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# Recreationist perspectives, attitudes, and perceptions towards national park management in Sri Lanka

## Abstract

*Sri Lanka's National Parks (NPs) are becoming prime destinations for both foreign and domestic tourists. With rising heterogeneous demand for nature-based experiences, NP administrators are facing the challenge of re-crafting policy and nature-based use-models to meet the diverse expectations of visitors while achieving conservation goals. As such, an understanding of NP visitor perspectives is essential in making sound management decisions to effectively accommodate conservation and recreational uses. This study explores visitor perceptions of roles, functions, policies and best uses of NPs in Sri Lanka. On-site interviews from 682 visitors to two highly-visited NPs revealed that a majority of respondents view "ecological protection" as the most important role of NPs. Recreation and commercial development-related roles were ranked lower in overall importance. Factor analysis and subsequent ANOVA comparisons further identified core belief constructs that ultimately supported the notion of NP policy should be more protection-oriented rather than accommodating to recreation. This is not to say that recreation should not be one of the multiple uses of NPs from the respondents' viewpoint. Although non-consumptive activities were rated most appropriate, visitors also desire that park infrastructure and visitor services to be developed and maintained at an acceptable level in order for them to satisfactorily experience the destination.*

*Key words:* visitor attitudes; nature-based tourism; national parks; ecotourism; visitor management; Sri Lanka

## Introduction

Tourism, the largest service-sector industry in the global economy in terms of value, can play a significant role in promoting national economic development in developing countries endowed with natural assets. Historically, Sri Lanka, the focal country of this study, has lagged neighboring Southeast Asia countries in terms of destination tourism development due to a three-decade civil war that hindered social, economic and environmental stability on a national level. Since the conclusion of the war in 2009, Sri Lanka has been on a rapid and steady path to economic recovery, including developing the potential to create a rich, diverse, and safe tourism industry.

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As negative environmental and socio-cultural impacts of mass tourism become more apparent, the appeal of alternative forms of tourism has increased. As a result, significant growth in nature-related tourism including ecotourism, visitation to National Parks/protected areas, and rural/cultural tourism has been observed in the global tourism market during the past two decades (Eagles, McCool & Haynes, 2002; WTO, 2004; TIES, 2005). Such nature-based alternative forms of tourism have wide implications for biodiversity-rich tropical countries such as Sri Lanka.

The *International Union for Conservation of Nature* (IUCN) protected area classification describes National Parks (NPs) as "large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible spiritual, scientific, educational, recreational and visitor opportunities" (Dudley, 2008). As such, recreational and tourism opportunities is an important dimension that needs to be considered in establishing NPs as it can generate public interest, and ensure the economic viability of the establishment (Suntikul, Butler & Airey, 2010).

In Sri Lanka's NPs, wildlife observation and study are allowed by mandate (Fauna and Flora Protection Ordinance, 1937) and presently, Sri Lanka's NPs are increasingly becoming prime tourism destinations for both international and domestic tourists (SLTDA, 2012). This emerging trend has positioned ecotourism and nature-based wildlife tourism in a strategic position to positively contribute to the sustainable management of protected areas, i.e. income generated through tourism activities can be channeled into conservation efforts in protected areas. Further, tourism operations in NPs can help raise awareness of environmental issues among visitors while positively influencing their attitudes towards environmental conservation (Liliehalm & Romney, 2000; Suntikul *et al.*, 2010). However, unplanned tourism development in protected areas can also lead to negative impacts on biological and natural resources (Weaver, 2001) as well as potentially foregoing economic contribution.

With rising demand, nature-based tourism and ecotourism markets have become more heterogeneous (Kerstetter, Hou & Lin, 2004; Perera, Vlosky & Wahala, 2012). Most nature-based and ecotourism activities around the world are predominantly based on NPs and other protected areas. As such, administrators of NPs are facing the quandary of positively meeting the diverse expectations of tourists while effectively conserving the biological and natural resources. In many developing countries, the lucrative income from tourism activities in NPs has often sidelined conservation priorities (Senevirathna & Perera, 2014; Kaltenborn, Nyahongo & Kideghesho, 2015). In this background, the real contribution of nature-based tourism or ecotourism to biodiversity conservation in NPs has also become under scrutiny. Visitors are the core of ecotourism management in NPs as management actions impact visitors' tourism experience (Chin, Moore, Wallington & Dowling, 2000; Perera & Vlosky, 2013). Hence, in making sound management decisions and policy changes to accommodate the dual mandates of conservation and recreational utilization of NPs, an understanding of park visitor perspectives is essential. In this study, we examined the perceptions and attitudes of visitors towards the management aspects of two NPs in Sri Lanka, which are highly visited by both local and foreign tourists.

## Visitor perception research on national parks and protected areas

Past research has explored the association between visitors and protected areas from many perspectives. A number of recent studies have examined visitor attitudes and motivations in the context of their "expected socio-psychological outcomes" from engaging in recreational activities in wilderness areas. Environmental attitudes have been found strongly related to nature-based tourism motives (Luo & Deng, 2008), and decisions to expend leisure time to visit wilderness areas are often influenced by one's environmental attitudes and knowledge of conservation issues (Singh, Slotkin & Vamosi, 2007; Wolf-Watz, 2014). In this regard, many tourism scholars have investigated the "push motives" of visitors to wilderness areas (Fielding & Pearce, 1992; Uysal, McDonald & Martin, 1994). These studies have revealed relaxation, novelty, enjoyment, and prestige as some of the main push motives that drive an individual to visit a wilderness area.

