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Recent years have seen a growing movement to reconnect children and nature—to get children of all ages off the couch, away from their computers, and out the door to move, play, explore, enjoy, and learn outside. Fueled by increasing concern about the potential effects on children of a sedentary life style, too much screen time, and too little active, unstructured play, parents, educators, health care professionals, and policy-makers have come together in communities across the country and around the world to generate ways to introduce children to the joys of the outdoors and to ensure that green spaces are created and/or preserved so that all children have access to nature. Conservation leaders, naturalists and environmental educators have embraced (and in many cases led) this movement, building on a widely-shared belief that people take care of what they know and love firsthand; thus, helping children learn to love nature will lead them to be good stewards of the environment when they grow up (a belief supported by emerging research).

Although many individuals and organizations have worked for decades to engage children in nature experience, in 2005 journalist Richard Louv, in his popular book, *Last Child in the Woods: Saving Our Children from Nature Deficit Disorder*, inspired a much broader and varied group of stakeholders to action. Then, with a handful of like-minded colleagues from different disciplines (author of this paper included), Louv spearheaded the creation of the Children & Nature Network (C&NN), www.childrenandnature.org, a non-profit designed to encourage, support and inform individuals and organizations working to extend and enhance children's experience in the natural world.

Even as the children and nature movement has gained momentum, with parents sometimes leading the charge (see, for example, the grassroots Family Nature Clubs featured on the C&NN website), many parents say they feel too squeezed. They long for more quality time together as a family, and they know that is important for their children's health and development. But their jobs, children's activity schedules, and the seductive power of technology (for both kids and parents, who often are in separate rooms in front of their separate screens) make family time an elusive vision. Hearing now that they also need to make sure their kids have time to play and explore outside—on top of all the other demands on their time—can feel, as one mom said recently, like, "One more 'ought to' that I end up feeling stressed and guilty about."

But, what if that "one more 'ought to'" actually could help parents achieve the important goal of increasing family time and building closer, stronger connections with their children? And what if that "one more thing" also could alleviate some of the stress both parents and kids experience in their often-hurried lives? That is the premise of this paper—that by following a prescription for more nature experience *together*, families will discover a win/win situation in which both children and adults benefit as individuals, even as they are strengthening those important family bonds that all children (and adults) need.

Granted, the impact of shared nature experience on family relationships does not appear to be something researchers have studied directly. But, as described in the next few pages, other related areas of research provide some evidence that can begin to build a case for shared nature experience as a promising avenue for building strong family bonds. Bolstered by enthusiastic testimonials from a family who has experienced firsthand that special kind of togetherness (OK—not just a family, but my *own* family), the idea of a link between shared nature experience and family connectedness seems to be worthy of systematic study—along with family dinners, parental involvement in school and other similar variables that researchers have shown to be important assets for families and for children's health and success.

PARENT-INFANT ATTACHMENT: A Firm Foundation for Lifelong Connections

Since the 1960s, child development research has yielded a wealth of information about the importance of the quality of parent-infant attachment as a powerful influence on a child's lifelong development. Building gradually and slowly over the first year of a child's life, parent-infant attachment is a child's first close relationship and, to a large extent, a model for all relationships that follow. Although babies almost always become attached to their primary caregiver(s)—mom, dad or whomever is with the baby over time—those attachments vary, with some (about 70% in the U.S.) being "secure" attachments and about 30% being "insecure" (also referred to as "anxious," with different subtypes depending to a large extent on the particular kind of care the child has received from that parent).

Longitudinal, observational research using carefully standardized measures of the quality of attachment shows that babies become securely attached when their parents are consistently sensitive and responsive to their needs, comforting them when they are distressed, playing and talking and singing to them when they seek interaction, and allowing quiet time when they give cues that say they don't want to be hugged or fed or tickled right now. With sensitive, responsive care, babies learn to trust their caregivers and perceive the world as a safe place.

