

Monitoring Report on the Sustainable Tourism Development of Huangshan (2019)

Huangshan Scenic Area Management Committee

Monitoring Centre for UNWTO Sustainable Tourism Observatories

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Address: Building 329, Sun Yat-sen University, 135, Xingang West
Road, Guangzhou, P.R. China

Postcode: 510275

Tel: +86-20-84114683

Fax: +86-20-84113621

Table of Contents

1 Foreword.....	4
1.1. Introduction to Monitoring.....	4
1.2. Monitoring methods.....	5
1.2.1. Monitoring process.....	5
1.2.2. Screening of main issues and indicators.....	6
2. Tourism, Resources and Environmental Protection.....	10
2.1. Biodiversity conservation assessment.....	10
2.1.1. Overview.....	10
2.1.2. the status quo of protection and conservation.....	12
2.2. Cultural Resources Assessment.....	13
2.2.1. Overview.....	13
2.2.2. the status quo of conservation/protection.....	13
2.3. Monitoring of environmental protection indicators.....	15
2.4. Implementation of other protective measures.....	17
2.5. Expenditure on Resources and Environmental Protection.....	18
3. Tourism and community.....	18
3.1. Status of community economic development.....	18
3.2. Status of community tourism development.....	19
3.3. Community public services and environmental sanitation.....	19
3.4. Attitudes and perceptions of residents in the buffer zone.....	20
3.4.1. Monitoring process and method.....	20
3.4.2. Statistics of community demographics.....	20
3.4.3. Tourism's impact.....	21
3.4.4. Residents' attitudes and living conditions.....	22
4. Tourists.....	22
4.1. Basic situation of tourist questionnaire.....	22
4.2. Tourist demographics.....	23
4.3. Visitor behavior.....	24

4.3.1. Travel plans.....	24
4.3.2. Companionship.....	24
4.4. Tourist experience.....	24
4.4.1. Landscape experience.....	24
4.4.2. Weather awareness.....	25
4.5. Tourist satisfaction.....	26
4.5.1. Tourist perceived value.....	27
4.5.2. Overall Tourist Satisfaction.....	27
4.5.3. Tourist loyalty.....	28
4.5.4. Tourist evaluation.....	29
4.6. Summary of this chapter.....	31
<i>Case study.....</i>	32
Session 1 Investigation Report on the Distribution Status of Trash Bins and Interpretation Boards in Huangshan Scenic Area.....	32
1.Research background.....	32
2. Research process.....	32
3. Overview of the status of garbage bins in Huangshan Scenic Area.....	33
3.1. The main problems.....	35
3.2. Suggestions for improvement.....	35
4. Overview of commentary board distribution in Huangshan Scenic Area.....	36
4.1. The main problems.....	36
4.2. Suggestions for improvement.....	37
4.3. Survey Summary.....	37
<i>Session 2 Irrational Consumption? Cane, raincoat purchase and use experience.....</i>	38
1.Background.....	38
2. Research process.....	39
3. Results analysis.....	39
3.1. Purchase process of walking sticks and raincoats.....	39
3.2. Using walking sticks and raincoats.....	40
4. Thematic conclusions and recommendations.....	40

1 Foreword

1.1. Introduction to Monitoring

Huangshan, a world-class scenic area, is an outstanding representative of mountain tourism destinations in China. Huangshan's sustainable tourism development receives worldwide attention as it's one of the top ten scenic spots in China, China's 5A-level tourist attraction, national civilization scenic tourist area, world culture and natural heritage and world geopark. On February 26, 2008, the World Tourism Organization and UNESCO formally established the UNWTO Huangshan Observatory for Sustainable Development and the World Heritage Site for Sustainable Tourism Development (Huangshan) Observation Area. The purpose is to collect long-term monitoring data such as tourists' perceptions and satisfaction, and the impact of tourism on the community, and collect data on multiple indicators of sustainable development of Huangshan tourism, in order to explore a development mode of world heritage, maximize the economic benefits and the community's benefits, and at the same time minimize negative environmental impacts.

On May 30, 2011, the Huangshan Scenic Area Management Committee of China and Sun Yat-sen University formally signed an agreement on the construction of the observatory and officially joined the technical evaluation system of the United Nations World Tourism Organization GOST project. On August 22, 2011, the Monitoring Centre for UNWTO Sustainable Tourism Observatories officially launched the five-year monitoring and management of Huangshan tourism sustainable development. In 2012, three field surveys were conducted in March, May, and September to complete the 2012 Huangshan Sustainable Development Monitoring. From August 28 to September 7, 2013, the monitoring center continued its 11-day monitoring activities to complete the 2013 Huangshan Sustainable Development Monitoring. From June 30 to July 7, 2014, the monitoring center continued an 8-day monitoring activity and completed the 2014 Huangshan Sustainable Development Monitoring. The monitoring center completed the monitoring activities in 2015 from July 10 to July 19, 2015. From June 25th to July 4th, 2016, the monitoring center continued a 10-day monitoring activity. From July 6 to July 13, 2017, the monitoring center completed an eight-day monitoring activity. From July 21 to July 30, 2018, the monitoring center completed a 10-day monitoring activity. From July 14 to July 21, 2019, with the strong support and active cooperation of the Management Committee of Huangshan Scenic Area, the Huangshan Scenic Area Monitoring Team of the School of Tourism of Sun Yat-sen University completed the monitoring tasks for this year was completed. It is hoped that by comprehensively investigating the environmental, social and economic impacts of tourism development in

Huangshan Scenic Area, the management experience of sustainable tourism development will be summarized and promoted worldwide.

