

# Understanding the Importance of White Oak

by Darren Morris and Jeff Stringer

## Introduction

White oak (*Quercus alba*) is one of the most important tree species in the eastern United States. Most of us, regardless of whether we focus on wildlife, timber, or recreation, agree with this. There are many reasons to hold white oak in such high regard. White oaks are long-lived, easily living 200 years or more and some living to 600 years. White oak also happens to be one of the most widely distributed of all the oaks growing on a wide range of soils and sites. As a result, white oaks are often important landmark trees, having historical or cultural significance. The species is seen as a majestic and stable representation of our natural landscape, growing in cities and urban areas and their natural habitat in rural and secluded forests. Many have a personal association with white oak in some form or fashion.

## Wildlife Value

The value of white oak is not solely related to how long it lives or its widespread occurrence. White oak has special characteristics which make it ecologically and economically important. White oak is significant for wildlife, providing food and shelter for both game and non-game wildlife species. Let's first consider the acorn. White oak acorns happen to be the most palatable of all the oaks. This is due to their relatively low concentration of tannic acid that makes other acorns bitter. While we would find white oak acorns distasteful, wildlife love them, and white oak acorns are a highly digestible source of food. This can be observed between the months of September through November, when acorns are falling from the trees. Many wildlife species like deer, turkey, squirrels, to name only a few, can often be found under white oak crowns scratching, raking, pawing, and digging through the leaves to get to the nutritious acorns. However, acorns are not the only source of food provided by white oak. The tender buds and new shoots of seedlings and saplings in the spring are perfect for browsing by deer. Even rabbits can be found eating young bark and twigs.



*White oak acorns are a significant wildlife food. Because of their low concentration of tannic acid they are the most palatable of all acorns.*

*Oak tree photo courtesy: Renee Williams; Lumber and acorn: Darren Morris*

White oaks provide significant habitat and places of hiding for a host of wildlife species. Mature trees develop cavities which can be used as dens by birds, squirrels, and raccoons, just to name a few. White oaks happen to be a favorite nesting tree of birds such as the near-threatened Cerulean Warbler that spends much of its time hopping around from branch to branch feeding on insects in the canopy of mature white oaks. The cavities and flaky bark of white oaks are also used as hiding places in the summer by forest-dwelling bats, some of which are federally protected. Because white oaks provide food and shelter to many different kinds of wildlife, the species is critical to the overall health of the ecosystem.

## Forest Products and Industry

Most oaks are important providers of forest products, and white oak is no exception. In fact, white oak provides a wider range of products to the forest product industry than most other oaks. Lower quality white oak is harvested as pulpwood for paper production, small logs for manufacturing pallets and crossties for railroads, and the lower grade logs of all sizes for low valued No. 2 and 3 Common lumber.





On the opposite end of the spectrum, the pattern of the grain and color of white oak wood make it sought after for its use in manufacturing veneer, the highest valued forest product, and other valuable products such as furniture, cabinets, flooring, and other solid wood products with high-end uses. White oak also has wood properties that make it uniquely suited for manufacturing barrels used by the wine and whisky industries. The stave logs (staves being the vertical pieces of wood in a barrel) are full of tyloses, a substance that is unique to white oaks that plugs the wood cells and allows them to hold liquid for long periods of time, a characteristic that is needed for aging wine, whisky, and other spirits. Further, the charred white oak wood in a barrel contributes all of the color to whisky and bourbon and 70 percent of the flavor. All of these characteristics result in white oak being used by a large number of wood product industries, which creates steady competition for high quality white oak logs. For these reasons, white oak generally has the best potential to reach the highest value, compared to other oaks. This is another way white oak separates itself from the field, so to speak.

### ***Regeneration and Growth Characteristics***

Of course not everything about white oak is ideal. When it comes to managing white oak in our forests, there are some hurdles to overcome. For starters, white oak happens to be one of the slower growing of the upland oaks. Considering that oaks in general are slower growing than many of the tree species they commonly must compete against, white oaks are often at a disadvantage.

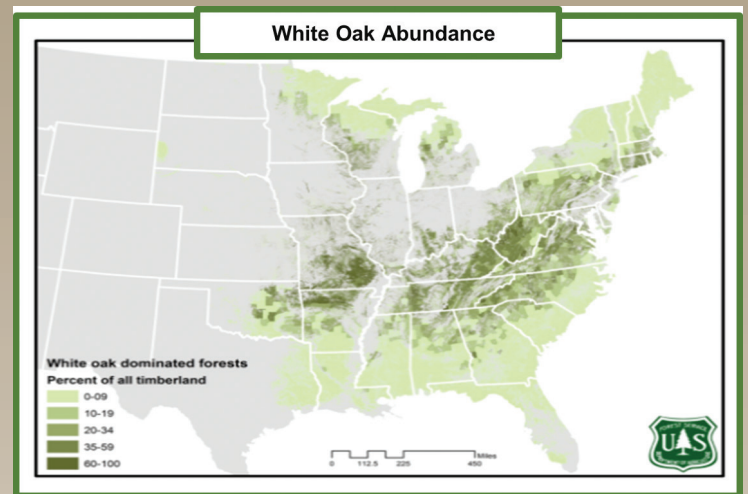


*Because of white oak growth characteristics, white oak seedlings must be well established before they can take advantage of an opening in the canopy.*

This means regenerating an upland oak forest after a timber harvest can prove to be difficult. In order to ensure that white oak has a good chance of becoming a part of the next forest stand, white oak seedlings need a head start. This means making sure white oak seedlings are growing in the understory prior to harvesting timber. This advanced regeneration is a key component of upland oak forest management.

An important factor in establishing regeneration is acorn production. This brings up another characteristic that makes managing white oaks in forests difficult. It turns out that

most white oaks only have good acorn producing crops every few years. Further, it is necessary for acorns to make direct contact with the soil. If they lie on top of the leaves, they can easily dry out or become wildlife food. However, if they are resting on the soil under the leaves or are buried by wildlife they stand a much better chance of successfully germinating and becoming a seedling. With a little luck, the newly established seedlings will soon receive enough sunlight through the forest canopy to continue to survive and grow, something that can be greatly aided by good forest management. An abundant number of seedlings, referred to as advance regeneration, must become established in the forest understory, ready for any kind of opening above. When an opening or thinning of the forest canopy occurs due to mother nature or through forest management, it can provide enough sunlight for the white oak advance regeneration to continue to thrive and outgrow its competition, eventually maturing to become a dominate tree of the forest.



### ***Important to All***

White oak is clearly an important component of our forests. Not only is white oak an important timber resource, it is possibly one of the most highly valued wildlife trees in the forests of the eastern United States. We also need to continue to see white oaks represented in our cities and urban environments. White oak is one of the most important trees in our upland oak forests. There are indeed many reasons to hold white oak in such high regard.

For more information about white oak and white oak management, contact: [www.whiteoakinitiative.org](http://www.whiteoakinitiative.org)

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