

Research paper

A Comparison of Visitors' Characteristics, Traveling Motivations, Recreational Experiences, and Attitudes Toward Recreational Carrying-Capacity Controls between Peak and Off-Peak Seasons

Tzeng-Hua Yang,^{1,4)} I-Ching Huang,²⁾ E-Ling Huang,²⁾ Li-Ping Huang³⁾

【 Summary 】

Excessive tourist demands during peak seasons typically concern managers of forest recreation areas, national parks, and natural and historic heritage sites. They continue to look for better solutions to relieve overcrowding while protecting natural resources and cultural treasures. This study focused on visitors to the Lalashan Forest Reserve in Taiwan to compare the sociodemographic and trip characteristics, traveling motivations, and recreation experiences, of visitors between peak and off-peak seasons, and visitors' opinions regarding recreational carrying-capacity controls in order to draft practical solutions for managers to solve overcrowding problems in the peak season. The results indicated that peak-season respondents were mostly groups, consisting of family recreational trips or company tours. They generally preferred to use tour buses for transportation and to stay for shorter times. The forest reserve was more likely to be one of the major tourist attractions on their itineraries. In contrast, off-peak-season respondents were mostly individuals who stayed longer. These tourists had a stronger motivation to gain knowledge and enjoy the rich historic and cultural heritage in the Lalashan Forest Reserve. Off-peak-season respondents had less-crowded experiences and were more inclined to learn new things. Both peak and off-peak respondents supported the practice of recreational carrying-capacity control in Lalashan Forest Reserve.

Key words: seasonality, recreation motivation, traveling experience, Lalashan Forest Reserve.

Yang TH, Huang IC, Huang EL, Huang LP. 2014. A comparison of visitors' characteristics, traveling motivations, recreational experiences, and attitudes toward recreational carrying-capacity controls between peak and off-peak seasons. *Taiwan J For Sci* 29(1):17-31.

¹⁾ Department of Tourism Management, Chinese Culture Univ., 55 Huagang Rd., Taipei 11114, Taiwan. 中國文化大學觀光事業學系, 11114台北市士林區華岡路55號。

²⁾ Department of Tourism and Leisure Management, Yung Ta Institute of Technology and Commerce, 316 Chungshan Rd., Linti Village., Linlo Township, Pingtung 90942, Taiwan. 永達技術學院觀光與休閒事業管理系, 90942屏東縣麟洛鄉麟蹄村中山路316號。

³⁾ Hualien Forest District Office, Taiwan Forestry Bureau, 1 Lincheng St., Hualien City 97051, Taiwan. 林務局花蓮林區管理處, 97051花蓮市林政街1號。

⁴⁾ Corresponding author, e-mail: yzh4@faculty.pccu.edu.tw 通訊作者。

Received November 2012, Accepted December 2013. 2012年11月送審 2013年12月通過。

研究報告

淡旺季期間遊客屬性、遊憩動機、遊憩體驗及 對承載量管制態度之比較

楊增華^{1,4)} 黃一菁²⁾ 黃一琳²⁾ 黃麗萍³⁾

摘要

森林遊樂區、國家公園或自然與歷史遺跡之管理單位常對旺季期間的過量遊客感到困擾，期望能有較佳的方法來減少過度擁塞的遊客，以保護自然或文化資源。本研究以拉拉山自然保護區為個案，比較旅遊旺季與淡季期間之遊客特性、旅遊動機、旅遊體驗，以及對於遊憩總量管制的意見是否不同，以求對於旅遊旺季期間過量遊客問題提出具體建議。研究發現，拉拉山自然保護區旺季期間之遊客多為團體旅客，同行夥伴主要是家人與公司同事，相對較偏好以遊覽車為交通工具，停留時間較短，拉拉山自然保護區只是他們旅程中的一個重要景點。淡季期間則主要是自由行旅客，同行夥伴主要是家人與朋友，停留時間較長，有較強的動機想獲得新知，以及體驗拉拉山的歷史及文化資源；相較於旺季旅客，淡季旅客較無擁擠的遊憩體驗，且較感受到獲得新知識。研究另發現，淡旺季遊客均支持承載量管制措施。

關鍵詞：季節性、旅遊動機、旅遊體驗、拉拉山自然保護區。

楊增華、黃一菁、黃一琳、黃麗萍。2014。淡旺季期間遊客屬性、遊憩動機、遊憩體驗及對承載量管制態度之比較。台灣林業科學29(1):17-31。

INTRODUCTION

Seasonality has long been viewed as a unique and one of the most worrisome facets of the tourism industry (Jang 2004). It is affected by both natural and institutional factors. For example, temperature, snowfall, and hours of sunshine, summer and winter vacation periods, social leisure norms, religion, and culture. This leads to the phenomenon of “peak and off-peak seasons” (Bar-On 1999), marked by unevenly distributed tourist flows across time and space, with high concentrations of demand in specific periods of the year (Butler 1994).