1.2. Monitoring methods

1.2.1. Monitoring process

The monitoring scope of this period is the overall planning scope of the Huangshan Scenic Area (2006) and the buffer zone, which specifically includes 160.6 square kilometers included in the Huangshan Scenic Area and its surrounding five towns (Tangkou Town, Tanjiaqiao Town, Sankou Town, Geng Towns and Jiaocun Towns, with a total administrative area of approximately 490 square kilometers). On the basis of a summary of the monitoring results of the past five years, from July 14 to July 21, 2019, 2 professors, 1 lecturer, 1 doctoral student, 2 master's students, and 11 undergraduate students of the School of Tourism Development, Sun Yat-sen University completed the monitoring activities together. Through questionnaire surveys, field surveys, government interviews, etc., they completed: (1) the assessment of Huangshan tourism and resource environmental protection; (2) the buffer zone of Huangshan: survey on environmental, social and economic impacts tourism on the five towns; (3) the satisfaction of residents of the five towns in the buffer zone with Huangshan tourism; (4) monitoring of routine items such as tourist perception and satisfaction in scenic spots. Completed: (5) Investigation report on the distribution status of trash bins and commentary boards in Huangshan Scenic Area; (6) report on irrational consumption study: case studies on walking sticks and raincoats purchase and their use experience.

This monitoring is a continuation and deepening of the previous monitoring. On the basis of updating the fixed indicators of previous years, two new special investigations have been added on the sustainable development of the Huangshan Scenic Area. First, students have conducted GPS positioning monitoring of the trash can and commentary board on the mountain to understand whether the distribution of trash bins and commentary boards on the mountain is reasonable, and to conduct interviews and observations to understand tourists' perception of the trash bins and commentary boards. Secondly, for the high-frequency consumables necessary for mountaineering-disposable, such as raincoats and walking sticks, students conducted interviews and observations to understand the understanding of business vendors and tourists on environmental impact.

The monitoring mainly obtained primary data through semi-structured interviews, non-participatory observations, questionnaire surveys, and GPS information data collection,

and collected relevant secondary data through relevant departments of the Management Committee. The interviewees included government agencies in the buffer zone villages and towns, community residents, tourism practitioners, and tourists. The resident questionnaire issued a total of 203 copies, 203 questionnaires were collected, and 195 were valid; 400 tourist questionnaires were issued, 399 questionnaires were collected, and 389 were valid. The GPS data of garbage bins and commentary boards in the Qianshan area of Huangshan Scenic Area was collected by positioning software, and surveys were assisted by fixed-point observation and semi-structured interviews.

1.2.2. Screening of main issues and indicators

Based on the World Tourism Organization (WTO) indicator method, the *Overall Planning of Huangshan Scenic Area Tourism* and the actual situation of tourism development in Huangshan Scenic Area, based on previous monitoring experience, the basic indicators for sustainable development of tourism in Huangshan Scenic Area were formulated. See Table 1-1 for details.

Table 1-1 Summary of the main issues and basic indicators for monitoring the sustainable development of tourism in Huangshan Scenic Area

Main issues	Basic monitoring indicators	routine monitoring	Frequency/Length of monitoring time recommended
Tourism and Resources Environmental Protection			
Biodiversity conservation	1. The number of national key species	yes	5 years
	2. Endangered species; number	yes	5 years
	3. Number of ancient and famous trees; distribution status; protection level	yes	5 years
	4. Forest coverage	yes	5 years
	5. Names of scientific research cooperation projects in resource protection; tasks; cooperative institutions; duration	yes	1 year

Main issues	Basic monitoring indicators	routine monitoring	Frequency/ Length of monitoring time recommended
	6. Added protection measures	yes	2 years
Protection of cultural resources	7. The number and protection status of cliff carvings and cultural relics	yes	5 years
	8. Funds for cultural heritage protection (recovery, protection and maintenance)	yes	1 year
	9. Added policies and protection measures	yes	5 years
Tourist diversion situation	10. Percentage of tourists entering the mountain at each gate	yes	1 year
Water Environment	11. Surface water quality compliance rate	yes	1 year
	12. Drinking water quality compliance rate	yes	1 year
	13. Annual total volume of domestic sewage treatment; peak-season daily treatment volume	yes	1 year
Acoustic environment	14. Living and traffic noise compliance rate	yes	1 year
Atmospheric environment	15. Air quality compliance rate	yes	1 year
Solid waste	16. Total annual solid waste production	yes	1 year
	17. The way to treat waste	yes	5 years
	18. Proportion of total recycled waste	yes	1 year
Reputation of major landscapes	19. Reputation of major landscapes	no	3 years
Construction area in the	20. Construction area and concentration in the protected area	yes	3 years

Main issues	Basic monitoring indicators	routine monitoring	Frequency/Length of monitoring time recommended
protected area			
Tourism and community			
Level of Tourism Development	1. Total community population (local, non-local proportion)	yes	3 years
	2. Number of attractions	yes	1 year
	3. Number of accommodation facilities	yes	1 year
	4. Number of visitors received	yes	1 year
	5. Overall impact of tourism on local communities	no	2 years
Residents' attitudes and impact perceptions	6. Residents' overall attitudes towards tourism development (questionnaire)	no	1 year
	7. Resident perception of the economic, social and cultural impact of tourism	no	1 year
Community participation and awareness	8. Proportion (quantity) and main types of tourism related work performed by community residents	no	1 year
	9. Community residents' perception of their tourism participation level	no	1 year
	10. Community residents' perception of the concept of "sustainable tourism development"	no	1 year
	11. Tourism development related issues of concern to residents	no	1 year
Satisfaction of business partners	12. Satisfaction of tour guides and travel agencies	no	1 year

