

# The Role of Wilderness Protection and Societal Engagement as Indicators of Well-Being: An Examination of Change at the Boundary Waters Canoe Area Wilderness

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**Abstract** A societal decision to protect over 9 million acres of land and water for its wilderness character in the early 1960s reflected US wealth in natural resources, pride in the nation's cultural history and our commitment to the well-being of future generations to both experience wild nature and enjoy benefits flowing from these natural ecosystems. There is no question that our relationship with wilderness has changed. Individually it is probably quite easy to examine differences in the role wilderness plays in the quality of our lives today compared to some previous time. But how the role of wilderness protection has changed for society is more difficult to describe. In only a few places do we have data across multiple decades that would allow us to even examine how users or their use may have changed over time. At the Boundary Waters Canoe Area Wilderness in northern Minnesota we are fortunate to have multiple studies that can give us some 40 years of insight into how some aspects of use have changed there. For example, an analysis of results of visitor studies at the Boundary Waters Canoe Area Wilderness in 1969, 1991 and 2007 reveal some big differences in who is out there today, most notably the presence of a much older, more experienced and better educated user population, almost exclusively white and predominantly male. It is time to decide whether the best thing for wilderness and or society is to try to restore historic patterns of use (to include younger people, the less wealthy and lower educated) in greater numbers, to try to identify new markets within growing underrepresented populations, or adapt our perception of wilderness stewardship to better include planning for emerging social values of a new generation with other indicators of well-being. A growing population with greater dependence on ecosystem services provided by protected nature could lead to wilderness protection becoming an important quantitative and qualitative element of quality of life indices in the very near future.

**Keywords** Emerging adults · Ecosystem services · Under-represented populations · Quality of life · Protected nature

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## 1 A Theoretical Basis for Examining the Role of Wilderness Protection and Visitation as an Indicator of Quality of Life

Our National Wilderness Preservation System in the US, established by an Act of Congress in 1964, has grown to nearly 110 million acres in all but 6 states, with continuous proposals to protect additional lands and water. Wilderness protection has been proposed to also extend more strict protection to some marine environments. When we collectively decided to protect a system of wild places across lands and water administered by the Departments of Agriculture and Interior, it was during a time of rapidly increasing quality of life in the US, at the height of the rights movements and the dawning of environmental awareness and activism. Collective decisions to protect lands in their primitive condition can reflect several things about a society, including their relative wealth of natural resources, their commitment to future generations and demonstration of commitment to human and environmental well-being.

While the total number of acres of wilderness protected or proportion of the public visiting wilderness has never been proposed as a primary indicator of quality of life in any of the major national or international indices, at least some very dedicated wilderness enthusiasts may feel that it should. In 1969, for example, Sigurd F. Olson published one of several of his books advocating for protection of wild places in the US, particularly in the North Country of Minnesota. Olson, who was President of The Wilderness Society from 1963 to 1971, was involved in every aspect of influencing the public and Congress to support passage of the Wilderness Act in 1964. In his book *Open Horizons*, Olson (1969) shared his concerns about our society's future well-being, if we did not protect such areas:

The world needs metals and men need work, but they also must have wilderness and beauty, and in the years to come will need it even more. I thought of the broad, beautiful America we had found and our dream of freedom and opportunity, and wondered. Could man in his new civilization afford to lose again and again to progress? Did we have the right to deprive future generations of what we have known? What would the future bring? (Olson 1969, p. 210)

Olson, as a leader in the wilderness movement continued to fuel a long-running debate over the definition of progress, and thus the role of wilderness in quality of life for Americans. This paper will explore the role of protected nature and recreation across recognized theoretical approaches to measuring quality of life in the social indicator research literature, explore the psychology literature to discover what is influencing today's young people in evaluation of quality of life and value formation, and then examine some of the ways wilderness use and users have changed during the past 40 years at the Boundary Waters Canoe Areas Wilderness (BWCAW), in Minnesota, with focus on changing demographics. The purpose is to search for understanding of what various changes, particularly across generations, might mean to the values society places on this wilderness and other wildernesses. It's not 1964 anymore. Society has changed, relationships with wilderness have changed, and the role of protected areas in defining quality of life has probably changed, too. Planning for future stewardship may require our managers and scientists to consider alternative scenarios in the future than the one we have followed in the past.

**Table 1** Examining the potential for wilderness protection and wilderness recreation participation in theoretical bases for quality of life research summarized by Sirgy (2010)

Theoretical foundations	Nature protection elements	Recreation elements
Socio-economic development	Natural capital: green space, forest cover, water quality, environmental intactness	Built capital: walking trails; Human capital: affordable recreation and leisure activities
Personal utility	Protection of nature	Leisure time to enjoy nature
Social justice	Healthful environment	Equality in access
Human development	Environmental pollution, environmental programs to reduce environmental ill-being, quality of community landscape	Interaction with nature, quality of leisure and recreation activities, community programs to enhance leisure well-being
Sustainability	Diversity and condition of forests and other ecosystems, natural water systems, air quality, resource utilization	Health, wealth, knowledge and culture, community and equity
Functioning and capabilities	Environmental barriers to capabilities for functioning	Freedom to choose among doings and beings

### 1.1 Protecting Nature, Recreation and the Theoretical Bases for Quality of Life Research

Sirgy (2010) recently provided a very useful roadmap to the major theoretical foundations of quality of life (QOL) indices. There are six theoretical orientations that can help us understand the 22 most-used quality of life indices Haggerty et al. (2001) described, as well as most other research aimed at identifying important QOL indicators. This analysis (Table 1) allows us to examine the role of nature protection, recreation and leisure participation across these conceptual approaches to develop understanding of the role wilderness and wilderness visitation changes may play in quality of life for Americans.