This alternating pattern poses serious threats to the tourism industry. First, tourism destinations need to invest in infrastructure and services to meet high demands in the peak

season; however, returns on investment are often severely reduced due to underutilization of facilities during the off-peak season. Second, overwhelming visitor concentration in the peak season creates a sense of crowding in terms of transportation and facilities; people subjected to higher pricing for tourism products and services in the peak season may then receive compromised service quality, a common source of visitor complaints (Andriotis 2005). Third, seasonal peaking causes employment and management issues for destination managers; some employees hired in the peak season may be redundant in the off-peak season. Fourth, a sudden massive influx of visitors burdens the water supply, waste management, and transportation systems and

may cause irreversible damage to natural and cultural resources (Manning and Powers 1984, Moyle and Croy 2007, Cuccia and Rizzo 2011).

To minimize negative impacts of seasonal patterns on the tourism industry, numerous studies have proposed methods to draw more visitor traffic during the off-peak season. In the hope that induced demand will increase profits, some suggested adopting off-peak pricing schemes and establishing promotional festivals (Prentice and Andersen 2003, Tohmo 2005). Others proposed deferring or moving travel seasons, or inducing visitors to shift travelling periods to less-crowded times (Higham and Hinch 2002, Spencer and Holecek 2007, Chung 2009).

However, the concern of managers of forest recreation areas, national parks, and natural and historic heritage sites is not how to increase demand in the off-peak season but how to cope with excessive demands in the peak season (McCool and Lime 2001). In particular, in terms of potential threats to the environmental carrying capacity, managing organizations are keen to minimize seasonal destruction and protect ecosystems for the benefit of current and future generations (Lawson et al. 2003, Newman et al. 2005). Past research on seasonality mainly focused on the hospitality industry and used case studies of well-known tourist attractions. Efforts devoted to investigating natural and historic heritage are limited, and research on how to effectively reduce peak visitor burdens remains underexplored.

Common approaches to deal with problems caused by peak-season demands include environmental education, differential pricing, good planning and management, and hardening of facilities (Mieczkowski 1995). Some outdoor recreational locations, museums, and shopping centers choose to restrict visitor

numbers during the peak season. The downside of visitor controls, or so-called recreational carrying-capacity controls, is that suppressed visiting capacity is then very likely to fail to meet demands. This can be detrimental to tourism development and might even invoke protests. Hence it is imperative to carefully evaluate and study visitors' reactions towards recreational carrying-capacity controls.

Negative effects of tourism seasonality on visitors, travel sites, and destination managers cannot be overlooked. It would be beneficial to understand the characteristics of tourism market segments especially visitors' sociodemographic and trip attributes, travelling motives, and recreation experiences in peak and off-peak seasons, and visitors' opinions regarding recreational carrying-capacity controls. Such knowledge can help us better understand the essence of seasonality and draft practical solutions. Thus, this study aimed to examine and compare the following: 1. the demographic and travelling attributes of visitors in peak and off-peak seasons; 2. the travelling motives of visitors in peak and off-peak seasons; 3. the recreation experiences of visitors in peak and off-peak seasons; and 4. visitors' responses to recreational carrying-capacity controls in the peak season.

MATERIALS AND METHODS

Lalashan Forest Reserve

The scope of this study covers the Lalashan Forest Reserve, a natural protection zone managed by the Taiwan Forestry Bureau. The area has elevations that range 1500~2130 m, and is well-known for its forest comprised of 22 ancient Taiwan red cypress (*Chamaecyparis formosensis*) trees, each about 500~2800 yr of age. Lalashan Forest Reserve is one of the most important sites for nature observation, environmental

education, and forest ecotourism in northern Taiwan.

The problem of seasonality is closely connected with tourism demands and the capacity to provide destination services (Cuccia and Rizzo 2011). In the case of the Lalashan Forest Reserve, the peak season is in the summer months from June to August, which coincides with the summer vacation periods for students and their families. This is also the time of the year when climatic conditions are good in mountain regions. Furthermore, there are many private peach farms nearby, and the time of harvesting peaches is from mid-June to early August. As a result of local governmental promotions of peach festivals, the summer months have become the peak tourist season of Lalashan Forest Reserve (Fig. 1).

However, according to Taiwan's *Forest Law and Natural Reserve Establishment and Management Act*, nature reserves are established to protect forest ecosystems and preserve biodiversity. Therefore management should limit access of both people and transportation with only science research and

environment education activities welcomed in these areas. The nearly 200,000 visitor arrivals over the course of a year (Taiwan Tourism Bureau 2012) in the Lalashan Forest Reserve obviously reflects a conflict with legislative goals. In fact, environmental impacts due to a high concentration of tourism activities in the peak season have already emerged (Liu 2008). In light of this, the Taiwan Forestry Bureau invited university scholars to conduct research projects and plans to implement visiting restrictions in the area, which may involve limiting the number of incoming vehicles to a total of 125 each morning and afternoon throughout the peak season (Hsinchu Forest District Office 2011). Before traveling, visitors may need to register online to obtain an access quota.

