Climate Resilient Communities

Huron River Watershed Council

Trees of the Huron River Watershed in a Changing Climate

Bur Oak *Quercus macrocarpa*


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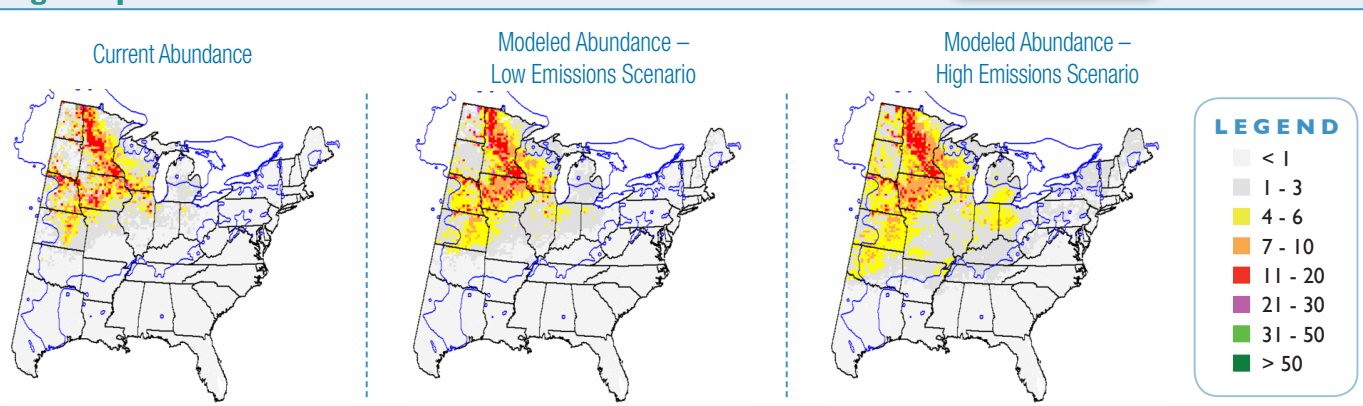
Description

Bur Oak is a large, strong, long lived tree. It is common in southern Michigan. It is moderately shade tolerant and can tolerate a wide variety of sites from upland with poor, sandy soils to mesic and seasonally wet. Bur oak is very drought resistant and fire tolerant. Like other oaks, it is poorly adapted to hard winter freezes. Oaks are among the tree species most valuable to wildlife due to the abundance of acorns that they produce which serve as a high quality food source.

Change Maps for Bur Oak[1]



Abundance change maps for bur oak showing current (1961-1990) range and importance of the species and predicted future (2071-2100) range and importance using an average of three low emissions climate models. The Importance Value ranges from 0 to 100 and gives a measure of the abundance of the species.

Implications of Climate Change

Bur oak should continue to do well as climate changes in the area. Models predict that the distribution of bur oak will shift northward, primarily as a result of milder winter conditions. Southern Michigan will become more favorable for this species however its abundance will be limited by increased competition from other species. Restoring savanna systems, reducing invasive species and prescribed burns will help this species persist.

Natural Communities Associations[2]

Canopy dominant in bur oak plains, lakeplain oak openings, oak openings and oak pine barrens

Vulnerability of Natural Communities[3]

Most of the savanna systems in which bur oak occurs are already very rare and isolated making them very vulnerable to threats such as invasives or land use change, especially bur oak plains and lakeplain oak openings. However, savanna systems in general may benefit from warmer, drier conditions expected in the Huron River Watershed. Oak openings are the most common natural system in the area supporting bur oak. The climate envelope for oak pine barrens will likely shift north, moving this system out of southeast Michigan.

[1] Prasad, A. M., L. R. Iverson., S. Matthews., M. Peters. 2007-ongoing. A Climate Change Atlas for 134 Forest Tree Species of the Eastern United States [database]. http://www.nrs.fs.fed.us/atlas/tree, Northern Research.

[2] Michigan Natural Features Inventory. www.mnfi.anr.msu.edu/communities

[3] Lee, Y., M. A. Kost, J. G. Cohen, and E. H. Schools. 2012. Climate Change Vulnerability Assessment and Adaptation Strategies for Natural Communities in Michigan, Focusing on the Coastal Zone. Michigan Natural Features Inventory Report No. 2012-18, Lansing, MI.