Keeping Your Woods Healthy

Through the Years Ahead

Whether you spend time outside in your woods, or just enjoy the beauty of your trees and wildlife from your window, you likely love your woods and want to keep them healthy.

Forests are always changing and adapting to new conditions. Some changes are as anticipated as the progression of green summer leaves to the bright red and gold of fall foliage, or annual return of brightly-colored migratory songbirds. Other changes in our woodlands are only visible when comparing differences across many years or decades.

Our climate is changing in ways that humans have never experienced before, resulting in rising temperatures and shifts in seasonal precipitation patterns. You may be noticing some of these changes in your woods — such as earlier dates for the first signs of spring leaf-out, unusual weather patterns, longer dry periods in summer, or even an increase in fast-growing, nuisance plants such as poison ivy.

In particular, temperature and precipitation patterns in the MassConn region of northeast Connecticut and south central Massachusetts have changed over the course of our lifetimes. For example, the heaviest rainfall events have increased 71% in the Northeast U.S. from 1958 to 2012 — more so than in any other part of the country[1]. Additional changes are expected by the time our grandchildren are having grandchildren of their own:

- Annual precipitation has increased by 3-6 inches in the MassConn Woods area, and is projected to rise at least another inch over the next 100 years. At the same time, extreme or very heavy precipitation events are expected to occur more often, and warmer temperatures will result in more rain than snow[2]. This means your stream crossings and culverts will need to accommodate dramatically increased flow at times.

- By the end of this century, average annual temperatures are projected to increase somewhere between 5 to 10 degrees Fahrenheit, increasing both the length of the growing season and the frequency and severity of extremely hot days[3].

- A longer growing season, warmer temperatures, and more variable summer rain are likely to increase summer moisture stress leading to potentially harmful droughts[4].

- As the climate conditions change, the MassConn area is expected to become less favorable to the traditional northern trees we are familiar with and more favorable to typically southern species that are now at the northern reaches of their range. This means that many common trees such as maple, birch, and beech are likely to experience greater stress, and tree species more typical of the oak-hickory forest may have more opportunities[5].

The MassConn Woods already faces threats from invasive bugs like the Asian Longhorned Beetle, Emerald Ash Borer and hemlock and balsam woolly adelgids, as well as an ongoing outbreak of gypsy moth. A changing climate can combine with and increase the effects of existing stresses, like bugs and disease, to put your woods at an even greater risk. But there are solutions available to help you and your woods prepare for and cope with the unpredictable conditions that lie ahead. A woodland of healthy, diverse trees can better withstand stress, thereby better supporting the community of plants and animals that live in your woods.

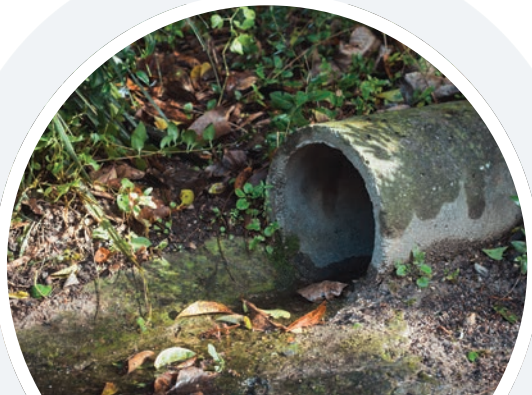
Taking an active role as a steward of your land can help your woodland become more resilient to changing conditions and more frequent disturbances from events such as wind, storms or disease that can damage trees. A forester, or other natural resource professional, can help you determine what actions are most suitable for the unique conditions on your land.

Here are some solutions you might implement on your woodland and why they are so important:

- **Protect water and soils on your land.** The MassConn region is expected to experience more frequent and much more significant precipitation events in spring and fall seasons. These events could cause wash-outs like you've never experienced before, so ensure your culverts and crossings can handle a much larger stream flow than you might expect. Plus, protecting plants around wetlands and streams will help ensure that less of your soil is washed away, to avoid filling and choking your healthy streams. A professional can help you anticipate and design appropriate improvements you may need to protect your water sources.

- **Improve ability of your trees to resist bugs and disease.** Promoting growth of the healthiest, strongest trees in your woodland to provide a future seed source will help your property to withstand increased threats from pests and pathogens. Additionally, make sure your forest has a diversity of tree species, so your woods won't be overly at risk if one particular tree species is attacked by an unknown pest.

- **Prevent and control non-native plants and weeds that threaten native plants and animals.** The changing climate is projected to create even more attractive conditions for undesirable plants that are not native to our area. Unfortunately, these invasive plants often outcompete our native tree species and contribute very little to the values we appreciate most from our woods: deep, strong root systems for clean water, native nuts and berries for wildlife to eat, complex leafy structure for wildlife shelter and even valuable wood for you to harvest for income to reinvest back into keeping your woods healthy. By staying on top of eliminating these non-native plant and weed threats, you will ensure your woods are better prepared for the future.



