WHY SUSTAIN OAK FORESTS?

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Abstract.—A brief overview and some personal thoughts are offered that deal with the implications of our social and political systems on the long-term sustainability of our forest resources. The connection of the most recent climatic events, in a geologic-time context, to the development of present day oak dominated forests of the Eastern United States is discussed. The impacts of human activity and human infrastructure during the recession of the Wisconsin Glacier that began about 15,000 years ago to the present are reviewed. Changes in eastern oak forests since European settlement in the early 1600s, and more specifically in the last half century are presented in greater detail. Also discussed are important characteristics of the more that 30 oak species native to the Eastern United States, the complexity of the oak dominated eastern forests, the uniqueness of oak species for a variety of forest products and uses to satisfy human needs, and the critical importance of the oaks for wildlife food and cover. Finally, seven reasons for sustaining oak forests are presented.

INITIAL THOUGHTS

How we will achieve sustainable management of our oak forests is complex and encompasses much more that just understanding the biological aspects of trees and forests. It has become evident how differently various groups look at or perceive forests. For most foresters and land owners who grew up on farms or have been intimately associated with their forested land, we think about the evolution and changes that occur over periods of tens and hundreds of years. We plan and carry out management activities, the full results of which we may not live to see. There is a significant body of scientific knowledge and professional experience that we use to make these long-term decisions. Is this knowledge complete? Certainly not, but it is sufficient for us to move forward and be relatively sure that we are moving toward our goal of sustaining our forested ecosystems. There are several obstacles that make the road to success a bit difficult. We live in a democratic country and our government functions through a well-established political system. It is through this system that all legislation (including that related to forests, forestry and the environment) is formulated, discussed, and enacted or rejected. With this political system there are some drawbacks. We often are faced with new legislation that results in what I term "political silviculture." This is forest resource management policy legislation that often includes silvicultural practices or constraints on silvicultural practices that denies or disregards established scientific knowledge and professional experience, or when passage is influenced by issues and circumstances that are not related to the legislation, is partisan, or caters to special interests. Another concern is that there is an ever growing disconnect between what we use and where it comes from. This disconnect has worsened as we moved from a predominately rural to a predominately urban population over the past 100 years. The concept that toilet paper comes in a roll and not from a tree and that milk comes in a container and not from a cow pasturing in a field has far reaching implications when it comes to the need to practice forestry that will provide people across the country and world with the products, and values and uses they depend on and demand. We also must deal with a general public that has little understanding of the dynamics of forest establishment, growth and development. For the majority of our society forests are viewed like a picture or a "snapshot in time"—a view of a forest as an entity that is static and does not change. The fact is that the only thing constant in a forest is change.

OAK FORESTS IN THE RECENT GEOLOGIC PAST

To gain ideas and a perspective on how to develop and organize this presentation, I talked to several people who were knowledgeable about and interested in eastern hardwoods and the implications of fire on forest stand development in oak and mixed-oak stands in particular. One person suggested that I explore what may be known about oaks and oak species evolution

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in terms of geologic time. I thought for a moment and the idea of tens of millions of years did not appear to be relevant to this particular conference. In fact, just thinking about what might have happened during the Pleistocene geologic epoch (1.8 million to 8000 years ago) seemed to be more than we really needed to be concerned about. When you consider that glaciers came southward an estimated 17 times during the Pleistocene and our eastern forests migrated north and south the same number of times (Goudie 1992), I do not think it is necessary to concern ourselves with what happened prior to that geologic period. What seems to be most important to the question of whether we should attempt to sustain the oak dominated forests of the Eastern United States is what has happened since the last ice age and what has been the influence of humans on the development of today's forests.

