

## Hope and Reality for Urban Ecosystems

*The world is too much with us; late and soon,  
Getting and spending, we lay waste our powers;  
Little we see in nature that is ours;  
We have given our hearts away, a sordid boon!*

From *The World Is Too Much With Us* by William Wordsworth

*EDITOR'S NOTE: Our last issue (Summer 2014) included Clark DeLong's article on the use of green roofs as ex situ conservation space. We invited Rod Simmons to share his perspective on conservation of rare and uncommon plant species.*

Years ago, I served on Maryland's Plant Reintroduction Task Force, which was largely convened to address the merits, legal ramifications, and biological soundness of reintroducing rare taxa "recently lost from its historic range" or to enhance dwindling populations that remained in their historic natural settings (PRTF 1999). This involved a proposal to dig up for propagation the three dwindling survivors of Box Huckleberry (*Gaylussacia brachycera*) from a sandy hillside in Oak-Pine-Heath Forest along the upper Magothy River in Pasadena, Maryland. Box Huckleberry is a globally rare, highly clonal, ice-age relict. Its natural range is essentially the Mid-Atlantic region (Pooler et al. 2006). The Magothy River site was Maryland's last and only known station for this plant.

The Task Force ultimately decided that those few plants would likely be lost in the near future and that the best way to conserve this Maryland genome was to remove the plants from the wild and propagate them *ex situ* at the USDA tissue culture lab at Beltsville, Maryland. Horticulturists are usually good at finding ways to successfully grow finicky plants, and this was no exception. USDA's only condition for participating in the project was a stipulation that allowed propagated Box Huckleberry clones from the plants to be made available to the nursery industry. Apart from this stipulation, this project met the principles of ecological restoration by safeguarding identical plants to be planted in exactly the same documented location and situation where they originally grew—or very near, if there was disturbance to the original site. So this was not a case of *ex situ* conservation, but rather an example of ecological restoration and rare plant reintroduction.

Odd things have been afoot regarding Box Huckleberry since those days. Last year the *New York Times* and *The Washington Post* reported that the National Arboretum intends to hybridize together Box Huckleberry material from all of the known, remaining wild sites in the world. The National Arboretum stated correctly that harboring a collection of propagated plants from Box Huckleberry sites in a museum-like setting at the arboretum is "preserving a genetic resource for the future" (DePalma 2014). However, this remains true only so long as the plants are not cross-pollinated or hybridized with each other. It is against the principles of ecological restoration to reintroduce or plant hybridized

Box Huckleberry (or other artificial taxa) into natural areas where man-made diversity did not formerly exist, as this practice is as unnatural as the entity that was artificially created. As to National Arboretum plans to develop, through cross-breeding, Box Huckleberry traits "that nursery growers need in garden plants" (Higgins 2014), I strongly agree with now-retired scientist Jim Long that this is an irrelevancy at best and a serious blurring of the separate and distinct worlds of cultural landscapes and conservation biology.

For further examples of misguided conservation or restoration efforts, take Longleaf Pine (*Pinus palustris*), which is wholly artificial planted well outside its native range in northern Virginia and the piedmont (VDOF 2014); Gulf Coast pitcher plants and other deep south flora illicitly planted in Maryland and Virginia seepage bogs; Sweet Pepperbush (*Clethra alnifolia*), Inkberry (*Ilex glabra*), and other "BayScape" plantings at the Sideling Hill Visitors Center in the Maryland Ridge and Valley; unnecessary "pollinator garden" plantings of imported wildflower seed into natural areas at the exceptionally diverse Manassas Battlefield Park; introducing southern species northward to preempt assumed climate change effects; and so on. To my mind, these well-intentioned but misapplied practices also include the almost fanatic efforts to "restore" the once-dominant American Chestnut (*Castanea dentata*) to Appalachian forests and other natural lands through the introduction of 94% Asian-American Chestnut backcross

hybrids. None of these examples meet the criteria of conservation biology or ecological restoration, nor in my opinion do they further the future of the species they seek to preserve. Sometimes there are consequences to our folly and we simply have to live with the results.

As far as conservation biology and ecological restoration are concerned, a taxon should not be considered native if it is the product of hybridization, genetic alteration, and other human manipulations. Once a species is artificially moved out of its niche—whether introduced beyond its natural range or denatured to be more plastic in its adaptability or usefulness—it ceases to be a natural entity or truly functioning component of the ecosystem.

This is not a "purist" point of view—as contrarians are quick to claim—but a centered, realistic alignment with the natural world supported by decades of empirical evidence and a deep appreciation for leaving things natural and causing as little disturbance as possible.

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Naturally occurring Box Huckleberry (*Gaylussacia brachycera*) at Nanticoke State Wildlife Area, Delaware.

