

Growing a Park: A Narrative Journey through the Natural Areas Vision of The Parklands of Floyds Fork



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Introduction:

The Parklands of Floyds Fork is a planned 4000 acre addition to Louisville's public park system that reapplies Frederick Law Olmsted's brilliant vision of preserving land ahead of development on the edge of a city for large public parks. Running north to south along Floyds Fork of the Salt River between Shelbyville Road and Bardstown Road, it will encompass numerous recreational amenities (playgrounds, ballfields, bike and hiking trails, a paddling trail, a scenic park drive, among others), as well as preserved agricultural lands, all embedded within a restored natural mosaic of meadows, scrublands, wetlands, and forests. The planners divided The Parklands into four parks (ranging in size from 600 to over 1000 acres), each named for a tributary of Floyds Fork: from north to south, Beckley Creek Park, Pope Lick Park, Turkey Run Park, and Broad Run Park. A connecting green corridor called "The Strand" links Pope Lick and Turkey Run Parks. While much of the attention to date has focused on the recreational aspects of the project, the natural areas planning is largely complete and we are beginning to initiate the first major restoration projects. The overall goal of the natural areas plan is to preserve and enhance both terrestrial and aquatic habitats to maximize the diversity of landscapes and species. While the landscape today is largely agricultural, or recently abandoned fields and pastures, what we call the "100 Year Vision" seeks to reestablish and use natural processes of succession to create an integrated mosaic of early-, middle-, and late-successional areas that promote the growth and reproduction of native species, both flora and fauna. These landscapes are designed to both function ecologically and be part of the educational and recreational experience of The Parklands.

The 21st Century, the demographers tell us, will be an urban century. As cities are created, or continue to grow, it becomes critical to integrate nature into their geography, for both human

health and the health of the environment. The essay below attempts to illustrate, through the natural areas work of The Parklands of Floyds Fork, the challenges and methods required to achieve this kind of vision. While much design work on sustainable cities focuses on issues of energy, transportation, and infrastructure, the creation of healthy, functioning green space is an equally important and fundamental infrastructure requirement of a livable city. While systemic green infrastructure planning does not guarantee a quality urban landscape, its absence almost certainly means limited progress towards these goals. As many land managers have demonstrated in nature preserves and large national parks and forests, it is possible to restore and manage for ecological health and diversity. The challenge illustrated here is how to do that in an urban setting, applying those same techniques in concert with higher human population densities, and the demands of the modern city. As the story below illustrates, it not only requires the basics of land acquisition, preservation, and planning, but a truly long-term vision, and the resources necessary to execute and maintain that vision over time. We can grow a forest that functions as an "old growth" forest, but only with patience and quiet care. We have many good (and bad) lessons learned from the great early urban park systems in New York and other large cities, as well as from natural areas management in nature preserves and rural and wild parks. How to apply those in an urban setting, alongside other demands such as recreation, health, and local food production, is one of the challenges we set for ourselves in the planning for The Parklands. Illustrated below are some of the solutions we adopted. While the presentation is impressionistic, it is grounded in the latest conservation science, and is based on a detailed natural areas inventory and plan.

