




Community attitudes toward ecotourism development and environmental conservation in nature reserve: a case of Fujian Wuyishan National Nature Reserve, China

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Abstract: Using social exchange theory, this study investigated residents' attitudes toward the preliminary stage of tourism development in nature reserves in Wuyishan National Nature Reserve of China, and the socio-economic and negative effects of residents' attitude toward the tourist industry. Results of the questionnaire survey indicated that local people perceived they could benefit from the economic activities related to tourism, and were supportive of the conservation of natural resources and local culture, sustainable community development, and community participation in ecotourism planning and management. This study also revealed that the variables of age, gender, education level, household income, family size, non-farm work arrangements, and the distance to tourism attractions, have significant association with respondents' attitudes toward ecotourism development, or negative impacts of the tourist industry. Respondents who are male, or have a higher household income, are more supportive of tourism development inside the reserve. Younger and more highly educated community members are more likely to support learning more about natural and cultural resources and landscapes. Respondents who have a higher household income, or live far from

the village center, are more concerned about the negative environmental impacts of tourism development.

Keywords: Economic benefits; Environmental conservation; Nature reserve; Residents' attitude; Tourism development; Wuyishan National Nature Reserve

Introduction

By 2014, officially designated nature reserves in China totaled 2729 constituted an area of 1,469,915 km² excluding marine and coastal reserves (MEP 2015), yet many face managerial challenges. Some of these challenges include lack of effective legal supervision, multiple sectors being responsible for their management (Chen and Nakama 2013), lack of standards for professional training and related research, and limited community participation (Zhou and Grumbine 2011).

While funding influences the sustainability of nature reserves, so too does administrative management and support from local actors.

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Responding to the interests of local powers is important as doing so can generate strong and active support from the host community (Ryan 2002; Tsaour et al. 2006; Liu et al. 2010; Lee 2013; Zhu et al. 2014). Unfortunately, a shortage of external funds for conservation has significantly impeded managers' ability to adopt a pro-poor strategy, so they have become largely self-financed (Dhamartne et al. 2000). In China, national nature reserves received only \$113 per km² for operating and construction funds from the Chinese government, which is much lower than the world average of \$893 per km² and the average for developing countries of \$157 per km² (Liu et al. 2003). In some countries, over 50% of park funding is collected from visitor fees (Buckley 2012). Hence, the protection of endangered species has become reliant on revenues from tourism, with more than 50% of park agencies worldwide heavily dependent on tourism for new funding opportunities (Buckley et al. 2012).

Previous studies indicate ecotourism development as a pro-poor strategy brings many benefits, such as the conservation of natural resources (Gössling 1999; Das and Chatterjee 2015), economic development (Ross and Wall 1999; Das and Chatterjee 2015), and local community sustainability (Weaver 2001; Sirivongs and Tsuchiya 2012; Das and Chatterjee 2015). The development of ecotourism can also reduce people's dependence on natural resource exploitation in poor regions (Nyaupane and Poudel 2011), and can generate support for conservation (Kaeslin and Williamson 2010; Pegas et al. 2013).

Despite the challenges being faced by China's nature reserves, they continue to be among the country's most popular tourism destinations owing to their unique natural landscapes and abundant flora and fauna (Weaver and Lawton 2007). China, as the world's most populous country that is dramatically increasing its inbound and outbound tourism markets, still largely lacks scientifically based empirical studies of ecotourism planning and development in protected areas. Most field studies have been conducted in terms of natural resource utilization and exploitation (Liu et al. 2013) and the attitude and behavior of tourists (e.g., Liu et al. 2013).

Understanding the perceptions and attitudes of local community members is essential for the

success of tourism development and the management of protected areas (Vodouhê et al. 2010; Holladay and Ormsby 2011), and can provide important fundamental information for forest conservation policy makers. Ecotourism related knowledge based on solid evidence in the protected areas in China are still largely lacking, although ecotourism-related research has been a research focus for the past two decades.

To address this gap in the literature, the purpose of this study is to analyze residents' attitudes toward tourism development in a nature reserve, particularly with respect to the economic and social benefits, and the potential social, cultural, and environmental problems/costs that tourists will bring. The study also aimed to quantify residents' attitudes according to their sociodemographic characteristics, including gender, age, income, education level, length of migrant work time, family size, and distance of their residence to the center of the tourism attractions.

1 Study Area and Method

1.1 Study area

The Fujian Wuyishan National Nature Reserve (Wuyishan NNR, Figure 1) was selected as the study site. Wuyishan NNR is the only Chinese site in a UNESCO biosphere reserve, as well as being a World Cultural and Natural Mixed Heritage Site. Wuyishan NNR's outstanding value comes from its subtropical forest biodiversity, unique in southeast China, and the large refuge it provides for a great number of ancient and relict species.

The Wuyishan NNR has an area of 565 km², extending into the northern part of the Wuyishan Mountain range, and bordering the three counties of Wuyishan City, Jianyang City, and Guangzhe County. The average elevation of Mt. Wuyi is 1200 m, with the Huanggang peak the highest point at 2158 m. Wuyishan NNR has a typical subtropical monsoonal climate, with an average annual temperature that ranges from 8.5°C to 18°C. The area is rich in rainfall, with an average precipitation varying from 1486 mm to 2150 mm.

