

RESTORING SUSTAINABILITY FOR WHITE OAK AND UPLAND OAK COMMUNITIES: AN ASSESSMENT AND CONSERVATION PLAN



KEY TAKEAWAYS

NOVEMBER 2021

WHITE OAK FACTS



- American white oak is a foundational tree species, currently occupying more than 104 million acres of public and private forestland across much of the eastern and central United States—including a strong presence in Alabama, Arkansas, Georgia, Illinois, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Missouri, Pennsylvania, North Carolina, Ohio, Tennessee, Virginia, West Virginia and Wisconsin.
- White oak forests support extensive plant and animal biodiversity, providing a critical food source for a variety of wildlife species and serving an important role in maintaining our diverse forest ecosystem.
- Forest sector economic reports from central hardwood region states (where white oak predominates) clearly indicate the importance of oak resources, which generate billions of dollars annually.
- White oaks are the most commercially important timber oak—necessary for industries such as furniture, flooring, cabinetry, and wine and spirits.

CURRENT STATE OF AMERICA'S WHITE OAK

OVERALL REPORT FINDINGS

- Due to shifts in land management and ecological changes, an increasing amount of competing tree species have been establishing themselves in the understories of America's white oak forests.
- Competing species, most notably maples and beech, are shading out white oak trees and preventing them from regenerating.
- As a result, older white oak trees are not being replaced by younger white oak trees at a pace that will support long-term sustainability.
- About 75% of all white oak trees across the eastern United States can be classified as "mature," while populations of young white oak trees are limited.
- Challenges such as climate change, invasive insects and diseases, and behavior change are also impacting white oak sustainability.
- Without intervention today, the American white oak population will begin to decline significantly within the next 10 to 15 years, with more extreme declines over the next several decades.

FINDINGS FROM SPATIAL ANALYSIS STUDY

■ **White oak is a cornerstone tree species.**

White oak can be found throughout a range of more than 104 million forestland acres. It reaches its highest concentrations in the Northern Cumberland Plateau (Kentucky), the Boston Mountains (Arkansas and Oklahoma,) the Ozark Highlands (Missouri) and the Central Appalachian Piedmont (North Carolina).

■ **Older trees represent the majority.** Current white oak forestland is largely mature—about 75% of all surveyed white oak acres can be classified as at least “mature.”

■ **Not enough seedlings and saplings means not enough new trees.** In many places, the next generation of white oak in mature stands is not clearly established.

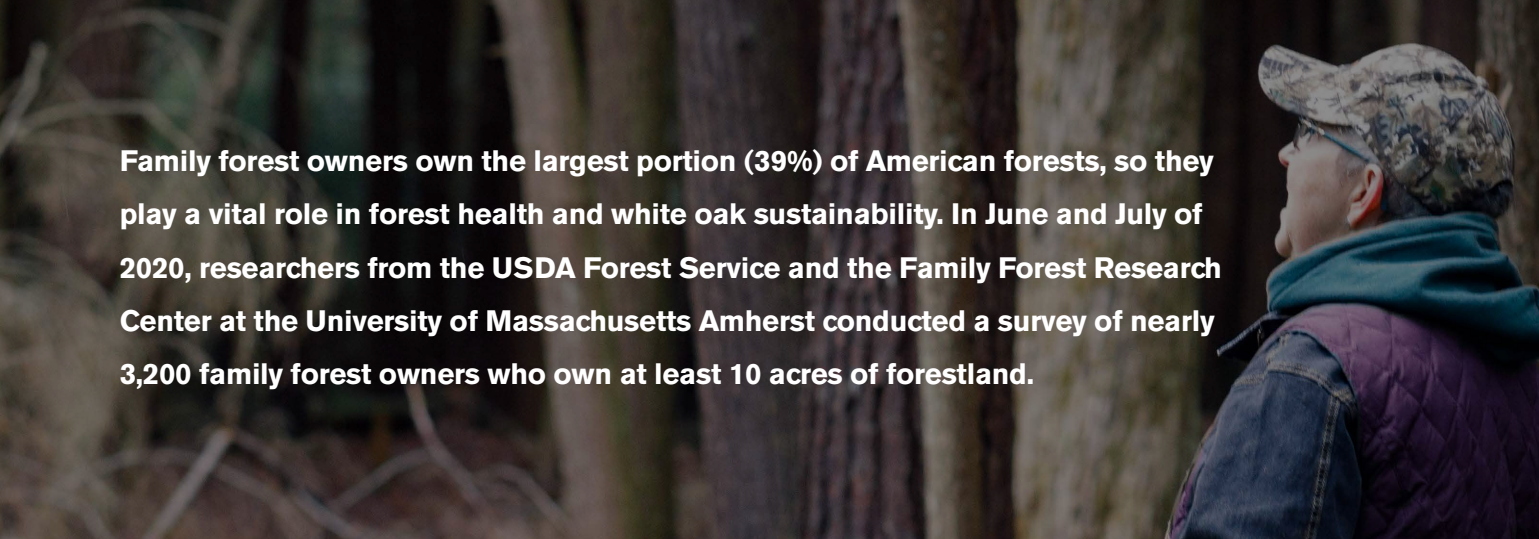
An estimated 60% of surveyed mature white oak acres have no white oak seedlings present and about 87% have no white oak saplings present.

