

Understanding the Transformative Aspects of the Wilderness and Protected Lands Experience upon Human Health

Alan Ewert, Jillisa Overholt, Alison Voight,
and Chun Chieh Wang

Abstract—Wilderness and Protected Landscapes (WPLs) have long been considered special areas for a variety of reasons including baseline data, impact analyses, protected zones, and other tangible and intangible values. Another salient, and some would argue, a more important value offered through WPLs is that of human transformation. Accordingly, three theories have provided the bulk of the explanatory framework regarding the connection of WPL to human health: (1) attention restoration theory (ART), (2) psycho-evolutionary theory (PET), and (3) intentionally designed experiences (IDE). Transforming experiences associated with WPLs are often strongly related to emotion, affect, and social cognitive variables, such as developmental/therapeutic health, physical health, self-sufficiency, and educational, spiritual, and aesthetic/creativity benefits. The relationship between these types of experiences and transformations of attitude, beliefs, and behaviors in human populations is presented. The Eastern religions, such as Hinduism, Taoism, and Buddhism, and their erudite philosophers, have a long historic link to health, spiritualism, and wilderness environments. In response to this fact, this paper will discuss wilderness and human transformation from both the familiar Western concepts as well as an international (Asian) perspective on wilderness and transformative experiences.

I'm a city person, born and raised in New York City. My interest in outdoor environments and wilderness seems to stem from a primordial hunger to get back to roots, to nature, to peace and quiet... I have a deep conviction that the source and strength of our lives is in the wilderness, that it is a place of renewal physically and psychically . . . The wilderness, like music, touches something universally felt and experienced by people and perhaps has the power to heal them and bring them together.

Sydney Fine, Wilderness Psychology
Newsletter

All authors are in the Department of Recreation, Park, and Tourism Studies, at Indiana University, Bloomington, IN U.S.A. Send correspondence to the first author at: Alan Ewert, Indiana University, HPER 133, 1025 E. Seventh Street, Bloomington, IN 47405-7109. E-mail: aewert@indiana.edu

Watson, Alan; Murrieta-Saldivar, Joaquin; McBride, Brooke, comps. 2011. Science and stewardship to protect and sustain wilderness values: Ninth World Wilderness Congress symposium; November 6-13, 2009; Meridá, Yucatán, Mexico. Proceedings RMRS-P-64. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 225 p.

Introduction

Wilderness and Protected Landscapes (WPLs) have long been considered special areas for a variety of important reasons, including providing ecological baseline data for the establishment of protected zones, understanding impact analyses, and other tangible and intangible values. Another salient, and some would argue more important, value offered from WPLs is that of human transformation. That is, these areas provide avenues, either through the landscape itself or the types of activities typically engaged in there, to change human attitudes, belief systems, and behaviors. This paper describes the transformational process within a wilderness context through three avenues: (1) the connection of wilderness and other undeveloped landscapes (WPLs) to human health, (2) the development of WPLs as areas of transformative experiences, and (3) an international (Asian) perspective on wilderness and transformative experiences.

As an underlying framework for this discussion, *health* is defined as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (World Health Organization 1948). Likewise, in accordance with Curtis (2008), WPLs are considered to contain aspects of place (e.g., location such as geographical position relative to other places), specific and often unique attributes of that location, and personally held and imagined characteristics that are imbued with specific social, cultural, and intrinsic meanings leading to a “sense of place” (Curtis 2008; Tuan 1974). Finally, transformative experiences are considered to be those events, either planned or unplanned, that lead to a change in an individual, either behaviorally, psychologically, or emotionally. Transformative experiences are often accompanied by feelings of freedom, sense of harmony or union with some higher power, absorption in the moment, or a sense of overcoming limits or barriers associated with an individual’s life (Williams and Harvey 2001). As will be discussed, a number of authors suggest that WPLs serve a critical role in facilitating both benefits to health and the transformative experience (Laski 1961; Mitchell 1983; Poudyal and others 2009; Pretty and others 2003).

Wilderness and Human Health

A number of well-documented and seminal studies such as Ulrich’s (1981, 1984) work on length of hospital stay, and Kaplan and Kaplan’s (1989) identification of the restorative

effects of natural settings, delineate the effects of outdoor natural settings on both individuals and groups. WPL-based programs and experiences within natural settings have become increasingly employed to enhance the health and quality of life for hard-to-reach populations such as adjudicated youth, the chronically ill, and people with disabilities. Moreover, Ewert (2003) suggests that natural environments such as WPLs are increasingly connected to quality of life, wellness, and human health.

