

# National Park Management Strategies under Social Change

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## 사회적 변화에 따른 국립공원 관리 전략

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### ABSTRACT

우리나라 국립공원은 좁은 공원면적에 비해 높은 이용도와 인력 및 재원의 부족, 공원별로 특화된 계획 부재로 인해 관리에 어려움을 겪고 있다. 여기에 주5일 근무제가 확대 시행된다면 국립공원 방문수요가 증가할 것으로 예상되고 있어, 이에 대비한 관리전략의 수립이 절실하다. 본 연구는 주5일 근무제 정착에 대비해, 국립공원 이용자들의 선택행동에 영향을 주는 속성별 수준의 종류와 영향력 정도를 파악하고 관리의 우선순위를 결정해, 자연자원의 보전과 이용자 만족이라는 목적을 달성할 수 있는 방안을 제시하고자 수행하였다.

5대 대도시에 거주하는 1,000명을 대상으로 자료를 수집하여 *conjoint choice model*로 분석한 결과, “휴무일수의 증가”는 국립공원 방문의도와 정(+)의 방향을 보이는 것으로 나타났다. 속성별로는 “환경교육”과 “연계관광”은 모든 수준에서, “공원 내 숙박시설”과 “관광여건”, “비용”의 일부 수준에서 ‘현재상태’보다 선호가 증가했지만 “자연보호”는 선호 증가가 없었다.

*Key Words* : National Park, Conjoint Choice Model, Management Strategies

## 1. INTRODUCTION

According to the Natural Park Act, “The objective

behind the establishment of national parks is the preservation of our natural environment and Korea’s natural beauty, and the promotion of sustainable use

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by the public, enabling them to contribute to the enhancement of public health, leisure, and recreation.” Although the initial objective of national park(NP) was to emphasize sustainability, public use of the parks has been emphasized more than preservation of the natural environment. Inevitably, controlling overuse has become the most important focus for park management. The major reasons for this phenomenon were (1) development oriented policy to enhance local residents’ income level such as provision of Collective Facilities Zones(CFZ), (2) relatively smaller acreage, comparing to the public tourism participation rate, and (3) distinguishing natural and cultural attractions in the NPs.

The central government passed a five-day work-week system into law, adding another cause for overuse. The new system is likely to result in an increase in demand for domestic travel as well as changes in tourism patterns. It is expected that length of stay at tourism destinations will be extended and average tourism patterns will shift from general sightseeing to participation in activities such as ecotourism or experience-oriented tours. Additionally, tourism patterns are likely to shift from mere amusement or relaxation to the pursuance of educational aspects such as cultural learning(Korea National Tourism Corporation, 2002; Lee *et al.*, 2001; Min *et al.*, 2001). In preparation for the five-day work-week system, NP managers have made efforts to provide or enhance facilities and services in accordance with the purpose of NP establishment. They have implemented a rest rotation system for severely damaged hiking trails, valleys, and specific vegetative communities. As the public’s interest in the environment rises, environmental interpretation programs, although in an early stage, are being provided. In order to minimize damage to nature while meeting the increasing demand for accommodation, NP managers are planning to restrictively locate camping

grounds and log cabins in specified areas, and expand information centers and convenience facilities such as visitor centers and evacuation shelters.

Once the new work week system is in place, it is forecasted to worsen the current problems of NPs. Currently, 662 employees are responsible for managing and administering 20 NPs. Their job description is too broad, including park resources protection, development of new facilities and maintenance, law enforcement, issuing permits or licenses for commercial facilities inside parks, collecting user fees for camping and concessions, guiding visitors and public management. Given this wide range of duties, it is likely that employees are not experienced in every aspect of their job. As a result, dissatisfaction of both park managers and park users is on the rise.

The NPs face several problematic issues, including ecosystem preservation, decreasing visitation volume, and repositioning their image from mass tourism destinations into sustainable recreational areas. However, NPs have served as typical tourist destinations in the past and therefore, must continue to meet the increasing demand for public tourism activities. Thus, the present research was conducted to suggest management implications for NPs under the reduced work-week system to achieve the appropriate balance between visitor satisfaction and natural resources protection.

## II. METHODS

### 1. Conjoint Choice Model

There are several alternatives for NP managers to prepare for a five-day work-week system. Hypothetical alternatives are different kinds of products or services that can be represented as multi-attribute profile bundles. Thus, they were constructed by fractional factorial design, and data collected were

analyzed with a conjoint choice model(CCM). These were done to identify which attributes and corresponding levels should be combined to induce proper alternatives to satisfy user needs in line with the purpose of NP establishment prior to their implementation(equation 1).