The Wuyishan NNR is divided into three different zones: the core, buffer, and experimental zones, with an area of 292.72 km², 123.952 km²,

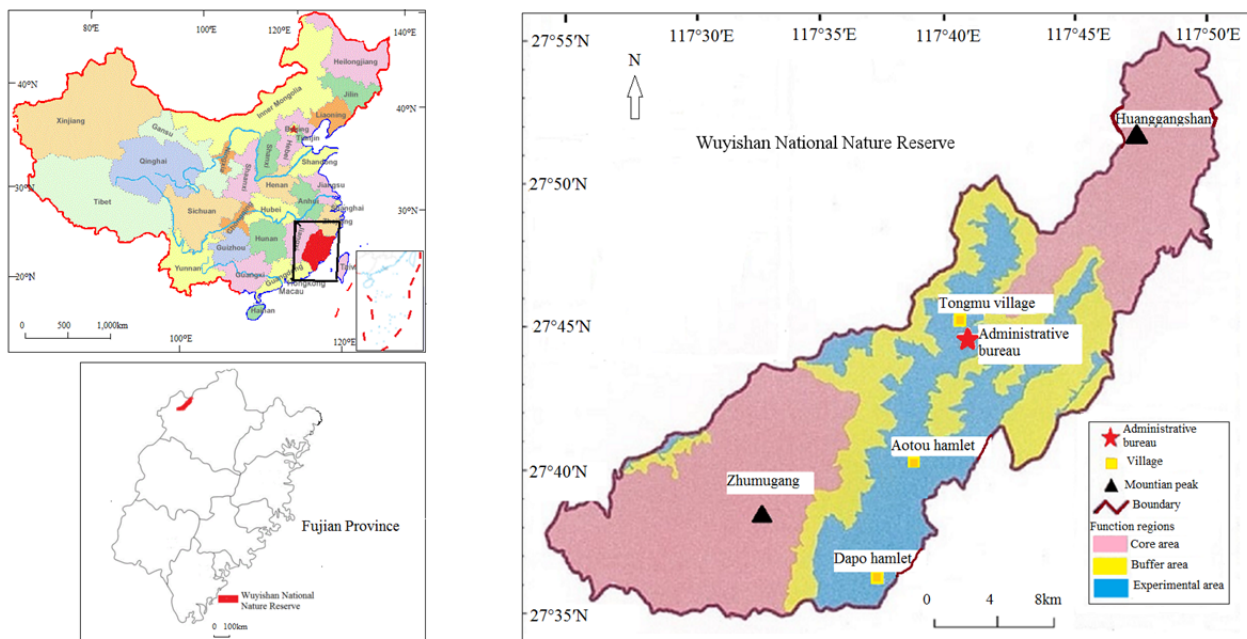


Figure 1 Location of Wuyishan Nature Reserve in Fujian Province, China (Left). The right map shows the Wuyishan Nature Reserve in the north part of Fujian Province, China.

and 148.60 km² respectively, accounting for 51.8%, 21.9%, and 26.3% of the total area of the Reserve. In this paper, tourist development inside the Nature Reserve is within the experimental zone, unless otherwise stated.

The Wuyishan NNR includes three administrative villages ¹⁾, consisting of 40 natural villages that contain 2508 people in 617 households. We selected the largest administrative village, Tongmu, where the Wuyishan NNR's administrative office is located, as the field survey site. At the time of the survey, Tongmu had a population of 1503 people and 384 households, with 751 males and 752 females.

The primary population comprises the Hakka people, who have lived in the region of the Wuyishan NNR for thousands of years. They have made their living from timber, chestnut, tea, bamboo, and other timber and non-timber forest products since long before the establishment of the Wuyishan NNR in April 1979.

Tourism development took place on the reserve from 1996 to 2007; however, it was shut down by the nature reserve's administration in 2008. The reason for tourism cessation was

elaborated in our related research project (Chen and Ota 2017). The reason that was publicly stated was that tourists affected the endangered species inside the protected area. However, the real reason for the cessation of the ecotourism industry in the Reserve was due to the interest conflicts between administrative bureaus. The Jiangxi Wuyishan NNR blocked access to the primary attraction, Mt. Huanggangshan's peak, because the Fujian Wuyishan NNR rejected its request to share in the revenue from the entry fee. The peak of Mt. Huanggang is located in the Fujian Province; while part of the road to the mountain peak belongs to the Jiangxi Province. The Jiangxi Wuyishan NNR administrators believed that entitled their office to a share in the profits from tourist development.

Resuming tourism development is under consideration by the reserve's administration. An urgent transformation of the current local industry structure is expected by local residents. The cultivation and selling of bamboo and black tea have been the primary industries of the natural villages in the nature reserve. However, with the drop in revenue from these two products, residents are eager to search for alternative industries. A

¹⁾ An administrative village is the smallest administrative organization in China. It usually consists of a few natural villages/lineage villages. The difference between an administrative village and a natural village is that the former has a village committee, while the latter has none.

high-speed rail was completed in July 2015 to connect the nature reserve with the large city of Fuzhou, the capital of Fujian Province. This will reduce the traveling time from approximately six hours to one hour and increase the number of tourists.