In a survey of domestic and foreign backpackers to NPs in Australia, Loker-Murphy (1996) identified excitement, adventure, and meeting local people as main motivational factors of visiting. In a study of visitors to forest-based ecotourism-oriented sites in Sri Lanka, Perera *et al.* (2012) identified "to be in a natural setting", "to spend time with family or friends", "to spend free time" and "appreciate the ecological landscape" as primary motives to visit such sites. A study on visitors to coastal wetlands in Taiwan found "adventure" and "education" as primary motives for visitation in addition to "pursuit of physical health", which is a rarely cited expected socio-psychological outcome of visiting a nature-based or wilderness areas (Kerstetter *et al.*, 2004).

Several authors have specifically studied ecotourists' motivations of travelling to nature-based areas (Eagles & Cascagnette, 1995; Holden & Sparrowhawk, 2002; Hughes & Morrison-Saunders, 2003; Luo & Deng, 2008; Strobl, Teichmann & Peters, 2015). In general, these studies highlight ecotourist bio-centric attitudes and motives that are associated with appreciating pristine natural environments, having deep commitment to environmental conservation issues, and a desire to have deep interaction with nature. Such studies better frame what images of nature do individuals seek or expect by engaging in recreational activities in wilderness areas, and provide valuable information for wilderness area managers to effectively develop improved recreational opportunities.

Identifying visitor preferences of site attributes is important as they can highly influence visitor perceptions towards NPs and their management. "Pull factors" discussed in tourism literature are often related to features, attractions, and attributes of a destination. In the context of wilderness recreation, main pull factors seem to focus on biological diversity, natural resources, and historical or cultural resources of a site (Obua & Harding, 1996; Kim, Lee & Klenosky, 2003). However, studies indicate that numerous other factors can influence visitor attitudes and preferences toward site attributes.

Tourism scholars have often drawn comparisons between "hardcore" and "soft-core" ecotourists in the context of wilderness recreation research. Hardcore ecotourists are described as self-motivated tourists that have deep commitment to environmental issues, tend to engage in activities that support enhancement sustainability, and look for deep meaningful interaction with nature; while soft-core ecotourists are characterized by a lesser degree of involvement with nature, and higher expectations of services and facilities (Weaver, 2001). Hardcore ecotourists who are frequent visitors to wilderness areas tend to have a more complex level of interaction with the site, relative to soft-core ecotourists (Hughes & Morrison-Saunders, 2003).

Studying wildlife viewing preferences of visitors to protected areas in South Africa, Lindsey, Alexander, Mills, Romaach and Woodroffe (2007) found that experienced hardcore wildlife viewers are more interested in bird and plant diversity, scenery, and rarer or less easily-observed species, while amateur or soft-core visitors are more interested in charismatic mega-fauna such as elephants, lions, and wildebeests. From the perspective of recreational facility development in wilderness areas, hardcore ecotourists have been found to be unsupportive of such development activities (Obua & Harding, 1996; Chin *et al.*, 2000). Soft-core ecotourists often rely on guided tours and tend to expect better facilities and on-site interpretation than hardcore ecotourists. For instance, a study on attitudes of tourists visiting nature reserves in China found that quality of tourist amenities was positively correlated with willingness to pay a higher entrance fee (Liu, Xiao, Li & Pechacek, 2013). While demanding higher quality tourist amenities, soft-core ecotourists tend to approve non-consumptive recreational experiences (Chin *et al.*, 2000; Deng, Walker & Swinnerton, 2005).

Numerous studies have further examined visitor attitudes toward use-limit policies, entrance or user fees, and limiting recreational activities (Bultena, Albrechta & Womble, 1981; Papageorgiou, 2001; Buckley, 2003; Huang, Deng, Li & Zhong, 2008; Liu *et al.*, 2013). Past studies further suggest that visitors with bio-centric attitudes seeking a deep interaction with nature are more supportive of visitor control and management policies. For instance, Bultena *et al.* (1981) studied the receptivity of backpackers to use limitations at Mount McKinley NP in Alaska, and found that they were highly supporting the idea of rationing access and use. They were also supportive of park management policies and advocated anti-development notions in wilderness areas. In contrast, surveying visitors to a NP in Austria, Arnberger, Eder, Alex, Sterl and Burns (2012) found that visitors with low wilderness affinity tend to have more negative attitudes towards nature conservation and visitor management policies at NPs.