Babies also learn that they have the power to solicit what they need; when their signals to their caregivers are effective, babies have their first experience of competence and what developmental psychologists call "effectance"—discovering that they have an effect on those around them. This is what we would wish for all children. With that foundation of trust and security, children venture out with confidence and enthusiasm, using their attachment figures as a secure base from which to explore and learn about the world around them. Securely attached children also regulate their emotions more effectively and are more likely to enter into cooperative, caring relationships with other adults and children than children who do not have that firm foundation of a secure attachment.

In contrast, when parents are inconsistent, unresponsive and/or insensitive to babies' cues and signals, babies learn that they cannot count on their parents for care and support. Furthermore, these babies feel powerless to solicit the care they need and they develop an insecure (also called "anxious") attachment. Depending on the particular type of care a baby has received—and the type of insecure attachment the baby develops with his or her parent(s)—in the long run, the child is at risk for a lack of confidence, anxiety, behavior problems and relationship difficulties throughout childhood and into adulthood. To learn more about research on parent-infant attachment—how it develops and how it influences later developmental outcomes— see the 2002 book, *Infants, Toddlers & Families: A Framework for Support and Intervention*, by Martha Farrell Erickson (the author of this paper) and Karen Kurz-Riemer.

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So, what does shared nature experience have to do with parent-child attachment? Research has not looked specifically at a link between outdoor experience and quality of parent-child attachment, and certainly parents can be sensitive and responsive to their babies and young children indoors or out. But, in many ways, the natural world seems to invite and facilitate parent-child connection and sensitive interactions. For example, as many parents note, their homes are filled with distractions—household chores begging to be done, as well as TVs, computers and telephones inviting parents to multi-task rather than focus on their baby. But unplugging and taking baby into the back yard, a park, or a nature trail can eliminate those distractions and create an opportunity for what is called "affective sharing"—oohing and aahing together over the sun shining through the leaves of a big tree, feeling the rough bark and the soft moss on the tree's trunk, listening to the sounds of birds or squirrels, feeling a soft spring rain or a light winter snowfall on your face. (Affective sharing is a feature of a securely attached infant and parent.)

Because the natural world is filled with sights, sounds, and smells that ignite a young child's curiosity and invite active exploration, being outdoors also can make it easy for a parent to follow the child's lead, to respond to the child's cues and expressed interests, to share the child's delight in new discoveries and experiences—the very ingredients shown to lead to a secure attachment. Furthermore, many a parent has discovered that an almost surefire way to soothe a tired, cranky infant is to go outdoors. Fresh air, a gentle breeze, the warmth of the sun, the fragrance of flowers and grass can calm both a fussy baby and a frazzled parent, allowing for one of those special moments of quiet connection. (As mentioned in the next section of this paper, a growing body of research is beginning to document the power of nature to reduce stress.)

BIOPHILIA:

A Natural Connection to Natural Things?

Some scientists contend that human beings have an innate attraction to other living things. Dubbed the "biophilia hypothesis," this idea was set forth by Harvard biologist Edward O. Wilson in his 1984 book, *Biophilia: The Human Bond with Other Species*, and has been the focus of many essays and books in the 25 years since, including the 1993 book, *The Biophilia Hypothesis*, edited with Wilson by C&NN Board member, Dr. Stephen Kellert of Yale. Although the concept of biophilia is still a hypothesis, with a good number of supporters and some detractors (as is true with most hypotheses), the concept rings true for me when I watch the behavior of young children, including my own grandchildren.

For example, when I have taken my toddler and preschool-aged grandkids to a nearby shopping mall, I have noticed on several occasions that they gravitate toward the few scrawny trees planted outside the entrance, dashing behind them and saying, "I'm hiding in the woods." And they seem far more interested in the caterpillar on the leafy plant—or the hummingbird hovering over the flowers near the parking lot—than in what the mall has to offer.

I recall my first grandchild, when she was only eleven months old and just beginning to walk, pushing her own stroller around our neighborhood, excitedly filling the stroller basket with leaves and twigs and flower petals, later examining them one-by-one while sitting in our front yard. Not much later that same little girl was wide-eyed with wonder when she realized that the baby monkey at the zoo was drinking from its mother's breast. "Na-na!" she exclaimed, using the word she had created to name her own breastfeeding experience. It seemed clear to me that she was well aware, even at this very young age, of the similarity between the baby monkey's experience and her own. She had another "aha moment" that summer in the birthing barn at the state fair, when she saw newborn baby piglets being suckled by their mother. Their mom gave them "na-na" too, just like her mom did for her.