### 1.2 Socio-Economic Development

Sirgy (2010) describes a historic trend of assuming that quality of life was largely determined by indicators of market productivity or economic development. Pointing out that a standard of living focus, however, leaves out social well-being, health well-being and environmental well-being, Sirgy (2010) offers an expanded view, or a “liberal concept of socio-economic development” that is more friendly to environmental and social well-being by including indicators of human capital, social capital, built capital, financial capital and natural capital. QOL indices that include measures of natural capital, in particular, recognize the importance of things like amount of green space, proportion of forest cover, water quality and other measures of environmental intactness with strong association to wilderness values. While historically a collective act of protection of nature or visiting nature would not have been included in QOL indices developed under this theoretical approach, under the “liberal view of socio-economic development” described by Sirgy (2010), it is certainly more likely. Among the built capital that Sirgy (2010) includes in his review of indicators of QOL following this theoretical orientation, is walking trails, and under human capital he lists recreation and leisure activities that are affordable. A variation

of the socio-economic development theoretical orientation advanced by Heady (1993) is the concept of stocks and flows. A high QOL is thought of as having good stocks and experiencing good flows. This adaptation of economic concepts into psychological ones can include leisure skills or equipment and socio-economic status among stocks, and satisfaction or dissatisfaction in daily leisure aspects of life as part of flows.

### 1.3 Personal Utility

This theoretical basis for QOL indicator development based on a personal utility theoretical foundation rests on the importance community members attach to community issues. Among aspects of community issues sometimes considered is the quality of the environment and leisure life. Many community conditions are outcomes of community action and collective decisions to provide services, much like our collective decision in the 1960s to protect wilderness places for recreation and other values. Leisure and the environment are considered within evaluations of life domains under this theoretical foundation, as are evaluation of other community conditions and evaluation of community services collectively provided. Again, within this theoretical orientation, protection of nature and leisure time to enjoy it have strong grounding as indicators of QOL.

### 1.4 Social Justice

Some QOL approaches are built on the concept that if a community enjoys a high level of social justice, there is a correspondingly high quality of life. A right to a healthful environment is among the list of important basic rights and duties within this theoretical orientation to QOL indicators, along with a right to meet basic needs, rights to safety and to employment and the duties to pay taxes and vote. There is also high regard for equality in the assignment of basic rights across gender, age, minorities, economic class and physical and mental ability of the community. Higher QOL is built on equality of basic rights and duties and inequality to benefit the least advantaged (Sirgy 2010). If nature protection existed only in the private sector in the US, it is unclear whether we would consider controlled or paid access to the benefits to such places as socially just. Off-site benefits could certainly flow to all parts of society, but on-site restrictions to personal engagement could certainly suggest limitations. Equality in access to public lands has been fiercely protected in the face of increasing tendencies to charge fees for public lands recreation (More 1999; Watson 2001). Intrinsic values and spiritual values of wilderness are particularly threatened by efforts to commercialize or privatize wilderness resources (Trainor and Norgaard 1999). Erikson et al. (2009) suggest that low participation rates in US national park visitation by minority populations indicates this type of recreation is not a quality of life indicator among this part of society. Historical and cultural factors, not assignment of basic rights, are believed to be primary contributors to low participation. Over time, however, invisible lines of segregation could be overcome, but it is unclear they will.

### 1.5 Human Development

Interaction with nature appears to be among both lower order and higher order need satisfactions described within this conceptual approach. Among the lower order, or primary needs, are health, safety and economic purposes. Sirgy (2010), however, charts out an extensive list of components of these lower order needs from previous efforts to measure

QOL indicators, including measures of environmental pollution and environmental programs to reduce environmental ill-being. Other lower order needs extend to things like disease incidence, crime, housing conditions, unemployment, community infrastructure, and illiteracy. Among higher order needs that some evidence suggests are relevant indicators of QOL are measures of quality of leisure and recreation activities and community programs to enhance leisure well being. These are included along with things like work productivity and income, educational attainment, the quality of the community landscape, population density, cultural activities and community programs to enhance spiritual well being.

