Magical Gardens for the Blind, Deaf, and Disabled

**The Daily Beast 10.22.14, 5:45 AM ET**

Sensory gardens are outdoor spaces designed to stimulate the senses and increase awareness of the body. Why they are so important for physically and cognitively disabled kids (and their able bodied peers).

When I walk into the Stephen Knolls School’s greenhouse, cheerfully bright even on an overcast day, the humidity frizzes my hair into a delirious halo. The school’s principal, Kim Redgrave, is explaining the school’s gardening program to me when three boys who are maybe 10 to 12 years old join us. Two of them are in wheelchairs. The third walks unsteadily, led by a grown-up holding his hand. I try to catch the eye of this third boy, but he plops down onto a stool and avoids my gaze. I turn to one of the boys in wheelchairs, who rewards me with a giant, hammy smile.

“They are here to measure their plants,” explains their teacher. From the looks of the seedlings in their plastic pots, the boys have planted their seeds just a few weeks ago, and they are growing vigorously.

Just a few years ago, I hate to admit that in my total ignorance of disability, I would have assumed that these boys were barely aware of their environments. More attuned, I now see how all three boys become absorbed in their plants’ progress.

Stephen Knolls School is a public school in a Maryland suburb of Washington DC. The entire school has fewer than 100 students. About half of these are preschool students with varying levels of special needs. The other half are, according to the school’s website, “school-aged students 5 to 21 years old with severe to profound/multiple disabilities.” The majority of the school-aged students are nonverbal and not fully ambulatory. When I was growing up, many of these students would probably have been in residential centers more focused on their maintenance than on their education and flourishing. One of my three sons is a student who thrives there, due in no small part to innovative programs like its greenhouse and gardens.

Reams of research demonstrate that gardens and plant care can help students with disabilities develop crucial knowledge, skills, emotional regulation, and self-reliance: those with less intensive disabilities, more intensive disabilities, cognitive disabilities, physical disabilities. Even children without disabilities, for that matter, experience the same benefits.

As a result of this research, there has been a growing movement to include what are known as “sensory gardens” in many schools for children with disabilities, as well as many botanical gardens and children’s hospitals. Sensory gardens are gardens that are designed not only to be accessible to people with disabilities, such as having winding paths appropriate for wheelchairs, but to “systematically and sensitively nourish the five basic senses,” says Amy Wagenfeld, professor of occupational therapy at Rush University and one of the authors of the forthcoming book Therapeutic Gardens: Design for Healing Spaces. Such gardens provide opportunities to see, smell, touch, listen to—and sometimes taste—plant life and garden fixtures, such as scented herbs, smooth river rocks, or velvety lamb’s ears.

“But sensory gardens,” Wagenfeld adds, “aren’t restricted to the five basic senses. They also provide vestibular, proprioceptive, and kinesthetic input.” These senses include our awareness of our bodies’ movements, position, and balance. Swinging high in the air, squeezing into a nook, or rolling down a hill might provide these sorts of sensory input.

Naomi Sachs is the Founding Director of the Therapeutic Landscapes Network and co-author of the book Therapeutic Landscapes: An Evidence-Based Approach to Designing Healing Gardens and Restorative Outdoor Spaces, which marshals an impressive amount of evidence about the healing benefits of gardens as well as practical design advice. “Kids are spending so much more time indoors and on screens rather than outside, connecting with nature and interacting with each other,” said Sachs. Indeed, it turns out that taking kids away from TVs, phones, and tablets for just five days showed measurable improvements in some measures of emotional intelligence.

Gardens, it seems, are sort of like exercise. Both have a surprisingly broad array of positive effects. Exercise improves not only physical fitness and health, but also mood and cognition. So too do gardens. And while everyone benefits from gardens, they can provide an extra boost for kids with special needs. “Spending time in gardens can reduce the need for medication in children with ADHD,” Sachs pointed out, even after walks that last just 20 minutes.

