Environmental Value Orientation and Environmental Impact Perception of Visitors to Khao Yai National Park

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ABSTRACT

The purposes of this study were to examine environmental value orientation and perceptions of the environmental impacts of domestic visitors in Khao Yai National Park (KYNP) across three groups of activities: campers, hikers and bird-watchers. A total of 628 questionnaires were distributed to participants in these three major activities.

The results showed that visitors enjoyed a high level of environmental value. The majority of campers, hikers, and bird-watchers were ecocentrists (valuing nature for its own sake). Proportionately, there were more ecocentrists among the bird-watchers compared to the campers and hikers, while there were more anthropocentric hikers than campers and bird-watchers. For impact perception, more than 30 percent of visitors indicated that visitor activities did not cause environmental impacts. The majority of visitors rated the severity of impact in KYNP at the moderate level. Visitors who engaged in different types of recreational activities perceived impacts differently. Overall, bird-watchers perceived impacts at a higher level of severity than either campers or hikers. For management recommendations, KYNP needs to seriously consider more effective environmental education programs to create a positive environmental attitude and improve the ecological impact knowledge of visitors that is a primary factor underlying environmentally friendly behavior.

Keywords: environmental value orientation, impact perception, Khao Yai National Park

บทคัดย่อ

การวิจัยในครั้งนี้มีวัตถุประสงค์เพื่อศึกษาการให้คุณค่าสิ่งแวดล้อมและการรับรู้ผลกระทบสิ่งแวดล้อมจากการประกอบกิจกรรมนันทนาการของผู้มาเยือนชาวไทยที่มาเยือนอุทยานแห่งชาติเขาใหญ่ โดยศึกษาเปรียบเทียบผู้มาเยือนที่ประกอบกิจกรรมหลัก ได้แก่ ตั้งแค้มป์พักแรม เดินป่า และดูนก ทำการเก็บข้อมูลด้วยแบบสอบถามจากผู้มาเยือนที่ประกอบกิจกรรมดังกล่าว รวม 628 คน

ผลการศึกษาพบว่าผู้มาเยือนส่วนใหญ่มีระดับการให้คุณค่าสิ่งแวดล้อมในระดับสูง โดยผู้มาเยือนส่วนใหญ่มีการให้คุณค่าสิ่งแวดล้อมอยู่ในกลุ่มที่มีแนวคิดที่ให้ระบบนิเวศเป็นศูนย์กลาง (Ecocentrism) ซึ่งมองธรรมชาติมีคุณค่าในตัวของมันเอง เมื่อทำการเปรียบเทียบในแต่ละกิจกรรม พบว่าจำนวนของผู้มาเยือนที่มีแนวคิดให้ระบบนิเวศเป็นศูนย์กลางในกลุ่มของผู้ที่ประกอบกิจกรรมหลักดูนกมีสัดส่วนที่มากกว่าผู้มาเยือนที่ประกอบกิจกรรมแค้มป์พักแรม และเดินป่า ตามลำดับ ในส่วนของการรับรู้ผลกระทบ

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ผู้มาเยือนมากกว่าร้อยละ 30 มีความคิดเห็นว่าการท่องเที่ยวไม่เป็นสาเหตุของผลกระทบสิ่งแวดล้อมในพื้นที่ ผู้มาเยือนส่วนใหญ่ประเมินระดับผลกระทบในอุทยานแห่งชาติเขาใหญ่ในระดับปานกลาง และผู้มาเยือนที่ประกอบกิจกรรมหลักตั้งแค้มป์พักแรม เดินป่า และดูนกมีระดับการรับรู้ผลกระทบที่แตกต่างกัน โดยผู้มาเยือนในกลุ่มของนักดูนกมีระดับการรับรู้ผลกระทบที่มากกว่าผู้มาเยือนที่ประกอบกิจกรรมหลักในกลุ่มของตั้งแค้มป์พักแรม และเดินป่า ผลการศึกษาในครั้งนี้นำไปสู่ข้อเสนอแนะในการจัดการท่องเที่ยวในพื้นที่ธรรมชาติที่มุ่งเน้นการให้ความรู้แก่ผู้มาเยือนที่เน้นการสร้างความตระหนักถึงคุณค่าของสิ่งแวดล้อมและผลกระทบจากการประกอบกิจกรรมการท่องเที่ยวต่อระบบนิเวศ ซึ่งนำไปสู่การปรับเปลี่ยนพฤติกรรมที่เป็นมิตรกับสิ่งแวดล้อมมากขึ้น