The conventional CCM, however, assumes that utilities are independent from the external condition to choice alternatives, such as constraints. Faced with external conditions, individuals may trade off the attribute levels of the choice alternatives in a different way and prefer different attributes(Hong and Lee, 2000; Stermerding *et al.*, 1999). In this research, an increase in the number of holidays resulting from the adoption of a five-day work-week system corresponds to the external condition to NP choice alternatives. Thus, the present study used a constraint-induced CCM model to incorporate constraints and the NP attributes by setting the utility functions as a joint function of the attribute levels of alternatives and constraints(equation 2).

$$p(a|C_i) = \frac{\exp(V_a)}{\sum_{j \in C_i} \exp(V_j)} \quad (\text{equation 1})$$

$C_i$ :  $i^{\text{th}}$  choice set

$p(a|C_i)$ : probability of choosing alternative  $a$  in  $C_i(i=1, 2, \dots, I)$

$V_a$ : preference(utility) of alternative  $a$

$$V_a = \sum_{k=1}^K \sum_{m=1}^M b_{km} X_{akm} + \sum_{f=1}^F \sum_{g=1}^G \beta_{fg} X_{ifg} \quad (\text{equation 2})$$

$b_{km}$ : parameter for level  $m$  of attribute  $k$

$X_{akm}$ : dummy variable defining whether level  $m$  of attribute  $k$  is present in alternative  $a$

$\beta_{fg}$ : parameter for level  $g$  of constraint  $f$

## 2. Salient Attributes and Their Levels

The NPs fall into three categories based on major attractions: mountainous, coastal(Hallyeo-haesang, Taean-haean, Dadohaehaesang, Byeonsanban-do), and historic(Gyeongju). If part of a mountainous type park is inside the boundary of an urban city, it is classified as an urban type(Bukhansan, Gyeryongsan). Since respondents did not visit all of the NPs, they do not have information on all the NPs. Therefore, this research calibrated the extent of influence of attribute levels over intention to visit NPs by types of NPs(i.e., mountainous, coastal and urban). The historic type of NP is excluded from the study because there is only one historic type of NP.

Since the Korean NPs are dealing with a unique overuse problem, there are limitations in adopting attributes contributing to the attractiveness of NPs used by foreign studies(Deng *et al.*, 2002; Galloway, 2002). For this reason, attributes and their corresponding levels were selected primarily by relying on domestic research on (1) NP attraction factors, (2) NP users' requests for improvement, and (3) current use(Shin *et al.*, 2001; Korea National Parks Authority, 2000; 2001; Cho, 1998; Chung, 1997; Kim, 1995; Park, 1995; Kong, 1994; Kim, 1991). Thirty-six park managers in 5 NPs were asked several open-ended questions regarding which attributes should be added to increase visitor satisfaction as well as for preparation of the new work-week system. Their responses were then included into the list of attributes and their corresponding levels. Most of the managers responded that it is critical to expand (1) environmental interpretation programs and topics, (2) visitor centers and other convenience facilities, and (3) camp grounds.

Two standards were considered in deciding the range of attribute levels: (1) compared to the existing norms, it should not be too large or too small(Green and Srinivasan, 1978), and (2) similar numbers of levels need to be included for each attribute, since an