The recreational carrying capacity can be defined as the maximum number of people that can visit a tourist destination at the same time, without causing destruction of the physical, economic, and socio-cultural environment and an unacceptable decrease in the quality of visitors' satisfaction (McCool and

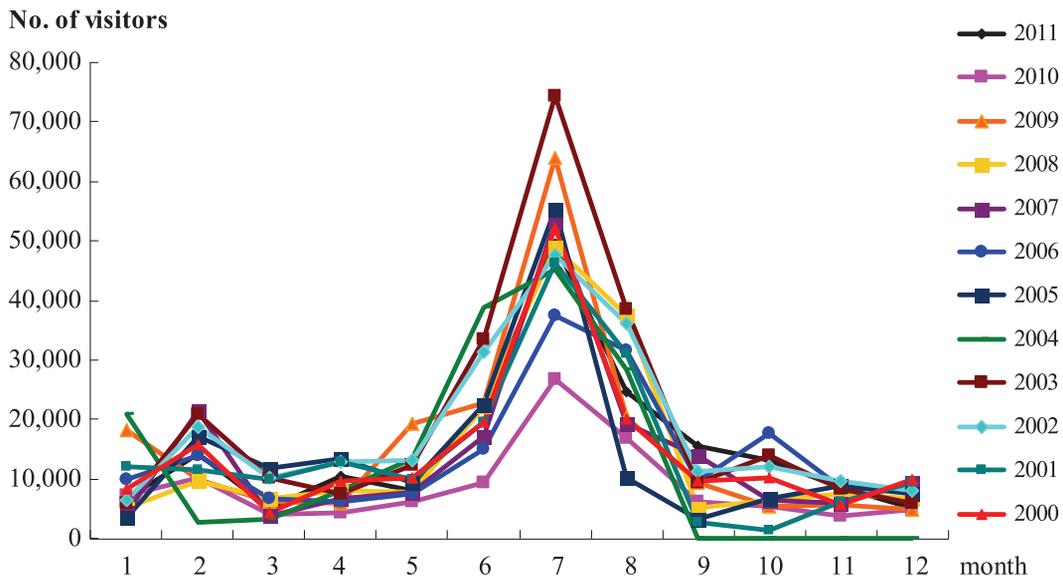


Fig. 1. Lalashan Forest Reserve monthly tourism arrivals, 2000-2011.

Lime 2001, Lawson et al. 2003, Newman et al. 2005). For the Lalashan Forest Reserve, the recreational carrying capacity is influenced by the existing facilities, such as parking lots. However, as the goal of the new plan is to minimize negative impacts on the natural environment, it is a compound carrying-capacity control.

Methods

For this study, the authors conducted a survey on peak and off-peak weekends in Lalashan Forest Reserve in 2011: on January 15, 16, 22, 23, 29, and 30 (off-peak season); and on July 23, 24, 30, and 31 (peak season). The survey was conducted at 10:00~17:00 each day in the spacious rest area beside the #3 giant Taiwan red cypress, which has drinking fountains, toilets, picnic tables, and chairs. A convenience sample was employed, as most visitors to the reserve passed through this location and rested there; this approach also minimized possible inconvenience to visitors. The survey construct consisted of sections evaluating visiting characteristics, push and pull motivations, recreation experiences, opinions regarding recreational carrying-capacity controls, and demographic attributes. Motivational questions were based on measurements of Kim et al. (2003) and Yoon and Uysal (2005). The questions to measure visitors' recreation experiences were based on those of Clawson and Knetsch (1966), McIntosh and Goeldner (1990), and Yoon et al. (2010), which included the 5 phases of recreation experiences: preparation before departure; travel to; on-site experience; travel back; and recollection. A 7-point Likert scale was used as the response format for each variable with assigned values ranging 1~7 for "strongly disagree," "disagree," "somewhat disagree," "neutral," "somewhat agree," "agree," and "strongly agree." Of the collected data, 312

valid samples were obtained in the off-peak season and 282 in the peak season.

RESULTS

The results of this study are presented as: 1) characteristics of respondents; 2) motivation; 3) recreational experiences; and 4) respondents' opinions about recreational carrying-capacity controls.

Characteristics of peak-season versus off-peak-season respondents

More than half of the peak and off-peak respondents were first-time visitors to Lalashan Forest Reserve (Table 1). These respondents were mostly aged 30~49 years and had a college degree. The majority of travel companions were family members, and trips to Lalashan Forest Reserve were mostly impromptu decisions made less than 2 d before departure.

Sociodemographic and trip characteristics of the peak- and off-peak-season respondents differed to some degree. In the peak season, group visitors (54.1%) outnumbered individual visitors (45.9%). Their travel party members were relatively more likely to be colleagues, and travel invitations from friends occurred less often. They were relatively younger and more inclined to use tour buses to travel to Lalashan Forest Reserve. Also, the number of preparation-days prior to destination selection and departure tended to be longer, but their length of stay tended to be shorter. In contrast, 72.4% of off-peak-season respondents were individual visitors who were relatively older. Their travel party members were relatively more likely to be friends, and company tours occurred less often. Also, the number of preparation-days prior to destination selection and departure tended to be shorter but the length of stay was longer.