### 1.6 Sustainability

Sirgy (2010) presented literature that suggests that a sustainability theoretical orientation to QOL indicator investigations originally centered on purely environmental well-being, but later expanded to include measures of human well-being as well. Here again, it is easy to place human relationships with nature in some way within this theoretical approach. In fact, sustainability seems to mandate attention to this human and nature relationship. Among indicators of a sustainable ecosystem include the diversity and condition of forests and other ecosystems, natural water systems, air quality and resource utilization. Official systems to protect nature are largely justified by the contributions to environmental well-being of such systems. Within this theoretical orientation, QOL indicators have focused on health, wealth, knowledge and culture, community and equity, also closely related to many of the human well-being arguments for protection of nature in some official, collective manner. Sirgy (2010) suggests that QOL researchers working in this domain consider sustainability to mean equal treatment of people and the environment. This theoretical approach is predicated on the belief that one cannot have a good human condition in a bad environment.

### 1.7 Functioning and Capabilities

The central concept of this theoretical set of QOL investigations is “freedom to choose.” Functionings, the common term for this theoretical orientation, simply refers to the fact that a person’s life can be considered a set of doings and beings. Freedom to choose among these doings and beings is sometimes referred to as capabilities. Basically this approach focuses on understanding what people consider as important in their lives and the capability of the system to provide these functionings. Functionings are the desired goals of human living, and capability indicates the freedom of choice to experience the end results of desired functionings. Sen (1999) illustrates this approach well with the conclusion that well-being is best achieved through a process of recognizing the real freedoms that people enjoy. Sirgy (2010) summarizes several applications of the functioning and capabilities approach to QOL indicators in the area of women’s well-being, poverty, deprivation, health and educational indicators. Environmental barriers that interfere with capabilities for functioning is a common topic of discussion in this literature.

### 1.8 Conclusions from the Social Indicator Research Theoretical Approaches

There is a tendency in every theoretical approach taken to development of quantitative QOL indices to include some aspect of environmental well-being as well as human well-being. Even liberal models of socio-economic approaches have evolved into broad

inclusion of natural, social and built capital which acknowledge the role of intact ecosystems, collective action to provide equitable and fair access to resources and both public and private infrastructure which protect the relationship between humans and nature. While “wilderness” is never mentioned within these descriptions of the dominant theoretical approaches summary, it is clear that those fighting for wilderness protection in our society mount strong arguments that the wilderness debate is about tradeoffs between economic prosperity and the nature component of quality of life. Some theoretical approaches have evolved towards strong assimilation of human/nature interactions within QOL indices. A broadened concept of sustainability, strengthening definitions of lower and higher order needs for human development, applying social justice principles broadly to collective resources, and growth of personal utility concepts to include evaluations of community conditions (including environmental conditions), all demonstrate evidence that our country’s decision in the 1960s to establish the world’s first wilderness preservation system does demonstrate the wealth of our country, our commitment to quality of life for the predominant part of society for current and future generations, and the ability to legislate to protect both environmental and human well-being.

## **2 Changing Society, the Emerging Issue of Emerging Adults and the North Woods of Minnesota**

Sigurd Olson’s future is here. He’s been gone for nearly 30 years now (1982). The concerns he voiced in 1969 about the tension between protection of nature and the contributions to our quality of life from resource extraction are still real concerns. The Wilderness Act he worked so hard to support has provided increased protection to the landscape, increased opportunities for people to engage in recreation and leisure in protected wilderness settings and to enjoy the beauty of nature, though on other lands progress has proceeded to alter natural systems and aesthetics. There has been some concern expressed, however, that future generations may not value wilderness protection or recreate there as much as in the past. As well as general societal concerns about the lack of children spending time in nature (e.g., Louv 2008); Potts (2007) suggests that an enduring wilderness resource in the US is not threatened so much by overuse as it is threatened by under use and under representation of population segments among visitors engaged in wilderness recreation activities.

In the recent psychology literature, however, the emphasis is on value formation and its influences on future quality of life decisions not by children, but by emerging adults. In the 1960s, at a time when our society collectively decided to establish a National Wilderness Preservation System and establish instant protection for over 9 million acres of land and water, by age 22 or 23 the typical person in our society was married, had at least one child, and was well on the way to a mortgage (Arnett 2005a). Arnett suggests that today, young people have greater freedom, but require even less support than they did in previous generations as they make their way into adulthood. Arnett describes a period of life now commonly referred to as “emerging adulthood,” where young people about the age of 18 to 25 in our society, are often seeking out and evaluating alternative world views. Today, these emerging adults marry later, are more engaged in higher education, change residences frequently, and are generally characterized by Arnett (2005a) as in an exceptionally unsettled period of exploration and instability, as they try out various possible futures in love and work before making enduring commitments. At this time of life, many persistent values are formed, but there is only limited understanding of what influences this value formation.

Most identity exploration is now believed to take place in this emerging adulthood phase of life. Erikson (1968) suggested that in the 1960s there was a growing proportion of late adolescence people looking for a niche in society, trying to develop their own identity. Today, Arnett (2005a) concludes there are many more young people in that boat than when Erikson first described this phenomenon. Identity expression issues arise in selecting life partners, making education decisions and selecting professions, but are equally important to any commitment an emerging adult may eventually make that will express their values and beliefs, including nature protection policies and recreation behaviors.

