

Tettegouche State Park Summer Visitors' Perceptions on Ecosystem Services of the Park and Management Practices They Support

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Abstract

It has been said that youth and their parents are losing their connection to nature as evidenced by attendance in protected nature areas (PNA's) such as state and national parks (Outdoor Foundation, 2010, 2014; Monz, Cole, Leung & Marion, 2010). Managers have increased their efforts to encourage greater attendance through advertisements and specialized programs. A challenge to park managers is to manage the park in a manner that protects the natural resource while also managing the visitor experience (Francis, 2016; Lofthouse & Simmons, 2016). A primary benefit of a PNA to a visitor exists through Ecosystem Services, which is an outcome of the quality of the park experience (MEA, 2005). The quality of the visitor experience is determined to be beneficial to ones quality of life or sense of well-being (Diversitas, 2016). Using a survey design, we queried park visitors at one of the most popular state parks in the state of Minnesota called Tettegouche State Park. Visitors (n=222) were administered a questionnaire during two weeks in August, 2013, which is peak season. We asked respondents about the purpose and quality of their visit. Additionally, visitors' perceptions of ecosystem services related to the park were asked (e.g. "I believe that Tettegouche State Park is particularly important because it is a place of scenic beauty"). The ecosystem services items were based on the Common International Classification of Ecosystem Services (CICES, 2013, 2016). Analysis used descriptive statistics and a factor analysis to determine groupings of perceived ecosystem services and management actions. Results indicated a positive park experience with respondents indicating that they intended to revisit the park. Factor analyses revealed visits for "A place of scenic beauty", "A place for hiking", and "A place for the use and enjoyment by people". Management views were to "Provide more information about plants and animals along the trails" and "Educate more about sustainability of park resources". These results indicate a challenge to park managers to manage the park for a more deliberately improved visitor experience beyond resources protection and more toward education provided about sustainability of the resource. This can be a dilemma for PNA managers because maintaining the balance between an enhanced visitor experience through additional signage can conflict with sustainability of the natural resources. This can also be a conflict because increased use can directly conflict with sustainability of the PNA (Francis, 2016; Lofthouse & Simmons, 2016).

Keywords: Ecosystem Services, Protected Nature Areas, Park Management, Sustainability, Nature-based Tourism

1. Introduction

The ecosystem services concept has been proposed as a new conceptual tool for recognizing the dependence of human societies and their development on the natural systems on Earth. Ecosystem services research has become a major academic field, drawing in various academic disciplines, perspectives, and research approaches (MEA, 2005; Abson et al., 2014).

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The multifaceted concept of “ecosystem services” includes a normative component, which has strong implicit links to the notion of sustainability (MEA, 2005). A balance between conservation aims and human needs should be considered when managing a natural resource such as a park. In this context, the ecosystem services concept may potentially be a response to a more integrated approach to ecosystems for a balance between human needs and conservation representing the interaction of ecological and social spheres (Palomo et al., 2014).

Nature-based tourism (NBT), one of the ecosystem services, can be a two-edged sword by providing an economic initiative for the destination which influences management of protected nature areas through human impacts on the area. Even in their simplest forms descriptions of ecosystem services and their human benefits provide overt links to the role and functions of leisure, recreation and tourism (Simmons, 2013). Nature-based tourism and outdoor recreation can be key factors of human wellbeing and can provide a key interface between the different dimensions of environmental services (i.e. the tangible bio-physical vs. the intangible cultural services and their related health and wellbeing dimensions).

The NBT sector depends on the biophysical environment and ecosystem functions for land (e.g. accommodation & roads), water, energy inputs, minerals, biodiversity, and a whole host of ecosystem services such as climate and greenhouse gas regulation and soil formation as well as an outcome of a sense of well-being through the beauty of nature. Together, the biophysical environment and ecosystem functions provide numerous direct and indirect inputs into the NBT sector. Clearly, if these resources or ecosystems services are depleted or degraded over time, the ecological sustainability of the NBT sector is threatened resulting in diminished well-being (Simmons, 2013).