Photo by David G. Smith, [www.delawarewildflowers.org](http://www.delawarewildflowers.org)

*(Hope and Reality continued)*

A native plant society, by definition, should be preeminently concerned with the sustainability of native flora, wildlife, and natural communities of the particular region it represents. The same inherently applies to the conservation biologist. Expressing this sentiment at a time when there was much more of the natural world around us and far fewer threats, are Smithsonian botanist Lester Ward's comments on the effects of urbanization: "In many ways the botanist looks at the world from a point of view

society faces from a lack of exposure to the natural world and meaningful understanding of it. More inexcusable, though, is the apparent paucity of quality science education and mentorship at academic institutions that were renowned for such not long ago. This seeming ignorance of basic conservation biology principles has even extended to esteemed scientific and geographic journals. These are the folks with authority and responsibility to instruct the next generation of those open to learning



*Arlington Regional Master Naturalist Daniel Elmer, left, and Matt Bright of Earth Sangha in December 2013 planting a 100% pure American Chestnut (*Castanea dentata*) sapling along an Oak-Heath Forest ridge at Dora Kelley Nature Park in the City of Alexandria, Virginia where scant, remnant populations of American Chestnut naturally occur. Earth Sangha sourced and successfully propagated a hundred or so saplings from heavily fruiting American Chestnut thickets along the summit of the Northern Blue Ridge Mountains in Virginia. No existing native vegetation at the park was displaced or disturbed during the plantings; saplings were planted in old tree throws and other open areas. All of these plantings may not grow to produce fruit in the coming years, but at least they are real! Photo by R.H. Simmons*

precisely the reverse of that of other people. Rich fields of corn are to him waste lands; cities are his abhorrence, and great open areas under high cultivation he calls 'poor country'; while on the other hand the impenetrable forest delights his gaze, the rocky cliff charms him, thin-soiled barrens, boggy fens, and unreclaimable swamps and morasses are for him the finest land in a State. He takes no delight in the 'march of civilization', the ax and plow are to him symbols of barbarism, and the reclaiming of waste lands and opening up of his favorite haunts to cultivation he instinctively denounces as acts of vandalism." (Ward 1881).

It is disturbing that in this age of supposed scientific advancement there are so many manipulations and poor management practices of natural lands and wildlife. This surely speaks to the increasing disconnect our

such principles. How many academics, professors, and land managers today consider it indispensable to teach a "Do No Harm" ethic to those working with the natural world? How many of them even know what it means, let alone its importance?

We should never lose sight of the fact that large-scale natural land conservation is the only effective means of preserving biodiversity and natural communities. According to Smithsonian Botanist Emeritus Stan Shetler (2003), "there are only three rules for saving species—save habitat, save habitat, save habitat!" Eloquently underscoring this is a statement from a letter to conservation activist Bonnie Bick from world renowned biologist E.O. Wilson during the campaign to save Chapman Forest: "Chapman Forest has great importance for its *(continued page 7)*

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biodiversity content, magnified many times over in its humanitarian value due to its proximity to the large urban and suburban populations of the DC area. To save a remnant of America's natural heritage of this nature would be a gift to future generations unmatched by any other that could be provided in the same place, on the same land."

As to the "hope" part of this diatribe, I would suggest a "dance with the one that brought you" regimen where natural land restoration is concerned: simply use the common, native successional plants of the appropriate local region, whether for green roof projects, highway medians, parking lots, infill development, whatever. Another method more closely aligned with nature is to refrain from planting and allow the existing native seedbank to re-emerge and naturally revegetate a site (with an accompanying non-native invasive plant removal program). This is what nature has always done with tough, disturbed sites and bare ground, and we sure have produced a ghastly legacy of land-use disturbance over the years. Nonetheless, the outgrowth of these naturally healed lands, as well as the tens of thousands of acres of remarkable, remnant wild areas in and around most cities, are what most of us have grown up with and love and appreciate, mainly because they are real and natural!



*Rugged, calcareous forest along the Potomac River bluffs at Chapman State Park. This exceptional site preserves a diversity of globally-rare natural communities and rare species 20 miles south of the Nation's Capital. Photo by R.H. Simmons.*

Healing the land with common, native successional and "foundation" plants restores functionality to natural systems; carpeting areas with mass-produced rare and endangered species does not. Rare taxa find their niche and relevancy in the context of stable, functioning, non-degraded communities and the particular native habitat to which they belong. This is one of many reasons rare species are not recommended for use in general ecological restoration plantings, let alone ornamental landscaping.

To my way of thinking, preserving large tracts of natural land; minimizing disturbance; providing quality stewardship (mostly entailing non-native invasive species control); and using appropriate native flora when planting is needed are the best means to improve and hopefully restore conditions in the natural world. What I hope is that nature's conventions, and not human designs, always lead the way.

~ Rod Simmons



*Rod Simmons and Scouring Rush (Equisetum sp.) at Medicine Rocks State Park, Carter County, Montana. Photo by Dianne H. Simmons.*

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