1.2 Social exchange theory and research hypothesis

Social exchange theory (SET) assumes tourism development comes with economic benefits in exchange for social and environmental impacts. SET, which has been widely accepted as a theoretical framework to explain the relationship between individual benefits and perceptions of economic development (Ap 1990; Perdue, Long and Allen 1990), is an appropriate framework as it can explain both positive and negative perceptions (Ap 1992). Based on social exchange theory, residents are expected to support tourism development only when they perceive that personal/group benefits gained will exceed the costs, such as inconveniences and environmental problems, such as pollution and traffic congestion.

The literature shows an interrelation between sociodemographic characteristics and residents' attitudes. For example, Nunkoo and Gursoy (2012) found gender identity to be a good predictor of attitudes associated with negative impacts, as well as support for tourism.

In terms of gender difference, women more tend to oppose to proposed development owing to issues of road safety than men (Mason and Cheyne 2000; Nunkoo and Gursoy 2012). Regarding the relationship between education level and residents' attitude, residents with higher levels of education have been found to exhibit a more positive attitude, which may be attributable to the fact that they were more familiar or aware of the potential benefits than those with less education (Teye et al. 2002). A lower education level is found to be associated with a critical outlook on the negative environmental impact and low benefits from tourism (Kuvan and Akan 2005).

Regarding the influence of income level on residents' attitudes, Kuvan and Akan (2005) reported that those in lower income categories were more critical in terms of the negative impacts of tourism. The variable of age was found to be significant factor for respondents' attitude as

younger respondents were more dependent on tourism industry than the older ones (Walpole and Goodwin 2001).

Relationships between family size and attitudes have also been reported (Tosun 2002; Wang and Pfister 2008), although much less frequently in comparison to other personal characteristics. Further, the distance residents live from the tourist attraction areas has been found to influence their attitudes toward tourism. Residents living closest to the attraction were more supportive of tourism development and more concerned about the negative impact of tourism than residents living further away from the attraction (Jurowski and Gursoy 2004). William and Lawson (2001) noted that residents living close to a tourist zone were least supportive of the tourist industry. Moreover, the residents living closest to the center of tourist activity are more sensitive to negative impacts (Faulkner and Tideswell 1997).

The hypothesis of this study is as follows.

H1. Residents with a higher education level will be more supportive of sustainable tourism development than those with a lower education level.

H2. More affluent residents will be more supportive of sustainable tourism development than less affluent residents.

H3. Age will be negatively correlated with attitudes toward sustainable tourism development.

H4. Female respondents will more oppose to the negative impacts of tourism development than male respondents.

H5. Family size will have a positive influence on the respondents' attitudes toward sustainable tourism development.

H6. Distance from the tourist attractions will influence residents' attitudes toward tourism development.

H7. Residents perceiving that they will earn economic benefits from tourism development will have a more supportive attitude toward tourism development and be less concerned about negative effects than those perceiving no economic benefits from the tourism industry.

1.3 Data collection instrument

The local community's attitude toward ecotourism development was documented using 21

statements drawn from previous studies conducted in Taiwan (Lai and Nepal 2006), and took into consideration the local situation. These items included residents' attitudes toward tourism development, the negative impacts of such development, and willingness to learn new knowledge and skills in order to participate in the tourism industry.

A questionnaire containing three parts was used in this study. In the first part, participants were asked about whether they had experience with the tourism industry and if they will receive any benefits from the tourism industry. In the second part, participants were asked to respond to 21 statements about ecotourism development. The third part contained questions about respondents' backgrounds, including questions related to gender, age, education, household income, family size, hamlet name, and migrant work situation (Table 1).

We used a 5-point Likert scale to measure some of the statements in the first part, and all the attitudinal statements in the second part as the scale has been employed in several previous studies to evaluate residents' attitudes toward ecotourism (e.g., Kuvan and Akan 2005; Lei and Nepal 2006). The responses were recorded on a 1–5-point scale: 5 represented “strongly agree,” 4 “agree,” 3 “neither agree nor disagree,” 2 “disagree,” and 1 “strongly disagree.”

1.4 Sample and data collection

The study was conducted in November 26–31, 2014, following two previous visits in March and September 2014. Snowball sampling was used to select study participants. The data were collected from residents in Tongmu Administrative Village, Sangang natural village, and several other natural villages alongside the only road in the nature reserve. Data were collected from these villages in an effort to obtain representation from the residents who are living in the central natural village of Sangang natural villages and close to the ecotourism industry, and those who are living in the other natural village some distance from the Sangang natural village. The first author and two research assistants from the local university interviewed villagers. A villager was approached, introduced to the purpose of the study, and asked for his or her cooperation. If he or she agreed to