The resource intensity of NBT can be balanced against the argument that well-planned and well-managed NBT has become one of the most effective tools for long-term conservation of biodiversity when the right conditions such as social and physical carrying capacity, management capacity, and clear and monitored links between NBT development and conservation management are balanced (MEA, 2005), (Figure 1).

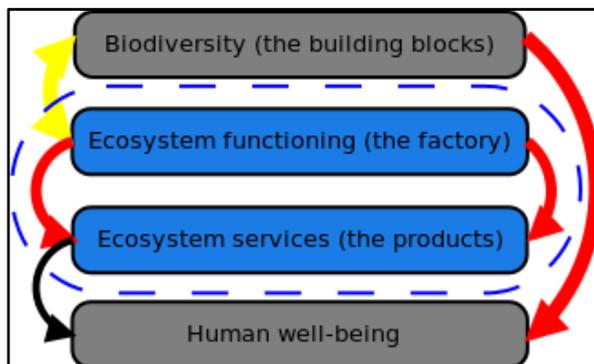


Figure 1. The chain of interaction between biodiversity, ecosystem functioning, ecosystem services, and human well-being. There is some feed back from ecosystem processes (functioning) to biodiversity (Diversitas: integrating biodiversity science for human well-being, 2016).

Protected nature areas (PNA) are important resource areas in terms of protecting biological diversity. Protected areas have national and international management strategies to protect the natural ecosystem. Nature-based tourism, on the other hand, is the most important human activity interacting with PNA's. Protected nature areas need NBT and NBT needs protected areas because PNA's exist in part for tourists to enjoy the beauty of nature. Though the relationship between protected areas and NBT is complex and sometimes adversarial, NBT has always been an important component in the management of protected areas (Eagles et al., 2002).

The management of protected areas and parks is a complex process. For ecosystem services management to be effective in protected areas, visitor perceptions of land use should be considered. The basic principles of sustainable PNA management are to understand visitor expectations towards park ecosystem services. Effective park management requires having detailed information about park ecosystem services and determining the strategies to evaluate the risks against these services. When visitors are aware of the objectives of park management, they tend to become more sensitive towards managerial practices and processes (Crick-Furman and Prentice, 2000).

Decisions made by park managers related to NBT activities affects the PNA itself as well as the local community, visitors, scientists and entrepreneurial tourism operators associated with the PNA. Planners should particularly consider the needs of the local community and tourists in relation to conflicting roles towards the protection of nature (Huang et al., 2008). People's personal perceptions of the world are related to their needs, motivations, personal attitudes and values. People's values give direction to their thoughts, choices and actions (Ballantyne et al., 2009). While visiting an area, tourists have many perceptions of and attitudes towards that specific area and/or site. Nature-based tourists visit an area for many reasons including learning information about nature, exercise, feeling a sense of personal success, spending quality time with their friends, strengthening their family ties, discovering cultural values and promoting the protection of the area (Ewert, Gilbertson, Yuan, and Voight, 2013; Eagles et al., 2002). Further, destination expectations including tourists' perceptions of an area can influence their recreational experiences, satisfaction and future behaviors toward that area (Lee, 2009). In managing protected nature areas, planners and managers should understand the visitors' attitudes towards the area for a planned and sustainable management scheme (Tosun, 2000).

The first step of determining the park-tourism relationship to ensure management plans for sustainability is to understand the perceptions, wishes, needs and behaviors of the visitors (Hodur, 2010; Smith, 2008, Settachai, 2008). For sustainable NBT plans, the biggest obstacle facing NBT planners is to determine the expectations of tourists. Thus, managers need to plan for a variety of appropriate uses by tourists (Eagles et al., 2002; Kelly et al., 2007). Tourists' perceptions of a park can affect their attitudes towards the management of the park. For instance, tourists having environment-centered perceptions are more likely going to support the practices oriented towards the protection of the park rather than the management of the park for development (Kalterborn et al., 2011). Tourism operators and area managers should be innovative and cooperative for tourists to have a better and more sustainable visiting experience (for example, providing frequent scenic overlooks and resting areas to allow for family participation).