The relationship between humans and natural environments originates with humans having spent literally thousands of years adapting to natural environments, but only a relatively limited number of generations living in urbanized settings (Maller and others 2006). Indeed, Frumkin (2001) suggests that if the last 2 million years of our species' history were scaled to a single human lifetime of 70 years, then the first humans would not have begun to settle into villages and towns until 8 months after their 69th birthday. Further elucidating on this point, biologist E.O. Wilson states:

It would... be quite extraordinary to find that all learning rules related to that world [natural environments] have been erased in a few thousand years, even in the tiny minority of peoples who have existed for more than one or two generations in wholly urban environments (Wilson 1993, p. 32).

Within a North American context, numerous wilderness proponents have advocated the connection between WPLs and the human condition. For example, John Muir thought of wilderness as a "restorative place," where people could restore their mental and physical well-being (Fox 1981; Miles 1987). Contemporary writers have also made the connection between natural settings and human health including Leopold's ecosystem integrity (Gobster 1995), Olmstead's benefits to city dwellers of parks and open space (Nash 2001), Orr's (2004) integration of environment, education, and the human condition, Ulrich's (1984) connection to nature and recuperation, and Louv's (2005) nature deficit disorder. More recently, Mayer and others (2009) report that after almost three decades of study and the use of a variety of methodologies and measures, research has shown that exposure to the natural world provides for health benefits such as decreases in aggression and stress, and increases in positive outcomes such as improved affect, cognitive capacity, and wellness.

Moreover, numerous studies have shown a number of psychological and physical benefits connected with wilderness experiences (Davis 2004; R. Kaplan 1984; Miles 1987; Scherl 1989; Weinstein and others 2009). Kaplan emphasizes the peace and simplicity of life, which allows for reflection and may ultimately transfer back to everyday life. Miles emphasizes the healing aspects of the wilderness environment, encompassing not only psychological benefits but spiritual, emotional and physical as well. More recent literature has focused on the theoretical dimensions of psychological well-being, and its connection between natural and WPL environments and human health (Weinstein and others 2009).

Theories Associated with Human Health and WPLs

Can the pursuit of these health-related benefits be what draws so many users to the wilderness environment? Two

theories have provided the bulk of the explanatory framework regarding the interface between natural environments, such as wilderness, and human health: (1) attention restoration theory (ART) (R. Kaplan and Kaplan 1989; S. Kaplan 1995), and (2) psycho-evolutionary theory (PET) (Ulrich 1984; Ulrich and others 1991).

Attention Restoration Theory (ART) was first developed by Kaplan and Kaplan (1989) and focuses on directed attention, which requires mental effort and can be fatigued from overuse. Directed attention fatigue can lead to negative consequences such as inability to focus, performance errors, inability to plan, social incivility and irritability (Herzog and Strevey 2008). Restorative settings enable the recovery of directed attention fatigue, with natural environments often thought to be the best example of restorative settings (Kaplan and Kaplan 1989). In fact, studies utilizing attention restoration theory have shown better performance on attention-demanding tasks by people exposed to natural settings (Kaplan 2001; Kaplan 1995; Taylor and others 2001). The authors have also suggested that ART may be related to improved self-control, reduced attention deficit disorder (ADD) symptoms, and improved mood and memory.

Psycho-evolutionary Theory (PET) emphasizes emotions and how exposure to nature can reduce stress reactions. In this case, stress is considered a physiological response to situations that threaten well-being, and stress recovery occurs in settings that evoke interest, pleasantness and calm, such as natural environments like WPLs (Ulrich 1984). Studies utilizing PET suggest that nature may be therapeutic, in part, by providing positive distractions that reduce stress responses (Ulrich and others 1991). For example, an early study indicated that recovery time decreased for hospital patients following gall bladder surgery who had rooms with natural views (Ulrich 1984).

