | 8.53 m | 21.64 m | 5.79 m | AS | 10 | Y | 8 | 1 | 0 | 1 | 25 | N | Y | N | 0 | | |
| BD | 27 | 218 | 1 | Q. vel. | 36.30 cm | 5.94 m | 15.85 m | 5.49 m | AS | 30 | N | 14 | 1 | 0 | 1 | 60 | Y | Y | N | 1 | | |
| BD | 28 | 219 | 1 | Q. vel. | 41.70 cm | 11.43 m | 18.90 m | 3.96 m | AS | 20 | N | 8 | 1 | 0 | 1 | 40 | Y | Y | Y | 0 | 23 | 1 |
| BD | 28 | 220 | 1 | Q. vel. | 48.70 cm | 14.63 m | 23.47 m | 4.57 m | AS | 5 | N | 9 | 1 | 0 | 1 | 15 | N | N | N | 2 | | |
| BD | 29 | | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 22 | 5 |
| BD | 30 | | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 13 | 2 |
| BC | 1 | 335 | 1 | Q. vel. | 30.80 cm | 9.14 m | 22.86 m | 9.75 m | AS | 25 | Y | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | 4 | 1 |
| BC | 1 | 336 | 1 | Q. alba | 27.40 cm | 8.08 m | 20.42 m | 5.18 m | AS | 5 | Y | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 336 | 2 | Q. alba | 31.90 cm | 9.91 m | 20.42 m | 6.10 m | AS | 5 | Y | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 336 | 3 | Q. alba | 13.50 cm | 2.29 m | 7.62 m | 6.10 m | AL | 1 | N | 1 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 336 | 4 | Q. alba | 14.20 cm | 1.83 m | 7.62 m | 6.10 m | AL | 0 | N | 0 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 336 | 5 | Q. alba | 15.60 cm | 2.29 m | 7.62 m | 6.10 m | AL | 0 | N | 0 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 337 | 1 | Q. alba | 15.80 cm | 3.20 m | 13.11 m | 6.71 m | AL | 5 | N | 8 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 337 | 2 | Q. alba | 8.20 cm | 2.13 m | 6.40 m | 3.35 m | AL | 10 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 337 | 3 | Q. alba | 17.10 cm | 2.90 m | 7.92 m | 3.96 m | AL | 5 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 338 | 1 | Q. alba | 21.70 cm | 3.96 m | 23.47 m | 12.80 m | AL | 5 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OF H | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | 1 | 338 | 2 | Q. alba | 26.00 cm | 5.79 m | 23.47 m | 9.75 m | AS | 10 | N | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 338 | 3 | Q. alba | 31.00 cm | 8.23 m | 23.47 m | 7.62 m | AS | 5 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 338 | 4 | Q. alba | 32.30 cm | 9.45 m | 23.47 m | 5.18 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 339 | 1 | Q. alba | 14.70 cm | 2.13 m | 17.07 m | 8.23 m | AS | 5 | N | 2 | 1 | 0 | 1 | 50 | Y | Y | N | 0 | | |
| BC | 1 | 339 | 2 | Q. alba | 18.50 cm | 4.42 m | 17.07 m | 7.01 m | AS | 5 | N | 2 | 1 | 0 | 1 | 50 | Y | Y | N | 0 | | |
| BC | 1 | 340 | 1 | Q. alba | 20.70 cm | 5.94 m | 19.51 m | 8.53 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 1 | 341 | 1 | Q. alba | 19.50 cm | 5.03 m | 19.51 m | 11.28 m | AS | 10 | N | 3 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 1 | 342 | 1 | Q. alba | 20.10 cm | 3.66 m | 20.12 m | 9.14 m | AS | 20 | N | 5 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 1 | 343 | 1 | Q. vel. | 21.10 cm | 3.96 m | 21.34 m | 11.58 m | AS | 30 | N | 7 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| BC | 2 | 344 | 1 | Q. vel. | 12.00 cm | 0.15 m | 4.57 m | 3.05 m | DT | 90 | N | 15 | 1 | 0 | 1 | 85 | N | N | N | 0 | 17 | 20 |
| BC | 2 | 345 | 1 | Q. alba | 24.70 cm | 6.86 m | 18.29 m | 3.05 m | AS | 5 | N | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 2 | 346 | 1 | Q. vel. | 22.50 cm | 5.49 m | 20.42 m | 10.67 m | AS | 20 | N | 6 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 2 | 346 | 2 | Q. vel. | 23.60 cm | 5.94 m | 20.42 m | 10.67 m | AL | 20 | N | 8 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 2 | 347 | 1 | Q. alba | 22.30 cm | 3.66 m | 18.59 m | 10.67 m | AL | 25 | Y | 4 | 1 | 1 | 1 | 20 | N | N | N | 0 | | |
| BC | 2 | 348 | 1 | Q. vel. | 26.00 cm | 6.86 m | 21.34 m | 9.14 m | AL | 25 | N | 8 | 1 | 1 | 1 | 5 | N | N | N | 0 | | |
| BC | 2 | 349 | 1 | Q. alba | 25.70 cm | 4.57 m | 16.76 m | 5.18 m | AS | 20 | N | 4 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| BC | 2 | 350 | 1 | Q. vel. | 27.20 cm | 5.49 m | 23.47 m | 10.67 m | AS | 30 | N | 7 | 0 | 1 | 1 | 10 | N | N | Y | 0 | | |
| BC | 3 | 351 | 1 | Q. alba | 35.60 cm | 10.97 m | 22.86 m | 4.57 m | AS | 10 | Y | 3 | 1 | 1 | 1 | 25 | N | N | N | 0 | ?? | ?? |
| BC | 3 | 352 | 1 | Q. alba | 14.60 cm | 2.29 m | 17.07 m | 6.71 m | AL | 10 | Y | 6 | 0 | 1 | 1 | 0 | N | N | N | 1 | | |
| BC | 3 | 352 | 2 | Q. alba | 17.70 cm | 3.35 m | 17.07 m | 9.14 m | AL | 10 | N | 7 | 0 | 1 | 1 | 0 | N | N | N | 1 | | |
| BC | 3 | 353 | 1 | Q. alba | 26.90 cm | 10.97 m | 22.86 m | 8.23 m | AS | 15 | N | 6 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 3 | 354 | 1 | Q. alba | 19.10 cm | 4.11 m | 21.34 m | 10.06 m | AL | 10 | N | 3 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 3 | 354 | 2 | Q. alba | 18.00 cm | 3.20 m | 20.73 m | 10.06 m | AL | 10 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 3 | 355 | 1 | Q. vel. | 19.30 cm | 1.83 m | 21.64 m | 6.40 m | AS | 25 | N | 10 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 3 | 356 | 1 | Q. alba | 19.00 cm | 0.61 m | 12.19 m | 9.14 m | DT | 90 | N | 10 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 3 | 356 | 2 | Q. alba | 20.00 cm | 0.15 m | 5.49 m | 0.00 m | DT | 90 | N | 10 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 3 | 357 | 1 | Q. alba | 33.40 cm | 6.40 m | 30.48 m | 13.11 m | AS | 20 | Y | 9 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 3 | 357 | 2 | Q. alba | 34.60 cm | 6.86 m | 30.48 m | 13.11 m | AS | 20 | N | 8 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 3 | 357 | 3 | Q. alba | 25.10 cm | 5.94 m | 21.03 m | 12.50 m | AL | 30 | N | 9 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 3 | 358 | 1 | Q. alba | 19.40 cm | 3.66 m | 12.80 m | 0.00 m | AL | 60 | N | 8 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| BC | 3 | 359 | 1 | Q. vel. | 21.20 cm | 2.74 m | 23.16 m | 13.72 m | AS | 40 | N | 7 | 1 | 0 | 1 | 30 | N | N | N | 0 | | |
| BC | 3 | 359 | 2 | Q. vel. | 19.10 cm | 3.35 m | 23.16 m | 13.72 m | AL | 40 | N | 8 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 4 | 360 | 1 | Q. vel. | 22.70 cm | 1.98 m | 16.76 m | 12.19 m | DT | 90 | N | 14 | 1 | 0 | 1 | 65 | N | Y | N | 0 | 27 | 1 |
| BC | 4 | 361 | 1 | Q. vel. | 36.70 cm | 10.06 m | 23.77 m | 2.74 m | AS | 25 | Y | 15 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BC | 4 | 362 | 1 | Q. vel. | 20.00 cm | 2.90 m | 12.19 m | 9.14 m | AL | 85 | N | 11 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 4 | 363 | 1 | Q. vel. | 36.00 cm | 6.40 m | 21.34 m | 6.10 m | AL | 25 | N | 14 | 1 | 0 | 1 | 60 | N | N | N | 2 | | |
| BC | 4 | 364 | 1 | Q. vel. | 25.50 cm | 2.74 m | 16.76 m | 9.45 m | AL | 30 | N | 12 | 1 | 0 | 1 | 70 | N | N | N | 0 | | |
| BC | 4 | 365 | 1 | Q. alba | 16.30 cm | 3.51 m | 16.76 m | 9.45 m | AS | 20 | N | 5 | 1 | 0 | 1 | 50 | N | Y | Y | 0 | | |
| BC | 4 | 366 | 1 | Q. vel. | 18.10 cm | 4.27 m | 19.51 m | 11.28 m | AS | 50 | N | 14 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| BC | 4 | 367 | 1 | Q. vel. | 18.70 cm | 0.91 m | 18.59 m | 10.97 m | AL | 60 | N | 9 | 1 | 1 | 1 | 30 | N | N | Y | 0 | | |
| BC | 4 | 368 | 1 | Q. vel. | 12.50 cm | 1.52 m | 17.37 m | 10.06 m | AS | 5 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 4 | 368 | 2 | Q. vel. | 21.90 cm | 4.11 m | 21.95 m | 8.84 m | AS | 10 | N | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 4 | 369 | 1 | Q. vel. | 35.20 cm | 10.06 m | 23.16 m | 6.40 m | AS | 40 | N | 17 | 0 | 4 | 1 | 0 | N | Y | N | 0 | | |
| BC | 4 | 370 | 1 | Q. vel. | 25.80 cm | 8.23 m | 22.56 m | 7.01 m | AS | 40 | N | 9 | 1 | 0 | 1 | 40 | N | Y | N | 0 | | |
| BC | 4 | 371 | 1 | Q. alba | 15.40 cm | 2.29 m | 19.20 m | 12.50 m | AL | 80 | N | 10 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| BC | 4 | 372 | 1 | Q. vel. | 22.80 cm | 4.11 m | 23.16 m | 10.06 m | AS | 30 | Y | 7 | 0 | 2 | 1 | 0 | N | Y | N | 0 | | |
| BC | 5 | 373 | 1 | Q. vel. | 34.20 cm | 7.77 m | 24.99 m | 10.67 m | AS | 5 | N | 6 | 1 | 0 | 1 | 50 | N | N | Y | 0 | 25 | 1 |
| BC | 5 | 374 | 1 | Q. vel. | 34.40 cm | 6.40 m | 22.56 m | 9.75 m | AS | 20 | N | 7 | 1 | 1 | 1 | 20 | N | N | N | 1 | | |
| BC | 5 | 375 | 1 | Q. vel. | 25.40 cm | 5.03 m | 21.03 m | 10.97 m | AS | 70 | N | 8 | 2 | 1 | 1 | 10 | N | N | N | 0 | | |
| BC | 5 | 376 | 1 | Q. vel. | 23.80 cm | 7.16 m | 25.30 m | 1.22 m | AS | 30 | N | 3 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 5 | 377 | 1 | Q. vel. | 25.20 cm | 4.57 m | 21.64 m | 11.58 m | AS | 15 | Y | 2 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 5 | 378 | 1 | Q. vel. | 33.20 cm | 9.60 m | 24.99 m | 9.45 m | AS | 5 | Y | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 6 | 379 | 1 | Q. vel. | 35.00 cm | 6.10 m | 28.65 m | 9.14 m | AS | 10 | N | 12 | 0 | 1 | 1 | 0 | N | N | N | 0 | 36 | 1 |
| BC | 6 | 380 | 1 | Q. vel. | 23.80 cm | 3.81 m | 24.08 m | 14.94 m | AS | 10 | N | 6 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 6 | 381 | 1 | Q. vel. | 27.70 cm | 5.94 m | 21.64 m | 14.02 m | AL | 10 | N | 7 | 1 | 0 | 1 | 60 | N | Y | Y | 0 | | |
| BC | 6 | 382 | 1 | Q. vel. | 25.30 cm | 5.49 m | 19.81 m | 6.71 m | AS | 15 | N | 9 | 1 | 0 | 1 | 40 | Y | N | N | 0 | | |
| BC | 6 | 383 | 1 | Q. vel. | 32.10 cm | 5.79 m | 27.13 m | 13.72 m | AS | 15 | N | 7 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 6 | 383 | 2 | Q. vel. | 33.10 cm | 6.40 m | 28.96 m | 10.67 m | AS | 10 | N | 8 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 6 | 384 | 1 | Q. vel. | 23.20 cm | 1.98 m | 19.51 m | 12.50 m | AL | 80 | N | 10 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 6 | 385 | 1 | Q. vel. | 22.40 cm | 4.11 m | 21.03 m | 11.89 m | AL | 10 | N | 6 | 0 | 2 | 0 | 0 | N | N | N | 1 | | |
| BC | 6 | 386 | 1 | Q. vel. | 36.20 cm | 8.69 m | 29.57 m | 11.89 m | AL | 20 | N | 11 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 7 | 387 | 1 | Q. alba | 23.20 cm | 2.74 m | 22.25 m | 6.10 m | AS | 0 | N | 2 | 1 | 0 | 1 | 60 | N | N | N | 1 | 29 | 5 |
| BC | 7 | 388 | 1 | Q. vel. | 24.60 cm | 4.72 m | 24.69 m | 8.53 m | AS | 10 | Y | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 7 | 389 | 1 | Q. alba | 23.60 cm | 6.71 m | 20.12 m | 6.40 m | AS | 0 | N | 1 | 1 | 0 | 1 | 20 | N | N | N | 0 | | |
| BC | 7 | 389 | 2 | Q. alba | 21.00 cm | 5.03 m | 20.12 m | 11.28 m | AS | 5 | Y | 3 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | 390 | 1 | Q. alba | 21.60 cm | 4.57 m | 16.15 m | 6.71 m | AL | 10 | N | 4 | 1 | 0 | 1 | 35 | N | N | N | 0 | 215 | 80 |
| BC | 8 | 391 | 1 | Q. alba | 20.60 cm | 5.03 m | 16.46 m | 7.01 m | AL | 1 | N | 1 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | 392 | 1 | Q. alba | 14.90 cm | 1.22 m | 11.58 m | 9.14 m | AS | 20 | Y | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | 393 | 1 | Q. alba | 22.30 cm | 7.32 m | 23.16 m | 11.89 m | AS | 0 | Y | 2 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | | | Q. vel. | 26.00 cm | #DIV/0! | 0.00 m | 0.00 m | DEAD | | | | 0 | 0 | | | | | | | | |
| BC | 8 | 394 | 1 | Q. alba | 18.50 cm | 5.03 m | 13.72 m | 9.75 m | AS | 0 | N | 1 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | 394 | 2 | Q. alba | 27.60 cm | 6.40 m | 21.64 m | 9.14 m | AL | 2 | N | 2 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | 394 | 3 | Q. alba | 25.00 cm | 3.51 m | 22.86 m | 8.23 m | AL | 5 | N | 1 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | 395 | 1 | Q. alba | 12.70 cm | 3.05 m | 9.75 m | 6.10 m | AS | 2 | N | 1 | 1 | 0 | 1 | 60 | N | N | N | 0 | | |
| BC | 8 | 395 | 1 | Q. vel. | 27.20 cm | 3.20 m | 20.42 m | 9.45 m | AS | 60 | N | 6 | 1 | 0 | 1 | 10 | N | N | N | 1 | | |
| BC | 8 | 395 | 1 | Q. vel. | 33.30 cm | 9.14 m | 28.65 m | 16.15 m | AS | 10 | N | 4 | 1 | 1 | 1 | 5 | N | N | Y | 0 | | |
| BC | 8 | 395 | 1 | Q. vel | 28.80 cm | 5.94 m | 22.25 m | 12.19 m | AS | 10 | N | 5 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | 395 | 2 | Q. vel. | 27.40 cm | 5.03 m | 26.52 m | 10.67 m | AS | 2 | N | 3 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | 395 | 3 | Q. vel. | 26.40 cm | 5.94 m | 22.86 m | 7.62 m | AS | 2 | N | 3 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 8 | 396 | 1 | Q. alba | 20.70 cm | 7.32 m | 12.80 m | 6.40 m | AS | 0 | N | 0 | 1 | 0 | 1 | 20 | N | N | N | 0 | | |