There are various studies that have investigated visitors' perceptions of and attitudes towards NBT and outdoor recreation activities in a specific area (Ağaoğlu et al., 2006; Huang et al., 2008; Lee, 2009; Pearce and Kang, 2009; Reichel et al., 2008). Examples are: tourist behaviors in protected nature areas (Brown et al., 2010), preferences and values of tourists (Chaminuka, 2012; Crick-Furman and Prentice, 2000; Li, 2000), tourists' environmental awareness and experiences in tourism activities (Ballantyne et al., 2008; Ballantyne et al., 2009; Ballantyne et al., 2011), effects of different variables on the tourism experience (Bojanic, 2011; Marques et al., 2010; McGeheea et al., 2007; Okazaki and Hirose, 2009; Thrane, 2012). Additionally, studies about tourists' level of satisfaction, attitudes and perceptions related to a specific area have been investigated (Bornhorst et al., 2010; Chen and Chen, 2010; Chen et al., 2011; Chen and Chen, 2011; Goossens, 2000; Larsen et al., 2009; Lee et al., 2009; Mohsin, 2005; Okello and Yerian, 2009; Zabkar et al., 2010). This range of studies illustrates the broad range of NBT research that addresses the diverse expectations of use by PNA visitors.

Studies associated with ecosystem services of protected nature areas, natural values in parks and visitor attitudes towards the relationship between these values, plus services and management have also been examined (Daniel et al., 2012; Simmons, 2013; Wang et al., 2006). Beery et al. (2016) examined the perceptions of Swedish municipal stakeholders for the ecosystem services concept. Aretano et al., (2013) evaluated the dynamics of environmental services linked to the changes of the landscape of the Vulcano Island (southern Italy) where NBT is the primary force for management of these sites. Whitelaw et al., (2014) reviewed the relationship between NBT and protected nature areas to assess opportunities to assure effective stewardship by visitors. Zhang et al., (2012) presented a quantitative analysis on the effects of NBT disturbance which provided direction for improved management. Zhao and Jia (2008), developed a double-layer management model of regional ecosystem services, composed of natural ecosystem management and macro-control of society and the economy, which was used to analyse the feasibility of ecotourism development in Lugu Lake region.

Bengston, Fan and Celarier (1999) evaluated values and benefits of forests and forest eco-systems under four categories: recreational, material, ecological and spiritual values. Gilbert, Manning, Negra and Koenemann (1996) subsumed park values under ten main categories based on wildlife literature and their visitor observations. Manning and Valliere (1996), on the other hand, by using the same categorization, investigated visitors' attitudes towards the management of wildlife. Borrie et al., (2002) focused on the perceived values of visitors visiting Yellowstone National Park and the support they give to the management of the park. Kaltenborn, et al., (2011) explored visitors' attitudes towards park management and its' qualities. They studied how visitors perceived the management of the Tanzanian Serengeti National Park. Specifically, visitors' perceptions of the qualities of the environment and park management on the visitor experience were investigated. The general conclusion of these studies find that nature-based tourists value protected nature areas and have an expectation for the PNA managers to protect the park in a sustainable manner.

Lee (2009) developed a wetland tourism behavior model by using the variables of destination images, attitudes, motivations, satisfaction and future behaviors of the visitors visiting the areas in the southwest of Taiwan. This model indicates that the

destination affects satisfaction and subsequent behaviors and motivations in deciding to visit the PNA and while visiting the selected PNA. Consequently, it is clear that the perceived quality of the visitor experience is an important aspect of ecosystem services. These values can influence management plans of the PNA that protect the natural environment and by contributing to the well-being of the visitor experience.