Table 1. Attributes and Corresponding Levels

Attribute	Levels
Number of Holidays <sup>a</sup>	<ol style="list-style-type: none"> <li>1. Five-Day Work-Week System</li> <li>2. Six-Day Work-Week System</li> </ol>
Nature Protection	<ol style="list-style-type: none"> <li>1. Active Preservation/Management of Important Wildlife</li> <li>2. Tighter Management of Reservation System</li> <li>3. Tighter Management of Restricted Areas</li> <li>4. Same as the Current Level</li> </ol>
Environmental Interpretation	<ol style="list-style-type: none"> <li>1. Improvement of Self-Guided Nature Interpretation Facilities</li> <li>2. Provision of More Audio/Visual Materials</li> <li>3. Expansion of Professional Nature Interpretation Program</li> <li>4. Same as the Current Level</li> </ol>
Commercial and Accommodation Facilities	<ol style="list-style-type: none"> <li>1. Relocation of Inner-Park CFZ's Commercial Facilities/Accommodations to Outside of Parks<sup>b</sup></li> <li>2. Establishment of Eco-Lodges with Varied Price Ranges</li> <li>3. Establishment of Additional Campgrounds</li> <li>4. Same as the Current Level</li> </ol>
Package Tour	<ol style="list-style-type: none"> <li>1. Provision of Wildlife Habitats Tour within Parks</li> <li>2. Provision of Points of Interest Tour in Peripheral Areas</li> <li>3. Holding Local Festivals Each Season</li> <li>4. Same as the Current Level</li> </ol>
Tourism Conditions	<ol style="list-style-type: none"> <li>1. Expansion of Amenities (Toilets, Water Fountains, etc)</li> <li>2. Maintaining Night-Time Security by Reinforced Park Patrol</li> <li>3. Litter Control and Purification of valleys/Beaches in Parks</li> <li>4. Same as the Current Level</li> </ol>
Costs	<ol style="list-style-type: none"> <li>1. Accommodation Costs Not Different from Around Home Area</li> <li>2. Goods and Meal Prices Not Different from Around Home Area</li> <li>3. Temple Entrance Fee Separately Charged from Park Entrance Fee</li> <li>4. Same as the Current Level</li> </ol>

<sup>a</sup> constraint

<sup>b</sup> Collective Facilities Zone

attribute can be overestimated if there are too many levels in one specific attribute(Wittink *et al.*, 1982). By taking these two standards into account, the number of levels was limited to 3 and 'same as the current level' was added to each NP-related attribute except for the attribute of "number of holidays"(Table 1).

### 3. Construction of Hypothetical Alternatives and Data Collection

Hypothetical alternatives for visiting NPs were

constructed by using levels of six NP-related attributes provided in Table 1, and 32 profiles were generated through 1/128 fractional factorial design. Since the target destinations fall into three types- mountainous, coastal and urban- 32 profiles were constructed for each type in the same way. Then, as a constraint, the "number of holidays" attribute was combined with all the other NP-related attributes to maintain orthogonality.

Thirty-two choice sets were generated by randomly selecting one profile out of the 32 profiles for each type, and then adding the base alternative, 'would not

visit NPs'. Given that each choice set is composed of three hypothetical alternatives of different levels of each attribute, it is too demanding to ask respondents to evaluate all the 32 choice sets. Thus, this research asked each respondent to evaluate 8 choice sets randomly chosen from the 32 choice sets. Since at least 4 respondents were required to evaluate all the 32 choice sets, the sample size was set at 1,000, which is a multiple of 4.

Sampling and data collection was conducted by a

polling agency, targeting citizens in 5 metropolitan cities (Seoul, Busan, Daegu, Gwangju, Daejeon) on March 8-26, 2002. The number of respondents in each city was allocated in proportion to the population of the city. Respondents were selected by cluster sampling with probabilities proportional to size. In the first stage, Dongs in each city were selected. In the second stage, 10-12 residents were selected in each of the Dongs chosen. Face-to-face interviews were conducted on a total of 1,000 residents. Respondents'

Table 2. Model Estimation Results<sup>a</sup>

Attributes	Levels	Coefficient	S.E.	P[ Z =z]
Constant	Coastal Type	<b>1.69000</b>	0.0967	0.0000
	Mountainous Type	<b>1.42400</b>	0.0973	0.0000
	Urban Type	<b>0.76862</b>	0.0990	0.0000
No. of Holidays <sup>b</sup>	Five-Day Work-Week System	<b>1.23140</b>	0.1384	0.0000
	Six-Day Work-Week System	0.00000		
Nature Protection	Wildlife Preservation/Management	0.02042	0.0452	0.6518
	Tighter Management of Reservation System	-0.01249	0.0494	0.8004
	Tighter Management of Restricted Areas	-0.02936	0.0415	0.4795
	Same as the Current Level	0.00000		
Environmental Interpretation	Improving Nature Interpretation Facilities	<b>0.12396</b>	0.0423	0.0034
	More Audio/Visual Materials	<b>0.10005</b>	0.0441	0.0234
	Improving Nature Interpretation Programs	<b>0.09535</b>	0.0454	0.0355
	Same as the Current Level	0.00000		
Commercial and Accommodation Facilities	Relocation of CFZ Outside the Parks	0.08142	0.0433	0.0602
	Establishment of Eco-Lodges	0.06841	0.0466	0.1418
	Establishment of Additional Campgrounds	0.00846	0.0410	0.8366
	Same as the Current Level	0.00000		
Package Tour	Wildlife Habitat Tour	<b>0.26858</b>	0.0364	0.0000
	Points of Interest Tour	<b>0.16577</b>	0.0441	0.0002
	Local Festivals in Each Season	<b>0.10390</b>	0.0428	0.0151
	Same as the Current Level	0.00000		
Tourism Conditions	Expansion of Amenities	<b>0.12684</b>	0.0421	0.0026
	Tightening of Night-Time Security	<b>0.09889</b>	0.0470	0.0355
	Cleaner Parks	0.04282	0.0418	0.3051
	Same as the Current Level	0.00000		
Costs	Accommodation Costs	<b>0.08658</b>	0.0423	0.0407
	Goods/Meal Costs	0.02648	0.0455	0.5610
	Separate Charge for Entrance Fee	-0.05420	0.0435	0.2133
	Same as the Current Level	0.00000		

