Travel Motivation of Domestic Tourists to the Changbai Mountain Biosphere Reserve in Northeastern China: A Comparative Study

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Abstract: This article seeks to develop a fuller understanding of the social and attraction motives of domestic tourists who visit the Changbai Mountain Biosphere Reserve (CMBR) in Northeastern China. To do so, ecotourists are compared to general travelers visiting this area. A questionnaire was employed to collect data on visitor characteristics and motivations, responses to which were then analyzed via descriptive statistics, T-tests and principal component factor analysis. Results showed that 16% of the visitors to this area were classified as ecotourists, while the remainder general travelers. Five motivations displayed significant differences (P<0.05) between these two types of tourists. Three social motives – boosting self-confidence, feeling at home away from home and being together with family – and two attraction motives – indoor sports and viewing unique landscapes of the CMBR (crater lake, waterfall, gorge and hot spring) – were significantly more important for general travelers (P<0.05); while two social motives of experiencing the tranquility of the natural setting and the natural beauty of the landscape were relatively more important for ecotourists (P<0.1). Results suggest that ecotourists have distinct and complicated attraction and social motives compared to general travelers visiting the CMBR. Results have useful implications for researchers interested in tourist motivations and behavior, as well as for managers who wish to focus their marketing strategies more effectively.

Introduction

The concept of motivation is considered as an element of market segmentation in many empirical studies of tourism (Awaritefe 2004; Card and Kestel 1988; Kozak 2002; Ryan and Glendon 1998), and a number of approaches have been used for understanding tourist motivations (Crompton 1979; Hanqin and Lam 1999; Kerstetter et al. 2004; Plog 1974; Ross and Iso-Ahola 1991; Ryan and Glendon 1998). Researchers note that tourists' motivations are multiple (Crompton 1979; Mayo and Jarvis 1981) and that people may have different reasons for taking either domestic or international vacations (Kozak 2002). Fodness (1994) observes that effective tourism marketing is impossible without understanding the consumers' (tourists') motivations and that a satisfying experience in visiting a particular area can ultimately help entice more tourists to visit that area. Beh and Bruyere (2007) agree that it is first important to identify tourists' motivations for travel in order to adequately provide an excellent tourism experience for visitors. Pan and Ryan (2007) believe that in order to develop an effective marketing strategy and sustainable management plan for any destination, it is important to explore and identify the motivating factors that lead to the selection of a specific destination to visit. Other scholars have recommended that, in an increasingly saturated marketplace, the successful marketing of national parks and other distinctive ecological destinations should be guided by a thorough analysis of tourist motivations and their relationship to visitor satisfaction and loyalty (Kozak 2001; Yoon and Uysal 2005).

Natural areas and national parks have powerful appeal for tourists, are major foreign currency earners, and make up an important part of a nation's tourism industry (Uysal et al. 1994). A number of studies focusing on motivations of visitors to national parks and nature areas have been undertaken in western countries. Ferreira and Harmse (2014) found that most visitors wanted to view wildlife (especially the Big Five) in the Kruger National Park of South Africa. Uysal et al. (1994) assessed the travel motives of Australian tourists to U.S. national parks and nature areas and formed five groupings including 'relaxation/hobbies', 'novelty', 'enhancement of kinship relationship', 'escape', and 'prestige'. Tao et al. (2004) analyzed motivations of Asian tourists travelling to Taiwan's Taroko National Park using a self-defined approach and found that the most significant benefits sought by self-defined ecotourists are 'learning about nature' and 'participating in recreation activities'. Beh and Bruyere (2007) analyzed visitor motivations in three Kenyan national reserves, identifying the three most prominent kinds of tourists as escapers, learners and spiritualists. Pan and Ryan (2007) used factor analysis to reveal five motivational dimensions – 'relaxation', 'social needs', 'a sense of belonging', 'mastery skills', and 'intellectual needs' – of visitors to the Pirongia Forest Park in New Zealand. Kruger and Saayman (2010) did a comparative study on travel motivations of tourists to Kruger and Tsitsikamma National Parks in South Africa and found that common motives of tourists were 'escape and relaxation' as well as 'knowledge seeking', 'nostalgia' and 'park attributes'. Despite these efforts, on an overall basis past literature on why visitors travel to national parks and nature areas is still rather limited.

In China, a number of empirical studies on tourist motivations have been conducted since the early 1990s (Chen and Miao 2006; Dong 2011; Huang et al. 2011; Jeffrey and Xie 1994; Lu 1997; Ma et al. 2013; Zhang 2012). Some studies have focused on motivations of visitors to nature reserves (Li 2007), geological parks (Chen and Qiao 2010), world heritage sites (Su et al. 2005), and seismic memorial sites (Tang 2014). However, most previous research findings on tourist motivations are not comparable, reflecting the fact that visitors to different parks have quite different motives due to the attributes of particular destinations, the geographic locations of these parks, types of available activities, marketing strategies, and the complexity of travel motives (Chen and Qiao 2010; Pan and Ryan 2007). While it is true that certain motivations were shared in varying degrees by most tourists to these places – i.e., 'appreciating natural landscapes', 'family and education', 'social needs', and 'perceived prestige of

visit' – most previous research has not focused on natural settings as destinations. Thus travel motivations of tourists to these areas must be further explored and clarified in relation to impacts on particular natural areas and patterns of market segmentation.

As one of the earliest and largest natural reserves established in China, the Changbai Mountain Biosphere Reserve (CMBR) has long been a draw not only for domestic tourists but also for international visitors, and tourism to the area has been growing steadily since 1980. With the number of visitors to the reserve having climbed to 2.44 million in 2010 (Statistical Communiqué of the Changbai Mountain Protection and Development Zone of Jilin Province 2011), it has become imperative for local government officials and reserve wardens to understand tourists' desires and interests when identifying tourism development opportunities. However, the existing literature still suffers from a lack of empirical studies that investigate why people travel to the CMBR and whether tourist motives differ between groups such as ecotourists and general travelers. The target population for this study consists of domestic visitors to the CMBR. The goals of this research include: (1) to identify the social and attraction motives of domestic tourists that influence decisions to visit the CMBR; (2) to explore whether there are any differences between the motivations of these two types of tourists; and (3) to provide some useful management implications for local government and tourism marketers.

1 Methods

1.1 Study site

The Changbai Mountain Biosphere Reserve (CMBR), located in Jilin Province of northeastern China [41°41'49"-42°25'18"N, 127°42'55"-128°16'48"E], is situated on the China-North Korea border and encompasses an area of 196,456 ha (Figure 1). Elevation ranges from 720 to 2691 m above sea level. The region is characterized by a temperate continental climate, with warm summers and long, cold winters. Annual average

precipitation ranges from 700 to 1400 mm, most of which occurs from June to September. The CMBR was established in 1960 as one of the earliest and largest natural reserves in China. In 1980 it was included in the reserve network of the Man and the Biosphere Program of UNESCO. The reserve is rich in biodiversity, containing 2277 species of plants and 1211 species of animals. It has played a critical role in biodiversity conservation in northeastern China and has been recognized for its unique status both at home and abroad. The CMBR was listed as a national forest wild animal nature reserve approved by the State Council in 1986; identified as an international A-level nature reserve by the International Union for Conservation of Nature (IUCN) in 1992; assessed as the first national 4A grade tourism area by the China National Tourism Administration (CNTA) in 2001; named as one of the China's top-ten mountains in 2003; and was designated as the first national 5A level tourism scenic area in 2007.

