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Tourists' Willingness to Pay Conservation Fees: The Case of Hulunbuir Grassland, China

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Abstract: With the continuous development of human society, population increase, resource consumption and environmental pollution are increasing day by day, and the environment and resources on which tourism depends for development are more and more seriously damaged, which seriously affects the sustainable development of tourism, especially in underdeveloped areas. Hulunbuir Grassland Ecological Function Zone is the national ecological function area in China; and it is also an important ecological security barrier in northern China. Methods of raising more funding to support the ecological conservation of the Hulunbuir grasslands, while also supporting the tourism sustainability, is an important problem. In this study, the Contingent Valuation Method (CVM) was used to explore the feasibility of collecting conservation fees from tourists in grassland tourism destinations in China, determine the reasonable amount of conservation fees and the factors influencing the amount of conservation fees by face-to-face questionnaire survey. The respondents of this study is tourists who had completed their travel and were about to leave Hulunbuir, and 567 valid questionnaires were collected. The results show that: (1) tourists have the potential to create environmental resources conservation funds, and it is feasible to raise conservation funds with tourists as the main source of payments; (2) the Hulunbuir grassland conservation fee should be set at 49 yuan, which is acceptable to most tourists and will not change the number of tourists; (3) Tourists' socio-economic characteristics, travel characteristics and types of leisure activities have significant influences on the amount of conservation fees.

Key words: tourists; willingness to pay; conservation fees; contingent valuation method; Hulunbuir grassland

1 Introduction

Over the past three decades, China's tourism industry has grown tremendously. For the five years from 2015 to 2019, there were increases in the number of domestic tourists in China, growing from 4 billion, to 4.4 billion, to 5.0 billion, to 5.5 billion, to 6 billion year by year. As one of the three major grasslands in the world today, the Hulunbuir natural grassland in China is an important part of the Eurasia grasslands. It is popular and sought after by domestic and foreign tourists. In 2019, it was one of the popular tourist destinations in China, receiving 19 million domestic and foreign tourists, and a tourism income of 71.64 billion yuan.

The Hulunbuir grassland attracts domestic and foreign tourists with its good ecological environment, and rich flora and fauna resources. However, in recent years, a series of ecological and environmental problems have emerged in Hulunbuir. For example, grassland degradation occurred in more than 40% of the total grassland area; there were nearly 3 million hectares of potential sanding area; Hulunbuir experienced grassland degradation at an annual rate of 2%, and a construction rate of only 0.2% per year; and in the wetland area, wildlife numbers decreased, with some rare or

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sensitive species even disappearing. As ecological and environmental problems have become more serious, they have also led to social problems, such as limited economic development in pastoral areas, a lack of improvement in herdsmen living standards, and a decline in the function of ecosystem cultural services (Musacchio, 2009; Daniel et al., 2012). These problems endanger national ecological security (Shackleton et al., 2019).

In China's spatial pattern plan for land, introduced in 2010, Hulunbuir was assigned to the restricted development zone. The main goal of the zone is to protect the ecological environment and provide an ecological barrier in northern China. As such, many industries in Hulunbuir are under restricted development, leading to slow economic development. The regional GDP was 162.09 billion yuan, 118.59 billion yuan, 125.29 billion yuan and 119.30 billion in 2016, 2017, 2018 and 2019, respectively.

The Chinese government requires that the Hulunbuir area be both a good ecological environment and an area of tourism development. However, with shortages in government funds, the question becomes, how can funds be raised to support the ecological protection of Hulunbuir, while also supporting sustainable tourism development, and providing an important ecological barrier in northern China? Conserving the Hulunbuir grassland requires the combined efforts of multiple stakeholders, including local residents, tourists, and the government. As an economically underdeveloped region in China, according to the results of the seventh national census, the resident population of Hulunbuir City is 2242900, and the per capita disposable income of the city residents in 2020 is 31515 yuan, which is far below China's average per capita income of 32188 yuan (2021 China Statistical Yearbook). As such, residents have a limited ability to pay for grassland protection.

Nearly 20 million tourists visit the Hulunbuir grasslands each year. Given that tourists are the direct beneficiaries of the positive ecological environment, tourists should assume the responsibility of conservation. It is possible to raise conservation funds by collecting resource conservation fees from tourists, while also promoting sustainable tourism development. Internationally, some regions have already introduced fee-based systems, where conservation fees are collected through entry or exit fees for tourists entering the region. These entry/exit fee-based systems can be considered to be tourist payments for environmental services (Casey and Schuhmann, 2019). The collection and implementation of conservation fees have generally been concentrated in marine tourism destinations or protected areas (Rodella et al., 2019). In contrast, this study examined whether it is feasible to collect conservation fees from tourists in grassland tourism destinations in China. What would the target conservation fee be? What factors influence visitors' Willingness to Pay (WTP)?

China is a developing country, where tourists do not yet know enough about public environmental goods and awareness of conservation participation is not yet strong. Given this, information sheet about the ecological environment in Hulunbuir was added to the experimental design to explore the impact of receiving information on tourists' WTP.