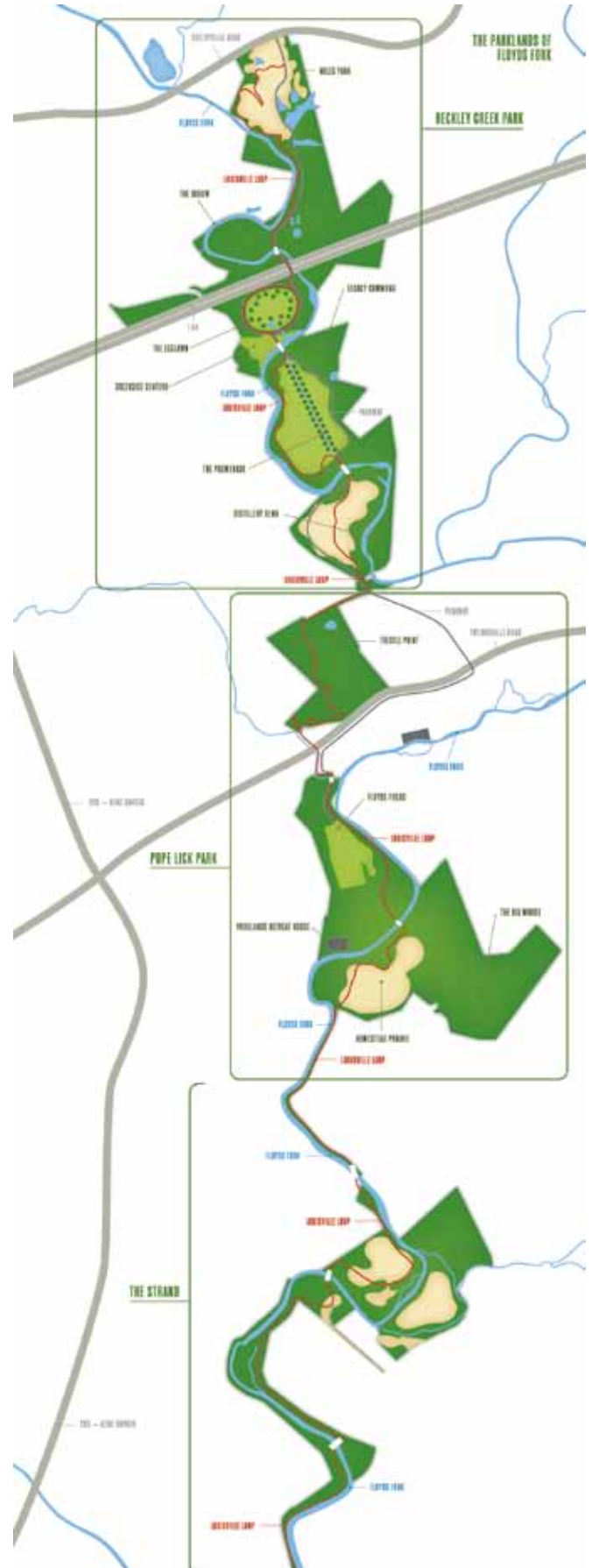
2015—The View from the Path: 5 Years from now were I to decide, on a sunny summer Saturday morning, to go out to The Parklands of Floyds Fork and recreate, here is what I find.



Beckley Creek Park:

I take the Shelbyville Road exit off the Gene Snyder Freeway, where I see a large brown sign advertising “The Parklands of Floyds Fork, Next Right.” Following a set of well-designed park signs I catch my first glimpse of a family of bikers crossing Shelbyville Road at the light at Beckley Station Road. As I continue down the hill to Floyds Fork, to my right I see a well-maintained bike path with another group of bikers. As I cross Floyds Fork there is a lovely view of the restored bridge that now hosts the Middletown Eastwood Trail; under the bridge, Floyds Fork is a ribbon of silver in the early morning light. As I come up the hill, Beckley Creek Park, the first of four parks within The Parklands, unfolds to my right. Gone is the old narrow and barely visible entrance to Miles Park. Replacing it is an obvious park gateway that stretches up the hill—its prairie garden my first glimpse of the natural wonders to come. It welcomes me into the park and makes clear that I am entering a special place—4000 acres of public green space stretching for miles.