คำสำคัญ: การให้คุณค่าสิ่งแวดล้อม การรับรู้ผลกระทบสิ่งแวดล้อม อุทยานแห่งชาติเขาใหญ่

INTRODUCTION

Trends in national parks related to tourism development indicate a significant increase in visitor numbers (Monz, Cole, Leung, & Marion, 2009). In many countries, especially developing countries, national parks have been a magnet attracting visitors who want to appreciate, enjoy, and experience the natural environment. This has given rise to a paradoxical situation, where positively, tourism development contributes to promoting conservation, enhancing infrastructure development, supporting economic activities, reducing consumptive uses of forest resources by the locals, and minimizing resource conflicts between the park and local communities (Eagles, McCool, & Haynes, 2002). However, when poorly managed, the development of tourism and visitor activities can cause undesirable changes to the environmental conditions of a park, such as soil erosion, alteration of plant communities, habitat fragmentation, alteration of wildlife behavior, and changes in water quality (Monz, et al., 2009). Managing visitor impacts in the parks is complicated as it deals with many bio-physical, social, and behavioral factors. Thus, to sustain ecological integrity in the park, knowledge of visitor impacts, not only is bio-physical knowledge required but also social science research on environmental impacts. In particular, understanding visitors' attitudes toward general aspects of the environment and perceptions of issues related to the condition of natural resources are two issues that are fundamentally important elements of visitor management.

Understanding the environmental value orientation of visitors is important because it is a primary factor underlying low impact behavior. Studies of environmental value orientation attempt to determine the association between an individual's demographic characteristics, perception, social factors, and environmental values (Vaske, Donnelly, Williams, & Jonker, 2001; Casey & Scott, 2006). Furthermore, these studies analyze the impacts of value orientation on human behavior related to the environment. Several studies found that relationships existed among the levels of environmental attitude, environmental awareness, and environmentally responsible behavior (Thapa & Graefe, 2003; Hansla, Gamble, Juliusson, & Gärling, 2008). Different attitudes related to different environmental actions of people; when tourists are more concerned about their environment, they are willing to use environmentally responsible behavior in natural areas (Fransson & Gärling, 1999).

Anthropocentrism and ecocentrism are two philosophical orientations that many environmentalists believe could explain human values, attitudes, perceptions, and behavior towards an environmental crisis (Kortenkamp & Moore, 2001; Deborah, 2003; Hoffman & Sandelands, 2005). Value orientation can be arranged along an anthropocentric-ecocentric continuum. Ecocentric value orientation is nature-centered, and views the ecological community as a whole; people are inseparable from the inorganic and organic nature that encapsulates them. It places

emphasis on valuing nature for its own sake (Casey & Scott, 2006). In its most extreme form, ecocentrism affirms equal value of all life forms (Deborah, 2003). The opposite position to ecocentrism is anthropocentrism, which places human beings at the center of the universe (Casey & Scott, 2006). Anthropocentrism also supports environmental conservation but sees it as motivated by self interest, that is, the human quality of life is dependent on the preservation of natural resources and the quality of the environment (Thompson & Barton, 1994). The most extreme position of anthropocentrism views human beings as the only species that has value and, therefore, it is morally acceptable for human beings to work to benefit as much as possible by exploiting the natural environment (Deborah, 2003). Additionally, there is another aspect of environmental value orientation called environmental apathy that reflects a lack of interest in environmental issues and a general belief that problems in this area have been exaggerated (Casey & Scott, 2006).