2 Literature review

Eagles et al. (2013) proposed there are three main sources of income for a tourist destination or protected area: social taxes, user fees, and donations. Social taxes are the most significant source of income, but are distributed from the top down, with little explanation about how and in what proportion they are distributed across areas. This leads to a lack of transparency and poor accountability in funding (Wang and Jia, 2012; Wang and Zhong, 2018; Mach et al., 2020).

For tourism destinations, economic interests drive governments to invest large amounts of social tax revenues in constructing tourism facilities, developing scenic spots, or other national development priorities. These do not address the negative externalities generated by tourism. The result is often the destruction of natural and cultural resources, possibly limiting the long-term attractiveness of the destination and leading tourism to a stage of degradation and decline (Reynisdottir et al., 2008).

Therefore, to promote sustainable tourism development, in places where tourism is key to the economy, many destinations have begun to internalize the negative externalities of tourist travel behaviour by imposing conservation fees on tourists. From 1996 to 2017, the Preserve Conservation Trust charged a 25.33 yuan conservation fee for all visitors leaving the country of Belize in Central America; this fee was raised to 135.09 yuan in April 2017 (Casey and Schuhmann, 2019). Since 2009, the island nation of Palau has levied a 101.32 yuan "green fee" and a 135.09 yuan departure tax on non-Palauan passport holders[①]. Macedonia imposes a "bed tax" on tourists staying in or around protected areas.

Many studies have applied survey-based non-market valuation methods, such as the Contingent Valuation Method (CVM) and Choice Experiments (CE), to assess problems related to tourists' WTP for conservation or access fees to preserve species, forests, marine, nature reserves, and national parks (Edwards, 2009; Casey et al., 2010; Gill et al., 2015; Rathnayake, 2016; Malinauskaite et al., 2020; Rani et al., 2020). These studies reported that most of the tourists were willing to pay for conservation fee, but there were differences in the amount of payment. Many factors influence tourists' WTP, including socioeconomic variables, such as gender, age, and marital status (Liu et al., 2019; Šebo et al., 2019); frequency of visits; trip characteristics; interest

① $1 = 6.7547 yuan (Average exchange rate of USD against RMB in 2019).

in environmental issues; and concerns about losses of ecosystem services (Iranah et al., 2018; Enriquez-Acevedoa et al., 2018).

In addition, providing more information to visitors can increase the percentage of visitors that are willing to pay (Roberts et al., 2017; Bravo-Vargas et al., 2019). In addition to conservation or access fees, funds can also be raised in other forms. For example, Chen et al. (2017) found that a mix of local culture, history, and nature; and donations or admission tickets, can be used to raise funds to conserve natural resources.

Roberts et al. (2017) found that tourists are willing to pay higher fees to protect parks but are not willing to pay for additional ecosystem services from parks, such as global and intangible benefits. Most tourists are willing to pay a conservation or access fee, especially when they determine the true use of the fee and how it is used. It may further improve the quality of governance if tourists also have a voice and can participate in the fee allocation (Mitchell et al., 2013; Lal et al., 2017).

The studies above show that tourists' WTP for different environmental goods and the factors influencing their WTP differ, and are closely related to the socioeconomic and cultural background of the country and region; the socioeconomic characteristics of tourists; and their behavioural characteristics. This highlights the need for good case studies in any region before implementing policies. The Hulunbuir grassland in China provides important value, and is facing significant ecological and environmental problems. This study explored this underdeveloped area, which has grassland as its main attraction, to protect and restore its ecological environment and promote sustainable tourism development. The study assessed whether there is the possibility of levying a tourist conservation fee, and if possible, the factors influencing that conservation fee.

3 Methods

3.1 Study area

Hulunbuir area is located at the coordinates of 115°31′–126°04′E, 47°05′–53°20′ N. It is in the easternmost prefecture-level city of Inner Mongolia and includes 14 counties, adjacent to Russia and Mongolia, with a total area of 2.53×10^5 km^2, which accounts for 21.4% of the Inner Mongolia land area. According to the results of the seventh national census, the resident population of Hulunbuir City is 2242900, and the per capita disposable income of the city residents in 2020 is 31515 yuan.

Hulunbuir has more than 500 species of wildlife, accounting for 12.3% of all species in China and 70% of all species in Inner Mongolia. It is also a birthplace of ethnic minorities and nomadic people in northern China, with 42 ethnic minorities, mainly Mongols. It has the only three autonomous ounties of ethnic minorities in China (Dabur, Ewenke, Oroqen). Hulunbuir attracts domestic and foreign tourists with its excellent natural resources and long history and culture. It is known as "the most beautiful grassland in the world".

From 2015 to 2019, the number of tourists and tourism income in Hulunbuir continued to grow, with 14.170 million, 15.54 million, 17.20 million, 18.65 million and 22.48 million tourists; the tourism income over the same five years reached 44.84 billion yuan, 52.77 billion yuan, 60.74 billion yuan, and 71.64 billion yuan, respectively.

