Every year, the U.S. Centers for Disease Control and Prevention (CDC) conduct a national survey to assess the health of the country. In 2007, this survey (known as the Behavioral Risk Factor Surveillance System, or BRFSS) revealed a surprising fact: living in a rural area decreased the risk of suffering from psychological disturbance by 17 percent, compared to the risk for urban residents. (Dhingra et al., 2009. See Figure 1). Studies of other mental health conditions such as depression have shown similar results when comparing rural and urban living (Paykel et al., 2000).

Mental Health Outdoors: The Benefits of Nature

BY KURT BEIL
Enviro-Mental Health and Biophilia

The contributing factors for mental health concerns are multiple and varied. Yet despite accounting for genetic, socio-economic and behavioral influences, rural residents still demonstrate greater mental health (on average) than city dwellers. One explanation for this finding that is slowly gaining recognition is the importance of the physical environment itself in shaping mental health (Lundberg, 1998). While the field of “environmental psychology” is broad, this article will focus on one aspect in particular that has relevance to the rural/urban disparity in mental health: the natural environment.

The claim that exposure to the natural environment can be beneficial to mental health is neither surprising nor new. For centuries poets and writers have extolled the virtues of nature and its ability to soothe the psyche and inspire the soul. Anyone that has ever been outside of a city instantly recognizes these benefits from their own lived experience. There is a “natural” ability of landscapes to soften the heart, relax the mind and help a person feel connected to something larger than themselves. All of these experiences are properties of good mental health.

While this awareness of the ability of nature to effect changes in mental health status is not new, it is only recently that science has investigated this phenomenon. The majority of investigation has occurred in response to Harvard biologist and author E.O. Wilson’s suggestion that human beings have an evolutionarily inherited affinity for natural places (1984). This affinity, known as “Biophilia,” draws us to places that are similar to the pristine savannahs and forests in which our genetic ancestors lived for millennia. According to the biophilia hypothesis, we are not only psychologically attracted to such places, but are also physiologically programmed to respond favorably to them. These natural places are our environmental “set-point” to which we are conditioned to favorably respond.

The evidence seems to support Wilson’s biophilia hypothesis: people are measurably happier after contact with the natural world, particularly when compared to urban settings. In one study, measures of positive affect (i.e. positive emotions such as happiness and joy) improved significantly upon taking a walk in a lightly forested area, while walking in an area of light suburban development had the opposite impact (Hartig et al., 2003; See Figure 2). Inverse responses were noted with regard to sadness, anger, and aggression.

This mirrors many other studies that show similar emotional responses and suggests that there is something inherent about a positive emotional response to nature.

Mental Restoration and Health

The ability of nature to positively impact mental health is supported by two complementary theories that utilize biophilia as a guiding principle. One theory, advocated by Stephen and Rachel Kaplan of the University of Michigan, suggests that natural environments decrease our minds’ tendency toward mental fatigue. This “Attention Restoration Theory” (ART) proposes that our minds are evolutionarily adapted to cognitively process the stimuli provided by the natural environment of our ancestors (Kaplan, 1995). In contrast, modern industrialized settings provide environmental stimuli that require more mental effort to process. The moving cars, electronic billboards and construction sounds that are synonymous with urban development decrease our mental capacity for cognitive attention and, ultimately, erode our mental health. These concepts have been demonstrated experimentally in the study by Hartig et al. (2003): Cognitive attention and task performance were affected by exposure to nature and urban environments in a manner similar to emotions.
Cognitive attention is one of the basic aspects of mental activity, and is a fundamental process in determining mental health status. This is most evident in the mental health condition known as Attention Deficit Hyperactivity Disorder, or ADHD. This condition is very prevalent in today's population, particularly in children, and evidence supports the idea that environmental stimuli play some role in the lack of cognitive attention in affected individuals. Children diagnosed with ADHD have significant reductions in symptoms when exposed to natural outdoor environments. This is particularly true when compared with children exposed to typical urban or suburban environments, in keeping with the tenets of ART. These reductions have been measured for long-term exposure to nature; such as the finding that changing the amount of nature around a child's home resulted in corresponding changes in ADHD symptoms (Wells, 2000). Short-term exposures to nature have also proven to be beneficial in reducing ADHD symptoms (Faber-Taylor & Kuo, 2009). Researchers have noted the numerous other benefits that exposure to nature has on children, including improvements in academic performance, social skill development and creative thinking ability. Author and journalist Richard Louv has summarized these benefits in his 2005 book “Last Child in the Woods: Saving Our Children from Nature-Deficit Disorder.”

