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The future stewardship of our planet quite literally is in the hands of the next generation of children, and children exposed to nature from an early age are more likely to grow into adults who care about the environment. Aside from a nostalgic wish for our children to be able to meander across meadows, swing from the branches of a tree, or explore the mysteries of a forest floor, what are the consequences of this lost connection to nature?

Children's physical health is a major concern. Overweight children are at greater risk for diabetes and other serious health conditions, and physical activity is one way to prevent those outcomes. But Louv points out that, ironically, children's girth is expanding despite the fact that more kids than ever before are enrolled in organized sports. He says one possible explanation is that "the physical and emotional exercise that children enjoy when they play in nature is more varied and less time-bound than organized sports." Children out of touch with the natural world also suffer emotionally.

Studies:

Several studies suggest that contact with nature may help prevent or lessen the symptoms of attention-deficit disorder, reduce stress, and guard against depression. Researchers at Cornell University found that even a view of a natural scene from a window can decrease anxiety in children. Nature also encourages imaginative free play, which is crucial for children's overall development. A paper published in 2006 by the American Academy of Pediatrics states that "play is essential to development as it contributes to the cognitive, physical, social, and emotional well-being of children and youth."

Pennsylvania Horticultural Society

The Pennsylvania Horticultural Society (PHS) is a nonprofit membership organization founded in 1827. PHS produces the Philadelphia Flower Show and sponsors events, educational activities, and publications for novice gardeners, experienced horticulturists, and flower lovers of all ages.

PHS's urban greening program, Philadelphia Green, works with community groups, residents, city agencies, nonprofits, and other partners to plan and implement greening projects throughout the city. Recognizing the breach between today's youth and the natural world, PHS recently developed a five-year strategic plan that includes the goal of reaching out to younger audiences, including school-age children. According to PHS education Director, Eva Ray, quote "we want children to understand that they have an impact on their green environment, now and in the future. Schools are an obvious place where more can be done to engage children with nature. However, with more emphasis being placed on standardized testing, time and resources are often in short supply and the program helps fill this need. Working with five Philadelphia schools, Green City Youth brings teachers, students, and community greening activists together and engages them in horticultural activities.

During the program's first year, about 150 students took part in Green City Youth. They worked in partnership with greening activists associated with PHS's Philadelphia Green program. Projects included habitat gardens, tree plantings, and a self-made video promoting the importance of community greening.

"Our first year has been a great success," says PHS project manager and former teacher Larry Stier, who runs the program. "Students chose to improve their neighborhoods in a variety of ways, and the students demonstrated a greater understanding of the importance of community greening." Sulzberger Middle School science teacher Crystal Martin is participating in Green City Youth for the second year. "My students have really learned what greening is—that it's more than just potted flowers," she says. "They've taken ownership of their community and how it looks." Principals from all five schools reported improvements in student grades, performance, behavior, and attendance.

Perhaps more important, the students gained a sense of wonder at the natural world. For many of these 11- to 15- year-old children, it was their first close encounter with nature. "I never planted flowers or trees before," reflected one student. "When I planted the flowers, reflected one student. I loved the feeling."

In 2006, a grant from the Burpee Foundation helped PHS design a complementary program called Green City Teachers. Through workshops and seminars, the program helps give Philadelphia educators the tools to incorporate horticulture and environmental education into their classroom Environmental Stewardship Program, a partnership between Philadelphia Green, the city's Department of Recreation, and the Fairmount Park Commission. Supported by the William Penn Foundation, Youth Works, and the Pennsylvania Department of Conservation and Natural Resources, the program is an offshoot of Philadelphia Green's successful Parks Revitalization Project and aims to connect older children with local natural resources in ways that inform, inspire, and engage them. It provides six weeks of paid employment to youth in Philadelphia who take part in stewardship activities in parks and recreations centers. The program has a special focus on environmental education, service learning, job readiness, and leadership development. "It's a good mix because it combines environmental awareness with work experience and exposure to 'green industries,'" says parks project manager Paul Bonfanti. Going forward, the program will develop a health component called the Youth Environmental Health Corps. Project coordinator Takkeem Morgan worked with the young people during the first year and proposed the idea. "The kids were excited to be working for positive change," he says, "but some had trouble seeing the connection to their own lives. We want them to grasp the link between, for example, clean air and asthma or healthy soil and fresh produce, to help them see the impact on their own health and the health of their neighborhood." Gardening is another way to get kids interested in nature. It gives them direct, hands-on experience and helps them understand where their food comes from. Schools and communities across the country are using gardens as outdoor classrooms, and many public gardens have developed innovative children's gardens and displays. PHS has helped many Philadelphia

