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## The Grapevine

By Maryann Whitman

***Does Early Interaction With Nature Help Kids Think and Cope Better? And if You Don't Like Poison Ivy Now, Wait Until You Hear What Happens When It Grows in a "Greenhouse."***

### Nature Nurtures

Karen Wells, an assistant professor in Cornell's College of Human Ecology, has published a number of papers over the past few years that reflect on the beneficial effects of "nature" on children.

In 2000, Wells conducted a study that found that being close to nature helps boost a child's attention span. "When children's cognitive functioning was compared before and after they moved from concrete surroundings to housing that had more green spaces around, profound differences emerged in their attention capacities, even when the effects of the improved housing were taken into account," said Wells. Other studies, she notes, also support the theory that green spaces might help restore children's ability to focus their attention, thereby bolstering their cognitive resources by allowing neural inhibitory mechanisms to rest and recover from use. "By bolstering children's attentional resources, green spaces may enable children to think more clearly and cope more effectively with life stress," Wells said.

In 2003 she showed empirically that nature in or around the home appears to be a significant factor in protecting the psychological well-being of children in rural areas. "Our study finds that life's stressful events appear not to cause as much psychological distress in children who live in high-nature conditions compared with children who live in low-nature conditions. And the protective impact of nearby nature is strongest for the most vulnerable children – those experiencing the highest levels of stressful life events."

Further research published in 2005 expanded on this line of reasoning: "Our study indicates that participating in wild nature activities before age 11 is a particularly potent pathway toward shaping both environmental attitudes and behaviors in adulthood," said Wells. "When children become truly engaged with the natural world at a young age, the experience is likely to stay with them in a powerful way – shaping their subsequent environmental path," she added.

Interestingly, participating in Scouting or other forms of environmental education programs had no effect on adult attitudes toward the environment.



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"Participating in nature-related activities that are mandatory evidently does not have the same effects as free play in nature, which doesn't have demands or distractions imposed by others, and may be particularly critical in influencing long-term environmentalism," Wells said.

### **An Interesting (Maybe Itchy) Future?**

Plants function as carbon "sinks," storing carbon when they break down carbon dioxide (CO<sub>2</sub>) during photosynthesis. A carbon pool, such as a well-managed, old growth forest, has more carbon flowing into it than flowing out.

Carbon dioxide (CO<sub>2</sub>) emissions increase the concentration of this gas in the Earth's atmosphere. CO<sub>2</sub> has become the most common greenhouse gas. Major sources of CO<sub>2</sub> emissions include the burning of fossil fuels for energy and transportation, and the destruction of forests. Numerous reports (World Meteorological Organization, Laboratory for Applied Biotelemetry & Biotechnology at Texas A&M) have shown that human activity has contributed to increased atmospheric CO<sub>2</sub>. Prior to the start of the Industrial Revolution (circa 1850), atmospheric CO<sub>2</sub> concentrations were about 280 parts per million by volume (ppmv). Current levels are about 370 ppmv.

Biologists have wondered whether this carbon boost might work as aerial fertilizer for plants. The plant-world beneficiaries might surprise you.

Researchers from Duke University (North Carolina), over a period of five years, monitored the plants growing in a confined area while exposed to levels of approximately 560 ppmv CO<sub>2</sub> – a 50% increase over current CO<sub>2</sub> levels.

Poison ivy vines, in particular thrived in this environment, showing extra photosynthesis and more efficient water use. The chemical composition of urushiol, the oil that poison ivy produces, became more toxic. While the concentration produced by the plants remained the same, much more of the unsaturated form was produced. This is the form that is more likely to produce painful skin reactions in people.

Other studies have suggested that vines may be big winners in a high-carbon- dioxide future. Experiments at Oak Ridge National Laboratory in Tennessee showed that forest honeysuckle vines increased their growth.

Vines don't spend much of their carbon harvest on trunks or other supports, so the carbon windfall can go directly into new leaves, which collect yet more carbon and sunlight. An increased abundance of vines, which can choke out trees, could change forest dynamics.

Bigger, more-toxic poison ivy is a serious concern, says a researcher from Macquarie University in Australia. It's another factor to add to his tally of the extra misery that climate change might bring to people with allergies. For example, certain pollen counts are likely to go up, so allergy seasons could become more serious events, he says

Maryann is Editor of the Wild Ones Journal, and comes to the position with an extensive background in environmental matters of all kinds.