Today's emerging adults are in a distinctly self-focused stage of life. They have few social obligations, little in the way of duties and commitments to others, often spending a considerable amount of their leisure and school or work time alone. They are also the most heterogeneous cohort group. In fact, their heterogeneity largely defines this stage of life, though increasing evidence has suggested that they all share these major value forming experiences at this time. Tanner (2005) suggests that college attendance is one crucial context of change in emerging adulthood, and participation in higher education has greatly expanded in the past half century in the US, signaling rapid expansion of emerging adulthood influences.

Family relationships have long been regarded as the primary influence on social and emotional development of children and adolescents, partly due to the extreme control parents have on family lives (Arnett 2005b). But as emerging adults, family influence is greatly diminished. Arnett (2005b) points out the increasingly important role that media plays in the lives of emerging adults, however. They spend more of their time alone than all except the elderly, their social lives are often built around media, they have extreme freedom in media choices, and Brown (2005, p. 279) refers to them as the "new media generation." They have very accessible and interactive access to great quantities of media sources. Very little research has been conducted, however, on their media choices. We know very little, for instance, about how they choose between sources of information, how they process the information they access, and how the media affect values formation. Once a heavy user group of wilderness, wilderness may be contributing less to their human well-being through direct interaction all the time.

## 2.1 Emerging Adults at the Boundary Waters Canoe Area Wilderness

One of our earliest science studies of wilderness visitors was at the BWCAW of Minnesota, a place Olson described as "that rugged wilderness of rivers and lakes and forests known as the Quetico-Superior Country" in the dedication of his first book (Olson 1956). Stankey (1971, 1973) presented to us a baseline effort at understanding who was visiting the BWCAW in 1969 and a description of their trips. Young people dominated the visitor population in this favorite place of Sigurd Olson's back in the 1960s, but not anymore.

By 1991, while there had been many efforts to generate knowledge about use and users of a diverse set of wildernesses, there had been very little opportunity to conduct repeat studies over time at any of these places. A repeat study at the BWCAW (Watson 1995; Cole et al. 1995) replicated Stankey's earlier study and provided some opportunity for examining trends. With an intent to better understand trends in use and users across some common items in several studies conducted at that time, there were only five consistent trends reported out of 83 variables investigated at several areas in the early 1990s (Cole et al. 1995). Very simply, at this time these analyses suggested that visitor age and educational attainment had increased significantly, as did the proportion of females and the proportion of visitors who had been to other wildernesses. The fifth variable that had

changed in a consistent manner was the evaluation visitors gave of litter problems: they consistently reported litter was less of a problem in later studies. These scientists found wildly fluctuating direction and magnitude of change on other items studied across these areas.

Our knowledge has been increased only slightly since that time, with one study at the Bob Marshall Complex in Montana, with the intent of updating information from earlier studies there (in 1970 and 1982) by Lucas (1980, 1985) (Borrie and McCool 2007). Not surprisingly, age, educational attainment and previous wilderness experience had increased significantly, and though the proportion of females increased from 1970 to 1982, it had not increased further by 2004, and remained near 30%. While encounters with other groups seemed to have increased significantly from 1982 to 2004, the number of visitors reporting that they were seeing too many other people in the wilderness did not change across the three study periods.

A study was undertaken at the BWCAW in 2007 to add insight into trends there across three study years, 1969, 1991, and 2007. This report examines some of the basic demographic and visitor evaluation trends evident from that analysis and then draws conclusions about what these trends might imply for the role of wilderness participation in future assessments of quality of life in the US, under any of the major theoretical conceptualizations.

### 3 Methods

The BWCAW was heavily used prior to becoming a unit in our National Wilderness Preservation System in 1964 and expanded in 1978 to its present size of over one million acres. It is the largest designated wilderness area east of the Mississippi River. The BWCAW is also our heaviest used wilderness in the US, with over 250,000 visits per year (Dvorak et al. in press). Day use is by unlimited though required self-issued permits available at the trailhead, but overnight permits are rationed, available by reservation or a limited number available upon arrival at designated permit issuing stations the day before entry.

In 1969, Stankey (1971, 1973) conducted one of the earlier studies of wilderness visitors in the US at the BWCAW. He repeated portions of this study at other places, but never went back to repeat it at the BWCAW. He described his methods extensively in his dissertation (Stankey 1971) and less specifically in the publication that combined results from several baseline studies (Stankey 1973). He contacted visitors at entrance points as they entered or exited and administered a survey that obtained response from a sample of visitors to describe who they were, what kind of trip they were on and how they evaluated some of the things they encountered on their trips. Only overnight visitors were included in the study, only those visitors over 15 years old were surveyed, and only those entering or exiting during the highest use season, approximately May to September, at 17 of the highest used access points, were included.

In 1991, every effort was made to replicate sampling, down to sampling at specific locations on approximately the same days of each of the summer months sampled in 1969. This sample was complemented, however, by also sampling from permits at medium and lower used trailheads. While the sample in 1969 produced 152 usable surveys, there were just over 200 usable surveys collected from exactly the same access points in 1991. The extended effort to more accurately represent the 1991 visitor population, by expanding to represent lower use access points, produced nearly 300 usable surveys that accurately



represented distribution of visitors across four strata (high, moderately high, medium and low use access points) (Watson 1995).