teachers develop school gardens. Kindergarten teacher Chuck Lafferty is a graduate of the PHS training programs Tree Tenders and Garden Tenders and serves on the Philadelphia Green Advisory Board and the Kids Grow Expo committee. In 1998, he started a community garden adjacent to Longstreth Elementary School in Southwest Philadelphia with neighborhood resident Marie Womack. When he began to integrate gardening into his classroom curriculum, it was an instant hit with the students. "In other schools, students might grow a potted plant on a windowsill," says Chuck. "Here, we allow them to plant it in the garden, see how it grows, and watch it change with the seasons." Philadelphia is home to some 500-community gardens, but many of the people who tend these plots are aging. In an effort to cultivate young gardeners, as well as provide opportunities for outdoor learning, several PHS-supported community gardens have created partnerships with nearby schools. Aspen Farms garden in West Philadelphia has a long-standing after-school program for students of nearby Sulzberger Middle School. Hayward Ford is president of Aspen Farms and a Philadelphia

Green Advisory Board member. He says gardening is a positive outlet that can keep children from turning to destructive behavior. "Children often are not given the tools to positively impact their environments," he says, "so they turn to negative impacts like graffiti or littering. What tools they're given determine which way they'll go." "The key to the future of places like Aspen Farms and other green spaces," says PHS executive vice president J. Blaine Bonham, Jr., "is to engage young people in taking an active role. By working now to get them involved in horticulture, we hope to not only build a long-lasting constituency, but also to ensure that the natural resources of our region, from community gardens to large parks to the air we breathe, will have champions to protect them far into the future.

Richard Louv, is the author of the influential 2005 book *Last Child in the Woods*. Richard Louv contends, today's American children spend significantly less time experiencing nature than any previous generation in the country's history. Louv writes that baby boomers "may constitute the last generation of Americans to

share an intimate, familial attachment to the land and water.” Most adults now in their forties and older, he explains, had grandparents or other relatives with some connection to farming, or they played near farmlands or in woodlands at the suburban rim, but many children growing up today lack this proximity to nature and have few other opportunities to encounter it. There are numerous reasons for this disturbing trend. For starters, about 80 percent of Americans now live in metropolitan areas, too many of which lack sufficient park space. Development in outer-ring suburbs, where population is surging, is rapidly eating up woodlands and farmlands. Time is another factor. More children are growing up in single-parent households or in homes where both parents work, so instead of going outside to play near their homes, they are enrolled in daycare or after-school programs that keep them indoors or in enclosed play areas. Children now spend large amounts of time playing with computers, video games, and other electronic gadgets. At the same time, kids are under more pressure to excel academically and to fill their “free time” with extra-curricular activities.

Studies:

In the past 20 to 30 years, without most of us realizing what was happening, lifestyle changes have accumulated with powerful and pervasive detrimental effects on children. Obesity, Attention Deficit Disorder, impaired social skills and even what some, including Richard Louv, are calling a “culture of depression” are adding to the stress levels and severely impacting our young. Those are physical and psycho-social characteristics of the changes. And then there is more—less time outdoors, more time with electronic technology, little free and unstructured time, and even a 30% decrease in bicycle riding.

Nature is important to children’s development in every major way — intellectually, emotionally, socially, spiritually, and physically. In young children, the authors say that the health benefits from outdoor play are only one aspect of the overall benefits. They suggest that the concept of “play” is more compelling and inviting to most adult caregivers, parents and guardians than “exercise.” (Burdette, Hillary L., M.D., M.S.; and Robert C. Whitaker, M.D, M.P.H. “Resurrecting Free

Play). The authors cite cognitive benefits from play in nature, including creativity, problem solving, focus and self-discipline. Social benefits include cooperation, flexibility, and self-awareness. Emotional benefits include stress reduction, reduced aggression and increased happiness. Children will be smarter, better able to get along with others, healthier and happier when they have regular opportunities for free and unstructured play in the out-of-doors.

People are drawn to gardens, forests, and other natural spots for recreation and for vacations. Evidence suggests that children and adults benefit so much from contact with nature that land conservation can now be viewed as a public health strategy. Nature contact yields surprisingly broad benefits. This contact may occur on a very small scale — plants in the workplace or trees outside the apartment building — or it may occur on a larger scale — a nearby park, a riparian corridor in a city, or a wilderness area.

These are just a few of the major findings to be found in a review of the research concerning the beneficial effects of the natural environment on children's health and well being.

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