Main issues	Basic monitoring indicators	routine monitoring	Frequency/ Length of monitoring time recommended
Tourist perception and satisfaction			
Level of tourist satisfaction	1. Level of tourist satisfaction with Huangshan resources, services, overall tourism environment and other aspects	no	1 year
	2. Overall tourist satisfaction	no	1 year
	3. Tourists' perception of the travel experience and expectation	no	1 year
	4. Revisit rate and recommendation willingness of tourists	no	1 year
	5. Huangshan Scenic Area Tourist Complaint Rate	yes	1 year
Visitor Safety	6. Tourist accident rate	yes	1 year
	7. Tourists' Perception of the Safety of Huangshan Tourism	no	1 year
Education for tourists	8. Proportion of tourists who participated in commentary education activities in Huangshan Scenic Area	no	1 year
Economic impact of tourism			
Tourism income	1. Total number of tourists received in Huangshan Scenic Area	yes	1 year
	2. Tourism statistics (total tourism income, number of beds, number of overnight stays, per capita expenditure, etc.)	yes	1 year
	3. The number of tourists received in the surrounding low mountain attractions	yes	1 year
	4. The tourism statistics for the surrounding low mountain attractions	yes	1 year

Main issues	Basic monitoring indicators	routine monitoring	Frequency/ Length of monitoring time recommended
Seasonality of tourism	5. Ratio of tourist numbers between peak and low moons in the scenic area	no	1 year
Tourism and employment	6. Employment opportunities created by tourism	no	1 year
	7. Satisfaction of tourism practitioners	no	2 years
Economic Driving Force of Tourism	(Special Research)	no	3 years
Organization and management			
Achievement in organizational management and social recognition	Recognition in industry and society	no	3 years

The main content of the report includes seven parts: foreword, tourism and resources, environmental protection, tourism and community, tourist experience and satisfaction, economic impact of tourism, organization and management, and special research (distribution status of trash bins and comment boards in Huangshan Scenic Spot).

2. Tourism, Resources and Environmental Protection

2.1. Biodiversity conservation assessment

2.1.1. Overview

Huangshan is located in the subtropical monsoon climate zone, with an average annual temperature of 8 ° C and an average temperature of 7.8 ° C on the mountain. The rainfall is abundant with an average annual rainfall of 2331mm, and the precipitation increases

with the elevation. The main body of the mountain is composed of Huangshan granite and lion forest porphyritic granite. The heritage area reaches 15,400 hectares and has a buffer zone of 14,200 hectares. The terrain is dominated by medium and low mountains and hills. The altitude of the mountain is 400-500 meters, and there are many peaks above 1,000 meters.

The vegetation of Huangshan Mountain is distributed vertically, with a vegetation coverage rate of 93% and a forest coverage rate of 98.29%. Among them, the *Pinus massoniana* forest (below 800 meters above sea level) and the Huangshan pine forest (between 800 meters and 1800 meters above sea level) cover the landscape. The area of

the scenic area is 24%, and the rest are basically roads, streams, buildings and bare rocks that are not green. There are many kinds of plants and rich species resources, and they are called "Eastern China Plant Treasury". There are 1,807 plant species recorded, of which 1,450 are native species, 176 have been listed on the World Heritage List, and there are about 50 rare and endangered plants. Huangshan is rich in animal resources, including 300 species of vertebrates, including 48 species of mammals, 170 species of birds, 38 species of reptiles, 24 species of amphibians, and 24 species of fishes. Among them, 31 are listed on the World Heritage List.

Table 2-1 Animal and plant species in Huangshan

	Overall category	National protection category
Animals	There are 176 species of birds, 21 species of amphibians, 48 species of reptiles, 24 species of fish, 54 species of beasts, a total of 323 species, accounting for about two-thirds of the wildlife species in Anhui Province.	28 species of national protected animals. Among them, there are 7 species of first level national protected animals (including 2 species of birds: white-necked long-tailed pheasant, white stork; 5 species of mammals: South China tiger, clouded leopard, golden leopard, black muntjac, and sika deer); and 21 species of national secondary protection (Among them, 10 species of birds: salamander, black-crowned cuckoo, red-bellied eagle, spoon chicken, white salamander, crow cuckoo, brown forest salamander, eagle owl, common salamander (kuang), hairy-legged salamander; 1 species of amphibian: large salamander; beast 10 species: macaque, macaque, pangolin, lynx, black bear, big civet, small civet, golden cat, lynx, iguana).

Plants	(now discovered) Higher plants of 222 families, 826 genera and 1805 species, more than 7% of the total number of Chinese nationally protected plants	37 species of nationally protected plants, of which 5 are first level national protected plants (Chinese leek, ginkgo, metasequoia, yew, southern red bean) <i>Cunninghamia lanceolata</i>), 16 species of secondary protected plants (Water fern, East China cedar, <i>Pinus sylvestris</i> , citron, <i>Liriodendron chinense</i> , <i>Magnolia officinalis</i> , <i>Tianzhugui</i> , <i>Prunus chinensis</i> , Golden buckwheat, <i>Lilium sylvestris</i> , beech, Elm. Huangshan plum, palm tree, <i>Eucommia ulmoides</i> , fragrant fruit tree); 16 species of third-level protected plants (Southern Hemlock, Tianmu Magnolia, Huangshan Magnolia, Tennin Flower, Tianmumu Ginger, Trillium, Gastrodia, Short Ear Bamboo, Short Cormorant <i>Coptis chinensis</i> , aniseed lotus, collar spring wood, purple stem, green sandalwood, yellow mountain calyx, silver cypress tree, Ming Dangshen). There are 4 families of East Asian endemic families, 3 families of Chinese endemic families, 24 families of endemic genera in China, 44 species of endemic species in China, and 34 species of plants named in Huangshan. There are 27 species of plants collected in Huangshan.
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2.1.2. the status quo of protection and conservation

The Huangshan Scenic Area has always attached importance to the protection and sustainable exploitation of biodiversity, and actively carried out biodiversity protection cooperation projects. The main progress from 2018 to 2019 includes:

1) The Huangshan Scenic Area Biodiversity Conservation Research Base cooperation project has established 10 new observation plots of 0.48 hectares and 0.2 hectares were newly built, and the original 10.24 hectares of Xiaolingjiao and 1 hectare of Guanlou Tower and Xianglu Peak were reviewed. The project was jointly established in May 2015 by the Nanjing Institute of Environmental Sciences of the Ministry of Environmental Protection, the Management Committee of Huangshan Scenic Area and Nanjing Forestry University. The completion of the research base project will provide an important scientific basis for the protection of biodiversity in Huangshan, and will play a demonstration role in the national biodiversity monitoring work.

