

Restoration in a changing landscape – what's a native plant nursery to do?

Bill Schneider

wildtype native plants • ecological services

February, 2018

When I started the nursery in 1996, I wanted to grow not just native plants but genetic wild types. My idea was to produce native plants with enough genetic diversity to produce self-sustaining populations; or in other words, to conserve not only the species but the genetic diversity found in the wild population. Preserving the genetic diversity that remains in our native flora requires wild collection of seed across many remnant populations. This continues to be our goal and passion.

It is beyond dispute that the landscape is changing. We know climate change is responsible for increasing average global temperatures, changing precipitation patterns and causing rising sea levels. This is only the tip of a quickly melting iceberg. But climate change is only one of several anthropogenic impacts on the environment. For example, habitat is being lost to agriculture, development, and the spread of invasive species. Furthermore, the pH of rainwater has become more acidic and contains more nitrogen, altering nitrogen cycles, and the soil microbiota. The list goes on.

When I started out in this profession I looked to the pre-European settlement map as a vital reference as to how to approach restoration. While it continues to be an important historic reference, it is less valuable as a restoration tool since the landscape is changing so rapidly. Over the 25 years I have been collecting seed in Michigan, many collection sites have become developed or overrun with invasive species. It does not seem reasonable to assume that restoring the landscape to pre-settlement conditions is possible in most situations. This leaves open the question of what is the place and purpose of native flora in our future landscape. Several years ago I was discussing this with a friend and he asked me a simple question, 'what will a native plant nursery look like in 50 years?' I have been pondering the gravity of this question ever since. The question not only challenges the meaning of what is native but more importantly, the significance of being native.

There are some folks that think we need to prepare for climate change and suggest we should start moving genotypes and southern species due north. This assisted migration strikes me as simplistic since we almost always overestimate our understanding of the environment. Some climate models indicate that our climate in lower MI will not be simply warmer, but the summers drier and punctuated with heavier precipitation events, which will be much more like the climate of the Ozarks than southern Ohio or Indiana. We do know that while the climate is changing, the physical geography of our region will not. Topography, soils, latitudinal differences in day length will remain the same. Don't write off regional genotypes quite yet. The genetic variability contained within any given species will likely contain genes that will help foster adaptive change in the population.

The relative importance of genotype to the long-term success of a project continues to be debated. As a practical matter we suggest putting your project along a continuum from highly disturbed, inextricably altered sites to high quality landscape remnants. The vast majority of project where native plants and seed are used would fall closer to the inextricably altered end of this continuum. These include sites such as detention basins, mitigated wetlands, roadsides, post agricultural prairie plantings, residential and commercial landscapes. Adhering to highly restrictive or narrow genotypic range may not be warranted or maybe even ill advised. Defining “highly restrictive” or “narrow genotypic range” is part of the problem since describing acceptable ranges in terms of distance or political boundary have no ecological context. At first glance using eco-region maps seems like the logical approach but who’s map do you use and what level of scale? The problem is eco-region maps are not drawn to specifically describe genotypic distinctions between populations of plants although it is tempting to infer. On higher quality sites the preferred restoration approach often is to manage the invasive species and restore ecological function to the site through the use of prescribed fire and restored hydrology etc. For those restoring these higher quality native landscape remnants we caution against using genotypes from outside the eco-region you are working – in fact we suggest relying on the genetic resources on-site or within close proximity to the site. We are sometimes called upon to collect seed for these types of projects – let us know if we can help.

At Wildtype we are always discussing what we should be growing and how we should be growing it?’. If you look through our on-line catalog or visit the nursery this season you will notice Wildtype is making a few changes in response to the changing environment. The majority of plants we grow will continue to be collected from the wild within Michigan. We have however expanded our collecting range to include northern Ohio and Indiana since eco-regions do not follow political boundaries. Along these lines there are also a few new species in the catalog not considered native to Michigan, but which do grow natively just south of the state line, which we refer to as “nearly native”.

For a number of years we have been growing a small number of plants from non-Michigan genotypes. Most notable are purple coneflower (*Echinacea purpurea*) and pale coneflower (*Echinacea pallida*). Many people consider these species native to Michigan but we defer to the University of Michigan herbarium, which considers purple coneflower extirpated and pale coneflower not native. In both cases only non-Michigan genotypes are available. We are also growing a number of species like Jacob’s ladder (*Polemonium reptans*) from genotypes outside of Michigan. This is a protected species in Michigan, which means seed, nor plants can be collected from wild sources. Protected species like Jacob’s ladder are readily and legally available in Michigan from either cultivated sources within Michigan or from outside state where they are more common and therefore do not have protected status. The logic behind this does not make a lot of sense and will be the subject of another blog.

We continually strive to capture and sustain the genetic diversity that is still found in native populations, but will be doing things slightly differently behind the scenes. The places we collect are increasingly fragmented and genetically isolated, which can result

in the inadvertent propagation of inbred lines. Furthermore, many of the species we grow are harder to find and can only be responsibly collected in smaller quantities from a particular site. For these reasons, we have started mixing collections from multiple sites within an eco-region. In the past, for example, when we collected a species from multiple locations we would accession and grow them separately. In the future we will be pooling collections in order to help ensure the population of plants that leave the nursery are not highly inbred, despite being collected from the wild.

Native species will be a critical part of the future landscape, but historic plant and animal communities have already changed dramatically. Taking a conservative, humble approach to restoring the landscape is prudent as we adjust to the “new normal”. To quote Wendell Berry “When we cut the forest and plowed our prairies we never knew what we were doing because we never knew what we were undoing”.