

NATURE FIX, by Florence Williams.
Book Report and comment by David G. Schwartz, M.D.

Is spending time in natural environments a luxury or a necessity? Florence Williams traveled throughout the world studying projects that set out to answer that question and many more. The wisdom from all those studies speaks loudly, "Yes, being in nature is vital necessity for most or all people if we want to be healthy."

For centuries, poets and philosophers have extolled the benefits of being outdoors in nature, from Aristotle to Beethoven, Wordsworth, Tesla, Darwin, Einstein, Teddy Roosevelt, Walt Whitman, and of course, John Muir. Many of them walked in woods and gardens to help them think. The human species came out of wild nature. Our bodies are wild nature.

From my perspective, civilization and urbanization make up a small speck (maybe an aberration?) in the timeline of history. Wouldn't it stand to reason that we might have trouble adjusting to unnatural environments? Many chronic ailments are made worse by time spent indoors, such as myopia, Vitamin D deficiency, obesity, depression, loneliness, anxiety, etc. If being in nature reduces stress, then it may affect every chronic condition that our society suffers from, because toxic stress makes everything worse.

All the advice we give for healthful living, such as exercise, rest and sleep, eating vegetables grown organically, managing stress, avoiding processed food, addictive substances, and toxic chemicals, all stem from following nature's cycles, rhythms, balance, and lessons, receiving nature's gifts, and all are connected with respecting and preserving the natural environment.

Now, back to the book. This author spoke on "The People's Pharmacy" radio show, with Terry and Joe Graedon, and pointed out that when we walk outdoors in nature, immediately we use many senses simultaneously, smells, sights, sounds and touch (just by feeling the air), coming more alive.

An apt and whimsical description of nature is Oscar Wilde's: "a place where birds fly around uncooked."

Unfortunately many people underestimate how much nature would make them feel better, a "forecasting error," and the long disconnection from nature they have had, makes them forget.

The author first explores the two dominant theories for why our brains need nature. One is that nature reduces stress and boosts mental health, studied by the Japanese. The other is that sharper cognition is restored in brains that have been overtaxed by multitasking and virtual reality, studied by neuroscientists in Utah. These studies are done with short episodes of walking in the woods or in a park, etc.

Next she looks at longer periods of time in nature, and the Finnish recommendation of 5 hours a month. She follows that with longer, more intense wilderness experiences, going white water kayaking, rock climbing, etc. Lastly, she looks at what all this means for most of us, who live in cities.

The Japanese have developed this ritual of shinrin yoku, "forest bathing," organized trips into parks and woods. Japan's Forestry Agency has 48 official "Forest Therapy" trails designed for shinrin yoku. Their studies gather health data such as blood pressure on visitors on the trails. Participants are encouraged to pay attention to all 5 senses, including tasting some leaves, an exercise from ancient spiritual practices. On the walk that she took with them, the author's blood pressure dropped, as well as the other people, during the walk. Physicians in increasing numbers are being certified in "Forest Medicine."

The Japanese have good reason to study this. Schools and jobs drive the 3rd highest suicide rate in the world. They coined the terms, tsukin jigoku (commuting hell), and karoshi (death from overwork). Physicians in increasing numbers are being certified in "Forest Medicine."

The biophilia hypothesis, popularized by Harvard entomologist E.O. Wilson, is incorporated by environmental psychologists into Stress-Reduction Theory. Erich Fromm first coined the term "biophilia," and described it as "the passionate love of life and of all that is alive." Wilson describes it as an adaptation for survival. Yoshifumi Miyazaki, a physical anthropologist near Tokyo, says a feeling of comfort can be achieved if, in our everyday life, our rhythms are synchronized with those of the natural environment. Much cross-talk between the brain and nature is evident in why people build houses on the lake, why children love Teddy bears, why a computer company names itself after a fruit, etc.

Miyazaki has taken hundreds of research subjects into the woods since 2004. Leisurely forest walks, compared to urban walks, result in a 12% decrease in cortisol (stress hormone) level, 7% decrease in sympathetic nerve activation, 6% drop in heart rate, 1.4% drop in blood pressure, and on questionnaires, they reported better moods and decreased anxiety. Nearly a quarter of the Japanese population participates in some shinrin activity.

Miyazaki showed subjects with EEG apparatus on their heads either pictures of nature scenes or of utilitarian buildings. Viewing nature scenes resulted in more alpha waves, associated with relaxation, than with photos of buildings. Miyazaki's collaborator, an immunologist at Nippon Medical School, Qing Li, studies Natural Killer cells, which protect us from infections. Li took Tokyo businessmen into the woods in 2008 for 2 hours per day for 3 days. Their NK cell increased by 40%, and a month later the count was still 15% higher than at the start. In contrast, urban walks of the same duration and schedule did not result in any change in those cells.

Li suspected it was the aromatic volatile substances from the kinoki cypress trees. He locked 18 subjects in hotel rooms for 3 nights, with vaporized oil from those trees. The control group had regular air. Those breathing the vaporized oil had 20% increase in NK cells, and the control group had no changes.