2) Huangshan Large-scale Fungal Diversity Research Project: 5 new large-scale fixed fungal observation plots were built in Huangshan Scenic Area, and long-term observation and protection research of large-scale fungal diversity was jointly conducted. The project is co-operated by the Shanghai Academy of Agricultural Sciences and the Garden Bureau of the Huangshan Scenic Area Management Committee. The project time is from 2018.1.1 to 2022.12.31.

In terms of environmental management, the Lotus Peak Ecological Restoration and Ecological Restoration Project along the West Sea Cable Car were completed, and an ecological environment monitoring system and pilot project for the disposal of organic waste were established. Implementation. The quality of the ecological environment has improved significantly, with forest coverage and tree greening rates in the scenic areas being 98.29% and 98.53%, respectively.

2.2. Cultural Resources Assessment

2.2.1. Overview

Huangshan is a world cultural and natural heritage site. Its natural landscape is peculiar, and its ecology is stable and balanced. It has a long cultural history and rich cultural heritage. Huangshan is located in Huizhou with a long history of culture. It is especially seen in the "five wonders" of relics, calligraphy and painting, literature, legends and celebrities. There are 290 ancient cliff carvings in the scenic area, more than 150 ancient ruins such as ancient roads, ancient bridges, ancient temples, ancient pavilions, and ancient tombs. From the ancient time, tourists to Huangshan are countless, and there are more than 20,000 poems and songs chanting Huangshan in the past; The "Tiandu Poetry Society" of the Ming Dynasty and the "Huangshan School of Painting" started in the late Ming and early Qing dynasties, the number of calligraphy and paintings that chant and depict Huangshan is countless, and various chronicles, documents, legends and thesis, as well as the audio-visual, photography, stamp, and stamp products were created based on Huangshan, they not only enrich the connotation of cultural Huangshan, but also have extremely valuable historical, artistic, and scientific value. Therefore, Huangshan cultural relics include immovable cultural relics such as ancient cultural sites, ancient buildings, ancient roads, ancient tombs, cliff carvings, important historical sites and representative buildings in modern times, as well as important physical objects, works of art, and ancient books, manuscripts and materials and other representative physical objects and movable cultural relics.

2.2.2. the status quo of conservation/protection

Huangshan Scenic Area adheres to the concept of "conservation at the forefront, development as the top priority, management innovation, and harmonious development of mountains" and the policy of "scientific planning, unified management, strict protection, and sustainable use", adhering to the purpose of the World Heritage Convention and properly handling the relationship between conservation and development.

In terms of planning and management, a four-tier system of the whole mountain has been formed (general planning, zoning planning, lot planning, professional planning), four-level approval for the mountain (management committee, municipal government, provincial government, and relevant state departments), formulated and issued the "Administrative Rules for Huangshan Scenic Area", "Interim Regulations on the Protection of Cultural Relics in Huangshan Scenic Area", "Interim Regulations on the Management of the Planning and Construction of Huangshan Scenic Area", "Interim Measures for Environmental Protection Management of the Huangshan Scenic Area", "Integrated Environmental Remediation Planning for the Tianhai Section", "Special Planning for the Construction of Communication Facilities in Scenic Areas", "Plan for Utilization of Scenic Water Resources", etc., involving cultural relics protection, planning and construction, comprehensive management, and tourism safety. This series of operating rules and normative documents have been produced to strengthen law enforcement inspections and promptly correct and stop illegal construction activities.

In recent years, the Huangshan Scenic Area has carried out a census of cultural relics and historic sites, a census of cliff carvings and the third national census of cultural relics to find out the number, distribution and status of cultural relics and historic sites in Huangshan, and has initially established a set of scientific, informative and complete data, laying a solid foundation for the protection and management of cultural relics. At the same time, the preparation of the overall plan for the protection of cultural relics in Huangshan was initiated, and scientific and reasonable protection and management measures were used to better protect and extend all historical information and cultural values of cultural relics. Each year, the Huangshan Scenic Spot Management Committee will extract 10% of the ticket income as special heritage protection funds for the implementation of heritage protection projects. However, Huangshan's cultural landscape and resources are inadequate for excavation, consolidation, and cultural facilities are relatively small in number, cultural activities are relatively simple, and cultural competitiveness is relatively weak.

In terms of cultural relics protection, there are 2 national key cultural relics protection units (Huangshan Cliff Carvings, Huangshan Mountain Trails and Ancient Buildings) announced by the State Council in 2013; 14 key cultural relics protection units in Huangshan Scenic Area were announced in 2013. From 2018 to 2019, the total funds for cultural relics protection projects were 1.722 million yuan (the cultural relics protection and repair costs of Huangshan Scenic Area in recent years are summarized in Table 2-3). Huangshan Scenic Spot Cultural Affairs Management Office organized the implementation of national security

unit projects such as the repair of cultural relics protection facilities, and the restoration of Guanpulou pavilions, and the restoration of Lianyuting. The repair project of the palace was reported in 2019. the Moya stone carving repair project and the Songguyu fire protection project were also reported.