<sup>a</sup> The figures shown in boldface and \* indicate statistically significant confidence levels of 95% and 90%, respectively.

<sup>b</sup> constraint

age was limited to 19-59 considering the sampling costs and statistics showing that 19-64 year-olds accounted for 82% of total visitors from 1991 to 2000(Korea National Parks Authority, 2001).

### III. RESULTS AND DISCUSSION

The extent of influence of attribute levels was

calibrated with the CCM using the maximum likelihood method. The attribute levels were defined using dummy coding. The calculated McFadden  $\rho^2$  was 0.174(Table 2). It is an goodness of fit measure similar to  $R^2$  in the regression. However, because of the characteristics of log-likelihood, large positive values are much less likely for  $\rho^2$  than  $R^2$ . To identify whether previous visitation had a greater

Table 3. Model Estimation Results by Group(VG and NVG)<sup>a</sup>

Attributes	Levels	Visiting Group <sup>b</sup>			Non-Visiting Group <sup>c</sup>		
		Coefficient	S.E.	P[ Z =z]	Coefficient	S.E.	P[ Z =z]
Constant	Coastal Type	<b>2.0905</b>	0.1334	0.0000	<b>1.2292</b>	0.1500	0.0000
	Mountainous Type	<b>1.9313</b>	0.1338	0.0000	<b>0.7275</b>	0.1524	0.0000
	Urban Type	<b>1.1527</b>	0.1361	0.0000	<b>0.3356</b>	0.1539	0.0291
No. of Holidays <sup>d</sup>	Five-Day Work-Week System	<b>1.5247</b>	0.2376	0.0000	<b>1.0763</b>	0.1733	0.0000
	Six-Day Work-Week System	0.0000			0.0000		
Nature Protection	Wildlife Preservation/Management	0.0394	0.0555	0.4782	-0.0153	0.0786	0.8459
	Tighter Management of Reservation System	0.0123	0.0609	0.8398	-0.0635	0.0849	0.4547
	Tighter Management of Restricted Areas	-0.0137	0.0511	0.7888	-0.0596	0.0716	0.4049
	Same as the Current Level	0.0000			0.0000		
Environmental Interpretation	Improving Nature Interpretation Facilities	<b>0.1616</b>	0.0519	0.0018	0.0523	0.0736	0.4776
	More Audio/Visual Materials	<b>0.1271</b>	0.0547	0.0201	0.0546	0.0751	0.4675
	Improving Nature Interpretation Programs	0.1050*	0.0562	0.0617	0.0828	0.0773	0.2839
	Same as the Current Level	0.0000			0.0000		
Commercial and Accommodation Facilities	Relocation of CFZ Outside of Parks	0.0981*	0.0534	0.0660	0.0565	0.0748	0.4496
	Establishment of Eco-Lodges	0.0778	0.0577	0.1775	0.0494	0.0797	0.5354
	Establishment of Additional Campgrounds	0.0041	0.0501	0.9355	0.0216	0.0719	0.7642
	Same as the Current Level	0.0000			0.0000		
Package Tour	Wildlife Habitat Tour	<b>0.2509</b>	0.0442	0.0000	<b>0.3153</b>	0.0647	0.0000
	Points of Interest Tour	<b>0.1353</b>	0.0542	0.0126	<b>0.2214</b>	0.0766	0.0038
	Local Festivals in Each Season	0.0752	0.0526	0.1530	<b>0.1630</b>	0.0738	0.0273
	Same as the Current Level	0.0000			0.0000		
Tourism Conditions	Expansion of Amenities	<b>0.1153</b>	0.0518	0.0261	<b>0.1494</b>	0.0730	0.0408
	Tightening of Night-Time Security	0.1062*	0.0584	0.0689	0.0821	0.0800	0.3048
	Cleaner Parks	0.0684	0.0512	0.1816	-0.0070	0.0728	0.9230
	Same as the Current Level	0.0000			0.0000		
Costs	Accommodation Costs	0.0791	0.0519	0.1272	0.1066	0.0737	0.1480
	Goods/Meal Costs	0.0311	0.0561	0.5789	0.0129	0.0786	0.8697
	Separate Charge for Entrance Fee	-0.0388	0.0536	0.4693	-0.0852	0.0752	0.2573
	Same as the Current Level	0.0000			0.0000		