I don't offer those simple anecdotes necessarily as evidence in support of the biophilia hypothesis. But those observations do make me think about the capacity of very young children to connect with other living things. Those observations and others also lead me to wonder how children's recognition of similarities between themselves and other species might influence their concern for—and willingness to care for—the natural world. And, in the case of my little granddaughter, I wonder how her discovery of the mother-baby connections among the monkeys and the pigs might help her make meaning of her own attachment with her mother and other adults who care for her.

If nothing more, I'm confident that by watching these very young children discover, explore, and make sense of the world around them, I have seen the world through new eyes. I have renewed my awareness of how much even babies and toddlers are taking in. I have watched my young adult children—away from their laptops—fully engaged in supporting their children's play and exploration. And, through these shared nature experiences, I have felt my own relationship with this next generation of my family growing ever closer.

BUILDING ON THOSE FOUNDATIONS AS CHILDREN GET OLDER

Moving beyond the toddler years, the possibilities for families to share both adventures and quiet times in the outdoors multiply rapidly. Family hikes, canoeing, fishing, camping, gardening, or simply an after-lunch nap or quiet reading time on a blanket in a neighborhood park or your own backyard—all of these are opportunities for fun, learning and connection. Because most of us as adults still have much to learn about nature, these outdoor experiences can be times to learn with our children and *from* our children. I remember when my son was only in the first or second grade, he taught me all sorts of things about some of the bugs and animals indigenous to where we lived—things I either had never learned or had forgotten. The reciprocity and mutual respect such interactions engender are important elements of close parent-child relationships as children move toward adulthood.

The outdoors—especially environments beyond the familiarity of our own neighborhood—often bring out fears in young and old alike. It's common to be fearful of bugs and other outdoor creatures, the dark, and simply the unknown. There's nothing like a family camping trip to tap into those fears, but also to allow an opportunity for children (and adults too) to master those fears. What a great way to reinforce a secure parent-child relationship—to confront challenges, provide comfort and encouragement to each other, and then settle into a cozy tent and tell each other bedtime stories before falling asleep. Family camping trips have been one way we have maintained close relationships with our children from the time they were babies right into adulthood. Last summer we took the first 3-generation camping trip with our three grandchildren, then two and three-and-a-half years old. Even at these young ages, the kids talk now about last year's camping trip as if it were "the good old days"—reminiscing about the s'mores cooked over the fire, the thrill of going into the woods after dark, even the annoying mosquitoes that are an inevitable part of most camping trips in Minnesota. (The oldest also reminds me how much I complained about the mosquitoes!) By recounting these memories, the children are contributing to our family narrative, a powerful way to sustain and reinforce strong family bonds.

By the way, the grandchildren also love to hear over and over the story about one of the first camping trips my husband and I took when our children were small and our son crawled into our double sleeping bag to get warm between my husband and me, only to wet the bed about five minutes later. Sometimes shared nature experience brings a family a little too close!

Family experiences in the outdoors—especially those that include a little challenge or require a little work—afford great opportunities to build children's competence and encourage their autonomy, even as we emphasize the importance of interdependence within the family group. Whether caring for a garden, paddling a canoe across a lake, or setting up a campsite, everyone has responsibilities and cooperation is key. Even the youngest child in the family can come to see that he or she has something to contribute to the common good. Not only is that crucial to the child's developing sense of self, but it allows the adults in the family to see the child's competencies, decision-making, and problem-solving abilities. This furthers the mutual trust and respect within the family—again, key ingredients for enduring close relationships.

