



An Annotated Bibliography for Nature Play

Books:

- Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder*, by Richard Louv; 2005 (A wide-ranging review of issues in nature and childhood; now a landmark publication.)
- The Thunder Tree*, by Robert Michael Pyle; 1993 (A powerful autobiographical view of the impact of “rough ground” on childhood; Pyle is probably the most eloquent spokesperson for this philosophy.)
- Children and Nature*, edited by Stephen Kellert and Peter Kahn; 2002 (An excellent compilation of relevant research summaries and essays.)
- Einstein Never Used Flash Cards*, by Kathy Hirsh-Pasek, Ph.D. & Roberta Michnick Golinkoff, Ph.D.; 2003. An excellent review of child development science that stresses the crucial role of play.
- The Geography of Childhood*, by Stephen Trimble and Gary Paul Nabhan; 1994 (An evocation of the impacts of nature and culture on childhood.)
- Reclaiming Childhood: Letting Children be Children in Our Achievement-Oriented Society*, by William Crain; 2004 (A review of how childhood is evolving away from the types of experiences that children really need; outdoor adventures are a particular focus.)
- Beyond Ecophobia*, by David Sobel; 1996 (A short book on the need to remove fear from children’s encounters with nature and replace it with developmentally appropriate love and passion for the outdoors.)
- The Great Outdoors – Restoring Children’s Right to Play Outside*, by Mary Rivkin; 1995 (One of the earlier books to describe the kinds of landscapes children need today – and still one of the best.)
- Natural Learning: The Life History of an Environmental Schoolyard*, by Robin Moore and Herb Wong; 1997 (About the design and impacts of a nature-focused schoolyard that the authors created in Berkeley.)
- Natural Playscapes*, by Rusty Keeler; 2008 (Great ideas and illustrations for creating outdoor play environments for children — especially in school or childcare settings.)
- Nature’s Playground — Activities, Crafts and Games to Encourage Children to Get Outdoors*, by Fiona Danks and Jo Schofield; 2005 (Excellent ideas for outdoor activities and wonderful photos.)
- Designing Outdoor Environments for Children — Landscaping Schoolyards, Gardens, and Playgrounds*, by Lolly Tai, Mary Taylor Haque, Gina K. McLellan, and Erin Jordan Knight.; 2006 (Lots of good information, but seemingly aimed more at institutional landscape designers. Rather “dry” to read.)

Websites:

- Green Hearts INC** — Newsletters, factoids, nature play quotes, tips, and background information about nature play and nature preschools: www.greenheartsinc.org
- The Children and Nature Network:** Probably the best “one-stop shopping” for current news, research, and strategies pertaining to children/nature issues: www.childrenandnature.org
- The Green Hour:** A National Wildlife Federation project with practical tips and suggestions for getting kids into more nature-based play: www.greenhour.org
- The Natural Learning Initiative** — Robin Moore’s innovative projects at North Carolina State University: www.naturalearning.org (*note:* only one “L” in the address)
- Children, Youth and Environments (CYE) - Center for Research and Design** at the University of Colorado, Denver — publishes the CYE Journal and offers a list-serve forum: <http://thunder1.cudenver.edu/eye>
- Landscape and Human Health Laboratory** at the University of Illinois at Urbana-Champaign — great research information on the values of green space: www.lhhl.uiuc.edu
- Nature Rocks:** A new, multi-agency initiative with tips and advice for family nature play: www.naturerocks.org

Websites, *continued*:

Planet Earth Playscapes (Rusty Keeler, principal) – landscape design for natural playgrounds and a thematic list-serve: www.planeteearthplayscapes.com

White Hutchinson Leisure & Learning Group – landscape design, including natural playgrounds: www.whitehutchinson.com (especially “Children’s Learning and Play Environments”)

Research Citations (*data frequently used by Green Hearts*)

An Investigation of the Status of Outdoor Play, Rhonda Clements, *Contemporary Issues in Early Childhood*, Vol. 5, Number 1, 2004:

- In a study of 830 mothers, 70 % reported playing outdoors every day when they were young, compared with only 31% of their children
- 85% of these mothers identified their child’s television viewing and computer game playing as the number one reason for the lack of outdoor play. 82% of them identified crime and safety concerns as factors that prevent their children from playing outdoors.

Changes in American Children’s Time, 1981-1997, Sandra Hofferth and John Sandberg, **University of Michigan Institute for Social Research, 1999:**

- between 1981 and 1997, the amount of time U.S. children aged 6 to 8 spent playing outdoors decreased by four hours per week, while the amount of time they spent indoors in school increased by almost 5 hours per week
- free time for children aged 14 and younger has decreased from 40% of the day in 1981 to 25% of the day in 1997 (a 38% decrease).
- children aged 3 to 13 spent an average of 29 hours a week in school, eight more than in 1981
- the average amount of homework for America’s youngest children has tripled since 1981
- children in the U.S. today spend, on average, 30 minutes of unstructured time outdoors each week.
- children aged 3 to 12 spend 1% of their time outdoors, and 27% with electronic media

Survey by the Kaiser Family Foundation and the Centers for Disease Control and Prevention, cited in *USA Today*, July 12, 2005

- a child is six times more likely to play a video game on a typical day than to ride a bike
- children aged 8 to 10 spend an average of 6 hours a day watching television, playing video games, using computers, and listening to audio media (and that’s during the school year
- no study has been done on vacation habits, but TV ratings show that kids watch more television during the summer.)
- 29% of American two and three year-olds have a TV in their bedroom (even though the American Academy of Pediatrics advises against any TV watching at age two)

Playing for Keeps (a nonprofit organization devoted to advancing constructive play):