Table 1. Sociodemographic and trip characteristics of peak-season vs. off-peak-season respondents

Item	Off-peak	Peak	χ^2	p
Gender				
Female	54.3%	54.5%	0.002	0.968
Male	45.7%	45.5%		
Age (years)				
0~19	9.4%	14.7%	21.529	0.001
20~29	14.3%	12.6%		
30~39	21.8%	28.8%		
40~49	29.6%	24.5%		
50~59	12.4%	15.5%		
> 60	12.4%	4.0%		
Marital status				
Single	40.3%	43.9%	1.344	0.511
Married	57.8%	55.0%		
Other	1.9%	1.1%		
Educational level				
Elementary or lower	4.3%	3.3%	4.586	0.468
Junior high	5.9%	8.6%		
Senior high	20.2%	25.2%		
University	55.0%	48.6%		
Graduate school	14.7%	14.4%		
Numbers of visits to Lalashan Forest Reserve				
First time	61.1%	52.4%	4.990	0.173
Two	19.3%	24.7%		
Three	10.0%	10.0%		
Four or more	9.6%	12.9%		
Travel companions				
Family	55.3%	49.3%	43.157	< 0.001
Classmates	4.5%	2.2%		
Boyfriend/Girlfriend	3.2%	4.0%		
Colleagues	6.4%	24.3%		
Friends	21.5%	12.5%		
Social group	7.1%	7.0%		
Single	1.0%	0.4%		
Other	1.0%	0.4%		
Preparation time prior to departure (d)				
< 1	28.3%	15.8%	23.359	0.001
1~2	42.4%	44.5%		
3~4	7.1%	5.9%		
5~6	5.8%	6.6%		
7~14	6.1%	14.0%		
15~30	3.5%	5.9%		
> 30	6.8%	7.0%		

con't

Estimated length of stay (h)				
0~5	24.9%	41.0%	53.730	< 0.001
6~11	11.8%	5.9%		
12~17	4.3%	7.4%		
18~23	0.7%	0.4%		
≥ 24*	54.4%	45.4%		
Travel members				
Independent	72.4%	45.9%	41.579	< 0.001
Group	27.6%	54.1%		
Transportation				
Sedan/Minivan/Jeep	79.9%	70.6%	17.031	0.001
Tour bus	11.7%	20.6%		
Motorcycle	5.8%	2.6%		
Other (e.g., public bus, bicycle, truck)	2.6%	6.2%		

*The Lalashan Forest Reserve is in a mountainous region; some respondents chose to stay in the Lalashan area to have more time to experience the forest reserve, aboriginal culture, peach festival (peak season), and other tourist attractions in the Lalashan area. Their length of stay was therefore more than 24 h.

Regarding transportation, off-peak season respondents were relatively less inclined to use tour buses (Table 1).

Motivation of peak-season versus off-peak-season respondents

The following sections discuss the push and pull factors regarding respondents.

Push motivation

Table 2 shows that the major motivations for respondents in both the peak and off-peak seasons were that Lalashan Forest Reserve is “a suitable destination to explore nature with children,” that people “have never been to Lalashan Forest Reserve,” and that they had “the opportunity to examine the Lalashan ecosystem,” “the opportunity to appreciate the history and culture of Lalashan Forest Reserve,” and “the opportunity to share a unique travel experience.” The 5 items above received an average agreement score of ≥ 5.5 on a scale of 7. This shows that regardless of the season,

respondents perceived the nature reserve as a distinct destination and planned to explore the natural and cultural resources with their families, friends, and colleagues.

Slight differences between peak and off-peak seasons were found in motivation items “to improve physical health,” “the opportunity to appreciate natural scenery,” “to escape from urban daily life routines,” and “the opportunity to bring families and friends closer.” The rate of approval of these 4 items was relatively higher in the peak-season sample (Table 2); however peak-season ratings were lower for the following 3 items: “the opportunity to appreciate the history and the culture of Lalashan Forest Reserve,” “the opportunity to relax,” and “the opportunity to meet new friends.”

Taken together with the data that peak-season respondents mostly were group visitors with a shorter length of stay, their motivations were more inclined toward improving physical health, getting away from city pressures,