The Wisconsin Glacier, the most recent glacial period of the Pleistocene, began about 100,000 years ago and reached its southern most extent in the Eastern United States about 15,000 years ago. (Nilsson 1983; Porter 1988). If we were to look at the Eastern United States 15,000 to 18,000 years ago, the sequence from north to south would have been ice sheets/glaciers, tundra and cold steppes, then white spruce forests, followed by jack pine forests, southern pine-oak forests, and finally sand dune-scrub communities in the lower half of Florida (Bonnicksen 2000). The spruce forests extended into North Carolina (Whitehead 1967; Wright 1981) and as far south as central Missouri, Arkansas, and southeastern Oklahoma. Some hardwoods including hornbeam and northern red oak may have been interspersed with the spruce in some places (Davis 1981; Delcourt and Delcourt 1991, 1979). A band of mixed hardwoods, including oak species, bordered the lower Mississippi River and major tributaries in protected areas adjacent to the spruce forests (Delcourt and Delcourt 1979, Wells 1970). The jack pine forests were just to the south of the spruce forests and consisted of jack pine and red pine with a few temperate hardwood species scattered throughout the pine on favorable sites. The jack pine forests extended southward to central Georgia, Alabama, and Mississippi and westward to Memphis and the lower Mississippi River Valley (Delcourt and Delcourt 1991; Whitehead 1973,;Wright 1981; Davis 1981). The mixed-hardwood, and southern pine-oak forests, lying to the south of the jack pine forests and containing most of the present day oak species, were relegated to the central and northern parts of Florida, and the southern parts of Georgia, Alabama, Mississippi, Louisiana, and Texas (Delcourt and Delcourt 1981; Porter 1988; Webb 1987). The southern half of Florida was too dry and hot to support trees (Davis 1981; Wright 1981).

When considering this historical distribution of forests 15,000 to 18,000 years ago, it is evident that those mixed hardwood, oak-pine, and pine forests occurred only in the southern portion of the country and occupied only about 20 percent of the land area they occupy today. In addition, the species composition, stand structure and distribution patterns probably were different from those of the present. Since the last glaciers started to recede, there has been a dramatic migration northward coupled with a rapid evolution of species composition and community structure, and adaptation to complex climatic and geographic changes. Since the end of the last Ice Age, the only thing constant in our Nation's forests has been change. I think the following quote puts the evolution of our forests in perspective. "Forests only exist in human minds. Groups of animals and plants that we call forests come together for a short time; then each species goes its separate way when conditions change. Constant warming and cooling of the climate, and the ebb and flow of glaciers, caused the disassembly of old forests and the reassembly of new forests. Some species thrive in glacial cold while others do best in the warm periods between glaciations. So different forests dominated the land under different climates" (Bonnicksen 2000).

The Holocene geologic epoch that we are presently in, began 8,000 to 10,000 years ago (USGS 2005). It is during this warming period that the glaciers retreated, our eastern forests began their migration north, and the evolution of today's forests began. Oaks have been a part of the forests throughout this evolutionary process. As an example, oak pollen from sediment core samples of Holocene deposits in Cliff Palace Pond, a small woodland pond, located below a sandstone ridge in the northeastern part of Jackson County in southeastern Kentucky, revealed the presence of oak pollen 9,500 years ago (Ison 2000; Delcourt et. al. 1998). Oak pollen showed a general increase to about 4,800 years ago, then declined dramatically for about a thousand years and then began to increase about 3,000 years ago. The oak pollen has remained at its present high for most of the past 3,000 years, with pollen from American chestnut and pine also being significant (Delcourt et. al. 1998). Delcourt and others measured charcoal particles and the relative abundance of fire-tolerant and fire-intolerant trees and shrubs. This study and similar studies have proved to be extremely helpful in investigating the role of fire, both natural and anthropogenic, in the regeneration of oak species in the upland hardwood and mixed oak-pine forests of the Eastern United States.