The purpose of this study was to determine the perceptions of nature-based tourists visiting Tettegouche State Park in Northeastern Minnesota, U.S.A. Specifically, we sought to determine the perceptions of the nature-based visitor and the quality of their park experience in context of the ecosystem services and the associated managerial practices provided by park managers. Finally, what is the relationship between the variables of visitor experience and park management related to the components of ecosystem services?

2. Study Area

Tettegouche State Park is located in Northeastern Minnesota on the north shore of Lake Superior 58 miles (93 km) northeast of the city of Duluth. The park is 9,346 acres (3,782 ha) and has six inland lakes known for their water quality and diversity of fish species. The park also has four waterfalls, and a scenic beach on Lake Superior. One waterfall, called "High Falls" is located on the Baptism River and is the highest waterfall within Minnesota (70 feet high (21 m)). The park contains 22 miles (35 km) of hiking trails, 12 miles (19 km) of ski trails, and access to the Superior Hiking Trail which runs from the Canadian border to Duluth, Minnesota (296 miles/476 km).

The Tettegouche Park's name stems from the Tettegouche Club, an association of local businessmen which purchased the land in 1910 from the Alger-Smith Lumber Company. The club's members protected the area until its sale in 1971 to the deLaitres family. In 1979, the State of Minnesota acquired 3,400 acres (1,400 ha) from the Nature Conservancy, including Tettegouche Camp. The land was added to the Baptism River State Park, which was renamed Tettegouche State Park.

The North Shore of Lake Superior is a combination of rock cliffs, pebble beaches, and bold headlands. The landscape owes its character to the erosion of bedrock by running water and glaciers, and especially to the glacial excavation of the Lake Superior basin. (Moss, C.; RZarth, R.; & Matsch, C. 1979).

The wide variety of plant communities in the park supports more than 40 species of mammals. Most commonly seen are white-tailed deer (*Odocoileus virginianus*), snowshoe hare (*Lepus americanus*), red squirrel (*Tamiasciurus hudsonicus*), and beaver (*Castor canadensis*).

The park has numerous scenic overlooks, including a self-guided interpretive trail to Shovel Point. Shovel Point is a unique feature of the park because it is a peninsula jutting into Lake Superior that has created a sub-alpine micro-habitat. Shovel Point is one of the most photographed sites in all of the Minnesota state park system (Minnesota Department of Natural Resources, 2014). The park contains 34 semi-modern campsites (flush toilets and showers), 13 cart-in campsites, and five picnic areas. There is a visitor center open year-round which was newly constructed and opened in 2014.

Tettegouche State Park is a well-known and popular recreational destination. It is the

fourth most frequently visited park in Minnesota (Minnesota Department of Natural Resources, 2014). The annual average number of visitors to park is between 300,000 and 400,000 (Attendance Report for Tettegouche State Park, 2013). When the numbers of the visitors between 2003 and 2013 are examined, it is seen that the park was most frequently visited in 2006 and least frequently visited in 2012. The decrease in the number of visitors in 2011 resulted from the closure of visitor center and continuing rebuilding process in addition to an unusually wet and cold summer (Figure 2).

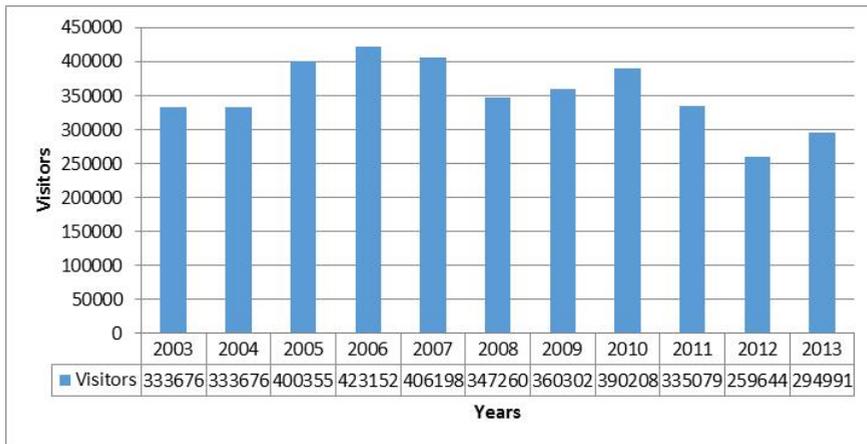


Figure 2. Annual average number of visitors to Tettegouche State Park (2003-2013).