In 2007, the sampling strategy most closely resembled the one used in 1991, but was increased in intensity to produce a sample of just over 600 completed surveys (Dvorak et al. in press). While in 1969, surveys were completed at the access point, in 1991 and 2007, some basic information was collected at the time of contact, but most information was collected through a mailback questionnaire. Response rates were 73% in the 1969 on-site survey, and 74% in 1991 and 69% in 2007 for the mailback surveys.

#### 4 Results

Consistent with earlier trends studies, the average age of visitors had increased significantly across the study years (Table 2). With an average age of only 26 in 1969, there was a substantial proportion of visitors between 16 and 25 within the sample (no one under 16 was included in the sample). In 2007, there was a similarly substantial proportion of the sample well above the average age of 45 years. Not commonly reported due to limited availability for other areas but available to us for Boundary Waters Canoe Area Wilderness visitors, we also find that a correspondingly low percentage of visitors are at least part-time students in 2007, compared to in 1991 and 1969 (Table 2). It is consistent with our perceptions of the environmental and rights movement of the 1960s to visualize all of those young students drawn to the wilderness in 1969. The emerging adults of 1969 were exploring self-identity through the wilderness media in large numbers. They were out there in decreasing proportions in 1991 and 2007, however.

While the median educational attainment hasn't changed since 1991, in both of the more recent studies it was significantly higher than in 1969 (Table 3). With nearly half of visitors in 1969 still students, a relatively low proportion could have claimed more than a high school education at that time. The dramatic rise to nearly one-third having a college education by 2007 was significant and reflects the substantial increase in educational attainment in our society over these years. Although the increasing proportion of female participants in wilderness recreation was one of only five consistent trends reported across several areas, including the BWCAW, in 1995 (Cole et al. 1995), the trend seems to have reversed and stabilized at the BWCAW. By 2007, the proportion of females among visitors had reverted back to about 25% from a high of 30% in 1991 (Table 3).

Also consistent with previous trends analysis, though even more dramatic, is the evident increase in experience among BWCAW visitors surveyed (Table 4). Visitors in 2007 are much less likely to be on their first visit and nearly 50% more have experience in other wildernesses compared to 1969. The trends are consistent and significant across the three

**Table 2** Average age and proportion of students for visitors to the Boundary Waters Canoe Area Wilderness in 1969, 1991 and 2007

Year	Average age <sup>a</sup>	Students <sup>b</sup> (%)
1969	26	47
1991	36	18
2007	45	11

<sup>a</sup> Significant at <0.001, ANOVA

<sup>b</sup> Significant at <0.001,  $\chi^2$

**Table 3** Educational attainment and gender of visitors to the Boundary Waters Canoe Area Wilderness in 1969, 1991 and 2007

Year	Median education <sup>a</sup>	College grads (%)	Gender <sup>b</sup>
1969	12 years	5	25% Female
1991	16 years	16	30% Female
2007	16 years	33	25% Female

<sup>a</sup> Significant at  $<0.001$ ,  $X^2$ /ANOVA

<sup>b</sup> Significant at 0.22,  $X^2$

**Table 4** Experience level of visitors to the Boundary Waters Canoe Area Wilderness in 1969, 1991 and 2007

Year	First time visitors to BWCAW <sup>a</sup> (%)	Experience in other Wilderness <sup>b</sup> (%)
1969	30	47
1991	12	57
2007	6	75

<sup>a</sup> Significant at  $<0.001$ ,  $X^2$

<sup>b</sup> Significant at  $<0.001$ ,  $X^2$

**Table 5** Group composition and length of stay for visitors to the Boundary Waters Canoe Area Wilderness in 1969, 1991 and 2007

Year	Organized groups <sup>a</sup> (%)	Group of family members <sup>b</sup> (%)	Avg. length of stay <sup>c</sup>
1969	11	43	4 nights
1991	10	47	4.2 nights
2007	5	69	4.4 nights

<sup>a</sup> Significant at  $<0.002$ ,  $X^2$

<sup>b</sup> Significant at  $<0.001$ ,  $X^2$

<sup>c</sup> Significant at 0.035, ANOVA

**Table 6** Number of encounters reported, on average, while visiting the Boundary Waters Canoe Area Wilderness in 1969, 1991 and 2007 and visitor evaluations of those encounters

Year	Number of groups seen per day <sup>a</sup>	Number of large groups seen per day <sup>b</sup>	Overcrowded? <sup>c</sup>
1969	4.1	0.5	26% Yes
1991	4.2	0.1	55% Yes
2007	8.6	4.2	60% yes

<sup>a</sup> Significant at  $<0.002$ , ANOVA

<sup>b</sup> Significant at  $<0.002$ , ANOVA

<sup>c</sup> Significant at  $<0.0001$ ,  $X^2$

study years. These more experienced visitors are also less likely to be in organized groups and more likely to be in groups containing family members in 2007 (Table 5). The length of stay of trips here has remained relatively stable (Table 6). There is a statistically significant difference, however, between the average of about 4 nights in 1969, 4.2 nights in 1991 and 4.4 nights in 2007, but at the 0.035 level.