One of the most important things that gardens can do for kids with disabilities, however, is allow them to socialize with typically-functioning peers. Gardens can be designed to be accessible and interesting to people of all levels of abilities. Gwenn Fried is a Horticultural Therapist at the Rusk Institute of Rehabilitation Medicine at NYU Medical Center. She frequently works with people with multiple intensive needs, like the students at Stephen Knolls School. “Something as simple as a hammock,” she said, “is a way for kids with intensive needs to share a moment with maybe a parent and a sibling who is often doing stuff the kid with disabilities cannot.”

Sachs agrees. “Sensory gardens should be a place not only for kids with disabilities, but where their siblings can run and play and their parents can relax. It should provide affordances for all levels of abilities.” An affordance is a feature that offers garden-goers a chance to interact with a garden. For example, there could be a boulder for a child to climb and sit on, a swing set, a tree under which a child might lie down and look up at the pattern of leaves moving gently against the sky.

Providing a variety of affordances that might be used by people of all levels of ability also provides a chance for kids with disabilities to challenge themselves. “We live in a risk averse society. Kids with disabilities are especially protected (sometimes overprotected) from risk,” said Sachs. “Something as simple as stepping stones that a child can climb on, with a soft surface in case he falls, can provide a chance for a child with disabilities to take some risks.”

“Gardens can provide kids with disabilities a greater level of autonomy,” said Fried. She suggested a possible design feature for children who can’t walk might be a hill they can roll down, with a gently sloping path back to the top so that they might crawl back up themselves. “They can choose which experiences to seek out, and choose which they might withdraw from.”

The “sensory” part of sensory gardens, that is, the integrated sensory experience of nature, seems to provide the best benefits. “Our sensory systems seek out intact sensory experiences,” says Wagenfeld. Sachs adds, “All the senses that connect us with nature are important.” So when designing, “It’s not a great idea to have an air conditioner humming or an exhaust fan blowing the smell of cooking hamburgers over the garden.”

The present Stephen Knolls School garden, with its carefully manicured grass, bright flowers, seashells, birdhouses, vivid blue bench settled beneath a tree, and a large container spilling with petunias and sweet potato vine, sits at the entryway to the school. The garden serves as a memorial to some of the students who have passed away. Principal Redgrave points out that it is not only a place for mourning, but for celebration of the students’ lives. Students have lessons, activities, and socialize in the garden. They learn about science, plant bulbs and watch them grow, and identify birds who visit the birdhouses.

The garden is supported not only by the school, but by the community. Community members donate materials; students from nearby high schools volunteer to help with the garden’s upkeep. I spoke with Jeff Gray, the Building Services Manager at Stephen Knolls who is in charge of maintaining the garden. “It is a pride and an honor to work in this garden,” he said emphatically. “Sometimes I even come on Saturdays to make sure it’s in good shape.”

Stephen Knolls is planning to enhance their garden program by creating a second garden that focuses on creating greater sensory variety. This garden is in its early design phases, but the school is planning to have plants to touch and see and smell at wheelchair height and standing height. It will provide places where all the students, of all abilities can take safe risks and have fun, where they can socialize or have some peaceful outdoor alone time. It will allow kids with disabilities to experience that special joy that seems hard-wired in us all—when we feel the breeze on our faces, smell a flower, hear the wind blow through the grass, or plant a seed and watch the seedling emerge and begin to thrive.

**At least 5 Major “take-aways” from this article that support the use of nature/greenspaces/parks:**

Why Kids Need a Big Dose of Nature By Adam Voiland , Feb. 13, 2008 | 2:48 p.m.

In the often-quoted poem "Birches," Robert Frost muses about a boy who lives too far from town to learn baseball so instead spends time in the woods swinging in the trees. "He always kept his poise / to the top branches, climbing carefully / with the same pains you use to fill a cup / up to the brim, and even above the brim," Frost writes. "Then he flung outward, feet first, with a swish, / kicking his way down through the air to the ground." This sort of unstructured, imaginative play is increasingly lacking in an indoor, scheduled world—to children's great detriment, argues Richard Louv, author of Last Child in the Woods, a book that explores research linking the absence of nature in children's lives to rising rates of obesity, attention disorders, and depression. New evidence of the lack: a recent study that shows visits to national parks are down by as much as 25 percent since 1987. U.S. News spoke with Louv about the study and the emergence of "nature deficit disorder."