Once into the park, I see on my left a parking area, and beyond that an impressive set of community gardens. They surround a trailhead, with bathrooms and signs introducing The Parklands. I stop in to see what I can learn. Within the trailhead is a series of maps. One shows all the recreational amenities of the greenway: canoeing, biking, hiking, picnicking, playgrounds, ball fields. I’m amazed at the diversity of recreational opportunities. There is also a set of photos that show the history of the land and the landscape. I had no idea that Floyds Fork was a crossroads of geology, civil war history, and is today so filled with natural wonders. I did not know the story of William F. Miles and his pioneering efforts in urban conservation. I also learn that the entrance road is actually the beginning of a scenic byway that stretches all the way from Shelbyville Road to Bardstown Road. The sign that really catches my eye outlines the park’s “100 Year Vision,” the natural areas master plan to bring natural diversity back to Louisville’s landscape. The map shows the “big idea” of that plan: two large blocks of “interior forest” (one in the north, one in the south) linked by a braided natural corridor of meadows, scrublands, and connecting canopy forest, running fifteen miles along both sides of Floyds Fork. The narrative explains that each habitat type hosts a relatively unique suite of plant and animal species—the maximization of biological diversity stems directly from the maximization of habitat diversity. By restoring the natural process of succession from meadows to scrublands to canopy forest, The Parklands will host the maximum diversity of associated species. By linking them together in corridors along the stream and in the uplands, we create living and migration spaces for a variety of both terrestrial and aquatic creatures and their varied demands for resources and living space. By restoring and preserving the lands in perpetuity, we allow the landscape to gradually develop a mosaic of ages and structures that will follow a natural trajectory of disturbance, succession, and change. The map also outlines the natural “special places” of Beckley Creek Park, some already existing, like the oak hickory forest in the uplands, which is the largest in The Parklands. Others are new, like the prairie meadows in the bottomlands, the newly forested riparian corridor along Floyds Fork, and the scrublands of the Oxbow, just west of the MSD plant. The narrative reiterates the key point: many of these areas will not reach their intended character for fifty to seventy-five





A small tributary of Floyds Fork. Reforestation along tributaries is key to protection of The Fork.

years. Because these lands are protected in perpetuity for public access and use, the project is able to make these kinds of long-term investments today.

I hop on my bike and head south down the Louisville Loop to explore. As I make the first turn down the hill into the floodplain the valley opens before me. I see a burst of colors from wildflowers in a restored meadow in the lowlands. By intent, the selected species attract and host a varied group of butterflies and other insects. The link between native plants, insects, and insectivores further up the food chain is an important, if subtle, part of ecological restoration. On my left is a savanna of large, old white oaks. At their feet sway prairie grasses. I remembered that this slope was once a tangled mass of invasive Bradford Pears, which have all been removed to allow the growth of a younger generation of oaks and hickories, just emerging above the tall grasses. In one hundred years, when the savanna oaks begin to die, these trees will be reaching maturity, demonstrating the use of natural regeneration as a tool in maintaining ecological integrity. Many older urban parks planted their trees with only one generation in



Floyds Fork's diverse natural beauty is accessible for hikers and paddlers as part of The Parklands of Floyds Fork new trail system.

mind, with the result that these landscapes are crumbling today. As the loop approaches the creek, I see a puzzling tangle of scrubby vegetation with scattered trees poking above it. A sign explains that this is a “riparian reforestation area.” Apparently, the site was initially cleared of a mass of invasive bush honeysuckle, then planted in native trees and shrubs. These areas are intended to be part of a continuous riparian (meaning streamside) forest that will one day connect the entire length of Floyds Fork with the project. Ranging from seventy-five to three hundred feet in width, it establishes a buffer against pollutants, captures silt runoff, and helps to stabilize the creek bank and channel, while creating a connected corridor for wildlife migration, movement, and nesting. The stream ecologists who worked on the project emphasized that this effort will do more to protect water quality in the stream, enhance wildlife habitat, and stabilize the stream bank, than almost any other effort. Much of the lowland reforestation work within The Parklands is centered on these areas.