The CMBR has unique characteristics that make it an attractive destination for tourists. A broad variation in climate types is reflected in vertical vegetational landscapes ranging from temperate to Arctic biomes. Striking volcanic landforms, including a volcanic crater lake at the top of Changbai Mountain, waterfalls and hot springs, old-growth forests, exotic plant species
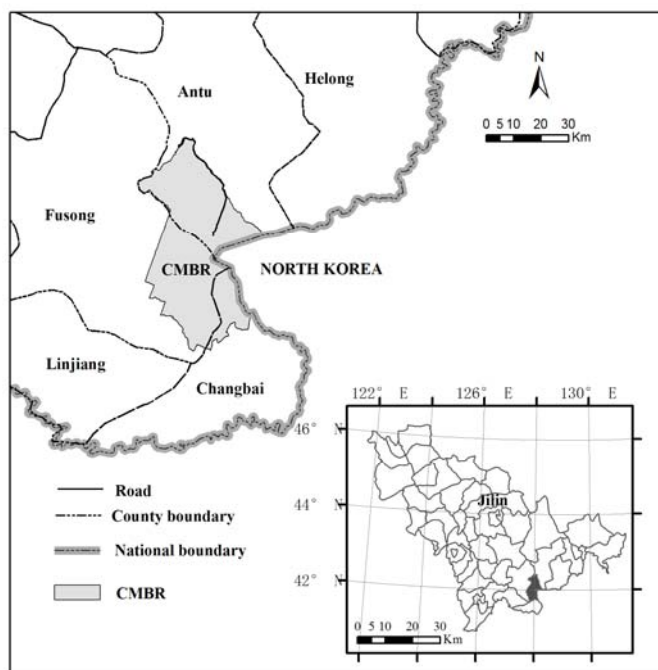

Figure 1 Location of the study area.

and rare herbs as expressions of the reserve's world-renowned gene pool, and distinctive local cultures all combine to make the CMBR a unique and rewarding destination for tourists.

The CMBR has witnessed a steady growth in tourism over the past three decades. The number of visitors to the reserve increased from 29,000 in 1980 to 570,000 in 2005 (Yuan et al. 2008) and 900,000 in 2007 (Dai et al. 2012). By 2010 visitor numbers had reached 2.44 million and total income accrued to governments and private sector businesses over the preceding 5 years totaled 2.03 billion RMB [approximately $322 million USD] (Statistical Communiqué of the Changbai Mountain Protection and Development Zone of Jilin Province 2011). In addition, since 2001, the volume of foreign visitors has exceeded 100,000 per year (Yuan et al. 2008).

1.2 Questionnaire design

Data gathering for the study was accomplished via a questionnaire given to domestic tourists visiting the CMBR during July and August of 2013. The questionnaire consisted of three sections. The first solicited demographic characteristics of visitors, including gender, age, educational level, household income, occupation, family structure and number of tourist trips to relatively pristine natural areas per year.

The second part generated information to identify an individual as a particular type of tourist. In this study, a tourist is identified as one of two types – ecotourist or general traveler. Xiao and Yang (2004) define an ecotourist as a tourist with a strong sense of ecology and low requirements of tour comfort. Such an individual, for example, would not prefer a 'natural area' saturated with roads and cable cars to provide visitor convenience, since such infrastructure is deemed to diminish the area's scenery and ecological character. Ecotourists prefer at least some physical challenges during their visit. Similarly, an adventure traveler who visits a natural area and does not leave litter behind or uses scarce firewood would not be an ecotourist, but one who practices low impact camping would likely be so (Patterson 2007). In contrast, general travelers, also sometimes referred to as mass tourists, while they may enjoy visiting natural areas, have not been found to share the

above characteristics as strongly as ecotourists (Xiao and Yang 2004).

Given this distinction, and in line with results described in previous studies (Chen and Qiao 2010; Xiao and Yang 2004), three questions were used in this study to distinguish between ecotourists and general travelers. Question 1: Which mode of transportation available in the reserve would you prefer – by car or on foot? Question 2: Which kind of tourist infrastructure should be added to the reserve – boats, more roads, cable cars, or none of these? Question 3: How would you deal with your rubbish when you travel in the reserve – discard wherever convenient or dispose in garbage receptacles? Respondents were asked to choose one answer to each of the above three questions. When a respondent selected the answers of 'on foot,' 'none of these,' and 'dispose in garbage receptacles' at the same time, that individual was identified as an ecotourist. Otherwise, he or she was counted as a general traveler. These questions, while not as elaborate as some utilized in other research, were selected to maintain consistency with those used in previous research on domestic tourists visiting China nature reserves (Chen and Qiao 2010; Xiao and Yang 2004).

The third part of the questionnaire was designed to detect the motivations of the tourists. A total of 49-items – including 24 social motives and 25 attraction motives – were selected on the basis of previous research on tourist motivations (Beh and Bruyere 2007; Chen and Qiao 2010; Eagles 1992; Kim et al. 2003), as well as the actual situation in the CMBR. "Social motives" refers to the set of opinions about personal goals and about interactions with other people, while features of the potential destination that make it desirable as a place to visit are referred to here as "attraction motives". Respondents were asked to indicate the importance of social and attraction motives for their trip to the CMBR. For each motive, four choices reflecting degree of importance were provided with the accompanying rankings: 1 – not at all important; 2 – not very important; 3 – somewhat important; and 4 – very important. The totals for each question were tabulated and averaged over all respondents. Thus for example, if all respondents stated that a particular travel motivation was very important to them in the choice of CMBR, that motivation would receive a

mean of four. Conversely, a mean of one would occur if all respondents stated that a motivation was not at all important.

1.3 Sample respondents

In this study, the survey was completed on-site by tourists from China to the CMBR; thus the questionnaire was provided in the Chinese language. In order to ensure validity, one pretest was conducted with 20 tourists before the formal questionnaires were administered in early July, 2013. The time period for formal survey distribution included the peak tourist season in July and August. The surveys were administered on-site at the entrance of the North Slope Scenic Area of the CMBR. Interviewers used a random sampling method to obtain the sample of visitors. Specifically, every 15 minutes interviewers approached a visitor and asked if he/she would agree to take part in the survey. The sample included groups and individuals, and 637 completed usable questionnaires were returned for a 90.4% response rate. The sample consisted of 536 general travelers and 101 ecotourists identified through their responses to the questions described earlier in part 2 of the questionnaire.

1.4 Data analysis

The data from the questionnaire were analyzed using the SPSS 17.0 statistical software package. General characteristics of the respondents were analyzed via descriptive statistics, and the T-test was employed to analyze differences in social and attraction motives between general travelers and ecotourists. Data for each set of 24 social motives and 25 attraction motives were factor analyzed in order to delineate the underlying dimensions. KMO (Kaiser-Meyer-Olkin Measure of Sampling Adequacy) and Bartlett's test were used prior to factor analysis. According to Kaiser's (1974) criterion, only factors with eigenvalues greater than 1 were retained; and only items with communalities and factor loadings greater than 0.4 were included in the final factor structure. Reliability alphas within each dimension were computed to best fit a factor's internal consistency.

2 Results

2.1 Demographic profiles of ecotourists and general travelers

Based on responses to the second section of the questionnaire described previously, 84% of all respondents were identified as general travelers and the remaining 16% as ecotourists. This may in part reflect the relatively strict criteria for identification of visitors as ecotourists, requiring a combination of three specific responses to the three questions in section 2 of the questionnaire.

Table 1 reveals some differences between general travelers and ecotourists with respect to gender, age, education, occupation, income and family structure. While the proportion of male and female general travelers was about equal, males accounted for approximately three-fifths of ecotourist visitors to the reserve. The largest difference in age classes occurred in the 25-34 age group, where the proportion of ecotourists (36.6%) exceeded that of general travelers (27.6%). No ecotourists were older than 64 years of age, which is not entirely surprising given that experiencing the reserve primarily 'on foot' would not be a likely preference for this age group. With respect to educational level, the largest difference between ecotourists and general travelers occurred at the lowest and highest educational levels, particularly the latter, where about 32% of ecotourists had engaged in graduate studies.