Dawson and Hendee (2009) suggest that visits to wilderness are different from visits to other places, by design, because they allow focus on nature in very low human density situations. Consistent with other studies, however, at the BWCAW the visitors are reporting many more encounters on average across the days of their trips (Table 6). With an average of 8.6 groups per day in 2007, encounter rates easily double those reported in previous studies. For large groups seen each day, the substantial increase is even more dramatic (Table 6). Despite many speculations that as use density increases in wilderness areas, visitors may come to be more accepting of high densities, BWCAW visitors actually have more negatively evaluated conditions as crowded. Either overcrowded in at least some places or as a whole was the evaluation for almost two-thirds of all respondents in 2007 (Table 6).

## 5 Conclusions and Discussion

The song of the North still fills me with the same gladness as when I heard it first. It came not only from the land of the Great Lakes, but from the vast regions beyond the Canadian border. More than terrain, more than woods, lakes, and forests, it had promise and meaning and sang of the freedom and challenge of the wilderness. (Olson 1969, p. 61)

In Olson's chapter "Song of the North," he shared in 1969 not only his excitement about knowing this wild country to the north, but also in sharing it with "anyone who would listen." He also tells of his early college years on the shore of Lake Superior and his courtship with the north.

I became part of the north, and the melody I heard was loud and clear. (Olson 1969, p. 64)

As an emerging adult, Olson's access to the wilderness media outdistanced all others, it seems. Today, while the wilderness media remains equally accessible to emerging adults, the door is not opened nearly as often by this segment of society at the BWCAW. Schneider et al. (2011) in a recent attempt to understand coping behaviors of visitors to the BWCAW, certainly found evidence that at least among those more experienced users at the BWCAW (and therefore older visitors), there were time constraints imposed by work and family commitments. By definition, however, those wouldn't apply as much to the largely missing emerging adults. Access constraints, imposed by the permit system specifically, for example, could apply across all life-stages of visitors to the BWCAW, but since most permits are now reserved over the internet, it would seem that emerging adults would be able to out compete most other life-stage groups desiring to visit the BWCAW, if that was their desire.

Structural constraints found by Schneider et al. (2011) related to work and family commitment, were hypothesized to affect length of visits to the BWCAW for visitors in this qualitative study of Minneapolis-St. Paul area residents. In the trends study, however, length of stay was found to not be significantly shorter across the nearly 40 years of comparisons, with even a slight trend evident toward longer visits. The sample used by Schneider et al. (2011) was biased somewhat towards women (approximately 50%) and regional residents (100%), but provided in-depth understanding of some of the constraints faced by these BWCAW visitors. How these constraints might apply to the mostly missing emerging adults is unclear.

Where are the young people in the BWCAW? When you go there, you see some of them, but evidently not in the numbers present in the 1960s or even the 1990s. Improved methodologies lead to confidence in current descriptions of the population of users now. Earlier efforts, however, provided smaller samples, high focus on heavily used entrance points and documentation is very sparse on sampling methodology. There is a chance that there is some unknown bias present in early data points or methods that affect demographic descriptions of the visitor population. Another possibility is that these young people are still there, they have simply grown older. In 2007, 43% of visitors were over 50, closely reflecting that proportion under 26 in 1969. Experience levels are high today. If these samples represent the same population of users, the question becomes more serious: “What happens when they no longer come to the BWCAW?” If we have protected the wilderness experience to increase the quality of life of our citizens, but people do not go there as they did in the past, are we contributing to quality of life through wilderness protection?

Two choices seem to emerge as possible answers. First of all, Potts (2007) and many others seem to suggest we need to find a way to attract a larger part of society to the wilderness, so they too can gain the many benefits of travel and sleeping in pristine conditions that we tried to protect through passage of the Wilderness Act. Potts (2007) suggests the problem is often not too many people in wilderness, but not enough people experiencing wilderness conditions today. If this is the case, current literature suggests the need for increased efforts to target emerging adults through appropriate media to raise awareness of opportunities, increase understanding of benefits and therefore raise use levels among people in this life-stage, when many lifetime behavioral patterns are developed. The appropriate media could be university courses, college community radio station broadcasts, podcasts, music, on-line books and articles easily accessed, and other targeted sources. Unfortunately, not very much research has occurred at this time on this topic. We know emerging adulthood is the time that people form enduring value systems and that emerging adult outdoor recreation behavior is strikingly different from in the past (Zinn and Graefe 2007).

Breunig et al. (2010) suggest another media, organized wilderness experience programs, that can contribute to sense of community among participants. Building a cultural identity community that shares nature values can contribute to both human and environmental well being. We know that value formation comes from self-identity exploration at this time of freedom and self-focus, but we don't know exactly how to influence it, nor have we debated the ethics of such efforts. A future research program could focus on these issues.