Knowledge of visitors' perceptions of environmental impacts is an important element for the ecological management and provision of quality recreational opportunities in national parks. Perception of environmental impacts refers to how the visitors perceive impacts on the environment caused by their activities (Kaplan & Kaplan, 1989). The study of visitor perception is complex as it deals with many social and behavioral factors. From previous studies, perceptions of environmental impacts at a particular site are often different from reality; individuals may see the same level of impact differently (Hillery, Nancarrow, Griffin, & Syme, 2001). Additionally, some studies have found that differences exist in the perception of impacts of a recreation activity between resource managers and visitors engaged in different activities, with visitors often underestimating their own impacts because they perceive that the other groups sharing the same resource cause more impact than they do (Chin, Moore, Wallington, & Dowling, 2000; Deng, Qiang, Walker, & Zhang, 2003; Priskin, 2003).

The purposes of the current study were to assess the levels of environmental value orientation and the environmental impact perceptions of domestic visitors. The objectives of this study were to examine the environmental value orientation of three groups of recreation activities: campers, hikers, and bird-watchers and to investigate the environmental impact perceptions among the three groups of visitors. Khao Yai National Park (KYNP), Nakhon Ratchasima province, Thailand, one of the most popular nature tourism destinations, was selected as the study site.

RESEARCH METHODOLOGY

Study area

KYNP is the first national park in Thailand and was established in 1962, covering an area of 2,166 square kilometers. Located between $14^{o}05'$ and $14^{o}15'$ N and $101^{o}05'$ and $101^{o}50'$ E, KYNP encompasses a wide variety of habitats and forest types. There are more than 2,500 plant species, 70 different kinds of mammals and over 350 species of birds (Department of National Parks, Wildlife, and Plant Conservation [DNP], 2006). Because of its unique characteristics and outstanding values, KYNP was designated as a World Heritage Site in 2005 (DNP, 2006). There are more than 20 tourism sites in KYNP with a rich diversity of plant species, plentiful wildlife, beautiful scenery, and an interesting cultural history. These provide various types of recreational opportunities for visitors. During the past ten years (2002–2011), KYNP was visited annually by more than 750,000 people (DNP, 2012). In recent decades, visitor-induced environmental impacts have been reported as significant concerns for KYNP management. These impacts include: impacts on soil and vegetation (especially around campgrounds and trails), water and noise pollution, accumulation of garbage, wildlife behavior change, and habitat destruction.

Survey instrument

A questionnaire was developed to measure visitors' value orientation and impact perceptions. The questionnaire was divided into four sections. Section I gathered general information about visitors' recreational activities and past experience. Section II measured visitors' value orientation by applying the Ecocentrism-Anthropocentrism Scale (Thompson & Barton, 1994). This scale was constructed based on the hypothesis that ecocentrism is associated with a higher rate of conserving behavior rather than anthropocentrism which has a lower rate of conserving behavior (Casey & Scott 2006). The value-orientation questions asked visitors to respond to 33 items measuring their tendencies toward ecocentrism, anthropocentrism, or environmental apathy. A Likert-type five-point rating scale was used to indicate responses from strongly disagree (1) to strongly agree (5). The statements in the scale were translated into Thai and pre-tested on site. The value of Cronbach's alpha was 0.65 indicating the scale was reliable (Bernard, 2000). Section III focused on measuring the perception of visitor-induced environmental impacts in KYNP. Perception of impacts in this study was measured by visitors' ratings of the environmental impacts in KYNP. Visitors' ratings were measured using 18 statements on a scale of 1 (slight) to 5 (very severe), covering impacts on soil, vegetation, water, wildlife, and others, and one statement for the overall level of environmental impact. The value of Cronbach's alpha was 0.91 indicating its reliability (Bernard, 2000). Section IV collected socioeconomic and demographic information including gender, age, education, income level, occupation, and residential location.

Data collection

The environmental value orientation and impact ratings of domestic visitors were examined across campers, hikers, and bird-watchers. These three activities represented different types of activities based on the level of natural resource consumption. For this study, bird-watching and hiking were considered as appreciative or non-consumptive while camping was considered as a consumptive activity. Surveys were conducted by trained interviewers to ensure a complete response and a high response rate. To avoid interviewers' bias, self-administered interviews, which draw on core principles of the cognitive interview technique, were conducted. Visitors were approached randomly and interviewed on site as they were completing their activity for the day. A total of 628 surveys of domestic visitors—304 campers, 237 hikers, and 87 bird-watchers—were completed. The on-site interviews were conducted during January to May, 2009, during weekdays and weekends.