Table 2-2 Costs for the protection and repair of cultural relics in Huangshan Scenic Area from 2010 to 2018 (Unit: 10,000 yuan)

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Ciguan	52	200	/	/	/	143	/	/	/
ngge									
Guanp	/	/	/	/	/	/	/	/	/
ulou									
Linxiq	/	/	/	/	/	/	/	/	/
uan									
Songg	/	45	/	/	/	/	/	/	/
uan									
Diaoqi	/	/	/	/	/	/	/	/	/
aoan									
Bansh	/	/	/	/	/	/	/	/	/
ansi									
other	80	755	/	/	/	56.05	/	/	/
total	132	1000	1000	342	369	199.05	485.34	/	172.2

2.3. Monitoring of environmental protection indicators

Table 2-3 Monitoring indicators and results of environmental protection

Topic	Indicator	Frequen cy	Related department	methods	Current monitoring results
Water enviro nment	1.Surface water quality	One year	the Environ mental Protectio n Office of the Scenic Area	Eco- environmen t monitoring station Routine work	The overall water quality of Xin'an River Basin is excellent. The water quality of the three monitoring sections was II . The overall water quality of the lakes and reservoirs in the city is excellent. The water quality at the five monitoring points is I ~ III , and the water quality compliance rate of the surface water functional zone is 100%.

Topic	Indicator	Frequency	Related department	methods	Current monitoring results
Water environment	2.Drinking water quality	One year	the Environmental Protection Office of the Scenic Area	Commissioned Municipal Environmental Monitoring Station	No latest data obtained
	3.Annual total amount of domestic sewage treatment	One year	Scenic Spot Sewage Station	Routine work	There are 15 sewage treatment stations in the scenic spot, with an average annual actual sewage treatment of about 500,000 tons, and a designed daily treatment capacity of 63 million Around ton
Acoustic environment	4. Living and traffic noise compliance rate	One year	Scenic Area Environmental Protection Office	Commissioned the Municipal Environmental Monitoring Station	No latest data obtained
Atmospheric environment	5. Air quality compliance rate	One year	Scenic Area Environmental Protection Office	Automatic continuous air monitoring system	In 2017, all major indicators of air quality in the scenic area were better than the national standard
Solid waste	6. Total annual solid waste production	One year	Environment and Sanitation department	Routine monitoring	No latest data available

Topic	Indicator	Frequency	Related department	methods	Current monitoring results
	7. Ways to dispose of wastes	Five years	Environment and Sanitation department	This monitoring project	All types of wastes are promptly removed and transported: the management and disposal of hazardous solid wastes have their own responsibilities and clear division of labor; the discharge and disposal of construction waste and engineering slag are strictly implemented Declaration, supervision and acceptance system. Reducing, recycling and harmless domestic waste.
	8. Proportion of total recycled waste	One year	Environment and Sanitation Department	This monitoring project	The recycling rate of domestic waste has reached more than 20% of the output, and the recycling rate of construction waste has reached 80%

2.4. Implementation of other protective measures

In addition to resource protection and environmental protection measures, Huangshan Scenic Area has also adopted a number of other basic protective measures. It implemented outdoor bans on smoking, designated smoking, banning fires and releases throughout the mountain, and established a "three-all" mechanism for forest fire prevention (all-mountain linkage, year-round vigilance, and full participation) to achieve 34 consecutive years without forest fires. ---- Implement the water-lifting uphill and regional water supply projects to create the highest water-lifting lift in scenic spots across the country (741 meters). It is the first mountain-type scenic spot in the country to build a high-altitude fire-prevention water

network. The total mountain pipe network is 13.9 kilometers long. There is one fire hydrant for every 100 meters. There are 120 fire hydrants in total. The main scenic spots in the core scenic spots such as Beihai, Xihai, Tianhai, Yuping and The trail has basically achieved full coverage. ---- Construct a 4 km wide and 100 km long Huangshan pine-free forest belt, implement the "three lines of defense", strengthen inspection and quarantine, and prevent the introduction of pine wood nematode disease into the scenic area.

2.5. Expenditure on Resources and Environmental Protection

Table 2-4 Huangshan Scenic Area Management Committee's Expenditure for Heritage Protection in 2018

No.	Category	Unit: yuan
1	Scenic environment renovation	558, 735.24
2	Landscape maintenance costs	2, 040, 959.60
3	Animal and Plant Protection Measures and Engineering	7, 186, 232.30
4	Pest Control Measures and Engineering	8, 258, 173.49
5	Forest fire prevention measures and engineering	18, 498, 271.48
6	Other security measures for the protection of scenic resources	21, 524, 352.12
7	Scenic area environmental protection	2, 634, 946.50
8	Scenic tourist roads and water supply facilities	3, 776, 922.60
9	Service and education facilities	416, 404.33
10	Protective zone ecological compensation measures	2, 624, 032.00
11	Research and Public Welfare	7, 995, 558.99
total	protection fees for heritage sites	75, 514, 588.65

3. Tourism and community

3.1. Status of community economic development

Among the five towns in the buffer zone, except for Tangkou Town, which is dominated by both the agriculture and the service industry, other towns basically use agriculture as the pillar industry, and the service industry and industry are in the development stage. Based on their own actual conditions, each town focuses on the development of the

service industry represented by the tourism industry, while bringing new vitality to agriculture and industry. Tangkou Town's guesthouse industry has developed rapidly. Tanjiaqiao Town has promoted the development of tourism around the development of East Huangshan Tourism. Gengcheng Town focuses on advantageous industries to create unique features. Jiaocun and Sankou Town actively introduce agricultural, industrial, and tourism projects to optimize its industrial structure.