Excerpts:

**The new study points to about a 1 to 1.3 percent yearly decline in national park visits in America. Why do you think this is happening?**

I looked at the decline in national park usage in my book, and the most important reason for it is the growing break between the young and nature. Our constant use of television, video games, the Internet, iPods is part of what's driving this. For example, a recent study from the Kaiser Family Foundation found that kids between the ages of 8 and 18 spend an average of 6.5 hours a day with electronic media. But time and fear are also big factors. Many parents feel that if they don't have their kids in every organized activity, they will fall behind in the race for Harvard. And we are scared to death as parents now of "stranger danger" and letting kids roam free. Also, there have been some egregious and upsetting crimes in national parks, and the media go back to them again and again. People remember these stories, but they don't remember the millions of park visits when nothing like that happened. In fact, despite the sensationalistic media coverage, the crime rate in national parks has been falling.

**You argue that exposure to nature is therapeutic and offers enough protection from certain health problems that its absence ought to be considered a disorder. Is that an exaggeration?**

I should be clear that I am in no way intending to make a medical diagnosis. Nature deficit disorder describes the human costs of alienation from nature, including diminished use of the senses, attention difficulties, and higher rates of physical and emotional sickness. Nature deficit can even change human behavior in cities. Long-standing studies show that the absence or inaccessibility of parks and open space is associated with high crime rates, depression, and other urban maladies.

**"Nature" means different things to different people. How do you define it?**

When I talk about nature, I am not just talking about wilderness. The people who study this actually use the term "nearby nature." Nearby nature can be the clump of trees at the end of the cul-de-sac or the ravine behind the house. Through a biologist's eyes, those places can seem insignificant, but through a child's eyes that ravine can be a whole universe. For which diseases are the links between nature exposure and good health the strongest?

It's important to acknowledge that some of the studies need more clarification on causality and correlation. However, at the very least, this research is powerfully suggestive that there is a relationship between nature exposure and reduced symptoms of ADD, that lack of exposure plays a role in childhood obesity, and that time in nature can help quell symptoms of depression. One study, for example, showed that joggers who exercised outdoors in natural settings felt more restored and less anxious or angry than people who burned the same amount of calories indoors. Studies in hospital settings have showed that patients with windows looking out into trees or other natural scenes had shorter hospitalizations. Certainly, we need more research. But Howard Frumkin, the director of the Centers for Disease Control and Prevention's Environmental Health unit, says that we know enough already to act.

**In addition to preventing disease, is there evidence that exposure to nature can actually boost abilities?**

Yes, much of the evidence points to benefits. We see increased self-confidence, better body image, and cognitive benefits. Kids who spend more time outdoors tend to do better on testing; they do better on science; they tend to play more cooperatively. Your parents allowed you to run loose in the woods while you were growing up in Missouri. Should today's parents try to somehow overcome their fears and let their children do the same?

No, I won't say that. This isn't an exercise in nostalgia. I felt that fear as a parent, and my kids didn't run as freely as I did. I do think, though, that we have to be very intentional now about getting our kids outdoors. It's going to be different than when we were kids, and we'll have to do much of it together with them. We also have to do a much better job of comparing risks. Yes, there are some dangers outdoors, but there is also great danger of raising a future generation of children under virtual house arrest. Yes, Lyme disease can be a problem, but it's also worth pointing out that one of the most dangerous spiders in North American—the brown recluse—likes to live inside in closets.

**What would you say to people who say that they live in the city and getting to nature is essentially impossible?**

I would tell them that the Sierra Club sponsors an interesting volunteer program in which they put backpacks on the kids and go on a 5-mile hike in their city, in their own neighborhood, and find nature. Anybody can do that with their children. Anywhere you are you can find birds nesting in windowsills or bugs crawling in alleys. Urban birding, windowsill gardening, planting flowers that attract butterflies—there are options for people who live in cities. Does the increasing interest in global warming and the environment help at all? If we emphasize environmental destruction at too early an age in the absence of a joyful experience, we are setting up kids to associate nature with the end of things and fear and disaster. That's important, but we also need to emphasize the positive that nature plays simply by being there.