Data analysis

Data analysis was based on 628 surveys of domestic visitors. The procedures consisted of descriptive statistics and measures of differences. Apart from descriptive statistics, analysis of variance (ANOVA) was applied to examine the differences in environmental orientation and impact ratings among the three groups of visitors.

RESEARCH FINDINGS

Respondents' profile

The respondents consisted of 48.4 percent campers, 37.7 percent hikers, and 13.9 percent bird-watchers; 51 percent of respondents were male. The greatest number of respondents (47.8%) was 21–30 years old and 61.5 percent had completed undergraduate education. The three major occupation groupings were student (30.9%), private company employee (27.6%), and government employee (13.5%). The largest group (34.3%) had an annual income lower than 120,000 baht. For tourism and recreation information, 61.6 percent had visited KYNP before and 70.0 percent had prior experience in their major recreation activity before their current visit to KYNP. Most of the respondents (98.7%) visited KYNP as a group, especially with

friends (49.2%). The average (38.2%) group size was between 2 and 5 people. The majority (57.8%) stayed in KYNP for one night. The main motivations for visiting KYNP were relaxation (46.7%), return to nature (34.2%), and enhancing family and friend affinity (27.2%). The socio-economic backgrounds of visitors were not much different among the three groups. Furthermore, the major reasons of the campers and hikers to visit KYNP were the same—namely, relaxation, return to nature, and enhancing family and friend affinity. The bird-watchers were slightly different; their primary motivation was learning more about nature. The majority of the participants in all three groups was composed of repeat visitors and the years of experience in the major activity were similar.

Environmental value orientation

Overall, the majority of visitors had a high level of environmental value orientation. For each type of value orientation, more bird-watchers (64.4%) tended to be ecocentric than campers (57.8%), and hikers (51.1%), respectively. More hikers (40.1%) tended to be anthropocentric than campers (29.0%) and bird-watchers (24.1%), respectively. There were more campers (3.0%) than bird-watchers (1.1%) and hikers (0.8%) among those tending toward environmental apathy. A breakdown of the different types of visitors by their value orientation is shown in Table 1. KYNP visitors were classified into three sub-groups trending toward either a weak (mean values ranging between 1 and 2.33), moderate (2.34–3.66) or strong orientation (above 3.66). Among the campers who were ecocentric, the majority were strongly ecocentric (84.9%) and those who were anthropocentric were strongly anthropocentric (70.2%). The same was true among the hikers and bird-watchers. Environmental apathy in the visitors of all three groups was at either the weak or moderate orientation.

Table 1 Visitors classified by level of environmental value orientation

Level of value orientation	Campers (n = 304)		Hikers (n = 237)		Bird-watchers (n = 87)	
	% of total visitors	% within group	% of total visitors	% within group	% of total visitors	% within group
Ecocentric	57.8		51.1		64.4	
Low level		1.1		0.0		0
Medium level		14.0		16.5		14.6
High level		84.9		83.5		85.4
Total		100.0		100.0		100.0
Anthropocentric	29.0		40.1		24.1	
Low level		1.4		0.0		1.2
Medium level		28.4		22.9		34.2
High level		70.2		77.1		64.6
Total		100.0		100.0		100.0
Environmental apathy	3.0		0.8		1.1	
Low level		48.9		50.0		67.5
Medium level		48.6		47.3		30.0
High level		2.5		2.7		2.5
Total		100.0		100.0		100.0
Could not classify	10.2		8.0		10.4	
Total	100.0		100.0		100.0	

The differences in environmental value orientation among the three groups of visitors are shown in Table 2. Based on the average score, the results indicated that hikers tended to be more ecocentric and anthropocentric than either campers or bird-watchers. Campers tended to be more indifferent to environmental issues (that is, they showed environmental apathy) than hikers and bird-watchers. The ANOVA results showed that the three groups differed significantly in their anthropocentric value orientation ($F = 6.203$, $p = .002$) and environmental apathy ($F = 3.504$, $p = .031$), but no significant differences existed in regard to the ecocentric value orientation.