Table 2. A comparison of peak- and off-peak-season respondents' push motivation

Push motivation	Off-peak		Peak		<i>t</i>	<i>p</i>
	Mean	Order	Mean	Order		
The opportunity to examine Lalashan Forest Reserve's ecosystem	5.65	6	5.72	3	-0.899	0.369
To enjoy time with family	4.26	16	4.60	15	-1.887	0.060
A suitable destination to explore nature with children	5.82	3	5.95	1	-1.867	0.062
The opportunity to appreciate the history and the culture of Lalashan Forest Reserve	5.82	3	5.52	5	3.594	< 0.001
Have never been to the Lalashan Forest Reserve	6.02	1	5.94	2	1.155	0.249
To improve physical health	5.20	11	5.64	4	-4.311	< 0.001
The opportunity to appreciate natural scenery	4.36	15	4.63	13	-2.054	0.040
To experience adventures in nature	3.75	17	3.88	17	-1.105	0.270
The opportunity to relax	5.85	2	4.30	16	12.40	< 0.001
To get away from stressful work	4.73	13	4.62	14	0.935	0.350
To escape from urban daily life routines	2.52	18	3.23	18	-5.367	< 0.001
The opportunity to meet new friends	5.43	7	4.79	11	5.131	< 0.001
The opportunity to bring families and friends closer	4.37	14	4.75	12	-3.304	0.001
The opportunity to share a unique travel experience	5.66	5	5.52	5	1.479	0.140
To distinguish my choice of travel destination from others	5.39	8	5.27	8	1.136	0.256
To satisfy my curiosity	5.33	10	5.22	9	1.018	0.309
To expand my horizons	5.37	9	5.29	7	0.796	0.426
To experience a different kind of leisure	5.11	12	5.07	10	0.427	0.669

familiarizing themselves with nature, and bringing families and friends closer. The Lalashan Forest Reserve was more likely to be one of the major tourist attractions on their travel plan and was just one of the choices for nature observation. In contrast, off-season respondents, who were mostly individual visitors with a longer length of stay, were relatively more “pushed” towards gaining knowledge, relaxing, and meeting new people.

Pull motivation

Table 3 shows that both peak and off-peak respondents were “pulled” by “the beautiful natural resources,” “the ease of access,” “the convenient transportation system,” and the fact that the area is “a decent place for

children to explore nature,” has “quality service,” and has “a reputation for the absence of natural and man-made disasters.” All 6 items above reached an average approval rate of ≥ 5.2 . This shows that respondents in Lalashan Forest Reserve in both seasons generally agreed that the area is a safe attraction site that is rich in natural resources, is easy to access, and also provides good services.

Again, there were differences in the pull factors between the peak and off-peak samples (Table 3). Peak-season respondents valued “ease of access” and “a quiet and comfortable destination to relax,” more than their off-peak counterparts. In contrast, off-peak-season respondents rated “quality services,” “rich historic and culture heritage,” “a safe place to travel,” and the acknowledgement

Table 3. A comparison of peak- and off-peak-season respondents' pull motivation

Pull motivation	Off-peak		Peak		<i>t</i>	<i>p</i>
	Mean	Order	Mean	Order		
The beautiful natural resources	5.64	2	5.49	3	1.761	0.079
Ease of access	5.33	6	5.54	1	-2.348	0.019
The convenient transportation system	5.46	5	5.54	1	-1.031	0.303
Unique ecosystem	4.98	12	5.07	8	-0.904	0.366
A decent place for children to explore nature	5.48	4	5.31	4	1.916	0.056
Provision of useful travel information	4.92	13	5.04	10	-1.022	0.307
Quality services	6.00	1	5.20	6	8.262	0.000
A quiet and comfortable destination to relax	3.72	17	4.10	17	-2.475	0.014
Rich historic and cultural heritage	5.06	10	4.48	16	4.919	0.000
Good environmental conditions	4.99	11	4.98	11	0.089	0.929
Convenient parking	5.21	8	5.06	9	1.678	0.094
Convenient facilities	4.76	14	4.83	13	-0.753	0.452
Clean and decent nearby accommodations	4.68	16	4.53	15	1.539	0.124
A safe place to travel	5.20	9	4.98	11	2.303	0.022
A reputation for the absence of natural or man-made disasters	5.28	7	5.28	5	0.084	0.933
A unique travel destination	4.72	15	4.75	14	-0.319	0.749
News of the imminent recreational carrying-capacity control in Lalashan Forest Reserve	5.51	3	5.17	7	3.494	0.001

of “news of the imminent recreational carrying-capacity control” higher than did peak samples.

Taken together, data indicated that peak-season respondents were mostly group visitors to Lalashan Forest Reserve which was more likely to be one of the major tourist attractions on their itineraries and were more inclined to agree that Lalashan Forest Reserve is easily accessible and is a quiet and comfortable destination to relax. In contrast, off-peak respondents, who are mostly individual visitors with a longer length of stay, were more “pushed” by motivations that Lalashan Forest Reserve is a historic and cultural attraction, has quality services, is safe, and recreational carrying-capacity controls may soon be imposed on the reserve. Off-peak-season respondents seemed more inclined to view Lalashan Forest Reserve as a specific

destination and wished to have in-depth travel experiences.