Most studies on wilderness recreationist attitudes have been centered on North American and European domestic visitors. Wilderness recreationist attitude research on visitors to Asian destinations has received scant scholarly attention in literature until recently (Kerstetter *et al.*, 2004; Huang *et al.*, 2008; Perera *et al.*, 2012; Liu *et al.*, 2013). Specifically, in the context of wilderness recreation in Sri Lanka, no previous studies have attempted to explore visitor attitudes toward management of NPs. Hence this study bridges this literature gap by examining visitors' perceptions on the roles, functions, uses, and policies related to recreation in Sri Lanka's NPs. While addressing the information gap at local level, it further examines the environmental orientation of visitors to NPs and how it affects visitor perceptions on management of NPs, contributing to the global body of literature on visitor studies in protected areas. Such understanding is critical in effective tourism planning in PAs.

## Methods

### Development of research instrument

In this study, a structured questionnaire was used as the main research instrument. The questionnaire was designed to identify visitor attitudes and perceptions on NP roles, functions, desirable uses, and policies related to recreation. A set of 18 items to measure visitor attitudes towards the roles and functions of NPs, 21 items to identify perceived uses and activities of NPs, and another set of 12 items to

measure visitor attitudes towards NP policies were adopted from previous work (Borrie, Freimund & Davenport, 2002; Deng *et al.*, 2005; Huang *et al.*, 2008) and modified to suit the Sri Lankan context. The list of items was given to a panel of subject experts to establish the face validity. All these items were measured using a five point Likert scale anchored by 1 = strongly disagree to 5 = strongly agree, or 1= highly inappropriate to 5= highly appropriate. In addition, the questionnaire also gathered information on visitor demographics and trip characteristics. The questionnaire was pre-tested using a sample of 25 visitors before finalizing.

## Sampling and data collection

Minneriya NP (7°58'44"N & 80°50'56"E) and Udawalawe NP (6°26'18.04"N & 80°53'18.44"E) in Sri Lanka were selected as study sites. Both destinations are among the top five highly visited NPs in the country (SLTDA, 2012) located in the "Dry Zone" climatic region of the country. Elephants are the major attraction in both sites. Data collection was conducted from April to November, 2013, predominantly on weekends where higher visitor traffic was anticipated. Only visitors over 18 years of age were interviewed at the park exit. A group of five interviewers were employed in data collection. To minimize selection bias by interviewers, a systematic sampling technique was adopted with every one-in-third visitor being intercepted at the park exit to participate in the survey. Visitors who complied with the request to participate were interviewed while those who declined to participate were treated as non-respondents. Data were cleaned by performing a consistency check before proceeding to detailed analysis. Incomplete questionnaires with many missing responses were discarded. Data were analyzed using Predictive Analytics Software (PASW<sup>®</sup>) Version 18.

## Results

Out of 1,130 visitors approached at both sites, a total of 735 individuals participated in the survey (383 visitors at Minneriya NP and 352 visitors at Udawalawe NP), which accounted for a response rate of 65%. There were 682 usable questionnaires (368 from Minneriya NP and 314 from Udawalawe NP). This included 614 domestic visitors and 68 foreign visitors. General respondent socio-demographic characteristics are summarized in Table 1. The sample included 56.7% males and 43.3% females. Most respondents were in the age group of 26 to 45 years. Approximately 82% of the respondents had a high school education or above. This represents the highest level of education completed by respondents at the time that they participated in the survey. Approximately 30.1% of the respondents were first-time visitors to a NP in Sri Lanka while the majority (62.2%) has visited a NP at least once in the last five years. No significant differences were observed between responses for items in the questionnaire dealing with visitor attitudes and perceptions at the two study sites. Hence, responses were pooled in subsequent statistical analysis.

Table 1  
General respondent socio-demographic profile

Socio-demographic variable	Frequency	Percentage
Origin (n=682)		
Domestic	614	90.0
Foreign	68	18.0

Table 1 continued

Socio-demographic variable	Frequency	Percentage
Gender (n = 682)		
Male	387	56.7
Female	295	43.3
Age (n = 682)		
18-25	142	20.8
26-45	449	65.8
Above 45	91	13.4
Education (n = 682)		
Secondary school	122	17.9
Up to high-school or high-school with professional qualifications	401	58.8
Undergraduate degree or above	159	23.3
Individual monthly income (n=597)		
Local visitors (n=537)		Mean USD*
Foreign visitors (n=60)		306
		6,840

\*Currency conversion rate as of 30/09/2013: 1 USD = Rs. 130.

## Visitor attitudes and perceptions of national parks

Identifying visitor attitudes and perceptions towards NP roles and functions was one of the main objectives of this study. Respondents were asked to state their level of agreement for a list of 18 items related to roles and functions of NPs (Table 2). Over 77% of respondents either strongly or moderately agreed with first five items which are related to conservation and protection of biodiversity or natural environments. This indicates that respondents in general, had positive perceptions towards protective roles and functions of NPs. A majority of respondents (over 67%) further indicated positive agreement for items "visiting NPs can enhance people's affection to nature", "NPs provide economic benefits to the country" and "NPs are places for learning about nature", indicating their recognition of educational and economic functions of NPs. Interestingly, less than 17% of respondents positively viewed NPs as places for recreational activities and socializing (Table 2).