3.2. Status of community tourism development

The main trend of tourism development in the five towns of Huangshan Buffer Zone is to improve the quality of tourism services, promote the construction of key tourism projects, and realize the integrated development of tourism and various industries. Tangkou Town is relatively rich in tourism resources and tourism products. At this stage, Tangkou Town has further promoted the "quality revolution" of tourism, and is working hard to create a unified festival event "Chinese Valentine's Day in Huangshan, China". How to transform and upgrade traditional tourism products to leisure and vacation products is the main problem that Tangkou Town needs to solve at present. Tanjiaqiao Town revolves around the goal of building an "East Huangshan International Town", vigorously promoting the construction of key projects, and accelerating the development of eastern Huangshan. Sankou Town is actively organizing and implementing the "Tourist Quality Project", creating a "Flower Corridor" and launching the "Three Ink Paintings" tourism route. Gengcheng Town and Jiaocun Town adapt to local conditions, actively promote the integrated development of tourism and the primary, secondary and tertiary industries, create a new format of "agriculture + tourism", and launch tourism products such as sketching experience, red education, agricultural tourism, and mountain camping.

3.3. Community public services and environmental sanitation

Since March 2018, Tangkou Town has quickly started the city-building and environmental improvement work, focusing on the removal of illegal constructions, cleaning up and rectifying the aisle management, and beautifying the city's appearance and environment. Tanjiaqiao Town strives to carry out environmental improvement in the whole region. It mainly focuses on cleaning up garbage and sewage, firewood and debris, advertising signs, building materials, messy cables, and private construction. It takes villagers as the unit to comprehensively sort out the remediation matters. Each village group form a unit and a file is created. Sankou Town focuses on the creation of civilized city of the country.

It conducts special rectification works on market towns, rivers, central villages, and Baobao communities. In 2018, 29 livelihood projects were carefully organized and implemented, of which 23 were grants and 6 were engineering. The beautiful village construction of Gengcheng Town has achieved full coverage of the central village, and the target of full coverage of the central village was completed 2 years in advance in the district. In recent years, Jiaocun Town has been actively constructing a social security system, constructing a social security system centered on medical insurance and subsistence allowances, and implemented a number of livelihood projects such as beautiful countryside, four good rural roads, and small water conservancy projects.

3.4. Attitudes and perceptions of residents in the buffer zone

3.4.1. Monitoring process and method

The survey on residents' attitudes and perceptions in the buffer zone for sustainable development of Huangshan tourism involves the economic, social, cultural, environmental impact and residents' attitudes towards Huangshan's tourism development, as well as the goal orientation of residents in the development of tourism. The questionnaires are mainly distributed around Huangshan's four surrounding towns. In the design of the questionnaire scale, a Likert 5-level scale design mode is adopted, that is, five alternative answers are given to each question in the scale. These five answers are arranged in increasing order of agreement, and the corresponding number is 1, 2, 3, 4, 5. A total of 203 questionnaires were distributed during this monitoring, and 203 questionnaires were recovered, of which 196 were valid questionnaires, with an effective rate of 96.1%. The following are the results of the questionnaire analysis.

3.4.2. Statistics of community demographics

Table 3-1 Demographic characteristics of community questionnaires

Variable	Category	Number of persons	percentage
Gender	Male	88	45.4
	Female	106	54.6
Age	Below 15	2	1
	15-24	23	11.9
	25-44	96	49.5
	45-60	62	32

	Over 60	11	5.7
Education level	Primary school or lower	19	9.9
	Middle school	69	35.9
	High school or technical secondary school	63	32.8
	University or vocational college	40	20.8
	Master and above	1	0.5
Occupation	student	12	6.2
	farmers	6	3.1
	Poultry farmers	2	1
	Service workers	54	27.8
	Company staff	11	5.7
	Government or public institution	10	5.2
	Retirees	6	3.1
	Self-employed	87	44.8
	Other	6	3.1
Monthly income	Below 1000 yuan	35	13.1
	1001-2000 yuan	42	15.7
	2001-3000 yuan	91	34.1
	3001-5000 yuan	58	21.7
	5001-10000 yuan	30	11.2
	Above 10000 yuan	11	4.1

3.4.3. Tourism's impact

The monitoring measures residents' perception of Huangshan tourism's impact. Tourism impact perception indicators are divided into four categories: economy, society, culture and environment. Generally speaking, residents' perception of the tourism impact is mainly positive, but they also have a clear perception of the negative impacts of raising price levels and living costs, increasing local garbage, causing traffic and crowding.

In terms of economic impact, residents' perceptions are mainly positive. Except "Tourism attracts more investment (3.64)", the average value of each item is above 3.7, but

the mean value of “Tourism development increases local price levels ” is the highest, reaching 4.01. In terms of social impact, residents believe that tourism development basically has no negative impact on the local society. The average value of perception of most items is less than 3, but they highly agree that "tourism development has increased local visibility" (4.24). In terms of cultural impact, residents believe that the development of Huangshan tourism is conducive to understanding the value of Huangshan, protecting and exploiting traditional culture, and promoting local and foreign cultural exchanges. In terms of environmental impact, residents feel that tourism development has increased noise and garbage, and the impact on air and water is not obvious, but it can also enhance the local residents' awareness of environmental protection.

3.4.4. Residents' attitudes and living conditions

The monitoring results show that, overall, residents' overall attitude towards Huangshan's tourism development is positive, and they support Huangshan's continued development of tourism. The data shows that 87.5% of the residents agree or strongly agree to support Huangshan's continued development of tourism, 83.2% are willing or very willing to actively communicate with tourists, and 79.5% of the residents are willing to actively provide suggestions for the development of local tourism. But relatively speaking, the local residents' satisfaction with tourism development is average, with the mean value being the lowest in this dimension (3.66), and the difference between different individuals is large, and the standard deviation is the highest in this dimension (0.952).