HUMAN MEDIATED CHANGE IN OAK FORESTS

In a Geologic Time Context

The presence of humans and the impacts of man's activities have resulted in forests that are different than those of the previous glacial cycles when forests migrated north and south as the climate changed. Humans, migrating eastward from Siberia, across Beringia (now lying below the Bering Strait) and into Alaska, have been present in North America for at least 15,000 years (Bonnicksen 2000; Fiedel 1987; Fagan 1991, 1987). It may have taken another 2,000 to 3,000 years for these Paleoindians to work their way south and east into what is now the Eastern United States. Paleoindians probably reached southeastern Wisconsin between 13,400 and 12,300 years ago (Bonnicksen 2000; Hall 1998). During the last 8,000 to 10,000 years, as the Wisconsin ice sheet retreated, human activity has had an ever increasing influence on how hardwood forests developed as they migrated north. The First Americans migrated south as the climate warmed. By 12,000 years ago, Paleoindians had settled in Florida and had moved as far west as St. Louis, Missouri (Canby 1979; Graham et. al. 1981). People were here and they were here to stay. For the next 11,600 years, until the arrival of Europeans in the early 1600s, fire was the primary anthropogenic tool for mediating change in eastern forests. We do not know how much change was directly or indirectly attributed to human caused fire, but we are confident that fire was used and for several thousand years. With the initial European settlements along the East Coast and the rapid migration west came land clearing for farming, the construction of towns and cities, and a rapid increase in the human population of a growing nation. The building of America had begun and the forests of the East were in rapid transition—not from the gradual climate changes measured in geologic times of tens of thousands of years but from human-induced changes in a matter of decades.

Since European Settlement

Think for a moment about some of the human-caused or mediated events of the past 300 years that have modified or permanently changed the oak dominated forest landscapes of the Eastern United States. Probably the first and most widespread was the conversion of millions of acres of forest land to pasture for domestic animals and the production of agricultural crops. The chestnut blight, a disease caused by the fungus *Cryphonectria parasitica,* virtually eliminated the American chestnut from oak-chestnut forests of the east—to the point where we changed the forest cover type name to oak-hickory. The exclusion of periodic understory fire in the past 100 years has had a significant negative influence on the recruitment of oak species and a positive influence on the recruitment of species e.g., maple, beech, and blackgum, in many central and eastern hardwood forests (Abrams 2000, 2005). One of the most interesting and perhaps a most significant event was related to the annual migration of the now extinct passenger pigeon. Little is known about the ecological impacts of the passenger pigeon and it is rarely mentioned in the context of oak forests and changes in these forests that must have occurred when one considers the almost unbelievable numbers that were present. Scott Weidensaul (1994) wrote: "In 1808, in Kentucky, ornithologist Alexander Wilson watched the sky blacken with birds—a flock he estimated at a mile wide that passed him for four hours. They were passenger pigeons, easily the most abundant species of bird in North America and likely the most numerous land bird in the world. Based on his observations, Wilson calculated the flock's number at 2.25 billion birds. They, and their kin, were the single greatest living expression of the bounty of the wooded sea." Weidensaul noted that the pigeons existed in a relatively few enormous flocks, with each flock numbering in the hundreds of millions

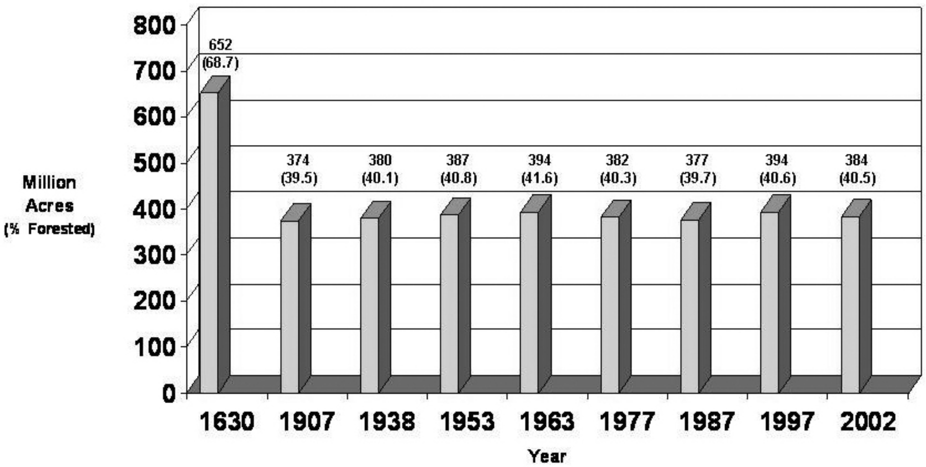

Figure 1.—Trends in U.S. forest-land area 1630-2002.