<sup>a</sup> The figures shown in boldface and \* indicate statistically significant confidence levels of 95% and 90%, respectively.

<sup>b</sup> Group visited NP in 2001

<sup>c</sup> Group not visited NP in 2001

<sup>d</sup> constraint

effect on the findings, an additional analysis was conducted by dividing the data into two groups: (1) NP visiting group(VG), denoting people who visited one of the NPs in 2001, and (2) non visiting group(NVG), comprised of people who did not visit any of the NPs in 2001(Table 3). NPs are well-known tourism destinations. However, it is difficult to frequently visit NPs, except for urban type parks, because parks generally belong to the high involvement product category. As Schiffman and Kanuk(1991) indicated, high involvement leads to an extensive information search, attitude change, purchase behavior, and ultimately brand loyalty. Thus, the respondents were classified into the two groups: VG and NVG. The VG(66.4% of total respondents) is thus likely to have more knowledge about the current state of NP management since they are more likely to have visited NPs in the past than the NVG(33.6%), and are aware of the purpose of NP establishment than the NVG since they have more information about the NPs.

The Chi-square test of independence showed that the VG had a higher proportion of car ownership, higher levels of educational attainment and income, a

higher frequency of married couples, and a lower proportion of those in their twenties(Table 4).

### 1. Constant and "Number of Holidays"

A constant represents how much, on average, respondents would visit one type of NP over those who would not visit NPs(base alternative). The analysis of the data showed that constants are statistically significant with coastal types being the most preferred followed by mountainous and urban types. "Number of holidays," which was used as a constraint, is also statistically significant(Table 2). Given this, the new work-week system would raise the intentions to visit NPs. Interpreting these two results together, intention is expected to increase regardless of NP type, but especially for coastal types. According to statistics released by the Korea National Park Authority(2002), lack of time(56.3%), money (33.2%), and information(10.1%) were identified as common constraints. Visiting urban type NPs does not have much effect on the issue even under the six-day work-week system, because these can be visited in a day trip. However, an increase in the number of

Table 4. Difference in Socio-Economic Variables among Groups

	CAR		EDUCATION <sup>a</sup>		INCOME <sup>b</sup>			MARITAL		AGE			
	Own	Do not own	Low	High	Low	Mid	High	Married	Single	20s	30s	40s	50s
VG <sup>c</sup>	552 (83.1%)	112 (16.9%)	371 (55.9%)	293 (44.1%)	188 (28.3%)	320 (48.2%)	156 (23.5%)	473 (71.2%)	191 (28.8%)	193 (29.1%)	190 (28.6%)	171 (25.8%)	110 (16.6%)
NVG <sup>d</sup>	240 (71.4%)	96 (28.6%)	223 (66.4%)	113 (33.6%)	125 (37.2%)	152 (45.2%)	59 (17.6%)	216 (64.3%)	120 (35.7%)	129 (38.4%)	87 (25.9%)	73 (21.7%)	47 (14.0%)
Total	792 (79.2%)	208 (20.8%)	594 (59.4%)	406 (40.6%)	313 (31.3%)	472 (47.2%)	215 (21.5%)	689 (68.9%)	311 (31.1%)	322 (32.2%)	277 (27.7%)	244 (24.4%)	157 (15.7%)
<i>p</i> -value	0,001		0,001		0,008			0,025		0,029			

<sup>a</sup> Low: high school graduate or less, High: college graduate or more

<sup>b</sup> Low: below \$1,667/month, Mid: \$1,667-2,500/month, High: over \$2,500/month

<sup>c</sup> Visiting group

<sup>d</sup> Non-visiting group

holidays contributed to the rise in the intention to visit mountainous and coastal types due to the accessibility from the metropolitan cities. Most of the NPs are located within 4 hours of driving distance. Thus, the adoption of a five-day work-week system may relieve perceived time constraints to some extent, which is likely to cause an increase in preference for visiting mountainous and coastal types. Regardless of NP type, the coefficients of VG were greater than those of NVG for constant and 'number of holidays'(Table 3). Thus, not surprisingly, the VG will initiate the increase in the number of NP visitors once the new work-week system is in place.