Table 1 Profiles of respondents' sociodemographic characteristics

	No.	Proportion (%)
Gender (n=97)		
Male	51	52.6
Female	46	47.4
Age (n=103)		
Under 24	4	3.9
25-44	50	48.5
45-64	46	44.7
Over 65	3	2.9
Education (n=95)		
None/primary	30	31.6
Junior high school	41	43.2
Senior high school	16	16.8
College and above	8	8.4
Household income(n=104)		
Under RBM 10,000	4	3.8
10,001-20,000	11	10.6
20,001-30,000	8	7.7
30,001-40,000	10	9.6
40,001-50,000	24	23.1
Over 50,001	47	45.2
Migration work time (n=103)		
None	86	83.5
Under 3 months	3	2.9
3-6 months	4	3.9
Over 6 months	8	7.8
Family size (n=103)		
1 person	1	1.0
2 persons	0	0.0
3 persons	23	22.3
4 persons	22	21.4
5 persons	27	26.2
6/over 6 persons	30	29.1
Hamlet (n=105)		
At the village center	33	31.4
Remote to the center	72	68.6

participate, a copy of the questionnaire sheet was given out. For some villagers, we explained the items and selected the proper responses. In total, 134 individuals were approached, among whom 29 individuals refused to participate for reasons such as, “My husband determines all the issues, I don't know” and “I have not received much education; hence, I don't know how to answer the questions.”

SPSS for Windows was used for the data analysis. Statements dealing with respondents' tourist-related activities and their attitudes toward tourism development were subjected to a two-stage analysis. In the first stage, all the original data were summarized and ranked. In the second stage,

independent sample t-tests were applied to analyze the relationship between the respondents' sociodemographic characteristics and attitudes toward tourism's impacts.

All the sociodemographic features and residents' perception of economic benefits from tourism development were subjected to t-test calculations. In addition, all the sociodemographic features were grouped for t-test analysis as follows:

- *Gender* (1: male, 2: female)
- *Age* (1: under 44, 2: 45 and over)
- *Education* (1: less than junior high school, 2: senior high school and higher)
- *Household income* (1: under RMB 30,000 per year, 2: RMB 30,001 or more per year)
- *Migrant work* (1: no migrant work, 2: more than three months of migrant work per year)
- *Family members* (1: three or fewer persons, 2: more than three persons)
- *Place of residence* (1: living in the center of the village, 2: living in an area remote from the village center)
- *Perception of economic benefits from tourism development* (1: Yes, 2: No that combines the responses of "No"; "Little concerned"; "Don't know" and "No response")

2 Results

2.1 Profile of the surveyed residents

The sociodemographic analysis of the respondents is presented in Table 1. One hundred and five villagers were surveyed, with males (52.6%) slightly outnumbering females (47.4%), many of whom tended to be reluctant to give their opinion. Approximately half of the respondents (52.4%) were 44-years old or younger. In terms of education, the majority (74.8%) reported having a junior high school education or below. Nearly half of the respondents (45.2%) had a yearly household income greater than RMB 50,000 (equivalent to approximately USD 8,300). The majority of respondents (83.5%) were engaged in agricultural activities only, and only 16.5% were employed as a migrant worker for more than three months per year. The majority (76.7%) live in a family with more than three persons. Approximately one-third of the respondents (31.4%) were from the center of

Tongmu Village, Sangang, which is also the center of the nature reserve. The other two-thirds (68.6%) were from other natural villages that are distant from the center.

2.2 Participation in tourism-related activities

Table 2 summarizes respondents' willingness to participate in tourism-related activities, and their perceptions of the benefits they expect to receive from ecotourism development. In Table 3, the frequency distribution of the responses to each item, and the means and standard deviations, are presented. The majority of respondents (84.8%) consider it necessary to resume ecotourism development inside the nature reserve.

Table 2 Respondents' tendency of their potentials to participate in tourism development

Item	No.	Proportion (%)
Is it necessary to reopen the tourism activities in the reserve? (n=105)		
Yes	89	84.8
No	6	5.7
Little concerned	6	5.7
Don't know	3	2.9
No response	1	1.0
Have you participated in the tourism activities in the reserve before 2008? (N=105)		
Yes	45	42.9
No	55	52.4
Don't know	3	2.9
No response	2	1.9
If the ecotourism is to be reopened in the nature, what tourism activities do you plan to conduct? (Multiple choice) (n=105)		
Open a guest house	38	36.2
Open a restaurant	32	30.5
Work in a souvenir store/restaurant	2	1.9
Sell souvenir/specialties to the tourists	46	43.8
Tour guide	5	4.8
Others	9	8.6
Nothing to do	3	2.9
Don't know	6	5.7
Do you think that you can receive any benefits from the reopen of the tourism activities? (n=105)		
Yes	87	82.9
No	5	4.8
Little concerned	5	4.8
Don't know	5	4.8
No response	2	1.9

Table 3 Community's perceived benefits from tourism development

Benefits	Mean	S.D.	Strongly agree		Agree		Neither agree nor disagree		Disagree		Strongly disagree	
			No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
What benefits, do you think, that you can receive from the reopen of the tourism activities?												
1. Increase household income (n=103)	4.29	0.896	47	45.6	49	47.6	5	4.9	2	1.9	0	0.0
2. Increase employment chances (n=98)	4.16	0.898	33	33.7	62	63.3	2	2.0	2	2.0	1	1.0
3. Increase the chances to participate in the reserve management (n=103)	3.86	1.094	25	24.3	57	55.3	11	10.7	6	5.8	0	0.0
4. Increase the interactions with tourists (n=100)	4.28	0.587	36	36.0	59	59.0	7	7.0	0	0.0	0	0.0
5. Preserve the nature environment in the reserve (n=101)	3.85	1.003	27	26.7	46	45.5	23	22.8	6	5.9	0	0.0
6. Increase the preservation awareness of community residents (n=103)	3.93	1.007	2	1.9	61	59.2	11	10.7	3	2.9	1	1.0
7. Facilitate the residents to participate trainings and increase their knowledge and skills (n=105)	4.13	0.748	30	28.6	63	60.0	10	9.5	1	1.0	0	0.0

Note: (%)= Proportion.