3.2 Contingent Valuation Method

The Contingent Valuation Method (CVM) is a research method that applies the utility maximization principle to reveal respondents' preferences for environmental goods and services. The CVM models the market and elicits the WTP to improve environmental benefits, or to obtain a non-use economic value for public goods (Hanemann, 1994). CVM was first proposed and applied by Davis in 1963 to study the recreational value assessment of woodland camping and hunting in Maine in the United States (USA). The application of the method has gradually evolved from the initial economic value studies of environmental recreation and aesthetic benefits, to value studies generated by different non-market goods, including environmental improvements (Wang et al., 2016, 2017; Abatea et al., 2020), species conservation (Molina et al., 2019), and the restoration of ecosystem service functions (Sardana, 2019). CVM has been widely used and advanced in many countries and plays an important role in environmental economic evaluation and environmental policy formulation (Casey and Schuhmann, 2019).

This study applied the CVM to measure conservation fees in the Hulunbuir grasslands to assess the relationship between tourists' WTP and factors such as socioeconomic characteristics and trip characteristics. The CVM also identified key factors that influence tourists' WTP. Specifically, the respondents were asked to compare two different utilities.

Respondents would choose to pay a higher fee (F) if:

$$\mu_{1i}(y_i - C_{1i}, X_i, M_i, F_1, \varepsilon_{1i}) > \mu_{0i}(y_i, X_i, M_i, F_0, \varepsilon_{0i}) \quad (1)$$

The probability that respondent i will choose to pay more is expressed as follows:

$$Pr(choosingC) = Pr[u_{1i}(y_i - C_{1i}, X_i, M_i, F_1, \varepsilon_{1i}) > u_{0i}(y_i, X_i, M_i, F_0, \varepsilon_{0i})] \quad (2)$$

where u_{0i} is the status quo of the respondent i; y_i is assuming utility of the respondent i; C_{1i} is the cost of the respondent i; u_{1i} is new status with the new higher fee at cost C_1 of the respondent i; X_i is the socioeconomic characteristics of the respondent i; M_i is the trip characteristics of the respondent i; F_1 is the new higher fee; F_0 is the initial fee; ε is an error term that captures aspects of utility that are unobservable to the researcher; Pr ($choosing\ C$) is the probability that respondent i will choose to pay more.

3.3 Questionnaire design

The questionnaire was divided into five parts.

Part 1: Presentation of the study purpose, trip characteristics, tourists' environmental awareness and leisure activities undertaken by tourists.

Part 2: Present a valuation scenario, first asking the interviewee:

In order to further protect Hulunbuir grassland and promote sustainable development of tourism, China Environmental Protection Foundation plans to raise funds by collecting conservation fees from tourists in Hulunbuir. Are you willing to pay a per-trip conservation fee to help fund the long-term protection and restoration of Hulunbuir grassland? Yes or No.

If so, how much are you willing to pay? Choose a amount from the following 11 payment amounts, 5, 10, 20, 30, 50, 80, 100, 120, 150, 180, 200 yuan.

A reminder: While you don't have to actually pay right now, I hope you'll seriously consider how much you would be willing to pay if this were a real scenario.

If not, choose your reason (single choice, choose one of the main reasons): "It's the government's responsibility", "I don't believe the money can be used effectively", "I don't think the Hulunbuir Grassland needs additional protection or management", "It doesn't matter if it is protected or not".

Part 3: The interviewees were provided with an information sheet listing the current ecological status of the Hulunbuir grasslands, measures being taken to restore the ecological environment, and a commitment that once the system is implemented, all funds will be used for the conservation of the Hulunbuir grasslands. The sheet also noted that the use of the funds raised, and the results achieved will be regularly announced to the public on a specific website.

Part 4: The interviewer repeated the valuation steps in Part 2 above.

Part 5: The interviewer collected socioeconomic characteristics of the respondents, including gender, age, income, education level, and home province.

3.4 Data collection

The study questionnaire was compiled based on previous research experience in Hulunbuir, and related literature. The questionnaire was revised and improved after consulting relevant experts. A pre-survey was conducted with selected tourists in May 2019. The official survey was conducted from June to September 2019, with tourists who had completed their travel and were about to leave Hulunbuir. The research sites included the airport and train station in Hailaer and Manzhouli, which are the main cities in and out of Hulunbuir. A face-to-face survey was conducted, using a randomly distribution. Most surveys were completed by the respondents in front of the researcher. For some older respondents, the questions were asked by the researcher, and the responded answered them verbally. 700 questionnaires were distributed, and 567 valid questionnaires were collected.