**At least 8 Major “take-aways” from this article that support the fact that kids (and adults) need access to nature/greenspaces/parks:**

Easing Brain Fatigue With a Walk in the Park

By Gretchen Reynolds, March 27, 2013

Scientists have known for some time that the human brain’s ability to stay calm and focused is limited and can be overwhelmed by the constant noise and hectic, jangling demands of city living, sometimes resulting in a condition informally known as brain fatigue.

With brain fatigue, you are easily distracted, forgetful and mentally flighty — or, in other words, me.

But an innovative new study from Scotland suggests that you can ease brain fatigue simply by strolling through a leafy park.

The idea that visiting green spaces like parks or tree-filled plazas lessens stress and improves concentration is not new. Researchers have long theorized that green spaces are calming, requiring less of our so-called directed mental attention than busy, urban streets do. Instead, natural settings invoke “soft fascination,” a beguiling term for quiet contemplation, during which directed attention is barely called upon and the brain can reset those overstretched resources and reduce mental fatigue.

But this theory, while agreeable, has been difficult to put to the test. Previous studies have found that people who live near trees and parks have lower levels of cortisol, a stress hormone, in their saliva than those who live primarily amid concrete, and that children with attention deficits tend to concentrate and perform better on cognitive tests after walking through parks or arboretums. More directly, scientists have brought volunteers into a lab, attached electrodes to their heads and shown them photographs of natural or urban scenes, and found that the brain wave readouts show that the volunteers are more calm and meditative when they view the natural scenes.

But it had not been possible to study the brains of people while they were actually outside, moving through the city and the parks. Or it wasn’t, until the recent development of a lightweight, portable version of the electroencephalogram, a technology that studies brain wave patterns.

For the new study, published this month in The British Journal of Sports Medicine, researchers at Heriot-Watt University in Edinburgh and the University of Edinburgh attached these new, portable EEGs to the scalps of 12 healthy young adults. The electrodes, hidden unobtrusively beneath an ordinary looking fabric cap, sent brain wave readings wirelessly to a laptop carried in a backpack by each volunteer.

The researchers, who had been studying the cognitive impacts of green spaces for some time, then sent each volunteer out on a short walk of about a mile and half that wound through three different sections of Edinburgh.

The first half mile or so took walkers through an older, historic shopping district, with fine, old buildings and plenty of pedestrians on the sidewalk, but only light vehicle traffic. The walkers then moved onto a path that led through a park-like setting for another half mile. Finally, they ended their walk strolling through a busy, commercial district, with heavy automobile traffic and concrete buildings. The walkers had been told to move at their own speed, not to rush or dawdle. Most finished the walk in about 25 minutes.

Throughout that time, the portable EEGs on their heads continued to feed information about brain wave patterns to the laptops they carried.

Afterward, the researchers compared the read-outs, looking for wave patterns that they felt were related to measures of frustration, directed attention (which they called “engagement”), mental arousal and meditativeness or calm.

What they found confirmed the idea that green spaces lessen brain fatigue.

When the volunteers made their way through the urbanized, busy areas, particularly the heavily trafficked commercial district at the end of their walk, their brain wave patterns consistently showed that they were more aroused and frustrated than when they walked through the parkland, where brain-wave readings became more meditative.

While traveling through the park, the walkers were mentally quieter.

Which is not to say that they weren’t paying attention, said Jenny Roe, a lecturer at Heriot-Watt’s School of the Built Environment, who oversaw the study. “Natural environments still engage” the brain, she said, but the attention demanded “is effortless. It’s called involuntary attention in psychology. It holds our attention while at the same time allowing scope for reflection,” and providing a palliative to the nonstop attentional demands of typical, city streets.

Of course, her study was small, more of a pilot study of the nifty new, portable EEG technology than a definitive examination of the cognitive effects of seeing green.

