The forest as nature's health service

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Hippocrates said "The function of protecting and developing health must rank even above that of restoring it when it is impaired."

While we rarely talk about it, I suggest that caring for the land and serving people includes the provision of health benefits. One of the guiding principles of sustainability is to contribute to a healthy population. I suggest that an economic return on nature and wild places through wellness and increased quality of life will reduce health care costs and help create wellness. Today I'm going to be talking about sustainable recreation in terms of the health benefits of spending time in nature and suggest that delivering health benefits contributes to a healthy future for both people and the natural landscape. The most important emerging area of public health is the zone of interaction between the human and the natural environment. Changes in how people interact with the environment coupled with changes in the biosphere are increasingly impacting the health of people around the world. Diseases are spreading rapidly and widely (West Nile Virus, SARS) and spreading across species (H1N1) demonstrating how the health of the global environment and human health are intertwined.

Why do I think we need to explore a link between health and recreation? First, budgets for many local and state park and recreation departments have been substantially reduced. Signs that say "Parks closed due to budget reductions" are springing up across the country. Second, we are spending ever increasing amounts of money on health care with 17.3% of the total economic output in the US going to health care in 2009, up from 14% in 2008 and forecast to be 20% in 2011. That equates to 1 in 5 dollars! Some of the budget cuts experienced by parks and recreation departments may be going to cover health care costs. Third, research is demonstrating that contact with the natural world has both mental and physical health benefits. Beneficial contact ranges from wilderness therapy, which we will be hearing about from some of the speakers on this panel, to benefits of hospital, school, and community gardens, and urban nature centers and includes something as simple as a walk in a forest. Healthy people and healthy forests and recreation programs may depend on each other.

With my talk and the current focus of my research I'm hoping to jump start what John Crompton at Texas A&M termed "joined up thinking" (2008).

Recreation providers and land managers need to join with health care and medical professional s to encourage people to spend time in the natural world. I'm also borrowing from the Forestry Commission of England who suggested that we start thinking in terms of trees and woodlands as "Nature's Health Service." Spending time in forests can improve physical, psychological, and social well-being. Sustainable health requires effective medical approaches that are coupled with healthy environments and lifestyles. This presentation focuses on healthy lifestyles that incorporate time in nature into our lives, improving mental and physical health and well-being, and resulting in healthier schools, healthier workplaces, healthier youth and seniors, and healthier communities. Speakers on the panel will focus

therapeutic and rehabilitative aspects of spending time in nature, and the importance of recreation infrastructure to support outdoor activities.

I am using well-being to encompass physical fitness and health, psychological well-being, happiness, optimism, self-expression, self esteem, quality of life and personal satisfaction, social engagement, and ecologically sustainable lifestyles.

A Presidential Proclamation celebrating Great Outdoors Month (June 1, 2009) states "Exploring the great outdoors can also help improve one's health. These spaces provide countless venues for walking, hiking, running, swimming and boating among other activities. Americans can combine the enjoyment of being outside with the exercise we all need to stay healthy."

In addition to improved mental and physical health, other benefits of leisure (recreation and tourism) include community regeneration, cultural and historic preservation, achieving higher levels of educational attainment, alleviating deviant behavior, alleviating unemployment distress, fostering friendships and a sense of belonging and connectedness, and reducing effects of Post Traumatic Stress Disorder. In my talk I'll be focusing on health and well-being benefits related to prevention of and recovery from illness. Other members of the panel will talk about benefits for youth and the infrastructure needed to support these programs.

Nature pays an important role in the power of prevention—and more of us need to spend time in nature. According to the CDC the public health challenge of the 21st century is chronic disease resulting in 7 of 10 deaths among Americans. In 2005 one out of two adults had at least one chronic illness with 25% limiting daily activity. Mental health and chronic disease are closely related, with chronic disease leading to impaired mental health including depression and impaired mental condition leading to other chronic health issues in a vicious circle.

The top three causes of death in the Unites States are cancer, heart disease, and stroke. Between 1991 and 2001 obesity increased 75% among adults. Today, one in three adults is obese and one in five young people between the ages of 6-19 are obese. If current trends continue one in three Americans born in 2000 will develop diabetes. Lack of physical activity, poor nutrition, and tobacco and alcohol use play a role in these diseases. Physical activity is directly related to recreation and spending time in nature; spending time in nature also has benefits for reducing the use and abuse of tobacco, alcohol and other drugs.