Recreational experiences of peak-season versus off-peak-season respondents

There were few significant differences in the 5 phases of recreational experiences between peak and off-peak respondents (Table 4). In the peak season, respondents felt that too many visitors made Lalashan Forest Reserve very crowded, while off-peak-season respondents felt they learned new things during their visit and the travel process to Lalashan Forest Reserve was straightforward. The other measurement items did not significantly differ between groups. In short, compared to peak-season respondents, off-peak-season respondents enjoyed better recreational experiences, especially in terms of learning new things. This is an important finding, as environmen-

Table 4. A comparison of peak- and off-peak-season respondents' recreational experiences

Recreational experiences		Off-peak		Peak		<i>t</i>	<i>p</i>
		Mean	Order	Mean	Order		
Preparations before departure	I spent a lot of time gathering travel information about Lalashan Forest Reserve.	4.58	22	4.64	22	-0.592	0.557
	I spent a lot of time preparing equipment required for the trip to Lalashan Forest Reserve.	4.40	25	4.41	25	-0.181	0.858
	It is a challenging trip.	4.62	21	4.82	20	-0.986	0.342
	I didn't plan ahead before the trip to Lalashan Forest Reserve.	4.41	24	4.45	23	-0.326	0.744
Travel to	I enjoyed preparing for the trip to Lalashan Forest Reserve.	4.79	20	4.70	21	0.877	0.385
	The principal destination of this trip is Lalashan Forest Reserve.	5.69	13	5.79	8	-1.091	0.278
On-site experience	Traveling to Lalashan Forest Reserve makes me very happy.	5.99	4	6.02	3	-0.429	0.689
	Traveling to Lalashan Forest Reserve makes me relaxed.	6.00	3	6.05	2	-0.622	0.535
	I was treated with respect on this trip to Lalashan Forest Reserve.	5.43	16	5.47	13	-0.381	0.704
	It was a memorable trip to Lalashan Forest Reserve.	5.73	10	5.66	11	0.811	0.421
	The trip to Lalashan Forest Reserve stimulated my imagination.	5.23	19	5.17	18	0.646	0.519
	Traveling to Lalashan Forest Reserve made me feel physically and mentally comfortable.	5.99	4	5.95	4	0.592	0.557
	The natural ecological environment of Lalashan Forest Reserve is well protected.	5.81	6	5.88	5	-0.816	0.419
	Lalashan Forest Reserve has adequate parking spaces.	4.56	23	4.43	24	1.118	0.265
	The hiking trails in Lalashan Forest Reserve are well-designed.	5.56	13	5.46	14	1.028	0.308
	The public infrastructure in Lalashan Forest Reserve is not well-maintained.	3.79	27	3.96	27	-1.503	0.133
	Too many visitors makes Lalashan Forest Reserve very crowded.	3.83	26	4.13	26	-2.725	0.006
	I have learned new things on this trip to Lalashan Forest Reserve.	5.34	18	5.12	19	2.448	0.016
	This trip to Lalashan Forest Reserve was as expected and under control.	5.36	17	5.25	17	1.255	0.213
Travel back	The travel process from Lalashan Forest Reserve went well.	5.72	11	5.55	12	2.012	0.047

con't

Recollection	I was satisfied with the trip to Lalashan Forest Reserve.	5.79	8	5.69	10	1.296	0.200
	Lalashan Forest Reserve is worth a visit.	5.80	7	5.82	7	-0.171	0.865
	I will never visit Lalashan Forest Reserve again.	2.73	31	2.85	31	-0.919	0.359
	I will share this trip to Lalashan Forest Reserve with my friends.	5.77	9	5.71	9	0.749	0.459
	I would like to recommend Lalashan Forest Reserve to my relatives and friends.	6.12	2	5.86	6	0.812	0.395

tal education is one of the legislative goals of nature reserves such as Lalashan Forest Reserve.

Respondents' opinions about recreational carrying-capacity controls

Favorable attitudes towards recreational carrying-capacity controls were seen in both groups. Off-peak respondents appeared to support this more, but the value did not significantly differ from peak-season respondents (Table 5). Both peak and off-peak respondents agreed with the use of recreational carrying-capacity controls, and they were willing to support the policy at the expense of travel convenience.

From Table 5, it can also be seen that both peak and off-peak respondents strongly supported the statement "I agree to make more effort to protect the ecological environ-

ment" (means of 6.14 and 6.19 for peak and off-peak respondents, respectively). Furthermore, those who supported the statement "I agree to make more effort to protect the ecological environment" were more likely to support the new restrictions (coefficient of correlation 0.35.) Therefore attitudes regarding environmental protection can explain why both peak and off-peak respondents supported recreational-carrying capacity-controls. Past studies indicated that people who have more pro-environmental beliefs and attitudes will have more pro-environmental behaviors (Mehmetoglu 2005, Mehmetoglu et al. 2010).

About the statement "The nature protection zone should not be open to the public as an attraction", both groups slightly disagreed with this idea (means of 3.75 and 3.70 for peak and off-peak respondents, respectively, on a scale of 7). This indicates that these re-

Table 5. Respondents' opinions about recreational carrying-capacity controls

Item	Mean		<i>t</i>	<i>p</i>
	Off-peak	Peak		
I am in favor of the implementation of recreational carrying-capacity control in Lalashan Forest Reserve.	5.47	5.36	0.952	0.344
I also support its implementation in other recreational areas in Taiwan.	5.45	5.26	1.542	0.126
I agree to make more effort to protect the ecological environment.	6.19	6.14	0.916	0.360
A nature protection zone should not be open to the public as an attraction.	3.70	3.75	1.499	0.135

spondents wished to have a chance to know more about the natural beauty and uniqueness of ecosystems in Taiwan.