Table 2

### Visitor perceptions on NP roles and functions (n=682)

Items	Percent of respondents		Descriptive statistics	
	Strongly agreed (5)	Moderately agreed (4)	Mean	SD
<b>National parks ...</b>				
• first priority should be to protect the natural environment and wildlife	63.9	26.7	4.46	0.85
• are places for protecting the natural environment and wildlife	55.9	33.9	4.42	0.81
• are areas to protect endangered species of flora, fauna and their habitats	61.4	25.8	4.40	0.96
• function to preserve biological diversity	46.0	35.8	4.17	0.99
• are places to protect scenic beauty of nature	37.0	40.2	4.05	0.96
• visiting can enhance people's affection to nature	39.0	37.0	3.95	1.12
• provide economic benefits to the country	36.7	37.1	3.89	1.17
• are places for learning about nature	30.4	36.7	3.83	1.05

Table 2 continued

Items	Percent of respondents		Descriptive statistics	
	Strongly agreed (5)	Moderately agreed (4)	Mean	SD
<b>National parks ...</b>				
• function as places for spiritual fulfillment	20.1	32.4	3.30	1.31
• are reserves of natural resources for future use	21.4	27.3	3.26	1.32
• are tourist destinations	24.5	19.5	3.20	1.39
• are places for people's enjoyment	17.7	20.5	3.07	1.30
• are places for scientific research and education	7.2	31.7	2.96	1.18
• are places for protecting cultural and historical heritage	10.4	18.0	2.82	1.20
• are places to be protected for the enjoyment of future generations	8.9	16.4	2.50	1.30
• are places for commercial development of tourism	10.4	18.5	2.49	1.40
• are places for recreational activities	6.0	9.7	2.14	1.21
• function as place for socializing	5.4	11.1	2.11	1.23

The questionnaire also included a set of 12 items to measure visitor attitudes towards NP policies. Over 77% of respondents strongly or moderately agreed with statements related to a NP policy focused on offering greater protection to the natural environment and wildlife, while phasing out undesirable activities and limiting visitor numbers at NPs (Table 3). Negatively worded statements (last three items in Table 3) received lowest mean scores. These results in general indicate the respondents' preference for a NP policy oriented towards conservation and protection of biodiversity at the expense of recreation in NPs.

Table 3  
Visitor perceptions on NP policy (n=682)

Items	Percent respondents		Descriptive statistics	
	Strongly agreed (5)	Moderately agreed (4)	Mean	SD
• NPs should phase out inappropriate recreational uses within NPs.	69.2	21.8	4.51	0.94
• NPs should use protecting the natural environment and wildlife as the primary criterion for all resource and visitor management decisions within NPs.	57.8	29.5	4.41	0.82
• NPs should limit the numbers of visitors if the natural environment and wildlife of the parks are threatened.	52.5	30.1	4.24	1.01
• NPs should limit recreational/tourism activities, facilities and services if the scenic beauty of the parks is threatened.	43.3	34.6	4.11	0.99
• NPs are becoming more profit oriented by aggressively promoting nature-based tourism in NPs.	13.8	32.8	3.32	1.09
• Only small groups of tourists in 4WD cabs/safari jeeps should be allowed in NPs.	19.8	26.5	3.30	1.23
• NPs are becoming too concerned with protecting the natural environment and wildlife.	11.9	35.2	3.26	1.12
• NPs are too lenient in allowing recreation activities that harm the environment.	8.4	20.5	2.85	1.18

Table 3 continued

Items	Percent respondents		Descriptive statistics	
	Strongly agreed (5)	Moderately agreed (4)	Mean	SD
• NPs do not pay sufficient attention to the outdoor recreation.	7.3	16.7	2.85	1.05
• NPs are tending to unnecessarily restrict public enjoyment and use of parks in order to promote greater preservation of the park environment.	7.8	15.8	2.76	1.10
• Neither the provision of a wide variety of visitor activities nor commercial activity threatens the natural environment and wildlife of NFPs.	6.2	10.9	2.13	1.24
• NPs should be willing to compromise on protecting the park environment in order for visitors to experience as wide range of outdoor recreation activities as possible within NPs.	7.8	8.7	2.05	1.26

Identifying different activities and uses of NPs that are deemed appropriate by visitors was another objective of the study. A set of 21 items was used for this purpose. In order to facilitate further analysis, these uses and activities were grouped as highly appropriate (HA), moderately appropriate (MA), moderately inappropriate (MI), and highly inappropriate (HI) based on mean scores (Table 4). Non-consumptive uses such as observing wildlife and wildlife photography, as well as consumptive uses such as developing basic infrastructure facilities to support nature-based tourism and education were ranked highly or moderately appropriate by majority of respondents.