## 2. "Nature Protection"

Regarding "nature protection" there were no significant differences in preference among the three levels of the attribute and 'same as the current level'(Table 2). It was expected from the current use patterns, and also, it is due to the fact that the levels included were all restrictive of the use. "Although it is desirable that culture learning be inherent in the use, NPs are still regarded as sites for spending leisure time, for entertainment and pleasure(Chung, 1997)." Thus, the public seems to take more interest in the use of NPs than in the preservation of natural resources. This interpretation is supported by the statistical significances in most of the levels in "package tour" and "tourism conditions."

## 3. "Environmental Interpretation"

Respondents preferred all the levels of this attribute over 'same as the current level.' This is in line with the responses to the open-ended questions by NP managers. However, the managers preferred 'improving nature interpretation programs' the most, while the respondents preferred 'improving nature

interpretation facilities' the most, followed by 'more audio/visual materials' and 'improving nature interpretation programs'(Table 2). Given the increased interest in environmental issues among the public, a few years ago, NPs started providing nature interpretation programs. However, rather than offering actual experiences, the topics of the programs currently provided by NPs are neither unique nor distinguishable, and the contents are limited to explaining or demonstrating along predetermined settings by non-professionals. Thus, environmental interpretation programs offered in the NPs are in their early stage of development, which leaves a gap between the levels preferred by visitors and those preferred by the managers. More specifically, visitors prefer improvement of the basic facilities, whereas the managers wanted the actual content of the programs to be further developed. This is in line with previous research which demonstrated that managers and visitors hold different views regarding park management(Kang and Kim, 2000; Rosenthal and Driver, 1983; Wellman *et al.*, 1982).

As expected, the VG was more likely to be aware of the purpose of NP establishment than the NVG. Although both groups did not want "nature protection" that restricts further use, VG responses were more in line with the purpose of NP establishment than NVG regarding "environmental interpretation," "commercial and accommodation facilities," and "package tours." For "environmental interpretation", all the levels were statistically significant in VG, as opposed to none in the NVG(Table 3).

## 4. "Commercial and Accommodation Facilities"

Whereas NP managers viewed 'establishment of additional campgrounds' as a salient attribute that is important to achieve in preparation for a five-day work-week system, respondents showed no statisti-



cally significant preference over 'same as the current level.' Additionally, 'establishment of eco-lodges' was not preferred by respondents compared to 'same as the current level.'(Table 2). Hiking and vacationing are very common in Korea, and are the main activities in NPs. Despite restriction, many users still camp in undesignated areas and often use facilities in the CFZ(Chung, 1997; Kim, 1995; Kong, 1994). Given these use patterns, the lack of statistical significance for 'establishment of eco-lodges' and 'establishment of additional campgrounds' can be interpreted that most of the visitors return to accommodations in CFZ on the same day or camp anywhere they please.

By international standards, locating CFZ in the NPs is very unusual and additionally promotes land use that is against nature protection. Unlike other levels, VG preferred 'relocation of CFZ to outside the parks'(Table 3). This unexpected result is very encouraging. It seems that recent interest in environmental protection among the public is well reflected in this result. The average land size of CFZ is 12.9km<sup>2</sup> and most of this area is located linearly along the scenically appealing and ecologically critical valleys. This suggests that, although the existence of CFZ is convenient, VG respondents recognize that the CFZs are a typical example of environmentally unfriendly land use, and VGs are willing to tolerate inconveniences caused by relocation of CFZ outside the parks.

## 5. "Package Tour"

Since NPs have lower accessibility compared to other tourism destinations, visitors preferred package tours that combines peripheral attractions. All levels of the "package tour" were statistically significant(Table 2). This preference was illustrated by a manager from Seoraksan NP who explained that tourists visit this

NP because it satisfies a variety of purposes because of its easy accessibility to other attractions, including a spa, beaches, golf courses and ski resorts.

In spite of the general trend towards package tours, coefficients of all the levels in VG were smaller than those in NVG(Table 3). A particularly meaningful finding is the VG's lower preference for 'tours on wildlife habitats' compared to NVG. NPs occupy only 6.5% of Korea's total land area, but they are home to variety of wildlife. Nevertheless, visitation rates are very high and management is centered on user needs. In the case of Bukhansan NP, one manager mentioned that many users come to the mountain habitually because there are no better places to go. Thus, it seems that the VG is aware of the problems caused by overuse, that its preference for "package tours" that cause ecological damage is lower than that of NVG. Additionally, 'local festivals in each season' was not statistically significant, which also reflects respondents' awareness that this does not coincide with the purpose of NP visitation.