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OFH | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | 9 | 398 | 1 | Q. alba | 20.10 cm | 3.20 m | 21.03 m | 10.67 m | AS | 50 | N | 10 | 1 | 0 | 1 | 45 | N | Y | N | 0 | 56 | 85 |
| BC | 9 | 399 | 1 | Q. vel. | 23.50 cm | 5.94 m | 17.68 m | 8.23 m | AL | 50 | N | 8 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| BC | 9 | 400 | 1 | Q. alba | 24.80 cm | 8.23 m | 22.56 m | 5.49 m | AS | 2 | N | 2 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 9 | 401 | 1 | Q. alba | 23.30 cm | 6.86 m | 23.47 m | 6.40 m | AS | 2 | Y | 2 | 1 | 1 | 1 | 30 | N | Y | N | 0 | | |
| BC | 9 | | | Q. vel. | 33.40 cm | #DIV/0! | 0.00 m | 0.00 m | DEAD | | | | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| BC | 9 | 402 | 1 | Q. vel. | 24.20 cm | 5.49 m | 24.08 m | 13.41 m | AS | 40 | N | 5 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 9 | 403 | 1 | Q. alba | 33.70 cm | 10.97 m | 25.30 m | 9.14 m | AS | 5 | N | 3 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 9 | 404 | 1 | Q. vel. | 26.90 cm | 6.40 m | 21.34 m | 12.80 m | AS | 20 | N | 7 | 1 | 0 | 1 | 60 | Y | N | N | 0 | | |
| BC | 10 | 405 | 1 | Q. vel. | 34.90 cm | 8.23 m | 25.60 m | 10.06 m | AS | 5 | N | 7 | 1 | 0 | 1 | 10 | N | N | N | 1 | 79 | 70 |
| BC | 10 | 406 | 1 | Q. vel. | 29.80 cm | 6.86 m | 26.82 m | 15.54 m | AS | 15 | N | 7 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 10 | 407 | 1 | Q. vel. | 24.60 cm | 6.71 m | 21.34 m | 12.19 m | AS | 5 | N | 3 | 1 | 0 | 1 | 70 | N | N | N | 1 | | |
| BC | 10 | 408 | 1 | Q. vel. | 33.10 cm | 9.91 m | 25.91 m | 11.58 m | AS | 10 | Y | 15 | 0 | 2 | 0 | 0 | N | N | N | 0 | | |
| BC | 10 | 409 | 1 | Q. alba | 22.30 cm | 8.69 m | 21.03 m | 8.84 m | AS | 10 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 10 | 410 | 1 | Q. alba | 9.30 cm | 1.83 m | 10.36 m | 4.27 m | AS | 10 | N | 6 | 1 | 0 | 1 | 15 | N | N | N | 0 | | |
| BC | 10 | 411 | 1 | Q. vel. | 24.50 cm | 7.16 m | 25.91 m | 10.06 m | AS | 5 | N | 6 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 10 | 411 | 2 | Q. vel. | 28.30 cm | 7.77 m | 26.52 m | 8.84 m | AS | 5 | N | 6 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 10 | 412 | 1 | Q. vel. | 26.50 cm | 6.86 m | 26.21 m | 14.63 m | AS | 20 | N | 11 | 1 | 2 | 1 | 15 | N | N | N | 0 | | |
| BC | 10 | 413 | 1 | Q. vel. | 29.50 cm | 7.77 m | 26.21 m | 9.75 m | AS | 5 | N | 5 | 0 | 2 | 0 | 0 | N | N | N | 0 | | |
| BC | 11 | 414 | 1 | Q. vel. | 28.90 cm | 7.77 m | 26.52 m | 13.41 m | AS | 5 | N | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | 40 | 50 |
| BC | 11 | 415 | 1 | Q. vel. | 29.40 cm | 5.94 m | 21.03 m | 10.36 m | AS | 30 | N | 10 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 11 | 416 | 1 | Q. vel. | 36.90 cm | 10.52 m | 24.38 m | 9.75 m | AS | 15 | Y | 8 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 11 | 417 | 1 | Q. vel. | 22.30 cm | 3.35 m | 20.42 m | 11.28 m | AS | 15 | N | 3 | 0 | 0 | 1 | 20 | N | N | N | 2 | | |
| BC | 11 | 418 | 1 | Q. alba | 25.70 cm | 6.40 m | 21.64 m | 10.97 m | AS | 0 | Y | 3 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| BC | 11 | 419 | 1 | Q. vel. | 22.70 cm | 3.05 m | 16.76 m | 15.24 m | AL | 10 | N | 5 | 1 | 0 | 1 | 80 | Y | N | N | 0 | | |
| BC | 11 | 420 | 1 | Q. vel. | 29.20 cm | 6.10 m | 24.38 m | 12.50 m | AL | 10 | N | 5 | 1 | 0 | 1 | 70 | Y | N | N | 0 | | |
| BC | 11 | 421 | 1 | Q. vel. | 20.90 cm | 4.11 m | 12.19 m | 10.67 m | AL | 5 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 11 | 421 | 2 | Q. vel. | 25.70 cm | 3.51 m | 13.11 m | 11.89 m | AL | 10 | N | 6 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 11 | 421 | 3 | Q. vel. | 37.20 cm | 9.60 m | 25.91 m | 10.67 m | AS | 5 | N | 4 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 12 | 422 | 1 | Q. vel. | 16.50 cm | 3.20 m | 18.29 m | 10.06 m | AS | 50 | N | 8 | 1 | 0 | 1 | 50 | Y | N | N | 1 | 52 | 15 |
| BC | 12 | 423 | 1 | Q. vel. | 27.60 cm | 5.94 m | 28.96 m | 12.80 m | AS | 40 | N | 9 | 1 | 0 | 1 | 60 | N | N | N | 2 | | |
| BC | 12 | 424 | 1 | Q. vel. | 35.10 cm | 8.69 m | 27.13 m | 5.79 m | AL | 30 | N | 13 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 12 | 425 | 1 | Q. vel. | 25.80 cm | 4.11 m | 21.03 m | 7.92 m | AL | 30 | N | 8 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 12 | 425 | 2 | Q. vel. | 25.50 cm | 4.42 m | 22.86 m | 12.50 m | AL | 30 | N | 7 | 1 | 1 | 1 | 10 | N | N | N | 0 | | |
| BC | 12 | 426 | 1 | Q. vel. | 25.80 cm | 5.03 m | 25.60 m | 13.41 m | AS | 60 | N | 8 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BC | 12 | 427 | 1 | Q. vel. | 27.80 cm | 5.94 m | 27.43 m | 11.58 m | AS | 15 | Y | 6 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BC | 12 | 428 | 1 | Q. vel. | 30.80 cm | 7.77 m | 27.13 m | 11.28 m | AS | 10 | N | 8 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 12 | 429 | 1 | Q. vel. | 20.20 cm | 2.29 m | 13.11 m | 11.58 m | AL | 5 | N | 4 | 1 | 1 | 1 | 50 | N | N | N | 0 | | |
| BC | 12 | 429 | 2 | Q. vel. | 21.40 cm | 3.66 m | 19.51 m | 10.67 m | AL | 5 | N | 3 | 0 | 1 | 0 | 50 | N | N | N | 0 | | |
| BC | 12 | 430 | 1 | Q. vel. | 34.20 cm | 8.23 m | 28.65 m | 14.63 m | AS | 5 | Y | 10 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 12 | 431 | 1 | Q. vel. | 25.60 cm | 3.66 m | 18.29 m | 8.53 m | AL | 10 | N | 9 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BC | 12 | 432 | 1 | Q. vel. | 13.00 cm | 1.83 m | 17.07 m | 9.14 m | AS | 20 | N | 5 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BC | 13 | 433 | 1 | Q. vel. | 35.20 cm | 8.53 m | 27.13 m | 9.14 m | AS | 10 | N | 10 | 0 | 1 | 1 | 0 | N | N | N | 0 | 27 | 90 |
| BC | 13 | 433 | 2 | Q. vel. | 25.60 cm | 5.33 m | 16.76 m | 3.96 m | AL | 15 | N | 5 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BC | 13 | 434 | 1 | Q. vel. | 32.20 cm | 5.94 m | 26.21 m | 11.58 m | AS | 30 | N | 9 | 1 | 0 | 1 | 50 | N | N | N | 1 | | |
| BC | 13 | 435 | 1 | Q. vel. | 29.40 cm | 5.49 m | 24.38 m | 11.58 m | AS | 20 | N | 10 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 13 | 436 | 1 | Q. vel. | 28.70 cm | 7.77 m | 22.56 m | 11.58 m | AS | 20 | N | 9 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 13 | 437 | 1 | Q. vel. | 26.70 cm | 3.20 m | 24.38 m | 7.62 m | AL | 20 | N | 9 | 1 | 0 | 1 | 40 | N | N | N | 0 | | |
| BC | 13 | 437 | 2 | Q. vel. | 40.80 cm | 13.26 m | 27.43 m | 9.75 m | AS | 5 | N | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 14 | 438 | 1 | Q. vel. | 28.80 cm | 7.77 m | 25.91 m | 7.92 m | AS | 20 | N | 3 | 0 | 1 | 1 | 0 | N | N | N | 0 | 22 | 80 |
| BC | 14 | 439 | 1 | Q. vel. | 19.80 cm | 2.74 m | 24.69 m | 13.41 m | AS | 40 | N | 4 | 1 | 2 | 1 | 15 | N | N | N | 0 | | |
| BC | 14 | 440 | 1 | Q. vel. | 21.60 cm | 2.29 m | 20.73 m | 15.85 m | AS | 10 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 14 | 441 | 1 | Q. vel. | 23.10 cm | 2.59 m | 21.95 m | 15.85 m | AS | 10 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 14 | 442 | 1 | Q. vel. | 28.30 cm | 6.55 m | 18.29 m | 12.19 m | AL | 20 | N | 7 | 0 | 0 | 1 | 2 | N | N | Y | 0 | | |
| BC | 14 | 443 | 1 | Q. vel. | 25.50 cm | 3.20 m | 16.46 m | 11.89 m | AL | 10 | N | 5 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 14 | 444 | 1 | Q. vel. | 33.00 cm | 7.32 m | 29.87 m | 11.58 m | AS | 10 | N | 10 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 14 | 445 | 1 | Q. vel. | 33.60 cm | 6.86 m | 25.60 m | 7.92 m | AS | 15 | N | 10 | 1 | 0 | 1 | 60 | N | N | Y | 0 | | |
| BC | 14 | 445 | 2 | Q. vel. | 28.00 cm | 5.79 m | 22.56 m | 10.97 m | AL | 10 | N | 8 | 1 | 1 | 1 | 10 | N | N | Y | 0 | | |
| BC | 14 | 446 | 1 | Q. vel. | 34.60 cm | 10.06 m | 25.30 m | 10.36 m | AS | 5 | Y | 7 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 14 | 447 | 1 | Q. vel. | 37.10 cm | 7.32 m | 31.70 m | 10.97 m | AS | 15 | N | 9 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 14 | 448 | 1 | Q. vel. | 30.60 cm | 7.77 m | 28.04 m | 10.97 m | AS | 2 | N | 9 | 1 | 3 | 1 | 10 | N | N | N | 0 | | |
| BC | 15 | 449 | 1 | Q. vel. | 25.60 cm | 3.20 m | 20.12 m | 13.11 m | AS | 20 | N | 6 | 0 | 0 | 1 | 0 | N | N | N | 0 | 59 | 80 |
| BC | 15 | 449 | 2 | Q. vel. | 22.20 cm | 3.66 m | 18.29 m | 11.58 m | AL | 40 | N | 6 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| BC | 15 | 450 | 1 | Q. vel. | 32.00 cm | 5.94 m | 28.04 m | 9.75 m | AS | 10 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 15 | 451 | 1 | Q. vel. | 26.80 cm | 4.57 m | 19.51 m | 10.06 m | AL | 10 | N | 8 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 15 | 451 | 2 | Q. vel. | 27.60 cm | 5.49 m | 19.51 m | 10.67 m | AL | 5 | N | 5 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 15 | 451 | 3 | Q. vel. | 21.80 cm | 0.00 m | 18.90 m | 12.19 m | AL | 60 | N | 5 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 15 | 452 | 1 | Q. vel. | 24.40 cm | 5.03 m | 21.34 m | 11.89 m | AL | 10 | N | 5 | 1 | 0 | 1 | 40 | Y | N | N | 0 | | |
| BC | 15 | 452 | 2 | Q. vel. | 26.50 cm | 5.03 m | 22.56 m | 14.94 m | AL | 10 | N | 7 | 1 | 0 | 1 | 40 | Y | N | N | 0 | | |
| BC | 15 | 453 | 1 | Q. vel. | 35.20 cm | 9.14 m | 23.77 m | 8.23 m | AL | 5 | N | 8 | 1 | 1 | 1 | 10 | N | N | N | 0 | | |
| BC | 15 | 453 | 2 | Q. vel. | 21.60 cm | 1.83 m | 12.50 m | 7.92 m | DT | 80 | N | 6 | 1 | 1 | 1 | 10 | N | N | N | 0 | | |

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OFH | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | 15 | 455 | 1 | Q. vel. | 27.50 cm | 3.66 m | 22.86 m | 13.11 m | AS | 5 | N | 6 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 16 | 456 | 1 | Q. vel. | 27.20 cm | 4.57 m | 28.04 m | 15.85 m | AS | 10 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | ?? | ??? |
| BC | 16 | 456 | 2 | Q. vel. | 28.20 cm | 8.23 m | 28.04 m | 7.01 m | AS | 5 | N | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 16 | 456 | 3 | Q. vel. | 33.00 cm | 6.40 m | 28.04 m | 12.19 m | AS | 10 | N | 7 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 16 | 457 | 1 | Q. vel. | 32.50 cm | 6.86 m | 27.13 m | 7.32 m | AS | 5 | N | 4 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 16 | 457 | 2 | Q. vel. | 32.40 cm | 6.86 m | 27.13 m | 7.32 m | AL | 10 | N | 11 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 16 | 457 | 3 | Q. vel. | 30.60 cm | 5.79 m | 27.13 m | 7.32 m | AS | 10 | N | 11 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 16 | 457 | 4 | Q. vel. | 21.20 cm | 3.51 m | 16.15 m | 4.27 m | AL | 5 | N | 4 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 16 | 458 | 1 | Q. vel. | 14.00 cm | 1.83 m | 6.10 m | 5.49 m | AL | 80 | N | 6 | 1 | 0 | 1 | 80 | N | N | N | 0 | | |
| BC | 16 | 459 | 1 | Q. vel. | 27.20 cm | 7.77 m | 20.12 m | 9.45 m | AS | 5 | N | 2 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 16 | 459 | 2 | Q. vel. | 14.00 cm | 0.61 m | 7.62 m | 6.10 m | AL | 70 | N | 5 | 0 | 0 | 1 | 0 | N | Y | N | 1 | | |
| BC | 16 | 460 | 1 | Q. vel. | 24.00 cm | 2.29 m | 16.76 m | 10.67 m | AL | 25 | N | 8 | 1 | 0 | 1 | 80 | N | N | Y | 0 | | |
| BC | 16 | 461 | 1 | Q. vel. | 22.40 cm | 3.20 m | 23.77 m | 11.58 m | AS | 15 | N | 7 | 1 | 1 | 1 | 25 | N | N | N | 1 | | |
| BC | 16 | 462 | 1 | Q. vel. | 21.10 cm | 2.29 m | 17.07 m | 15.24 m | AL | 25 | N | 7 | 1 | 1 | 1 | 40 | Y | N | N | 1 | | |
| BC | 17 | 463 | 1 | Q. vel. | 30.20 cm | 6.86 m | 25.91 m | 11.28 m | AS | 20 | N | 6 | 0 | 1 | 1 | 0 | N | Y | N | 0 | 10 | 2 |
| BC | 17 | 463 | 2 | Q. vel. | 23.80 cm | 3.05 m | 25.91 m | 16.46 m | AS | 15 | N | 5 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| BC | 17 | 463 | 3 | Q. vel. | 28.80 cm | 6.86 m | 22.86 m | 8.23 m | AS | 2 | Y | 2 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| BC | 18 | 464 | 1 | Q. vel. | 27.00 cm | 6.86 m | 23.16 m | 10.36 m | AS | 5 | Y | 1 | 0 | 0 | 1 | 0 | N | N | N | 0 | 25 | 5 |
| BC | 18 | 465 | 1 | Q. vel. | 23.40 cm | 5.94 m | 26.82 m | 10.97 m | AS | 5 | Y | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 18 | 465 | 2 | Q. vel. | 32.00 cm | 7.32 m | 26.82 m | 10.36 m | AS | 5 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 18 | 466 | 1 | Q. vel. | 26.40 cm | 6.86 m | 20.73 m | 7.01 m | AS | 5 | N | 3 | 0 | 0 | 1 | 0 | N | Y | N | 0 | | |
| BC | 18 | 467 | 1 | Q. vel. | 28.00 cm | 5.03 m | 21.95 m | 10.97 m | AS | 15 | N | 6 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 18 | 468 | 1 | Q. vel. | 20.90 cm | 3.66 m | 16.15 m | 9.14 m | AS | 20 | N | 4 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 18 | 468 | 2 | Q. vel. | 20.50 cm | 3.51 m | 17.07 m | 10.97 m | AS | 40 | N | 9 | 1 | 0 | 1 | 30 | N | N | N | 0 | | |
| BC | 18 | 469 | 1 | Q. vel. | 25.00 cm | 3.20 m | 18.90 m | 9.14 m | AS | 40 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 18 | 470 | 1 | Q. vel. | 27.50 cm | 6.86 m | 23.16 m | 7.92 m | AS | 20 | N | 6 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 19 | 471 | 1 | Q. vel. | 30.00 cm | 10.06 m | 22.86 m | 5.79 m | AS | 5 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | 60 | 5 |
| BC | 19 | 472 | 1 | Q. vel. | 17.20 cm | 4.57 m | 13.11 m | 6.71 m | AS | 40 | N | 5 | 1 | 1 | 1 | 50 | Y | N | N | 0 | | |
| BC | 19 | 473 | 1 | Q. vel. | 29.90 cm | 7.32 m | 21.95 m | 10.67 m | AS | 10 | N | 6 | 1 | 1 | 1 | 5 | N | N | N | 0 | | |
| BC | 19 | 473 | 2 | Q. vel. | 32.50 cm | 5.03 m | 26.52 m | 15.24 m | AS | 5 | N | 4 | 1 | 2 | 1 | 2 | N | N | N | 0 | | |
| BC | 19 | 474 | 1 | Q. vel. | 22.20 cm | 3.66 m | 17.98 m | 7.01 m | AS | 10 | N | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 19 | 475 | 1 | Q. vel. | 14.00 cm | 3.05 m | 11.28 m | 2.13 m | AS | 5 | N | 2 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 19 | 476 | 1 | Q. vel. | 31.30 cm | 7.32 m | 21.34 m | 6.40 m | AS | 2 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 20 | 477 | 1 | Q. vel. | 29.90 cm | 5.49 m | 19.81 m | 6.10 m | AS | 25 | N | 12 | 0 | 1 | 1 | 0 | N | N | N | 0 | 40 | 1 |
| BC | 20 | 478 | 1 | Q. vel. | 31.50 cm | 7.32 m | 20.12 m | 7.32 m | AS | 15 | Y | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 21 | 479 | 1 | Q. vel. | 34.50 cm | 9.14 m | 19.81 m | 6.71 m | AS | 15 | N | 9 | 1 | 0 | 1 | 30 | N | N | N | 0 | 34 | 1 |
| BC | 21 | 480 | 1 | Q. vel. | 28.10 cm | 2.74 m | 27.43 m | 15.54 m | AS | 10 | N | 6 | 1 | 0 | 1 | 50 | N | N | N | 0 | | |
| BC | 21 | 481 | 1 | Q. vel. | 35.80 cm | 7.77 m | 28.04 m | 3.66 m | AS | 15 | N | 10 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 21 | 482 | 1 | Q. vel. | 31.40 cm | 9.14 m | 22.86 m | 3.05 m | AS | 30 | N | 16 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 22 | 483 | 1 | Q. vel. | 42.60 cm | 9.60 m | 25.91 m | 9.45 m | AS | 40 | N | 20 | 0 | 1 | 0 | 0 | N | N | N | 0 | 40 | 5 |
| BC | 22 | 484 | 1 | Q. vel. | 30.90 cm | 6.40 m | 26.21 m | 9.45 m | AS | 20 | N | 5 | 0 | 1 | 1 | 25 | N | N | N | 0 | | |
| BC | 22 | 484 | 2 | Q. vel. | 29.30 cm | 5.64 m | 17.07 m | 10.36 m | AL | 30 | N | 6 | 0 | 1 | 1 | 25 | N | N | N | 0 | | |
| BC | 22 | 484 | 3 | Q. vel. | 23.00 cm | 3.81 m | 20.12 m | 7.92 m | AL | 30 | N | 6 | 0 | 1 | 1 | 25 | N | N | N | 0 | | |
| BC | 22 | 485 | 1 | Q. vel. | 45.40 cm | 10.52 m | 28.96 m | 6.10 m | AS | 20 | Y | 16 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 22 | 485 | 2 | Q. vel. | 36.30 cm | 11.43 m | 28.04 m | 9.75 m | AS | 20 | N | 11 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 23 | 486 | 1 | Q. vel. | 21.10 cm | 2.74 m | 24.99 m | 12.80 m | AS | 5 | N | 2 | 0 | 1 | 1 | 0 | N | N | N | 1 | 50 | 5 |
| BC | 23 | 487 | 1 | Q. vel | 16.10 cm | 1.68 m | 22.86 m | 21.34 m | AL | 10 | N | 3 | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| BC | 23 | 488 | 1 | Q. alba | 27.10 cm | 6.71 m | 25.30 m | 6.40 m | AS | 10 | Y | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 23 | 489 | 1 | Q. vel. | 22.90 cm | 3.20 m | 24.99 m | 3.05 m | AS | 40 | N | 9 | 1 | 0 | 1 | 20 | N | N | N | 0 | | |
| BC | 23 | 490 | 1 | Q. vel. | 25.10 cm | 4.88 m | 25.60 m | 12.80 m | AS | 40 | N | 10 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| BC | 23 | 491 | 1 | Q. alba | 32.50 cm | 7.32 m | 26.82 m | 5.79 m | AS | 10 | N | 8 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 23 | 492 | 1 | Q. vel. | 14.50 cm | 0.61 m | 4.57 m | 0.00 m | DT | 90 | N | 15 | 0 | 0 | 0 | 60 | N | Y | N | 0 | | |
| BC | 23 | 493 | 1 | Q. vel. | 30.80 cm | 7.77 m | 27.43 m | 7.62 m | AS | 30 | N | 15 | 0 | 1 | 1 | 0 | N | N | N | 1 | | |
| BC | 23 | 494 | 1 | Q. vel. | 26.10 cm | 4.11 m | 9.14 m | 7.92 m | AS | 50 | N | 7 | 1 | 0 | 1 | 10 | N | N | Y | 0 | | |
| BC | 23 | 495 | 1 | Q. alba | 31.80 cm | 7.77 m | 29.26 m | 10.97 m | AS | 5 | N | 3 | 0 | 0 | 1 | 0 | N | N | N | 1 | | |
| BC | 23 | 496 | 1 | Q. alba | 14.10 cm | 2.13 m | 19.81 m | 18.29 m | AL | 10 | N | 4 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| BC | 23 | 497 | 1 | Q. vel. | 19.00 cm | 1.37 m | 25.91 m | 13.72 m | AL | 50 | N | 9 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| BC | 23 | 498 | 1 | Q. alba | 23.70 cm | 4.57 m | 26.82 m | 10.67 m | AS | 5 | Y | 3 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 23 | 499 | 1 | Q. vel. | 30.80 cm | 6.40 m | 27.74 m | 9.14 m | AS | 10 | N | 8 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 23 | 500 | 1 | Q. alba | 25.70 cm | 5.49 m | 25.30 m | 12.19 m | AS | 5 | N | 2 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 24 | 501 | 1 | Q. alba | 20.60 cm | 5.03 m | 23.16 m | 13.72 m | AS | 5 | N | 3 | 0 | 1 | 1 | 0 | N | N | N | 0 | 40 | 15 |
| BC | 24 | 501 | 2 | Q. alba | 28.60 cm | 6.86 m | 24.69 m | 15.85 m | AS | 20 | Y | 7 | 1 | 1 | 1 | 5 | N | N | N | 0 | | |
| BC | 24 | 502 | 1 | Q. vel. | 26.50 cm | 4.11 m | 24.99 m | 11.58 m | AS | 30 | N | 10 | 1 | 0 | 1 | 50 | N | N | Y | 0 | | |
| BC | 24 | 503 | 1 | Q. vel. | 22.70 cm | 5.94 m | 22.86 m | 8.84 m | AS | 15 | N | 7 | 1 | 0 | 1 | 15 | N | N | Y | 0 | | |
| BC | 24 | 504 | 1 | Q. vel. | 20.60 cm | 2.29 m | 22.86 m | 9.14 m | AL | 20 | N | 8 | 3 | 0 | 1 | 20 | N | N | N | 0 | | |
| BC | 24 | 505 | 1 | Q. vel. | 20.50 cm | 3.51 m | 25.91 m | 9.75 m | AS | 20 | N | 10 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 24 | 506 | 1 | Q. alba | 25.50 cm | 4.88 m | 23.47 m | 10.97 m | AS | 5 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 24 | 507 | 1 | Q. alba | 18.80 cm | 4.88 m | 27.13 m | 11.89 m | AS | 5 | N | 3 | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| BC | 24 | 508 | 1 | Q. alba | 19.90 cm | 4.57 m | 27.13 m | 11.58 m | AS | 5 | N | 2 | 0 | 0 | 1 | 0 | N | N | Y | 0 | | |