There are many opportunities for nature-based activities in the park. For example, cross-country skiing, snowshoeing, snowmobiling, whitewater and sea kayaking, canoeing, archery, rock climbing, mountain biking, atv riding, nature education, outdoor photography, geocaching, backpacking, camping and fishing are some of activities for the park. However, recent attendance data trends show interest in the park continues to follow a seasonal pattern with a high in August of more than seventy thousand visitors, and a low in December of approximately eight thousand visitors. The highest visitation rates to Tettegouche State Park are during the summer months. The number of visitors visiting Tettegouche State Park in August 2013 was 65,548. Of these, 59,432 were daily visitors and 6,116 were camping visitors (Attendance Report for Tettegouche State Park, 2013). On the other hand, summer visitation was described as a time that is comprised mostly of families; fall is a time when the majority of visitors are retirees; and winter is when more young adults and locals tend to use the park. Activities recommended for summer months are hiking, rock climbing, biking, sea kayaking, archery, fishing, and camping.

The trails within the park offer a variety of hiking experiences from high cliffs along the Lake Superior shoreline to hikes along the Baptism River to view 3 scenic waterfalls plus loop trails that wind around its interior lakes. About 12 miles (19 km) of the Superior Hiking Trail cross through the park. The Superior Hiking Trail is a separately managed trail that runs from Duluth to the Canadian border (310 miles/499 km).

Rock climbing has grown to be a major recreational sport in the United States (Gilbertson at al, 2004). The park is one of only four state parks in Minnesota offering

rock climbing. Shovel Point lies within the boundaries of the Tettegouche State Park has become one of the premier climbing sites in Minnesota (Thompson, 1996). Both Shovel Point and the Palisade Head cliffs are popular spots offering climbing directly over Lake Superior. Shovel Point has climbing routes for beginner to expert climbers. Palisade Head, which is also in the park, has many climbing routes for the advanced and expert climbers (<http://www.northshorestateparks.com/tettegouche.htm#climb>).

The activity with the most frequent participation in this study (August 1-14, 2013) was hiking (F=213), followed by sight-seeing (F=189), participating photography (F=100) and looking at flowers (F=78)(Table 1).

Table 1. Frequency of participation by activity type

Activities	F	Activities	F
Hiking	213	Rock climbing	43
Sight-seeing	189	Visiting rest area	38
Participating in photography	100	Visiting tourism information center	33
Looking at wildflowers	78	Sea kayaking	3
Driving for pleasure	50	Other	16

3. Methodology

3.1 Study Group

Out of 65,548 annual visitors our sample size was n=222. We collected data August 1-14, 2013. The questionnaires were administered within four days, two of which were weekdays and two of which were weekends. The two sites used to collect data were Shovel Point and the High Falls trail of the Park. All visitors who passed by an established rest site along the two primary trails in the park were asked whether they would like to participate in the study. Less than 10 visitors declined to participate in the study.

3.2 Data collection and analysis

The participants were administered a questionnaire consisting of four sections. The first section asked information about respondent demographics. The second section inquired about the respondents' purpose and quality of their visit. Third, 14 value items were used to elicit visitors' perceptions of ecosystem services related to the park (e.g. "I believe that Tettegouche State Park is particularly important because it is a place of scenic beauty). To construct the ecosystem services items, we used observations in the Tettegouche State Park based on the Common International Classification of Ecosystem Services (CICES) developed by the European Environment Agency (CICES, 2013, 2016). Visitors were asked to rate how much they agreed that each was particularly important to the overall ecosystem services of Tettegouche using a Likert scale that ranged from 1 ("strongly disagree") through 5 ("strongly agree").