The greatest proportional difference in income (6.14 yuan (RMB) = 1 U.S. dollar in 2014) between the two types occurred in the highest income class (more than 80,000 yuan annually), with about a quarter of ecotourists compared to 13% of general travelers in this class. Meanwhile, more than a third (34.7%) of general travelers had incomes less than 20,000 yuan, while for ecotourists this proportion was 27.7%. With respect to visitor occupation, about one-quarter of both types of visitors to the reserve were students and slightly less than one-fifth of each type were company staff. The largest proportional difference between the types involved scientific and technical workers, who accounted for 12.9% and 5.4% of ecotourists and general travelers, respectively.

Slightly more than one-third of both general travelers and ecotourists were unmarried. For

Table 1 Demographic profile of tourists to the Changbai Mountain Biosphere Reserve (N=637)

Variables	General travelers		Ecotourists		Variables	General travelers		Ecotourists	
	N	%	N	%		N	%	N	%
Gender					**Occupation**				
Masculine	277	51.7	60	59.4	Student	142	26.5	26	25.7
Feminine	259	48.3	41	40.6	Government officer	46	8.6	7	6.9
Age (in years)					Company staff	103	19.2	19	18.8
Less than 18	24	4.5	3	3.0	Worker	28	5.2	7	6.9
18-24	121	22.6	20	19.8	Merchant	40	7.5	5	5.0
25-34	148	27.6	37	36.6	Scientific/technical worker	29	5.4	13	12.9
35-44	128	23.9	20	19.8	Retiree	43	8.0	6	5.9
45-54	65	12.1	13	12.9	Others	105	19.6	18	17.8
55-64	36	6.7	8	7.9	**Mean annual income (RMB)**				
65 and above	14	2.6	0	0	Less than 20,000 yuan	186	34.7	28	27.7
Education					20,000-40,000 yuan	122	22.8	21	20.8
Junior college below	123	22.9	14	13.9	40,000-60,000 yuan	113	21.1	20	19.8
Junior college	91	17.0	16	15.8	60,000-80,000 yuan	46	8.6	7	6.9
University	235	43.8	39	38.6	More than 80,000 yuan	69	12.9	25	24.8
Graduate	87	16.2	32	31.7	**Family Structure**				
Tourism trips /year					Single	189	35.3	37	36.6
Less than one	132	24.6	27	26.7	Husband-and-wife pairs	81	15.1	27	26.7
1-2 times	318	59.3	58	57.4	Family with children	185	34.5	29	28.7
3-4 times	48	9.0	9	8.9	Three-generation family	45	8.4	4	4.0
More than 4 times	38	7.1	7	6.9	others	36	6.7	4	4.0

Notes: General travelers (N = 536), Ecotourists (N = 101).

general travelers, another one-third of visitors consisted of families with children (28.7% for ecotourists). The largest proportional difference in family structure of tourists to the reserve was in husband-and-wife pairs, which accounted for about 27% of ecotourists but only 15 % of general travelers. Finally, there was no sharp difference between ecotourists and general travelers with respect to annual number of tourist trips to natural areas such as the CMBR, with slightly less than three-fifths of both types of tourists having 1-2 such travel experiences each year.

2.2 Social motives for visitor types

Table 2 presents the 24 social motivations for visiting the CMBR and their rankings by general travelers and ecotourists. For both groups of tourists the strongest (i.e., top five) social motives for visiting the CMBR are the same, with slightly different rankings (3.32 – 3.56) for each group. Four of these – *being close to nature, experiencing the natural beauty and tranquility of the landscape*, and *protecting the ecological environment* – focus directly on the natural attributes of the reserve; while the fifth – *expanding personal horizon* – is more

psychological in nature. This is mirrored at the other end of the spectrum with the motives of *buying local specialties, thrills & excitement*, and *feeling at home away from home* receiving among the five lowest overall mean rankings for both tourist types. Others in the lowest five for general travelers (1.90 – 2.61) focus on *learning new outdoor skills, seeing places which friends have not visited*, and *caring for the interests of local residents*. For ecotourists, other least strong social motives (1.85 – 2.42) for visiting the reserve include *boosting self-confidence*, and *visiting friends and relatives*.

Table 2 also reveals some differences in the rankings of social motivations between the two types of tourists to the CMBR. Means for motivations of general travelers and ecotourists were compared by the use of the T-test. The most significant difference (P<0.01) occurred with respect to *visiting friends and relatives*, which for general travelers, although not as strong (2.67) as other motives, was still significantly greater than the same motive for ecotourists (2.39). Three social motives – *being together with family, feeling at home away from home*, and *boosting self-confidence* – were more significantly important (P<0.05) for general travelers. However, two social

Table 2 Comparison of social motives between general travelers and ecotourists

Social motives	General travelers			Ecotourists			T-test	
	Mean	SD	Rank	Mean	SD	Rank	T	Sig.
Higher importance ranking by ecotourists								
Being close to nature	3.47	0.638	*1*	3.50	0.594	*2*	-0.509	0.611
Experiencing natural beauty of landscape	3.45	0.636	*2*	3.56	0.555	*1*	-1.722	0.086*
Experiencing the tranquility	3.33	0.737	*4*	3.47	0.626	*3*	-1.729	0.084*
Protecting the ecological environment	3.32	0.715	5	3.35	0.655	5	-0.408	0.684
Seeing as much as possible in time available	3.12	0.663	7	3.16	0.543	6	-0.611	0.542
Changing from a busy job	2.91	0.882	11	3.04	0.848	7	-1.319	0.188
Participating in sports	2.90	0.752	12	2.92	0.717	10	-0.312	0.755
Caring for the interests of local residents	2.54	0.842	21	2.57	0.766	17	-0.369	0.712
Thrills and excitement	2.32	0.894	23	2.38	0.904	22	-0.551	0.582
Higher importance ranking by general travelers								
Expanding personal horizons	3.40	0.676	*3*	3.39	0.663	*4*	0.205	0.838
Being together with family	3.22	0.772	6	3.01	0.843	8	2.517	0.012**
Free to act the way I feel	3.12	0.752	7	3.01	0.700	8	1.425	0.516
Experiencing new lifestyle	2.94	0.792	9	2.90	0.806	11	0.413	0.680
Attending recreation activities	2.93	0.764	10	2.90	0.755	11	0.317	0.751
Tasting new food	2.85	0.852	13	2.70	0.782	13	1.620	0.106
Reliving good memories	2.78	0.903	14	2.69	0.880	15	0.890	0.374
Talking about trip after return	2.76	0.825	15	2.70	0.843	13	0.690	0.491
Meeting people with similar interests	2.67	0.875	16	2.58	0.803	16	0.953	0.341
Visiting friends and relatives	2.67	0.853	16	2.39	0.787	21	3.083	0.002***
Boosting self-confidence	2.63	0.904	18	2.42	0.863	20	2.186	0.029**
Feeling at home away from home	2.61	0.927	19	2.36	0.890	23	2.500	0.013**
Learning new outdoor skills	2.61	0.799	19	2.44	0.805	18	1.966	0.050*
Going places friends have not been	2.53	0.941	22	2.44	0.994	18	0.878	0.380
Buying local specialties	1.90	0.746	24	1.85	0.726	24	0.570	0.569

Notes: *P<0.1, **P<0.05, ***P<0.01

motives involving *experiencing the tranquility* and *natural beauty of the landscape* were relatively more important for ecotourists (P<0.1), while learning new outdoor skills was more appealing (P<0.1) to general travelers.

2.3 Attraction motives for visitor types

Table 3 presents the 25 attraction motivations and their rankings of importance for general travelers and ecotourists to the CMBR. There is again a strong similarity in the most important motives for the two groups. Four of the five motives ranked highest in importance by general travelers (3.38-3.52) and ecotourists (3.36-3.48) are the same. These include *wildness-undisturbed nature*, *geological and geomorphic landscape*, *good ecological environment*, and unique landscapes of the CMBR (*crater lake, waterfall, gorge and hot spring*). For ecotourists, the importance of the *temperate forest landscape* (3.36) completes the top five rankings, while for general travelers the motives of *perfect tourism information* (3.43) and

convenient traffic (3.38) are among the five most important motivations. As was the case with social motivations, attraction motives for visiting the CMBR were similar for both tourist types at both ends of the importance scale. The motives of *camping*, *budget accommodation*, *outdoor recreation*, *indoor sports*, *special souvenirs* and *high quality restaurants* were ranked least important by both general travelers (1.90-2.47) and ecotourists (1.79-2.40).