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OF H | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | 24 | 510 | 1 | Q. alba | 15.50 cm | 2.90 m | 17.68 m | 13.72 m | AS | 20 | N | 4 | 1 | 1 | 1 | 10 | N | N | N | 0 | | |
| BC | 24 | 511 | 1 | Q. alba | 13.40 cm | 2.13 m | 14.33 m | 9.75 m | AS | 15 | N | 7 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| BC | 24 | 512 | 1 | Q. vel. | 37.10 cm | 7.77 m | 31.70 m | 14.94 m | AS | 2 | N | 8 | 0 | 0 | 1 | 0 | N | N | N | 1 | | |
| BC | 24 | 513 | 1 | Q. alba | 13.50 cm | 2.59 m | 15.54 m | 6.71 m | AS | 15 | N | 1 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 24 | 513 | 2 | Q. alba | 12.50 cm | 0.91 m | 16.76 m | 13.72 m | AS | 5 | N | 4 | 1 | 0 | 1 | 50 | N | N | Y | 0 | | |
| BC | 24 | 514 | 1 | Q. alba | 10.70 cm | 1.52 m | 14.94 m | 4.57 m | AL | 5 | N | 2 | 1 | 0 | 1 | 30 | N | N | N | 0 | | |
| BC | 24 | 514 | 2 | Q. alba | 13.20 cm | 1.83 m | 14.94 m | 4.57 m | AL | 2 | N | 1 | 1 | 0 | 1 | 30 | N | N | Y | 0 | | |
| BC | 24 | 515 | 1 | Q. alba | 19.50 cm | 5.94 m | 19.51 m | 9.14 m | AS | 2 | N | 1 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 24 | 516 | 1 | Q. alba | 14.80 cm | 3.66 m | 18.29 m | 9.14 m | AL | 2 | N | 1 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| BC | 24 | 517 | 1 | Q. alba | 20.10 cm | 3.66 m | 20.42 m | 11.28 m | AL | 15 | N | 4 | 1 | 0 | 1 | 10 | N | N | N | 1 | | |
| BC | 24 | 518 | 1 | Q. alba | 19.40 cm | 5.49 m | 22.86 m | ####### | AS | 2 | N | 2 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 24 | 518 | 2 | Q. alba | 18.50 cm | 3.35 m | 22.86 m | 13.72 m | AL | 2 | N | 2 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 24 | 518 | 3 | Q. alba | 19.00 cm | 4.11 m | 25.30 m | 9.75 m | AL | 2 | N | 2 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 25 | 519 | 1 | Q. alba | 29.50 cm | 8.23 m | 35.97 m | 11.58 m | AS | 5 | N | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | 80 | 15 |
| BC | 25 | 519 | 2 | Q. alba | 19.30 cm | 4.72 m | 21.95 m | 14.63 m | AS | 10 | N | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 25 | 520 | 1 | Q. vel. | 27.30 cm | 3.20 m | 25.30 m | 12.19 m | AS | 40 | N | 8 | 1 | 0 | 1 | 50 | N | N | N | 1 | | |
| BC | 25 | 521 | 1 | Q. alba | 12.90 cm | 0.61 m | 11.28 m | 8.23 m | AS | 5 | N | 3 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 25 | 521 | 2 | Q. alba | 23.90 cm | 3.35 m | 23.47 m | 7.01 m | AS | 2 | N | 1 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| BC | 25 | 522 | 1 | Q. alba | 23.50 cm | 6.40 m | 23.77 m | 10.06 m | AS | 15 | N | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 25 | 523 | 1 | Q. alba | 18.00 cm | 5.64 m | 14.02 m | 8.53 m | AL | 2 | N | 2 | 0 | 1 | 0 | 0 | N | N | Y | 0 | | |
| BC | 25 | 523 | 2 | Q. alba | 13.80 cm | 2.44 m | 12.50 m | 8.53 m | AL | 5 | N | 3 | 0 | 1 | 0 | 0 | N | N | Y | 0 | | |
| BC | 25 | 524 | 1 | Q. vel. | 26.70 cm | 4.72 m | 20.42 m | 11.28 m | AL | 20 | N | 9 | 0 | 2 | 0 | 0 | N | N | N | 0 | | |
| BC | 25 | | | Q. vel. | 25.80 cm | #DIV/0! | 0.00 m | 0.00 m | DEAD | | N | | 1 | 0 | 1 | 5 | N | N | Y | 0 | | |
| BC | 25 | 525 | 1 | Q. vel. | 23.30 cm | 4.11 m | 25.60 m | 16.15 m | AS | 5 | N | 4 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BC | 25 | 526 | 1 | Q. vel. | 25.40 cm | 4.57 m | 28.35 m | 16.46 m | AS | 10 | N | 5 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BC | 25 | 527 | 1 | Q. vel. | 29.90 cm | 5.94 m | 28.96 m | 10.67 m | AD | 95 | N | 18 | 0 | 1 | 1 | 0 | N | N | N | 1 | | |
| BC | 25 | 528 | 1 | Q. alba | 27.00 cm | 5.49 m | 17.37 m | 11.28 m | AS | 2 | N | 2 | 1 | 1 | 1 | 5 | N | N | N | 3 | | |
| BC | 25 | | 1 | Q. vel. | 33.70 cm | #DIV/0! | 0.00 m | 0.00 m | DEAD | | N | | | | | 0 | N | N | Y | | | |
| BC | 25 | | 2 | Q. vel. | 34.70 cm | #DIV/0! | 0.00 m | 0.00 m | DEAD | | N | | | | | 0 | N | N | Y | | | |
| BC | 25 | | 3 | Q. vel. | 29.50 cm | #DIV/0! | 0.00 m | 0.00 m | DEAD | | N | | | | | 0 | N | N | Y | | | |
| BC | 25 | 529 | 1 | Q. alba | 11.00 cm | 1.83 m | 12.19 m | 7.62 m | AS | 15 | N | 5 | 1 | 0 | 1 | 25 | N | N | N | 0 | | |
| BC | 26 | 530 | 1 | Q. vel. | 28.30 cm | 2.74 m | 19.51 m | 6.71 m | AL | 75 | N | 6 | 1 | 0 | 1 | 30 | N | N | N | 0 | 31 | 45 |
| BC | 26 | 531 | 1 | Q. vel. | 46.50 cm | 10.06 m | 30.78 m | 9.45 m | AS | 35 | Y | 13 | 1 | 1 | 1 | 5 | N | N | N | 0 | | |
| BC | 26 | 532 | 1 | Q. vel. | 19.50 cm | 2.90 m | 23.47 m | 14.33 m | AS | 30 | N | 8 | 1 | 1 | 1 | 60 | N | N | N | 0 | | |
| BC | 26 | 533 | 1 | Q. vel. | 34.60 cm | 8.69 m | 32.92 m | 14.63 m | AS | 20 | N | 12 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 26 | 534 | 1 | Q. vel. | 25.80 cm | 5.03 m | 21.34 m | 10.67 m | AL | 30 | N | 6 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 26 | 535 | 1 | Q. vel. | 27.90 cm | 4.57 m | 25.91 m | 11.58 m | AS | 15 | N | 5 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| BC | 26 | 535 | 2 | Q. vel. | 25.00 cm | 3.35 m | 27.13 m | 13.72 m | AL | 20 | Y | 8 | 1 | 1 | 1 | 40 | N | N | N | 1 | | |
| BC | 26 | 536 | 1 | Q. vel. | 27.50 cm | 5.03 m | 24.99 m | 7.01 m | AS | 15 | N | 9 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 26 | 537 | 1 | Q. vel. | 21.30 cm | 4.11 m | 17.68 m | 10.67 m | AS | 10 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 26 | 538 | 1 | Q. vel. | 24.30 cm | 6.40 m | 23.16 m | 9.14 m | AS | 5 | N | 5 | 0 | 1 | 1 | 0 | N | N | N | 1 | | |
| BC | 26 | 539 | 1 | Q. vel. | 28.20 cm | 3.66 m | 22.56 m | 12.80 m | AS | 40 | N | 8 | 1 | 1 | 1 | 25 | Y | N | N | 0 | | |
| BC | 26 | 540 | 1 | Q. vel. | 27.00 cm | 4.27 m | 24.08 m | 11.89 m | AS | 10 | N | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 27 | 541 | 1 | Q. vel. | 39.60 cm | 10.52 m | 24.08 m | 10.36 m | DT | 45 | N | 10 | 1 | 0 | 1 | 30 | N | N | N | 0 | 50 | 90 |
| BC | 27 | 542 | 1 | Q. vel. | 28.60 cm | 5.94 m | 20.73 m | 4.88 m | AS | 25 | N | 5 | 1 | 0 | 1 | 25 | N | N | N | 0 | | |
| BC | 27 | 543 | 1 | Q. vel. | 40.50 cm | 8.23 m | 25.60 m | 9.45 m | AS | 10 | N | 6 | 1 | 1 | 1 | 10 | N | N | N | 0 | | |
| BC | 27 | 544 | 1 | Q. vel. | 36.10 cm | 6.40 m | 28.35 m | 11.58 m | AS | 10 | Y | 6 | 0 | 1 | 1 | 0 | N | N | Y | 0 | | |
| BC | 27 | 545 | 1 | Q. vel. | 22.80 cm | 2.44 m | 14.33 m | 8.23 m | DT | 70 | N | 10 | 1 | 1 | 1 | 5 | N | N | N | 0 | | |
| BC | 27 | 546 | 1 | Q. vel. | 32.50 cm | 4.11 m | 25.91 m | 16.15 m | AS | 45 | N | 10 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 28 | 547 | 1 | Q. vel. | 31.90 cm | 5.79 m | 22.86 m | 9.14 m | AS | 10 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | 26 | 80 |
| BC | 28 | 548 | 1 | Q. vel. | 10.00 cm | 0.61 m | 9.14 m | 0.00 m | AS | 85 | N | 5 | 1 | 0 | 1 | 35 | N | N | Y | 0 | | |
| BC | 28 | 549 | 1 | Q. vel. | 13.60 cm | 2.74 m | 17.37 m | 8.84 m | AS | 40 | N | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 28 | 550 | 1 | Q. vel. | 17.10 cm | 2.13 m | 17.07 m | 11.28 m | AS | 40 | N | 7 | 1 | 0 | 1 | 50 | N | N | N | 0 | | |
| BC | 28 | 551 | 1 | Q. vel. | 41.50 cm | 8.69 m | 29.26 m | 10.97 m | AS | 5 | Y | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 28 | 552 | 1 | Q. vel. | 25.80 cm | 6.86 m | 21.64 m | 10.97 m | AL | 5 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 1 | | |
| BC | 28 | 553 | 1 | Q. vel. | 31.20 cm | 5.33 m | 20.12 m | 7.92 m | AL | 10 | N | 6 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |
| BC | 28 | 554 | 1 | Q. vel. | 25.20 cm | 5.49 m | 20.12 m | 17.07 m | AL | 15 | N | 7 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 28 | 555 | 1 | Q. vel. | 21.50 cm | 3.66 m | 9.75 m | 6.71 m | DT | 15 | N | 5 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 29 | 556 | 1 | Q. vel. | 27.60 cm | 4.57 m | 28.35 m | 16.76 m | AS | 5 | N | 3 | 0 | 1 | 1 | 0 | N | N | N | 0 | 42 | 80 |
| BC | 29 | 557 | 1 | Q. vel. | 35.00 cm | 6.86 m | 28.96 m | 16.76 m | AL | 5 | N | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| BC | 29 | 557 | 2 | Q. vel. | 34.00 cm | 3.66 m | 24.08 m | 14.63 m | AL | 5 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 29 | 558 | 1 | Q. vel. | 36.40 cm | 6.86 m | 24.99 m | 12.50 m | AS | 10 | Y | 7 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 29 | 559 | 1 | Q. vel. | 35.20 cm | 5.94 m | 25.91 m | 15.24 m | AL | 5 | Y | 5 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 29 | 560 | 1 | Q. vel. | 26.50 cm | 3.66 m | 32.00 m | 20.12 m | AL | 10 | N | 4 | 1 | 0 | 1 | 50 | Y | N | N | 0 | | |
| BC | 29 | 561 | 1 | Q. vel. | 41.10 cm | 5.94 m | 30.78 m | 21.64 m | AS | 5 | N | 3 | 1 | 0 | 1 | 40 | Y | N | N | 1 | | |
| BC | 29 | 562 | 1 | Q. vel. | 26.40 cm | 2.90 m | 27.13 m | 16.46 m | AS | 10 | N | 5 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| BC | 29 | 563 | 1 | Q. vel. | 32.20 cm | 5.94 m | 22.86 m | 7.01 m | AS | 10 | N | 4 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| BC | 29 | | | Q. vel. | 23.90 cm | #DIV/0! | 0.00 m | 0.00 m | DEAD | | N | | | | | | N | N | N | | | |
| BC | 29 | 564 | 1 | Q. vel. | 22.00 cm | 4.11 m | 21.34 m | 13.72 m | AS | 15 | N | 6 | 0 | 0 | 1 | 0 | N | Y | N | 0 | | |

