Climate Resilient Communities

Huron River Watershed Council

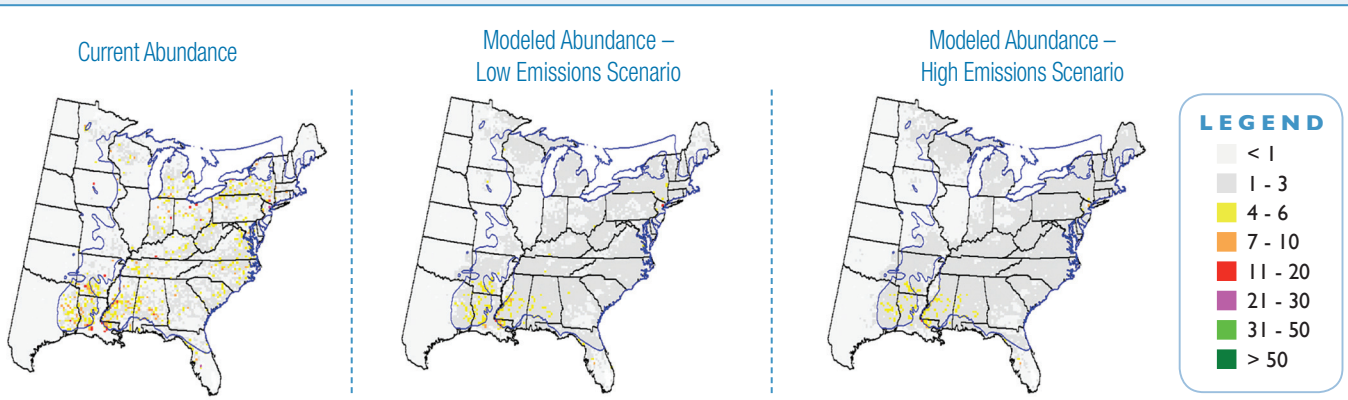
Trees of the Huron River Watershed in a Changing Climate

American Hornbeam *Carpinus caroliniana*

Description

This shade-tolerant understory tree is small, slow-growing, and short-lived. It can be found in Michigan's Lower Peninsula. The American hornbeam prefers wet and mesic habitats where the soil is moist with sufficient drainage to prevent poor aeration during the growing season. Due to its small stature it is not used commercially but is a food source to wildlife; the seeds, buds and catkins are eaten by birds and mammals.

Change Maps for American Hornbeam[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

Under most climate scenarios, American hornbeam will decline in importance in southeast Michigan. Some populations will remain primarily in areas maintaining wet-mesic soils. The increased heat index is considered to be the limiting factor for the American hornbeam as it will cause drier soil conditions. Fire is an additional threat. Protecting alluvial soils and large canopy trees will help maintain this tree's habitat.

Natural Communities Associations[2]

Canopy tree in inundated shrub swamps. Understory in hardwood-conifer and southern hardwood swamps, floodplain forest, wet-mesic flatwoods and mesic southern forest.

Vulnerability of Natural Communities[3]

Inundated shrub swamps are vulnerable to climate change as it is likely groundwater hydrology will change in response to drier climates. Low dispersal potential and expected alterations to hydrology make floodplain forest, southern hardwood swamp, and wet-mesic flatwoods highly vulnerable. Mesic southern forest is widespread and therefore less vulnerable to predicted changes but is still vulnerable to threats like invasive species and deer herbivory which are likely to increase as a result of climate change.

[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.