Table 3 does reveal some significant subtle differences in several attraction motivations between general travelers and ecotourists, identified via the T-test in comparing means of motivation scores. Among the most important reasons for visiting the reserve identified by both groups, seeing the more spectacular and unique landscapes of the CMBR (*crater lake, waterfall, gorge and hot spring*) was more important for attracting general travelers (3.52) than for ecotourists (3.37) (P<0.05). This was also the highest ranked attraction motive for the former group in visiting the reserve. General travelers also

Table 3 Comparison of attraction motives between ecotourists and general travelers

Attraction Motives	General Travelers			Ecotourists			T-test	
	Mean	SD	Rank	Mean	SD	Rank	T	Sig.
Higher importance ranking by ecotourists								
Wildness-undisturbed nature	3.43	0.661	*3*	3.45	0.655	*2*	-0.178	0.859
Geological and geomorphic landscape	3.38	0.659	*5*	3.45	0.624	*2*	-0.943	0.346
Temperate forest landscape	3.28	0.708	*8*	3.36	0.626	*5*	-0.990	0.323
Climate & astronomical phenomena	3.26	0.697	*9*	3.27	0.646	*9*	-0.057	0.955
Watching birds, trees & wildlife	3.18	0.742	*12*	3.31	0.674	*6*	-1.539	0.124
Local customs	2.93	0.769	*16*	3.01	0.700	*14*	-0.959	0.338
Budget accommodation	2.37	0.815	*21*	2.40	0.749	*20*	-0.262	0.793
Camping	2.12	0.833	*23*	2.15	0.684	*22*	-0.354	0.724
Higher importance ranking by general travelers								
Heaven pool, waterfall, gorge, hot spring	3.52	0.611	*1*	3.37	0.612	*4*	2.297	0.022**
Good ecological environment	3.51	0.596	*2*	3.48	0.610	*1*	0.497	0.620
Perfect tourism information system	3.43	0.674	*3*	3.29	0.726	*8*	1.868	0.062*
Convenient traffic	3.38	0.715	*5*	3.26	0.757	*10*	1.525	0.128
Magical, mysterious, sacred atmosphere	3.37	0.657	*7*	3.31	0.718	*6*	0.838	0.402
Broad space & large-scale scenic spots	3.24	0.737	*10*	3.19	0.731	*11*	0.682	0.496
Cultural heritage and historic sites	3.24	0.733	*10*	3.17	0.708	*12*	0.891	0.373
The history of Changbai Mountain	3.14	0.738	*13*	3.09	0.736	*13*	0.589	0.556
Beautiful and concentrated scenic spots	3.10	0.748	*14*	2.96	0.882	*15*	1.701	0.089*
Photography landscape	2.98	0.840	*15*	2.96	0.824	*15*	0.189	0.850
Local legends and allusions	2.93	0.808	*16*	2.80	0.775	*17*	1.502	0.134
Inexpensive meals	2.62	0.839	*18*	2.58	0.803	*18*	0.390	0.697
Local festivals and events	2.56	0.814	*19*	2.49	0.844	*19*	0.819	0.413
Outdoor recreation	2.47	0.858	*20*	2.40	0.708	*20*	0.978	0.330
Indoor sports	2.24	0.810	*22*	2.05	0.698	*23*	2.506	0.013**
High quality restaurants	2.05	0.799	*24*	1.89	0.720	*24*	1.865	0.063*
Special souvenirs	1.90	0.744	*25*	1.79	0.725	*25*	1.403	0.161

Notes: *P<0.1, **P<0.05.

favored *indoor sports* to a greater degree than did ecotourists (P<0.05). Three attraction motives for *high quality restaurants*, *beautiful and concentrated scenic spots* and *perfect tourism information system* were also significantly more important (P<0.1) for general travelers, the last of these being the third highest rated motive overall in terms of attraction for this group.

2.4 Factor analyses of travel motivations

2.4.1 Social motives for general travelers

To examine the dimensions underlying the social and attraction factor scales, a principal component analysis (PCA) with varimax rotation of the motivation items was undertaken for each tourist type. The 24 social motive items for general travelers yielded five factors with eigenvalues greater than 1.0 (Table 4). The dimensions, each followed in parentheses by the survey items that contributed to their formation, were labeled: "Appreciating natural landscapes and protecting the environment" (i.e., *experiencing natural beauty of landscape*, *expanding personal horizons*, *being close to nature*, *experiencing the tranquility*, *protecting the ecological environment*, and *seeing as much as possible in the time available*); "Emotional appeal and personal growth" (i.e., *visiting friends and relatives*, *reliving good memories*, *meeting people with similar interests*, *feeling at home away from home*, *going places friends have not been*, *being together with family*, *boosting self-confidence*, and *talking about trip after return*); "Health and responsibility" (i.e., *learning new outdoor skills*, *participating in sports*, and *caring for the interests of local residents*); "Food, shopping and recreation" (i.e., *tasting new food*, *buying local specialties*, *attending recreation activities*, and *thrills & excitement*); and "Escaping social routines" (i.e., *changing from a busy job*, *experiencing new lifestyle*, *free to act the way I feel*). These factors explained 52.5% of the total variance. Factor 1, "Appreciating natural landscapes and protecting

Table 4 Principal component factor analysis with varimax rotation of social motives for general travelers

Social motives domains	Factor loading	Comm.	Item means	Grand mean	Eige.	VE	RC
Factor 1: Appreciating natural landscapes and protecting the environment							
Experiencing natural beauty of landscape	0.775	0.641	3.45				
Expanding personal horizons	0.677	0.537	3.40				
Being close to nature	0.657	0.489	3.47	3.347	6.735	28.063	0.805
Experiencing the tranquility	0.654	0.525	3.33				
Protecting the ecological environment	0.634	0.590	3.32				
Seeing as much as possible in time available	0.534	0.452	3.12				
Factor 2: Emotional appeal and personal growth							
Visiting friends and relatives	0.650	0.473	2.67				
Reliving good memories	0.645	0.533	2.78				
Meeting people with similar interests	0.607	0.493	2.67				
Feeling at home away from home	0.607	0.488	2.61				
Going places friends have not been	0.586	0.469	2.53	2.734	1.952	8.135	0.794
Being together with family	0.574	0.500	3.22				
Boosting self-confidence	0.513	0.565	2.63				
Talking about trip after return	0.480	0.510	2.76				
Factor 3: Health and responsibility							
Learning new outdoor skills	0.697	0.628	2.61				
Participating in sports	0.693	0.598	2.90	2.681	1.497	6.236	0.650
Caring for the interests of local residents	0.566	0.501	2.54				
Factor 4: Food, shopping and recreation							
Tasting new food	0.727	0.588	2.85				
Buying local specialties	0.580	0.418	1.90	2.500	1.354	5.642	0.579
Attending recreation activities	0.567	0.509	2.93				
Thrills and excitement	0.468	0.466	2.32				
Factor 5: Escaping social routines							
Changing from a busy job	0.679	0.552	2.91				
Experiencing new lifestyle	0.596	0.578	2.94	2.990	1.057	4.405	0.673
Free to act the way I feel	0.431	0.492	3.12				

Notes: Comm. = Communalities; Eige. = Eigenvalue; VE = Variance explained; RC= Reliability coefficient; KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) = 0.898; Bartlett = 3791.001; df = 276; Sig. = 0.000.

the environment," accounted for 28% of the total variance, more than all of the other four factors combined. All 24 items had factor loadings greater than 0.43. The reliability coefficients (i.e., Cronbach's alphas), which are designed to check the internal consistency of items within each dimension, were all greater than 0.57. Most coefficients exceeded or were close to the standard of 0.70 recommended by Nunnally (1978).