As I follow the Louisville Loop through the woodlands, I pass several old “wolf trees,” large open grown trees that are relics from a time when this entire area was farm pasture and the trees provided shade for cows. Once farming halted and the forest began to regrow, these trees stand as silent sentinels to an earlier time, but they also anchor a great deal of wildlife diversity, as they host a number of bird, mammal and insect species. Managing for these “legacy trees” is another important component of the planning. After a short climb up the hill I pass MSD’s Floyds Fork Treatment Plant, screened behind a fast growing patch of trees. To my right is an explosion of densely packed small trees—box elders, walnuts, and sycamores. This is the famous “Oxbow” curve of Floyds Fork, and a sign explains that it is being released back into a process of natural succession. The long-term goals for this site are to integrate its small “patches” of forest fragments into a much larger block of floodplain forest (over forty acres) and then link that area into the longer riparian corridor. Forest fragmentation, the sign explains, is one of our critical ecological issues. A legacy of agriculture and urban development, small fragmentary patches lack “interior forest” which represent critical habitat for many terrestrial species. Small patches also create a large amount of “edge” habitat, which introduces a number of threats, such as cowbirds, which invade the nests of species such as warblers that inhabit interior forest areas. In another forty years, this site will host a large area of riparian forest, connected to the overall riparian corridor: a safe home for these woodland residents.

As I bike south, I pass The Egg Lawn—a place of Frisbee throwers and picnickers—and the PNC Achievement Center for Education and Interpretation, which is the gateway for a well-developed partnership between The Parklands and area schools. A group of young students are just heading out on an expedition by canoe to learn about invertebrates in the creek and to participate in the sampling study that tracks long-term changes in the water quality of Floyds Fork. With almost a million and a half people within a field trip bus ride, this is an ideal place to teach Kentucky’s incredible natural history and biodiversity



by immersing children and adults in an outdoor classroom and engaging them in the process of restoration through observation, research, and volunteer conservation projects that help to implement the vision.

From there, I pass south through additional areas of young, fast-growing riparian forest, until I reach “The Valley of the Giants,” one of the oldest floodplain sites in the park, and a template for the riparian reforestation efforts in the project. Huge sycamores, walnuts, and box elders line the creek in an almost open woodland. A crew of Student Conservation Association interns is in their last season of a three year project of bush honeysuckle removal, which has opened up the herbaceous and shrub layers to native plants dormant in the seed bank. Large trunks of fallen trees litter the ground, and a recent tree fall has opened a gap in which new growth has rapidly sprouted. This kind of forest structure is characteristic of a mature forest, and hosts a diverse set of animal species, which colonize the rotting trunks of fallen trees, and the cavities of older trees. A number of snags also dot the landscape, excellent roosts for predators such as hawks; as if on cue, a broad-winged hawk swoops quietly through the understory.

Pope Lick Park:

For a few miles I let my mind wander and just enjoy the ride along the creek and through woods, open fields, and patches of scrubby vegetation. Indigo buntings and bluebirds flit into the bushes at my approach. A strenuous push up the hill out of the floodplain reminds me of the distinctive topography of Floyds Fork, with its broad floodplain, its steep slopes, and its rolling uplands. Derived from the underlying soft shale rock of the Ordovician Period, so different from the tough, massive limestones of Cherokee Park, they erode easily. This distinctive landscape is one of the delights and challenges of managing for ecological diversity. A delight because it offers many distinctive habitats, from lowland to upland, the combination of which creates a broad cross section of diversity in a fairly narrow geographic range. Succession in each area results in a different group of plant and animal species at each phase, resulting in a truly diverse matrix—a challenge to manage, a delight in terms of biodiversity.

My next milestone comes when I cross Taylorsville Road, the only major road crossing in The Parklands, and the major impediment to a continuous habitat corridor. The challenge of creating safe passage across the road—for both humans and slow-moving species such as the box turtle—is still ongoing. On the south side I enter Pope Lick Park, one of the most remarkable combinations of landscapes in The Parklands. Just past the entrance I cross Pope Lick Creek and stop to chat with another group of students, who have grounded their canoes and are studying invertebrates in both Floyds Fork and Pope Lick Creek, sampling for a range of species. Just past the confluence I enter a section the park map indicates as some of the best birding habitat in the park. The bike path skirts the edges of a long, linear



The riparian forest and a gravel bar adorn the banks of Floyds Fork.