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OF H | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | 30 | 566 | 1 | Q. vel. | 29.80 cm | 4.57 m | 26.52 m | 14.63 m | AS | 2 | N | 1 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 30 | 567 | 1 | Q. vel. | 36.00 cm | 8.69 m | 28.04 m | 13.41 m | AS | 10 | N | 7 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 30 | 568 | 1 | Q. vel. | 23.00 cm | 4.57 m | 17.07 m | 9.14 m | AL | 5 | N | 2 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| BC | 30 | 569 | 1 | Q. vel. | 27.00 cm | 5.03 m | 24.38 m | 10.67 m | AS | 25 | N | 8 | 1 | 0 | 1 | 25 | N | N | N | 2 | | |
| L | 1 | 570 | 1 | Q. vel. | 19.40 cm | 5.03 m | 17.07 m | 6.40 m | AS | 5 | N | 4 | 0 | 0 | 1 | 0 | N | N | N | 0 | 72 | 25 |
| L | 1 | 571 | 1 | Q. vel. | 12.60 cm | 4.11 m | 16.15 m | 4.88 m | AS | 2 | N | 2 | 1 | 0 | 1 | 50 | N | N | N | 0 | | |
| L | 1 | 572 | 1 | Q. vel. | 9.60 cm | 1.83 m | 10.67 m | 5.49 m | AS | 15 | N | 5 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| L | 1 | 573 | 1 | Q. vel. | 12.50 cm | 3.96 m | 14.33 m | 4.27 m | AS | 5 | N | 2 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| L | 1 | 574 | 1 | Q. vel. | 10.40 cm | 2.74 m | 14.33 m | 3.66 m | AS | 10 | N | 3 | 2 | 0 | 1 | 70 | N | Y | N | 0 | | |
| L | 1 | 575 | 1 | Q. vel. | 11.90 cm | 3.96 m | 15.24 m | 3.66 m | AS | 10 | N | 4 | 1 | 0 | 1 | 60 | N | N | N | 0 | | |
| L | 1 | 576 | 1 | Q. vel. | 11.90 cm | 2.44 m | 17.07 m | 8.53 m | AS | 15 | N | 4 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| L | 1 | 577 | 1 | Q. vel. | 15.10 cm | 5.49 m | 20.12 m | 4.57 m | AS | 15 | N | 4 | 2 | 0 | 1 | 2 | N | N | N | 0 | | |
| L | 1 | 578 | 1 | Q. vel. | 19.10 cm | 5.94 m | 20.73 m | 2.74 m | AS | 15 | N | 10 | 0 | 0 | 0 | 5 | N | N | N | 0 | | |
| L | 1 | 579 | 1 | Q. vel. | 14.90 cm | 3.20 m | 17.07 m | 4.57 m | AS | 2 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 1 | 580 | 1 | Q. vel. | 16.10 cm | 3.20 m | 17.98 m | 5.49 m | AS | 15 | N | 5 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 1 | 581 | 1 | Q. vel. | 11.80 cm | 2.74 m | 17.68 m | 6.71 m | AS | 5 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 1 | 581 | 2 | Q. vel. | 13.00 cm | 2.90 m | 17.68 m | 6.71 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 1 | 582 | 1 | Q. vel. | 14.10 cm | 3.66 m | 16.76 m | 3.05 m | AS | 5 | N | 2 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 2 | 583 | 1 | Q. vel. | 19.00 cm | 3.51 m | 16.15 m | 7.01 m | AS | 5 | N | 3 | 0 | 1 | 0 | 0 | N | N | N | 0 | 150 | 50 |
| L | 2 | 584 | 1 | Q. vel. | 20.60 cm | 7.32 m | 21.34 m | 3.05 m | AS | 2 | N | 2 | 0 | 1 | 0 | 0 | N | Y | N | 0 | | |
| L | 2 | 585 | 1 | Q. vel. | 22.50 cm | 5.03 m | 18.90 m | 7.62 m | AS | 5 | N | 3 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 2 | 586 | 1 | Q. vel. | 11.90 cm | 2.74 m | 15.24 m | 6.40 m | AL | 5 | N | 2 | 1 | 0 | 1 | 70 | N | Y | N | 0 | | |
| L | 2 | 587 | 1 | Q. vel. | 11.00 cm | 3.66 m | 15.85 m | 5.18 m | AS | 5 | N | 3 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 2 | 588 | 1 | Q. vel. | 12.10 cm | 3.20 m | 15.85 m | 6.10 m | AS | 5 | N | 3 | 1 | 0 | 1 | 20 | N | N | N | 0 | | |
| L | 3 | 589 | 1 | Q. vel. | 34.90 cm | 7.77 m | 25.91 m | 12.19 m | AS | 2 | N | 1 | 0 | 1 | 1 | 0 | N | N | N | 0 | 91 | 20 |
| L | 3 | 590 | 1 | Q. vel. | 16.00 cm | 5.03 m | 13.72 m | 3.96 m | AS | 2 | N | 1 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 3 | 591 | 1 | Q. vel. | 10.80 cm | 3.05 m | 9.14 m | 3.05 m | AS | 10 | N | 4 | 1 | 0 | 1 | 40 | N | N | N | 0 | | |
| L | 4 | 592 | 1 | Q. vel. | 26.40 cm | 5.94 m | 17.07 m | 5.49 m | AS | 10 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | 92 | 15 |
| L | 4 | 593 | 1 | Q. vel. | 13.60 cm | 4.11 m | 14.94 m | 3.66 m | AS | 5 | N | 2 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| L | 5 | 594 | 1 | Q. vel. | 45.30 cm | 10.52 m | 27.74 m | 9.14 m | AS | 5 | Y | 6 | 0 | 1 | 0 | 0 | N | N | N | 0 | 90 | 5 |
| L | 5 | 595 | 1 | Q. vel. | 33.80 cm | 7.77 m | 28.65 m | 15.24 m | AS | 20 | N | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 5 | 596 | 1 | Q. vel. | 38.60 cm | 8.69 m | 29.26 m | 3.05 m | AL | 20 | N | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 6 | 597 | 1 | Q. vel. | 45.00 cm | 9.14 m | 27.13 m | 9.14 m | AS | 30 | N | 11 | 1 | 0 | 1 | 60 | Y | Y | N | 0 | 107 | 47 |
| L | 6 | 598 | 1 | Q. vel. | 27.10 cm | 5.79 m | 18.90 m | 12.80 m | AL | 40 | N | 10 | 1 | 0 | 1 | 40 | N | N | N | 0 | | |
| L | 6 | 598 | 2 | Q. vel. | 24.70 cm | 4.57 m | 14.33 m | 12.80 m | DT | 30 | N | 5 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 7 | 599 | 1 | Q. vel. | 8.00 cm | 1.83 m | 8.53 m | 1.22 m | AS | 2 | N | 1 | 1 | 0 | 1 | 5 | N | N | N | 0 | 84 | 50 |
| L | 7 | 600 | 1 | Q. vel. | 8.30 cm | 1.83 m | 11.58 m | 1.52 m | AS | 2 | N | 1 | 1 | 0 | 1 | 5 | N | N | N | 0 | | |
| L | 7 | 601 | 1 | Q. vel. | 9.30 cm | 1.83 m | 9.14 m | 4.57 m | AS | 10 | N | 3 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| L | 7 | 602 | 1 | Q. vel. | 10.40 cm | 2.13 m | 12.19 m | 3.66 m | AS | 20 | N | 6 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 7 | 603 | 1 | Q. vel. | 9.70 cm | 2.13 m | 11.58 m | 3.66 m | AS | 10 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| L | 7 | 604 | 1 | Q. vel. | 12.30 cm | 2.13 m | 12.50 m | 6.10 m | AS | 10 | N | 5 | 1 | 0 | 1 | 70 | N | Y | N | 1 | | |
| L | 7 | 605 | 1 | Q. vel. | 20.40 cm | 6.40 m | 17.98 m | 4.57 m | AS | 2 | Y | 1 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| L | 7 | 606 | 1 | Q. vel. | 10.00 cm | 0.91 m | 11.58 m | 3.05 m | AS | 15 | N | 5 | 1 | 0 | 1 | 10 | N | Y | N | 0 | | |
| L | 8 | 607 | 1 | Q. vel. | 34.00 cm | 7.32 m | 17.98 m | 6.40 m | AL | 15 | N | 6 | 1 | 1 | 1 | 5 | N | N | N | 0 | 105 | 5 |
| L | 8 | 608 | 1 | Q. vel. | 31.80 cm | 2.29 m | 17.37 m | 6.71 m | DT | 10 | N | 5 | 0 | 1 | 1 | 0 | N | Y | N | 0 | | |
| L | 8 | 609 | 1 | Q. vel. | 54.80 cm | 9.60 m | 27.43 m | 8.23 m | AS | 10 | Y | 9 | 0 | 2 | 0 | 0 | N | N | N | 0 | | |
| L | 8 | 610 | 1 | Q. vel. | 36.90 cm | 6.86 m | 27.13 m | 8.53 m | AS | 10 | Y | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 8 | 611 | 1 | Q. vel. | 10.10 cm | 0.61 m | 10.67 m | 9.14 m | AS | 90 | N | 10 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| L | 8 | 612 | 1 | Q. vel. | 10.40 cm | 1.22 m | 14.63 m | 9.14 m | AS | 40 | N | 8 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| L | 8 | 613 | 1 | Q. vel. | 10.30 cm | 0.61 m | 14.63 m | 9.14 m | AS | 60 | N | 10 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| L | 8 | 614 | 1 | Q. vel. | 10.50 cm | 1.22 m | 14.02 m | 7.01 m | AS | 50 | N | 7 | 1 | 0 | 1 | 60 | N | Y | N | 0 | | |
| L | 9 | 615 | 1 | Q. vel. | 66.40 cm | 11.89 m | 35.66 m | 5.49 m | AS | 60 | N | 26 | 1 | 0 | 1 | 60 | Y | N | Y | 0 | 74 | 40 |
| L | 9 | 616 | 1 | Q. vel. | 10.10 cm | 1.83 m | 13.72 m | 3.96 m | AS | 50 | N | 8 | 1 | 0 | 1 | 40 | N | Y | N | 0 | | |
| L | 9 | 617 | 1 | Q. vel. | 10.00 cm | 0.30 m | 11.89 m | 0.00 m | DT | 95 | N | 14 | 1 | 0 | 1 | 50 | N | Y | N | 0 | | |
| L | 9 | 618 | 1 | Q. vel. | 15.00 cm | 1.83 m | 17.07 m | 7.01 m | AS | 50 | N | 10 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 10 | | | | | #DIV/0! | 0.00 m | 0.00 m | | | | | | | | | | | | | 62 | 30 |
| L | 11 | 619 | 1 | Q. vel. | 12.20 cm | 1.83 m | 14.63 m | 7.32 m | AS | 30 | N | 8 | 1 | 0 | 1 | 5 | N | N | N | 0 | 64 | 40 |
| L | 12 | 620 | 1 | Q. vel. | 65.30 cm | 9.60 m | 30.48 m | 3.05 m | AS | 40 | N | 11 | 1 | 1 | 1 | 10 | N | N | N | 0 | 68 | 40 |
| L | 12 | 621 | 1 | Q. vel. | 16.70 cm | 3.66 m | 15.85 m | 6.10 m | AS | 30 | N | 7 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| L | 12 | 622 | 1 | Q. vel. | 15.20 cm | 3.05 m | 15.24 m | 4.27 m | AS | 5 | N | 3 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| L | 12 | 623 | 1 | Q. vel. | 11.00 cm | 1.83 m | 14.02 m | 2.74 m | AS | 5 | N | 4 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| L | 13 | 624 | 1 | Q. vel. | 10.10 cm | 1.83 m | 6.10 m | 0.91 m | DT | 40 | N | 10 | 1 | 0 | 1 | 40 | N | Y | N | 0 | 53 | 40 |
| L | 13 | 625 | 1 | Q. vel. | 12.00 cm | 2.74 m | 13.72 m | 3.96 m | AS | 30 | N | 6 | 1 | 0 | 1 | 20 | N | Y | N | 0 | | |
| L | 13 | 626 | 1 | Q. vel. | 15.40 cm | 3.05 m | 15.24 m | 4.27 m | AS | 30 | N | 7 | 1 | 0 | 1 | 5 | N | Y | N | 0 | | |
| L | 13 | 627 | 1 | Q. vel. | 11.80 cm | 0.61 m | 14.63 m | 12.19 m | AS | 90 | N | 10 | 1 | 0 | 1 | 30 | N | Y | N | 0 | | |
| L | 13 | 628 | 1 | Q. vel. | 15.00 cm | 2.13 m | 16.15 m | 5.49 m | AS | 40 | N | 9 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 13 | 629 | 1 | Q. vel. | 11.30 cm | 2.74 m | 16.46 m | 7.62 m | AS | 60 | N | 7 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 13 | 630 | 1 | Q. vel. | 58.00 cm | 10.06 m | 26.21 m | 7.32 m | AS | 30 | N | 11 | 0 | 2 | 1 | 0 | N | N | N | 0 | | |

| Site | Plot # | Root sys. | Stem | Sp. | DBH | Avg Crown Width m | TCH m | LCH m | TS | Crown loss % | Cored | # DB | # FS | # OF H | CB | WR % | Hollow | Suckers | Decay | Dead stems | # Oak Sap | % Cover Sap/Shrubs |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| L | 14 | 632 | 1 | Q. vel. | 12.90 cm | 3.05 m | 15.24 m | 3.66 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | 114 | 30 |
| L | 14 | 633 | 1 | Q. vel. | 15.00 cm | 3.96 m | 19.20 m | 4.57 m | AS | 10 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 14 | 634 | 1 | Q. vel. | 12.40 cm | 2.74 m | 15.24 m | 4.27 m | AS | 15 | N | 7 | 0 | 1 | 0 | 0 | N | Y | N | 0 | | |
| L | 14 | 635 | 1 | Q. vel. | 43.50 cm | 9.14 m | 31.39 m | 7.01 m | AL | 5 | Y | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 14 | 636 | 1 | Q. vel. | 29.40 cm | 8.23 m | 24.69 m | 7.92 m | AS | 10 | Y | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 14 | 637 | 1 | Q. vel. | 53.60 cm | 9.14 m | 31.09 m | 5.18 m | AS | 10 | N | 6 | 1 | 0 | 1 | 10 | N | Y | N | 1 | | |
| L | 15 | 638 | 1 | Q. vel. | 33.40 cm | 6.40 m | 21.64 m | 8.53 m | AL | 20 | N | 8 | 2 | 0 | 1 | 10 | N | N | N | 0 | 144 | 50 |
| L | 15 | 639 | 1 | Q. vel. | ?? | 5.49 m | 19.20 m | 9.14 m | AL | 20 | N | 8 | 0 | 1 | 1 | 0 | N | N | N | 0 | | |
| L | 16 | 640 | 1 | Q. vel. | 41.00 cm | 11.89 m | 25.30 m | 8.53 m | AS | 10 | Y | 10 | 0 | 1 | 0 | 0 | N | N | N | 0 | 46 | 10 |
| L | 16 | 641 | 1 | Q. vel. | 25.70 cm | 5.94 m | 21.95 m | 5.49 m | AS | 2 | Y | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 16 | 642 | 1 | Q. vel. | 15.20 cm | 3.96 m | 16.46 m | 7.01 m | AS | 5 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 17 | 643 | 1 | Q. vel. | 59.00 cm | 5.03 m | 24.38 m | 13.72 m | AL | 50 | N | 10 | 0 | 1 | 0 | 0 | N | Y | N | 2 | 140 | 60 |
| L | 17 | 644 | 1 | Q. vel. | 13.90 cm | 5.03 m | 14.63 m | 5.49 m | AS | 15 | N | 6 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 17 | 645 | 1 | Q. vel. | 10.00 cm | 1.83 m | 10.67 m | 3.96 m | AS | 5 | N | 2 | 1 | 0 | 1 | 60 | N | N | N | 0 | | |
| L | 18 | 646 | 1 | Q. alba | 64.60 cm | 22.25 m | 28.04 m | 4.57 m | AL | 2 | Y | 3 | 0 | 0 | 0 | 0 | N | Y | N | 0 | 140 | 40 |
| L | 18 | 647 | 1 | Q. alba | 10.80 cm | 2.44 m | 11.58 m | 2.13 m | AS | 2 | N | 2 | 2 | 0 | 1 | 10 | N | N | N | 0 | | |
| L | 18 | 648 | 1 | Q. alba | 26.80 cm | 5.03 m | 24.99 m | 13.11 m | AS | 5 | N | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 18 | 649 | 1 | Q. alba | 31.00 cm | 8.23 m | 24.38 m | 4.57 m | AS | 2 | N | 2 | 1 | 1 | 1 | 40 | N | Y | N | 0 | | |
| L | 18 | 650 | 1 | Q. alba | 54.40 cm | 14.17 m | 26.52 m | 4.57 m | AS | 5 | N | 5 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 19 | 651 | 1 | Q. vel. | 32.40 cm | 7.32 m | 25.30 m | 6.71 m | AS | 25 | N | 12 | 0 | 1 | 0 | 0 | N | N | N | 1 | 41 | 10 |
| L | 19 | 652 | 1 | Q. vel. | 12.20 cm | 2.90 m | 9.14 m | 6.10 m | AS | 70 | N | 13 | 1 | 0 | 1 | 20 | N | Y | N | 0 | | |
| L | 19 | 653 | 1 | Q. vel. | 13.20 cm | 3.20 m | 12.19 m | 6.10 m | AS | 40 | N | 6 | 0 | 0 | 0 | 0 | N | Y | N | 0 | | |
| L | 19 | 654 | 1 | Q. vel. | 11.40 cm | 2.13 m | 10.67 m | 9.14 m | AS | 90 | N | 12 | 1 | 0 | 1 | 30 | N | Y | N | 0 | | |
| L | 19 | 655 | 1 | Q. vel. | 37.60 cm | 11.43 m | 26.52 m | 8.84 m | AS | 25 | N | 9 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 19 | 656 | 1 | Q. vel. | 20.30 cm | 5.49 m | 21.64 m | 9.14 m | AS | 25 | N | 7 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 20 | 657 | 1 | Q. alba | 22.20 cm | 6.86 m | 22.56 m | 5.79 m | AS | 2 | N | 2 | 0 | 0 | 1 | 0 | N | N | N | 0 | 30 | 40 |
| L | 20 | 657 | 2 | Q. alba | 21.40 cm | 7.32 m | 22.56 m | 6.10 m | AS | 2 | N | 2 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| L | 20 | 658 | 1 | Q. alba | 11.80 cm | 12.34 m | 10.36 m | 3.05 m | AS | 2 | N | 2 | 1 | 0 | 1 | 60 | N | N | N | 0 | | |
| L | 20 | 659 | 1 | Q. alba | 67.20 cm | 18.29 m | 25.60 m | 6.40 m | AS | 2 | N | 7 | 0 | 0 | 0 | 0 | N | Y | N | 0 | | |
| L | 20 | 660 | 1 | Q. vel. | 58.50 cm | 11.89 m | 34.14 m | 16.76 m | AL | 40 | N | 7 | 0 | 1 | 0 | 0 | N | Y | N | 1 | | |
| L | 20 | 661 | 1 | Q. vel. | 26.70 cm | 6.25 m | 23.47 m | 11.28 m | AL | 5 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 20 | 662 | 1 | Q. vel. | 37.40 cm | 11.43 m | 25.30 m | 6.10 m | AL | 10 | N | 7 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 20 | 663 | 1 | Q. vel. | 21.30 cm | 5.94 m | 19.81 m | 4.88 m | AS | 2 | N | 1 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 21 | 664 | 1 | Q. pal. | 16.30 cm | 3.66 m | 21.34 m | 4.57 m | AS | 2 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | 17 | 10 |
| L | 21 | 665 | 1 | Q. pal. | 20.00 cm | 5.49 m | 21.34 m | 4.57 m | AS | 2 | N | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 21 | 666 | 1 | Q. pal. | 20.60 cm | 5.94 m | 21.34 m | 1.22 m | AS | 2 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 21 | 667 | 1 | Q. vel. | 26.30 cm | 5.94 m | 27.43 m | 9.14 m | AS | 2 | N | 4 | 1 | 0 | 1 | 40 | N | Y | N | 0 | | |
| L | 21 | 668 | 1 | Q. pal. | 12.30 cm | 3.20 m | 8.84 m | 4.57 m | AS | 5 | N | 6 | 1 | 0 | 1 | 30 | N | Y | N | 0 | | |
| L | 22 | 669 | 1 | Q. vel. | 44.30 cm | 13.26 m | 29.26 m | 7.92 m | AS | 5 | N | 6 | 0 | 1 | 0 | 0 | N | N | N | 0 | 7 | 10 |
| L | 22 | 670 | 1 | Q. pal. | 22.00 cm | 7.32 m | 22.25 m | 5.49 m | AS | 5 | N | 5 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 22 | 671 | 1 | Q. pal. | 15.60 cm | 4.57 m | 21.34 m | 7.62 m | AS | 2 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 22 | 672 | 1 | Q. pal. | 16.10 cm | 4.57 m | 21.34 m | 7.62 m | AS | 2 | N | 63 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 22 | 673 | 1 | Q. pal. | 15.50 cm | 4.11 m | 21.34 m | 6.10 m | AS | 5 | N | 8 | 1 | 0 | 1 | 3 | N | N | N | 0 | | |
| L | 22 | 674 | 1 | Q. pal. | 27.90 cm | 9.14 m | 26.21 m | 11.28 m | AS | 20 | N | 10 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 22 | 675 | 1 | Q. pal. | 25.50 cm | 6.86 m | 25.91 m | 8.23 m | AS | 2 | N | 3 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 22 | 676 | 1 | Q. pal. | 16.80 cm | 5.49 m | 25.91 m | 7.62 m | AS | 2 | N | 2 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 23 | 677 | 1 | Q. vel. | 50.00 cm | 15.09 m | 33.53 m | 10.67 m | AS | 2 | N | 5 | 1 | 1 | 1 | 20 | N | Y | N | 0 | 66 | 5 |
| L | 24 | 678 | 1 | Q. vel. | 12.90 cm | 3.20 m | 15.54 m | 6.10 m | AS | 50 | N | 8 | 0 | 1 | 1 | 0 | N | N | N | 0 | 84 | 10 |
| L | 24 | 679 | 1 | Q. vel. | 10.30 cm | 2.59 m | 14.33 m | 7.92 m | AS | 50 | N | 6 | 1 | 0 | 1 | 2 | N | N | N | 0 | | |
| L | 24 | 680 | 1 | Q. vel. | 11.60 cm | 2.29 m | 15.85 m | 6.71 m | AS | 50 | N | 8 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| L | 24 | 680 | 2 | Q. vel. | 16.30 cm | 3.51 m | 15.54 m | 1.22 m | AS | 20 | N | 4 | 0 | 0 | 1 | 0 | N | N | N | 0 | | |
| L | 25 | 681 | 1 | Q. vel. | 51.60 cm | 11.89 m | 25.60 m | 6.40 m | AS | 50 | N | 8 | 0 | 1 | 1 | 0 | N | N | N | 0 | 46 | 10 |
| L | 25 | 682 | 1 | Q. vel. | 35.60 cm | 5.94 m | 18.90 m | 8.53 m | AL | 10 | N | 7 | 0 | 0 | 0 | 0 | N | N | Y | 0 | | |
| L | 25 | 683 | 1 | Q. vel. | 41.50 cm | 8.23 m | 22.25 m | 11.58 m | AL | 2 | N | 2 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 25 | 683 | 2 | Q. vel. | 38.70 cm | 8.69 m | 31.09 m | 15.85 m | AS | 10 | N | 7 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 26 | 684 | 1 | Q. vel. | 33.60 cm | 5.49 m | 23.16 m | 4.88 m | AL | 40 | N | 8 | 0 | 1 | 0 | 0 | N | Y | N | 0 | 119 | 10 |
| L | 26 | 685 | 1 | Q. vel. | 34.70 cm | 8.23 m | 24.69 m | 9.45 m | AS | 5 | N | 5 | 2 | 0 | 1 | 30 | N | Y | N | 0 | | |
| L | 26 | 685 | 2 | Q. vel. | 29.20 cm | 6.40 m | 21.03 m | 9.14 m | AL | 5 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 27 | 686 | 1 | Q. vel. | 36.20 cm | 6.86 m | 23.47 m | 8.84 m | AL | 15 | N | 12 | 0 | 1 | 0 | 0 | N | N | Y | 0 | 98 | 10 |
| L | 28 | 687 | 1 | Q. vel. | 65.20 cm | 13.26 m | 30.48 m | 4.57 m | AS | 20 | N | 14 | 0 | 0 | 0 | 0 | Y | N | N | 0 | 60 | 5 |
| L | 28 | 688 | 1 | Q. vel. | 10.00 cm | 1.83 m | 12.19 m | 3.05 m | AS | 5 | N | 4 | 1 | 0 | 1 | 20 | N | Y | N | 0 | | |
| L | 29 | 689 | 1 | Q. vel. | 10.00 cm | 2.59 m | 9.14 m | 1.22 m | AS | 5 | N | 4 | 0 | 0 | 0 | 0 | N | N | N | 0 | 12 | 2 |
| L | 29 | 690 | 1 | Q. vel. | 51.60 cm | 10.97 m | 27.13 m | 7.01 m | AS | 10 | N | 8 | 1 | 0 | 1 | 20 | N | N | N | 0 | | |
| L | 29 | 691 | 1 | Q. vel. | 13.80 cm | 4.42 m | 12.19 m | 4.57 m | AS | 15 | N | 6 | 0 | 0 | 0 | 0 | N | N | N | 0 | | |
| L | 29 | 692 | 1 | Q. vel. | 13.60 cm | 3.66 m | 13.41 m | 6.10 m | AS | 15 | N | 6 | 0 | 0 | 0 | 0 | N | N | N | 1 | | |
| L | 29 | 693 | 1 | Q. vel. | 10.00 cm | 1.83 m | 9.14 m | 3.05 m | AS | 10 | N | 5 | 1 | 0 | 1 | 10 | N | N | N | 0 | | |
| L | 29 | 694 | 1 | Q. vel. | 10.00 cm | 1.83 m | 9.14 m | 3.05 m | AS | 10 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 29 | 695 | 1 | Q. vel. | 10.00 cm | 1.83 m | 9.14 m | 6.10 m | AS | 10 | N | 4 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 29 | 696 | 1 | Q. vel. | 13.80 cm | 4.57 m | 12.19 m | 2.44 m | AS | 10 | N | 7 | 0 | 1 | 0 | 0 | N | N | N | 0 | | |
| L | 29 | 697 | 1 | Q. vel. | 10.00 cm | 2.29 m | 8.53 m | 1.83 m | AS | 40 | N | 8 | 1 | 0 | 1 | 20 | N | N | N | 0 | | |
| L | 30 | 698 | 1 | Q. vel. | 58.90 cm | 10.06 m | 26.52 m | 3.96 m | AS | 40 | N | 14 | 1 | 0 | 1 | 60 | Y | Y | Y | 0 | 57 | 5 |