3.5 The econometric model

The preferred method was to ask respondents about their willingness to pay (WTP). Respondents who were willing were asked to choose the maximum amount they would pay using the payment card method to offer 11 payment amounts ranging from 5 yuan to 200 yuan. To examine the effects of demographic and empirical variables on WTP, we estimated the following equations, which represented Model 1, Model 3, Model 2 and Model 4 respectively. The key variables affecting *Y* and *WTP* before and after information was provided to the respondent were screened out using a stepwise regression model, as shown in the following equation.

$$Y_{\text{before}} = \alpha + \beta_1 income + \beta_2 edu + \beta_3 NEP + \beta_4 rim + \beta_5 her + \varepsilon \tag{3}$$

If yes, the respondent is willing to pay, then:

$$WTP_{\text{before}} = \alpha + \beta_1 income + \beta_2 edu + \beta_3 NEP + \beta_4 rim + \beta_5 lov + \beta_6 her + \beta_7 exp + \varepsilon \tag{4}$$

$$Y_{\text{after}} = \alpha + \beta_1 income + \beta_2 edu + \beta_3 NEP + \beta_4 rim + \beta_5 lov + \beta_6 her + \beta_7 exp + \varepsilon \tag{5}$$

If yes, the respondent is willing to pay, then:

$$WTP_{\text{after}} = \alpha + \beta_1 income + \beta_2 edu + \beta_3 NEP + \beta_4 rbj + \beta_5 lov + \beta_6 her + \beta_7 per + \varepsilon \tag{6}$$

where Y_{before} and Y_{after} are "yes" or "no" in response to the question about the willingness to pay a fee before and after information was provided respectively. "Before" is before information sheet is provided; "after" is after the information sheet is provided; WTP_{before} and WTP_{after} are the circled amount indicating the highest fee the respondent reported being willing to pay before and after information was provided respectively. *Income* and *edu* are respondents' income and education; *NEP* represents New Environmental Paradigm; *rim*, *rbj*, *lov*, *her*, *exp* and *per* represent residence of Inner Mongolia, residence of Beijing, the length of the visit, experiencing the life of herdsmen, travel experiences, enjoying folk songs and dances or performances respectively; α is the constant; β is regression coefficient of the corresponding variable. Table 1 explains the variables.

4 Results

4.1 Descriptive statistics

A total of 567 surveys were completed. Of the respondents, 54.3% were male; and in terms of age, 16.2% were aged 18–24, 57.3% were aged 25–44, 25.7% were aged 45–64, and 0.7% respondents were 65 or older than 65. Respondents were generally well-educated and affluent, and 67% held a college degree or higher. More than 85% of the respondents had an annual income over 40000 yuan after taxes: 31% of the respondents had an annual income between 40001 yuan to 60000 yuan; 34.2% of the respondents had an

annual income between 60001 yuan to 100000 yuan; 20.3% of the respondents had an annual income above 100000 yuan. Most respondents had spent more than 3 days in Hulunbuir: 12.7% had spent 1 to 2 days, 34.2% had spent 3 to 4 days, 37.6% had spent 5 to 6 days, and 15.5% had spent more than 6 days. In terms of travel overall, 3% of respondents traveled less than 1 times a year, 49% traveled 1 to 2 times a year, 35.6% traveled 3 to 4 times a year, and 12.3% traveled 5 times or more than 5 times a year. The top three originating provinces for respondents were Inner Mongolia, Heilongjiang and Beijing in China, accounting for 22.6%, 17.5% and 12.5%, respectively, of the total incoming visitors. Five questions were selected from the New Ecological Paradigm (NEP) (questions are in Table 1) and a five-point Likert scale was used to assess visitors' environmental awareness: 5 indicated the most agreement and 1 indicated the least amount of agreement. The mean score for the five questions was 3.59.

Table 1 Descriptive statistics of respondent, trip characteristics and leisure activities

Variable	Means	Leisure activities	Percentage of respondents who engaged in the activity (%)
Gender (1=male; 0=female)	0.54	Enjoying folk songs and dances or performances	57
Age (1=[18, 24]; 2=[25, 44]; 3=[45, 64]; 4=65 or above 65)	2.11	Eating grassland food	55.4
Education (1= college degree or higher; 0= below college degree)	0.67	Riding horses	50.6
Annual income after taxes (1=below 30000; 2=[30000, 40000]; 3=[40001, 60000]; 4=[60001, 100000]; 5=above 100000 yuan)	3.57	Bonfires	49.2
Residence of Inner Mongolia	0.23	Self-drive across the grasslands	37.9
Residence of Beijing	0.13	Experiencing ethnic festivals	33.9
Residence of Heilongjiang	0.18	Experiencing the life of herdsmen	33.5
Travel experiences (1=less than 1 times a year; 2=1 to 2 times a year; 3=3 to 4 times a year; 4=5 times or more than 5 times a year)	2.57	Archery	33
The length of the visit (1=1 to 2 days; 2=3 to 4 days; 3=5 to 6 days; 4=More than 6 days)	2.56	Grassland go-cart	16.6
NEP (the means of response to the five environment questions) Q1: When humans interfere with nature it often produces disastrous consequences; Q2: Humans must live in harmony with nature in order to survive; Q3: The balance of nature is very delicate and easily upset; Q4: Plants and animals have as much right as humans to exist; Q5: The earth is like a spaceship with very limited room and resources	3.59	Grassland glider	14.1
		Slippery grass	6

