

Managing for Forest Resilience in a Changing Climate

A Factsheet for Forest Landowners in the Ridge and Valley Region



Your Forest and Climate Change



Climate change is impacting our forests. The Bureau of Forestry recommends taking steps to establish forests resilient to a changing climate.

Current and Projected Climate Shifts

Pennsylvania's climate has already warmed by 1.8°F since the early 1900s. Scientists know the rate of warming is accelerating and expect as much as a 5.9°F increase by 2050.

Average winter temperatures are increasing more than any other season, by 1.3°F per decade since 1970.

Our climate has also become wetter. Average annual rainfall has increased 10% over the last century and heavy downpours have increased by 71% in the north-eastern US.

The following information identifies potential forest vulnerabilities to climate change and management strategies to encourage forest resilience.

Forest Vulnerabilities

- New forest pests and greater impact of existing forest pests
- More invasive plants
- More fungal outbreaks
- More windthrow
- More soil erosion



- Streambank destabilization
- Changing forest community
- Unpredictable seasonal temperatures and extremes

Management Strategies

- Increase vigilance for forest pests, invasive species, and pathogens (with aggressive follow-up)
- Protect existing forests
- Reforest deforested lands
- Ensure biodiversity through a mix of age classes
- Plant a diversity of native trees, including known climate resilient trees in your region
- Work with your county service forester and consulting forester to create a forest management plan

Resilient Trees

Oaks: white, chestnut, black, chinkapin, scarlet, pin, N. red

Hickories: bitternut, mockernut, pignut, shagbark

Other: black walnut, sycamore, elms, black gum, eastern redbud, persimmon, sweet gum, hackberry, sassafras, Virginia pine, black locust, Am. holly, yellow poplar, flowering dogwood, Am. beech

Trees at Risk

Aspens: big tooth, quaking

Birches: black, paper, yellow

Spruces: black, red, white

Other Evergreens: hemlock, red pine, table mountain pine, white pine

Other Deciduous: striped maple, mountain maple, fire cherry, black cherry, basswood, serviceberry, swamp white oak

*Resilient and At Risk lists are based on modeling by the USDA Forest Service. With all models, there is some uncertainty. Some species may fare better (or worse) in different settings depending on prevailing ecological factors at the site. Landowners should enhance diversity to improve climate resilience and not necessarily limit their management decisions based solely on these models.

More Information

DCNR Bureau of Forestry
PaForester@pa.gov
717-787-2703

DCNR's Climate Change Page
<https://www.dcnr.pa.gov/Conservation/ClimateChange/Pages/default.aspx>

Service Forester Directory
<https://maps.dcnr.pa.gov/landownerassist/>



pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES
www.dcnr.pa.gov