PET is related to a third theory, the biophilia hypothesis, that also connects human health with natural environments (Wilson 1984). PET and biophilia both invoke humankind's historical relationship with the natural environment as creating an ingrained affinity that is key to our well-being. Related to this, biophilia was originally defined by Wilson as "an innate tendency to affiliate with natural things" (Kahn and Kellert 2002, p. 1). Biophilia further suggests that contact with nature promotes well-being as well as an increased understanding of nature, which can lead to stewardship beliefs and behaviors. Conversely, disconnections from nature are harmful to the individual, as well as for societies and cultures (Pretty and others 2003). In addition, Kellert (1993 p. 42) links biophilia to quality of life in suggesting that "the human need for nature is linked not just to the material exploitations of the environment but also to the influence of the natural world on our emotional, cognitive, aesthetic and even spiritual development."

Intentionally Designed Experiences (IDEs)

One of the major issues that arise in terms of wilderness experiences involves the importance of simply *being* in the wilderness environment versus *doing* structured activities in the wilderness. Several researchers have proposed that a major factor in the efficacy of wilderness programs is simply being in *contact* with the natural environment itself (Bardwell 1992; Mitten 1994). It has also been suggested,

however, that structured programs work to “focus the power” of nature, and that highlighting this relationship could work to further enhance health-related outcomes (Mitten 2009).

More specifically, benefits from both PET and ART are typically based on simply being exposed to the natural environment (e.g., wilderness). That is, simply being in a wilderness will create the potential for a positive connection to human health through PET and/or ART. However, another way of enhancing the relationship between humans and natural environments, such as WPLs, and creating subsequent health benefits, is through the use of Intentionally Designed Experiences (IDEs) (Sheard and Golby 2006). Similar to Mitten’s (2009) idea that wilderness programs may serve to focus the benefits of nature, the idea of IDEs is that programming in the natural environment can, and should be, purposeful in its planning and implementation in order to achieve specific benefits. In this way, wilderness-based programs become a type of vector for the benefits imbued by the more passive theories of the psychological and physical benefits of nature such as ART, PET, and biophilia (fig. 1).

The type of benefits resulting from participation in an IDE can be separated into two orders or levels. First order benefits can be considered major outcome variables that occur from participation in an IDE in a WPL setting and include achievement, restoration, empowerment and resilience. Second order benefits emerge from the occurrence of these first order outcome variables and include benefits related to self-systems (e.g., esteem, concept, awareness, efficacy), stress reduction, identity formation, and social support.

The idea of the IDE posits that the purpose, type, specifics of the program, and the type of clients all impact the outcome. The IDE is an active mechanism that, depending on its design, incorporates many of the theoretical

underpinnings of the human-nature benefit interaction (such as ART, PET and biophilia) into a program or experience that ultimately contributes to health and/or quality of life. Some examples of IDEs include Outward Bound, NOLS, Wilderness Inquiry, and University-based outdoor programs.

Wilderness as Transforming Experiences

Theoretically, wilderness experiences may be especially beneficial because they entail *engaging* with the landscape rather than *viewing* it (Frumkin 2001). This immersion may lead to a sense of “wilderness rapture,” including feelings of awe, wonder, humility, comfort in and connection to nature, increased appreciation of others, and a feeling of renewal and vigor” (Cumes 1998, in Frumkin 2001, p. 237). The idea of rapture is similar to the transcendent experience, as described by Williams and Harvey (2001) in relation to forest environments. Both of these concepts suggest a spiritual connection that takes place within a wilderness environment. According to Williams and Harvey, characteristics of a transcendent experience may include aspects such as a strong positive effect, overcoming personal limits, a sense of union with the universe, absorption in the moment, and a sense of timelessness. Transcendence has also been identified as a limitless experience, one that goes beyond the “essential being” (R. Fox, 1999, p. 457).

Williams and Harvey (2001) ultimately identified six different types of forest experiences, two of which—diminutive and deep flow—can be classified as transcendent. The diminutive experience was characterized by high fascination, high