Table 2 Distribution of payment card responses

Payment (Before information, *N*=403)				Payment (After information, *N*=472)			
Card amount (yuan)	Count (*n*)	Percent (%)	Cum (%)	Card amount (yuan)	Count (*n*)	Percent (%)	Cum (%)
5	15	3.7	3.7	5	0	0	0
10	26	6.5	10.2	10	9	1.9	1.9
20	52	12.9	23.1	20	31	6.5	8.4
30	9	2.2	25.3	30	2	0.4	8.8
50	104	25.8	51.1	50	158	33.5	42.3
80	44	10.9	62	80	27	5.7	48
100	107	26.6	88.6	100	141	29.9	77.9
120	14	3.5	92.1	120	32	6.8	84.7
150	19	4.7	96.8	150	39	8.3	93
180	9	2.2	99	180	22	4.7	97.7
200	4	1	100	200	11	2.3	100
Total	403	100		Total	472	100	

Table 3 Regression results

Variables	Logit regression (Pay or not pay)		Variables	OLS regression (WTP)	
	Model 1 (Before information) Coefficient (standard error)	Model 2 (After information) Coefficient (standard error)		Model 3 (Before information) Coefficient (standard error)	Model 4 (After information) Coefficient (standard error)
Constant	–1.697(0.574)***	–5.932(1.061)***	Constant	–64.251(11.738)***	–56.846(11.377)***
Income	0.199(0.091)**	0.325(0.123)***	Income	4.796(1.710)***	5.570(1.668)***
Edu	0.452(0.199)**	1.347(0.274)***	Edu		8.457(3.867)**
NEP	0.376(0.140)***	0.647(0.209)***	NEP	17.554(2.809)***	20.382(2.514)***
Residence of Inner Mongolia	0.700(0.254)***	1.190(0.421)***	Residence of Beijing	17.106(5.467)***	11.019(5.008)**
The length of the visit		0.710(0.167)***	The length of the visit	13.058(2.037)***	8.968(1.970)***
Experiencing the life of herders	0.427(0.214)**	3.873(1.018)***	Experiencing the life of herders	23.397(3.931)***	19.277(3.816)***
Travel experiences		0.460(0.192)**	Enjoying performances	12.112(3.833)***	15.799(3.752)***
Dependent variable	Y_{before}	Y_{after}	Dependent variable	WTP_{before}	WTP_{after}
Number	567	567	N	403	472
Prob (YES)	71.1%	83.2%			
Significance	0.0000	0.0000	Adj. R^2	0.3367	0.3213
Mean WTP	49 yuan	72 yuan	Mean WTP	69 yuan	86 yuan

Note: **and *** indicate statistical significance at the 5% and 1% levels, respectively.

4.2 WTP and factors

This study explored the factors influencing whether tourists are willing to pay, and the amount they are willing to pay from three perspectives: socioeconomic characteristics of tourists, trip characteristics, and the type of leisure activities undertaken by tourists. Respondents were provided 11 types of popular leisure activities to select from. The top three leisure activities that the tourists participated in included enjoying folk songs and dances or performing arts (57%), eating grassland food (55.4%), and riding horses (50.6%). More than a third of the tourists participated in bonfires, drove across the grasslands, experienced ethnic festivals, and experienced the life of herdsmen (Table 1).

Prior to receiving information, 403 survey respondents were willing to pay a conservation fee, with a maximum WTP of 200 yuan. The distribution of responses to the payment cards indicated that the most frequent choice of fee was 100 yuan, representing 26.6% of the total 403 respondents; this was followed by 50 yuan, representing 25.8% of the total 403 respondents (Table 2). After being provided with information, 472 survey respondents were willing to pay a conservation fee. The distribution of responses to payment cards shows that most frequently choice of fee was 50 yuan, representing 33.5% of the total 472 respondents; this was followed by 100 yuan, representing 29.9% of the total 472 respondents.

Both Logit models had similar explanatory power (Model 1 and Model 2), as shown in Table 3, with 71.1% of respondents willing to pay before information was provided in Model 1, and 83.2% willing to pay after information was provided in Model 2. Visitors with higher income and higher level of education, with a stronger environmental awareness, from Inner Mongolia and experiencing the life of herdsmen were more willing to pay, both before and after receiving information. Once receiving information, visitors who stayed longer in Hulunbuir and with more tourism experience were more willing to pay.

Stepwise multiple linear regression estimated that Model 3 and Model 4 performed equally well, as indicated in Table 3. After being provided information, the number of visitors willing to pay increased from 403 to 472, with the average WTP increasing from 69 yuan to 86 yuan. The difference between the two groups was statistically significant. Visitors with higher income, with strong environmental awareness, coming from Beijing, experiencing the herdsmen's life, who stayed longer in Hulunbuir, and who enjoyed ethnic performances, reported higher WTP both before and after being provided information. After the information was provided, the more educated the visitor was, the higher the WTP was.