But even so, she said, the findings were consistent and strong and, from the viewpoint of those of us over-engaged in attention-hogging urban lives, valuable. The study suggests that, right about now, you should consider “taking a break from work,” Dr. Roe said, and “going for a walk in a green space or just sitting, or even viewing green spaces from your office window.” This is not unproductive lollygagging, Dr. Roe helpfully assured us. “It is likely to have a restorative effect and help with attention fatigue and stress recovery.”

**At least 5 Major “take-aways” from this article that support the use of nature/greenspaces/parks:**

Wednesday, 10 April 2013 00:00

**From greenways to ball fields, state cuts could sideline local recreation wish list**

Written by  [Andrew Kasper](http://www.smokymountainnews.com/archives/itemlist/user/12658-andrewkasper)

Statewide parks and recreation funding is clashing with fiscal austerity in the current state budget process, in a showdown that has environmentalists and local governments bracing for the worst.

Gov. Pat McCroy has recommended a nearly 45 percent cut to the state’s Parks and Recreation Trust Fund compared to historical funding levels. It’s one of many proposed cuts unveiled last month in the new governor’s budget.

The Parks and Recreation Trust Fund would get $15.5 million instead of the $27 million it has historically gotten. That would mean less money for parks, greenways and sports fields in Western North Carolina, where a portion of the fund has been a lifeline for little governments with big projects.

Each year, the trust fund is divided into two main pots: 30 percent goes to recreation-related grants to counties, towns and cities and 65 percent to state park projects.

Since 1995, Jackson County has been awarded more than $1 million from the fund and used it to help pay for everything recreation, from horseshoe courts to a gymnasium.

“It’s made a lot of difference in our little area of the woods,” said Jeff Carpenter, Jackson County Recreation and Parks director. “It’s been great for us in Jackson County.”

Without the state assistance, Carpenter said business in the Parks and Recreation Department would slow to “a creep and a halt.” Instead of a three- to four-year timeframe for major projects, double that can be expected.

And the county hopes to be awarded another $435,000 this summer to help it construct the first section of the county’s future greenway equipped with a footbridge crossing the Tuckasegee. The county would put up the remaining $625,000 for the project.

Alex Bell, a fly fishing guide in Jackson County, said the greenway as it is envisioned would provided unprecedented access along the riverbank for activities like jogging, bicycling, boating and fishing. Bell also serves on the county’s greenway committee and knows without the matching funds from the state, the project will have a different outlook.

“I would not pretend to tell the state legislature how to spend the money, but our outdoor resources are valuable and critical, and we need to pass them on to generations to come,” Bell said. “If you can’t get to the water, you can’t fish.”

If the cuts to the fund were enacted, they would not take effect until the upcoming fiscal year, which starts in July. However, the slew of local grant applications submitted in January will draw from both next year’s and this year’s funds.

Several localities have already thrown their name in the hat for state park and recreation grants this go-around. Jackson County wants a greenway. Macon County wants $500,000 for a baseball complex. Waynesville wants $75,000 to refurbishing its tennis courts, just to name a few of the applications coming out of WNC.

And geographic distribution is one of the factors considered in the awards process.

“It’s a competitive process,” said Bayard Alcorn, head of the grant administration program for N.C. State Parks. “The more grants that come from a given region, it would be tougher for the other applications.”

Statewide, 74 small government projects applied in January, requesting a total of $20 million from the fund. And, if the governor’s proposal is adopted, Alcorn expects there to be about $4 million to $5 million to go around in coming years.

 **The latest cut, an uncertain future**

Budget cuts have become a way of life for the Parks and Recreation Trust Fund since the recent recession.

Last fiscal year, more than $14 million was poached from the parks and recreation fund and diverted to other budget areas, including plugging a budget hole in state park operating costs. So far this year, $6 million was diverted from the fund to state park operations and more could be drawn out before year’s end.

The real meat of the governor’s recommended changes may not be the cuts themselves, however. The governor has proposed a new funding formula for the parks and recreation trust fund all together.

Currently, the trust fund gets an earmarked share of the real estate transfer tax, a fee tacked on to all property transactions. Under the proposal, it would lose this earmarked revenue and rely on a line item allocations each year with no guarantees.

