Climate Change in Your Garden

By Michael Hurley, Fairfax Master Gardener Intern
"No occupation is so delightful to me as the culture of the earth, and no culture comparable to that of the garden."
— Thomas Jefferson

Climate change is here — it's all around us. But public surveys talk about our life in a post-fact world, so is climate change real? Does it matter here in Fairfax County, far from rising seas and scorched forest lands? Are there indicators that we should be aware of, such as the proliferation of invasive species to the detriment of native plants that will help understand how climate change affects us as gardeners? Short of moving to a nearby cave and rubbing two sticks together, what can we do about it?

We should care because environmental conditions are getting worse. Carbon dioxide and other heat trapping gases get into the atmosphere from several man-made sources. Rising temperatures and changing precipitation patterns due to global warming cause heat waves, drought, heavy downpours and storms, all favorable to invasive plants.

photo: University of Minnesota

According to the USDA, we buy nonnative and sometimes imported plants because they look beautiful at the nursery, but we are usually unaware of the ecological costs of "escaped ornamentals that become invasive …. Humans have deliberately or accidentally moved thousands of species beyond their native ranges." Shifting to native plants can increase the diversity of bees, butterflies, birds and others, creating a local food web.

A native plant is one that occurs naturally in its own habitat and over time has adapted to physical conditions with other species in an ecosystem. A nonnative species is one that is unlikely to have arrived without human assistance. An invasive species is a nonnative plant that spreads and outcompetes native species for habitat and food. One source estimates that 80 percent of ornamental plants for sale are nonnative. Another source estimates that an estimated 5,000 nonnative plant species have been introduced into U.S. ecosystems (most of which do not cause harm but have the potential to do so).

Climate change contributes to extreme conditions such as hurricanes, fires, ice storms, floods, drought, heat waves, landslides and volcanic activity. All of these things, plus man-made interventions such as logging, construction, our international trade and travel, and our use of fossil fuels accelerate climate change. The alterations on the ground that these conditions cause tend to favor invasive species that can compete better when native plants are washed, burned or scraped away, leaving an open field to invasive species invasions. Disturbances (e.g., fire, storms) exacerbated by climate change can result in large increases of carbon dioxide, an increase in bare ground available for invasions and mortality of native species. All can potentially enhance invasive species performance.

Invasive plants cause a reduction of native biodiversity, a disturbance of resource availability, changes in species composition, loss of habitat for native species and alterations in growth cycles. When the environment for a native plant declines, scientists judge that invasive plants move fast to fill in the barren patches (including in your garden), taking advantage of weakened ecosystems. Climate shifts mean that many native plants will have difficulty surviving in their historic range. To survive, native plants and invasive species move to new regions (in our case they mostly move north and to higher elevations) where they previously were not found.

photo: Colorado State University

Japanese Stiltgrass

What does all this mean for us as gardeners? If climate change accelerates the spread of invasive species, it means a reduction in the resilience of our native plants. One way it affects me is the Stilt Grass *(Microstegium vimineum)* invasion. I am not a big fan of herbicides, so I spend a few sweaty afternoons every summer stripping the Stilt Grass out of my Liriope (also a nonnative). Stilt Grass is an annual weed, but it can reseed itself, so the key is to prevent seed production. It is an aggressive competitor and loves to jump in where garden and lawn growth are not robust.

Climate change doesn't cause Stilt Grass, but its damage to the native plant environment accelerates its spread. It is now found in every county in Virginia. It spreads rapidly, especially after a flood or mowing. Its seeds are also carried on the fur and hooves of animals, or by water during a heavy rain. It is unfortunately not appetizing to animals like our hydrangeas are for the deer. Stilt Grass suppresses the growth of tree seedlings and other vegetation.

The Lewis Ginter Botanical Garden near Richmond calls Japanese Stilt Grass one of their "Dirty Dozen" worst invasive plants. Gardeners might look to the following as alternatives to Stilt Grass: *Carex pensylvanica* (sedge); *Schizachyrium scoparium* (little bluestem); *Sisyrinchium angustifolium* (narrowleaf blue-eyed grass).

What's a gardener to do? Predictions for the negative effects of climate change such as accelerating the spread and establishment of nonnative invasive species are "dire but not inevitable."

Experts recommend the following:

- Reduce the use of gas-powered yard tools (rake instead of blow)
- Purchase electric or solar-powered garden products (solar powered mowing robot)
- Reduce purchase of nonnative ornamentals
- Look into planting native plants and diversify the species to attract pollinators
- Remove invasive plants from the garden (Stilt Grass be gone)
- Reduce water consumption (mulch; use drip hoses; install rain barrels)
- Develop a rain garden to stanch stormwater runoff
- Compost kitchen and garden waste
- Don't leave the garden soil naked — plant winter cover crops (legumes, grasses, brassica)

We need to follow the science to educate ourselves to limit the relentless march of invasive plants. As gardeners we can't control the weather, but we can do some things, such as reducing the bare ground available for nonnative invasive plant invasion.

More than one source mentioned certification of one's backyard or neighborhood as a Certified Wildlife Habitat with the National Wildlife Federation. This sounds interesting and probably beats the heck out of moving to a cave.

References

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