Peter Del Tredici has been a prominent voice in the landscape architecture and urban ecology communities, calling for a rehabilitation of overlooked urban plants in the public imagination. With his extensive research and fieldwork experience as Senior Research Scientist at Harvard University’s Arnold Arboretum, he highlights the importance of spontaneous plants’ resilience to the urban condition and their important place in providing environmental services, and tells the stories of plants’ behavior in disturbed and urban sites.

In 2010, Peter published *Wild Urban Plants of the Northeast*, a pioneering field guide to the spontaneous vegetation found in cities, regardless of its native or nonnative status. This book, a mainstay on the shelves of many landscape architects and urban ecologists, identifies and describes plant species intuitively familiar to most city dwellers, yet rarely noticed. In it, he lays out his argument that it is unrealistic to expect the plant species native to a city’s location to thrive, or even survive, in the urban context. It is a new crop of hardy disturbance-adapted plants that are more likely to succeed in cities, and why not try to acknowledge and appreciate them, he argues, as well as the ecological function they provide.

Nicholas Pevzner and I sat down to talk with Peter Del Tredici about his philosophy on plants, about the cultural role of plants in the city, and about what we can learn from Europe about learning to live with “weeds” on our cities’ front lawn.

Izabela Riano (IR): You’ve written extensively about urban vegetation, but you seem to have a different vocabulary for describing vegetation in cities than that of many other ecologists, and certainly different than that of most designers. Could you describe some of the terms you’ve used, like “spontaneous,” “urban-adapted,” “cosmopolitan,” “ruderals,” “neo-phytes” and “archaeophytes”. Why do you think these terms are more helpful adjectives than the conventional adjectives “native” and “exotic”?

Virginia Creeper (*Parthenocissus quinquefolia*)
Peter Del Tredici (PDT): If you look into the ecological literature where many of these terms originated, there’s a lot of variation in how to describe the relationship of plants to their habitats and an abundance of terms that describe the relationship of native vs. nonnative plants. The terms “native” and “exotic” or “nonnative,” create a dichotomy. Life is always a continuum and dichotomies typically represent the extreme ends of the continuum, and fail to capture the gray area in the middle. As is typical with most dichotomies, “native” and “exotic” are overly simplistic and judgmental.

I tend to look for terms that describe habitat function or habitat preferences. I like the word “spontaneous” because it simply refers to plants that grow without human intervention, including both native and nonnative species. “Disturbance adapted” plants can also be either native or nonnative species. In the urban environment, the fact that a given suite of plants is adapted to relatively high levels of disturbance is much more ecologically significant that if it’s native or nonnative.

The term “ruderal,” is taken from the traditional ecological lexicon, and comes from the Latin rudus, which means broken stone, or rubble. The word is used to describe plants that grow on construction rubble, and characterizes a plant’s ecological preference.

“Neophytes” and “archeophytes” are European terms. The term archeophyte describes plants that were moved around Europe, mainly from south to north, prior to the discovery of North America, and which over time have become part of the naturalized vegetation of an area. Neophytes are plants that came to Europe after the discovery of the New World, essentially plants introduced into Europe from Asia and North America. These terms have little relevance in North America where Europeans brought a whole host of plants here over 300 years ago. Personally I think that in America any plant that was here prior to 1800, we might as well declare a naturalized species in the same way we make people who come from other countries naturalized citizens after a fixed period of time. Continuing to refer to them as exotics after 300 years doesn’t make a whole lot of sense to me.

Nicholas Pevzner (NP): The current conversation on the role of vegetation in green infrastructure tends to focus on a small range of services such as carbon sequestration or storm water mitigation. Many other services are undervalued, unmeasured or ignored (such as urban heat island effect reduction, habitat creation, nitrogen fixing, and other biological services). What are some of the consequences of this narrow view being used to make largescale decisions on shaping the urban landscape?

PDT: I define sustainability as the value of the services provided by the ecosystem divided by the cost required to maintain that ecosystem. So the High Line, according to my definition, is not particularly sustainable. I’m not sure how to calculate the aesthetic or recreational value of a site, but leaving this detail aside for a moment and looking just at environmental services, the maintenance costs of the High Line are off the charts and wipe out any ecological services that New York City might be deriving from vegetation growing on it. The same holds true for most intensively maintained landscapes, so you have to really calculate in the aesthetic and recreational values of the landscape in order to justify the maintenance costs. Since many spontaneous urban landscapes are providing substantial ecological services at relatively low cost, or in some cases at no cost, they are by my definition highly sustainable. I tend to look at this issue of ecological services as one of the key ingredients in the definition of the term “sustainability.”

Of course, there is no landscape that is self-sustaining—all landscapes will develop into something different than they are if left to their own devices—so if you want to hold a landscape at a certain stage of development or design, then there are going to have to be significant maintenance inputs. These inputs can be carefully measured in terms of units of petroleum used or how much CO₂ will go into the atmosphere as a result of maintenance activities. If you calculate these costs, then you can see if they balance the CO₂ being taken up by the landscape plants you’re maintaining.