In terms of the living conditions of the residents, the residents of the four towns thought that their living conditions were average, with an average value of 3.27. Among them, the most recognized by residents is the increase in consumption level (average 3.68), the least recognized is the statement that their own social influence is more than the average person (average 2.68). In general, community residents are generally satisfied with their current life (mean value is 3.22) and want to improve their lives. And from the data above, there is no significant difference in the living conditions of the towns.

4. Tourists

4.1. Basic situation of tourist questionnaire

The monitoring of tourists this time is mainly based on field surveys and questionnaires, supplemented by a brief non-structured interview method to collect

monitoring data. Among them, the questionnaires were distributed at the Yingsong-Yuping Ropeway Station (in the scenic area), the Yungu Temple Visitor Center (outside the scenic area) and the transfer center terminal (in the tourism portal community). A total of 444 questionnaires were distributed and 412 questionnaires were collected. Due to the lack of information in some questionnaires, 306 valid questionnaire data were used for analysis.

The monitoring conducted a survey of five indicators for tourists, namely the demographic characteristics of tourists and the visitor behavior, the experience of tourists and the satisfaction of tourists. Visitor demographic characteristics help understand the basic information of the interviewed tourists such as gender, age, place of origin, education, and occupation. Visitor behavior mainly includes information on the number of days of stay in the Huangshan Scenic Area and the way of companionship; the tourist experience includes a total of 10 evaluation projects; Tourists' perceived value includes a total of 3 evaluation items; Tourists' satisfaction includes a total of 10 evaluation items.

4.2. Tourist demographics

In this survey, there were 201 male tourists and 165 female tourists, and the gender ratio was 1.2: 1. The number of tourists aged 17-25 was the largest, accounting for 38.0%, and the number of tourists aged 26-45 was 35.8%. It can be seen that Huangshan tourists are mainly composed of young and middle-aged groups.

Among the valid questionnaires, the number of tourists from Anhui Province and Jiangsu Province was the largest, tied for the first place, accounting for 11.9% respectively; the number of tourists from Guangdong Province ranked third, accounting for 9.3%; followed by Zhejiang Provincial tourists, accounting for 9.0%. It can be seen that the radiation range and degree of tourist sources in Huangshan Scenic Area are characterized by three levels: The main tourist source of Huangshan is Anhui Province and the provinces bordering Anhui Province, the core circle of the itinerary; followed by the Southeast Coast Provinces, such as Guangdong Province, Zhejiang Province, Fujian Province, etc. they constitute the secondary tourist source areas while tourists from southwestern and northwestern regions such as Yunnan, Qinghai, Guizhou, Xinjiang, and Gansu are few and are the outermost layers of the radiation circle.

Among the valid questionnaires, there were 165 tourists with a bachelor's degree, accounting for 44.1%, followed by tourists with a high school or technical secondary school degree, with a total of 69, accounting for 18.4%. It can be found that most tourists have a bachelor's degree or higher, which belongs to those with higher education.

Among the surveyed, there were 136 students, accounting for 36.3%; enterprise employees were 72, accounting for 19.2%. There were 71 people working in government institutions, accounting for 18.9%. These three occupations account for most of the tourist sample.

4.3. Visitor behavior

In this visitor monitoring, visitor behavior is divided into two broad categories: travel plans and companionship.

4.3.1. Travel plans

The travel plan is mainly divided into two aspects: the number of visits and the number of days of stay.

Judging from the number of visits, tourists visited Huangshan mainly for one-time sightseeing. Of the 377 valid questionnaires, 322 tourists came to Huangshan for the first time, accounting for 85.4%; 38 tourists came to Huangshan for the second time, accounting for 10.1%; 12 of the tourists who visited 3-4 times, occupying 3.3%; only 5 tourists repeatedly visited Huangshan, the number of times was 5 or more, accounting for 1.3%.

From the number of days of stay, tourists mainly choose one or two-day itineraries. Of the 377 respondents, 129 chose to stay in Huangshan for only one day, accounting for 34.2%; 195 tourists stayed for two days, accounting for 51.7%; and 50 tourists stayed for three days (and above). According to calculations, the average stay time of tourists in Huangshan is 1.94 days, and the standard deviation of the stay time is 1.438.

4.3.2. Companionship

From the perspective of tourists' travel modes, the small group self-guided tourists has become an important trend. Among the 389 valid questionnaires, a total of 372 people checked the companion method. Among them, self-guided tourists accounted for 57.8%, and group tourists accounted for 42.2%.

4.4. Tourist experience

According to the existing research, this monitoring survey of the tourist experience of mountain-type scenic spots includes two aspects: landscape experience and weather perception.

4.4.1. Landscape experience

Landscape experience mainly includes three aspects: tourists' aesthetic experience,

aesthetic emotional experience and aesthetic imagination.

In the aesthetic experience of tourists, the first is the evaluation of Huangshan scenery: the beautiful scenery of Huangshan (97.3%), the magnificence (96.2%), and the image of a mountain weathering thousands of years (92.7%) have gained a high degree of recognition from tourists; more than eighty percent of tourists believe that Huangshan is bright and wide, having historical charm. However, Huangshan's simple and elegant image has a relatively low recognition (73.6%), indicating that some tourists do not have a strong perception of Huangshan's simple image. Secondly, in the evaluation of the state of aesthetic experience, more than 90% of tourists believe that Huangshan Scenic Area is clean and tidy, and the landscape and facilities are well maintained. In Huangshan, you can experience the tranquility and peace of nature, but less than 80% of tourists believe that the sound comes more from nature itself, which shows that the source of the sound in Huangshan has a certain negative impact on the tourists' aesthetic experience. Finally, in terms of the uniqueness of the aesthetic experience, tourists generally agree with it to a high degree. For example, more than 90% of tourists believe that Huangshan Mountain is a typical mountain scenery, and the landscape is breath-taking.