## 6. "Tourism Conditions"

For the "tourism conditions" attribute, respondents preferred 'expansion of amenities' the most, which is likely because they spend most of their time outdoors. Preference for 'tightening night-time security' was ranked the second. However, 'cleaner parks' was not statistically significant, which was unexpected(Table 2). Perhaps this is because many respondents were already aware that NPs are overused, and as such, are used to the current level of cleanliness and expectations for it are not high(Shelby and Heberlein, 1986). It may also be that respondents are already aware of the difficulty of keeping parks clean with such large numbers of visitors.

'Expansion of amenities' was less preferred by the VG than the NVG. Perhaps this is because expansion

would inevitably lead to more damage toward nature. Furthermore, the VG preferred 'tightening night-time security.' It is likely that VG is well aware of problems like cooking or camping in undesignated areas as well as shouting and yelling, while the NVG do not care about this, or are unaware (Table 3).

## 7. "Costs"

Regarding costs, 'accommodation costs' was significant, whereas the other two levels were not statistically significant (Table 2). This is likely because accommodation costs are the largest portion of total visit costs. Regarding those attributes with no statistical significance, however, it seems that respondents are already used to being overcharged in NPs or acknowledge that the prices for souvenirs and local food are higher than those around their residential areas. Charging one entrance fee (which included the temple entrance fee) was one of the main complaints of visitors in the survey of park managers. However, this analysis showed that 'separate charge for entrance fee' was not statistically significant. Perhaps this is because the temple entrance fee and NP entrance fee are nominal (ranging from \$1.00-\$1.60 for each) compared to the total cost spent during NP visitation. Moreover, it is likely that visiting the temples is appealing in and of itself and thus, respondents do not have any significant complaints regarding, which was contrary to the expectations of managers.

In the overall analysis of the data collected, 'accommodation costs' was statistically significant, but was not statistically significant when analyzed by groups. This is likely because of the smaller sample size when analyzed by group, and also the magnitude of variance of 'accommodation costs' is similar in both groups as well as in all data collected (Ben-Akiva and Lerman, 1993).

## IV. CONCLUSION AND IMPLICATIONS

With the nation's high population density and a total number of 24 million visitors to NPs in 2001, overuse of NPs is unavoidable because NPs can best satisfy people's recreational needs. Thus, controlling overuse without degrading visitors' satisfaction is the highest priority for NP management. Current overuse is expected to worsen since the government passed a five-day work-week system into law. Under these circumstances, this research was conducted to seek NP management strategies to satisfy public needs without degrading the quality of experience for visitors and of the quality of nature. The results were obtained through a conjoint choice model by constructing a hypothetical scenario with numbers of holidays and salient attributes of NPs.

Results showed that users' intentions to visit NPs will rise under a new work-week system. Among the NP types, intentions to visit coastal NPs are expected to increase the most, while the least increase will be in intentions to visit urban NPs. The main reason for this is the accessibility to each type of NP. Except for "nature protection," all attributes were statistically significant at least in one level. It is likely that none of the "nature protection" levels were statistically significant because the public still regards NPs as objects for visitation and use, not for protection and conservation. "Environmental interpretation" was the highest priority for NP managers to provide in preparation for the new work-week system. However, the coefficient was not large enough compared to other significant attributes, and only the VG preferred this attribute. 'Relocation of CFZ outside the parks', which demonstrates the importance of NP protection in the most resolute way, was preferred by only the VG. This result suggests an important strategy for NP management in the future. That is, moving CFZ out of parks will lower the utility of the facilities

inside the parks by the NVG, which will eventually contribute to controlling overuse.

Most levels of preference for "package tours" were significant. However, 'local festivals in each season,' which is disconnected from the main purpose of visiting NPs, was not significant in VG, and preference for the other levels was also lower in VG than in NVG. With respect to "tourism conditions," the VG was more aware of problems caused by the overuse of NPs than the NVG. In particular, 'tightening night time security' was statistically significant only in VG, and 'expansion of amenities'(which could damage the nature) was also significant but with lower level of preference than that of NVG. Regarding the "costs" attribute, 'accommodation costs' was the only statistically significant level, but this level was not significant in the analysis by each group.