That scenario could spell doom for the future of the fund, even when the economic outlook has improved. The governor’s proposal could shift the burden of funding parks and recreation projects even more so onto the backs of towns and counties. The outlook has brought the issue of local parks and recreation initiatives at the forefront of discussion.

Waynesville Mayor Gavin Brown paused briefly to think about how getting funding for a town skate park would have gone without access to the extra resources.

“Could we have done the skate park without the Parks and Recreation Trust Fund?” Brown said. “I guess so, but it made the stretch a whole lot easier.”

Already, local governments around the state are passing resolutions urging the state not to gut the fund. Jackson County commissioners passed one at its meeting in early April. Macon County commission took a stance on the issue at their meeting Tuesday.

But Macon County’s Parks and Recreation director, Seth Adams, had already cast his verbal vote long ago in regards to the Parks and Recreation Trust Fund.

“I certainly hope that they do no cut it, it is vital to us,” Adams said. “I would think that’d be vastly unpopular.”

Several projects in Macon County have received funding from the state during the years. Namely, Franklin’s 5-mile greenway project along the Little Tennessee River received nearly half-a-million dollars in the state funds.

A member of the Franklin Bird Club also took a moment to consider what her guided bird walks would be like if she didn’t have access to the greenway.

“I don’t know a lot of the ins and outs of what funded the greenway to begin with,” Paula Gorgoglione said. “But I think it’s one of the best things that ever happened to Franklin.”

Parks and Recreation Trust Fund projects across the region have left similar, lasting marks on the landscape, while others are just getting underway.

Scott Cline, president of the Swain Youth Soccer Association, said the state parks and recreation funds awarded $30,000 towards renovation of the county soccer field. The organization has already raised $12,000 from donors to match the state money and begin much-needed grading, irrigation and landscaping work, and later possibly install new nets, bleachers and bathrooms.

He questioned where the project would be doable if it didn’t have the support of the state funds.

“We’d probably be in a situation where all we could do is put grass seed out there,” Cline said. “The matching money is allowing us to get it going in the right direction.”

However, the governor’s proposal is only a recommendation. Legislators in the General Assembly will be unveiling their own versions of the budget in coming weeks. N.C. Rep. Joe Sam Queen, D-Waynesville, said he is already determined to make sure the governor’s recommendation remains just that, a recommendation.

“I know the history of these trust funds and what good they do,” Queen said. “They serve every part of the state.”

Queen also said that the issue doesn’t have to be a partisan one. He urged N.C. Sen. Jim Davis, R-Franklin, to push for the funds protection on the senate front.

Davis said he has fond memories of the Parks and Recreation Trust Fund from serving as a Macon County commissioner. He said the money helped expand a county recreation complex. But the fiscal reality means the state can’t fund everything it wishes it could — a mantra for Davis during the past two years. It will come down how much revenue the state has to divvy up among its priorities, the top two being education and public safety.

“I’d like to preserve (the fund) as much as I could,” Davis said. “But the bottom line is I’d like us to live within our means.”

**By the numbers**

*The N.C. Parks and Recreation Trust Fund has been a boon for mountain communities, offering matching grants for public town parks, swimming pool repairs, recreation centers, greenways, soccer fields, softball fields, gyms and even a skateboard park.*

*Haywood, Jackson, Macon and Swain have gotten $3.4 million in all since the fund’s inception. Some examples of projects are:*

*• Macon County: $467,000 to the Little Tennessee River Greenway; $250,000 for the Highlands recreation complex; and $70,000 for recreation park land acquisition in Highlands.*

*• Jackson County: $250,000 for the recreation center in Cullowhee; $250,000 toward the Monteith community park; and $181,000 toward the Canada community park.*

*• Haywood County: $250,000 for the Maggie Valley Festival Grounds; $250,000 toward the Canton baseball complex; $170,000 for Allens Creek soccer fields, $250,000 toward the Waynesville Recreation Center.*

*• Swain County: $187,000 for the improvements at the county recreation park; $150,000 for the county courthouse riverfront park; and $156,000 to the county’s recreation center.*

**At least 5 Major “take-aways” from this article that show what is happening to NC’s nature/greenspaces/parks and what should be done about it:**