Temperature reduction is one of the most important services that vegetation can provide in the urban environment. I also think absorption of available nitrogen and phosphorus (from dog waste, fertilizers, etc.) by wetland ecosystems can be very significant.

IR: In terms of ecosystem services like carbon storage, contemporary urban reforestation programs have measured relatively low survivability rates (10 years on avg.) If we are indeed to use street trees, how do we improve survivability rates in order to achieve the trees’ projected benefits, which increase with maturity?

PDT: For woody plants, survival is pretty much a function of how much soil volume we provide them with. When you put a tree in a meter-square tree pit, that’s going to allow a tree survive for about 1015 years. So, anything you can do to provide a tree with a larger soil volume, such as connecting up the tree pits, is going to automatically increase its longevity. Porous paving, structural soils, planting on the private property side of the sidewalk—all create more soil volume for trees which is going to increase their longevity. These are all details that can be spec’d out on the planting plan. If you just move the sidewalk over so it’s right against the curb and put the plant-
ing strip on the other side of the sidewalk—which is what they often do in Europe—you can create a much more favorable environment for trees. It’s just amazing how we’re wedded to this horse-and-buggy era aesthetic that dictates the placement of trees between the street and the sidewalk.

IR: You’ve advocated for spontaneous urban vegetation from a functional point of view, but often these plants carry negative cultural connotations as weeds. Moreover, in designed projects, the choice of plans that designers and clients prefer seems to change, as with fashion. What do you think the role of design can be in changing the cultural perception of plants? What plants would you like to see more widely used in urban landscape designs?

PDT: I generally frame this issue in the reverse—I say that the context in which a plant is growing determines how people will view it aesthetically. You can have plants growing in a vacant lot in an urban situation and people will say, “Oh my God, it’s a bunch of weeds.” You take the same plants and put them along the roadside out in the country then all of the sudden the same plants—clover, Queen Anne’s lace, chicory—become wildflowers.

I think that it’s really important for landscape architects to understand that it is not just about the species, it is also about context. Of course, there are some species of spontaneous plants like mugwort that are just plain ugly—and there’s not much that can be done about it. For people who live in the inner city, mugwort is a sign that nobody is taking care of this landscape. I advocate the use of long-lived perennials like chicory, oxeye daisy, and frost aster which have good aesthetic qualities, are not too tall, and grow extremely well in degraded urban habitats. If you can just change the context a little bit and create a meadow with consciously selected species, I think you can create an aesthetically pleasing context for these plants to become better known and appreciated.

When I was in Berlin recently, I noticed that a lot of public spaces are dominated by wild, weedy-looking plantings, and people accept them because they consider them part of urban nature. Now in private yards, vegetation maybe be manicured and cared for to a very high level, but they don’t necessarily have that same expectations for public spaces. You can also see this in Switzerland—and I found it really jarring to see messy meadow plantings in public spaces where everything else was totally manicured.
IR: Who are the leaders in landscape architecture or in the nursery profession in changing the attitude towards ruderal vegetation?

There are some nurseries that supply seeds and plugs for the creation of meadows—such as Ernst Conservation Seeds in Pennsylvania—who grow a wide range of both native and nonnative species. These sorts of nurseries are not only promoting sustainable landscapes but also an acceptance of different aesthetic. They help show people that dynamic meadow plantings, despite the fact that they may look a little unkempt, have real ecological value. Also a number of native plant nurseries—such as North Creek Nursery or Prairie Nursery—have gone a long way towards increasing the acceptance of naturalistic meadow plantings. In Europe there are quite a few landscape architects, like Piet Oudolf, who have embraced this aesthetic and figured out how to present it in such a way that people find it compelling. He is not creating meadows per se, but his work has changed the way people view the meadow aesthetic.

NP: You’ve written that urban woodlots are more likely to succeed when aesthetics and recreational program are folded into ecological functionality. How does this relate to your use of the phrase “socially functional landscape”?

PDT: When you look at urban woodlands, the design process relies more on the process of removal rather than that of insertion. Essentially you make value judgments about why one tree is better or healthier than another and then remove the ones you don’t want. This process is described by the engraving term intaglio, where you create a positive image by removal of the material what you don’t want. The goal here is to increase both the ecological and aesthetic qualities of the site, and to make people feel more comfortable, perhaps by increasing sight lines or by inserting pathways to make the space more accessible. Any small gestures to indicate intentionality—it can be an art project, it can be exercise device—will make it easier for people to relate to the site. These kinds of subtle, low-impact gestures signal to people that a designer or artist has inserted themselves into this to create a nature park—it’s mostly nature but that has enough elements to make it feel like a park.