Table 4  
Visitor perceptions on items on appropriate uses and activities in NPs (n=682)

Items	Percent respondents		Descriptive statistics	
	MA	HA	Mean	SD
<b>Highly appropriate (score of 4 and above)</b>				
• Observing wildlife	29.6	60.0	4.42	0.91
• Sanitary facilities	32.7	48.1	4.17	1.04
• Pavilions for wildlife observation	32.7	48.5	4.15	1.09
• Wildlife photography	38.7	37.8	4.01	1.05
<b>Moderately appropriate (score of 3 to 3.99)</b>				
• Emergency medical services/centers	36.1	38.3	3.94	1.14
• Operation of visitor information/interpretive centers	44.4	28.7	3.86	1.05
• Sightseeing by safari jeeps	32.6	32.4	3.69	1.27
• Educational centers/museums	38.6	26.0	3.66	1.17
• Bungalows/eco-lodges operated by park management	34.2	26.7	3.54	1.29
• Camping	32.0	15.2	3.15	1.31
<b>Moderately inappropriate (score of 2 to 2.99)</b>				
• Restaurants/boutiques	22.3	11.7	2.83	1.32
• Picnicking	24.8	6.2	2.67	1.25
• Souvenir stores	18.2	8.5	2.53	1.33
• Bungalows/eco-lodges operated by private sector	18.5	9.7	2.53	1.35
• Hiking/jogging/walking	18.9	7.3	2.39	1.33
• Non-motorized boating/canoeing	14.2	4.3	2.20	1.23
• Gathering natural edible products	5.9	1.9	2.02	1.02



Table 4 continued

Items	Percent respondents		Descriptive statistics	
	MA	HA	Mean	SD
<b>Highly inappropriate (score of below 2.00)</b>				
• Biking	4.3	1.6	1.67	0.94
• Power boating	5.4	2.3	1.67	1.03
• Recreational fishing	4.4	2.1	1.66	0.97

## Underlying dimensions of visitor attitudes and perceptions

In order to further explore the underlying dimensions of items related to NP roles and functions in Table 2, and items related to NP policies in Table 3, principal component factor analysis with Varimax rotation was performed on each set of items respectively. For items related to NP roles and functions, a Kaiser-Meyer-Olkin test statistic of 0.802 suggested the sampling adequacy to perform a factor analysis, while statistical significance for Bartlett's test of sphericity ( $p = 0.001$ ) indicated the items used to measure NP roles and functions are correlated. Accordingly, four factors with an eigenvalue of at least 1.00 or greater were extracted, those cumulatively accounted for 52.06% of the total variance. Factors were named as in Table 5 and the Cronbach's coefficient alpha exceeded 0.7 for first three sub-scales. In general, a value greater than 0.7 for Cronbach's alpha indicates sufficient scale reliability (Cortina, 1993). Accordingly, fourth factor was removed from further analysis.

Table 5  
Factor loadings and Cronbach's coefficient alphas for NP roles and functions sub-scales

Factor and items	Loadings	Eigen value	% Variance explained	Cronbach's $\alpha$
<b>Factor 1: Ecological protection</b>		3.67	20.41	0.73
• NPs function to preserve biological diversity	0.731			
• Protecting the natural environment and wildlife should be the first priority of NFPs	0.724			
• NPs are areas to protect endangered species of flora, fauna and wildlife habitats	0.655			
• NPs are places to protect scenic beauty of nature	0.646			
• NPs are places for protecting the natural environment and wildlife	0.617			
<b>Factor 2: Recreation</b>		2.86	15.88	0.71
• NPs are places for people's enjoyment	0.794			
• NPs are places to be protected for the enjoyment of future generations	0.722			
• NPs function as place for socializing	0.678			
• NPs are places for recreational activities	0.627			
• NPs are places for commercial development of tourism	0.564			
<b>Factor 3: Socio-economic benefits</b>		1.65	9.18	0.70
• NPs provide economic benefits to the country	0.732			
• Visiting NPs can enhance people's affection to nature	0.720			
• NPs are reserves of natural resources for future use	0.577			
• NPs are tourist destinations	0.558			
• NPs are places for learning about nature	0.429			

Table 5 continued

Factor and items	Loadings	Eigen value	% Variance explained	Cronbach's $\alpha$
<b>Factor 4: Socio-cultural values</b>		1.19	6.59	0.59
• NPs are places for protecting cultural and historical heritage	0.750			
• NPs function as places for spiritual fulfillment	0.572			
• NPs are places for scientific research and monitoring	0.403			

The principal component factor analysis yielded four factors for items related to NPs policies (Table 6). Performance of a factor analysis was justified by obtaining a Kaiser-Meyer-Olkin test statistic of 0.701, and statistical significance for Bartlett's test of sphericity ( $p = 0.001$ ). Although four factors were initially identified, Factor 3 and Factor 4 were excluded from further analysis because of having low reliability (Cronbach's coefficient  $\alpha$  less than 0.7). The two factors retained "Compromise recreation for ecological protection" and "Enhanced recreational opportunities" accounted for 40.55% of the total variance.

