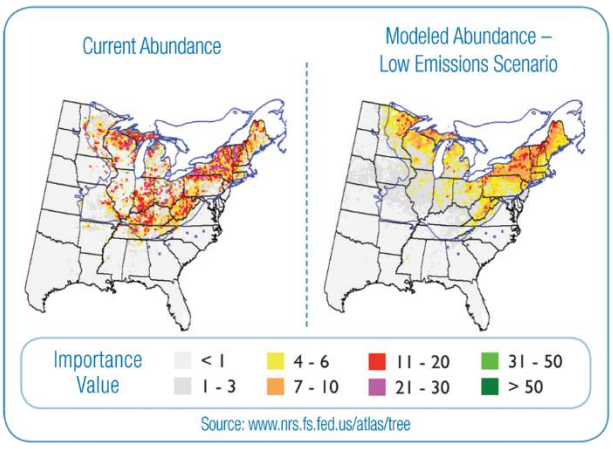
Impacts of Climate Change on Tree Species in Southeast Michigan

The impacts of climate change on forests and the urban tree canopy will vary based on species characteristics and emerging threats. Temperatures are increasing. Patterns in precipitation are changing. Other stressors such as drought, forest fire, pests, and invasive species are expected to increase. Species that are unable to keep pace with migrating temperature and precipitation conditions may struggle to persist. For southeast Michigan, this translates to a transition from conditions favoring existing maple, beech, and birch to those favoring oak and hickory. Some species, such as red pine, may be completely lost from the Great Lakes region by the end of the century.

The Favorability Table presented here represents a summary of research on the impact of climate change for 30 tree species significant in southeast Michigan. The predictions for these species can give natural resource managers and urban foresters insights as to how species and communities are likely to respond to changes in climate and make informed decisions about management and restoration of these natural resources.

Example change map. Current and future (2100) habitat suitability for Sugar Maple.



For detailed fact sheets on the impacts of climate change for each of the 30 species visit hrwc.org/tree-toolkit.

Favorability of future climate to tree species in southeast Michigan	
American Basswood	0
American Beech	-
American Elm	0
American Hornbeam	-
Black Cherry	-
Black Oak	+
Black Spruce	-
Blackgum	+
Box Elder	+
Bur Oak	+
Chinkapin Oak	+
Eastern Hophornbeam	0
Eastern Redbud	+
Eastern White Pine	-
Flowering Dogwood	+
Hackberry	+
Hickory species	+
Honeylocust	+
Kentucky Coffeetree	+
Northern Red Oak	-
Paper Birch	-
Red Maple	0
Sassafras	+
Serviceberry	+
Sugar Maple	-
Swamp White Oak	0
Sycamore	0
Tamarack	-
Tuliptree	+
White Oak	+

"+" indicates that the predicted future climate will be favorable to a species, "0" indicates a predicted future climate is not expected to positively or negatively affect a species, and "-" indicates the predicted future climate will be unfavorable for a species.