# APPENDIX B

## Fire History Data

| Year | BC | | | | | BD | | | | | L | | | | | M | | | | | ALL SITES | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd |
| | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1878 | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1879 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1880 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1881 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1882 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1883 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1884 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1885 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1886 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1887 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1888 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1889 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1890 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1891 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1892 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1893 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1894 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1895 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1896 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1897 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1898 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1899 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1900 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1901 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1902 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1903 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1904 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |

| Year | BC | | | | | BD | | | | | L | | | | | M | | | | | ALL SITES | | | | |
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| | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd |
| 1905 | | | | | | | | | 1 | | | | | | | | | | | | | | | 1 | |
| 1906 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1907 | | | | | | 1 | | 1 | 2 | 50.00% | | | | | | | | | | | 1 | | 1 | 2 | 50.00% |
| 1908 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1909 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1910 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1911 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1912 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1913 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1914 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1915 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1916 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1917 | | | | | | 1 | | 1 | 2 | 50.00% | | | | | | | | | | | 1 | | 1 | 2 | 50.00% |
| 1918 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1919 | | | | | | | | | 2 | | | | | | | | | | | | | | | 2 | |
| 1920 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1921 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1922 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1923 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1924 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1925 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1926 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1927 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1928 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1929 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1930 | | | | 1 | | | | | 2 | | | | | | | | | | | | | | | 3 | |
| 1931 | 1 | | 1 | 1 | 100.00% | | | | 2 | | | | | | | | | | | | 1 | | 1 | 3 | 33.33% |
| 1932 | | | | 1 | | | | | 3 | | | | | 1 | | | | | | | | | | 5 | |
| 1933 | | | | 1 | | | | | 3 | | | | | 2 | | | | | 2 | | | | | 8 | |

| Year | BC | | | | | BD | | | | | L | | | | | M | | | | | ALL SITES | | | | |
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| | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd |
| 1936 | | | | 1 | | 1 | | 1 | 7 | 14.29% | | | | 2 | | | | | 5 | | 1 | | 1 | 15 | 6.67% |
| 1937 | | | | 1 | | | | | 8 | | | | | 2 | | | | | 5 | | | | | 16 | |
| 1938 | | 1 | 1 | 1 | 100.00% | 1 | 1 | 2 | 8 | 25.00% | | | | 2 | | | 1 | 1 | 5 | 20.00% | 1 | 3 | 4 | 16 | 25.00% |
| 1939 | | | | 1 | | | | | 9 | | 1 | | 1 | 2 | 50.00% | 1 | | 1 | 5 | 20.00% | 2 | | 2 | 17 | 11.76% |
| 1940 | | | | 1 | | | 1 | 1 | 10 | 10.00% | | | | 2 | | | | | 5 | | | 1 | 1 | 18 | 5.56% |
| 1941 | | | | 4 | | 1 | 1 | 2 | 10 | 20.00% | | | | 2 | | | | | 5 | | 1 | 1 | 2 | 21 | 9.52% |
| 1942 | 1 | | 1 | 8 | 12.50% | | | | 11 | | 1 | | 1 | 2 | 50.00% | | | | 5 | | 2 | | 2 | 26 | 7.69% |
| 1943 | | | | 9 | | 1 | | 1 | 11 | 9.09% | | | | 2 | | | | | 5 | | 1 | | 1 | 27 | 3.70% |
| 1944 | | | | 9 | | | 2 | 2 | 11 | 18.18% | | | | 2 | | | 2 | 2 | 5 | 40.00% | | 4 | 4 | 27 | 14.81% |
| 1945 | | | | 9 | | 1 | | 1 | 11 | 9.09% | | | | 3 | | | | | 5 | | 1 | | 1 | 28 | 3.57% |
| 1946 | 1 | | 1 | 9 | 11.11% | 2 | 1 | 3 | 11 | 27.27% | | | | 5 | | | | | 5 | | 3 | 1 | 4 | 30 | 13.33% |
| 1947 | | | | 10 | | 1 | | 1 | 11 | 9.09% | | | | 5 | | | | | 5 | | 1 | | 1 | 31 | 3.23% |
| 1948 | | 1 | 1 | 10 | 10.00% | | 2 | 2 | 11 | 18.18% | 1 | | 1 | 5 | 20.00% | | | | 5 | | 1 | 3 | 4 | 31 | 12.90% |
| 1949 | | | | 10 | | | | | 11 | | | | | 5 | | 2 | | 2 | 5 | 40.00% | 2 | | 2 | 31 | 6.45% |
| 1950 | 2 | 2 | 4 | 10 | 40.00% | | 2 | 2 | 11 | 18.18% | | | | 5 | | | | | 5 | | 2 | 4 | 6 | 31 | 19.35% |
| 1951 | | 1 | 1 | 11 | 9.09% | | | | 11 | | | | | 5 | | 2 | | 2 | 5 | 40.00% | 2 | 1 | 3 | 32 | 9.38% |
| 1952 | | | | 12 | | 1 | 2 | 3 | 11 | 27.27% | | | | 5 | | 1 | | 1 | 5 | 20.00% | 2 | 2 | 4 | 33 | 12.12% |
| 1953 | | | | 12 | | | | | 11 | | | | | 5 | | | | | 5 | | | | | 33 | |
| 1954 | 1 | | 1 | 12 | 8.33% | | 2 | 2 | 11 | 18.18% | | 1 | 1 | 5 | 20.00% | | 2 | 2 | 5 | 40.00% | 1 | 5 | 6 | 33 | 18.18% |
| 1955 | | | | 12 | | | | | 11 | | | | | 5 | | | | | 5 | | | | | 33 | |
| 1956 | 1 | | 1 | 12 | 8.33% | 1 | 1 | 2 | 11 | 18.18% | | | | 5 | | | | | 5 | | 2 | 1 | 3 | 33 | 9.09% |
| 1957 | | | | 12 | | | | | 11 | | | | | 5 | | | | | 5 | | | | | 33 | |
| 1958 | | | | 12 | | | | | 12 | | | 1 | 1 | 6 | 16.67% | 1 | 1 | 2 | 7 | 28.57% | 1 | 2 | 3 | 37 | 8.11% |
| 1959 | 1 | 1 | 2 | 12 | 16.67% | | | | 12 | | | | | 6 | | | | | 7 | | 1 | 1 | 2 | 37 | 5.41% |
| 1960 | | | | 12 | | | 1 | 1 | 12 | 8.33% | | | | 6 | | | | | 7 | | | 1 | 1 | 37 | 2.70% |
| 1961 | | 1 | 1 | 12 | 8.33% | | | | 12 | | | | | 6 | | | 1 | 1 | 7 | 14.29% | | 2 | 2 | 37 | 5.41% |
| 1962 | | | | 12 | | | | | 12 | | | | | 7 | | 1 | 1 | 2 | 7 | 28.57% | 1 | 1 | 2 | 38 | 5.26% |
| 1963 | | 1 | 1 | 12 | 8.33% | | | | 12 | | 1 | 1 | 2 | 7 | 28.57% | | | | 7 | | 1 | 2 | 3 | 38 | 7.89% |
| 1964 | | | | 12 | | | | | 12 | | 1 | | 1 | 11 | 9.09% | | 1 | 1 | 7 | 14.29% | 1 | 1 | 2 | 42 | 4.76% |

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| | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd |
| 1965 | | | | 12 | | | | | 12 | | | 1 | 1 | 11 | 9.09% | | | | 7 | | | 1 | 1 | 42 | 2.38% |
| 1966 | 2 | | 2 | 12 | 16.67% | 2 | 1 | 3 | 12 | 25.00% | | | | 11 | | | 1 | 1 | 7 | 14.29% | 4 | 2 | 6 | 42 | 14.29% |
| 1967 | 6 | 1 | 7 | 12 | 58.33% | | 1 | 1 | 12 | 8.33% | | | | 11 | | | | | 7 | | 6 | 2 | 8 | 42 | 19.05% |
| 1968 | 2 | | 2 | 15 | 13.33% | | | | 13 | | | | | 11 | | | | | 7 | | 2 | | 2 | 46 | 4.35% |
| 1969 | | 1 | 1 | 15 | 6.67% | 1 | | 1 | 13 | 7.69% | 5 | | 5 | 11 | 45.45% | | | | 8 | | 6 | 1 | 7 | 47 | 14.89% |
| 1970 | | | | 15 | | | | | 14 | | 1 | 1 | 2 | 13 | 15.38% | 1 | 1 | 2 | 8 | 25.00% | 2 | 2 | 4 | 50 | 8.00% |
| 1971 | 1 | | 1 | 15 | 6.67% | | 1 | 1 | 14 | 7.14% | 1 | | 1 | 13 | 7.69% | 2 | | 2 | 9 | 22.22% | 4 | 1 | 5 | 51 | 9.80% |
| 1972 | | | | 15 | | 3 | 1 | 4 | 14 | 28.57% | | | | 13 | | 1 | 1 | 2 | 9 | 22.22% | 4 | 2 | 6 | 51 | 11.76% |
| 1973 | | | | 15 | | | 1 | 1 | 14 | 7.14% | 1 | | 1 | 13 | 7.69% | | 2 | 2 | 10 | 20.00% | 1 | 3 | 4 | 52 | 7.69% |
| 1974 | | | | 15 | | 2 | | 2 | 14 | 14.29% | 2 | | 2 | 13 | 15.38% | 1 | | 1 | 10 | 10.00% | 5 | | 5 | 52 | 9.62% |
| 1975 | | | | 15 | | | | | 14 | | | | | 13 | | | 1 | 1 | 10 | 10.00% | | 1 | 1 | 52 | 1.92% |
| 1976 | | | | 15 | | | 1 | 1 | 14 | 7.14% | 1 | 1 | 2 | 13 | 15.38% | 1 | 1 | 2 | 10 | 20.00% | 2 | 3 | 5 | 52 | 9.62% |
| 1977 | | | | 15 | | | | | 14 | | | | | 13 | | | | | 10 | | | | | 52 | |
| 1978 | 1 | | 1 | 15 | 6.67% | | | | 14 | | | 2 | 2 | 13 | 15.38% | | | | 10 | | 1 | 2 | 3 | 52 | 5.77% |
| 1979 | | | | 15 | | 1 | | 1 | 14 | 7.14% | 3 | | 3 | 13 | 23.08% | | | | 10 | | 4 | | 4 | 52 | 7.69% |
| 1980 | | | | 15 | | | 2 | 2 | 14 | 14.29% | | 1 | 1 | 14 | 7.14% | 1 | 1 | 2 | 10 | 20.00% | 1 | 4 | 5 | 53 | 9.43% |
| 1981 | 6 | | 6 | 15 | 40.00% | 1 | 1 | 2 | 14 | 14.29% | 1 | | 1 | 14 | 7.14% | 3 | | 3 | 12 | 25.00% | 11 | 1 | 12 | 55 | 21.82% |
| 1982 | 4 | 1 | 5 | 15 | 33.33% | 1 | 2 | 3 | 14 | 21.43% | | | | 14 | | | 3 | 3 | 12 | 25.00% | 5 | 6 | 11 | 55 | 20.00% |
| 1983 | 5 | 1 | 6 | 15 | 40.00% | | 2 | 2 | 14 | 14.29% | | | | 14 | | | | | 12 | | 5 | 3 | 8 | 55 | 14.55% |
| 1984 | | | | 15 | | | | | 14 | | | 1 | 1 | 14 | 7.14% | 2 | 2 | 4 | 12 | 33.33% | 2 | 3 | 5 | 55 | 9.09% |
| 1985 | 1 | | 1 | 15 | 6.67% | 1 | | 1 | 14 | 7.14% | 1 | | 1 | 14 | 7.14% | 1 | | 1 | 12 | 8.33% | 4 | | 4 | 55 | 7.27% |
| 1986 | | | | 15 | | | | | 14 | | 1 | 1 | 2 | 14 | 14.29% | 1 | 1 | 2 | 12 | 16.67% | 2 | 2 | 4 | 55 | 7.27% |
| 1987 | | | | 15 | | | | | 14 | | | | | 14 | | | | | 12 | | | | | 55 | |
| 1988 | 3 | 2 | 5 | 15 | 33.33% | 1 | 1 | 2 | 14 | 14.29% | | 1 | 1 | 14 | 7.14% | 6 | | 6 | 12 | 50.00% | 10 | 4 | 14 | 55 | 25.45% |
| 1989 | | | | 15 | | | | | 14 | | | | | 14 | | | | | 12 | | | | | 55 | |
| 1990 | | | | 15 | | | 2 | 2 | 14 | 14.29% | | 2 | 2 | 14 | 14.29% | | | | 12 | | | 4 | 4 | 55 | 7.27% |

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| | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd | FS | Inj | FS+Inj | # Trees | % Brnd |
| 1991 | | | | 15 | | 3 | 1 | 4 | 14 | 28.57% | | | | 14 | | | | | 12 | | 3 | 1 | 4 | 55 | 7.27% |
| 1992 | 11 | | 11 | 15 | 73.33% | 3 | 1 | 4 | 14 | 28.57% | 1 | | 1 | 14 | 7.14% | 6 | 1 | 7 | 12 | 58.33% | 21 | 2 | 23 | 55 | 41.82% |
| 1993 | 2 | 1 | 3 | 15 | 20.00% | 1 | | 1 | 14 | 7.14% | 1 | | 1 | 14 | 7.14% | | | | 12 | | 4 | 1 | 5 | 55 | 9.09% |
| 1994 | 1 | | 1 | 15 | 6.67% | 1 | 1 | 2 | 14 | 14.29% | | | | 14 | | 1 | 3 | 4 | 12 | 33.33% | 3 | 4 | 7 | 55 | 12.73% |
| 1995 | 4 | | 4 | 15 | 26.67% | | 2 | 2 | 14 | 14.29% | | | | 14 | | | | | 12 | | 4 | 2 | 6 | 55 | 10.91% |
| 1996 | | | | 15 | | 1 | | 1 | 14 | 7.14% | | | | 14 | | 2 | | 2 | 12 | 16.67% | 3 | | 3 | 55 | 5.45% |
| 1997 | | | | 15 | | 1 | | 1 | 14 | 7.14% | | | | 14 | | | | | 12 | | 1 | | 1 | 55 | 1.82% |
| 1998 | | | | 15 | | 1 | | 1 | 14 | 7.14% | 1 | | 1 | 14 | 7.14% | 2 | | 2 | 12 | 16.67% | 4 | | 4 | 55 | 7.27% |
| 1999 | 2 | | 2 | 15 | 13.33% | 4 | | 4 | 14 | 28.57% | | | | 14 | | 1 | | 1 | 12 | 8.33% | 7 | | 7 | 55 | 12.73% |
| 2000 | | | | 15 | | | 1 | 1 | 14 | 7.14% | | | | 14 | | | | | 12 | | | 1 | 1 | 55 | 1.82% |
| 2001 | | | | 15 | | 1 | | 1 | 14 | 7.14% | | | | 14 | | | 1 | 1 | 12 | 8.33% | 1 | 1 | 2 | 55 | 3.64% |
| 2002 | 2 | | 2 | 15 | 13.33% | | | | 14 | | | | | 14 | | | | | 12 | | 2 | | 2 | 55 | 3.64% |
| 2003 | | | | 15 | | | | | 14 | | | | | 14 | | | | | 12 | | | | | 55 | |
| 2004 | 1 | | 1 | 15 | 6.67% | | | | 14 | | | | | 14 | | 6 | 1 | 7 | 12 | 58.33% | 7 | 1 | 8 | 55 | 14.55% |
| 2005 | 5 | 2 | 7 | 15 | 46.67% | 1 | | 1 | 14 | 7.14% | | | | 14 | | | | | 12 | | 6 | 2 | 8 | 55 | 14.55% |
| 2006 | | | | 15 | | | | | 14 | | 8 | | 8 | 14 | 57.14% | | | | 12 | | 8 | | 8 | 55 | 14.55% |
| 2007 | | | | 15 | | | | | 14 | | | | | 10 | | 1 | | 1 | 12 | 8.33% | 1 | | 1 | 51 | 1.96% |