of birds. "Several billion birds feeding through a forest would reduce the mast available to other nut-eaters and would seriously reduce tree regeneration; the fractured, mangled trees, collapsed under the sheer weight of the roosting or nesting birds (to say nothing of the vast quantities of guano), would have provided a flush of sunlight and fertilizer for new plant growth, benefiting grazers and browsers like elk and deer." Passenger pigeons were still nesting by the millions in the 1870s, by the turn of the century they were almost gone from the wild, and the last known passenger pigeon died in the Cincinnati Zoo on September 1, 1914 (Weidensaul 1994). Think about this for a moment: a bird species composed of billions becoming extinct in less than 50 years. It was during this same period that major forest harvests of mature and old-growth oak forest types were taking place within the natural range of the passenger pigeon in the Eastern United States. Here were two major landscape altering events occurring at the same time—and both closely linked to oak forests. What were the individual and the combined effects of these two agents of change on the oak forests of today? It is certainly worthy of some thoughtful conversation and contemplation.

Eastern Oak Forests and Recent Trends

The total land area of the Eastern United States, which includes Minnesota, Iowa, Missouri, Oklahoma, Texas, and all states to the East, is 948 million acres, or 42 percent of the U.S. land area. There are 384 million acres of forest land in the East, or 52 percent of the total U.S. forest land area. Today, the eastern U.S. is 40.5 percent forested. How has this forest land area changed over time? In 1630 it is estimated that the eastern U.S. was nearly 70 percent forested (Fig. 1). By 1907, primarily as a result of land clearing for agricultural crops and pasture, the forest-land base had declined to 39.5 percent (652 to 374 million acres) of the total land area. It is believed that this was the low point in forest coverage in the eastern U.S. since sometime during the early Holocene epoch when the ice sheets were receding—some 8,000 to 10,000 years ago. Since the first part of the 20th century, the eastern U.S. forest-land base has remained remarkably constant at about 40 percent (Fig. 1).

The forest-land base has remained essentially constant but what about forest types and species? When looking at land area trends of the oak type groups, both upland and bottomland, over the past 50 years, there appears to have been an increase in the acreage of upland types and a decrease in the bottomland types (USDA For. Serv. 2003). The area occupied by the oak-pine type group increased by 30 percent and the oak-hickory type increased by 23 percent, while the bottomland oak-gum-cypress type declined by 17 percent (Table 1). The conversion of productive bottomland sites from forest to agriculture uses and the oak-gum-cypress types to pine plantations are significant factors in the decline in bottomland hardwood acreage. The increase in upland oak type groups likely is the result of the reversion of agricultural land back to forest cover, especially land that was cleared but proved to be marginal for agricultural uses. Overall, there was a 15-percent increase in the total acreage of the oak type groups in the past 50 years (Table 1). It is important to note that these forest-type groups are broad general classifications and species composition within a type group could vary by 15 to 20 percent or more. For example, the oak-hickory type group is defined as: "forests in which upland oak or hickory, singly or in combination, comprise a plurality of the stocking except where pines comprise 25 to 50 percent, in which case the stand is classified as oak-pine. Common associates include yellow-poplar, elm, maple, and black walnut" (USDA For. Serv. 2003). Therefore, these data tell us little about possible shifts in the oak component within these type groups.