After being provided with information about the ecological environment in Hulunbuir, respondents' mean WTP for grassland conservation increased. There were significant differences in respondents' mean WTP before and after being provided with information. As shown in Table 3, when including the respondents who were unwillingness to pay (their WTP was considered to be zero in the Model 1 and Model 2), the mean WTP ranged from 49 yuan to 72 yuan before and after information was provided; when excluding the respondents who were unwillingness to pay, the mean WTP ranged from 69 yuan to 86 yuan before and after information was provided (Model 3 and Model 4). This result

was consistent with previous studies (Liefländer et al., 2015; Bravo-Vargasa et al., 2019; Cole et al., 2019).

4.3 Reasons for unwillingness to pay

Of the 567 respondents, 164 visitors were unwilling to pay before being provided information and 95 visitors were unwilling to pay after being provided information. This represented 28.9% and 16.8% of the total respondents, respectively. Table 4 presents the reasons and percent distribution of respondents who were unwillingness to pay before and after being provided with information. The most common responses were: "It is the government's responsibility" (56.1% before, 66.3% after); "I do not believe the money will be used effectively" (21.3% before; 16.8% after); "I do not believe that the grassland in Hulunbuir needs additional protection or management" (16.5% before; 11.6% after); and "Protect or not, it doesn't matter" (6.1% before; 5.3% after).

Table 4 Reasons and percent distribution of respondents who were unwilling to pay before and after information

Reasons	Before information sheet is provided		After information sheet is provided	
	Number of respondents	Percent (%)	Number of respondents	Percent (%)
It is the government's responsibility	92	56.1	63	66.3
I do not believe the money will be used effectively	35	21.3	16	16.8
I do not believe that the grassland in Hulunbuir need additional protection or management	27	16.5	11	11.6
Protect or not, it doesn't matter	10	6.1	5	5.3
Total number and percent	164	100	95	100

5 Discussion

The first goal of this study was to determine whether visitors are willing to pay a conservation fee for the Hulunbuir grasslands, what the amount of that conservation fee should be based on WTP, and what the factors impacting that decision are. The second study goal was to determine the impact of providing information about the ecological environment in Hulunbuir on visitors' WTP.

The study reported most visitors were willing to pay a conservation fee and respondents' WTP for grassland conservation increased after they were provided information. The respondents' WTP ranged from 49 yuan to 86 yuan before and after receiving information. These results indicate that visitors have the potential to generate funds.

Respondents with higher incomes were more willing to pay before and after information was provided.The result was consistent with related literature (Hunter et al., 2012; Bueno et al., 2016; Šebo et al., 2019).

Once receiving information, the more educated the visitor was, the higher the WTP was. This may be because the information provided explains the current ecological status of the Hulunbuir grasslands and measures to restore the ecological environment, and the monitoring mechanisms for conservation fees. Providing information dispels respondent concerns somewhat, especially those with a higher education level, who can better understand the importance and predictability of conservation fees. This leads to a higher WTP.

Respondents' environmental awareness had a strong positive impact on the WTP before and after information was provided (Liefländer et al., 2015; Cole et al., 2019). As China's environmental problems have become more prominent, the government and the public have become more concerned about environmental issues. China is transforming its approach to economic development, and development concepts such as an ecological civilization and the idea that "green waters and green hills are gold and silver" are deeply rooted in people's minds. However, the Chinese public is still not highly involved in public services such as environmental protection; this helps explain why more than half of the respondents who were unwilling to pay believed that environmental protection was the government's responsibility. Educational programs can make the public more aware of the value of the resource environment and cultural heritage, increase public awareness of environmental protection, and reduce the negative effects of tourism (Platania and Rizzo, 2018).

There were four reasons that respondents were not willing to pay. Besides the main reason "environmental protection was the government's responsibility", other reasons also need be concerned. After information was provided, there was a decrease in the proportion of respondents who said "I do not believe that the grassland in Hulunbuir needs additional protection or management," from 16.5% to 11.6%. This indicates that the information increased respondent awareness of the ecological problems in Hulunbuir and the need for ecological protection. The proportion of respondents who said "I do not believe the money will be used effectively" also decreased significantly after information was provided, from 21.3% to 16.8%. This indicated that many tourists were willing to pay for conservation, but were worried that the money will be misappropriated and not really used for grassland conservation. Public trust in the government may be increased through greater disclosure and transparency. A collaborative governance approach between local governments and NGOs might enhance popular par-

ticipation, especially with respect to environmental issues (Arantes et al., 2020). Compared to other countries, Chinese NGOs are still developing their capabilities and voice in China. The government would benefit from devolving some of its powers, and maximizing the NGO's role in collecting protection money. It would also be a benefit to establish sound monitoring and information dissemination mechanisms. Transparency and openness of information could promote the deeper and more comprehensive participation of multistakeholder groups in tourism resource conservation (Atmodjo et al., 2017).