Approximately two-fifths (42.5%) were engaged in ecotourism activities before 2008, while slightly over half (52.4%) had not participated in any ecotourism-related activities before 2008.

When asked what tourism-related activities they planned to do, "selling souvenir/specialties to the tourists" was ranked first (43.8%), followed by "opening a guest house" (36.2%), and "opening a restaurant" (30.5%).

2.3 Perceived benefits from ecotourism

The majority (82.9%) stated that they expected to receive some benefits from the resumption of ecotourism activities (Table 3). They assessed the importance of seven potential benefits from ecotourism development (Table 3). All possible benefits were considered important, with increasing household income (mean = 4.29, S.D. = 0.896), increasing interactions with tourists (mean = 4.28, S.D. = 0.587), increasing chances for employment (mean = 4.16, S.D. = 0.898), and facilitating opportunities to participate in training to increase their knowledge and skills (mean = 4.13, S.D. = 0.748) being the four most important (Table 3).

2.4 Attitude toward ecotourism development

Table 4 shows the distribution of respondents' attitudes toward the 21 items. The majority

(86.9%) agreed with the statement "learn about the natural landscape and other heritage of the area" (mean = 4.07; S.D. = 0.862), and opposed (> 92%) "trade in rare plants (mean = 1.5; S.D. = 0.878) or rare animals" (mean = 1.36; S.D. = 0.709). The responses were more divergent for the questions about limiting tourist numbers, open access for tourists, and loosening the reserve regulations for tourist development.

More than 90% of the respondents agreed with "preserve the cultural landscapes in the reserve" (mean = 4.22; S.D. = 0.763), "protect traditional ceremonies and other customs from any change induced by tourism development" (mean = 4.22; S.D. = 0.747), and "learn about cultural heritage, landscapes, and traditional customs" (mean = 4.14; S.D. = 0.642). Respondents in general (77.3%), were positive toward developing ecotourism as the principal industry.

The majority (89.8%) supported the government investing in training to enable residents to participate in tourist activities (mean = 4.08; S.D. = 0.917). Attitudes diverged in relation to the potential negative impacts of tourist activities on the community's environment, with about half of the respondents agreeing that the development of tourism would mean "tourist littering increases" (mean = 3.27; S.D. = 1.456), "environmental problems such as waste disposal increase" (mean = 3.05; S.D. = 1.339), "traffic jams

Table 4 Mean and standard deviations of the total 21 scale items

Scale items	Total correlation	Mean	S.D.	Strongly agree*		Agree*		Neither agree nor disagree		Disagree*		Strongly disagree*		Don't know	
				No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)	No.	(%)
1. (n=103)	0.448	3.26	1.357	21	20.2	31	29.5	17	16.2	27	25.7	2	1.9	5	4.8
2. (n=104)	0.332	3.18	1.305	22	21.2	21	20.0	26	24.8	25	23.8	9	8.6	1	1.0
3. (n=103)	0.573	3.07	1.345	17	16.3	27	25.7	20	19.0	27	25.7	9	8.6	3	2.9
4. (n=105)	0.231	1.5	0.878	3	2.9	2	1.9	3	2.9	29	27.6	68	64.8		0.0
5. (n=105)	0.271	1.36	0.709	2	1.9	0	0.0	2	1.9	26	24.8	75	71.4		0.0
6. (n=104)	0.584	4.07	0.862	28	26.9	63	60.0	9	8.6	2	1.9	0	0.0	2	1.9
7. (n=104)	0.577	4.22	0.763	34	32.7	65	61.9	2	1.9	1	1.0	1	1.0	1	1.0
8. (n=105)	0.516	4.22	0.747	36	34.6	60	57.1	7	6.7	1	1.0	0	0.0	1	1.0
9. (n=104)	0.093	3.88	0.855	19	18.3	62	59.0	17	16.2	4	3.8	1	1.0	1	1.0
10. (n=105)	0.588	4.14	0.642	28	26.9	66	62.9	9	8.6	2	1.9	0	0.0	0	0.0
11. (n=105)	0.515	3.27	1.456	24	23.1	36	34.3	8	7.6	19	18.1	17	16.2	1	1.0
12. (n=104)	0.602	3.05	1.339	8	7.7	46	43.8	13	12.4	22	21.0	10	9.5	5	4.8
13. (n=102)	0.728	3.25	1.23	12	11.5	43	41.0	16	15.2	22	21.0	7	6.7	2	1.9
14. (n=100)	0.639	2.98	1.263	7	6.7	35	33.3	24	22.9	22	21.0	7	6.7	5	4.8
15. (n=102)	0.063	3.22	1.256	13	12.5	37	35.2	24	22.9	19	18.1	5	4.8	4	3.8
16. (n=105)	0.008	2.86	1.204	8	7.7	28	26.7	24	22.9	34	32.4	8	7.6	3	2.9
17. (n=105)	0.639	3.88	0.968	22	21.2	62	59.0	12	11.4	6	5.7	1	1.0	2	1.9
18. (n=105)	0.440	4.08	0.917	29	27.9	65	61.9	7	6.7	1	1.0	0	0.0	3	2.9
19. (n=105)	0.543	4.08	0.817	27	26.0	65	61.9	11	10.5	0	0.0	0	0.0	2	1.9
20. (n=104)	0.538	3.94	0.923	21	20.2	68	64.8	9	8.6	2	1.9	2	1.9	2	1.9
21. (n=104)	0.354	3.73	1.007	12	11.5	69	65.7	15	14.3	3	2.9	1	1.0	4	3.8