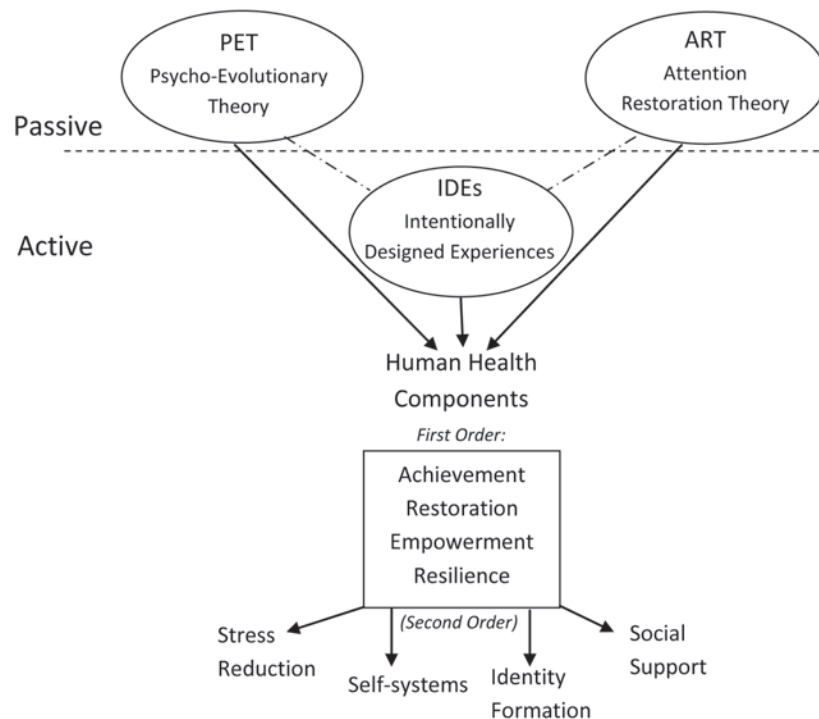


Figure 1—Natural Environment and Human Health Outcome Model.

novelty, low compatibility, and high levels of transcendence, and was likely to include feelings of insignificance and humility. The deep flow experience was different in that it included high compatibility and moderate novelty, and was likely to be described as relaxing or creating a sense of belonging. The other four types of experience—non-transcendent, aesthetic, restorative-familiar, and restorative-compatibility—contain similar characteristics as those deemed transcendent, but could not be distinctly categorized as such.

Williams and Harvey's (2001) work on the transcendent forest experience is important because it provides empirical data that links the spiritual experience with Kaplan's (1995) restorative environments work. Specifically, the authors posit that the concept of fascination may be influential in both restorative and transcendent experiences in nature. Thus, this study not only brings additional credence to the ART theory that has been utilized for a number of decades, but it adds much needed theoretical and empirical knowledge to the existing spirituality literature. Transcendent experiences have also been related to other theories currently used to describe the outdoor recreation experience, including flow (Csikszentmihalyi and Csikszentmihalyi 1990), and the peak experience (Maslow 1962).

The idea of wilderness transcendence has often been thought of as a type of spiritual experience in wilderness, but it may also be regarded as a transformational aspect. One way of conceptualizing this may be to examine the constructs of Fredrickson's (1998, 2001) broaden-and-build theory. Fredrickson's model posits that negative experiences narrow peoples' thought-action responses, while positive experiences broaden them. As such, new resources are built physically, intellectually, socially, and psychologically by these positive experiences. These new resources may facilitate coping with stress and adversity (Fredrickson and Joiner 2002). As the idea of the transcendent experience is built around experiencing intensely positive emotions triggered in a wilderness setting, Fredrickson's theory helps to explain how these experiences are then translated into the benefits so often touted as being a result of time spent in the wilderness.

In a similar fashion, Roggenbuck and Driver's (2000) taxonomy of wilderness benefits includes: developmental, therapeutic/mental health, physical health, self-sufficiency, independence, social identity, educational, spiritual, and aesthetic/creativity benefits. The literature generally tends to agree that wilderness experiences imbue benefits such as those listed in the above taxonomy (Ewert and McAvoy 2000; Fox 1999; Miles 1987; Scherl 1989; White and Hendee 2000). However, the exact meaning and role of the wilderness setting with regards to the benefits and outcomes of adventure programs remains largely unknown. Fredrickson and Joiner (2002) propose an upward spiral of positive emotions that lead to emotional well-being for the individual, and that these feelings accumulate and compound over time. Thus, the wilderness experience could be a first step in creating these positive emotions. This is an area in need of future investigation by wilderness researchers.