It all sounds theoretical, but the fact of matter is that you can actually see these types of landscapes in Europe, especially Germany. I’m really pleased to say that there is finally an example here in the United States, quite nearby actually—Liberty State Park in New Jersey. The outer perimeter, where the ferry boat docks are located, is a large, well maintained, traditional state park. But the interior section, I think it’s over 100 hectares, is a highly contaminated former railroad yard, where they ripped up all the tracks 40 years ago, and now is mostly spontaneous woodland and meadows, and they’re not going to do much to it beyond putting in a boardwalk to make it accessible. The boardwalk will allow people to interact with the environment without coming into direct contact with it. As far as I know, this is going to be the first example in the United States of an unremediated, European-style nature park. What we really need now is a few more examples of this type of landscape in the U.S., because people are having a very hard time getting their heads around what these kinds of projects are going to look like.

PDT: Of course, but that project is at a scale we North Americans can only fantasize about at this point in time. We need to learn how to walk before we can run. In Berlin there lots of small-scale nature parks tucked in around the city associated with where the wall used to be or where old rail yards were that got cut off when the wall was erected. A key element to this approach to urban nature is that the German ecologists were very systematic in demonstrating that these sites actually had high biodiversity, and that this biodiversity was an important part of the reason to protect them. This was an important argument for their preservation and it led to public acceptance of their ecological value.

That is a key piece of the strategy of how you build an argument for these projects—you have to demonstrate through studies of insects, of birds, of plants etc., that these places are important habitats which need to be valued for the sake of urban biodiversity.

NP: How do you compare the desire to protect remnant habitat patches with the desire to embrace the potential of ruderal vegetation to offer other kinds of environmental benefits, especially in a changing climate? What is the role of maintenance in protecting remnant habitats? Is there a threshold for intervening?

PDT: For most remnant native habitats, it is sad but true, the smaller they are, the less likely they are to survive over the long term. Many of these small remnant habitat patches are just too small and too highly fragmented to survive beyond the lifespan of the original vegetation that grows there. Fragmentation creates edges and the more edges one has, the more disturbance one gets, which spreads into the surrounding landscape. Just think about sun-loving vines moving into a forest from the edge of an adjacent highway. In thinking about the distribution from invasive species across the landscape, the one factor that always correlates strongly with their presence is proximity to a roadway.

Believe me, I am all in favor of preserving native remnant patches, and if you can
connect them up with each other, that’s all the better. Native habitat conservation efforts should focus on patches that are relatively undisturbed and on linking up patches that are isolated from one another. Anything that minimizes fragmentation is a good thing.

IR: While remnant landscapes may have benefits of increased biodiversity, how should we factor in the burden of maintenance required and protect these landscapes?

PDT: I think this gets back to my definition of sustainability. If you can design a landscape that is in balance with the resources available to maintain it, you have achieved sustainability. If you create a landscape that exceeds the maintenance budget, then it is non-sustainable. Simply planting native species, based on my experience, does not reduce maintenance costs. If you want sustainability to become real, landscape architects have to acknowledge the necessity of maintenance and select plants that are well adapted to the conditions that prevail on the site.

I just went to a talk by Peter Walker on the Ground Zero Memorial. It is clear that they don’t want there to be any change whatsoever in that landscape over the next fifty years, other than the trees getting bigger. If a tree dies, they are going to replace it in the exact same spot. This design is not sustainable in any ecological sense of the term, except that he picked a species of tree, the swamp-white oak, that is more likely to survive than say a sugar maple or a white pine. The design itself is rigid and fixed and all the maintenance is going to be focused on preserving that design.

NP: In Europe, where you were traveling over the summer, the public has different expectations where they will tolerate a wider range of spontaneous plants in public places. But also, you see land managers that are far more willing to practice minimal management techniques. What can we learn from them?

PDT: Absolutely, in the city of Berlin, it is illegal to use herbicides. Somehow a decision was made that this is how it’s going to be, and people seem willing to accept the weeds and not use Round-Up. And that is what it takes to change the system: if you want to ban herbicides, you have to learn to live with weeds.

Peter Del Tredici, Ph.D., is an adjunct associate professor of landscape architecture at the Graduate School of Design at Harvard, where he teaches courses on plants, soils, and ecology. He has also worked at the Arnold Arboretum of Harvard University since 1979 as plant propagator, editor of Arnoldia, director of Living Collections, and currently as senior research scientist. Dr. Del Tredici’s education includes a B.A. in zoology from UC, Berkeley, an M.A. in biology from the University of Oregon, and a Ph.D. in plant ecology from Boston University. His most recent book, Wild Urban Plants of the Northeast: A Field Guide (2010, Cornell University Press), focuses on urban ecology and the identification of plants that grow spontaneously in cities. More on his work can be found at http://www.peterdeltredici.com/.

Izabela Riano’s work explores design as a vehicle for restoring balance between natural systems and the built environment, with the potential for transforming human experience. Her interests reside on the border of art and science, which together work to create spaces that are both imaginative and functional. Combining her knowledge of visual studies and design, she examines the use of emerging technologies into design practice and experiments with ways of understanding, mapping, and documenting contemporary landscapes. Ms. Riano received a B.A. in printmaking at the Academy of Fine Arts and Design in Lodz, Poland, an MFA at the University of Florida, and an MLA from Harvard’s Graduate School of Design. She is currently a designer with Michael Van Valkenburgh Associates in New York.

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