Finally, the fourth section asked participants about their perceived support levels for 12 park-related action items. To establish these 12 items, we interviewed the assistant park manager about park management. Using data obtained from this interview combined with visual observations about park management strategies such as trail design, layout, and construction, 12 management action items were constructed using a Likert scale that

ranged from 1 (“strongly oppose”) through 5 (“strongly support”). The instrument reliability was $\alpha = .88$.

Analysis of the data was conducted using SPSS v.18. Frequencies were run for the first two sections of the questionnaire. For the third and fourth sections, a factor analysis was conducted to group the perceived ecosystem services and supported management actions. Within the context of descriptive analysis, mean scores obtained for each item were evaluated. A Pearson Correlation analysis was carried out to determine the relationship between the perceived ecosystem services and supported actions.

4. Results

Out of the participants of the study, 59.5% were females. Age groups were: 26.6% = 16-24 years old, 22.5% = 25-34 yrs. old, 14.9% = 35-44 yrs. old, 18% = 45-54 yrs. old, and 18.1% = 55 and over.

Educational backgrounds were: 24.2% were high school graduates, 51.8% were 4-year college graduates, 24.0% of the participants held a master’s or PhD degree. This data reflects that the respondents had a high level of education.

Respondents stated their marital status as follows: 44.6% were single, 41.4% were married with children and 14% were married without children.

When the data concerning the characteristics of the visits of the participations were examined, we found that 51.4% of the participants visited the park for the first time, 28.4% of them visited the park 2-4 times and 11.7% of them visited it more than 8 times. While 61.3% of the participants visited the park with their families, 2.3% visited it alone. Fifty-nine percent of the participants visited the park in groups of 2-5 people, 14.9% visited the park within groups of more than 10 people. While 67.6% of the participants were daily visitors, 32.4% were camping visitors. Out of a scale of 5, the mean satisfaction score of the participants was found to be 4.64 that was between “satisfied” and “absolutely satisfied”. 95.9% of the participants stated that they would recommend the park to other people.

4.1 Perceived park ecosystem services scale

In order to test the suitability for factor analysis, a Kaiser-Meyer-Olkin (KMO) coefficient of the data collected from the ecosystem services section of the questionnaire was .89 and the Bartlett test was found to be significant ($p < .000$).

These two values show that the data were suitable for a factor analysis. Fourteen items were analyzed and were subsumed under two factors having an Eigen value greater than 1. The first factor accounted for 44.5% of the total variance with the total variance explained by two factors at 59.65% (Table 2). Those two factors suggest that Factor 1 emphasizes “nature and recreation” such as scenic beauty, wildness, hiking and recreational activities. Factor 2 emphasizes “protection, education and sustainability” such as protection for wildlife habitat, learning about nature, and to preserve natural resources for future use.

Table 2. Factor analysis and descriptive statistics of perceived ecosystem services of park scale

Items	Rotated component matrix		Mean	SD
	Factor 1	Factor 2		
A place of scenic beauty			4.73	.64
A place for the use and enjoyment by people			4.60	.70
A place for hiking			4.67	.68
A place for all living things to exist	.86		4.51	.85
A place everyone should see at least once	.86		4.36	.95
A place for recreational activities	.85		4.29	.94
A place for wildness	.76		4.46	.93
A site to renew your sense of personal well being	.71		4.41	.78
A place for education about nature	.69	.83	4.06	1.19
Protection for fish and wildlife habitat	.68	.78	3.88	1.49
A chance to learn about nature	.61	.75	4.18	1.05
A place for scientific research and monitoring		.72	3.83	1.48
A protector of threatened and endangered species		.72	3.95	1.46
A reserve of natural resources for future use		.51	4.16	1.19
Note: Explained total variance = 59.7%	Factor 1: 44.5%	Factor 2: 15.14%		

The mean scores from the items of the “perceived ecosystem services of park” section of the questionnaire show that the highest scores belong to items “A place of scenic beauty”, “A place for hiking”, and “A place for the use and enjoyment by people” in the nature and recreation factor (M = 4.73; 4.67; 4.60, respectively). The lowest score belonged to the item “A place for scientific research and monitoring” in the protection, education and sustainability factor (M = 3.83).