This study analyzed the differences in the WTP of tourists from the three major places of origination (Inner Mongolia, Heilongjiang, and Beijing). Tourists from Inner Mongolia were more willing to pay, while tourists from Beijing reported being willing to pay more (higher fees) compared to tourists from Heilongjiang and Inner Mongolia. Visitors from Inner Mongolia were more willing to pay. This may be because visitors from Inner Mongolia have a deeper affection for the grasslands, a greater understanding of the specifics of the grasslands, and are more closely related to the sense of place of the residents. However, the WTP of visitors from Inner Mongolia was not very high, which may be influenced by factors such as the level of per capita disposable income in Inner Mongolia. The per capita disposable income of town residents is 31497 yuan in Inner Mongolia in 2020 (2021 China Statistical Yearbook), which is lower than the average Chinese disposable income 32189 yuan.

Beijing tourists reported a higher WTP, which may be related to Beijing's poorer air quality (Sun et al., 2019; Zhang et al., 2020). In recent years, Beijing residents have been plagued by environmental problems (Zhao et al., 2018), such as air pollution. The Hulunbuir grassland is an important ecological barrier for protecting Beijing's environment. Another reason may be the higher level of disposable income per capita of Beijing residents (69434 yuan), which is the second highest level in China (2021 China Statistical Yearbook). In terms of distance, Heilongjiang is closer to Hulunbuir than Beijing, and Heilongjiang tourists can benefit more from grassland conservations. However, the WTP from Heilongjiang tourists is not as high, indicating that distance from Hulunbuir grassland is not an important factor influencing tourists' WTP. However, Heilongjiang tourists have higher visitation rates than Beijing tourists. This indicates that distance remains an important factor influencing visitation rates (Šebo et al., 2019).

Before information was provided to tourists, the length of the visit had no impact on whether tourists were willing to pay. After information was provided to tourists, visitors who stayed longer in Hulunbuir were more willing to pay. This may be because respondents had a low comprehension of the ecological environment of the Hulunbuir grasslands before the information was provided. They were also concerned about the subsequent use of the funds and were therefore unwilling to pay the conservation fee. However, those who were willing to pay the conservation fee showed a higher WTP both before and after information. This may be because the longer the visit was, the higher the total tourism cost was, and the lower the proportion of conservation cost in the total tourism cost was. This leads to a higher acceptance rate of the higher cost of protection. After being provided information, the longer the stay time was, the more willing the tourists were to pay, and the higher the willingness to pay was. This may be because the longer the tourists stay, the stronger they feel an identity with the issues described in the information and the more they feel the importance and necessity of the grassland protection. This increases the willingness to pay and report a higher WTP.

Of the 11 kinds of leisure activities that tourists participate in while visiting Hulunbuir, the most popular activities are to enjoy folk songs and dances or performances. The largest proportion of tourists participated in this activity, perhaps because Hulunbuir has many forms of intangible cultural heritage, such as folk music, folk dance, and sports. For example, Urtiin duu and Humai (two music forms of Inner Mongolia in China) are world-class intangible forms of cultural heritage, and are popular with both domestic and foreign tourists. Eating grassland food, riding horses, and experiencing bonfires accounted for 55.4%, 50.6%, and 49.2% of tourist participation, respectively. These leisure activities are closely related to the production life of the local people and national culture, and are widely welcomed by tourists. In addition, 37.9% of tourists drove across the grassland by themselves. This proportion was lower compared to other activities, because Hulunbuir is relatively far from home provinces; as such, relatively few tourists drive to Hulunbuir. Further, Hulunbuir is vast, and has an underdeveloped public service system and roads for tourists to navigate. The proportion of participation at ethnic festivals was only 33.9%. This is mainly because grassland festivals are held at relatively fixed times and it is difficult for tourists to coordinate their travel times with the festivals. In addition, the festival itself has not yet become a sufficient attraction on its own for tourists to travel specifically for it. Experiencing the life of herders was reported by 33.5% of respondents. This is because this activity has not yet formed a complete product system, there is low product profit, and the promotional packaging is not in place.

When considering tourist leisure activities in the grassland, experiencing the life of herders both affected the willingness of respondents to pay and the amount of the WTP before and after information was provided. This may be because tourists who experience the in-depth life of herders may better understand the importance of the grassland to the herders. Protecting the grassland protects the natural eco-

logical environment and the culture it carries. The national culture has significant long-term attraction for tourists, and the production and life of local people are important cultural elements. Therefore, tourists should be encouraged to truly integrate into the local production and life, and further increase the integration of grassland tourism and folk tourism. Promoting environmental education projects should focus on the many impacts of human activities, including the impacts on the natural ecological environment and biodiversity, on the production and life of local residents, and on protecting and inheriting the culture carried by the natural environment and resources. Enjoying folk songs and dances or performances was the most popular activities; tourists enjoying it reported having a higher WTP. These further demonstrated the importance of protecting and inheriting the national culture.Therefore, travel enterprises, governments, tourism practitioners and other stakeholders should work together to explore tourism products with cultural characteristics, conduct environmental education and cultural communication for tourists.