Note: *The responses were recorded in a 1-5 point scale: 5 representing strongly agree, 4 for agree, 3 for neither agree nor disagree, 2 for disagree, and 1 for strongly disagree; (%) = Proportion.

The 21 scale items are as below:

1. Deregulate the limits of tourist activities;
2. Give completely open access to the reserve for tourists;
3. Regulate the tourist number for nature conservation;
4. Trade in rare plants;
5. Trade in rare animals;
6. Learn about the natural landscapes and other heritage of the area;
7. Preserve the cultural landscapes in the reserve;
8. Preserve the traditional ceremonies and other customs from any change induced by tourism development;
9. Develop tourism as the leading industry in replace of the original economic activities;
10. Learn about the cultural heritage, landscapes and traditional customs of the area;
11. Tourist littering increases;
12. Environmental problems such as waste disposa;
13. Traffic jam and noise;
14. Take negative tourism impacts to the community;
15. Maximize non-local tourism investment ;
16. Develop large scale and luxurious tourist facilities;
17. Prevent negative tourism impacts;
18. Government should invest to train and enable residents to participate in tourism activities (n=105);
19. Communicate with the local government for ecotourism planning;
20. Communicate with the nature reserve management administration for ecotourism regulation and management;
21. Communicate with the local government and the nature reserve management administration to increase the ecotourism-related employment opportunities.

and noise increase” (mean = 3.25; S.D. = 1.230), and “negative tourism impacts will affect the community” (mean = 2.98; S.D. = 1.263). Just over one-third (34%) agreed with building large scale and luxurious tourist facilities, and 40% disagreed. Nearly half (47.7%) agreed with “maximize non-local tourism investment,” while 23% disagreed.

Approximately 80% of the respondents agreed with the three statements regarding the community’s participation in ecotourism planning and management. Approximately 87.9% were

willing to be involved with local government about ecotourism planning (mean = 4.08; S.D. = 0.817). About 85% stated that they are willing to be involved with the administration of the nature reserve about ecotourism regulation and management (mean = 3.94; S.D. = 0.923). A slightly lower percentage (77.2%) stated that they would be willing to be involved with local government and the administration of the nature reserve to increase ecotourism-related employment opportunities (mean = 3.73; S.D. = 1.007).

2.5 Difference in attitudes based on sociodemographic characteristics

Independent sample t-tests were used to assess whether attitudes significantly differed based on the sociodemographic characteristics of the respondents, e.g., *age, gender, household income, education level, family size, and place of residence*. The t-test results were used to explore the research hypotheses.

H1. Residents with a higher education level will be more supportive of sustainable tourism development than those with a lower education level.

Hypothesis 1 was supported. Respondents with a higher education level were more inclined to support a sustainable tourism development by limiting tourist numbers, acquiring more knowledge, and objecting to the establishment of large tourism facilities than respondents with a lower education level (Table 5). Specifically, respondents whose education level was higher than senior high school were more supportive of the following statements: “Regulate the tourist number for nature reserve” ($p=0.001, t=-3.546$), “learn about natural landscapes and other heritage of the area” ($p=0.036, t=-2.124$), “learn about the cultural heritage, landscapes and traditional customs of the area” ($p=0.002, t=-3.224$), and “preserve the cultural landscape in the reserve” ($p=0.046, t=-2.027$). However, respondents with a higher education level were less supportive of the statements, “[give] completely open access to the reserve to tourists” ($p=0.016, t=2.448$), and “develop large scale and luxurious tourist facilities” ($p=0.000, t=5.184$).

H2. More affluent residents will be more supportive of sustainable tourism development than less affluent residents.

Hypothesis 2 was supported by the t-test results. The results suggested (Table 5) that different levels of household income have an influence on attitudes. Respondents whose household income is less than RMB 30,000 or over RMB 30,000 per year (equivalent to about USD 5000) show more support for the statements, “deregulate the limits of tourist development inside the nature reserve” ($p=0.018, t=2.402$), “give completely open access to the reserve to tourists” ($p=0.005, t=2.852$), “preserve the cultural

landscapes” ($p=0.008, t=2.710$), “develop tourism as the leading industry to replace the original economic activities” ($p=0.014, t=2.495$), and “develop large scale and luxurious tourist facilities” ($p=0.049, t=1.991$). In contrast, respondents whose household income is less than RMB 30,000 or over per year (equivalent to about USD 5,000) show more support for the statements, “tourist development would increase traffic jams” ($p=0.024, t=-2.299$), “tourist development would bring negative tourism impacts to the community” ($p=0.026, t=-2.270$), and “trade in rare animals” ($p=0.041, t=2.149$).