It is very possible that many of the benefits that have resulted from IDEs are due, in part, to the wilderness environments in which they take place. Knowing that this is the case may allow us to more fully harness or focus the

power of nature through intentional design. For example, Stringer and McAvoy (1992) suggest that programs might set aside more structured reflection time, allow for group discussion on the spiritual nature of the experience, provide for emotional challenge and the testing of personal limits, teach more about the natural history of an area in which a group is travelling, and facilitate personal connections among group members. A greater understanding of specific types of wilderness benefits, such as the transcendent experience, coupled with a greater understanding of the ways in which IDEs can help to facilitate those benefits may ultimately result in enhanced outdoor experiences for those who participate.

Many of the theories discussed thus far, such as ART and PET, represent a Western perspective, and a North American ideology of what constitutes a transformative experience in wilderness areas and other protected lands. It is significant to note, however, that many of the underlying frameworks for health and restorative relationships with wilderness take their roots from historic civilizations in the Eastern regions of the world, primarily in Asia. Religions, such as Hinduism, Taoism, and Buddhism, and their erudite philosophers have a long, historic link to health, spiritualism, and wilderness environments. The following section explores the significance of these ancient religious tenets and their foundational connection with wilderness lands.

Asian Perspectives on WPLs and Experiences

In Asia, people have strong connections with natural environments and consider the human being as part of nature, not separated from it (Hayashi 2002; Plummer 2008). Asians view the wilderness as the resource of basic energy from the earth. The earth provides all human beings with various materials to meet their survival, medical, aesthetic, and spiritual needs. In this section, the belief systems of Hinduism, Taoism, and Buddhism will be explored and discussed regarding their influence and impact on Asians' perspectives concerning wilderness and the transformative experience.

Hinduism

From Hinduism's point of view, the universe is God's body and a human's relationship with the Earth is inseparable, like that of children and their mother (Beelman 2005). Hindu dogma teaches people that the divine is in every aspect of nature—mountains, rivers, forest, animals, and planets—and that nature is valued and respected (Arsene 2007). For example, Hindus believe that taking ritual baths in the Holy Prayag River on specific days gives them great health benefits, since the water of the river can purify their bodies and minds. In addition, some natural places have spiritual resonance for the Hindu people. For instance, the Himalayas are sacred places for Hindus and they believe that sacred places can give them spiritual energy. As suggested by Frumkin (2003), these places [nature] seem to enhance well-being and may even promote good health.

Taoism

Taoism is a nature philosophy that emerged from the reflections of Taoist thinkers' reflections, and was inspired by the spiritual essence of the interaction between humans and nature. Simultaneously, they rejected the works of civilization. Zhuang Tzu, one of the founders of Taoism, created the notion of following the natural order of things and withdrawing from worldly reality (Menzie's 1994). Thus, a spiritual retreat into the mountains or forests became a practice of Taoism, and the wilderness became a place for Taoists to develop and pursue their beliefs (Soper 1941). In addition, other significant Taoist spiritual concepts such as Yin/Yang, chi, and Wu Xi (the five elements: gold, wood, water, fire, and land) also were inspired by the wilderness (Menzie's 1994). These Taoist concepts have influenced Asian cultures for thousands of years and become embedded magnificently in the spiritual and attitudinal aspects of people's everyday lives. These concepts demonstrate the substantial influence of the wilderness on the emergence of ancient Taoism and its subsequent impact on Asians' beliefs.

Buddhism

The Buddhists believe that life is full of pain and suffering that result from cravings or desires. The wilderness is seen as a path to obtain spiritual freedom and release people from this suffering. In ancient times, monks and nuns left their homes and lived isolated in the wilderness to pursue their spiritual freedom and overcome their desires. Living in a tranquil forest taught them to find peace and happiness despite a harsh life, and to conquer their original sensual cravings (Ramanathapillai 2009). Today, some Asian cultures that practice Buddhism have inherited this tradition. For example, people in Sri Lanka view the wilderness as a source of inspiration to heal tangled minds (Alwis 1999). Also, in Thailand, every young man is expected to be ordained as a monk for a short period of time before getting married. These individuals make a spiritual journey by walking into the jungle and sitting in meditation for days. Most people who have experienced these spiritual journeys and accomplished their tasks, found themselves transformed into more mature people (Hutanuwatr 1999). Hutanuwatr, a former Buddhist monk, stated:

This primordial energy (from the wilderness) is very vital for supporting our inner energy and harmonizing it with universal energy. Enhance the healing, the recovery of health, and the deep meditation (Hutanuwatr 1999, p. 35).