Table 6  
Factor loadings and Cronbach's coefficient alphas for NP policy sub-scales

Factor and items	Loadings	Eigen value	% Variance explained	Cronbach's $\alpha$
<b>Factor 1: Compromise recreation for ecological protection</b>		2.69	22.39	0.76
• NPs should limit recreational/tourism activities, facilities and services if the scenic beauty of the parks is threatened	0.746			
• NPs should limit the numbers of visitors if the natural environment and wildlife of the parks are threatened	0.741			
• NPs should phase out inappropriate recreational uses within NPs	0.639			
• Only small groups of tourists in 4WD cabs/safari jeeps should be allowed in NPs	0.547			
<b>Factor 2: Enhanced recreational opportunities</b>		2.18	18.16	0.72
• NPs should be willing to compromise on protecting the park environment in order for visitors to experience as wide range of outdoor recreation activities as possible within NPs	0.769			
• Neither the provision of a wide variety of visitor activities nor commercial activity threatens the natural environment and wildlife of NPs	0.701			
• NPs are tending to unnecessarily restrict public enjoyment and use of parks in order to promote greater preservation of the park environment	0.518			
<b>Factor 3: Managing for protection</b>		1.47	12.28	0.54
• NPs are becoming too concerned with protecting the natural environment and wildlife	0.828			
• NPs should use protecting the natural environment and wildlife as the primary criterion for all resource and visitor management decisions within NPs	0.491			
<b>Factor 4: Commercial orientation</b>		1.29	10.75	0.48
• NPs are too lenient in allowing recreation activities that harm the environment	0.722			
• NPs are becoming more profit oriented by aggressively promoting nature-based tourism in NPs	0.721			
• NPs do not pay sufficient attention to the outdoor recreation	0.442			

## Comparison of visitor attitudes and perceptions

ANOVA tests were used to better understand the relationships of derived factors/sub-scales of NP roles and functions with NP policy factors/subscales, as well as desirable uses and functions of NPs. Composite mean scores computed for each factor/subscale were used for this purpose. Following the statistical procedures adopted by Huang *et al.* (2008), the three subscales of the NP roles and functions were divided into two groups as low-score (LS) and high score (HS) groups, based on the 33<sup>rd</sup> and 66<sup>th</sup> percentiles. These were compared with NP policy subscales and desirable uses of NPs categories respectively, using ANOVA procedures.

ANOVA results indicate LS and HS respondent groups for "Ecological protection" subscale significantly differ in terms of "Compromise recreation for ecological protection" NPs policy sub-scale (Table 7). This suggests that respondents who highly appreciated the protective roles/functions of NPs tend to favor a NP policy that compromises recreational uses for ecological protection. On the other hand, LS and HS respondent groups for "Recreational opportunities" and "Socio-economic benefits" subscales significantly differed on NP policy subscale "Enhanced recreational opportunities" (Table 7). This indicates that respondents who tend to consider NPs as places for providing recreational and socio-economic benefits are inclined to support a NP policy that allows more recreational opportunities.

Table 7  
ANOVA comparisons for NP policy and NP roles and functions subscales

NPs policy subscale	NPs roles and functions subscale	Mean (LS)	Mean (HS)	F value
Compromise recreation for ecological protection	• Ecological protection	3.95 (n=266)	4.18 (n=306)	17.09**
	• Recreation	4.10 (n=327)	3.99 (n=311)	3.54
	• Socio-economic benefits	4.05 (n=297)	4.05 (n=341)	0.00
Enhanced recreational opportunities	• Ecological protection	2.42 (n=266)	2.21 (n=306)	8.00*
	• Recreation	2.09 (n=327)	2.52 (n=311)	36.22**
	• Socio-economic benefits	2.12 (n=297)	2.47 (n=341)	24.28**

Statistical significance at \*p < 0.05, \*\*p < 0.001.

Results of ANOVA comparisons for NP desirable use categories and NP roles and functions are provided in Table 8. Respondents who positively viewed the protective, recreational and socio-economic roles/benefits of NPs tend to consider the uses classified as highly appropriate. Moderately appropriate uses were favored by respondents who had positive attitudes and perceptions on recreational and socio-economic roles of NPs. Respondents who appreciated the protective functions of NPs disallowed those uses classified as moderately and highly inappropriate, while respondents who appreciated the recreational roles/functions of NPs favorably considered the uses classified as moderately and highly inappropriate.

Table 8

**ANOVA comparisons for NP desirable uses and NP roles and functions**

NP desirable uses and functions category	NPs roles and functions subscale	Mean (LS)	Mean (HS)	F value
Highly appropriate	• Ecological protection	4.09 (n=266)	4.28 (n=306)	12.71**
	• Recreation	4.08 (n=327)	4.32 (n=311)	23.37**
	• Socio-economic benefits	4.05 (n=297)	4.32 (n=341)	30.79**
Moderately appropriate	• Ecological protection	3.65 (n=266)	3.61 (n=306)	0.51
	• Recreation	3.45 (n=327)	3.86 (n=311)	58.21**
	• Socio-economic benefits	3.40 (n=297)	3.86 (n=341)	75.98**
Moderately inappropriate	• Ecological protection	2.56 (n=266)	2.39 (n=306)	7.49*
	• Recreation	2.34 (n=327)	2.55 (n=311)	14.39**
	• Socio-economic benefits	2.39 (n=297)	2.49 (n=341)	2.58
Highly inappropriate	• Ecological protection	1.71 (n=266)	1.55 (n=306)	6.52*
	• Recreation	1.51 (n=327)	1.66 (n=311)	6.55*
	• Socio-economic benefits	1.63 (n=297)	1.54 (n=341)	2.53

Statistical significance at \* $p < 0.05$ , \*\* $p < 0.001$ .