Environmental impact perception

The results showed that the majority of visitors rated the severity of impact at the moderate level. Roughly 65 percent of the visitors indicated that visitor activities caused environmental impacts, while 33.4 percent did not agree with this statement. Considering each group of visitors, the majority of campers (63.5%) agreed that visitor activities caused environmental impacts in KYNP. Cooking (34.0%), camping (30.9%), and picnicking (23.0%) were rated as the major threats by campers. Of the 18 impact items listed on the questionnaire, seven items were rated by a majority as "very severe". These were: suspended solid matter on water surface, solid waste in water, monkeys waiting for food from visitors, conversion of natural area into developed area, air pollution from vehicles, bad smell from toilets, bin, garbage, etc., and accumulation of garbage.

The majority of hikers (59.5%) agreed that visitor activities caused environmental impacts and camping (32.1%), cooking (29.3%), and picnicking (25.7%) were rated as the top three activities causing the most impacts. Of the 18 impact items, seven items were rated by a majority as "very severe": suspended solid matter on water surface, solid waste in water, conversion of natural area into developed area such as vehicles parked in unauthorized areas, air pollution from vehicles, bad smell from toilets, bin, garbage, etc., accumulation of garbage, and disturbed natural area by visitor activities.

A majority of bird-watchers (82.8%) agreed that visitor activities caused environmental impacts. Bird-watchers rated camping (40.3%), picnicking (25.4%), and cooking (26.1%) as the top three activities causing the most impacts. Of the 18 impact items, six items were rated by a majority as "very severe": solid waste in water, monkeys waiting for the food from visitors, wildlife on the road or very close to the road, habituated deer, air pollution from vehicles, and accumulation of garbage.

The differences between the three groups of visitors (domestic campers, hikers, and bird-watchers) were investigated to test the hypothesis that differences exist in perceptions between the three groups of visitors. Based on the average impact rating score of each item (mean values), overall the results indicated that bird-watchers

Table 2 Comparison of environmental value orientation among campers, hikers and bird-watchers

Value orientation	Mean score (based on five-point scale[1])			F	*p*
	Campers (n = 304)	Hikers (n = 237)	Bird-watchers (n = 87)		
Ecocentrism	4.011	4.025	3.974	0.425	0.654
Anthropocentrism	3.850	3.956	3.755	6.203	0.002**
Environmental Apathy	2.403	2.390	2.199	3.504	0.031*

* $p < .05$

** $p < .01$

[1] Likert-type five-point rating scale was used to indicate responses from strongly disagree (1) to strongly agree (5)

tended to perceive impacts as more severe than campers and hikers while hikers tended to perceive impacts as less severe than the other two groups. Of the 18 items of impact, overall, the bird-watchers perceived 15 types of impact at a higher level than the other two groups. There were only three items of impact that hikers and campers perceived as more severe than bird-watchers. These impacts were related to water quality. However, the ANOVA results indicated significant differences in impact perceptions among the three groups of visitors on four items only (Table 3)—namely, wildlife on the road or very close to the road (F = 4.391, p = .013), habituated deer (F = 5.277, p = .005), conversion of natural areas into developed areas (F = 3.842, p = .022), and air pollution from vehicles (F = 3.350, p = .036). Bird-watchers rated these impacts more highly than campers and hikers.

Table 3 Comparison of environmental impact perceptions among campers, hikers, and bird-watchers

Impact	Mean of impact perception			F	p
	Campers	Hikers	Bird-watchers		
Soil impacts					
– Soil erosion	2.866	3.088	3.182	2.813	0.061
– Bare ground	3.125	3.161	3.329	0.837	0.433
Vegetation impacts					
– Exposed tree roots	2.788	2.780	2.899	0.255	0.775
– Damaged tree/sapling/seedling	3.134	3.054	3.184	0.395	0.674
– Presence of non-native plants	2.548	2.365	2.577	1.154	0.317
Water impacts					
– Suspended solid matter on water surface	3.660	3.644	3.658	0.010	0.990
– Solid waste in water	3.706	3.710	3.532	0.592	0.554
– Turbidity	3.209	3.055	3.208	0.944	0.390
Wildlife impacts					
– Monkeys waiting for the food from visitors	3.521	3.413	3.700	1.392	0.250
– Wildlife on the road/ very close to the road	3.052	3.022	3.514	4.391	0.013*
– Habituated deer	3.130	3.006	3.587	5.277	0.005**
Other impacts					
– Conversion of natural area into developed area	3.688	3.471	3.901	3.842	0.022*
– Air pollution from vehicles	3.607	3.449	3.855	3.350	0.036*
– Bad smell (from toilets, garbage, etc.)	3.611	3.456	3.617	1.004	0.367
– Accumulation of garbage	4.028	3.861	4.161	2.172	0.115
– Disturbance to natural area by visitor activities, such as vehicles parked in unauthorized areas	3.569	3.568	3.786	1.204	0.301
– Vehicular noise	3.394	3.367	3.691	2.307	0.101
– Noise from visitors	3.431	3.300	3.554	1.555	0.212
Overall level of the environmental impact	3.304	3.233	3.542	2.790	0.062