The influence of Buddhism on people's spiritual health is obviously significant. It not only leads people to pursue peace in their minds but also impacts their attitudes and beliefs towards their lives. If we track the essential origin of Buddhism, we see that the core notions were stimulated and inspired by the power of the wilderness, a place which guides people to pursue spiritual peace.

As can be seen from the previous descriptions, the belief systems of the Eastern religions have a stronger and more foundational connection to wilderness than those espoused by traditional religions of Western cultures. Transformative experiences are drawn from a personal relationship with the natural landscape and the inner most core of the

individual. Depending on the specific belief system, it is nature, rather than a perceived deity, that can heal "tangled" minds and provide a forum for obtaining spiritual energy. This enhanced spiritual energy is what moves the individual toward greater personal development or spiritual "completeness." These transformations can occur by simply being in the wilderness, which resembles the notion of withdrawing into the wilderness (Taoism), or by intentionally engaging with wilderness such as the belief that taking a bath in the Holy Prayag River purifies the body and mind (Hinduism), or meditating in the jungle for personal maturation (Buddhism). In addition, we can use the Natural Environment and Human Health Outcome Model to examine how WPL facilitates health benefits and transformative experiences (fig. 1).

Conclusions

This paper has explored the concept of wilderness as a setting from which to create a transforming experience. In support of this discussion, the Natural Environment and Human Health Outcome Model illustrates the connection between natural environments (e.g., WPLs) and salient, human health-related outcomes including sense of achievement, resilience, empowerment, and restoration. Integral to this model is the belief that WPLs can be facilitative in creating benefits to human health and transformative experiences because of the long-standing connectivity of humans to natural environments. This historic connection is particularly evident when exploring the Eastern belief systems, and their heavy reliance on wilderness and nature in the transformation of an individual toward a higher level of development and spirituality.

Attention restoration theory (ART), psycho-evolutionary theory (PET), and biophilia are theories used to explain the *passive* ways of connecting with nature. On the other hand, intentionally designed experiences (IDEs) demonstrate the *active* approaches used to enhance health-related outcomes by engaging with WPLs. The use of IDEs augments this connection by providing structured and facilitated experiences in WPLs that further enhance the positive outcomes from interaction with natural environments. Similar IDEs can be seen through an Asian cultural lens, in the purposeful acts of retreating into wilderness, personal testing, and spiritual cleansing rituals.

A growing body of research findings points to the importance of not only visiting the wilderness and other protected lands but also using structured experiences to heighten this connection to human health components. These components of human health speak to the importance and value we currently ascribe to wilderness, its pervasive, historic significance in long-standing Eastern cultures, and to the benefits it will continue to provide to those of future generations.

References

- Alwis, L. 1999. Origins, evaluation, and present status of the protected areas of Sri Lanka. *International Journal of Wilderness*. 5(4): 37-40.
- Arsene, G. 2007. The human-nature relationship: the emergence of environmental ethics. Available at: <http://bioethics.agrocampus-ouest.eu/pdf2007/51EN.pdf> [December 18, 2010].

