Climate Resilient Communities

Huron River Watershed Council

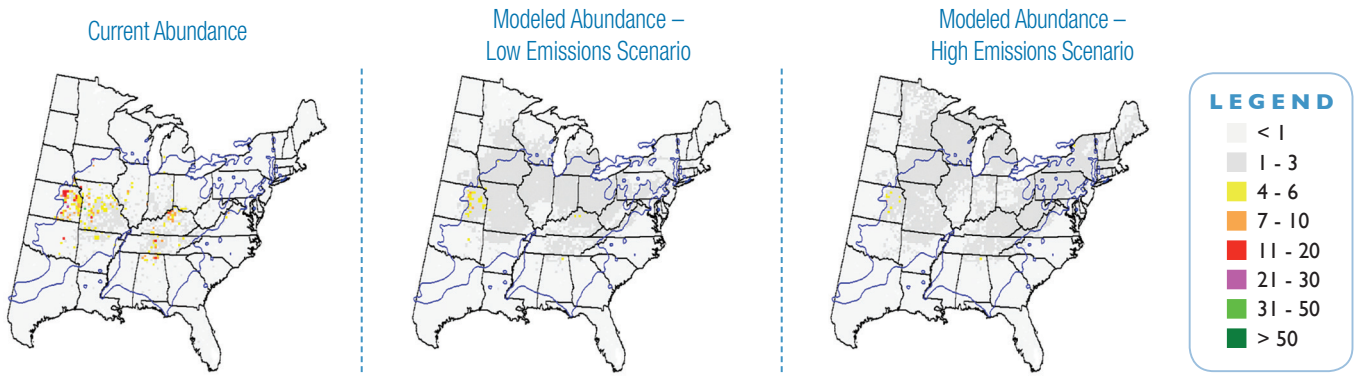
Trees of the Huron River Watershed in a Changing Climate

Chinkapin Oak *Quercus muehlenbergii*

Description

Chinkapin Oak grows in well-drained, alkaline soils on the slopes of uplands and along rivers. Its current native range within Michigan is limited to the southern lower peninsula. It is rarely the dominant species in any habitat as it is very intolerant of shade. Its acorns are a biologically significant food source and it is an important resource for the Gray Hairstreak butterfly. Chinkapin oak is fire tolerant and susceptible to mortality from gypsy moth.

Change Maps for Chinkapin Oak[1]



Abundance change maps for serviceberry 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

Climate models predict the range of this species will expand northward and chinkapin oak is expected to increase in importance in the forests and savannah systems of southeast Michigan. Chinkapin oak's tolerance of a wide range of temperatures and fire will help support the species as climate changes. Its intolerance of shade and susceptibility to invasives, pests and pathogens may negatively impact the species adaptability.

Natural Communities Associations[2]

Canopy dominant in wet-mesic flatwoods and oak openings.

Vulnerability of Natural Communities[3]

Wet-mesic flatwoods are considered vulnerable to climate change because of the low dispersal potential of this natural community type and expected alterations to hydrology. Oak openings have low vulnerability and may actually benefit from climate change, the drier weather that negatively impacts wet-mesic flatwoods is a benefit to savannah systems. The potential increase in temperature and disturbance give oak openings the opportunity to expand into new areas and expand their range.

[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.