

Managing for Forest Resilience in a Changing Climate

A Factsheet for Forest Landowners in the Western Allegheny Plateau 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 northeastern 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
- 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



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Resilient Trees

Oaks: scrub, white, black, chinkapin, scarlet, pin, shingle

Hickories: mockernut, pignut, shagbark, bitternut

Other: black walnut, sycamore, slippery elm, black gum, eastern redbud, osage orange, cottonwood, hackberry, hophornbeam, hornbeam, sassafras, Virginia pine, pitch pine, boxelder, black locust, honey locust, yellow buckeye, persimmon, pawpaw, flowering dogwood, black willow

Trees at Risk

Maples: mountain, striped, black

Aspens: big tooth, quaking

Birches: paper, yellow, gray

Evergreens: hemlock, red pine, jack pine, red spruce, white spruce

Other: American mountain ash, fire cherry, balsam poplar, American beech, chokecherry, pin cherry

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

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