4.2 Supported management actions scale (SMA)

Based on the KMO and Bartlett test of the data indicated earlier, data for the SMA were suitable for a FA. Twelve items were analyzed and were subsumed under two factors having an Eigen value greater than 1.

Table 3. Factor analysis and descriptive statistics of supported management actions scale

Items	Rotated component matrix		Mean	SD
	Factor 1	Factor 2		
Provide more information about things to see and do outside the park			3.52	1.01
Provide more information about things to do in the park			3.73	.9
Provide more information along trails identifying points of interest	.80		3.76	1.00
Increase facilities provided to visitors to encourage them to use78		3.49	1.11
Provide more park rangers in the park to educate and assist visitors	.72		3.24	1.08
Provide better services along the trails (for example: toilet, water etc.)	.70		3.44	1.12
Provide more accommodation options in the park	.69		3.21	1.19
Be more assertive enforcing safety rules and regulations in the park	.67		3.04	1.16
Manage in a more sustainable manner (for example: Use of solar power)	.66	.88	3.78	1.21
Educate more about sustainability of park resources	.54	.81	3.82	1.07
Provide more information about plants and animals along the trails		.64	3.95	.95
Continue and increase advertisement of other areas to disperse use		.55	3.28	1.10
Note: Explained total variance: 60.86 %	Factor 1: 51.98 %	Factor 2: 8.87 %		

The first factor accounted for 51.98% of the total variance and the total variance explained by the two factors was 60.86% (Table 3). Those two factors suggest that Factor 1 emphasizes “Actions for visitors” and Factor 2 emphasizes “Actions for sustainability”. Reliability for this scale was $\alpha=.91$.

The mean scores from the items of supported management actions section show that the highest scores belong to items “Provide more information about plants and animals along the trails” and “Educate more about sustainability of park resources” in actions for sustainability factor (they are $M = 3.95$ and 3.82 , respectively). The lowest score was the item “Be more assertive enforcing safety rules and regulations in the park” in actions for visitors factor ($M = 3.04$).

When the relationship between the scores was considered between respondents viewing Tettegouche State Park as a “nature and recreation” area for the management practices they supported, no significant correlation was observed between respondent perceptions of the park as a “nature and recreation” area and the visitor-oriented practices. A low linear correlation was found with sustainability oriented practices ($r=.22$).

The relationship between respondent scores viewing Tettegouche State Park as a “protection, education and sustainability” area for the management practices they supported was a low linear correlation between the perception of the park as a “protection, education and sustainability” area and visitor sustainability-oriented practices ($r=.15$, $.20$, respectively) (Table 4).

Table 4. Pearson Correlation analysis related to the visitors’ ecosystem services of park and the management practices they support

		Actions for visitors	Actions for sustainability
Nature and recreation	Pearson Correlation	.08	.22**
	Sig. (2-tailed)	.22	.001
	N	222	222
Protection, education and sustainability	Pearson Correlation	.15*	.20**
	Sig. (2-tailed)	.03	.003
	N	222	222

**Correlation significance at the 0.01 level (2-tailed).

*Correlation significance at the 0.05 level (2-tailed).

5. Conclusions

The satisfaction level of the summer visitors’ perceptions toward Tettegouche State Park about the ecosystem services of park and the correlation between the management practices they supported were found to be high. Ninety-six percent of the participants stated that they would like to recommend this park to other people. This finding is supported by Petrosillo et al. (2007) in a study conducted in a sea protection area. They concluded that the tourists were content with their visit and would like to visit the area again. Kalternborn et al., (2011) also reported that the tourists were highly satisfied with their area visits.

