

Forest Diversity and Composition

Every woodlot is different and will contain a different mix of tree and plant species due to the conditions unique to that place and to the history of the land. In general, a forest that contains a variety of tree species that are well-suited to current local conditions and future climate conditions without many interfering plant species will be better able to tolerate changes in climate and other stressors.

SPECIES DIVERSITY

Higher Risk **Lower Risk**

The forest has low species diversity, either in the canopy or throughout the forest. One or a few tree species are dominant.

Many tree species are present, without a single species being overly dominant.

SPECIES SUITABILITY

Higher Risk **Lower Risk**

The dominant tree species are near the southern extent of their species range or are adapted to cold conditions.

The dominant tree species can tolerate warmer, drier, or more variable conditions and are generally found farther south.

GENERAL TREE HEALTH

Higher Risk **Lower Risk**

Trees have poor growth form or have been damaged by insect pests or forest diseases.

Most trees have good growth form, are healthy and free of insect and disease damage.

INSECTS AND DISEASES

Higher Risk **Lower Risk**

The forest is currently affected by insects or diseases. There are looming threats such as nearby outbreaks.

There are no current or looming forest insect or disease issues and there is a diversity of non-host species.

Forest Structure

When it comes to forest structure, more complexity is often better. Forest structure includes having a diversity of tree sizes and species, varying the number of trees per acre, and ensuring the presence of dead wood –both standing and down. These conditions make your woods more likely to attract wildlife and recover quickly from disturbance.

STRUCTURAL DIVERSITY

Higher Risk **Lower Risk**

The forest contains trees that are primarily a single age or size, creating a simple canopy.

The forest includes trees of different sizes as well as multiple vertical layers (overstory, understory, etc.).

STANDING DEAD TREES

Higher Risk **Lower Risk**

No or few large standing dead trees are present.

There are noticeable numbers of standing dead trees (several per acre) and some are large.

DOWN DEAD WOOD

Higher Risk **Lower Risk**

Woody material, especially large pieces, are rare or absent.

There are noticeable amounts of dead wood, especially large pieces, on the forest floor.

TREE CROWNS AND SPACING

Higher Risk **Lower Risk**

Trees are too crowded and competing for growing space, or (less common) trees are inadequately stocked and too widely spaced.

Trees have adequate growing space that leads to them having large, healthy crowns.

Regeneration

Regeneration refers to the young trees that will grow into the future forest, and these small trees are crucially important because they will influence how the forest changes over time. The species and health of these trees matter, and it is important to protect them from challenges like deer browse and competition from less desirable or interfering species.

DESIRABLE REGENERATION

Higher Risk **Lower Risk**

Tree seedlings and saplings are absent in the understory or are dominated by undesirable species.

Tree seedlings or saplings are present in the understory; the species mix is desirable for achieving management goals.

SPECIES SUITABILITY

Higher Risk **Lower Risk**

Regeneration includes species that are near the southern extent of their species range or are adapted to cold conditions.

Regeneration includes tree species that can tolerate warmer, drier, or more variable conditions, and they are generally present farther south.

INTERFERING PLANTS

Higher Risk **Lower Risk**

Plants such as buckthorn, multiflora rose, autumn olive, beech, ferns, and garlic mustard are common in the forest and may impede natural regeneration.

Interfering plants are absent on the property or are deliberately confined to small areas.

DEER BROWSE

Higher Risk **Lower Risk**

The occurrence of moderate to severe deer browse may create substantial challenges for tree regeneration and recruitment.

Deer browse does not pose a substantial challenge to tree regeneration that needs to be addressed.

Site Level Risks

Every location will be affected by climate change in unique ways. For example, a riparian forest may be more vulnerable to extreme rain events or flooding, while an exposed ridgetop may be more susceptible to extreme storms that can cause windthrow. Consider the unique ways that a site may be affected to develop actions tailored to that place.

MOISTURE STRESS OR DROUGHT

Higher Risk **Lower Risk**

The forest is susceptible to drought because the trees are not tolerant or because the soils are sandy or drought-prone.

Moisture stress or drought would not cause problems at this location.

EXTREME RAINFALL

Higher Risk **Lower Risk**

Forest is in an area that would be heavily affected by extreme rainfall, such as a floodplain or steep, highly-erodible slope.

Extreme rainfall would not cause problems at this location.

OTHER EXTREME WEATHER

Higher Risk **Lower Risk**

Parts of the forest may be susceptible to extreme weather events, such as a ridgetop that has a higher risk of damage from high winds.

This location is not at an elevated risk of damage from extreme weather events.

SHORTER AND Milder WINTERS

Higher Risk **Lower Risk**

Warmer winter conditions could negatively affect the forest or create challenges to forest management or timber harvest. For example, more variable snowpack could reduce windows for forest harvesting during the winter season.

Warmer winter conditions may be beneficial to forests or may increase opportunities for forest management or timber harvest.

Keep Forests Healthy

The Keep Forests Healthy scorecard can help you assess how resilient your forest may be to changing climate conditions. Consider the condition of your woods and check the appropriate boxes during a woods walk in your forest. The evaluation can help you identify potential risks and highlight management options that may increase the forest's ability to cope with the pressure of changing conditions. Discuss these topics with a professional as you plan for the future of your forest.



The Nature
Conservancy 

Cornell Cooperative Extension
Onondaga County