area of scrublands, which hosts a number of species unique to these mid-successional areas. While challenging to maintain in the long-term (they want to grow into more mature forest), the natural areas plan seeks to maintain this area as shrublands in order to support these distinctive bird species. As I cross Floyds Fork on a bike bridge, I pass a research team overseeing a study for The Parklands’ creek restoration plan. Focused on everything from streambank stabilization to adding structure for fish species to the restoration of native otters and freshwater mussels, they are mapping the stream cross-sections and channel profiles, as well as inventorying species and habitat areas. It is in our streams that the most dramatic biodiversity in Kentucky is found—our freshwater fish and mussel species are some of the most diverse in the world. On the other side of the Fork, I enter an area marked as a “native grassland.” Building on work initiated by Metro Parks, The Parklands has continued burning periodically a set of lowland fields that now host native bluestem, Indian grass, and other warm-season species. These open fields again host a distinctive suite of insect, bird, and mammal species. High overhead a red-tailed hawk circles the site. As a species that requires a much larger habitat area for hunting, they symbolize the ability of a project this size to provide habitat on a range of geographic scales, something critical to the restoration of diversity. Simply put, a coyote requires more space than a squirrel. As I move through the grasslands, I cross a small culvert (cleverly designed to allow the passage of both water and small creatures) over a small tributary recently restored to its natural meanders after a century of labor as a straightened channel for farm drainage.

At the edge of the meadow, I park my bike and hike up into The Big Woods, one of The Parklands’ most distinctive areas of upland forest. Centered on an old, mature beech forest, and hosting over 30 species of woody plants, I enter a different world than I’ve seen thus far: a dark, cool, quiet woodland. Signs of invasive species removal are present, but I find very few non-native species. Again, this area marks a template, in this case an upland “old-growth” forest structure. Fallen trees, diverse tree ages, vertical structure as smaller trees like dogwoods and vibur-



nums have filled in the understory, all reveal telltale signs of an older landscape, a longer passage of time since the last natural or human disturbance. As I think through my path to this point, I begin to see clearly the idea that landscape ecologists embrace of a landscape “mosaic” with a variety of habitats and a variety of age classes. Here I see old trees, but I climbed into this old forest through a section of much younger trees. There I saw a few remnant Eastern Red Cedars, telling me that it was open pasture only a few decades before, but the mature hardwoods towering over those cedars also told me that a new section of canopy forest was filling in a gap to contribute to a much bigger block of interior forest. In the section of old beeches, I again saw the distinctive signs of an old forest: fallen trees rotting on the ground, gaps from more recently fallen trees, which were beginning to create the varied age structure characteristic of an older forest. The linear elements of the broader plan also became clear. This large block of forest, once isolated, would gradually connect with other areas to the north and south as the fast-growing restoration areas matured and linked together a continuous canopy. My last goodbye was the tropical call of a pileated woodpecker, as I made my way back to bike. It was past noon, and I wasn’t even halfway to the end!

The Strand:

Back on the bike path, I enter The Strand, a narrow linear section of the park, that winds along Floyds Fork in the bottomlands, connecting the two northern parks to Turkey Run and Broad Run Parks in the south. The value of this area, the information on the map explains, is that we were able to assemble land on both sides of Floyds Fork. One side contained mature forest, the other was grazed horse pasture. That area, I clearly see as I bike through it, is fast restoring into a wide riparian buffer that mirrors the more mature existing forest on the other side of the creek. This several mile long section represented a critical acquisition as it allowed the project to extend a natural connecting corridor between the large blocks of protected land to the north and south, while also enhancing the quality of aquatic habitats along this section of the stream.