Table 1.—Timberland area in the Eastern United States[a] of oak type groups, 2002, 1997, 1987, 1977, and 1953

Year	Oak-pine	Oak-hickory	Oak-gum-Cypress	Oak types total
	-------------------------million acres-------------------------			
2002	32.6	124.3	29.8	186.7
1997	33.4	124.0	29.3	186.7
1987	31.1	117.0	28.0	176.1
1977	34.6	108.6	26.6	169.8
1953	25.0	101.3	35.7	162.0

[a] Includes Minnesota, Iowa, Missouri, Oklahoma, Texas, and all states to the East.

An analysis of the hardwood resource data from the Forest Service's Forest Inventory and Analysis unit over the past 40 years revealed some interesting and compelling trends that may be helpful in obtaining a better understanding of what has been happening in eastern U.S. oak forests. The net volume of all hardwood growing stock on timberland has shown a remarkable increase of nearly 70 percent between 1963 and 2002 (Table 2). A significant part of this impressive net volume increase probably is related to the skewed age-class distribution in eastern hardwood forests. Major harvests of original forests occurred in the Northeast, Lake States, Appalachian Mountains, and in the South between 1850 and 1920 (Sedjo 1991) The result is a significant bulge in the 80- to 150-year age classes where forest stands are vigorous and mortality is relatively low. The rapid increases in net volume growth during the past 40 years probably will level off in the next 10 to 20 years. Since 1963, the proportion of select white and red oak net growing stock volume has remained about the same at 16 percent. However, the proportion of growing-stock volume of all other oaks has shown a decline of 16 percent. By contrast, the proportion of soft maple net volume has increased by 60 percent and that of yellow-poplar has increased by 35 percent. The proportion of net growing-stock volume of "all other hardwoods" has shown a slight decline of less than 5 percent (Table 2). The proportion of hard maple and ash (both species were included in the "all other hardwood" category of Table 1) net growing-stock volume has also increased in the past 40 years (USDA For. Serv. 2003). If we consider the oaks to be an important component of eastern U.S. hardwood forests, then the general proportional decline of oak net growing-stock volume and the proportional increase in volume of associated species in the relatively short period of 40 years should be of major concern.

THE OAKS
Species and Distribution

Quercus is the classical Latin name of the oaks and is thought to be of Celtic derivation meaning ***fine*** and ***tree*** (Little 1979). The oaks are the largest tree genus in the United States and arguably the most important. Their worth is enormous when you consider the large number of species, the vast potential for forest products, the importance for wildlife food, cover and habitat, their importance for aesthetics and scenic beauty, their functional use in urban forests, and probably most important, their ecological value as significant functional components of most forested ecosystems, especially in the Eastern United States. Little (1979) recognized 58 native oak species in the United States and Canada, and about 10 native oak shrubs. Over half of the 58 native species are found in the Eastern United States. Of the 24 oak species described in significant detail in *Silvics of North America—Hardwood, Volume 2* (Burns and Honkala 1990), 20 are considered eastern species and 4 are only found in the western United States. Smith (1993) reviewed some of the regeneration-related silvical characteristics of 31 oak species, 25 of which were

Table 2.—Net volume of hardwood growing stock on timberland in the Eastern United States[a] of selected species, 2002, 1997, 1987, 1977, and 1963

Year	Total, all hardwood species	Select white oak and red oak	Other oaksmaple	Soft poplar	Yellow-hardwoods	All other
	100 million ft^3	-------------------------Percent of all hardwood species-------------------------				
2002	327.7	15.9	18.4	10.2	6.9	48.6
1997	316.4	16.2	18.2	10.2	6.7	48.7
1987	281.4	16.0	19.9	9.2	5.8	49.1
1977	241.3	16.4	21.0	7.9	5.7	49.0
1963	193.6	15.8	22.0	6.5	5.1	50.6

[a] Includes Minnesota, Iowa, Missouri, Oklahoma, Texas, and all states to the East.