- **Manage damage to young trees from excessive deer browsing.** Young tree seedlings are the future of the forest — and often the tastiest morsels for your local deer population. By promoting a healthy community of younger trees, you can have more confidence that your woodland will be more adaptable to changing conditions in the future. To prevent deer browsing, consider managing your deer population or enclosing young trees in protective tubes. A professional can help you think through the best solution for your situation.

- **Prepare for big weather events by promoting strong, healthy trees in your woodlot.** The healthiest trees can withstand damaging events and will provide a viable seed source and good genetics for the next generation of trees, too. Not only can you work with a professional to select those trees which appear most healthy and vigorous, but you can also manage your woods to promote others to grow strong and sturdy. For example, think about thinning out a crowded forest, which will enable trees to grow larger, wider and more complex root systems.

- **Respond quickly after big disturbance events to help your woods bounce back.** A quick response after a damaging event is very important. If your woodland experiences a sudden pest outbreak, you should work with a forester to evaluate and control the issue, preventing the threat from spreading further. Similarly, a big storm event might damage a portion of your woodland. Play an active role to make sure it's ready to recover as quickly as possible by preventing invasive plants, which thrive after disturbances, from outcompeting and killing off native tree seedlings.

- **Promote a diversity of tree species.** Remember, as the climate changes, conditions for current tree species will change, too. It's best to hedge your bets and make sure your woods have a variety of native tree species present, so eventual "winners" will adapt and thrive and your woods won't miss a beat. On the other hand, if you focus on maintaining a single tree species on your property, you run the risk of that particular species being unable to handle future conditions — and your whole forest loses out.

- **Promote a diversity of tree sizes.** A diverse forest structure is just as important as the individual species. A woodland that has trees of all the same size can be affected by changes in the same way, meaning your land will be less able to adapt and respond accordingly. Ensuring that you have a good population of young trees, middle-aged trees and old trees will not only make certain that you're providing diverse places for wildlife to live today, but it will also mean your woods are ready to handle a variety of situations in the future.

- **Protect rare or sensitive plant and animal communities.** Uncommon or fragile plants and animals will have the most difficult time adapting to changing conditions. While we can't provide absolute certainty that our attention to these natural wonders will protect them into the future, we can try and give them the best possible chance. Perhaps there are management activities you can implement, like removing invasive plants, ensuring that the right amount of light or shade protects the community, or better managing wetland areas. Consult with a professional and monitor these situations closely. A forester or wildlife biologist can help you establish a plan to protect these communities on your land.

- **Consider how your current trees will react to future conditions and which tree species you might want to promote.** Be thoughtful about what tree species are growing where. For example, a warmer climate may put some species like quaking aspen and eastern hemlock at greater risk while many oak and hickory species may be better adapted to future conditions. That doesn't mean you need to change the trees in your woods immediately, but you can begin to cultivate your woods for success, like you would gently, but deliberately, tend your garden.

- **Monitor your woods and the effect of different management tactics.** Regularly keeping an eye on your woods will help you better understand how the changing climate will affect your property in particular. Think about recording annual leaf-out dates. Check for signs of pest infestation or disease on certain trees. Take note of the number and success rate of tree seedlings, as these little trees will ultimately determine the future of your forest.

For more information, visit our website: mymassconnwoods.org

My MassConn Woods

1 Global Change Research Program, National Climate Assessment, 2014, Accessed via: GlobalChange.gov

2 Kunkel, K.E., et al., Regional climate trends and scenarios for the U.S. National Climate Assessment. Part 1. Climate of the Northeast U.S., 2013, US Department of Commerce, National Oceanic and Atmospheric Administration: Washington, DC. p. 87.

3 Manomet, M.C.f.C.S. and M.D.o.F.a.W. MA DFW, Climate change and Massachusetts fish and wildlife: Habitat and species vulnerability (Volume 2), 2010, Commonwealth of Massachusetts. p. 59.

4 Horton, R., et al., Chapter 16: Northeast, in Climate change impacts in the United States: the third National Climate Assessment, J.M. Melillo, et al., Editors., 2014, U.S. Global Change Research Program. p. 371-395.

5 Tobin, D., Janowiak, M., Hollinger, D., Skinner, R. H., Swanston, C., Steele, R., Chatrchyan, A. Northeast Regional Climate Hub Assessment of Climate Change Vulnerability and Adaptation and Mitigation Strategies (pp. 65), 2015, USDA Northeast Climate Hub, USDA Forest Service Northern Research Station.