If we decide to expend energy on getting more young people into wilderness, so they can appreciate the melody of the north woods more, shouldn't we also expend energy on attracting more females to wilderness visitation? When we thought the trend in wilderness participation was towards more female participation, we were somewhat pleased. Now we face the possibility that wilderness recreation remains predominantly a male activity, we might question the social justice in justification of such programs. We would also feel that we were contributing more broadly to quality of life across society if minorities became more present in visitation statistics. Unfortunately, however, the user population of the BWCAW in 2007 was 97% white (Dvorak et al. in press) and the female proportion has not followed the increase in trend we thought we saw in 1991. The emerging adult literature might help us with targeting younger women but not other underrepresented populations. It will likely be a different literature that will help with that task. In fact, Arnett (2005b) suggests that the emphasis on White college student samples in US emerging adult research may be attributed to the complexity of identity exploration among other cultures in the US and emerging adulthood may be prolonged among minority populations due to

this complexity. There may be very basic cultural or gender-based reasons that participation will never increase by minorities or women, and although it would make us feel that benefits of wilderness stewardship would seem more equally distributed if it did, we really need to think through alternative approaches to describing the quality of life contribution achieved from wilderness stewardship beyond on-site visitation.

Therefore, the second possibility may be that, rather than insist all of society visit the wilderness to receive the set of benefits so desired by politically influential activists in the 1960s and so common to socio-economic development, personal utility, social justice and human development theoretical approaches to human well-being, our responsibility may be to promote awareness and commitment to protection of areas with wilderness characteristics for other than use values, more in line with sustainability and functioning and capabilities quality of life approaches. Human well-being may flow increasingly from environmental well-being and wilderness may be the ultimate cultural symbol of our commitment to environmental well-being. Our knowledge has changed about the functions and services provided by protected lands and water, and this knowledge may suggest the need to weight the contribution of environmental well-being toward human well-being more than in the past. Research that is focused on off-site flow of ecological services is useful in creating understanding of the value of protecting biodiversity, carbon storage reservoirs and sources of high quality water for off-site benefits. In the Millennium Ecosystem Assessment (2005), the link between ecosystem services and human well-being is described as contributing to security; material for livelihoods, food and shelter; healthy environment, water and air; social cohesion; and freedom of choice to do what an individual values doing. These are values received broadly across society, not just to those driven and capable of outdoor recreation participation.

Today, someone can engage in assuring the protection of wilderness attributes through showing commitment to ecosystem services provided by these areas. The decision to engage in carbon, biodiversity or water ecosystem markets today may be the equivalent of identity expression through wilderness visits of the 1960s, and even of the 1990s. Although Zinn and Graefe (2007) could not find specific studies that identified environmental values of emerging adults, they did find evidence that more educated, more urban, younger adults were expressing increasingly strong protection-oriented environmental values.

The implications for research suggest increased need to more accurately describe exactly what ecosystem services benefits are provided by protected nature, who in society benefits from these services and protection of attributes that give rise to these services, how to model the effects of natural or anthropogenic disturbance on flow of these services, how to protect flow of benefits once they leave (if they do) collectively held lands and water, and how adaptive planning may help preserve the flow of historically important or crucially life sustaining benefits. Greater international collaboration to agree on methods of documentation of value magnitudes, methods of analyzing tradeoffs, models for making decisions and methods of communicating ecosystem service values to the public, to managers and to scientists is a priority. There is an international community currently building around the concept of "Nature Needs Half" (WILD Foundation 2011) with non-governmental organizations, communities and governments making commitments to improve human well-being through greater care and sharing of resources to protect environmental well-being. Research to contribute to greater understanding of the values this protection brings to current and future populations is in high demand and has immediate application potential.

We have studied emerging adults and their environmental values very little. We don't know how they express their protection-oriented environmental values; whether they

express them through their media choices, their financial commitments and decisions or their outdoor recreation use patterns. With such dramatically changing use of wilderness and such rapid increase in knowledge about the ecological importance of wilderness to current and future populations' quality of life, quality of environment and sustainability of lifestyles and life itself, it is probably time we took a closer look at how to engage emerging adults in discussion about the value of wilderness to identity formation, community building, financial and lifestyle decision making, and outdoor recreation choices. We need to figure out why a statement like the following by Olson in 1956 had so much meaning to the generation who was discovering the BWCAW in the 1960s and 1970s but either today's emerging adults don't read it, don't relate to it, or they are expressing their response to it in other ways that we haven't realized:

I have heard the singing in many places, but I seem to hear it best in the wilderness lake country of the Quetico-Superior, where travel is still by pack and canoe over the ancient trails of the Indians and the voyageurs. (Olson 1956, p. 6)