■ **Solutions will depend on geographic location.**

Seedling and sapling presence and abundance is often spatially variable, even within a region. This suggests that localized, stand-level drivers and adaptive growth will be highly important to regeneration outcomes.

■ **While their scores vary, all 146 geographical areas studied (defined as “EcoStates” in the report) have potential for increased white oak sustainability,** indicating that impactful work can and should be done across the range.

FINDINGS FROM FAMILY FOREST OWNER SURVEY



Family forest owners own the largest portion (39%) of American forests, so they play a vital role in forest health and white oak sustainability. In June and July of 2020, researchers from the USDA Forest Service and the Family Forest Research Center at the University of Massachusetts Amherst conducted a survey of nearly 3,200 family forest owners who own at least 10 acres of forestland.

■ **Family forest owners have positive opinions of oak.**

Respondents tended to view upland oak forests positively. When asked if they would like more oak on their land, about half—mainly concentrated in the center of the central hardwoods range—said yes while about 40% were neutral.

■ **Most family forest owners are willing to receive land management advice.** About 70% of respondents said they would want land management advice in the future.

■ **Family forest owners see the value in their land.** The most important values that respondents associated

with their land included protection of beauty and wildlife habitat, privacy, recreation and hunting, and timber.

■ **Family forest owners prefer cost-sharing programs.** Given several hypothetical oak-management partnership scenarios, respondents preferred cost-share programs and price incentives per acre.

■ **Family forest owners are interested in state and university partnerships.** While some respondents expressed interest in working with agencies and forestry professionals in general, state agencies and universities/extensions were most preferred.

ACTIONS NEEDED

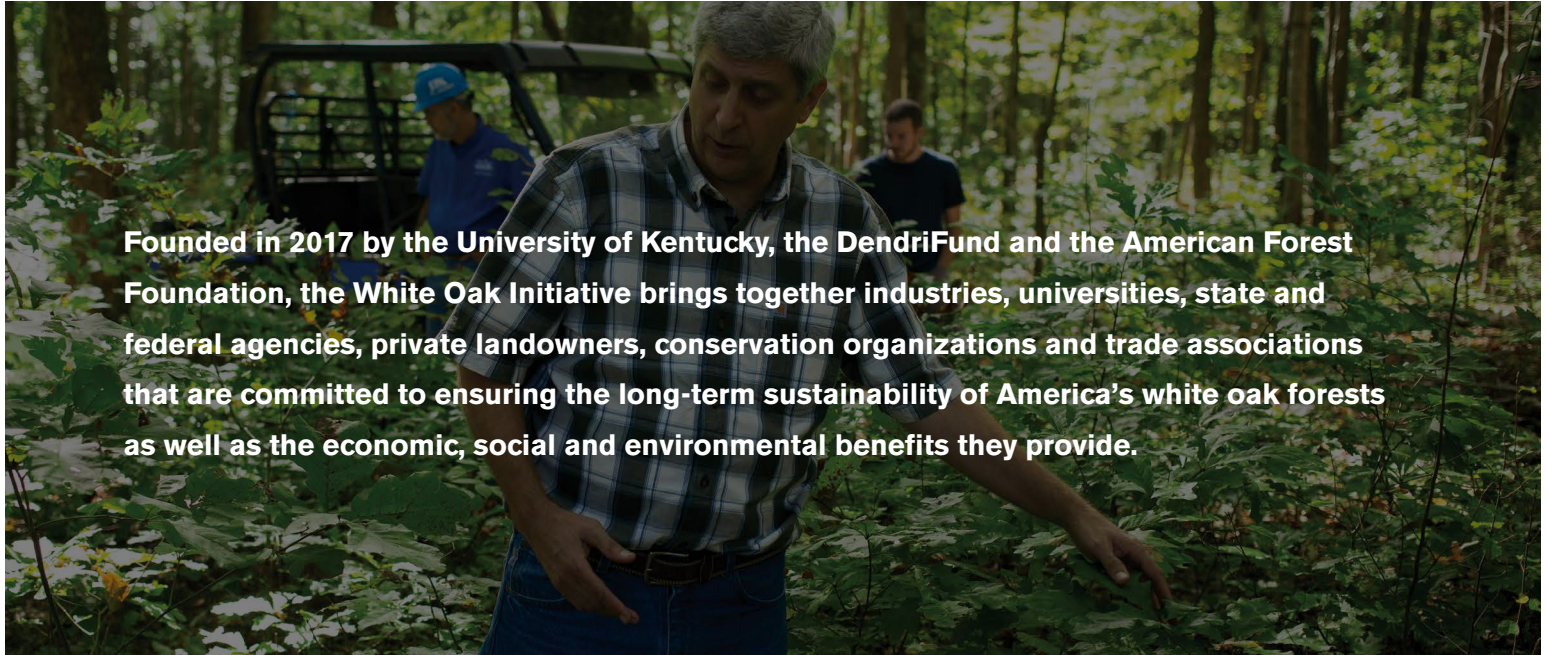
Reversing the decline of America's white oak population is possible, but intervention must begin today. To restore the long-term sustainability of America's white oak forests, and maintain the economic, social and environmental benefits they provide, we need active, cross-boundary collaboration, participation and support from industry, resource professionals, policymakers, landowners and others who can align knowledge and resources behind the following recommended forest management practices, before it's too late.