The respondents’ perceptions of park ecosystem services were collected under two main headings. The visitors’ perceptions of the ecosystem services related to the parks nature

and recreation practices were found to be high. Respondents preferred the park particularly for its natural beauty, trekking and other outdoor recreational practices. In addition, visitors' other main perceptions of the park were oriented towards the protection, sustainability and educational values of the park.

Parallel to our study, Kafarowski (2003) reported that tourists having a high value of recreation preferred more recreational and entertaining activities. Lee (2009) concluded that the destination image directly affects the level of satisfaction and indirectly affects future behaviors. While the attitudes of the tourists directly influence their level of satisfaction, their motivation to visit the park was also found to directly affect their satisfaction of the park experience.

Management practices supported by the visitors were subsumed under two main headings. The respondents emphasized that the practices of the management should be primarily directed towards the sustainability of the park and management should be focused toward the visitors. Respondents supported the idea that educational managerial practices should be increased.

In light of these findings, it is seen that the management practices supported by the respondents vary depending on their different perceptions of parks' ecosystem services. Respondents having positive values toward nature and recreational ecosystem services supported the practices directed toward sustainability of the park. Parallel to this finding, Borrie et al. (2002) found that visitors having nature-based values visiting Yellowstone National Park do not support the practices such as opening new roads that can destroy the natural features of the park. Instead, they supported the practices conducive to the sustainability of the park. In a study evaluating tourists' attitudes towards and perceptions of a national park in Romania, it was found that the tourists supported the practices aiming to protect the park and they were willing to pay more for this purpose (Szell, 2012). On the other hand, nature-based tourism represents a major opportunity and nexus for managing the interaction between ecosystems and people, including the development of a constituency that appreciates and supports protection of ecosystems (Daniel et al., 2012).

However, no significant correlation was found between the perception scores of the visitors having natural and recreational ecosystem services values and those types of management practices that were directed for visitors. While this finding is not consistent with the literature, it may be that the visitors either took those management practices for granted or didn't recognize what was being provided. Further, and contrary to this study, Borrie et al., (2002) found that visitors oriented to nature and human-focused values of Yellowstone National Park supported the development of more accommodation facilities and increased opportunities to make use of all the areas of the park.

In a study focusing on the visitors of Serengeti National Park, Tanzania, it was reported that visitor environmental attitudes affected those visitors' attitudes towards the management of the park. Tourists having high environment-centered values supported the managerial practices aiming to control tourism activities and their effects. Moreover, these tourists were more interested in the discovery of nature, wildlife and local culture (Kalterborn et al., 2011).

Furthermore, the visitors having higher perceptions of the protection, education and sustainability services of Tettegouche State Park supported both visitor-oriented and

sustainability-oriented practices in the management of the park. There are various studies in recent literature concluding that tourists support sustainability-oriented practices. Borrie et al., (2002) reported that visitors having human-centered thoughts believe that nature-based education requires more park rangers to be hired. Hudson and Ritchie (2001) found that English and American tourists having kayaking holidays attached greater importance to accommodation facilities that attend to environmental applications such as sustainable practices. This may be because the English have a high environmental sensitivity and American tourists like to visit protected nature areas. In Norway, Kaltenborn and Williams (2002) concluded that nature-based tourists tend to have higher positive attitudes towards the protection of nature and wildlife. Activities such as hunting, agricultural applications and research efforts were less supported by tourists. Kruja and Hasaj (2010) found that tourists support tourism management plans directed toward sustainable tourism.

Our findings indicate that the primary importance for park managers should be attached to the sustainability of the park in their future management practices. Special attention should be paid to the provision of educational opportunities informing tourists about the ecosystem services in the park and associated appropriate activities that can be experienced in within the park. Finally, it was clear that nature-based tourism lends to enjoyment and appreciation of nature, meaning that nature-based tourism and associated park management practices provide for the well-being of the visitor from the nature-based tourism experience. This insight makes clear that ecosystem services is vital for both the management of the protected nature area and for those who visit the area.

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