Like all studies, this one had some limitations. First, this study only considered the willingness of summer tourists to pay for grasslands, and the factors influencing that willingness. Previous studies have shown that winter and summer tourists may experience different uses, views, attitudes, and motivations with respect to the same reserve. This was found, for example, in studies of the Mountain National Parks and reserves in Europe and North America (Needham et al., 2011). However, due to the seasonal nature of Hulunbuir grassland tourism, most tourists come to Hulunbuir from June to September; compared with the proportion of summer tourists, the proportion of winter tourists was very small. Second, many developing countries have two-level charges, including Chile, Kenya, and Indonesia. International tourists pay significantly more than domestic tourists (UNDP, United Nations Development Programme, 2012). In other countries, including Nepal, only international tourists pay. In 2019, about 756100 international tourists visited Hulunbuir, which accounted for a small proportion of the total tourists in Hulunbuir. Third, the research is conducted in Hulunbuir; however, whether these research results can be applied to other regions in China warrants further investigation.

This study showed it is feasible to raise protection funds with tourists as the main source of payments, however, this is just the beginning. It is also important to consider how to better allocate and use the funds; this is key to improving the quality of governance. Ensuring stakeholder voices in fund allocation and use requires the joint efforts of local residents, enterprises, and other interest groups. This could be achieved by signing an "agreement on grassland conservation," and implementing other steps to limit destructive behaviors by residents and enterprises, and adopting more ways to recruit multiple groups to join the conservation of the Hulunbuir ecological environment (Mangubhai et al., 2020).

6 Conclusions

The Hulunbuir grassland has a good ecological environment, and a long history and culture. A sustainable financing mechanism is needed to protect the grassland and the culture it carries. Tourism development has brought many visitors and considerable tourism revenue to Hulunbuir. For the government, this tourism revenue is mainly obtained in the form of tax revenue, which enters the government's unified financial revenue. However, the government is not transparent with the final investments in grassland resources and environment protection.

This study shows that, as direct beneficiaries of Hulunbuir's resources and rich culture, most tourists are willing to pay a fee to conserve the grassland. The average WTP ranged from 49 yuan to 86 yuan, and tourists have the potential to create funds. This affirms the feasibility of raising an environmental conservation fund, with tourists as the main providers, as an important means to promote the sustainable development of Hulunbuir grassland. Laarman and Gregerse (1996) recommend that tourist destinations with natural resources as their attraction should develop fee policies that fall within the acceptable range of most tourists, starting with "symbolic fees." Therefore, the results of this study suggest that the Hulunbuir grassland conservation fee should be set at 49 yuan, which is acceptable to most tourists and will not change the number of tourists. This appears to be the most prudent approach given the circumstances.

The socioeconomic characteristics of tourists, trip characteristics, and types of leisure activities impact tourists' WTP differently. Socioeconomic characteristics and trip characteristics are difficult to change. However, the government and enterprises can impact the types of leisure activities the tourists participated in. The research found that tourists who are willing to experience a herdsmen's life and watch songs and performance programs have a higher WTP. This suggests that we should further deepen the development of folk culture tourism products; integrate intangible cultural heritage and tourism, help tourists to understand Hulunbuir's historical culture and national culture; and combine environmental education, cultural publicity, and other activities to improve tourists' awareness of ecological environment and cultural protection.

This study provides valuable information for China. The study identified a good way to raise funds to conserve ecological environment in the underdeveloped areas with good natural resources. This could also contribute to addressing the problem of the negative externalities of tourism and promoting sustainable development of tourism. Meanwhile,the study reported the factors that affected fund‐raising, which can help the government to take more targeted measures to guide tourists and promote the economic sustainability of tourism in Hulunbuir.

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游客对资源保护费的支付意愿研究——以呼伦贝尔草原为例

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摘　要：随着人类社会的不断发展、人口的增长、资源消耗和环境污染日益加剧，旅游业赖以生存和发展的环境和资源受到越来越严重的破坏，严重影响着旅游业的可持续发展，对于资金缺乏的欠发达地区，这种影响更为明显。呼伦贝尔草甸草原生态功能区是中国第一批国家重点生态功能区，是中国北方重要的生态安全屏障。如何筹集更多的资金来加强呼伦贝尔草原生态环境保护，推动草原旅游业的可持续发展，是一个值得探究的议题。本研究使用条件价值法，通过面对面问卷调查的方式研究了在中国以草原为主要资源类型的旅游目的地向游客收取资源环境保护费的可行性，确定了保护费的合理金额，以及影响保护费金额的因素。本研究调查对象是即将完成呼伦贝尔旅游的游客，共收集有效问卷 567 份。研究结果表明：（1）游客愿意支付环境资源保护资金，以游客为主要资金来源筹集保护资金是可行的；（2）呼伦贝尔草原保护费设定为 49 元较为合理，大多数游客可以接受这个金额，不会对游客数量产生较大影响；（3）游客的社会经济特征、出行特征、游客参与的休闲活动类型均对保护费金额有显著影响。

关键词：游客；支付意愿；保护费；条件价值法；呼伦贝尔草原