H3. Age will be negatively correlated with attitudes toward sustainable tourism development.

Hypothesis 3 was supported in this study. Younger respondents were more inclined to support the limit of tourist numbers, acquire more knowledge, and preserve the natural and cultural resources in the nature reserve (Table 5).

The t-test results indicated that age had a highly significant influence on the residents’ attitude. In general, younger respondents aged 44 years or less, were more supportive of the following four statements, “Regulating the tourist numbers in a nature reserve” ($p=0.02, t=3.316$), “learning about natural landscapes and other heritage of the area” ($p=0.03, t=2.198$), “learning about cultural heritage, landscapes, and traditional customs of the area” ($p=0.003, t=3.100$), “preserving the traditional ceremonies and other customs from any change induced by tourism development” ($p=0.05, t=2.011$).

In contrast, older respondents, aged over 44 years, were less supportive of the following statements, “trade in rare animals” ($p=0.041, t=2.149$), and “develop tourism as the leading industry in replace of the original economic activities” ($p=0.014, t=2.495$), but more supportive of statements concerning “traffic jam and noise” ($p=0.024, t=-2.299$), and “take negative tourism impacts to the community” ($p=0.026, t=-2.270$).

H4. Female respondents will be more opposed to the negative impacts of tourism development than male respondents.

Gender has a significant effect on respondents’ attitudes toward tourism development. However, gender had an influence only on only one statement “deregulate the limits of tourist activities” ($p=0.016, t=2.459$) (Table 5).

Table 5 Statements that are significantly different by respondent characteristics: t-test results

	Gender			Age			Education level			Household income		
	Male	Female	t&s	Under 44	Over 45	t&s	Under junior high school	Over senior high school	t&s	Under RMB 30,000	Over RMB 30,000	
Deregulate the limits of tourist activities	3.72	3.12	2.459*							3.95	3.29	2.402*
Give completely open access to the reserve for tourists												
Regulate the tourist number for nature conservation				3.53	2.77	3.316***	2.80	3.79	2.448*	3.87	3.04	2.852***
Trade in rare plants				1.56	1.23	2.649***						
Trade in rare animals				1.38	1.18	2.087**	1.36	1.13	2.501*	1.52	1.22	2.149*
Learn about the natural landscapes and other heritage of the area							4.09	4.38	2.124*			
Prevent negative tourism impacts												
Preserve the cultural landscapes in the reserve							4.24	4.48	2.027*	4.57	4.25	2.710**
Preserve the traditional ceremonies and other customs from any change induced by tourism development												
Develop tourism as the leading industry in replace of the original economic activities										4.26	3.85	2.495*
Learn about the cultural heritage, landscapes and traditional customs of the area				4.31	3.94	2.712**	4.04	4.46	3.224**			
Tourist littering increases												
Environmental problems such as waste disposal												
Traffic jam and noise										2.79	3.45	-2.299*
Take negative tourism impacts to the community										2.63	3.25	2.270*
Maximize non-local tourism investment							3.69	2.87	3.532***			
Develop large scale and luxurious tourist facilities							3.19	2.25	5.184***	3.36	2.84	1.991*

Notes: t&s= t-value and level of significance; *Significant at the 0.1 level; **Significant at the 0.05 level; ***Significant at the 0.01 level.

H5. Family size will have a positive influence on the respondents' attitudes toward sustainable tourism development.

Respondents with three or more family members were more likely to agree with the statement about "communicate with the local government and the nature reserve management administration to increase the ecotourism-related employment opportunities" ($p=0.037$, $t=2.120$).

H6. Distance from the tourist attractions will influence residents' attitudes toward tourism development.

Hypothesis 6 was supported. Respondents who live in a remote natural village other than the center of the administrative village were more supportive of the statement, "tourist littering would increase with tourist development" ($p=0.036$, $t=2.216$).

H7. Residents perceiving that they will earn economic benefits from the tourism development will have a more supportive attitude toward tourism development and be less concerned about negative effects than those perceiving no economic benefits from the tourism industry.

Hypothesis 7 was partially supported by the results. Residents perceiving that they will earn economic benefits from the tourism industry were inclined to support tourism development and were more willing to participate in tourism management with the local government and the administrative bureau of the nature reserve. It was also found that respondents with an expectation of economic benefits from the tourist industry were more supportive of the statements, "deregulate the limits of tourist development inside the nature reserve" ($p=0.001$, $t=3.344$), "develop tourism as the leading industry in replace of the original economic activities" ($p=0.002$, $t=3.640$), "government should invest to train and enable residents to participate in tourism activities" ($p=0.026$, $t=2.383$), "communicate with the local government for ecotourism planning" ($p=0.003$, $t=3.068$), and "communicate with the nature research management administration to increase the ecotourism-related employment opportunities" ($p=0.006$, $t=2.834$).