In order to further understand the influence of key demographic variables such as level of education and income on visitor attitudes and perceptions towards NPs, series of ANOVA tests were used with Tukey post-hoc multiple comparisons. As indicated in Table 9, the subscale "Ecological protection" showed statistically significant differences among respondents of different education levels. Results suggest respondents with high level of education tend to endorse a NP policy that is more conservation oriented. These individuals further approved uses of NPs those categorized as "Highly appropriate" as well as "Moderately inappropriate" (Table 9).

Table 9

**Comparisons of visitor attitudes and perceptions between education levels**

Subscale	Education level			F value
	Low	Mid	High	
<b>Roles and functions</b>				
• Ecological protection	4.16	4.32	4.35	5.32**
• Recreation	2.90	2.73	2.70	1.84
• Socio-economic benefits	3.64	3.61	3.67	0.27
<b>NP Policy</b>				
• Compromise recreation for ecological protection	3.91	4.02	4.20	6.87**
• Enhanced recreational opportunities	2.64	2.30	2.10	12.94**

Table 9 continued

Subscale	Education level			F value
	Low	Mid	High	
<b>Desirable uses</b>				
• Highly appropriate	4.04	4.16	4.38	11.25**
• Moderately appropriate	3.60	3.61	3.74	2.10
• Moderately inappropriate	2.45	2.41	2.58	3.15*
• Highly inappropriate	1.68	1.60	1.57	0.75

Education level:

Low = secondary education, Mid = high-school/high-school with professional qualifications, High = Undergraduate and above.

Statistical significance at \*p < 0.05, \*\*p < 0.001.

ANOVA comparisons of visitor attitudes and perceptions across different income categories revealed no statistically significant differences except for uses those categorized as "Moderately inappropriate" (Table 10). Though statistically not significant, high income group recorded the lowest mean score for "Ecological protection" subscale.

Table 10

Comparisons of visitor attitudes and perceptions between income categories

Subscale	Income group			F value
	Low	Middle	High	
<b>Roles and functions</b>				
• Ecological protection	4.32	4.30	4.21	0.50
• Recreation	2.68	2.80	2.73	0.96
• Socio-economic benefits	3.59	3.58	3.84	1.74
<b>NP Policy</b>				
• Compromise recreation for ecological protection	3.98	4.12	4.08	2.64
• Enhanced recreational opportunities	2.32	2.27	2.46	0.77
<b>Desirable uses</b>				
• Highly appropriate	4.17	4.17	4.42	2.65
• Moderately appropriate	3.61	3.63	3.75	0.64
• Moderately inappropriate	2.37	2.55	2.59	4.72**
• Highly inappropriate	1.58	1.68	1.65	1.13

Income level: Low = ≤Rs. 30,000, Middle = Rs. 30,001 to Rs 75,000, High = Above Rs. 75,000 (1 USD = Rs. 130).

Statistical significance at \*p < 0.05, \*\*p < 0.001.

## Discussion

Published research on visitors to Sri Lanka's protected areas have largely focused on understanding their environmental attitudes, on-site behaviors, visitor satisfaction and visitor willingness to pay for conservation (Rathnayake & Gunawardena, 2011; Perera *et al.*, 2012; Perera & Vlosky, 2013; Senevirathna & Perera, 2013, Sumanapala, Perera, Kotagama & Silva, 2015). This study ventures into a new dimension of visitor research by exploring visitor attitudes and perceptions towards key aspects of management of NPs. As suggested by McCool and Lime (1988), "understanding visitor attitudes about management policy helps administrators not only understand the types of opportunities being sought, but it may also help translate broadly written policy guidelines into specific on-site actions".

To recap the significance of the results of this study, first, we examined visitor attitudes and perceptions towards NP roles and functions. Results indicate that respondents in general had very positive attitudes towards protective roles and functions of NPs while having negative attitudes towards commercial development of tourism in NPs, recreation, and using as places for socializing. These findings are consistent with visitor studies conducted elsewhere where protective roles of NPs have been prioritized by visitors (Borrie *et al.*, 2002; Deng *et al.*, 2005; Huang *et al.*, 2008). Despite their negative perceptions on commercial development of tourism and recreation in NPs, respondents positively viewed the NPs' role in providing economic benefits to the country (3.89 on a 5-point scale) through functioning as major tourist destinations. Respondents further placed positive emphasis on educational functions of NPs (3.83 on a 5-point scale). A higher mean score for the item "Visiting NPs can enhance people's affection to nature" (3.97 on a 5-point scale) can be partially attributed to the educational function of NPs. Affection to nature is positively associated with one's environmental attitudes (Arnberger *et al.*, 2012). As such, it is important to allow sustainable forms of tourism in NPs to improve visitor understanding on flora, fauna, and ecological systems, and through that, building stronger affection to nature. Park interpretation services can play a vital role in this regard in building positive environmental attitudes in visitors.