The Japanese have a concept of oneness with nature. Americans more often see nature as something "over there." What about Americans who don't enjoy nature? University of Chicago professor Mac Berman took research subjects through an arboretum on a blustery, windy day, and they did not enjoy themselves, but afterward they performed better on tests of memory and attention.

Next the author travels with a research group in the Utah desert. David Strayer wanted to study how nature helps us think, solve problems, and work together. Strayer's scientists measured the creativity of 50 Outward Bound participants. The test showed a 50% improvement in creativity after 3 days in nature.

That was a pilot study and didn't differentiate what caused the improvement, better sleep, a stimulating social group, exercise, good nutrition, or being disconnected from cyberspace?

Strayer and the other scientists on the trip were debating the various effects of being in wild nature. They concluded that nature makes things interesting but not too interesting, allows the executive functions of the brain to rest, and with fewer things happening to take our attention, less brain energy is consumed, and recovery is possible for better neural function.

Williams next goes to South Korea, where forest bathing, as in Japan, is encouraged, and the Forest Service has a "human welfare" division, and 1/6 of the entire population makes regular visits to the forest. The Korean researchers found that immune enhancing T cells in women with breast cancer increased after a 2-week forest visit, and they stayed up for 2 more weeks. People who exercise in nature as opposed to the city, achieve better fitness and are more likely to keep exercising. The Forest Agency estimates that forest healing reduces medical costs, and it continues to build more forest healing complexes. "Disney meets summer camp."

Two Korean studies of 11-12 year olds with borderline technology addiction had improvement in measures of self-esteem and lowered cortisol levels for 2 weeks, after just 2 days in the forest. They reported feeling happier, less anxious, and more optimistic about their future. The lead author of the study, Park Bum-Jin, said kids with higher self-esteem are less likely to get addicted. Park says the forest campaign can't come a moment too soon. So many children think of the forest as dirty or scary and have little experience with nature. "If we don't change their mind-set now, there will be no chance."

On another excursion, the author had her head under an EEG apparatus, studying the effects of sounds of nature on alpha rhythms. One of the important ways nature is

beneficial is sound in the natural environment, and the lack of noise pollution of urban settings that is so destructive of good health, and which is steadily increasing.

The largest study to date on noise and children's cognition, funded by the European Union and published in the <u>Lancet</u> in 2005, followed thousands of children near major airports. For every 5decibel increase in noise, reading scores dropped the equivalent of a 2-month delay. Kids in neighborhoods that were 20 decibels louder were almost a year behind. This was adjusted for income level and other factors. Authors of a review paper on noise noted that the stress reactions affect BP, cardiac function, lipids, clotting factors, and blood viscosity. In contrast, the sounds of nature are soothing to most humans, especially wind, water, and birds. Sounds that are quiet, high pitched, and smooth are more restorative than loud and rough sounds. Humans share more genes governing speech with birds than with other primates.

Gordon Hampton, a sound engineer, traveled this country looking for quiet spots. He found fewer than a dozen sites where you can't hear human made noise for at least 15 minutes before dawn. People think they become habituated to urban noise and don't mind it, but in studies where people were hooked up to monitors during sleep, the plane, train, and traffic noises resulted in elevated heart rates, BP, and respiration rates, even when they did not wake up.

Epidemiological and case-control studies in Europe, where excellent health records are available for research, confirm the effects of the accumulation of these smaller stresses over time. In a study of 2000 men over 40, environmental noise over 50 decibels was linked to a 20% increase in hypertension rates. In another study of 4800 adults over 45, every 10-decibel increase in nighttime noise was associated with a 14% increase in hypertension. The World health Organization attributes thousands of deaths in Europe per year to heart attacks and strokes caused by high levels of background noise.

Next, the author reports on studies of the visual effects of nature. Psychologist and architect Roger Ulrich examined records of gallbladder surgery patients over 6 years. Those assigned to rooms with window views of trees needed fewer post operative days in the hospital, and requested less pain medication than people with windows to a brick wall.

Several of the studies showed that being able to view outside greenery showed less psychological aggression and violence, less procrastination, less impulsive behavior, more delayed gratification, and 42% fewer crimes. Buildings with the most green views saw 48% fewer property crimes, and 56% fewer violent crimes, than the buildings with the least greenery. A Dutch study showed that people in rooms with potted plants showed more generous behavior than those without. Psychologist Pet Kahn at university of Washington found workers' cognition and mood were best improved by looking out at real nature, somewhat improved by nature-playing video screens, and a blank wall helped the least in recovering from a stressful test. One of the little boys on the wilderness excursion the author took, looking up at the night sky with its trillions of stars, marveling,

said, "We don't have this back home!" Urban environments have so much light pollution at night that people seldom see many stars.

The author points out that many of the salutary visual effects may be coming from fractile patterns that occur in nature, such as with snowflakes, tree branches, etc., patterns that keep repeating themselves.

So each of these senses is stimulated in a positive way by nature, but to get all of them together is what we are looking for. This has an even greater impact when people are out in the natural environment for at least 5 hours a month.