According to the American Institute of Stress (2008) over 43 % of US adults have adverse health conditions due to stress. The same report estimated 75 % of visits to primary care physicians are stress related. Stress puts people at risk for colds, heart attacks, cancer, obesity, high blood pressure, elevated heart rates, can reduce blood flow to the heart, migraines, rheumatoid arthritis, chronic fatigue, receptiveness to allergies, suppresses immune system function, and can lead to hormonal imbalances that increase production of abnormal cells (Goodbey 2009 - Resources for the Future).

The World Health Organization predicts that diabetes will rise 50 % in the next decade and globally obesity is skyrocketing, cardiovascular disease and poor mental health will become the biggest

contributors to disease by 2020 (Murray and Lopez 1996). In a pre-emptive strike many employers are implementing health initiatives for their employees, saving millions of dollars in lost work time, productivity and health care costs.

"Empirical, theoretical, and anecdotal evidence demonstrates that contact with nature positively affects blood pressure, cholesterol, outlook on life, stress reduction, and behavioral problems among children, [youth and adults]" (Goodbey 2009:4). This is important because mental health and cardiovascular disease are expected to be the biggest contributors to disease worldwide by 2020.

Over 2 million youth have been diagnosed with ADD/ADHD in the US. There has recently been an explosion in diagnosis of adult ADHD with approximately 4 million adults diagnosed (Kessler 2006). Research has shown that spending even a little time in nature reduces symptoms of ADHD and "could be a lifesaver for the 10 percent of children whose symptoms don't respond to medication" (Kuo and Taylor 2004:1586). Nature is important for both adults and children with ADD – thinking and inspiration seem to be linked to moving. Activity in nature can give those with ADD the ability to manage their symptoms without addictions or troublesome side effects (and costs) of prescription medications. Research has suggested regular walks in nature can be as effective as medications (Halliwell and Ratey 2005). People with ADD report that being in nature increases their focus (Honos-Webb 2008:127) and researchers suggest spending time in nature is necessary for optimal levels of attentional functioning for all children and adults (Kuo and Taylor 2004; Taylor, Kuo, and Sullivan 2001)). Studies of children with ADHD have shown that they may perform better throughout the day if they take "green breaks" and spend time in a natural environment (Taylor, Kuo and Sullivan 2001). This may hold true for all children and adults as well. The September issue of American Journal of Public Health reported that for children with ADHD being outdoors every day significantly reduced their ADHD symptoms. Green outdoor activity was more significant in reducing symptoms that other settings across age, gender, income, community type, geographic region, and diagnosis (Kuo and Taylor 2004(94): 1580-1586.)

For many adults without ADHD the fast pace and explosion of technology has resulted in ADHD/ADD like symptoms – difficulty concentrating, being distracted easily by unimportant stimuli, feeling driven by a motor, impulsiveness, prone to jump into a project without following directions, likely to mix up the order and sequence of well-defined tasks, disorganized, struggle paying attention in work and recreation (Honos-Webb 2008). The natural environment can buffer us from impacts of life stresses – having a variable impact depending on level of nature exposure. Nature areas near schools and housing developments can foster resilience of children and promote healthy development (Wells and Evans 2003).

A literature review completed in Australia in 2008 found "The significance of the health and well-being benefits from interacting with nature, including park settings, the implications for public health, and the need for collated-up-to-date information on this topic cannot be over-estimated" (Maller and others 2008). The authors went on to say "Findings so far demonstrate that access to nature plays a vital role in human-health, well-being, and development that has not been fully recognized" (Maller and others 2008).

“It has been reported that modern people are experiencing a spiritual famine and that “alcohol, food and drug addictions are futile attempts to fill the spiritual emptiness that has arisen from loss of contact with nature” (Maller and others 2008:1). “Parks and other natural environments are a fundamental health resource, particularly in terms of disease prevention. The initial evidence documenting the positive effects of nature on blood pressure, cholesterol, outlook on life and stress reduction is sufficient to warrant its incorporation into strategies for the Australian National Health Priority Areas of ‘Mental Health’ and ‘Cardiovascular Disease.’” (Maller and others 2008) Worldwide these will be the two biggest contributors to disease by 2020. Spending time in nature has been linked to longevity and decreased risk of mental illness in Japan, Scandinavia, and the Netherlands (Takano et. Al., 2002; DeVries et el., 2003; Grahn and Stigsdotter, 2003).

Health benefits of nature may also have relevance to injury prevention and control, diabetes, asthma, arthritis, musculoskeletal conditions, and other maladies, including cancer, as the following study from Japan suggests.