DISCUSSION AND CONCLUSIONS

The majority of both peak- and off-peak-season respondents were first-time visitors to Lalashan Forest Reserve. They considered the place to be a destination with quality services and ease of transportation access and were mainly motivated by curiosity about the natural resources, history, and culture of Lalashan Forest Reserve, and a desire to relax and have a special travel experience. The ideal climatic conditions during the summer vacation period and the nearby peach festival from June to August underpin Lalashan Forest Reserve's peak season.

Most peak-season respondents were group visitors, consisting of family recreational or company trips, with groups relatively more inclined to use tour buses as transportation and to have shorter lengths of stay. An important reason that these groups came to Lalashan region was to attend the peach festival, and enjoy and purchase peaches, with the forest reserve also on the itinerary as a major tourist attraction. With respect to recreational experiences, they were more likely to feel crowded and less likely to enjoy all that nature has to offer. Compared to peak-season respondents, off-peak-season respondents were mostly individual visitors who had longer stays. They were relatively more "pushed" toward gaining knowledge and more "pulled" by the rich historic and culture heritage of Lalashan Forest Reserve. Their recreational experiences were less inclined to feel crowded and more inclined to experience all nature has to offer and learn new things.

The Lalashan Forest Reserve is not a business resort that can accommodate a

large flow of visitors without limits. It aims to protect the forest ecosystem and preserve biodiversity. Therefore, the authorities have a duty to limit the number of visitors who can access the reserve. Only those people who are interested in studying the ecosystem of a forest reserve should be allowed to visit. The authorities should encourage those, especially in the peak season, who view the forest reserve as a secondary and/or subsidiary tourist attraction to go to forest recreational areas to enjoy natural observations or forest ecotourism, rather than visiting nature reserves.

Both respondents in peak and off-peak seasons supported implementation of recreational carrying-capacity controls. Moreover, the majority of visitors agreed that more efforts should be made to protect the natural ecological environment. This is reasonable, because travelers who are willing to spend time and money to visit nature reserves may have special characteristics compared to the general population. Ecotourists and/or nature-based tourists were found to be more ecologically oriented and had more pro-environmental beliefs and behaviors (Weaver and Lawton 2002, Wurzinger and Johansson 2006). Besides, from the viewpoints of both peak- and off-peak-season samples, these visitors had already visited Lalashan Forest Reserve and had satisfied their curiosity. They were less likely to revisit this nature reserve in the foreseeable future since the perceived value and novelty seeking of revisiting a destination are very likely to be lower than previous traveling (Chen et al. 2010). The new plan will not have a great influence on these visitors who might not return soon, and hence, they were willing to support the new plan. However, when asked if nature protection zones should not be open to the general public as an attraction, they slightly disagreed with this idea, probably due to a fear of not having the chance to see

and learn more about Taiwan's natural sceneries and treasured ecosystems in the future.

Three suggestions are recommended for reserve managers. First, management can limit tour bus access. Our results showed up to 54.1% of tourism arrivals were group tours in the peak season and Lalashan Forest Reserve was likely to be just one of the major attractions on their itinerary. Restricting the number of tour buses would affect group tours to a limited degree but the benefits of effectively reducing inbound traffic would be great. Second, authorities could invest in forest recreational expansion projects to shoulder tourism demands. People mostly came to Lalashan Forest Reserve to explore nature. The creation of environmentally friendly artificial forest recreation areas in urban peripheral areas would redistribute uneven tourism demands and lighten the burden of excess arrivals. Third, in line with the legislative goals of nature reserves, management may consider holding more activities related to environmental education, such as educating visitors about the recreational carrying-capacity control policy, the relationship between the ecosystem and local aboriginal culture, and the importance of environmental protection.

The authors acknowledge that this study has limitations, and we provide advice for future research as follows. First, the survey used in this study was conducted on weekends, which could have resulted in a self-selection bias, since weekends are themselves "peak periods." Future researchers might consider conducting surveys on weekdays to gain more insights into the seasonality problem. Second, subsequent studies might compare if visitors' characteristics, visiting motivations, and recreational behaviors, as well as ecological environment quality, have systematic differences before and after Lalashan Forest Reserve's recreational carrying-capacity

controls are implemented. The comparison will help us understand the influence of recreational carrying capacity, and the results will be useful to management institutions. Third, the questions used to measure visitors' recreational experiences in this study were based on the 5 phases of recreational experiences: preparation before departure; travel to; on-site experience; travel back; and recollection. However, the phases contain a logical problem since the stage of travel back and recollection cannot be accurately measured during the on-site experience. Future researchers might design a better method to correctly measure visitors' travel back and recollections of their travel experience. Last, although a majority of respondents expressed support for recreational carrying-capacity controls, the opinions of local peach farmers, restaurant managers, accommodation owners, travel companies, and other stakeholders' attitudes should be investigated to ensure the success of recreational carrying-capacity controls.