The author goes with groups into the wilderness for several days at a time. When we experience wonder, awe, and mystery, it affects us profoundly for weeks afterward. She goes kayaking with a group of women veterans with PTSD. She says, "Adventure sports like kayaking provide a laser focus for an unfocused mind, as well as a distraction from unwelcome thoughts." The physical exercise leads to better sleep. My perception of this is that in PTSD there are often flashbacks of terrifying incidents of the past, and a basic fear of it happening again in the future. Adventure sports cause focus on the present moment, taking the attention off past and future. There is an American legacy of wounded veterans heading for the wilderness. She says, "The backwoods of Idaho, Montana, and Alaska are notoriously peopled by veterans."

Of the nine women who went on the outing, all but one noticed major lasting improvements in behavior, mood, activities, and goals, except for one. The Finnish mental health studies showed that about 15% of subjects did not improve as result of excursions in the natural environments.

Likewise the group of kids with ADHD really loved the rock climbing expedition. Erin Kenny, founder of Cedarsong Nature School said, "Children cannot bounce off the walls if we take away the walls." Science has affirmed that at least 2 activities that enhance kids' cognitive and emotional development – exercise, and exploratory play, are enhanced by nature play. Some of the kids after the outing were able to taper off their medications. One boy's mother said, "It's nothing short of miraculous. Now he's just happy."

I say that this is an indictment of our school system that forces kids to be confined inside 4 walls and seldom lets them go out to play. How much of ADHD symptoms are driven by the incarceration of children in an unnatural setting, when their bodies want to move? The author also provides a critique of how we design the schools' curricula and how we could allow more movement, play, and nature to be integrated into the system.

The last chapter and the Epilogue discuss how we could incorporate more green spaces in the cities, and an abundance of parks in close proximity to where people live and work.

This book is entertaining in its portrayal of the excursions the author makes in nature, and the activities of and conversations among the scientists on the trips. So reading the entire book can immerse you in the experience much more than reading this article does.

In my opinion, all of this should not have to be proven scientifically. It should just be common sense, and indigenous people know it intuitively. Indigenous people may have had shorter life spans, but what is the advantage of extending our chronological life span, propping it up with technology, limping along with chronic illness, when we have never learned to experience real living (and dying)? We are all one with nature. Our physical bodies are nature, and they heal best with natural methods, such as with plant medicines. The farther we move from nature, the more trouble we get into. The quality of our lives and our health deteriorate. This book is necessary because people have become so distracted and alienated from nature by technology, robotics, virtual reality, and industrial civilization. People have been so out of touch with nature for so long that it seems alien and scary, and they have forgotten how amazing and awesome nature really is and don't realize how good they could feel by walking in nature if given a chance. Now don't forget that nature has its discomforts, its bee stings, its hazards, but it is the balance of comfort, and discomfort, pleasure and pain, hot and cold, that is all a part of life. If we go through our lives disconnected from this balance, we lose quality, strength, vigor, resilience, and joy. The more we live closer to nature, the more confident and competent we are at living in nature more safely.

Children who grow up on farms develop more confidence, competence, and practical know-how, and are very much in touch with nature. We need to encourage more young families to get involved with organic gardening and farming. For the millions of people around the globe have been driven off their land by globalization and land grabs by the wealthy, who are unemployed and impoverished in cities, we need to find a way to return their land to them so that they can feed themselves and stay out of poverty.

A series of books by Tom Brown, who, as a child, was trained by an old Apache scout in wilderness survival skills, is a fascinating account of living peaceably with nature and trusting the Creator to show the way. He teaches children many of the skills he learned, with the intent of bringing people closer to nature, and so they have more love and respect for the Earth. He has a nonprofit foundation, the Children of the Earth Foundation, which provides scholarships for kids who could otherwise not afford it. One of his recommendations is to sit on the forest floor for several minutes and record every living thing you see in one square foot of earth. I did this once, decades ago, and I was amazed at all the insects, spiders, tiny grass, leaves, fungi, etc. that I would not have noticed before. He told of an old man fishing by the sea who saw Tom looking at the sand and asked why he was doing that. Tom showed him that by looking closely at the tiny grains of sand, all the sparkles and colors were revealed in the sunlight. The man looked at the sand in his own hand and began to cry, thinking of how much he lost during his life by not noticing the beauty all around him all those years.

Some insects can see many more wavelengths of light than we can, and some mammals can hear many sounds that we can't. What would those colors look like? What

would those sounds be like? What else lies beyond our perceptions? Nature is full of splendor we may never have seen or imagined. If we take time to be quiet in nature, we experience a lot more than if we clump along in our usual way. If we stop and reflect, we realize what a privilege it is to be on this rare planet and to part of this magnificent tapestry of life. One of the dangers of virtual reality is that we can develop hubris and fool ourselves into thinking that we can replicate nature, just by being oblivious to the immense complexity of the natural world. If we lose that sense of awesome wonder, we are more likely to squander this unique privilege we have and to destroy our habitat for generations to come.

Remember that Jesus, the Buddha, and many other spiritual teachers, spent a lot of time outside, often in wilderness areas, to pray, meditate, and to be in silence.

I would like to end with a quote from the Irish poet, John O'Donahue, "Approach nature with reverence and an open heart."