# APPENDIX C

Tree ring measurements

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| pmbo12b | 1933 | 1972 | 760 | 1716 | 992 | 1420 | 1856 | 3038 | | | |
| pmbo12b | 1940 | 2802 | 1854 | 4250 | 3092 | 4616 | 3888 | 4062 | 6156 | 4226 | 4684 |
| pmbo12b | 1950 | 6796 | 6716 | 5532 | 4026 | 2600 | 2716 | 1650 | 2572 | 4036 | 2952 |
| pmbo12b | 1960 | 3144 | 2834 | 1522 | 1352 | 1712 | 1728 | 966 | 1118 | 1000 | 1210 |
| pmbo12b | 1970 | 1244 | 1042 | 1184 | 1844 | 2184 | 2848 | 1894 | 1102 | 1468 | 1492 |
| pmbo12b | 1980 | 2122 | 2216 | 3256 | 2548 | 2360 | 2314 | 2510 | 3672 | 1074 | 1506 |
| pmbo12b | 1990 | 1806 | 2602 | 2480 | 2808 | 2134 | 2532 | 2892 | 2106 | 1812 | 1960 |
| pmbo12b | 2000 | 1434 | 1474 | 1534 | 1556 | 2092 | 1672 | 1732 | 1268 | -9999 | |
| pmbo14a | 1934 | 906 | 3702 | 1564 | 2746 | 2742 | 3874 | | | | |
| pmbo14a | 1940 | 2440 | 2532 | 5724 | 5276 | 5042 | 3874 | 3616 | 3442 | 2362 | 2588 |
| pmbo14a | 1950 | 2456 | 3052 | 2602 | 1928 | 2062 | 1898 | 1410 | 1638 | 1362 | 1214 |
| pmbo14a | 1960 | 1430 | 1212 | 1078 | 1008 | 986 | 866 | 726 | 848 | 876 | 986 |
| pmbo14a | 1970 | 1056 | 914 | 792 | 1368 | 1068 | 1590 | 946 | 860 | 990 | 946 |
| pmbo14a | 1980 | 866 | 688 | 1052 | 816 | 790 | 764 | 818 | 1184 | 896 | 1178 |
| pmbo14a | 1990 | 980 | 1114 | 1322 | 1874 | 1610 | 1440 | 1696 | 1364 | 1226 | 1516 |
| pmbo14a | 2000 | 1256 | 1924 | 1446 | 1372 | 1296 | 1274 | 1150 | 1212 | -9999 | |
| pmbo14b | 1934 | 1103 | 2064 | 1858 | 2786 | 2258 | 4314 | | | | |
| pmbo14b | 1940 | 2858 | 2792 | 5790 | 4880 | 5776 | 4036 | 3800 | 4462 | 3478 | 2656 |
| pmbo14b | 1950 | 2996 | 3242 | 3118 | 2134 | 1696 | 1734 | 1414 | 1482 | 1796 | 1370 |
| pmbo14b | 1960 | 1484 | 1320 | 1088 | 898 | 764 | 814 | 622 | 776 | 990 | 954 |
| pmbo14b | 1970 | 1146 | 884 | 1040 | 1312 | 1260 | 1492 | 1322 | 836 | 1006 | 1074 |
| pmbo14b | 1980 | 1010 | 836 | 1122 | 846 | 870 | 712 | 826 | 1144 | 850 | 880 |
| pmbo14b | 1990 | 1010 | 1198 | 1436 | 1748 | 1408 | 1446 | 1556 | 1280 | 1494 | 1394 |
| pmbo14b | 2000 | 1506 | 2264 | 1524 | 1450 | 1282 | 1146 | 1570 | 1414 | -9999 | |
| pmbo03c | 1934 | 2340 | 4020 | 1752 | 2774 | 4302 | 3816 | | | | |
| pmbo03c | 1940 | 2368 | 2884 | 3844 | 3292 | 2760 | 2406 | 2038 | 1962 | 1710 | 1980 |
| pmbo03c | 1950 | 2470 | 2336 | 2280 | 1878 | 1434 | 1328 | 1220 | 1424 | 4128 | 2044 |
| pmbo03c | 1960 | 2486 | 2620 | 2620 | 2196 | 1286 | 1694 | 1162 | 1246 | 1468 | 1326 |
| pmbo03c | 1970 | 1596 | 1222 | 1734 | 1246 | 1038 | 1384 | 994 | 718 | 1372 | 1064 |
| pmbo03c | 1980 | 1006 | 974 | 1360 | 796 | 934 | 796 | 1448 | 1430 | 472 | 1120 |
| pmbo03c | 1990 | 2334 | 2062 | 2628 | 5788 | 4052 | 5000 | 5066 | 4730 | 4928 | 5094 |
| pmbo03c | 2000 | 3156 | 3316 | 3448 | 3830 | 4196 | 2076 | 3154 | 4818 | -9999 | |
| pmbo10a | 1958 | 1662 | 3546 | | | | | | | | |
| pmbo10a | 1960 | 3612 | 4120 | 3060 | 3250 | 3932 | 2188 | 2264 | 2652 | 1854 | 894 |
| pmbo10a | 1970 | 2146 | 2198 | 1622 | 2024 | 1534 | 4088 | 4508 | 5744 | 11570 | 6690 |
| pmbo10a | 1980 | 8572 | 8876 | 9278 | 10276 | 9618 | 11102 | 9368 | 8836 | 6402 | 8222 |
| pmbo10a | 1990 | 7928 | 6658 | 9222 | 9436 | 7200 | 6508 | 5834 | 4372 | 6012 | 4928 |
| pmbo10a | 2000 | 4810 | 6060 | 3268 | 2906 | 2984 | 4166 | 3106 | 2068 | -9999 | |
| pmbo10b | 1958 | 746 | 3496 | | | | | | | | |
| pmbo10b | 1960 | 3584 | 3996 | 2868 | 3414 | 4010 | 2342 | 2224 | 2454 | 1980 | 952 |

pmbo10b 1970 1876 2270 1472 2058 1562 4438 4672 6840 10894 6836
pmbo10b 1980 9378 8540 10514 10196 8466 8392 8100 9460 6240 8182
pmbo10b 1990 7182 6622 10168 10164 7996 6978 6994 4502 6350 4274
pmbo10b 2000 3862 4800 2730 2706 2144 3810 3316 2176 -9999
pmbo01a 1981 1782 1898 1422 2808 1874 1612 1260 580 3300
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pbbo08a 2000 4272 4798 3124 3154 3634 2496 2744 3036 -9999
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pbbo08b 1970 2588 1344 2770 3174 1302 3440 2992 2922 3252 1216
pbbo08b 1980 1606 1160 3376 3086 1682 2010 3660 2568 1860 2946