- the average American two-year-old spends over four hours per day with television or computers
- more than 80% of children under age 2, and more than 60% of children aged 2 to 5, do not have access to daily outdoor play
- unstructured outdoor activities declined by 50% compared to the previous generation

International Association for the Study of Obesity:

- one-half of all North American and South American children will be overweight by 2010

National Association for Sport and Physical Education:

- preschoolers should get two hours of exercise daily (1 hour structured, 1 hour unstructured)

One False Move A Study of Children’s Independent Mobility; Hillman, M.; Adams, J.; and Witlegg, J.; 1990; London; The Policy Institute:

- the number of seven and eight year-olds permitted to go to school on their own dropped from 80% in 1970 to 9% in 1990 (hence a loss of freedom to explore)

United Nations’ International Narcotics Control Board, 1995 ANNUAL REPORT (Feb. 28, 1996):

- About 90% of the global consumption of the hyperactivity drug Ritalin is in the United States.

Research Citations, *continued***National Association for the Education of Young Children:**

— children who have frequent access to the outdoors “gain competence in moving through the larger world;” it also helps them to develop courage

Duke University 2005 Child Well Being Index (cited by R. Louv in *Last Child in the Woods: Saving Our Children from Nature Deficit Disorder*):

— violent victimization of children has dropped by more than 38% since 1975

The Landscapes of Childhood — The Reflection of Childhood’s Environment in Adult Memories and in Children’s Attitudes, Rachel Sebba, in *Environment and Behavior*, Volume 23, No. 4, 1991

— in one generation, the percentage of people who reported that the outdoors was the most influential environment of their childhood dropped from 96% to 46%

Nature and the Life Course: Pathways from Childhood Nature Experiences, Nancy M Wells and Kristi S. Lekies, Cornell University, in *Children, Youth and Environments*, 2006:

— “... participation with “wild” nature before age 11 is a particularly potent pathway toward shaping both environmental attitudes and behaviors in adulthood. 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.”

— “Neither childhood participation in environmental education nor childhood experiences in nature with other people had significant effects on adult environmental behaviors.” (both from a 1999 survey of approximately 2,000 adults age 18 – 90 living in urban areas throughout the U.S.)

Centers for Disease Control and Prevention:

— Re: the “hygiene hypothesis” — childhood asthma has increased by 160% since 1980 (to 2006); adult asthma has increased by 75% during the same period

Gideon Lack, Imperial College in London:

— Re: the “hygiene hypothesis” — over the past 10 years (to 2006), peanut allergies have doubled in the USA, UK, and other countries that advise against exposing unborn children to peanuts (through their mothers’ diets) and during infancy. Infants in regions of Africa and Asia who are exposed to peanuts rarely develop the allergy.

Clinical Report: The Importance of Play in Promoting Healthy Child Development and Maintaining Strong Parent-Child Bonds, American Academy of Pediatrics, 2006:

— Free and unstructured play is essential for helping children reach important social, emotional, and cognitive developmental milestones.

Robin Moore, Natural Learning Institute, North Carolina State University:

— “Nature should be considered a critical variable in the design of all childhood habitats, including homes, childcare centers, schools, places of worship, and neighborhoods, and in the many other community places where children go with family and friends: botanical gardens, museums, city parks, etc.”

Experience Life magazine, Sept. 2004, offered these bits of information in its side-bar notes:

— “The average kindergartner has watched more than 5,000 hours of TV by age 5. That’s more than enough hours to earn a college degree.”

— “The more television children watch, the fewer fruits and vegetables they eat, according to the Harvard School of Public Health.”

The Nature Conservancy reported (January 2005) in *“The Nature Conservancy Declares April 18 — the Sunday Before Earth Day — “Take Your Child to Nature Day”*:

— “According to a study last year (2004) by Hofstra University in Hempstead, NY, (Rhonda Clements, author), 71 percent of mothers across the country reported that they played outdoors more often than indoors when they were young, while only 26 percent said their own kids do that today.”

Other Articles and Research Reports:

- Chawla, Louise (1998), *Significant Life Experiences Revisited: A Review of Research on Sources of Environmental Sensitivity*, *Journal of Environmental Education*, Vol. 29, No. 3
- Chawla, Louise (1999), *Life Paths into Effective Environmental Action*, *Journal of Environmental Education*, Vol. 31, No. 1
- Nixon, Will (1997), *How Nature Shapes Childhood* and *Letting Nature Shape Childhood*, *Amicus Journal*, Summer & Fall 1997
- Kollmuss, Anja; and Agyeman, Julian (2002), *Mind the Gap: Why Do People Act Environmentally and What are the Barriers to Pro-Environmental Behavior?*, *Environmental Education Research*, Vol. 8, No. 3, 2002
- Vaska, Jerry J.; & Kobrin, Katherine C. (2001), *Place Attachment and Environmentally Responsible Behavior*, *Journal of Environmental Education*; Vol. 32, No. 4

Nature Play Quotes:

Visit the Green Hearts website: www.greenheartsinc.org. There is a collection of “Favorite Nature Play Quotes” in the Resources and Links section.

Green Hearts Institute for Nature in Childhood is a non-profit conservation organization dedicated to restoring and strengthening the bonds between children and nature. Green Hearts advances its mission through public speaking, publications, consulting services, and a network of nature-based preschools which is currently in the planning stages.

Green Hearts' founder and President, Ken Finch, is a veteran environmental educator and nature center leader. He believes that children must have frequent and ample opportunity to fall in love with nature at an early age, as a critical prelude to developing life-long conservation values and behaviors.

For more information or to discuss how Green Hearts might assist your organization in creating expanded opportunities for nature play, please contact Ken Finch at our office, which we share with the landscape architecture firm Big Muddy Workshop, Inc.

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