* $p < .05$

** $p < .01$

CONCLUSION AND RECOMMENDATIONS

The aims of this paper were to examine the environmental value orientation and environmental impact perceptions of domestic visitors to KYNP. Knowledge of the value orientation of park visitors is one of the fundamental inputs for visitor impact management as this is the motive underlying the support for environmental concerns and behavior of visitors. In this study, three different types of value orientation (anthropocentric, ecocentric, and environmental apathy) were studied across three groups of major recreational activities in KYNP: bird-watching, hiking, and camping. Following investigation by applying the Ecocentrism-Anthropocentrism Scale (Thompson & Barton, 1994), the results showed that the majority of the visitors had an ecocentric orientation. Proportionately, more bird-watchers than campers or hikers were ecocentric; based on past studies this is an expected result (Thapa & Graefe, 2003; Wurzinger, 2006).

This result implies that visitors who were involved in appreciative activities held stronger pro-environmental attitudes than visitors who were involved in consumptive activities (Thapa & Graefe, 2003). Wurzinger (2006) also reported that bird-watchers belong to a harder group of the spectrum of ecotourists that has been found to adhere more to an ecocentric than an anthropocentric perspective. Also, this reason could support the result that more bird-watchers than campers and hikers agreed with the statement that "visitor activities cause environmental impacts to KYNP."

Previous studies on impact perception have commented that visitors were not very perceptive of the impacts that they produced; the impacts that they notice were the direct impacts from other visitors (Hillery et al., 2001). Consistent with such previous work, the current study also found that the majority of visitors did not rate their major activity as the one causing the most impacts, i.e. hikers rated camping as the activity causing the most impacts. Additionally, visitors easily noticed the impacts from other visitors, such as conversion of natural area into developed area, air pollution from vehicles, bad smell (from toilets, garbage, etc.), accumulation of garbage, vehicles parked on natural areas, vehicular noise, and noise from visitors. The results also supported the hypothesis that visitors who engaged in different types of recreational pursuits (i.e., front country camping, backcountry hiking and bird watching) perceived impacts differently. Of the 18 items of impact, overall, bird-watchers, as appreciative creationists, perceived 15 types of impact at a higher level of severity than either campers or hikers. This finding supports the results of previous studies that differences existed in the perception of the impacts of a recreational activity among visitors who were engaged in different activities (Hillery et al., 2001; Deng et al., 2003; Priskin, 2003).

Several conclusions can be drawn from this study. First, for national park management, the results clearly indicate that KYNP needs to strengthen its environmental education programs. Visitors need to be made aware of the negative consequences of their activities, and also there needs to be reinforcement of positive behavior among those who are not aware of these issues. When visitors' understanding of the environmental impacts is improved, they might be more aware of the outcomes of their activity and behavior. This could help reduce the high-impact behavior of visitors (and also the consumption of natural resources) and encourage visitors to comply with park rules and regulations. Additionally, environmental education programs in KYNP need to be focused on the intrinsic values of the park in order to instill in visitors a heightened sense of ecocentric values. Second, for further research, there are various potential factors, such as recreational factors and cognitive factors (for example, the meaning of place, motive, and normative beliefs) that might influence the environmental value the visitors place on the park and their perceptions (Thompson & Barton, 1994). Investigating the associations among these factors, environmental value orientation, and

perception of impact can contribute to new understanding about visitor impact strategies.

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