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|---|---|---|---|---|---|---|---|---|---|---|---|
| pbbo08b | 1990 | 2922 | 3014 | 3356 | 10824 | 5624 | 4062 | 4872 | 5190 | 6396 | 6602 |
| pbbo08b | 2000 | 4490 | 5638 | 4936 | 5404 | 6560 | 4568 | 5800 | 3404 | -9999 | |
| pbbo01a | 1942 | 2280 | 1624 | 3182 | 4334 | 2126 | 2002 | 4156 | 3376 | | |
| pbbo01a | 1950 | 4058 | 4280 | 3796 | 2488 | 2160 | 1028 | 1420 | 2262 | 2170 | 2146 |
| pbbo01a | 1960 | 2988 | 2426 | 2376 | 2018 | 1482 | 2478 | 2044 | 2932 | 3900 | 2856 |
| pbbo01a | 1970 | 2512 | 2222 | 2342 | 2596 | 1782 | 2366 | 2038 | 1864 | 1894 | 1200 |
| pbbo01a | 1980 | 1314 | 2526 | 2868 | 1776 | 1436 | 1148 | 1304 | 1414 | 1198 | 1064 |
| pbbo01a | 1990 | 1322 | 1820 | 1488 | 2950 | 2298 | 1944 | 2234 | 2000 | 3274 | 3586 |
| pbbo01a | 2000 | 2690 | 3762 | 3928 | 4378 | 3472 | 2202 | 2470 | 2202 | -9999 | |
| pbbo01b | 1942 | 1728 | 2596 | 1298 | 3598 | 4078 | 2542 | 1892 | 3416 | | |
| pbbo01b | 1950 | 4090 | 2570 | 3776 | 3552 | 2826 | 2424 | 1180 | 1798 | 2900 | 2344 |
| pbbo01b | 1960 | 1920 | 2494 | 2792 | 2100 | 1838 | 2178 | 1212 | 1584 | 1740 | 1896 |
| pbbo01b | 1970 | 1604 | 1318 | 1422 | 2108 | 1806 | 2744 | 2292 | 1500 | 1914 | 1120 |
| pbbo01b | 1980 | 1492 | 1926 | 3594 | 3166 | 2050 | 1872 | 1800 | 2178 | 1210 | 1750 |
| pbbo01b | 1990 | 2730 | 3408 | 2590 | 4418 | 3280 | 2304 | 2562 | 2320 | 2082 | 2558 |
| pbbo01b | 2000 | 4026 | 4594 | 3720 | 5766 | 5446 | 3526 | 3860 | 2930 | -9999 | |
| pbbo05a | 1968 | 2776 | 2412 | | | | | | | | |
| pbbo05a | 1970 | 1732 | 1850 | 2988 | 3552 | 1608 | 4002 | 2838 | 1476 | 1918 | 1082 |
| pbbo05a | 1980 | 1260 | 2012 | 6986 | 4606 | 4862 | 4270 | 3756 | 2990 | 1630 | 2868 |
| pbbo05a | 1990 | 4612 | 3866 | 4500 | 5218 | 3400 | 2378 | 2044 | 2260 | 2166 | 2270 |
| pbbo05a | 2000 | 3228 | 3896 | 3852 | 4140 | 4088 | 3744 | 3314 | 2504 | -9999 | |
| pbbo05b | 1968 | 2556 | 2394 | | | | | | | | |
| pbbo05b | 1970 | 1784 | 1700 | 3126 | 3522 | 1574 | 4030 | 2982 | 1438 | 1844 | 1054 |
| pbbo05b | 1980 | 1270 | 2008 | 6936 | 4652 | 4898 | 4164 | 3868 | 2954 | 1578 | 3024 |
| pbbo05b | 1990 | 4480 | 3936 | 4222 | 5482 | 3332 | 2408 | 2076 | 2184 | 2350 | 2086 |
| pbbo05b | 2000 | 3150 | 4098 | 3802 | 3910 | 4108 | 3778 | 3350 | 2600 | -9999 | |
| pbbo09a | 1941 | 3512 | 6008 | 3172 | 2494 | 3340 | 2468 | 2052 | 1620 | 1862 | |
| pbbo09a | 1950 | 2432 | 2932 | 1856 | 1408 | 1486 | 2064 | 1822 | 1942 | 1816 | 1256 |
| pbbo09a | 1960 | 1908 | 2292 | 1958 | 1776 | 1780 | 1564 | 1298 | 1754 | 3306 | 3528 |
| pbbo09a | 1970 | 2576 | 2190 | 2118 | 2124 | 1600 | 2436 | 2016 | 1408 | 2280 | 1426 |
| pbbo09a | 1980 | 1322 | 2910 | 3150 | 1830 | 1464 | 1160 | 1280 | 1512 | 766 | 704 |
| pbbo09a | 1990 | 950 | 1132 | 1316 | 3770 | 3660 | 2164 | 2034 | 2078 | 2122 | 1852 |
| pbbo09a | 2000 | 2078 | 1652 | 1190 | 1646 | 2202 | 1400 | 1820 | 1524 | -9999 | |
| pbbo09b | 1941 | 3514 | 6064 | 3110 | 2618 | 3274 | 2478 | 2018 | 1550 | 1960 | |
| pbbo09b | 1950 | 2476 | 2850 | 1932 | 1354 | 1488 | 2050 | 1850 | 1918 | 1816 | 1362 |
| pbbo09b | 1960 | 2002 | 2082 | 2022 | 1808 | 1698 | 1496 | 1426 | 1570 | 3396 | 3616 |
| pbbo09b | 1970 | 2400 | 2304 | 2134 | 2126 | 1632 | 2410 | 2010 | 1446 | 2276 | 1282 |
| pbbo09b | 1980 | 1416 | 3002 | 3076 | 1882 | 1528 | 1014 | 1318 | 1500 | 758 | 752 |
| pbbo09b | 1990 | 1094 | 970 | 1354 | 3778 | 3564 | 2198 | 2152 | 2024 | 2170 | 1834 |
| pbbo09b | 2000 | 1990 | 1570 | 1102 | 1676 | 2166 | 1566 | 1904 | 1502 | -9999 | |
| plbo04a | 1964 | 1972 | 2764 | 1434 | 1996 | 2134 | 2640 | | | | |
| plbo04a | 1970 | 2228 | 1066 | 1552 | 2408 | 1236 | 1956 | 3950 | 2970 | 5478 | 5786 |
| plbo04a | 1980 | 1040 | 1272 | 3990 | 5296 | 5174 | 5366 | 6370 | 5920 | 2778 | 5120 |
| plbo04a | 1990 | 4610 | 4852 | 5664 | 8398 | 8202 | 12724 | 9896 | 6306 | 7096 | 7400 |
| plbo04a | 2000 | 10162 | 9516 | 5960 | 6204 | 8444 | 8698 | 4626 | 5392 | -9999 | |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| plbo04b | 1964 | 2054 | 2774 | 1432 | 2232 | 2048 | 2098 | | | | |
| plbo04b | 1970 | 1872 | 1480 | 1454 | 2428 | 1316 | 2204 | 3816 | 2870 | 5436 | 5744 |
| plbo04b | 1980 | 1012 | 1254 | 3856 | 5690 | 4634 | 5176 | 6368 | 6176 | 2916 | 5344 |
| plbo04b | 1990 | 4530 | 5422 | 5898 | 9258 | 8996 | 10566 | 9550 | 7184 | 9258 | 9244 |
| plbo04b | 2000 | 9074 | 6596 | 5216 | 5938 | 6908 | 8246 | 5450 | 3938 | -9999 | |
| plbo04c | 1964 | 1904 | 2946 | 1470 | 2066 | 2140 | 1940 | | | | |
| plbo04c | 1970 | 1900 | 1148 | 1558 | 2612 | 1358 | 2056 | 3682 | 2944 | 5228 | 5852 |
| plbo04c | 1980 | 1046 | 1120 | 4308 | 6084 | 5102 | 5420 | 6332 | 6078 | 2758 | 4884 |
| plbo04c | 1990 | 4574 | 5174 | 6040 | 8860 | 8852 | 10124 | 9412 | 6206 | 8064 | 8310 |
| plbo04c | 2000 | 9256 | 11478 | 8762 | 8280 | 9630 | 9834 | 4412 | 4726 | -9999 | |
| plbo05a | 1964 | 2212 | 2658 | 1532 | 2974 | 1902 | 2610 | | | | |
| plbo05a | 1970 | 4234 | 9108 | 6614 | 5642 | 4868 | 6896 | 6438 | 3032 | 4934 | 4326 |
| plbo05a | 1980 | 4574 | 2114 | 6118 | 7000 | 5586 | 6224 | 5850 | 10176 | 3322 | 4868 |
| plbo05a | 1990 | 5274 | 5554 | 6224 | 7086 | 5486 | 6836 | 3558 | 2528 | 3960 | 7830 |
| plbo05a | 2000 | 8236 | 9836 | 6760 | 5894 | 5332 | 4012 | 3780 | 1812 | -9999 | |
| plbo05b | 1964 | 1360 | 2120 | 2042 | 3308 | 1662 | 2384 | | | | |
| plbo05b | 1970 | 4728 | 7588 | 8514 | 5836 | 4870 | 6366 | 6650 | 4722 | 4642 | 5364 |
| plbo05b | 1980 | 3910 | 2318 | 5514 | 5828 | 4670 | 6520 | 5488 | 7654 | 3366 | 4338 |
| plbo05b | 1990 | 5994 | 4052 | 5512 | 8298 | 7710 | 7216 | 4018 | 3594 | 4894 | 8502 |
| plbo05b | 2000 | 7512 | 8318 | 6406 | 4690 | 4350 | 5324 | 3576 | 4118 | -9999 | |
| plbo01a | 1932 | 590 | 902 | 1418 | 1816 | 294 | 2374 | 952 | 1568 | | |
| plbo01a | 1940 | 510 | 1256 | 2774 | 2138 | 1350 | 2280 | 2090 | 2474 | 2396 | 3094 |
| plbo01a | 1950 | 2862 | 4410 | 3600 | 2998 | 1964 | 2962 | 1980 | 2624 | 1302 | 1794 |
| plbo01a | 1960 | 1992 | 1548 | 1918 | 1804 | 1918 | 2316 | 1954 | 2376 | 3118 | 4976 |
| plbo01a | 1970 | 4742 | 4548 | 3878 | 4142 | 5060 | 7268 | 6314 | 4262 | 4620 | 4776 |
| plbo01a | 1980 | 4666 | 6516 | 12144 | 6920 | 6186 | 4754 | 4452 | 7092 | 3004 | 5712 |
| plbo01a | 1990 | 7932 | 5294 | 2880 | 4020 | 3878 | 4170 | 3632 | 2272 | 5380 | 4850 |
| plbo01a | 2000 | 4376 | 3406 | 3102 | 3346 | 2658 | 2516 | 2376 | -9999 | | |
| plbo01b | 1932 | 796 | 1256 | 1042 | 1696 | 424 | 1524 | 1086 | 2310 | | |
| plbo01b | 1940 | 474 | 1458 | 3028 | 2142 | 1458 | 2062 | 1908 | 2216 | 2256 | 2948 |
| plbo01b | 1950 | 2744 | 4134 | 3492 | 3078 | 1970 | 3010 | 2022 | 2866 | 1298 | 1660 |
| plbo01b | 1960 | 2154 | 1522 | 2106 | 1942 | 2030 | 2434 | 2238 | 2524 | 3198 | 4914 |
| plbo01b | 1970 | 4696 | 4562 | 4028 | 4418 | 5416 | 7184 | 5784 | 4182 | 4426 | 4892 |
| plbo01b | 1980 | 4806 | 6598 | 12132 | 6780 | 6296 | 4872 | 4450 | 7098 | 3080 | 5834 |
| plbo01b | 1990 | 7692 | 5264 | 3000 | 4146 | 3782 | 4002 | 3712 | 2232 | 5202 | 4870 |
| plbo01b | 2000 | 4464 | 3362 | 3142 | 3162 | 2684 | 2370 | 2426 | -9999 | | |
| plbo14a | 1962 | 4052 | 2940 | 1750 | 2290 | 396 | 312 | 1616 | 3236 | | |
| plbo14a | 1970 | 7034 | 4456 | 4002 | 2494 | 2460 | 3208 | 3584 | 1568 | 1370 | 950 |
| plbo14a | 1980 | 1290 | 2032 | 3842 | 1792 | 2706 | 2442 | 3926 | 3280 | 1322 | 2402 |
| plbo14a | 1990 | 2220 | 1726 | 3132 | 4912 | 3264 | 2758 | 2652 | 1112 | 2018 | 1958 |
| plbo14a | 2000 | 1946 | 1096 | 1294 | 3538 | 5712 | 4516 | 10800 | 6974 | -9999 | |
| plbo14b | 1962 | 3822 | 4076 | 2118 | 3034 | 382 | 368 | 1764 | 3482 | | |
| plbo14b | 1970 | 2228 | 3798 | 2876 | 2160 | 1928 | 3938 | 3768 | 1866 | 1926 | 1078 |
| plbo14b | 1980 | 1506 | 2402 | 3544 | 1350 | 2378 | 2278 | 3186 | 2876 | 1160 | 2730 |
| plbo14b | 1990 | 2552 | 2694 | 2432 | 4682 | 3120 | 3028 | 3988 | 2158 | 5704 | 5142 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| plbo14b | 2000 | 4410 | 3784 | 7322 | 6952 | 6778 | 5610 | 11590 | 7336 | -9999 | |
| plbo09a | 1946 | 2040 | 1926 | 1580 | 2214 | | | | | | |
| plbo09a | 1950 | 2370 | 2476 | 3470 | 3350 | 3012 | 3916 | 2874 | 3772 | 1508 | 1268 |
| plbo09a | 1960 | 1388 | 1854 | 1646 | 2228 | 2002 | 1934 | 1208 | 1254 | 1902 | 2986 |
| plbo09a | 1970 | 2742 | 3100 | 2806 | 3228 | 3144 | 3530 | 3584 | 2020 | 1564 | 942 |
| plbo09a | 1980 | 1160 | 1324 | 2394 | 1562 | 2058 | 2298 | 3006 | 2606 | 1288 | 2166 |
| plbo09a | 1990 | 2032 | 1796 | 2150 | 3456 | 2606 | 3608 | 3392 | 2694 | 2466 | 2602 |
| plbo09a | 2000 | 3744 | 4490 | 3908 | 5434 | 5960 | 5948 | 5192 | 5048 | -9999 | |
| plbo09b | 1946 | 2820 | 3032 | 2198 | 1976 | | | | | | |
| plbo09b | 1950 | 2408 | 2662 | 3070 | 3690 | 3588 | 4574 | 3918 | 4576 | 1424 | 2344 |
| plbo09b | 1960 | 3350 | 3062 | 3114 | 3144 | 1890 | 1768 | 1448 | 1790 | 2016 | 3116 |
| plbo09b | 1970 | 4264 | 3560 | 4486 | 4140 | 2818 | 3498 | 3392 | 1888 | 1864 | 964 |
| plbo09b | 1980 | 1122 | 842 | 1480 | 1114 | 1568 | 1424 | 2542 | 2066 | 1500 | 2290 |
| plbo09b | 1990 | 1708 | 2140 | 2510 | 3330 | 2072 | 2466 | 2934 | 2320 | 2368 | 3134 |
| plbo09b | 2000 | 3868 | 5300 | 4698 | 5284 | 8422 | 8848 | 4688 | 3538 | -9999 | |
| plbo13a | 1980 | 918 | 2644 | 2108 | 1946 | 4158 | 3102 | 5422 | 3100 | 2146 | 5650 |
| plbo13a | 1990 | 4880 | 4264 | 5948 | 7774 | 4486 | 5642 | 5110 | 3896 | 6760 | 5846 |
| plbo13a | 2000 | 6280 | 5882 | 2540 | 5624 | 5716 | 4142 | 4744 | 4554 | -9999 | |
| plbo13b | 1980 | 1392 | 1618 | 1786 | 1850 | 4170 | 3192 | 7406 | 4560 | 2764 | 7378 |
| plbo13b | 1990 | 5528 | 5120 | 6960 | 9394 | 5988 | 7744 | 4958 | 3876 | 5270 | 5344 |
| plbo13b | 2000 | 7866 | 8178 | 3988 | 5046 | 4208 | 3052 | 2856 | 3344 | -9999 | |
| plbo10a | 1946 | 1962 | 1142 | 1548 | 550 | | | | | | |
| plbo10a | 1950 | 934 | 976 | 434 | 982 | 590 | 782 | 1318 | 1772 | 612 | 1168 |
| plbo10a | 1960 | 1274 | 864 | 964 | 618 | 536 | 1028 | 1170 | 600 | 306 | 382 |
| plbo10a | 1970 | 566 | 530 | 1182 | 916 | 1656 | 2204 | 2122 | 632 | 1194 | 1540 |
| plbo10a | 1980 | 604 | 938 | 1944 | 1140 | 1004 | 1576 | 1348 | 3820 | 1398 | 2580 |
| plbo10a | 1990 | 3648 | 2732 | 2586 | 2986 | 2268 | 1486 | 1318 | 1872 | 3738 | 2834 |
| plbo10a | 2000 | 2652 | 2404 | 2752 | 1984 | 2402 | 2654 | 2392 | 2166 | -9999 | |
| plbo10b | 1946 | 1612 | 1028 | 1496 | 876 | | | | | | |
| plbo10b | 1950 | 1184 | 884 | 490 | 786 | 606 | 1058 | 1522 | 2262 | 764 | 2140 |
| plbo10b | 1960 | 1642 | 904 | 1598 | 1118 | 404 | 554 | 638 | 474 | 316 | 642 |
| plbo10b | 1970 | 694 | 524 | 1584 | 1118 | 1660 | 2936 | 2656 | 850 | 916 | 1484 |
| plbo10b | 1980 | 952 | 1708 | 3028 | 1888 | 1148 | 1518 | 1472 | 3782 | 1428 | 2680 |
| plbo10b | 1990 | 3880 | 2998 | 2290 | 4264 | 3230 | 2170 | 1856 | 2220 | 3932 | 2824 |
| plbo10b | 2000 | 3116 | 1634 | 1806 | 2280 | 3186 | 2828 | 2094 | 2672 | -9999 | |
| plbo11a | 1958 | 2230 | 2638 | | | | | | | | |
| plbo11a | 1960 | 3020 | 2184 | 2414 | 1648 | 622 | 1178 | 1104 | 1092 | 754 | 1188 |
| plbo11a | 1970 | 1134 | 1248 | 1700 | 1230 | 1676 | 2720 | 2748 | 1442 | 1952 | 1966 |
| plbo11a | 1980 | 1636 | 1878 | 3684 | 2346 | 1944 | 3174 | 3018 | 5056 | 1660 | 2756 |
| plbo11a | 1990 | 3590 | 3616 | 2488 | 5266 | 2904 | 2390 | 2050 | 2520 | 2618 | 2184 |
| plbo11a | 2000 | 2356 | 1512 | 1602 | 1766 | 2150 | 3320 | 1858 | 1254 | -9999 | |
| plbo11b | 1958 | 2262 | 2852 | | | | | | | | |
| plbo11b | 1960 | 2938 | 2200 | 2066 | 1444 | 624 | 1488 | 1262 | 1446 | 720 | 1458 |
| plbo11b | 1970 | 1534 | 1288 | 1550 | 1200 | 1540 | 2106 | 1984 | 1082 | 1550 | 1294 |
| plbo11b | 1980 | 944 | 1206 | 2170 | 1424 | 1242 | 2082 | 2428 | 3014 | 1800 | 2782 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| plbo11b | 1990 | 3494 | 4076 | 2304 | 5808 | 2730 | 3028 | 3178 | 3380 | 3398 | 2896 |
| plbo11b | 2000 | 2994 | 1818 | 1670 | 1804 | 2362 | 2134 | 1180 | 1296 | -9999 | |
| plbo06 | 1977 | 418 | 2566 | 4042 | | | | | | | |
| plbo06 | 1980 | 328 | 2880 | 5592 | 6368 | 5578 | 7720 | 10072 | 7768 | 2720 | 7970 |
| plbo06 | 1990 | 6696 | 4654 | 4152 | 7854 | 4712 | 9848 | 6564 | 4720 | 6740 | 5802 |
| plbo06 | 2000 | 6148 | 6710 | 5548 | 8198 | 7734 | 6626 | 7126 | 5684 | -9999 | |
| plbo06b | 1977 | 678 | 2202 | 4424 | | | | | | | |
| plbo06b | 1980 | 1564 | 3628 | 4830 | 5130 | 4902 | 5464 | 9716 | 9302 | 4052 | 11680 |
| plbo06b | 1990 | 9522 | 5882 | 8108 | 11116 | 6128 | 8012 | 7100 | 5726 | 6770 | 6384 |
| plbo06b | 2000 | 6304 | 6778 | 5240 | 7702 | 8476 | 8134 | 8556 | 5886 | -9999 | |
| pdbo11a | 1936 | 1752 | 2496 | 1404 | 2762 | | | | | | |
| pdbo11a | 1940 | 1404 | 5914 | 5020 | 4942 | 3822 | 4340 | 2500 | 3238 | 2874 | 3152 |
| pdbo11a | 1950 | 2904 | 2596 | 2858 | 2740 | 2202 | 1720 | 2206 | 3380 | 2352 | 1916 |
| pdbo11a | 1960 | 1638 | 1632 | 1234 | 1422 | 1528 | 1256 | 1076 | 1472 | 1902 | 1506 |
| pdbo11a | 1970 | 1440 | 1262 | 1154 | 1348 | 936 | 904 | 794 | 762 | 1170 | 1032 |
| pdbo11a | 1980 | 916 | 1146 | 1462 | 1096 | 1332 | 1128 | 1870 | 2482 | 1776 | 2726 |
| pdbo11a | 1990 | 3918 | 3106 | 2564 | 3368 | 2276 | 4366 | 3190 | 2830 | 3132 | 2824 |
| pdbo11a | 2000 | 2204 | 1910 | 1830 | 2144 | 1982 | 1836 | 1942 | 1806 | -9999 | |
| pdbo11b | 1936 | 1474 | 2380 | 1426 | 2658 | | | | | | |
| pdbo11b | 1940 | 1648 | 3218 | 4268 | 3824 | 3526 | 3374 | 2848 | 4010 | 4318 | 4820 |
| pdbo11b | 1950 | 3014 | 2122 | 2302 | 2478 | 2010 | 1534 | 1938 | 2974 | 2660 | 1888 |
| pdbo11b | 1960 | 1778 | 1656 | 1350 | 1210 | 1342 | 1186 | 520 | 618 | 1236 | 1400 |
| pdbo11b | 1970 | 996 | 1026 | 976 | 1126 | 1446 | 1098 | 1062 | 932 | 862 | 1070 |
| pdbo11b | 1980 | 986 | 990 | 1244 | 1728 | 1068 | 1324 | 936 | 2054 | 2066 | 1322 |
| pdbo11b | 1990 | 2016 | 2416 | 1986 | 3326 | 1666 | 2320 | 1818 | 1388 | 1598 | 1858 |
| pdbo11b | 2000 | 1858 | 1744 | 1314 | 1068 | 1550 | 1414 | 2416 | 1318 | -9999 | |
| pdbo08a | 1940 | 2646 | 2698 | 3016 | 4762 | 3726 | 3786 | 3356 | 4600 | 4894 | 6166 |
| pdbo08a | 1950 | 5560 | 5760 | 5586 | 5230 | 2744 | 1554 | 966 | 1702 | 2534 | 1850 |
| pdbo08a | 1960 | 2872 | 2852 | 2150 | 1316 | 1502 | 1704 | 1336 | 1668 | 2738 | 2692 |
| pdbo08a | 1970 | 2726 | 1788 | 2244 | 2218 | 2490 | 4638 | 2752 | 1510 | 1782 | 1878 |
| pdbo08a | 1980 | 1080 | 1124 | 1964 | 1748 | 1350 | 944 | 1374 | 1504 | 1288 | 1756 |
| pdbo08a | 1990 | 1358 | 1702 | 1578 | 2094 | 1222 | 1830 | 1596 | 968 | 1362 | 1736 |
| pdbo08a | 2000 | 1040 | 1636 | 1074 | 1458 | 1410 | 1288 | 1248 | 1236 | -9999 | |
| pdbo08b | 1940 | 1916 | 2796 | 2858 | 4792 | 3740 | 3912 | 3300 | 4424 | 5240 | 5932 |
| pdbo08b | 1950 | 5400 | 5596 | 5326 | 5544 | 2398 | 1428 | 1168 | 1806 | 2416 | 1772 |
| pdbo08b | 1960 | 2828 | 2556 | 2046 | 1526 | 1354 | 1850 | 1102 | 2292 | 2974 | 2970 |
| pdbo08b | 1970 | 2898 | 1944 | 2448 | 2564 | 2474 | 4792 | 2718 | 1302 | 1782 | 1724 |
| pdbo08b | 1980 | 1058 | 1044 | 1684 | 1618 | 1258 | 774 | 1152 | 1372 | 1090 | 1650 |
| pdbo08b | 1990 | 1372 | 1636 | 1626 | 1990 | 1140 | 1736 | 1656 | 1158 | 1218 | 1368 |
| pdbo08b | 2000 | 972 | 1610 | 1010 | 1234 | 1172 | 1268 | 1206 | 1184 | -9999 | |
| pdbo14a | 1958 | 828 | 772 | | | | | | | | |
| pdbo14a | 1960 | 1812 | 1818 | 648 | 2664 | 1352 | 2170 | 1394 | 2512 | 2260 | 2272 |
| pdbo14a | 1970 | 4888 | 5788 | 6208 | 8010 | 6520 | 2076 | 2614 | 6140 | 8194 | 6988 |
| pdbo14a | 1980 | 4958 | 5500 | 6562 | 5076 | 4416 | 4806 | 8772 | 7872 | 3202 | 5384 |
| pdbo14a | 1990 | 6262 | 6344 | 6356 | 8022 | 5660 | 6146 | 4784 | 3798 | 5200 | 5628 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| pdbo14a | 2000 | 4130 | 4246 | 3348 | 4410 | 3590 | 2698 | 2282 | 2070 | -9999 | |
| pdbo14b | 1958 | 1014 | 976 | | | | | | | | |
| pdbo14b | 1960 | 1860 | 1632 | 908 | 2082 | 1706 | 2308 | 1238 | 2450 | 2488 | 2776 |
| pdbo14b | 1970 | 4826 | 4572 | 4292 | 6034 | 6516 | 2778 | 1564 | 4402 | 5682 | 6578 |
| pdbo14b | 1980 | 5644 | 5836 | 9244 | 6248 | 4220 | 3428 | 6640 | 7114 | 2844 | 3062 |
| pdbo14b | 1990 | 3898 | 4686 | 4252 | 6648 | 5100 | 5626 | 5120 | 4522 | 5582 | 6434 |
| pdbo14b | 2000 | 4606 | 5524 | 3542 | 4672 | 4222 | 3846 | 2830 | 2400 | -9999 | |
| pdbo06a | 1932 | 1268 | 2908 | 2396 | 3456 | 2780 | 2796 | 2264 | 2184 | | |
| pdbo06a | 1940 | 1190 | 1014 | 2084 | 1330 | 1042 | 2062 | 1964 | 1084 | 1422 | 1688 |
| pdbo06a | 1950 | 2502 | 3166 | 2458 | 2372 | 1784 | 2654 | 2090 | 2656 | 2384 | 1786 |
| pdbo06a | 1960 | 2066 | 2232 | 2218 | 1616 | 1534 | 1262 | 950 | 1142 | 1310 | 1324 |
| pdbo06a | 1970 | 1448 | 1472 | 1434 | 1596 | 1260 | 2064 | 2110 | 1206 | 1360 | 1690 |
| pdbo06a | 1980 | 1996 | 2658 | 2898 | 2064 | 1702 | 1694 | 2000 | 2572 | 1448 | 2856 |
| pdbo06a | 1990 | 3474 | 3956 | 2916 | 3730 | 3714 | 4810 | 3722 | 3332 | 3094 | 2772 |
| pdbo06a | 2000 | 3574 | 3366 | 2702 | 4322 | 3280 | 5266 | 5782 | 5712 | -9999 | |
| pdbo06b | 1932 | 656 | 1664 | 2362 | 2990 | 3154 | 3038 | 1942 | 2176 | | |
| pdbo06b | 1940 | 1382 | 1436 | 2130 | 1408 | 1426 | 1700 | 1662 | 850 | 1262 | 1518 |
| pdbo06b | 1950 | 1752 | 3036 | 2392 | 2964 | 1864 | 2162 | 1634 | 2146 | 2126 | 2024 |
| pdbo06b | 1960 | 2572 | 2208 | 2382 | 2406 | 1824 | 1244 | 1242 | 1622 | 2144 | 2008 |
| pdbo06b | 1970 | 1968 | 1786 | 1602 | 1912 | 1378 | 2756 | 2266 | 1558 | 1334 | 1594 |
| pdbo06b | 1980 | 1528 | 1426 | 2080 | 1756 | 1596 | 1422 | 1350 | 2022 | 862 | 1264 |
| pdbo06b | 1990 | 2442 | 3666 | 2948 | 3864 | 2238 | 3162 | 3508 | 2820 | 2554 | 3152 |
| pdbo06b | 2000 | 5412 | 4506 | 4104 | 4808 | 3376 | 3480 | 3700 | 4502 | -9999 | |
| pdbo02a | 1939 | 992 | | | | | | | | | |
| pdbo02a | 1940 | 2962 | 4442 | 4400 | 3552 | 3732 | 3574 | 2604 | 2016 | 2856 | 2710 |
| pdbo02a | 1950 | 2596 | 4314 | 3028 | 2880 | 2110 | 1350 | 1332 | 2114 | 2236 | 1710 |
| pdbo02a | 1960 | 2114 | 2036 | 1964 | 1586 | 1418 | 952 | 940 | 1160 | 1626 | 1534 |
| pdbo02a | 1970 | 1368 | 1430 | 1156 | 1622 | 1188 | 1310 | 1388 | 988 | 1134 | 1124 |
| pdbo02a | 1980 | 1508 | 1570 | 2244 | 1616 | 1566 | 1432 | 1876 | 2176 | 1294 | 1906 |
| pdbo02a | 1990 | 1582 | 1488 | 1110 | 1510 | 1324 | 1832 | 1540 | 1602 | 1130 | 1158 |
| pdbo02a | 2000 | 1754 | 1952 | 1646 | 2260 | 2432 | 2230 | 3662 | 2496 | -9999 | |
| pdbo02b | 1939 | 1520 | | | | | | | | | |
| pdbo02b | 1940 | 2648 | 2086 | 2488 | 1550 | 2762 | 3762 | 2748 | 1532 | 2112 | 4054 |
| pdbo02b | 1950 | 3456 | 3404 | 3506 | 4396 | 4350 | 3350 | 3266 | 3920 | 3642 | 3888 |
| pdbo02b | 1960 | 4510 | 3088 | 2690 | 2802 | 2754 | 1972 | 1282 | 1752 | 1750 | 1978 |
| pdbo02b | 1970 | 1688 | 1782 | 1612 | 2234 | 2032 | 2206 | 1954 | 1082 | 1140 | 1068 |
| pdbo02b | 1980 | 1284 | 1176 | 1648 | 1600 | 1422 | 934 | 1270 | 1396 | 1244 | 1484 |
| pdbo02b | 1990 | 1420 | 1596 | 1594 | 1154 | 828 | 1280 | 1082 | 1236 | 2770 | 3170 |
| pdbo02b | 2000 | 3980 | 3562 | 2714 | 2904 | 3634 | 2884 | 7480 | 4754 | -9999 | |
| pdbo15c | 1878 | 662 | 516 | | | | | | | | |
| pdbo15c | 1880 | 520 | 544 | 736 | 986 | 1500 | 902 | 448 | 240 | 540 | 728 |
| pdbo15c | 1890 | 590 | 412 | 474 | 410 | 452 | 388 | 166 | 266 | 734 | 556 |
| pdbo15c | 1900 | 290 | 270 | 236 | 164 | 192 | 182 | 352 | 264 | 274 | 214 |
| pdbo15c | 1910 | 390 | 380 | 392 | 360 | 380 | 458 | 582 | 1512 | 1218 | 796 |
| pdbo15c | 1920 | 524 | 386 | 276 | 330 | 330 | 562 | 428 | 408 | 446 | 408 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| pdbo15c | 1930 | 586 | 466 | 590 | 1488 | 638 | 2942 | 660 | 672 | 774 | 1802 |
| pdbo15c | 1940 | 1756 | 886 | 1280 | 2168 | 1528 | 1496 | 1218 | 1174 | 1012 | 1646 |
| pdbo15c | 1950 | 1726 | 1818 | 2490 | 1932 | 1448 | 1100 | 1284 | 1650 | 1002 | 1382 |
| pdbo15c | 1960 | 1718 | 1864 | 1772 | 1580 | 1324 | 1292 | 816 | 1048 | 1074 | 954 |
| pdbo15c | 1970 | 830 | 636 | 656 | 634 | 572 | 556 | 586 | 424 | 516 | 418 |
| pdbo15c | 1980 | 810 | 586 | 998 | 730 | 934 | 1008 | 2914 | 3264 | 1076 | 1476 |
| pdbo15c | 1990 | 1752 | 2462 | 2776 | 5292 | 2606 | 2640 | 2624 | 2372 | 3050 | 2926 |
| pdbo15c | 2000 | 3234 | 3070 | 2230 | 3608 | 3488 | 2734 | 3598 | 2758 | -9999 | |
| pdbo13c | 1968 | 1190 | 2044 | | | | | | | | |
| pdbo13c | 1970 | 1244 | 2192 | 1562 | 2056 | 1010 | 1562 | 2076 | 1852 | 2922 | 3150 |
| pdbo13c | 1980 | 3444 | 3100 | 3580 | 3496 | 3064 | 1634 | 2832 | 3672 | 2564 | 3568 |
| pdbo13c | 1990 | 3842 | 5840 | 2956 | 3644 | 1764 | 3610 | 4216 | 5392 | 5588 | 3500 |
| pdbo13c | 2000 | 3168 | 5180 | 4570 | 4048 | 3660 | 4366 | 3460 | 3160 | -9999 | |
| pdbo01a | 1936 | 2346 | 3806 | 2630 | 4140 | | | | | | |
| pdbo01a | 1940 | 3124 | 2482 | 3102 | 2560 | 2178 | 3090 | 2296 | 2448 | 2168 | 3004 |
| pdbo01a | 1950 | 2642 | 2814 | 2922 | 2864 | 1898 | 2020 | 1946 | 2464 | 2846 | 2498 |
| pdbo01a | 1960 | 2768 | 2996 | 2208 | 2402 | 2184 | 1976 | 1422 | 1824 | 1872 | 1802 |
| pdbo01a | 1970 | 1404 | 1276 | 1164 | 1528 | 1476 | 2034 | 1532 | 952 | 1134 | 1138 |
| pdbo01a | 1980 | 1236 | 1654 | 2374 | 1598 | 1476 | 1166 | 1512 | 1248 | 836 | 902 |
| pdbo01a | 1990 | 886 | 744 | 1348 | 1846 | 1258 | 1108 | 1054 | 1106 | 1182 | 1080 |
| pdbo01a | 2000 | 1990 | 992 | 672 | 578 | 490 | 1060 | 1046 | 1134 | -9999 | |
| pdbo01b | 1936 | 2372 | 3478 | 2696 | 6338 | | | | | | |
| pdbo01b | 1940 | 3454 | 3408 | 4200 | 3662 | 2788 | 3194 | 2268 | 2842 | 2410 | 2622 |
| pdbo01b | 1950 | 2404 | 2718 | 2892 | 2716 | 1912 | 1906 | 1848 | 2694 | 3080 | 2476 |
| pdbo01b | 1960 | 2904 | 2618 | 2160 | 1874 | 2014 | 1598 | 1346 | 1342 | 1200 | 1238 |
| pdbo01b | 1970 | 1390 | 986 | 812 | 1096 | 1104 | 1700 | 1084 | 730 | 1174 | 948 |
| pdbo01b | 1980 | 1090 | 1662 | 1978 | 1300 | 1262 | 992 | 768 | 1042 | 670 | 872 |
| pdbo01b | 1990 | 1052 | 1006 | 1404 | 1824 | 1268 | 1520 | 752 | 1022 | 1418 | 1792 |
| pdbo01b | 2000 | 1074 | 1008 | 730 | 552 | 630 | 660 | 1376 | 858 | -9999 | |
| pdbo07a | 1939 | 6616 | | | | | | | | | |
| pdbo07a | 1940 | 3808 | 6144 | 7454 | 4802 | 4932 | 8092 | 5784 | 3514 | 5074 | 9986 |
| pdbo07a | 1950 | 8486 | 8908 | 10530 | 9196 | 4554 | 3478 | 3104 | 5600 | 4266 | 2034 |
| pdbo07a | 1960 | 2230 | 1684 | 1446 | 1368 | 1820 | 1156 | 968 | 1322 | 1096 | 1446 |
| pdbo07a | 1970 | 1914 | 1656 | 1712 | 1956 | 1908 | 2024 | 1250 | 1476 | 1094 | 1090 |
| pdbo07a | 1980 | 812 | 854 | 900 | 856 | 880 | 846 | 866 | 1490 | 1092 | 1532 |
| pdbo07a | 1990 | 1442 | 2534 | 368 | 1608 | 776 | 906 | 1054 | 760 | 1076 | 1086 |
| pdbo07a | 2000 | 546 | 1250 | 1080 | 1204 | 1398 | 1072 | 1486 | 1178 | -9999 | |
| pdbo07b | 1939 | 5902 | | | | | | | | | |
| pdbo07b | 1940 | 4300 | 6390 | 8338 | 6080 | 5058 | 7412 | 5282 | 4720 | 5206 | 10586 |
| pdbo07b | 1950 | 11008 | 10314 | 7334 | 9504 | 3962 | 3802 | 4620 | 5044 | 3392 | 1802 |
| pdbo07b | 1960 | 2612 | 2142 | 1684 | 1416 | 1874 | 1020 | 1078 | 1056 | 906 | 1116 |
| pdbo07b | 1970 | 1386 | 1406 | 1248 | 1968 | 1782 | 2042 | 1144 | 1340 | 806 | 936 |
| pdbo07b | 1980 | 934 | 808 | 1384 | 802 | 922 | 890 | 962 | 1346 | 1036 | 1298 |
| pdbo07b | 1990 | 1570 | 1576 | 1400 | 1748 | 824 | 968 | 982 | 830 | 1468 | 1282 |
| pdbo07b | 2000 | 866 | 1254 | 1152 | 1316 | 1552 | 1194 | 1396 | 1062 | -9999 | |