Korea established NPs for the purpose of raising income levels for local residents. Thus, use has been stressed more than nature protection. However, it is hardly possible to ignore use and disregard the increasing public need for leisure activities. As suggested by Crompton and Lamb(1986), each NP should establish appropriate management objectives by compiling current user needs and dynamic external forces. Based on the management objectives, follow-up target market selection and marketing mix activities can be determined. The adoption of a five-day work-week system is an example of uncontrollable external force to NP managers. Nevertheless, all NPs are managed only in line with the general objectives defined in the Natural Park Act, and do not have clear management objectives for each park. Given this, park managers have applied the same marketing strategies to all the NPs without a distinctive strategy for each park. Since each NP has unique characteristics in natural resources and accessibility, user needs are likely to vary among the

NPs. Thus, the following demarketing and marketing strategies should be organized after management objectives are established for each type of NP.

Demarketing strategies need to be applied not only to alleviate the overuse problem. Currently, all NPs have designated the CFZs within the park boundary. Particularly, commercial facilities are clustered along side valleys for the sake of users' convenience. Given this, it is very encouraging that VG preferred relocating CFZ outside of parks. One alternative is to move commercial and accommodation facilities to cities around the parks. Seoraksan NP operates cable cars and Jirisan NP has an access road half way to the summit of the mountain, which stimulates overuse. These NPs should consider restricting charter buses to enter into the parks or allow only the elderly and the handicapped to use cable cars. Park authorities may also change pricing policies initiated by social agreement. Over the past 10 years, an average of 83.6% of total visitors to Taean-haean NP visited in the summer, and 64.2% of total visitors to Naejangsan NP visited in the autumn, thus indicating high seasonality in visitation. The current park entrance fee is not a constraint since it is nominal. Therefore, charging differential fees for each season could be an alternative to relieve seasonal concentration of visitation. However, demarketing has to be subtly and gradually introduced in order not to lose public support.

Marketing strategies should be implemented for the attributes which comply with the purpose of NP establishment and for which user needs are identified. For instance, 'improving nature interpretation facilities' was the most preferred level among the "environmental interpretation" attribute, while in reality, the needs for this attribute are not yet realized. Considering the recently increased public recognition of the importance of environmental protection, expanding environmental interpretation programs can contribute

greatly to educating the public about the importance of environmental protection. Moreover, developing packaged products that include NP visits as well as visits to those attractions around the area should be considered in order to satisfy needs. Providing NP-related information through the Internet is one promotional strategy which is likely to satisfy visitor needs to a great degree. According to statistics released by the Korea National Parks Authority in 2002, Internet (31.4%) ranked second as a way people obtain tourism-related information. It is also stated that the Internet is the most helpful media in selecting tourism destinations, means of transportation, and accommodation. Since 41.2% of all Koreans use the Internet(<http://www.nso.go.kr/eng/>), it can aid as a valuable outlet to educate the public and provide information on NPs including attractions, programs offered, and guidelines for desirable use. In particular, 77.7% of teens and 69.3% of those in their twenties use the Internet. The provision of information can help restrict overuse and prevent misuse of NPs caused by lack of information and understanding. Many of the current NP visitors can seek the benefits of other types of parks such as provincial parks and county parks. However, except for the NPs, these two groups rarely play their roles. The relatively low rate of visitation to these parks is mainly due to the lack of information provided to potential visitors, including information such as the location of parks and so forth.

Whereas costs are found to be a salient attribute in almost all tourism research, some levels of "costs" were not statistically significant in this research. This is an unexpected result, as one of the main complaints of NP visitors was overcharging on accommodations and goods/meals([www.npa.or.kr](http://www.npa.or.kr)). Although this finding may be due to overpricing many of the products in other common tourism destinations, more in-depth research needs to be conducted regarding this attribute. Moreover, 'separate charge of entrance fee,'

which was regarded as important by NP managers, turned out to be insignificant. It seems that respondents are not interested in being charged separately for NP entrance fees and temple entrance fees, since these fees are nominal, ranging from \$2.10- \$3.20 combined. This indicates that salient attribute levels emphasized by managers are different from those by visitors. It is recommended that park managers set an objective measure in assessing user needs.

The NPs are facing a potential for change due to the new work-week system. Sound management implications such as the above mentioned are needed to prepare for the possible overuse that is likely to result in natural degradation as well as decreases in visitor satisfaction. This research show the possible combinations of attributes levels each park managers have to determine to meet potential visitors needs under this changing social environment.

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