2.4.2 Social motives for ecotourists

A similar principal component factor analysis of the 24 social motive items for ecotourists resulted in eight factors with eigenvalues greater than 1.0 (Table 5). The dimensions were respectively named: "Appreciating natural landscapes and protecting the environment" (i.e., *experiencing natural beauty of landscape,*

expanding personal horizons, being close to nature, and *protecting the ecological environment*); "Health and responsibility" (i.e., *learning new outdoor skills, seeing as much as possible in the time available,* and *caring for the interests of local residents*); "Emotional appeal" (i.e., *feeling at home away from home, going places friends have not been,* and *reliving good memories*); "Adventure and personal growth" (i.e., *thrills and excitement, boosting self-confidence, talking about trip after return,* and *participating in sports*); "Food and shopping" (i.e., *buying local specialties,* and *tasting new food*); "Social contact" (i.e., *visiting friends and relatives, experiencing the tranquility,* and *meeting people with similar interests*); "Escaping social routines" (i.e., *changing from a busy job,* and *experiencing new lifestyle*); and "Social spontaneity" (i.e., *free to act*

Table 5 Principal component factor analysis with varimax rotation of social motives for ecotourists

Social motives domains	Factor loading	Comm.	Item means	Grand mean	Eige.	VE	RC
Factor 1: Appreciating natural landscapes and protecting the environment							
Being close to nature	0.804	0.715	3.50				
Experiencing natural beauty of landscape	0.713	0.709	3.56	3.450	5.700	23.751	0.791
Protecting the ecological environment	0.633	0.706	3.35				
Expanding personal horizons	0.617	0.699	3.39				
Factor 2: Health and responsibility							
Learning new outdoor skills	0.697	0.577	2.44				
Seeing as much as possible in time available	0.678	0.664	3.16	2.723	2.267	9.444	0.618
Caring for the interests of local residents	0.588	0.546	2.57				
Factor 3: Emotional appeal							
Feeling at home away from home	0.793	0.675	2.36				
Reliving good memories	0.715	0.603	2.69	2.495	1.926	8.027	0.599
Going places friends have not been	0.537	0.688	2.44				
Factor 4: Adventure and personal growth							
Thrills and excitement	0.756	0.729	2.38				
Boosting self-confidence	0.658	0.695	2.42	2.604	1.667	6.945	0.651
Talking about trip after return	0.515	0.644	2.70				
Participating in sports	0.447	0.752	2.92				
Factor 5: Food and shopping							
Buying local specialties	0.818	0.722	1.85	2.277	1.413	5.886	0.549
Tasting new food	0.641	0.593	2.70				
Factor 6: Social contact							
Visiting friends and relatives	0.698	0.700	2.39				
Experiencing the tranquility	0.634	0.697	3.47	2.812	1.258	5.240	0.609
Meeting people with similar interests	0.523	0.685	2.58				
Factor 7: Escaping social routines							
Changing from a busy job	0.832	0.759	3.04	2.970	1.076	4.482	0.694
Experiencing new lifestyle	0.585	0.665	2.90				
Factor 8: Social spontaneity							
Free to act the way I feel	0.677	0.668	3.01				
Being together with family	0.544	0.741	3.01	2.974	1.019	4.244	0.435
Attending recreation activities	0.510	0.691	2.90				

Notes: Comm. = Communalities; Eige. = Eigenvalue; VE = Variance explained; RC = Reliability coefficient; KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) = 0.766; Bartlett = 789.158; df = 276; Sig. = 0.000.

the way I feel, *being together with family*, and *attending recreation activities*). The eight factors accounted for 68.0% of the variance. Factor 1, "Appreciating natural landscapes and protecting the environment," was the most important motivation dimension for ecotourists, accounting for 24% of the variance explained. Factor loadings for the 24 items ranged from 0.447 to 0.832. The reliability alphas for the eight dimensions were from 0.435 to 0.791. Factor 8 for social spontaneity and Factor 5 for food and shopping were excluded, while the reliability coefficients of the other six factors were close to the standard of 0.70 recommended by Nunnally (1978).

2.4.3 Attraction motives for general travelers

A principal component analysis (PCA) with varimax rotation of the attraction motivation items was also accomplished for both tourist types. According to Kaiser's (1974) criterion, 23 attraction motive items were included in the final factor structure for general travelers. Five factors with eigenvalues greater than 1.0 were identified (Table 6). These five dimensions were named: "Local culture and history" (i.e., *local* legends *and allusions*, *the history of Changbai Mountain*, *local customs*, *cultural heritage and historic sites*, and *magical, mysterious, sacred atmosphere*); "Broad natural landscapes" (i.e., *temperate forest landscape*, *geological and geomorphic landscape*, *crater lake-waterfall-gorge-hot spring*, *climate & astronomical phenomena*); "Food, shopping and

Table 6 Principal component factor analysis with varimax rotation of attraction motives for general travelers

Attraction motives domains	Factor loading	Comm.	Item means	Grand mean	Eige.	VE	RC
Factor 1: Local culture and history							
Local legends and allusions	0.751	0.648	2.93				
The history of Changbai Mountain	0.724	0.667	3.14				
Local customs	0.701	0.640	2.93	3.121	7.662	33.311	0.851
Cultural heritage and historic sites	0.648	0.647	3.24				
Magical, mysterious, sacred atmosphere	0.500	0.566	3.37				
Factor 2: Broad natural landscapes							
Temperate forest landscape	0.820	0.737	3.28				
Geological and geomorphic landscape	0.770	0.730	3.38	3.361	2.352	10.226	0.820
Heaven pool, waterfall, gorge, hot spring	0.686	0.530	3.52				
Climate & astronomical phenomena	0.587	0.561	3.26				
Factor 3: Food, shopping and leisure							
Special souvenirs	0.702	0.569	1.90				
Outdoor recreation	0.670	0.519	2.47				
Camping	0.643	0.488	2.12				
Local festivals and events	0.617	0.564	2.56	2.282	1.354	5.886	0.766
High quality restaurants	0.605	0.566	2.05				
Indoor sports	0.561	0.438	2.24				
Inexpensive meals	0.520	0.436	2.62				
Factor 4: Accessible scenic landscapes							
Convenient traffic	0.780	0.662	3.38				
Perfect tourism information system	0.747	0.653	3.43				
Broad space & large-scale scenic spots	0.656	0.598	3.24	3.331	1.145	4.977	0.815
Beautiful and concentrated scenic spots	0.648	0.565	3.10				
Good ecological environment	0.501	0.533	3.51				
Factor 5: Viewing natural habitats							
Wildness-undisturbed nature	0.762	0.684	3.43	3.309	1.104	4.802	0.700
Watching birds, trees & wildlife	0.625	0.615	3.18				

Notes: Comm. = Communalities; Eige. = Eigenvalue; VE = Variance explained; RC = Reliability coefficient; KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) = 0.902; Bartlett = 5093.359; df = 253; Sig. = 0.000.

leisure" (i.e., *special souvenirs, outdoor recreation, camping, local festivals and events, high quality restaurants, indoor sports,* and *inexpensive meals*); "Accessible scenic landscapes" (i.e., *convenient traffic, perfect tourism information system, broad space and large-scale scenic spots, beautiful and concentrated scenic spots,* and *good ecological environment*); and "Viewing natural habitats" (i.e., *wildness-undisturbed nature,* and *watching birds, trees & wildlife*). The five factors explained 59.2% of the total variance. Factor 1, "Local culture and history," accounted for 33% of the variance, more than the other four factors combined. Factor loadings for the 23 items ranged from 0.500 to 0.820. The reliability coefficients (i.e., Cronbach's alphas) for all five dimensions were greater than 0.70, thus meeting Nunnally's (1978) criterion.