- Bardwell, L. 1992. A bigger piece of the puzzle: the restorative experience and outdoor education. Paper presented at the Coalition for Education in the Outdoors: Research Symposium Proceedings, Bradford Woods, IN.
- Beelman, A. M. 2005. Health habitats: The role of architecture in human relationships with nature. Cincinnati, OH: University of Ohio. Unpublished master's thesis.
- Csikszentmihalyi, M. 1990. *Flow: The psychology of optimal experience*. New York: Harper and Row.
- Curtis, S. 2008. Geographical perspectives on psychiatric disorder. In: Freeman, H.; Stansfield, S., eds. *The impact of environment on psychiatric disorder*. London: Routledge: 52-79.
- Davis, J. 2004. Psychological benefits of nature experiences: research and theory. Naropa University and School of Lost Borders [August, 18, 2008].
- Ewert, A. 2003. Quality of life, recreation, and natural environment: exploring the connection. In: Rapport, D.J.; Lasley, W.L.; Rolston, D.E.; Nielson, N.O.; Qualset, C.O.; Damania, A.B., eds. *Managing for healthy ecosystems*. Boca Raton, LA: Lewis Publishers: 199-205.
- Ewert, A., McAvoy, L. 2000. The effects of wilderness settings on organized groups: A state of knowledge paper. In: McCool, Stephen F.; Cole, David N.; Borrie, William T.; O'Loughlin, Jennifer, comps. 2000. *Wilderness science in a time of change conference-Volume 3: Wilderness as a place for scientific inquiry*; 1999 May 23-27; Missoula, MT. Proceedings RMRS-P-15-VOL-3. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 13-26.
- Fox, R. 1999. Enhancing spiritual experience in adventure programs. In: Miles, J.C.; Priest, S., eds., *Adventure programming*. State College, PA: Venture: 455-461.
- Fox, S. 1981. *John Muir and His Legacy: The American Conservation Movement*. Boston: Little, Brown, and Company, Inc.
- Fredrickson, B. 1998. What good are positive emotions? Review of *General Psychology*. 2:300-319.
- Fredrickson, B. 2001. The role of positive emotions in positive psychology: the broaden-and-build theory of positive emotions. *American Psychologist*. 56(3): 218-226.
- Fredrickson, B.; Joiner, T. 2002. Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science*. 172-175.
- Frumkin, H. 2001. Beyond toxicity: Human health and the natural environment. *American Journal of Preventive Medicine*. 20(3): 234-240.
- Frumkin, H. 2003. Healthy places: exploring the evidence. *American Journal of Public Health*. 93(9): 1451.
- Gobster, P. 1995. Aldo Leopold's ecological esthetic: integrating esthetic and biodiversity values. *Journal of Forestry*. (February): 6-10.
- Hayashi, A. 2002. Finding the voice of Japanese wilderness. *Journal of Wilderness*. 8(2): 34.
- Herzog, T.; Strevey, S. 2008. Contact with nature, sense of humor, and psychological well-being. *Environment and Behavior*. 40(6): 747.
- Hutanuwatr, P. 1999. Wilderness experience for personal and spiritual growth in Siam. *International Journal of Wilderness*. 5(1): 34-37.
- Kahn, P.; Kellert, S. 2002. *Children and nature: psychological, sociocultural, and evolutionary investigations*. The MIT Press.
- Kaplan, R. 1984. Wilderness perception and psychological benefits: an analysis of a continuing program. *Leisure Sciences*. 6(3): 271-290.
- Kaplan, R. 2001. The nature of the view from home: psychological benefits. *Environment and Behavior*. 33(4): 507.
- Kaplan, R.; Kaplan, S. 1989. *The experience of nature: a psychological perspective*. Cambridge, UK: Cambridge University Press.
- Kaplan, S. 1995. The restorative benefits of nature: toward an integrative framework. *Journal of Environmental Psychology*. 15(3): 169-182.
- Kellert, S. 1993. The biological basis for human values of nature. *The Biophilia Hypothesis*. 42-69.
- Laski, M. 1961. *Ecstasy: a study of some secular and religious experiences*. London: The Cressett Press.
- Louv, R. 2005. *Last child in the woods: saving our children from nature deficit disorder*. Chapel Hill, NC: Algonquin Books of Chapel Hill.
- Maller, C.; Townsend, M.; Pryor, A.; Brown, P.; St Leger, L. 2006. Healthy nature healthy people: contact with nature as an upstream health promotion intervention for populations. *Health Promotion International*. 21(1): 45-54.
- Maslow, A. 1962. *Toward a psychology of being*. New York: Van Nostrand.
- Mayer, F.; Frants, C.; Bruehlman-Senecal, E.; Dolliver, K. 2009. Why is nature beneficial?: the role of connectedness to nature. *Environment and Behavior*. 41(5): 607.
- Menzies, N. 1994. *Forest and land management in imperial China*. London: St. Martin's Press.
- Miles, J. 1987. Wilderness as healing place. *Journal of Experiential Education*. 10(3): 4-10.
- Mitchell, R. 1983. *Mountain experience: the psychology and sociology of adventure*. Chicago: University of Chicago Press.
- Mitten, D. 1994. Ethical considerations in adventure therapy: a feminist critique. *Wilderness therapy for women: the power of adventure*: 55-84.
- Mitten, D. 2009. Under our noses: The healing power of nature. *Taproot Journal*. 19(1): 20-26.
- Nash, R. 2001. *Wilderness and the american mind*. 4th ed. New Haven, CT: Yale University Press.
- Orr, D. 2004. *Earth in mind: on education, environment, and the human prospect*. Washington D.C.: Island Press.
- Plummer, R. 2008. *Outdoor recreation: an introduction*. New York, NY: Routledge.
- Poudyal, N.C.; Hodges, D.G.; Bowker, J.M.; Cordell, H.K. 2009. Evaluating natural resource amenities in a human life expectancy production function. *Forest Policy and Economics*. 11: 253-259.
- Pretty, J.; Griffin, M.; Sellens, M. 2003. Is Nature good for you? *ECOS-British Association of Nature Conservationists*. 24: 2-9.
- Pretty, J.; Griffin, M.; Sellens, M.; Pretty, C. 2003. Green exercise: complementary roles of nature, exercise and diet in physical and emotional well-being and implications for public health policy. *CES Occasional paper*. 1.
- Ramanathapillai, R. 2009. *A Forest Ride on Wild Elephants: The Philosophy of Wilderness in Buddhism*. Available at: <http://www.asesg.org/PDFfiles/2009/Gajah%2030/Pages%20from%20Gajah-30-%2029%20-%203033.pdf> [December 18, 2009].
- Roggenbuck, J.; Driver, B.L. 2000. Benefits of nonfacilitated uses of wilderness. In: McCool, Stephen F.; Cole, David N.; Borrie, William T.; O'Loughlin, Jennifer, comps. 2000. *Wilderness science in a time of change conference-Volume 3: Wilderness as a place for scientific inquiry*; 1999 May 23-27; Missoula, MT. Proceedings RMRS-P-15-VOL-3. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 33-49.
- Scherl, L. 1989. Self in wilderness: understanding the psychological benefits of individual-wilderness interaction through self-control. *Leisure Sciences*. 11(2): 123-135.
- Sheard, M.; Golby, J. 2006. The efficacy of an outdoor adventure education curriculum on selected aspects of positive psychological development. *Journal of Experiential Education*. 29(2): 23.
- Soper, A.C. 1941. Early Chinese landscape painting. *The Art Bulletin*. 23(2): 141-164.
- Stringer, L.; McAvoy, L. 1992. The need for something different: spirituality and wilderness adventure. *Journal of Experiential Education*. 15(1): 13-20.
- Taylor, A.; Kuo, F.; Sullivan, W. 2001. Coping with ADD: the surprising connection to green play settings. *Environment and Behavior*. 33(1): 54.
- Tuan, Y. F. 1974. *Topophilia*. London: Prentice-Hall.
- Ulrich, R. 1981. Natural versus urban scenes: some psychophysiological effects. *Environment and Behavior*. 13(5): 523.
- Ulrich, R. 1984. View through a window may influence recovery from surgery. *Science*. 224(4647): 420-421.
- Ulrich, R.; Dimberg, U.; Driver, B. 1991. Psychophysiological indicators of leisure benefits. *Benefits of leisure*. 73-89.