Turkey Run Park:

At Seatonville Road, I enter Turkey Run Park, the largest park in The Parklands at over 1000 acres. A mélange of old farm pastures, existing agricultural fields, an abandoned golf course, cedar groves and healthy second-growth hardwood forests, it represented a challenge and test for the broader vision of recreating and reconnecting an integrated natural landscape within the parks. At the trailhead for the Loop, I pause for a drink of water and a walk down to the stream edge. A blue heron passes on the stream, headed towards a large rookery just to the north, evidence of what natural spaces can accommodate, even on the edge of a major city. Gnawed trunks are a clue that beavers have recently been at work. Although I find no evidence, I know that both otters and mink also inhabit Floyds Fork. I cross a gravel bar filled with fossils from the time when these rocks sat at the

equator, and hosted tropical species, evidence for a fascinating tale of ancient diversity, moving continental plates, evolution, and extinction. A tale for another day, but important, because Louisville hosts some of the finest Ordovician Period rock outcrops in the world, and the gravel bars of Floyds Fork gather their many fossil species in a wonderful outdoor classroom. After a few more minutes of streamside quiet, punctuated only by the quiet passage of two kayakers, I head back to the trailhead and its maps and interpretive signs.

The challenge in Turkey Run Park, the signs explain, was how to manage the existing agricultural mosaic towards a more integrated natural ecology. The first key was to inventory and map the property, in order to locate areas of invasive species, and areas that required specific management. From that came the plan to shape a trajectory that would gradually fill in the gaps, so that in 75 years there would be a large (approximately 1000 acres) block of interior forest, linked with the lowland riparian corridor and other forest blocks to the north and south. Each area was mapped and a management prescription drafted and executed. In some cases, it involved simply removal of invasive species, and a hands-off approach that allowed the existing regeneration





Classic Kentucky Oak-Hickory forest. The branching tree trunks reveal a history of prior logging and land use.

to grow. In other cases, such as an area called the Stout Bottoms, federal conservation funds were secured to execute a full-blown restoration of bottomland forest through halting of agriculture, and planting of literally thousands of young trees of great diversity. Many of these were mast trees, such as Bur Oaks, that would not only create a forest, but provide forage for a range of wildlife species. I hopped on my bike and rode to the Stout Bottoms. While today, it is largely a regenerating forest—a thick tangle of young saplings, what foresters call a “doghair thicket”—in twenty to thirty years it will begin to mature into 55 acres of dense interior forest, another critical link in the connective tissue of The Parklands.

I strain to climb the hill again on my bike, then cross a spectacular bike bridge high in the canopy over Turkey Run. In the springtime, I’m told, you can watch one of nature’s great shows: the springtime passage of colorful Neotropical migrants, many of which have come all the way from South America. On the other side, I reach The Silo Center, a cluster of restored farm buildings that includes a silo, now converted to an observatory. I climb its winding staircase and at the top, a wonderful view of southern and eastern Louisville presents itself. A series of panoramas explains what I see; one lays out a view of the 19th century farm landscape that is quickly vanishing. From here I really get a sense of the mosaic of natural areas. I can see the connecting corridor of forest along Floyds Fork, and although the area of the Stout Bottoms is a light tan in comparison to the lush green of the mature trees beside it, I can see its role filling the gap and linking patches into a broader forest—it won’t take many years of growth for the trees to catch up with their neighbors. The immensity of 1000 acres of urban forest becomes tangible. I see the gash of the gorge of Turkey Run and realize that almost all of its watershed is within the parklands. This is incredibly valuable as it offers stream ecologists a “reference reach,” a stream that can be managed and studied for its undisturbed characteristics, offering a

chance to understand what can be done to restore more impaired streams in urban watersheds.

Broad Run Park:

From The Silo Center I follow the Louisville Loop past a series of farm ponds, preserved for their cultural legacy, their recreational fishing value, and for their value as habitat for frogs and other species whose natural wetland habitats have been drained. While not part of the original natural landscape, a conscious decision was made to retain them for this habitat value. From here I cross a savanna area of large open grown oaks, another preserved legacy from the agricultural era. Persimmon trees fat with fruit dot the uplands. After a short ride along a beautiful old country road I rise into The Highland Crossing, an area of upland forest connectivity, where massive old field-grown chinquapin oaks are now part of a second-growth oak hickory forest. Through the trees I catch a glimpse of a wet field in the lowlands below, part of a series of restored wetland sites in Broad Run Park. This chain of wetlands, which will one day dot the length of The Parklands, was created by removing drain tile inserted by farmers years ago to make the fields usable for agriculture. While they are in the process of restoration, they will ultimately host a variety of plant, bird and animal species, adding yet another habitat to the mosaic of the parklands. On the steep slopes are the last remnants of the spring wildflower bloom. Although originally cleared, these steep slopes reforested through the 20th century, and are the major armature of the chain of upland forests. In springtime they host a diverse wildflower display, and local naturalists have helped to sow local provenance seed in order to restore them to their native diversity. This is also the waterfall district in the park, and in areas all along the small tributaries of Floyds Fork are found botanical hotspots that host the highest level of herbaceous diversity within the parks. The rich limestone and dolomitic soils are perfect habitat for a riot of spring color. On the drier out-