2.4.4 Attraction motives for ecotourists

According to Kaiser's (1974) criterion, a factor analysis of the 25 attraction motive items for ecotourists generated seven factors with eigenvalues greater than 1.0 (Table 7). These seven dimensions were labeled: "Broad natural landscapes" (i.e., *temperate forest landscape, geological and geomorphic landscape, crater lake-waterfall-gorge-hot spring, climate & astronomical phenomena,* and *history of Changbai Mountain*); "Experiencing nature with a cultural lens" (i.e., *watching birds, trees & wildlife, cultural heritage and historic sites, wildness-undisturbed nature, good ecological environment,* and *magical, mysterious, sacred atmosphere*); "Food, shopping and leisure" (i.e., *special souvenirs, local legends and allusions, high quality restaurants, local festivals and events,* and *indoor sports*); "Experiencing outdoor localities" (i.e., *outdoor recreation, camping,* and *local customs*); "Accessible photogenic landscapes" (i.e.,

Table 7 Principal component factor analysis with varimax rotation of attraction motives for ecotourists

Attraction motives domains	Factor loading	Comm.	Item means	Grand mean	Eige.	VE	RC
Factor 1: Broad natural landscapes							
Temperate forest landscape	0.815	0.792	3.36				
Geological and geomorphic landscape	0.797	0.824	3.45				
Climate & astronomical phenomena	0.708	0.597	3.27	3.305	6.514	26.055	0.840
Heaven pool, waterfall, gorge, hot spring	0.666	0.538	3.37				
The history of Changbai Mountain	0.646	0.689	3.09				
Factor 2: Experiencing nature with a cultural lens							
Watching birds, trees & wildlife	0.753	0.685	3.31				
Cultural heritage and historic sites	0.682	0.716	3.17				
Wildness-undisturbed nature	0.669	0.577	3.45	3.341	3.431	13.724	0.777
Good ecological environment	0.574	0.582	3.48				
Magical, mysterious, sacred atmosphere	0.501	0.615	3.31				
Factor 3: Food, shopping and leisure							
Special souvenirs	0.725	0.644	1.79				
Local legends and allusions	0.715	0.709	2.80				
High quality restaurants	0.698	0.632	1.89	2.204	1.812	7.247	0.742
Local festivals and events	0.680	0.593	2.49				
Indoor sports	0.460	0.643	2.05				
Factor 4: Experiencing outdoor localities							
Outdoor recreation	0.783	0.720	2.40				
Camping	0.682	0.616	2.15	2.518	1.356	5.425	0.592
Local customs	0.407	0.646	3.01				
Factor 5: Accessible photogenic landscapes							
Convenient traffic	0.780	0.742	3.26				
Perfect tourism information system	0.712	0.771	3.29	3.168	1.294	5.175	0.637
Photography landscape	0.428	0.550	2.96				
Factor 6: Scenic landscapes							
Beautiful and concentrated scenic spots	0.783	0.749	2.96	3.074	1.180	4.719	0.679
Broad space & large-scale scenic spots	0.578	0.654	3.19				
Factor 7: Economical board and lodging							
Budget accommodation	0.850	0.742	2.40	2.490	1.010	4.039	0.412
Inexpensive meals	0.558	0.569	2.58				

Notes: Comm. = Communalities; Eige. = Eigenvalue; VE = Variance explained; RC = Reliability coefficient; KMO (Kaiser-Meyer-Olkin measure of sampling adequacy) = 0.790; Bartlett =1080.146; df = 300; Sig. = 0.000.

convenient traffic, *perfect tourism information system*, and *photography landscape*); "Scenic landscapes" (i.e., *beautiful and concentrated scenic spots*, and *broad space & large-scale scenic spots*); and "Economical board and lodging" (i.e., *budget accommodation* and *inexpensive meals*). Seven factors explained 66.4% of the variance. Factor 1, "Broad natural landscapes," accounted for 26% of the variance explained and was the most important motivational dimension for ecotourists. Factor loadings for the 25 items ranged from 0.407 to 0.850. Except for the seventh factor (Economical board and lodging), the reliability coefficients (i.e., Cronbach's alphas) for the other six dimensions were close to or greater than 0.70 and thus consistent with Nunnally's (1978) criterion.

3 Discussion

The purpose of this study is to: (1) identify the social motives and attraction motives that influence decisions to visit the CMBR; and (2) compare differences in these motives between ecotourists and general travelers.

This study found that 16% of the 637 surveyed travelers to the Changbai Mountain Biosphere Reserve were classified as ecotourists and 84% as general travelers. The overall percentage of ecotourist visitors identified in the CMBR is less than those found in other studies of Chinese domestic nature tourism. Li (2007) identified 139 ecotourists (32.8%) and 284 general tourists

traveling to Baihua Mountain Nature Reserve in Beijing using K-Nearest-Neighbor (KNN) and Back-Propagation (BP); while Chen and Qiao (2010) used the same method as in our study and classified 198 ecotourists (34.4%) and 377 general travelers to the Geopark Mount Yuntai in Henan Province. This may in part reflect the relatively strict criteria for identification of visitors as ecotourists adopted in this study and the fact that different methods for identifying the ecotourists will lead to different results. As Martha (2008) observes, since no universally accepted definition of ecotourists exists, this leads to considerable overlap with areas that have traditionally been termed nature, adventure and cultural tourism. There are a number of reasons for this definitional uncertainty, including limited studies of markets and the fact that ecotourist markets are not homogeneous (Wight 2001). Tao et al. (2004) has argued that an ecotourism experience might actually be better measured using more sophisticated criteria, possibly including clusters of related activities, measures of environmental quality, visitor satisfaction, and measures of the duration or psychological involvement in the activity.

In this study a majority of ecotourists to the CMBR were male (59.4%), tended to be younger (25-34, 36.6%), and possessed a higher level of education (70.3% had at least a college degree). In addition, ecotourists to the CMBR were relatively well-off in terms of income (25% reported average incomes in excess of 80,000 yuan) and had a higher percentage of husband-and-wife pairs than did the family structure of general tourists, possibly due to enhanced mobility for exploring more of the reserve area than if accompanied by children. These results are consistent with demographic profiles of ecotourists in the literature on China tourism (Kerstetter et al. 2004; Li 2007; Tao et al. 2004) and in Europe and the United States as well. Regarding the former, for example, Martha (2008) describes European ecotourists as experienced travelers, highly educated, falling into higher income brackets, as well as 'opinion leaders' who ask and tell their friends and colleagues about their trips. Although results in this study are certainly not identical to the above, they do point in this direction.

The five strongest social motives for visiting the CMBR were the same for both ecotourists and general travelers. Four of these – *being close to nature*, *experiencing the natural beauty* and *the tranquility of the landscape*, and *protecting the ecological environment* – focus on the natural features of the reserve, suggesting an underlying common orientation among visitors that has traditionally been described under the heading of 'nature tourism.' This is reinforced by similar rankings for four attraction motivations within the top five for each group, including *wildness-undisturbed nature*, *geological and geomorphic landscapes*, *good ecological environment*, and unique landscapes of the CMBR (*crater lake-waterfall-gorge-hot spring*).

A factor analysis of the social motivations for visiting the CMBR revealed that the major factor for both types, which explained 28% and 24% of the total variance for general travelers and ecotourists, respectively, focused on the natural features of the reserve, confirming their mutual identity as 'nature tourists.' The remaining factors served as the locus wherein the particular identities of each type began to crystallize. The greater appeal of social interaction among family, relatives and friend surfaced more quickly as factor 2 for general travelers (8% of explained variance [e.v.]) and less so as 'social contact' (factor 6, 5.2% e.v.) for ecotourists. For both types the themes of new experiences and skills and a curiosity regarding local cultures surfaced as minor factors.