However, no significant differences of attitude were documented toward the negative effects of tourism development and either respondents who expected economic gains from the tourism industry or those who perceived no economic benefits from

the tourism industry.

2.6 Relationship of non-farm work time with the residents' attitudes toward tourism development

Regarding correlation of the variable of "migrant work" with the attitude, respondents who work away from the farm for over three months per year are less supportive of the statements, "communicate with the nature reserve management administration for ecotourism regulation and management" ($p=0.037$, $t=2.120$) and "develop large scale and luxurious tourist facilities" ($p=0.026$, $t=2.264$).

3 Discussions

It was found that residents were highly supportive of the conservation of nature, cultural preservation, sustainable community development, and community participation in ecotourism planning and management to develop the ecotourism industry. These findings are consistent with the results of previous studies conducted in China and other parts in the world. Residents are pro-tourism and hold a positive attitude toward pre-tourism development and/or the early stages of tourism development (Akis et al. 1996; Cui and Ryan 2011; Khoshkam et al. 2016).

This study also found that respondents who believed that tourism development would bring economic benefits were more supportive of opening the nature reserve for the tourism industry and were inclined to participate in tourism management together with employees of the village office and the administrative bureau of the protected area. In general, the results provided support for the notion of social exchange theory (SET) (Jurovski et al. 1997; Gursoy and Rutherford 2004; Sirakaya et al. 2002), which suggests that host residents tend to perceive that they will benefit from tourism development. They are also in favor of biodiversity conservation (e.g., Walpole and Goodwin 2001; Vodouhê et al. 2010). However, this study did not reveal negative attitudes toward tourism development based on respondents' perception of economic benefits. This result may be attributable to the fact that the Reserve is in the

early stage of tourism development. According to [Doxey \(1975\)](#), attitudes toward both tourism and conservation may change at different stages of tourism development.

This study found that the residents' sociodemographic characteristics were significantly explained by their attitude toward sustainable tourism development, as well as the negative effects of the tourism industry in a nature reserve, which is congruent with previous literature (e.g., [Totoglu et al. 1998](#); [Kuvan and Akan 2005](#); [Khoshkam et al. 2016](#)). Male respondents, or those who have a higher household income were more supportive of tourism development inside the reserve. Our finding is consistent with previous research that suggests women more oppose to the proposed tourism development than men ([Mason and Cheyne 2000](#)). It also supports the notion that gender is a good predictor of attitudes ([Fisher and Arnold 1990](#)).

Being young and having a high education level are two significant variables to support learning more about natural and cultural resources, and landscapes. The positive correlation of high education level with the support for tourism development is consistent with the literature ([Teye et al. 2002](#)).

The relationship between age and attitude finds little support in the literature. In this study, younger respondents were more concerned about environmental protection in terms of limiting tourist number and opposing trade of wild animals/plants. In addition, it is found that younger residents were more supportive of acquiring cultural knowledge.

Respondents who have a higher household income or live far from the village center, are more concerned about the negative environmental impacts of tourism development. This result is inconsistent with several previous studies stating residents in the lower income categories were more critical of negative effects, compared to their counterparts ([Kuvan and Akan 2005](#)). The fact that residents with a higher household income were more likely to acknowledge the negative effects of tourism development may be attributable to the fact that these respondents have a clear and better understanding of both the benefits and potential disadvantages of the tourism industry.

The result in this study also contradicted

previous findings related to distance from the tourism center and attitudes toward tourism development ([Belisle and Holey 1980](#); [Haley et al. 2005](#)). Residents living farther from the central tourism zone were more inclined to agree that the negative impacts of tourism development should be limited in a nature reserve at its early stages of the development.

Finally, it was found that the respondents who were not engaged in "non-farm work time" were more opposed to building large-scale tourism facilities and more inclined to participate in tourism management together with the administrative bureau. This result may be because of the residents' attachment to their local community. However, because "non-farm work" is a factor specific to the rural areas of mainland China, it deserves further attention in future studies.

4 Conclusions

We investigated the attitudes toward tourism development of residents who are living inside a national nature reserve in China. In general, their attitudes toward ecotourism development were positive. This study also revealed that the variables of age, gender, education level, household income, family size, non-farm work arrangements, and the distance to tourism attractions, have a significant association with respondents' attitudes toward ecotourism development, or negative impacts of the tourist industry.

The results of this study contribute to the literature by highlighting local community residents' positive attitudes toward tourism development inside the nature reserve during the pre-tourism/emerging stage of development period. However, the negative impacts of tourism development on the natural environment were of little concern to respondents. Thus, more case studies are needed to clarify residents' attitudes toward tourism development and its negative effects, particularly in nature reserves at different stages of development.

Based on the results, it is clear that the local government and administrative bureau should begin to educate the local community about the benefits of shifting some, if not the majority, of their efforts supporting traditional industries (e.g.

farming) to supporting, in particular those who were younger and/or those with a higher education level.

Moreover, we did not address the noneconomic benefits or negative impacts of

tourism development, despite the fact that many previous studies have (Sirakaya et al. 2002, Wang and Pfister 2008, Aref 2010). Future research should account for economic, sociocultural, and environmental impacts (Gursoy et al. 2002).

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