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## References

- Arnett, J. J. (2005a). Emerging adulthood: Understanding the new way of coming of age. In J. L. Tanner & J. J. Arnett (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 3–19). Washington, DC: American Psychology Association.
- Arnett, J. J. (2005b). The psychology of emerging adulthood: what is known and what remains to be known? In J. L. Tanner & J. J. Arnett (Eds.), *Emerging adults in America: coming of age in the 21st century* (pp. 303–330). Washington, DC: American Psychology Association.
- Borrie, W. T., & McCool, S. F. (2007). Describing changes in visitors and visits to the "Bob". *International Journal of Wilderness*, 13(3), 28–33.
- Breunig, M. C., Todd, S., Anderson, L., & Young, A. (2010). The impact of outdoor pursuits on college students' perceived sense of community. *Journal of Leisure Research*, 42(4), 551–572.
- Brown, J. D. (2005). Emerging adults in a media-saturated world. In J. L. Tanner & J. J. Arnett (Eds.), *Emerging adults in America: coming of age in the 21st century* (pp. 279–299). Washington, DC: American Psychology Association.
- Cole, D. N., Watson, A. E., & Roggenbuck, J. W. (1995). *Trends in wilderness visitors and visits: Boundary Waters Canoe Area, shining rock, and desolation wildernesses* (No. INT-RP-483) (p. 38). Ogden, UT: USDA Forest Service, Intermountain Research Station.
- Dawson, C. P., & Hende, J. C. (2009). *Wilderness management: Stewardship and protection of resources and values* (4th ed.). Golden, Colorado: Fulcrum Publishing.
- Dvorak, R. G., Watson, A. E., Christensen, N., & Borrie, W.T. (in press). *The Boundary Waters Canoe Area Wilderness: Changes in use, users and management challenges*. Res. Pap. RMRS-000. Ft. Collins, CO: US Department of Agriculture, Frost Service, Rocky Mountain Research Station, p. xx.
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York: Norton.
- Erikson, B., Johnson, C. W., & Kivel, B. D. (2009). Rocky mountain national park: History and culture as factors in African-American park visitation. *Journal of Leisure Research*, 41(4), 529–545.
- Haggerty, M. R., Cummins, R. A., Ferriss, A. L., Land, K., Michalos, A. C., Peterson, M., et al. (2001). Quality life indexes for national policy: Review and agenda for research. *Social Indicators Research*, 55, 1–96.
- Heady, B. W. (1993). An economic model of subjective well-being: Integrating economic and psychological theories. *Social Indicators Research*, 28, 97–116.

- Louv, R. (2008). *Last child in the woods: Saving our children from nature-deficit disorder*. Algonquin Books.
- Lucas, R. C. (1980). *Use patterns and visitor characteristics, attitudes and preferences in nine wilderness and other roadless areas*. Res. Pap. INT-253 (p. 89). Ogden, UT: US Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.
- Lucas, R. C. (1985). *Visitor characteristics, attitudes, and use patterns in the Bob Marshall Wilderness Complex, 1970–1982*. Res. Pap. INT-345 (p. 32). Ogden, UT: US Department of Agriculture, Forest Service, Intermountain Research Station.
- Millennium Ecosystem Assessment (2005). *Ecosystems and human well-being synthesis: A report of the Millennium Ecosystem Assessment*, Island Press.
- More, T. A. (1999). A functionalist approach to user fees. *Journal of Leisure Research*, 99(3), 227–244.
- Olson, S. F. (1956). *The Singing Wilderness* (p. 245). New York: Alfred A. Knopf, Inc.
- Olson, S. F. (1969). *Open horizons* (p. 227). New York: Alfred A. Knopf, Inc.
- Potts, R. (2007). Changing human relationships with wilderness and wildlands. *International Journal of Wilderness*, 13(3), 4–6,11.
- Schneider, I. E., Schroeder, S. L., & Schwaller, A. (2011). Structural constraints to wilderness. *International Journal of Wilderness*, 17(1), 14–21.
- Sen, A. (1999). *Development as freedom*. Delhi, India: Oxford University Press.
- Sirgy, M. J. (2010). Theoretical perspectives guiding QOL indicator projects. *Social Indicators Research* online. doi:10.1007/s11205-010-9692-6.
- Stankey, G. H. (1971). The perception of wilderness recreation carrying capacity: A geographic study in natural resources management. East Lansing, MI: Michigan State University, p. 351, Dissertation.
- Stankey, G. H. (1973). *Visitor perception of wilderness recreation carrying capacity*. Res. Pap. INT-142 (p. 61). Ogden, UT: US Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station.
- Tanner, J. L. (2005). Recentering during emerging adulthood: A critical turning point in life span human development. In J. L. Tanner & J. J. Arnett (Eds.), *Emerging adults in America: Coming of age in the 21st century* (pp. 21–55). Washington, DC: American Psychology Association.
- Trainor, S. F., & Norgaard, R. B. (1999). Recreation fees in the context of wilderness values. *Journal of Park and Recreation Administration*, 17(3), 100–115.
- Watson, A. E. (1995). Opportunities for solitude in the Boundary Waters Canoe Area Wilderness. *Northern Journal of Applied Forestry*, 12(1), 12–18.
- Watson, A. E. (2001). Sustainable financing of wilderness protection: an experiment with fees in the United States. *International Journal of Wilderness*, 7(3), 12–16.
- WILD Foundation. (2011). <http://natureneedshalf.org/home/>. (Accessed 9/28/2011).
- Zinn, H. C., & Graefe, A. R. (2007). Emerging adults and the future of wild nature. *International Journal of Wilderness*, 13(3), 16–22.