crops, preserved by grazing cattle and their heavy hoofs, is The Parklands' special management zone for Kentucky gladdess, the most truly endangered species within the boundaries of the park.

Finally, I reach the last bridge over Floyds Fork at Bardstown Road, and park my bike. As I turn my eyes back north I see the flat fields of Broad Run Park—the remnants of a Pleistocene lakebed—and realize that I've seen only the beginnings of a 100 year process of natural change, succession, and growth. If I could return in 100 years, I would see areas that today are second-growth woodlands transformed into old-growth canopy forest, gaps filled in the forest to create a continuous pathway for migrating spring warblers, or slow moving box turtles. Hopefully, I would also see these kinds of initiatives extended up the tributaries of Floyds Fork into the lands surrounding the park, where new forests will have sprouted to help sustain healthy waters in Floyds Fork.¹

Conclusion:

The techniques described in this narrative will not surprise a land manager, a forester, or a conservation biologist. They are novel mostly in their application within an urbanized environment, and because of the range of diversity they attempt to support. Many conservation sites target specific plants and animals, or seek to preserve habitat that already exists. The challenge offered to the natural areas plan of The Parklands of Floyds Fork is to bring back a post-agricultural landscape in a way that creates habitats for a wide range of native and migratory species. A great deal of complexity underlies these plans, and a great deal of work needs to be done to execute them, but the basic pieces of the puzzle are in place: the land has been acquired, funds have been raised for both park amenities and natural areas restoration, and funds are in place to support the maintenance and operations staff needed to both run the parks and restore them. It will be an exciting project, in which many folks—from local scientists to local volunteers—can participate and help us to leave a legacy that in 100 years will truly be a natural wonderland, nestled on the edge of a large and vibrant city. A place for our children, grandchildren and great grandchildren to come and experience an authentic and healthy touch of Kentucky's wonderful natural legacies within the context of their busy lives.

Forman, *Landscape Ecology Principles in Landscape architecture and Land-Use Planning* (Washington: Island Press, 1996); Gary Bentrup, *Conservation buffers: design guidelines for buffers, corridors, and greenways* (Asheville: Department of Agriculture, Forest Service, Southern Research Station, 2008); Leslie Jones Sauer, *The Once and Future Forest: A Guide to Forest Restoration Strategies* (Washington: Island Press, 1998); DeGraaf, Yamasaki, Leak, and Lester, *Landowner's Guide to Wildlife Habitat: Forest Management for the New England Region* (Burlington: University of Vermont Press, 2005); James Grant MacBroom, *The River Book* (Hartford: DEP Natural Resources Center, 1998); For a great summary of Kentucky's biodiversity, see Abernathy, White, Laudermilk, and Evans, *Kentucky's Natural Heritage: An Illustrated Guide to Biodiversity* (The University Press of Kentucky, 2010).

References

- 1 The literature on ecological restoration and landscape ecology is vast. We have worked with a number of consultants in the inventory, planning, and design stages of this project, and much of the description here draws on that work. There are a number of useful texts, however, that are very accessible. The ones I find most useful are: Malcolm L. Hunter, Jr., *Wildlife, Forests, and Forestry: Principles of Managing Forests for Biological Diversity* (New Jersey: Prentice Hall, 1990); Dramstad, Olson, and