In Japan, Shinrinyoku or forest bathing is a short, leisurely visit to a forest providing a natural aromatherapy session. A Japanese study (Li 2009) with both men and women involved a 3 day/2 night trip to a forest where participants took short walks each day for 3 days. Blood and urine were sampled on days 2, 3 and 7 and thirty. Adrenaline was measured in the urine and natural killer (NK) cells were measured in the blood. The increase in NK cells lasted more than thirty days suggesting that trips in nature once a month could provide maintenance levels of NK cells which release anticancer proteins into the blood that work to prevent cancer generation and development. Breathing in wood essential oils with antimicrobial compounds while walking through the forest also results in relaxation and improves stress management resulting in significantly increased vigor, decreased anxiety, depression, anger – and may decrease risk of psychosocial stress related diseases.

People who walk 15-30 minutes a day are healthier than people who don’t – they have fewer diseases, are less likely to get cancer, have a lower risk of heart attack and stroke, and better bone density. Walking improves digestion and decreases the risk of intestinal cancer, reduces risk of type II diabetes, reduces insulin dependency of diabetics. Walking recalibrates energy/fat storage so the body becomes more efficient and trim. Walking helps the kidneys, lymphatic system, maintains joints, and diminishes some types of arthritis (Hartman 2006). Research at Duke University in 1999 found that a brisk 30 minute walk 3 times a week was more effective in reducing depression symptoms that Zoloft or Zoloft and walking and walkers were less likely to have a recurrence of depression (Hartman 2006).

In closing, linking leisure and recreation to health helps shift our attention to “upstream” efforts to prevent ill health rather than only working “downstream” on recue and care of the illness (Maller and others 2008). In support of upstream efforts the CDC (2009) recommends translation of scientific findings into community and school practices to protect the health of people where they live, work, learn and play.

I hope that this talk has contributed to that translation.

References

American Institute of Stress. 2008. America's No. 1 Health Problem. http://www.stress.org/about.htm.

Centers for Disease Control and Prevention. 2009. The Power of prevention: Chronic disease…the public health challenge of the 21st century. Downloaded from http://www.cdc.gov/chronicdisease/resources/publications/

Crompton, J.L. 2008. Empirical evidence of the contributions of leisure services to alleviating social problems: a key to repositioning the leisure services field. World Leisure 4: 243-258.

De Vries, S. R. Verheij, H. Groenewegen, and P. Spreeuwenberg. 2003. Natural environments—Healthy environments? An exploratory analysis of the relationship between green space and health. Environment and Planning 35(10): 1717-31.

Goodbey, G. 2009. Outdoor recreation, health, and wellness: understanding and enhancing the relationship. Prepared for the Outdoor Resources Review Group, Resources for the Future. 42 pages.

Grahn, P. and U.A.Stigsdotter. 2003. Landscape planning and stress. Urban Forestry & Urban Greening 2: 1-18.

Hartmann. T. 2006. Walking your blues away: How to heal the mind and create emotional well-being. Rochester, VT: Park St. Press. 102 pages.

Hallowell, E.M. and J.J. Ratey. 2005. Delivered from distraction: Getting the most out of life with Attention Deficit Disorder. New York: Random House. 379 pages.

Honos-Webb, L. 2008. The gift of adult ADD: how to transform your challenges and build on your strengths. Oakland, CA: New Harbinger Publishers, Inc. 230 pages.

Kessler, R.C. 2006. The prevalence and correlates of adult ADHD in the United States: Results from the National Comorbidity Survey Replication. American Journal of Psychiatry 163: 716-723.

Kuo, F. and W. Sullivan. 2001. Aggression and violence in the inner city: Effects of environment via mental fatigue. Environment and Behavior 33(4): 543-71.

Kuo, F. and A. Taylor. 2004. A potential natural treatment for Atention-Deficit-Hyperactivity Disorder: evidence form a national study. American Journal of Public Health 94 (9): 1580-86.

Li, Qing. 2009. Effect of forest bathing trips on human immune function. Environmental Health and Preventive Medicine vol. 15 (1):9-17.

Maller, C.; M. Townsend; L. St.Leger; C. Henderson-Wilson; A. Pryor; L. Prosser; M. Moore. 2008. Healthy parks, healthy people: the health benefits of contact with nature in a park context. Burwood, Melbourne, Australia: Deakin University and Parks Victoria. 96 pages.

Murray, C.J.L. and A.D. Lopez. 1996. The global burden of disease: a comprehensive assessment of mortality and disability from disease, injuries, and risk factors in 1990 and projected to 2020-summary. Geneva: The World Health Organization, The World Bank, and The Harvard School of Public Health.

Taylor, A.F., Kuo, F.E. and Sullivan, W.C. 2001. Coping with ADD: The surprising connection to green play settings. Environment and Behavior 33 (1): 54-77.

Wells, N.M. and G.W. Evans. 2003. Nearby nature: a buffer of life stress among rural children. Environment and Behavior 35(3): 311-330.