- Weinstein, N.; Przybylski, A.; Ryan, R. 2009. Can nature make us more caring?: effects of immersion in nature on intrinsic aspirations and generosity. *Personality and Social Psychology Bulletin*. 35(10): 1315.
- White, D.; Hendee, J. 2000. Primal hypotheses: the relationship between naturalness, solitude, and the wilderness experience benefits of development of self, development of community, and spiritual development. In: McCool, Stephen F.; Cole, David N.; Borrie, William T.; O'Loughlin, Jennifer, comps. 2000. *Wilderness science in a time of change conference-Volume 3: Wilderness as a place for scientific inquiry*; 1999 May 23-27; Missoula, MT. Proceedings RMRS-P-15-VOL-3. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station: 223-227.
- Williams, K.; Harvey, D. 2001. Transcendent experience in forest environments. *Journal of Environmental Psychology*. 21(3): 249-260.
- Wilson, E.O. 1984. *Biophilia: the human bond with other species*. Cambridge: Harvard University Press.
- Wilson, E. O. 1993. Biophilia and the conservation ethic. In: Kellert, S. and Wilson, E.O. eds., *The Biophilia Hypothesis*. Washington DC: Island Press.
- World Health Organization. 1948. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference. *Official Records of the World Health Organization*. 2: 100.