OUTDOOR OBSERVER

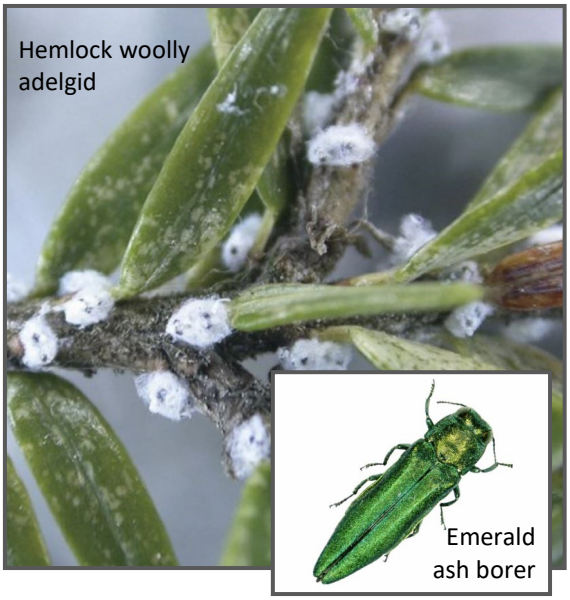
Change is sometimes good… or at least not all bad

By Rod Christie, Mianus River Gorge Executive Director

The Eastern Forest of North America has undergone great change since 45% of the US was covered in old-growth forest. Old-growth forest was cut (less than 4% remain) and many species have declined or disappeared. American chestnut, once the most dominant tree in the forest (1 out of every 4 trees) and food for dozens of species, including humans, are almost entirely gone, wiped out by the chestnut blight. But even with this drastic change, the forests have survived. Old farm fields once cleared have reverted back to forest and new species like oak and hickory have replaced the chestnut.


Photo by: Matt Tillett

There is good news when it comes to the chestnut. Researchers at SUNY ESF (one of MRG's partner universities) recently used genetic engineering to negate the effect of the fungus that kills chestnut trees. The insertion of one gene from wheat allowed the development of a new, extremely resistant chestnut that is phenotypically the same as the original. If approved, this would be the first time genetic engineering was used in conservation and could lead to other projects that will change the look of our depleted forests for the better.



As we've reported many times, introduced species such as the emerald ash borer, hemlock woolly adelgid, and Beech leaf disease are killing an array of trees at an alarming rate. Scientists across the country are working to develop various methods of control, but the key ecological solution may be to encourage plant and animal diversity so that forests can adapt to these changes over time. Who knows, species once uncommon but now thriving like the pileated woodpecker, along with other predators, could potentially play a vital role in controlling these destructive species over time.

It is also important to understand the role of "ecosystem engineers" such a white-tailed deer and aggressive invasive species, such as barberry, Oriental bittersweet, porcelain berry, or mile-a-minute vine. Studies at MRG have indicated that whether a species is invasive or not may be a function of the impact of these ecosystem engineers. White-tailed deer and aggressive, introduced vines have the ability to change the ecosystem by eliminating native species, reducing competition, and making it easier for introduced species to thrive. Increase the native competition by controlling the impact of these ecosystem engineers (fencing, deer management, vine removal or other strategies) and we push the advantage back to natives, and many of the less aggressive, newly introduced species eventually become part of the overall mix of forest diversity.

Porcelain berry

As we lose certain species due to climate change, habitat destruction, and other factors, it might be that less competitive, introduced species will replace them. Together with the remaining native species could they still form a diverse forest that is resilient to climate change moving forward? If we can manage deer, focus invasive species removal on these ecosystem altering species, and continue to protect our most fragile, rare species, we might have a chance. This will slow the speed of invasion so native species have a chance to come back, surviving alongside the less harmful, non-natives that have become naturalized.

There is no question our forests will change over time and that we will lose some native species, but with the addition of new species (and hopefully some old species like the chestnut that we have gotten back) to expand forest species diversity, there is a good chance future forests will still be healthy, beautiful, and worthy of our continued protection for years to come.