In looking at the factor analysis of attraction motivations for each type, here a major factor emerges for general travelers, explaining 1/3 of the total variance, focusing on the culture and local history of the Changbai area. For ecotourists, the major factor, accounting for one-quarter of the total variance, again focuses on the natural features of the reserve, somewhat more clearly differentiating the interests of this group from those of general travelers. For the latter group, these natural features of the reserve constitute the second strongest attraction factor (10% e.v.), while still comprising the major theme of the second factor for ecotourists (14% e.v.). It is here, therefore, in two strongest attraction motive factors, that the distinction between ecotourists and general travelers within the broader category of 'nature tourism' emerges most clearly in this study. Both types again share a minor motivational theme

related to leisure activities, including culinary and shopping interests.

What distinguishes ecotourists from general travelers in this study is that the former expressed greater appreciation for more subtle ecological characteristics of the CMBR, with significant differences from general travelers with respect to experiencing the natural beauty, as well as the tranquility of the ecological landscape. This agrees with the findings obtained by (Chen and Qiao 2010) that ecotourists are more attracted to these characteristics of the landscape than are general travelers. In contrast, general travelers surveyed in this study were more attracted by sheer natural spectacles (e.g., crater lake, beautiful, concentrated scenic spots) than were ecotourists. For general travelers, visiting relatives & friends, being together with family and, to a lesser degree, feeling at home away from home are more important components of their travel experience than for ecotourists. This agrees with earlier findings by Li (2007) and Eagles (1992). This also mirrors the finding of Deng and Li (2015) that visiting friends and relatives as the main traveling purpose tended to be less important for ecotourists than for non-ecotourists. Ecotourists also placed slightly less emphasis on tourism information systems than did general travelers, possibly an indirect reflection of the former's greater knowledge of and/or preparedness for visiting the CMBR relative to general travelers. This study is also consistent with the viewpoints in the literature that general travelers are more interested than ecotourists in indoor activities (Eagles 1992; Li 2007), as well as high quality restaurants. Our findings are not in line with those of Boo (1990) and Eagles (1992) that ecotourists require budget accommodations and inexpensive meals.

With respect to motives with significant differences for ecotourists and general travelers, our results differ somewhat from findings of another study focusing on domestic visitors to a nature reserve in China (Li 2007). She finds that ecotourists to Baihua Mountain Nature Reserve in Beijing are most interested in the social motives of thrills and excitement and changing from a busy job, and that the attraction motives of ecotourists are not substantially different from those of general travelers. This could, however, be influenced by the urban environment surrounding this particular

tourist attraction. In contrast, this study suggests that ecotourists are interested in a more intimate relationship to the natural setting they visit – e.g., *experiencing the natural beauty and the tranquility of the landscape* – than are general travelers, who in turn are more enamored with viewing the spectacular and picturesque landscapes of the CMBR (i.e., *crater lake -waterfall-gorge-hot spring*, *beautiful and concentrated scenic spots*.)

On an overall basis, this study yields some significant findings of similar characteristics of ecotourists as reported by the literature and adds to the still developing understanding of the domestic nature tourism market in China. However, as with many exploratory studies, this effort has some limitations and uncertainties. First, many segmentation studies on ecotourism focus on predominantly international tourists from a variety of countries visiting a nature tourism destination and categorize them into 'ecotourist groups' to explore their similarities and differences (Sheena et al. 2015). The demographic (particularly income level) and motivational characteristics of these tourists can be expected to differ from those of domestic tourists to the CMBR in China, rendering comparison of results of this study with these other research efforts more difficult.

Moreover, from a theoretical perspective, generalizations about ecotourists or sustainable tourists are often made difficult due to the lack of agreement of operational terms (Dolnicar 2006) and the different views of writers (Blamey 2001). Ecotourists have been identified in the literature by a variety of methods (Deng and Li 2015). These can be broadly described as site- and activity-based, motivation-based, value-based, multicriteria-based, and respondent-based (Hvenegaard 2002). Thus isolating ecotourists as a distinct set of consumers distinct from general tourists or non-ecotourists is not an easy task (Hvenegaard 2002), because such an effort is "constrained by disagreements over the parameters of ecotourism itself" (Weaver and Lawton 2007). Because there are no universal criteria that can be used to quantitatively discriminate ecotourists from general travelers, ecotourists identified in a given study are very sample-specific, and they cannot be directly compared with ecotourists identified in other studies due to the lack of uniform standards (Deng and Li 2015).

In our study, the value-based approach (three questions) is utilized to identify ecotourists based on their environmental values. However, Deng and Li (2015) contend that tourists' own self-interpretations of ecotourism and self-identification as ecotourists may be a more meaningful and practical way forward. For example, Tao et al. (2004) found that 39% of visitors to a national park in Taiwan who self-identified themselves as ecotourists were more environmentally concerned than non-self-identified ecotourists. By applying this self-identification approach, Deng and Li (2015) also found the self-identified ecotourists were more environmentally concerned and responsible, more dedicated to nature, more supportive of tourism accreditation programs, and more likely to patronize businesses with good environmental practices, even at a higher cost.

4 Conclusions

The Changbai Mountain Biosphere Reserve is one of the most important destinations for ecotourism in China, both at home and from abroad. This study, based on data obtained from a sample of domestic visitors to the reserve, provides some additional clues as to why people choose to travel natural settings, what motivations lead to the choice of particular destinations to visit, and whether the expectations of different types of tourists are realized during their visit. This study found that most general travelers to the CMBR dowant to focus on the outstanding natural features of the reserve; and management and marketing efforts would do well to focus on enhancing educational efforts to help these travelers effectively become ecotourists – i.e., better appreciate the ecological subtleties of this unique setting and the need to tread lightly with their ecological footprint. Future research should continue to explore the relationship between key socio-demographic characteristics of tourists and their social and attraction motivations for visiting natural settings such as the CMBR, and to segment the ecotourism market that can be self-identified by tourists. With the booming of ecotourism and the increasing disposable income of Chinese citizens, more people are expected to make trips to nature reserves in China or elsewhere in the coming years. This will undoubtedly exert intense pressure on managers of natural areas such as the CMBR. The more information available to tourists, on-site and elsewhere, on the value of the reserve as a harbor of unique geophysical and ecological landscapes and immense floral and faunal diversity, the greater will be the potential for all visitors to become practicing ecotourists, in the process coming to understand and appreciate a setting that truly merits its designation as a world heritage site.

Acknowledgements

References

Awaritefe O (2004) Motivation and other considerations in tourist destination choice: A case study of Nigeria. Tourism Geographies 6(3): 303-330. DOI: 10.1080/1461668042000249638

Beh A, Bruyere BL (2007) Segmentation by visitor motivation in three Kenyan national reserves. Tourism management 28(6): 1464-1471. DOI: 10.1016/j.tourman.2007.01.010

Blamey R (2001) Principles of ecotourism. In Weaver DB (ed.), The Encyclopedia of Ecotourism. CABI Publishing, Wallingford, UK. pp 5-22.

Boo E (1990) Ecotourism: The Potentials and Pitfalls. World Wildlife Fund Publishing, Washington DC, USA.