native to the Eastern United States and 6 to the western states. It is interesting that most eastern oak species occur in association with a wide variety of overstory and understory species. The combination of individual oak species and associated overstory and understory species are dependent on specific site conditions, and one or more species of oak is adapted to virtually every forest site condition that is found in the Eastern United States. In fact, if you were to overlay the ranges of just five species, northern red oak, white oak, bur oak, overcup oak and live oak, you would cover all sites in the Eastern United States except for several counties in northern New York. The overstory and understory species greatly influence oak regeneration distribution and success, and oak growth and development throughout the rotation. By contrast, the oaks of the Western United States generally are smaller in stature and in the total area that they occupy, Western oak species generally are found on more arid sites and in clumps or small pure stands. Competition from grasses and shrubs and drought often are major factors in regeneration success and subsequent seedling development on many western sites.

In general, oak species native to the Eastern United States are strong, durable, and relatively long-lived compared to associated species. Ages of 150 to 300 years for northern red oak, white oak, and chestnut oak are not uncommon, and ages up to 700 years have been recorded (Hora 1981). Very large oaks have been documented in the east. Probably the best example is a white oak that was cut in 1913 near Lead Mine, West Virginia. This giant was 13 feet in diameter 16 feet from the base and 10 feet in diameter 31 feet from the base (Clarkson 1964). That amounts to 19,200 board feet (International ¼ inch log rule) or 23,100 board feet (Doyle log rule) of lumber from the first log.

Uses and Values

The oaks serve as a raw material for a host of forest products and as such have a significant impact on local and regional economies throughout the eastern United States. The wood from oak is noted for its beauty, durability, strength, and decay resistance. Just think for a moment about the many products from oak that we take for granted, but use virtually every day: fine furniture, flooring, paneling, structural timbers, pallets, charcoal, veneer, molding, railroad ties, boxes and crates, cabinets, cooperage, boat building materials, handles, musical instruments, architectural woodwork, fuelwood, wood composites, and mulch.

The oaks also are important in the urban forest where they provide shade, food, and cover for urban wildlife, protection from wind, visual buffer zones, and aesthetically pleasing landscape components in parks, along streets, in yards, and in public areas.

A shift in forest tree species composition from the oaks to species including the maples, yellow-poplar, blackgum or beech has serious implications for many wildlife species in eastern hardwood forests. Acorns (hard mast) from oaks represent a significant food source for numerous mammals and birds, especially for fall and winter diets when sufficient food is critical for survival

(Martin et al. 1961). Wildlife, including deer, bear, wild turkey, quail, grouse, squirrel, mice and many songbirds depend on acorns for part of their diet. Some examples of these songbirds include the red-bellied woodpecker, tufted titmouse, blue jay and white-breasted nuthatch (Martin et al. 1961; Smith and Scarlett 1987; Grubb and Pravosudov 1994). Martin and others (1961) noted that acorns rate at or near the top of the wildlife food list, and listed more that 90 species of wildlife that use acorns. Acorns are a highly digestible, high-energy, low-protein food for many wildlife species (Kirkpatrick and Pekins 2002). Compared to many other seasonal food sources, acorns are relatively slow to decompose and therefore available for an extended period when other food sources are limited or absent. Acorns ripen and are dispersed in the fall and are available throughout the winter while the seeds of red maple and silver maple ripen and are dispersed in late spring and early summer. The seeds of sugar maple and yellow-poplar ripen and are dispersed in the fall.

The annual production of acorn crops is highly variable and unpredictable and varies by species, region, and environmental conditions (Koenig and Knops 2002). Since hard mast often is a critical source of wildlife food, the variability in annual acorn production is a factor in limiting wildlife populations and greatly influences periodic population fluctuations. The consequences of declining oak species composition has serious ecological implications. The results of a recent study in Pennsylvania (Rodewald and Abrams 2002) is perhaps the first study to suggest that shifts in forest composition from oak toward maples may reduce bird species richness and abundance within forest bird communities and have a negative influence on certain species. The most likely species to be impacted are long-distance migrants, residents and bark-gleaning species. Few birds consume maple seeds (Martin et al. 1961). When the food value, quantity (weight), season of dispersal (soft maples), and decomposition rates of maple seed are compared with those of acorns, the latter clearly are superior.