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Finally (although this paper is by no means the last word on the possible family benefits of shared nature experience), it is no small thing to consider the potential of nature to alleviate the stress so many families say dominates their lives. Currently, Dr. Frances Kuo and her research team at the University of Illinois are conducting some of the most interesting and provocative research on children and nature. In short, that research suggests that being in nature—or even just seeing nature through the window of one's urban apartment building—is associated with feeling less stressed, anxious and depressed. That team's studies also show that children—including children diagnosed with attention deficit hyperactivity disorder (ADHD)—concentrate better after spending time outdoors in "green" settings. (You can find summaries of this and other research on the website of the Children & Nature Network, www.childrenandnature.org.) Similarly, a number of studies in the health field have shown a link between the presence of nature and a person's physical and emotional health and well-being.

Although an individual anecdote is no substitute for scientific data, I have found over the years that even very short "nature breaks" allow me to calm down and focus when I'm having a particularly challenging day. I carry a couple of collapsible canvas chairs in the back of my car so, in the midst of a busy day, I can seek out a grassy spot (or even a snowy spot during our cold winters) and sit in my chair for a few minutes to breathe deeply and be soothed by my natural surroundings. The reason I have "a couple of" those chairs is that my oldest grandchild has taken up the idea of nature breaks too and likes to join me when we're out and about together. Based on both research and firsthand experience, I contend that the great outdoors may just be one of the best and most accessible "natural" stress-busters any individual or family could find. And with less stress come better relationships.

CONCLUSION:

Where Do We Go Next, as Family Members or Researchers?

Certainly there are many ways to build and sustain family bonds. But in today's hurried, high-tech world, shared nature experience presents a natural opportunity for families to put into practice the most important components of strong, healthy relationships—sensitive interactions, affective sharing, joint problem-solving, interdependence, and, free from the many distractions of most households, emotional availability to each other. Shared nature experience, both simple and elaborate, is something families can enjoy together from the earliest months of a baby's life through every stage of the child's development and right on into adulthood (even into the next generation, as I have had the delight of experiencing in recent years).

That said, my assertions about the benefits of shared nature experience are based primarily on indirect evidence and anecdote. It would be helpful to have rigorous research that examines more directly the connection between nature experience and family bonds. For example, to what extent and in what ways does shared nature experience contribute to a secure parent-child attachment and, more generally, to healthy family relationships over time? Does the natural environment offer a unique context for facilitating parental sensitivity and reciprocal parent-child interactions? If families not already inclined to spend time in nature together were engaged in a nature-based intervention would their family relationships improve? And would they improve more than similar families engaged in some other kind of non-nature-based intervention? These are just a handful of the questions research could address, building on the growing body of research that already is beginning to document the individual benefits of nature experience for children. (Note that a part of C&NN's mission and workplan has included convening leading researchers in this field to develop a research agenda and be a catalyst for additional and rigorous research on children and nature.)

Although I welcome and encourage such research—and, in fact, am helping to lead the research-promotion efforts of C&NN, mentioned above—I'm not waiting for the results before I plunge ahead with my own agenda of shared nature experience! Right now my husband and I are planning the 2nd annual 3-generation family camping trip with our children and grandchildren this summer (including the youngest, now 7 months old). And in the weeks between now and then, playing outside in the rain, taking nature walks, and tending a toddler garden will be part of the everyday activities I share with my grandchildren—one of the primary pathways we have chosen to sustain our strong family bonds and extend them into the next generation and generations that follow.



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The mission of the Children & Nature Network (C&NN) is to build a movement to reconnect children and nature. The primary goal of the C&NN is to achieve systemic change so every child, every year, every day, will have the opportunity to directly experience contact with nature. Research indicates that children who explore, learn, and play outside on a regular basis are healthier, happier, smarter, more cooperative, more creative and more fulfilled. Their well-being is enhanced while they develop a sense of place and bond with family, community and their environment. C&NN builds awareness, provides access to state-of-the art resources, supports the grassroots with tools and strategies, develops publications and educational materials, synthesizes the best available research, and encourages collaboration to heal the broken bond between children and nature. Since our founding in 2006, C&NN has fostered grassroots initiatives in more than 50 cities, states and nations. Our geographic reach is international, beginning predominantly in the United States and Canada. No other organization offers such a comprehensive, non-partisan, multi-sector approach to effecting social change to reconnect children and nature.