Card JA, Kestel C (1988) Motivational factors and demographic characteristics of travelers to and from Germany. Society and Leisure 11(1): 49-58. DOI: 10.1080/07053436.1988.10715289

Changbai Mountain Protection and Development Zone of Jilin Province (2011) Statistical Communiqué of the Changbai Mountain Protection and Development Zone of Jilin Province on the 2010 National Economic and Social Development Available online: http://cbs.jl.gov.cn/web/tjxx_xx.aspx?moduleid=241&id=7821&rn=6&querytxt= (Accessed on 2011-2 June 2011)

Chen DG, Miao CH (2006) The quantitative research on domestic tourism motivations of urban inhabitants: The case study of Kaifeng, Henan Province. Tourism Tribune 21(6): 22-28. (In Chinese)

Chen N, Qiao GH (2010) A comparative study on the tourism motivation of ecological tourists: A case of the Geopark at the Mount Yuntai Scenic Spot. Progress in Geography 29(8): 1005-1010. (In Chinese)

Crompton JL (1979) Motivations for pleasure vacation. Annals of Tourism Research 6(4): 408-424. DOI: 10.1016/0160-

7383(79)90004-5

Dai L, Wang Y, Lewis BJ, et al. (2012) The trend of land-use sustainability around the Changbai Mountain Biosphere Reserve in northeastern China: 1977-2007. International Journal of Sustainable Development & World Ecology 19(4): 369-377. DOI: 10.1080/13504509.2012.675599

Deng JY, Li J (2015) Self-identification of ecotourists. Journal of Sustainable Tourism 23(2): 255-279. DOI: 10.1080/09669582.2014.934374

Dolnicar S (2006) Nature-conserving tourists: The need for a broader perspective. Anatolia 17(2): 235-255. DOI: 10.1080/13032917.2006.9687188

Dong L (2011) A study on the origin of heritage tourists motivation difference. Tourism Science 25(2): 47-57. (In Chinese)

Eagles PFJ (1992) The travel motivations of Canadian ecotourists. Journal of Travel Research 31(2): 3-7. DOI: 10.1177/004728759203100201

Ferreira S, Harmse A. (2014) Kruger National Park: tourism development and issues around the management of large numbers of tourists. Journal of Ecotourism 13(1): 16-34. DOI: 10.1080/14724049.2014.925907

Fodness D (1994) Measuring tourist motivation. Annals of Tourism Research 21(3): 555-581. DOI: 10.1016/0160-7383(94)90120-1

Hanqin ZQ, Lam T (1999) An analysis of mainland Chinese visitors' motivations to visit Hong Kong. Tourism management 20(5): 587-594. DOI: 10.1016/S0261-5177(99)00028-X

Huang Y, Luo YJ, Bi H, et al. (2011) Research on visitors' recreation motivations in Sanya City. Journal of Hainan Normal University (Natural Science) 24(1): 114-118. (In Chinese)

Hvenegaard GT (2002). Using tourist typologies for ecotourism research. Journal of Ecotourism 1(1): 7-18. DOI:10.1080/14724040208668109

Jeffrey D, Xie Y (1994) An activity based on analysis and segmentation of China's holiday tourist market in the UK. Tourism Tribune (5): 14-18. (In Chinese)

Kaiser HF (1974) An index of factorial simplicity. Psychometrika 39(1):31-36. DOI: 10.1007/BF02291575

Kerstetter DL, Hou JS, Lin CH (2004) Profiling Taiwanese ecotourists using a behavioral approach. Tourism management 25(4): 491-498. DOI: 10.1016/S0261-5177(03)00119-5

Kim SS, Lee CK, Klenosky DB (2003) The influence of push and pull factors at Korean national parks. Tourism management 24(2): 169-180. DOI: 10.1016/S0261-5177(02)00059-6

Kozak M (2001) Repeaters' behavior at two distinct destinations. Annals of Tourism Research 28(3): 784-807. DOI: 10.1016/S0160-7383(00)00078-5

Kozak M (2002) Comparative analysis of tourist motivations by nationality and destinations. Tourism management 23(3): 221-232. DOI: 10.1016/S0261-5177(01)00090-5

Kruger M, Saayman M (2010) Travel motivation of tourists to Kruger and Tsitsikamma National Parks: A comparative study. South African journal of wildlife research 40(1): 93-102. DOI: 10.3957/056.040.0106

Li YQ (2007) Comparisons of ecotourists and general tourists in behavior characteristics: A case study of Baihua mountain nature reserve in Beijing. Economic Geography 27(4): 665-671. (In Chinese)

Lu L (1997) A Study on motivations of tourists in mountain resorts: A case study of tourists in Huangshan Mountain. Human Geography 12(1): 6-10. (In Chinese)

Ma XL, Zhang XY, Chris R (2013) The sub-classification of film induced tourists' motivation and its mechanism: A case study from Hobbiton, New Zealand. Tourism Tribune 28(8): 111-117.

(In Chinese)

Martha H (2008) Ecotourism and Sustainable Development: Who Owns Paradise? (2nd ed.). Island Press, Washington, USA.

Mayo EJ, Jarvis LP (1981) The Psychology of Leisure Travel: Effective Marketing and Selling of Travel Services. CBI Publishing Company, Boston, USA.

Nunnally J (1978) Psychometric Theory (2nd ed.). McGraw-Hall Book Company, New York, NY, USA.

Pan S, Ryan C (2007) Mountain areas and visitor usage–motivations and determinants of satisfaction: the case of Pirongia Forest Park, New Zealand. Journal of Sustainable Tourism 15(3): 288-308. DOI: 10.2167/jost662.0

Patterson C (2007) The Business of Ecotourism: The Complete Guide for Nature and Culture-Based Tourism Operators (3rd ed.). Trafford Publishing, Victoria, British Columbia, Canada.

Plog SC (1974) Why destination areas rise and fall in popularity. Cornell H R A Quarterly 14(4): 55-58. DOI: 10.1177/001088047401400409

Ross ELD, Iso-Ahola SE (1991) Sightseeing tourists' motivation and satisfaction. Annals of Tourism Research 18(2): 226-237. DOI: 10.1016/0160-7383(91)90006-W

Ryan C, Glendon I (1998) Application of leisure motivation scale to tourism. Annals of Tourism Research 25(1): 169-184. DOI: 10.1016/S0160-7383(97)00066-2

Sheena B, Mariapan M, Aziz A (2015) Characteristics of Malaysian ecotourist segments in Kinabalu Park, Sabah. Tourism Geographies 17(1): 1-18. DOI: 10.1080/14616688.2013.865069

Su Q, Cao YH, Zhang HX, et al. (2005) A study on the patterns of tourists' motivations and their behaviors: A case study of Xidi World Heritage Sites. Human Geography 20(4): 82-86. (In Chinese)

Tang Y (2014) Dark touristic perception: Motivation, experience and benefits interpreted from the visit to seismic memorial sites in Sichuan province. Journal of Mountain Science 11(5): 1326-1341. DOI: 10.1007/s11629-013-2857-4

Tao C-H, Eagles PF, Smith SL (2004) Profiling Taiwanese ecotourists using a self-definition approach. Journal of Sustainable Tourism 12(2): 149-168. DOI: 10.1080/09669580408667230

Uysal M, McDonald CD, Martin BS (1994) Australian visitors to US national parks and natural areas. International Journal of Contemporary Hospitality Management 6(3): 18-24. DOI: 10.1108/09596119410059209

Weaver DB, Lawton LJ (2007) Twenty years on: The state of contemporary ecotourism research. Tourism Management 28(5):1168-1179. DOI: 10.1016/j.tourman.2007.03.004

Wight P (2001) Ecotourists: Not a homogeneous market segment. In Weaver DB (ed.), The Encyclopedia of Ecotourism. CABI Publishing, New York, NY, USA. pp 37-62.

Xiao ZX, Yang GH (2004) A survey on the ecological consciousness of the domestic ecotourists: A case study on Bitahai Ecological Scenic Spot, Shangri La. Tourism Tribune 19(1): 67-71. (In Chinese)

Yoon Y, Uysal M (2005) An examination of the effects of motivation and satisfaction on destination loyalty: A structural model. Tourism management 26(1): 45-56. DOI: 10.1016/j.tourman.2003.08.016

Yuan JQ, Dai LM, Wang QL (2008) State-led ecotourism development and nature conservation: A case study of the Changbai Mountain Biosphere Reserve, China. Ecology and Society 13(2): 55. http://www.ecologyandsociety.org/vol13/iss2/art55/

Zhang T (2012) A study on the effect of food tourism motivation on tourist satisfaction and behavioral intention. Tourism Tribune 27(10): 78-84. (In Chinese)