With regard to NP policy, visitors placed a higher emphasis on providing greater level of protection to the natural environment. They were highly supportive of phasing out undesirable recreational activities and limiting visitor numbers to NPs in order to ensure greater ecological protection. Low levels of agreement were recorded for statements that supported recreation in NPs. This suggests that majority of the respondents endorse a NP policy that is more conservation oriented to a one that attempts to accommodate better recreation opportunities for visitors. Similar observations have been made in visitor studies conducted elsewhere in the world (Higham, Kearsley & Kliskey, 2000; Huang *et al.*, 2008). However, results don't imply that respondents entirely disapprove recreation in NPs. Instead, they were in agreement with allowing controlled or carefully planned recreational opportunities at NPs.

The present policy framework applicable to NPs in Sri Lanka is highly conservation oriented. However, increasing visitor numbers is a common scenario at all major NPs, largely due to lack of proper visitor controlling and management strategies. Hence, the findings of this study further call for improved visitor controlling and management strategies at NPs to maintain visitation numbers at appropriate levels. An understanding on visitor carrying capacities of NPs may be useful in this regard. Although visitor controlling and use limit policies were favored by most respondents, such policies can have significant negative tourism displacement effects, both at local and regional level (McCool, 2001). Hence when introducing such policies, it is important that they meet the criteria of effectiveness, efficacy, and efficiency to be successful in managing visitor impacts at NPs (McCool, 2001).

With respect to visitor perceptions on desirable uses and activities in NPs, observing wildlife and wildlife photography were the most preferred activities/uses by respondents. These findings are comparable with literature (Chin *et al.*, 2000; Huang *et al.*, 2008). However, in contrast to research conducted elsewhere (Huang *et al.*, 2008), visitors to Sri Lankan NPs stressed on site-hardening activities that are focused on developing basic infrastructure facilities to support tourism. This implies that existing basic infrastructure such as sanitary facilities, nature trails, visitor centers, wildlife observation platforms, and accommodation facilities at NPs are below-par or insufficient to support the current demand.

Moderately inappropriate uses predominantly included developments related to enjoyment and comfort of visitors. These are the site attributes and activities often preferred by soft-core ecotourists. Since soft-core ecotourists account for the greater share of the ecotourism market and help to financially sustain the industry, their preferences cannot be neglected in tourism development in NPs.

Comparison of attitudes and perceptions among visitors of different education levels indicated that individuals with higher level of education tend to appreciate protective roles and functions of NPs as well as protection-oriented NP policy. Comparison of mean scores (Table 10) suggests that ecological protection oriented roles and functions of NPs have been emphasized by low-income visitors. An analysis of domestic visitors to protected areas in Sri Lanka by Perera *et al.* (2012) has described individuals with such bio-centric attitudes and demographic characteristics as "ecotourists". Accordingly, domestic ecotourists segment in Sri Lanka includes relatively young, well educated, but comparatively low income individuals. A typical individual in the ecotourists segment is represented by recent high school or university graduate, or a university student, and this may be attributed to the well-educated, but low income nature of the visitor segment. Study findings on visitor attitudes, perceptions and uses of NPs are consistent with findings of previous research conducted elsewhere under different socio-economic and cultural settings (Chin *et al.*, 2000; Deng *et al.*, 2005; Wray & Booth, 2008; Huang *et al.* 2008; Arnberger *et al.*, 2012).

## Conclusions

In essence, findings of the study imply that respondents expect park management to prioritize ecological protection in NPs, but at the same time facilitate environmental-friendly forms of tourism activities. Under such circumstances, sustainable tourism models such as ecotourism is of greater relevance to NPs as it combines the pleasure of discovering nature within an educational periphery. Educating visitors on natural environments has been also viewed as an important role of NPs. This calls for stronger interpretation services, and infrastructure facilities to support visitor education. Visitor awareness at NPs can also help changing public attitudes towards environmental conservation. Environmentally conscious visitors cause minimal disturbances to the environment during their visits to natural landscapes.

Visitors with strong eco-centric attitudes are more likely to support conservation oriented NP policy, and oppose aggressive recreational developments and recreational activities that are potentially disturbing for wildlife. However, visitors recognize tourism as an essential component in NP management. Respondents are also concerned about the rising visitor numbers to NPs and its potential negative environmental impacts. Hence, the findings of this study call for improved visitor controlling and monitoring strategies at NPs to maintain visitation levels within the carrying capacity.

It is obvious that different types of tourists with varying motives visit NPs, and their requirements and trip expectations are very much heterogeneous. This has the potential to create conflicts between environmentally conscious ecotourists and other types of commercial visitors to NPs. It may negatively affect the trip satisfaction of ecotourists. Exposing sensitive ecosystems to undesirable types of visitors can further result in increased stress on ecosystems. Since it is impossible to prevent such visitors entering NPs, it is important to have strong visitor policies and monitoring mechanisms in place.

## Study limitations

This is an exploratory study where the sample captured represents only a section of the visitors to two selected NPs famous for charismatic species such as elephants and other large mammals. Foreign visitors represented about 10% of the valid responses, hence their perceptions and images of nature they seek or expect by engaging in recreational activities in wilderness areas are not well reflected in results. Translating the questionnaire into several languages to accommodate non-English speaking foreigners was impractical. Nonetheless, this study specifically explores the visitor perceptions of NP policy priorities, and explains the case if visitors are setting the NP policy agenda. Although the findings of this study are useful in setting the policy agenda, they need be weighed against national priorities.

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