Other physical factors of oaks versus maples and other species, such as bark thickness, maximum tree size, and longevity, also are important when evaluating shifts in species composition. The rough and deep furrowed nature of most oaks compared to the relatively smooth bark of red maple is an important and distinct advantage for insect-foraging bird species (Jackson 1970). The generally greater tree size, longer life, and the decay resistance of the oaks are important in their enhanced value as den and cavity trees. The larger size makes them more adaptable for bear and larger animals, and the fact that they live longer and are more resistance to wind fall and other climatic events adds to the stability of wildlife species that are dependent solely or in part on den cavity trees.

For a more comprehensive discussion of the importance of oak ecosystems to wildlife and the interactions of a host of wildlife species with these oak dominated forests see *Oak Forest Ecosystems: Ecology and Management for Wildlife* (McShea and Healy 2002).

WHY SHOULD WE SUSTAIN OAK FORESTS?

There is little question that change is the only thing that is constant in forests. I believe that one of the overriding issues is not the fact that changes in oak composition and distribution are probably occurring all across the eastern forests but that the rapid rate of change is unprecedented in the context of biologic and ecologic time frames of the past. We are seeing changes in less than a single generation of oaks that we would have expected in 10 to 20 or more generations. Ecological balances are not being reached as a result of human induced changes. It is imperative that we strive to enhance our understanding of the short and long-term, direct and indirect implications of human activity on our forested ecosystems. We must identify the information needed to understand the biological processes and functions that will result in forest resource management decisions that will ensure the future biological quality and ecological integrity of the forested-land base. We must diligently identify, prioritize, plan, conduct, and analyze, research programs that will fill the gaps in our present knowledge. Above all, we must report research results and translate and communicate them to people on the ground who are working to solve real-time problems. Finally, we must ensure that we have a built-in evaluation and follow-up system so that future information needs and associated research directions can be identified and considered effectively and efficiently. Forests always will be in a state of transition and what we learned yesterday will be helpful but not totally applicable to the conditions today and in the future. We have no choice but to work toward sustaining our oak forests. We human beings have mediated global ecological changes and we have by no means grasped the magnitude of the unintended consequences of our actions. We are a significant part of the problem so we must diligently and deliberately be part of the solution. We should continue our efforts to sustain oak forests because:

1. The oaks have ecological "standing." I borrow the word "standing" from the legal profession where it implies "a connection." The oaks have been "connected" for millions of years. They have been displaced, replaced, and then returned over a notable length of geologic time. There is little question that they are of significant ecological importance in an evolutionary context.

2. There are at least 31 oak species in the Eastern United States and at least one oak species, (and often several species) is adapted to or will grow on virtually every forest site in the East.

3. The wood from most oak species is noted for its strength, durability, rot resistance, high energy value, and visual appeal that make it ideal for a host of important wood products. Think about a world without oak floors and fine furniture, railroad ties, bourbon and wine barrels, firewood, and pallets.

4. The oaks are among the longest living tree species in the East and, therefore, tend to stabilize forest communities that are subjected to outside forces—both natural and anthropogenic. The presence of oaks in forested communities tends to make those same communities more resilient.

5. The oaks provide essential habitat components for many wildlife species, including large and small mammals, birds, and reptiles. The volume and quality of food provided by acorns are essential for a host of species. The durability and size of oak cavity trees are seldom matched by associated tree species.

6. Oaks add color, shape, contrast and stability to virtually every landscape, in all four seasons and in both rural and urban settings.

7. The oak tree is a symbol of American forests. It has stature among tree species.

We should continue our efforts to sustain our oak forests and greatly expand our efforts to achieve that goal.

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