RECOMMENDED FOREST MANAGEMENT PRACTICES

The following 10 recommended forest management practices will provide sustainability benefits across all oak forests as well as the upland forests they inhabit.

- **Crop tree release.** This practice is the primary technique used to ensure oaks continue to maintain vigorous growth.
- **Midstory/understory removal.** This practice is aimed at improving the vigor of advance regeneration.
- **Shelterwood establishment cuts.** A shelterwood harvest allows forest owners to capitalize on their timber value and provides a semi-shaded light regime favorable to oaks.
- **Group openings and gaps cuts.** A group opening allows for harvesting of older stands that dominate the region and provides a semi-shaded area around the opening edge that is conducive to oak regeneration.
- **Two-aged deferment cuts.** This practice is a technique of last resort, sacrificing immediate oak regeneration but maintaining future oak regeneration potential.
- **Site preparation for regeneration.** This practice removes trees that are or will compete with oak regeneration.
- **Afforestation.** This practice involves the establishment of new forests with seedlings or seeds, competition control, and at times control of deer and other wildlife.
- **Underplanting/enhancement.** This approach uses artificial regeneration to establish oak that is limited or nonexistent in upland hardwood stands.
- **Scarification.** Scarification is used to help ensure adequate acorn germination and seedling establishment.
- **Prescribed fire.** This approach can be used as a phase in a shelterwood establishment cut, or after a harvest as a liberation or cleaning tool.

ABOUT THE WHITE OAK INITIATIVE



Founded in 2017 by the University of Kentucky, the DendriFund and the American Forest Foundation, the White Oak Initiative brings together industries, universities, state and federal agencies, private landowners, conservation organizations and trade associations that are committed to ensuring the long-term sustainability of America's white oak forests as well as the economic, social and environmental benefits they provide.

***Restoring Sustainability for White Oak and Upland Oak Communities: An Assessment and Conservation Plan* was directed by the White Oak Initiative steering committee, and developed by the American Forest Foundation and the University of Kentucky. The White Oak Initiative would like to thank the following steering committee members, past and present, for their collaboration, dedication and leadership in this important work.**

Lisa Allen, Missouri Department of Conservation

Alex Alvarez, Brown-Forman and DendriFund

David Apsley, Ohio State University Extension

Bob Bauer, Kentucky Forest Industries Association

Mark Buccowich, USDA Forest Service Region 9

Paul DeLong, American Forest Foundation

Candace Dinwiddie, Tennessee Forestry Association

Clint Evans, Independent Stave Company

Robert Farrell, Virginia Department of Forestry

Alex Finkral, Forest Land Group

Justine Gartner, Missouri Department of Conservation

Renee Hornsby, National Hardwood Lumber Association

Kevin Hudson, Westrock

Barbara Hurt, DendriFund

Tom Inman, Appalachian Hardwood Manufacturers

Dwight Jensen, Columbia Forest Products

Caroline Kuebler, USDA Forest Service Region 9

Martin Lowenfish, USDA Natural Resources Conservation Services

Jason Lupardus, National Wild Turkey Federation

Garret Nowell, Independent Stave Company

Rick Oates, Alabama Forestry Commission

Rick Price, Beam Suntory

Kay Reed, USDA Forest Service Region 8

Alex Richman, Cumberland Springs Land Company

Greg Roshkowski, Brown-Forman

Eric Sprague, American Forests

Dr. Jeffrey Stringer, University of Kentucky

Chris Will, Central Kentucky Forest Management

Elizabeth Wise, Sazerac

Learn more about the White Oak Initiative and our recommendations for action at whiteoakinitiative.org.