LITERATURE CITED

- Andriotis K. 2005.** Seasonality in Crete: problem or a way of life? *Tourism Econ* 11(2):207-24.
- Bar-On RV. 1999.** The measurement of seasonality and its economic impacts. *Tourism Econ* 5(4):437-58.
- Butler RW. 1994.** Seasonality in tourism: issues and implication. In Seaton AV, (editor). *Tourism: a state of the art*. Chichester, UK: Wiley. p 332-9.
- Chen CC, Lai YH, Petrick JF. 2010.** The discriminant effect of perceived value on travel intention: visitors vs. non-visitors. In: Miller D, editor. *Proceedings of the Travel and Tourism Research Association 41st Annual Conference*; 2010, Jun 20-22; San Antonio, TX. Travel and Tourism Research Association.

- Chung JY. 2009.** Seasonality in tourism: a review. *e-Review Tourism Res* 7(5):82-96.
- Clawson M, Knetsch L. 1966.** Economics of outdoor recreation. Baltimore, MD: Johns Hopkins Univ. Press. 328 p.
- Cuccia T, Rizzo I. 2011.** Tourism seasonality in cultural destinations: empirical evidence from Sicily. *Tourism Manage* 32(3):589-95.
- Higham J, Hinch T. 2002.** Tourism, sport and seasons: the challenges and potential of overcoming seasonality in the sport and tourism sectors. *Tourism Manage* 23(2):175-85.
- Hsinchu Forest District Office. 2011.** Annual policy implementation book. Hsinchu, Taiwan: Hsinchu Forest District Office, Taiwan Forestry Bureau. 89 p. [in Chinese].
- Jang SC. 2004.** Mitigating tourism seasonality: a quantitative approach. *Ann Tourism Res* 31(4):819-36.
- Kim SS, Lee CK, Klenosky DB. 2003.** The influence of push and pull factors at Korean national parks. *Tourism Manage* 24(2):169-80.
- Lawson SR, Manning RE, Valliere WA, Wang B. 2003.** Proactive monitoring and adaptive management of social carrying capacity in Arches National Park: an application of computer simulation modeling. *J Environ Manage* 68(3):305-13.
- Liu RY. 2008.** A case study on management of Lalashan Forest Reserve in terms of community forestry. Taipei, Taiwan: Research paper of Taiwan Forestry Bureau. 103 p. [in Chinese].
- Manning R, Powers LA. 1984.** Peak and off-peak use: redistributing the outdoor recreations / tourism load. *J Travel Res* 23(2):25-31.
- McCool SF, Lime DW. 2001.** Tourism carrying capacity: tempting fantasy or useful reality? *J Sustain Tourism* 9(5):372-88.
- McIntosh RW, Goeldner CR. 1990.** Tourism principles, practices, philosophies. 6th edition. New York: Wiley. 534 p.
- Mehmetoglu M. 2005.** A case study of nature-based tourists: specialists versus generalists. *J Vacation Marketing* 11(4):357-69.
- Mehmetoglu M, Hines K, Graumann C, Greibrokk J. 2010.** The relationship between personal values and tourism behaviour: a segmentation approach. *J Vacation Marketing* 16(1):17-27.
- Mieczkowski Z. 1995.** Environmental issues of tourism and recreation. Lanham, MD: Univ. Press of America. 552 p.
- Moyle B, Croy G. 2007.** Crowding and visitor satisfaction during the off-season: Port Campbell National Park. *Ann Leisure Res* 10(3):518-31.
- Newman P, Manning R, Dennis D, McKonly W. 2005.** Informing carrying capacity decision making in Yosemite National Park, USA using stated choice modeling. *J Park Recreation Admin* 23(1):75-89.
- Prentice R, Andersen V. 2003.** Festival as creative destination. *Ann Tourism Res* 30(1):7-30.
- Spencer DM, Holecek DF. 2007.** Basic characteristics of the fall tourism market. *Tourism Manage* 28(2):491-504.
- Taiwan Tourism Bureau. 2012.** Visitors to the principal scenic spots in Taiwan by month, 2011. Available at <http://admin.taiwan.net.tw/statistics/year.aspx?no=134>. Accessed 30 July 2012.
- Tohmo T. 2005.** Economic impacts of cultural events on local economies: an input-output analysis of the Kaustinen Folk Music Festival. *Tourism Econ* 11(3):431-51.
- Weaver DB, Lawton, LJ. 2002.** Overnight ecotourist market segmentation in the Gold Coast hinterland of Australia. *J Travel Res* 40(3):270-80.
- Wurzinger S, Johansson M. 2006.** Environmental concern and knowledge of ecotourism among three groups of Swedish tourists. *J Travel Res* 45(2):217-26.
- Yoon Y, Uysal M. 2005.** An examination of the effects of motivation and satisfaction on

destination loyalty: a structural model. *Tourism Manage* 26(1):45-56.

Yoon YS, Lee JS, Lee CK. 2010. Measuring

festival quality and value affecting visitor's satisfaction and loyalty using a structural approach. *Int J Hosp Manag* 29(2):335-42.