pdbo04a 1935 4602 1850 2510 3322 4618
pdbo04a 1940 2560 1868 2304 1638 1520 1992 1896 1702 1858 2234
pdbo04a 1950 2922 3408 3980 4064 3912 4138 3216 2750 2350 2140
pdbo04a 1960 2496 2446 2174 1538 1798 1568 1294 1450 1498 1356
pdbo04a 1970 1128 872 808 1002 930 962 914 762 748 832
pdbo04a 1980 780 778 1318 974 828 928 1262 1356 798 1446
pdbo04a 1990 1294 1310 1334 1292 1164 1672 1300 1838 2142 2530
pdbo04a 2000 2536 2620 1774 1862 2104 1592 2514 1734 -9999
pdbo04b 1935 4448 1902 2378 3250 4030
pdbo04b 1940 2876 2038 2332 1660 1648 2062 1794 1752 1974 2190
pdbo04b 1950 2966 3586 4188 4362 3818 4160 3222 2708 2402 2184
pdbo04b 1960 2490 2482 2046 1540 1830 1686 1084 1486 1624 1360
pdbo04b 1970 1160 774 770 1070 930 1132 836 748 670 750
pdbo04b 1980 862 940 1256 1038 948 980 1158 1296 878 1228
pdbo04b 1990 1398 1376 1258 1480 1230 1656 1410 1848 2366 2368
pdbo04b 2000 2824 2668 1694 1958 2440 2098 2820 2446 -9999
pdbo12c 1907 2306 1972 2830
pdbo12c 1910 2172 1266 1788 1850 1910 3462 2176 2148 1632 1578
pdbo12c 1920 1536 1900 2738 2836 3510 1314 1442 1650 2038 2188
pdbo12c 1930 1672 1502 1580 1382 1022 1650 1472 1480 1080 1158
pdbo12c 1940 1414 1828 2122 2944 2404 3282 2574 2692 2430 2148
pdbo12c 1950 2360 1936 1900 1466 1398 1374 1284 1704 1408 1450
pdbo12c 1960 1730 1440 1270 1870 2154 2310 1114 1812 1912 1882
pdbo12c 1970 1764 1842 2354 2308 1560 1556 1308 942 1368 1440
pdbo12c 1980 1804 1408 2032 1518 1570 1864 2544 3058 2094 2898
pdbo12c 1990 3266 3012 3136 3336 2548 3172 2498 2258 2800 2666
pdbo12c 2000 2638 2268 2178 1958 1626 1626 1504 1376 -9999

APPENDIX D

GPS coordinates (lat/long) of trees used for fire history analysis

| | | | | | |
|---|---|---|---|---|---|
| Forest | BCF1 | 09-JAN-08 9:07:04AM Symbol & Name | N41 05.141 | W87 33.863 | 803 ft |
| Forest | BCF10 | 09-JAN-08 11:08:57AM Symbol & Name | N41 05.231 | W87 33.793 | 692 ft |
| Forest | BCF11 | 09-JAN-08 11:19:47AM Symbol & Name | N41 05.230 | W87 33.812 | 725 ft |
| Forest | BCF12 | 09-JAN-08 11:27:04AM Symbol & Name | N41 05.258 | W87 33.817 | 671 ft |
| Forest | BCF13 | 09-JAN-08 11:45:14AM Symbol & Name | N41 05.250 | W87 33.852 | 731 ft |
| Forest | BCF14 | 1/11/2008 6:02:57 PM Symbol & Name | N41 05.265 | W87 33.890 | |
| Forest | BCF15 | 09-JAN-08 12:06:28PM Symbol & Name | N41 05.278 | W87 33.905 | 701 ft |
| Forest | BCF16 | 09-JAN-08 12:24:40PM Symbol & Name | N41 05.336 | W87 33.941 | 700 ft |
| Forest | BCF2 | 09-JAN-08 9:24:39AM Symbol & Name | N41 05.141 | W87 33.844 | 675 ft |
| Forest | BCF3 | 09-JAN-08 9:34:58AM Symbol & Name | N41 05.149 | W87 33.831 | 711 ft |
| Forest | BCF4 | 09-JAN-08 9:44:22AM Symbol & Name | N41 05.162 | W87 33.833 | 719 ft |
| Forest | BCF5 | 09-JAN-08 9:57:32AM Symbol & Name | N41 05.177 | W87 33.863 | 703 ft |
| Forest | BCF6 | 09-JAN-08 10:15:15AM Symbol & Name | N41 05.206 | W87 33.880 | 708 ft |
| Forest | BCF7 | 09-JAN-08 10:35:18AM Symbol & Name | N41 05.210 | W87 33.835 | 738 ft |
| Forest | BCF8 | 09-JAN-08 10:48:15AM Symbol & Name | N41 05.204 | W87 33.792 | 742 ft |
| Forest | BCF9 | 09-JAN-08 10:56:15AM Symbol & Name | N41 05.221 | W87 33.789 | 707 ft |
| Forest | BDF1 | 10-JAN-08 10:38:17AM Symbol & Name | N41 04.618 | W87 38.798 | 677 ft |
| Forest | BDF10 | 10-JAN-08 12:03:20PM Symbol & Name | N41 04.415 | W87 38.832 | 669 ft |
| Forest | BDF11 | 10-JAN-08 12:07:17PM Symbol & Name | N41 04.414 | W87 38.813 | 675 ft |
| Forest | BDF12 | 10-JAN-08 12:16:13PM Symbol & Name | N41 04.386 | W87 38.737 | 669 ft |
| Forest | BDF13 | 10-JAN-08 12:24:14PM Symbol & Name | N41 04.379 | W87 38.721 | 671 ft |

| | | | | |
|---|---|---|---|---|
| Forest | BDF14 | 10-JAN-08 12:48:06PM Symbol & Name | N41 04.307 W87 38.679 | 656 ft |
| Forest | BDF15 | 10-JAN-08 1:00:57PM Symbol & Name | N41 04.445 W87 38.505 | 710 ft |
| Forest | BDF2 | 10-JAN-08 10:41:56AM Symbol & Name | N41 04.597 W87 38.830 | 668 ft |
| Forest | BDF3 | 10-JAN-08 11:17:13AM Symbol & Name | N41 04.546 W87 38.843 | 687 ft |
| Forest | BDF4 | 10-JAN-08 11:10:00AM Symbol & Name | N41 04.541 W87 38.870 | 675 ft |
| Forest | BDF5 | 10-JAN-08 11:11:49AM Symbol & Name | N41 04.525 W87 38.886 | 664 ft |
| Forest | BDF6 | 10-JAN-08 11:34:30AM Symbol & Name | N41 04.504 W87 38.907 | 699 ft |
| Forest | BDF7 | 10-JAN-08 11:37:27AM Symbol & Name | N41 04.462 W87 38.891 | 675 ft |
| Forest | BDF8 | 10-JAN-08 11:53:22AM Symbol & Name | N41 04.419 W87 38.908 | 662 ft |
| Forest | BDF9 | 10-JAN-08 11:58:36AM Symbol & Name | N41 04.462 W87 38.853 | 681 ft |
| Forest | LF1 | 09-JAN-08 3:02:26PM Symbol & Name | N41 00.966 W87 32.535 | 683 ft |
| Forest | LF10 | 10-JAN-08 8:50:00AM Symbol & Name | N41 00.891 W87 32.411 | 678 ft |
| Forest | LF11 | 10-JAN-08 8:56:08AM Symbol & Name | N41 00.911 W87 32.436 | 681 ft |
| Forest | LF12 | 10-JAN-08 8:58:44AM Symbol & Name | N41 00.902 W87 32.463 | 691 ft |
| Forest | LF13 | 10-JAN-08 9:05:49AM Symbol & Name | N41 00.918 W87 32.482 | 714 ft |
| Forest | LF14 | 10-JAN-08 9:10:04AM Symbol & Name | N41 00.887 W87 32.488 | 664 ft |
| Forest | LF15 | 10-JAN-08 9:11:55AM Symbol & Name | N41 00.875 W87 32.472 | 683 ft |
| Forest | LF2 | 09-JAN-08 3:02:56PM Symbol & Name | N41 00.971 W87 32.533 | 691 ft |
| Forest | LF3 | 09-JAN-08 3:21:28PM Symbol & Name | N41 00.983 W87 32.502 | 693 ft |
| Forest | LF4 | 09-JAN-08 3:20:09PM Symbol & Name | N41 00.993 W87 32.459 | 701 ft |
| Forest | LF5 | 09-JAN-08 3:47:17PM Symbol & Name | N41 00.983 W87 32.440 | 673 ft |
| Forest | LF6 | 09-JAN-08 3:51:21PM Symbol & Name | N41 00.963 W87 32.457 | 695 ft |
| Forest | LF7 | 09-JAN-08 4:06:18PM Symbol & Name | N41 00.981 W87 32.497 | 684 ft |

| | | | | |
|---|---|---|---|---|
| Forest | LF8 | 10-JAN-08 8:39:42AM Symbol & Name | N41 00.919 W87 32.419 | 708 ft |
| Forest | LF9 | 10-JAN-08 8:41:05AM Symbol & Name | N41 00.907 W87 32.396 | 678 ft |
| Forest | MFSC1 | 10-NOV-07 8:25:50AM Symbol & Name | N41 04.717 W87 39.555 | 618 ft |
| Forest | MFSC10 | 10-NOV-07 12:46:05PM Symbol & Name | N41 04.006 W87 39.622 | 576 ft |
| Forest | MFSC11 | 10-NOV-07 1:14:48PM Symbol & Name | N41 04.011 W87 39.468 | 661 ft |
| Forest | MFSC12 | 09-JAN-08 1:28:33PM Symbol & Name | N41 04.337 W87 39.431 | 718 ft |
| Forest | MFSC13 | 09-JAN-08 1:43:19PM Symbol & Name | N41 04.324 W87 39.446 | 705 ft |
| Forest | MFSC14 | 09-JAN-08 1:53:10PM Symbol & Name | N41 04.338 W87 39.450 | 689 ft |
| Forest | MFSC15 | 09-JAN-08 2:00:35PM Symbol & Name | N41 04.299 W87 39.432 | 681 ft |
| Forest | MFSC2 | 10-NOV-07 8:42:16AM Symbol & Name | N41 04.655 W87 39.484 | 660 ft |
| Forest | MFSC3 | 10-NOV-07 8:48:17AM Symbol & Name | N41 04.642 W87 39.466 | 667 ft |
| Forest | MFSC4 | 10-NOV-07 9:05:50AM Symbol & Name | N41 04.589 W87 39.479 | 679 ft |
| Forest | MFSC5 | 10-NOV-07 9:14:02AM Symbol & Name | N41 04.590 W87 39.480 | 676 ft |
| Forest | MFSC6 | 10-NOV-07 9:54:58AM Symbol & Name | N41 04.669 W87 39.515 | 649 ft |
| Forest | MFSC7 | 10-NOV-07 10:17:15AM Symbol & Name | N41 04.661 W87 39.528 | 668 ft |
| Forest | MFSC8 | 10-NOV-07 10:24:57AM Symbol & Name | N41 04.697 W87 39.568 | 672 ft |
| Forest | MFSC9 | 10-NOV-07 10:41:05AM Symbol & Name | N41 04.710 W87 39.583 | 667 ft |

# APPENDIX E

Photos of the four study sites

Big Dune

Mskoda

Leesville

Bentley Crawford

# APPENDIX F

Photos of tree cross-sections used in fire history analysis



BC3T


M-3


BD-15

# VITA

Graduate School
Southern Illinois University

Cody D. Considine                                        Date of Birth: May 31, 1983

3921 North Marrill Road, Byron, Illinois 61010

cconsidine@tnc.org

Western Illinois University
Bachelor of Science, Recreation Parks and Tourism Administration, August 2005

Thesis Title: Fire history and current stand structure analysis of a Midwestern black oak sand savanna

Major Professor: Dr. John W. Groninger & Dr. Charles M. Ruffner