**Stress-Reduction and Mental Health**

The other theory of how biophilia and urbanization contribute to mental health and illness is based on an understanding of the set of psychosomatic processes commonly known as “stress.” The stress response is a set of physiological reactions that occur in response to perceived threats to an individual’s well-being. These threats can be real or imagined, and may even be undetectable to a person’s conscious awareness. Through complex processes in the body and brain (known in the medical field as “Psychoneuroendocrino-immunology”, or PNEI) the accumulated effects of stress can have many negative impacts on mental health. The PNEI effects on neurotransmitters and other hormones that affect brain function have been definitively shown to contribute to depression, anxiety, schizophrenia, and other mental health conditions (Goodkin & Visser, 2000).

Stress comes from a variety of sources, and for urban residents in particular environmental stresses are especially problematic. The traffic, lights and noise of the city are constant low-grade stressors that have demonstrable effects on mental health (Freeman & Stansfeld, 1998). In contrast, the stimuli that we encounter in nature are typically relaxing and help us to slow down and “de-stress.” This is exactly why many people chose to live away from busy urban centers and why many urban residents choose to take their vacations in the mountains or on the beach. The calm, vibrant scenery of natural landscapes helps people relax and recover from the stresses of daily life. It feels healthy and natural to be in such places.

Exposure to nature can also aid in mental recovery from acutely stressful situations, as demonstrated by Roger Ulrich and colleagues in a set of now-classic nature and stress studies (1984, 1991). In one study, post-surgery patients were found to recover more quickly and with fewer stress-related complications when their hospital room overlooked a wooded park than when it overlooked another wing of the hospital. The second study measured physical and mental stress after an acutely stressful situation, and found that people that were exposed to natural scenery had vastly superior recovery times. This information has been useful in developing treatment for a number of mental health conditions, including treatment for post-traumatic stress disorder, or PTSD (Ottosson & Grahn, 2008). PTSD is particularly responsive to this type of “ecotherapy” because it reduces a person’s level of stress while providing a stable, non-threatening context that can be returned to multiple times for cumulative benefit. Even when vast expanses of natural landscape are unavailable, small vegetable or flower
gardens can provide enough stress-reducing nature exposure to create a therapeutic experience for people in need (Applebome, 2009).

PROTECTION OF NATURE
The information in this article provides evidence that direct contact with the natural world is beneficial for mental health. While this evidence matches most peoples directly lived experience, the implications of such have not yet been considered in applicable areas such as environmental resource management, land use policy or public health modeling. As urban, suburban, and rural development continue, it will be useful to consider what effects the presence or absence of natural environments have on the long term health and well-being of potentially affected populations. Particularly at a time when environmental degradation and biodiversity loss are increasing at an accelerating pace, an examination of the reciprocal relationship between the health of human beings and the health of the environment seems appropriate. The natural world provides us with more than the physical means to maintain life; it gives us the visual and experiential resources we need to make that life worth living.

ABOUT THE AUTHOR
Kurt Beil is professor of Environmental Medicine at the National College of Natural Medicine in Portland, Oregon, where he sees and treats patients using a combination of naturopathic and Chinese medicine techniques. He is also a public health consultant on the topic of green spaces for sustainable urban development, and advocates for a holistic approach to health for both people and planet.

ENDNOTES
1The physical impacts of stress are also numerous and are thought to cost hundreds of billions of dollars annually through worker absenteeism and contribution to healthcare conditions such as heart disease, high blood pressure, obesity, and diabetes.

REFERENCES