In terms of aesthetic emotional experience, Huangshan brings tourists a good emotional experience, but lacks the corresponding depth. From the specific data, more than 70% of tourists said that visiting Huangshan can make them feel away from the hustle and bustle of the earth, and can get a sense of happiness and it's very touching. Visiting Huangshan can make their spirit sublime and their souls purified, and devotion to relaxation during the tour, will leave you in a state of carefree happiness; more than 80% of tourists said that some of the Huangshan scenery made them feel awed and excited and their feelings blend into nature. They indulge in the beauty of Huangshan and enter the state of ecstasy. It is worth noting that less than 70% of tourists believe that they will get transcendental insights during the tour, which indicates that the tour time affects the emotional experience of tourists.

In terms of aesthetic imagination, data show that 75.3% of tourists will develop association and imagination when visiting Huangshan. Chinese landscape painting, literary works and classic poems are the main association objects of tourists, and there is relatively little association with related stories and legends. This shows to a certain extent the lack of cultural connotation in the image perception and experience of tourists in Huangshan.

4.4.2. Weather perception

In general, the questionnaire shows that weather has a certain influence on the tourist

experience, but the correctness of tourism decisions is not shaken by weather factors. From the data point of view, 74.5% of tourists said that the weather had an impact on the travel experience, of which 27.7% of tourists said that they would occasionally have a great impact, and 23.6% of tourists said that they would often have a great impact, 23.1 % Of tourists say they have had a big impact almost always. At the same time, only 20.6% of tourists believe that staying at home is better than traveling when the weather is bad. On the contrary, bad weather will bring certain benefits, 56.3% of tourists said they can freely adjust the event arrangements.

Tourists' expectations of rainy weather are generally in line with reality, and weather that is not consistent with expectations does not mean a worse travel experience. From the data, 26.9% of tourists think that the weather on Huangshan Mountain is worse than expected, and 28.2% of tourists think that the bad weather last longer than expected. On the other hand, only 29% of tourists agree or very much that this will bring negative impacts, 54.2% of tourists agree or strongly agree that this will enhance the aesthetic quality of the landscape, and 61.1% of tourists agree or strongly agree that this will make the landscape different.

Through paired sample t-test, it was found that there were differences before and after the departure of tourists on the cognition of "fog", "strong wind", "sun exposure", and "high temperature" on Huangshan Mountain in the two periods before and after the departure. In both time periods, tourists have the highest awareness of "fog", and they have lower awareness of the weather such as "strong wind", "sun exposure" and "high temperature". In addition, after departing for Huangshan, tourists' awareness of "fog" becomes lower, and their awareness of the latter three types of weather becomes higher. In addition, tourists in these two time periods did not differ in their perceptions of the "rapidly changing weather", "rainfall", and "low visibility" of the weather on the Huangshan Mountain, but they all thought that it was more likely to happen.

Through the linear regression analysis, it was found that the wrong estimates of "sun exposure" and "strong wind" have greatly encouraged tourists to think that the weather is worse than expected, which further illustrates that tourists' perception of these two factors is not high. At the same time, this also explains to some extent that these two factors have a negative impact on the tourism experience.

4.5. Tourist satisfaction

As for the measurement of tourist satisfaction, the monitoring was evaluated from the aspects of the perceived value of tourists, the overall satisfaction of tourists, the loyalty of

tourists, and the specific perception evaluation of the scenic spot.

4.5.1. Tourist perceived value

The perceived value of tourists will be measured from three aspects: functional value, overall value, and emotional value.

In terms of functional value, tourists have a more positive attitude towards the Huangshan tour experience and the quality of the functions in addition to the tour cost. 47.3% of tourists disagree or are neutral about the reasonability of Huangshan tour fees, while the remaining 52.7% of tourists agree that the cost of visiting Huangshan is economically reasonable; compared with the expenditure, 78.4% of tourists agree or strongly agree about having a good tour experience; 75.1% of tourists agree that Huangshan is good value for money compared to other tourist destinations, and 75.1% of tourists agree that Huangshan tourism is a high-quality tourist product.

In terms of overall value, tourists highly agree with Huangshan's tourism value. 88.1% of tourists think that choosing Huangshan is a right decision, 92% of tourists think Huangshan is worth it, and 87.9% of tourists indicate that Huangshan is the place they want to visit.

In terms of emotional value, tourists enjoy a positive emotional experience after visiting Huangshan. 89.9% of tourists think it is pleasant to visit Huangshan, 82.4% of tourists think that they feel relaxed after visiting Huangshan, and 86.1% of tourists indicate that they like Huangshan as a tourist destination.

After the T test, it was found that in terms of functional value, group tourists have valued Huangshan tourism as a high-quality tourism product. The value perception is generally higher than that of self-guided tourists. At the same time, gender differences also have a significant impact on it. For men, the average evaluation of "Huangshan Tourism is a high-quality product" is higher than that of women; in terms of overall value, the overall perception of group tourists is higher than that of self-guided tourists; the emotional value of group tourists of Huangshan is higher than a self-guided tourist.

4.5.2. Overall Tourist Satisfaction

Most tourists are quite satisfied with their tour experience, but compared with other tourist destinations, Huangshan has not yet fully reached the standard of the best tourist destination in their hearts. In addition, some tourists have also shown that Huangshan tourism has not achieved an experience beyond expectations. In terms of overall tourist satisfaction, 85.2% of tourists agree or strongly agree that visiting Huangshan is a wonderful experience,

and only 67.4% of tourists consider Huangshan to be one of the best tourist destinations they have been to. Only 69.8% of tourists agreed with or strongly agreed that the overall tourist experience of Huangshan exceeded their expectations.

A T-test of the data found that tourists' perceptions of whether Huangshan is the best tourist destination are that male tourists more often than female tourists agree that Huangshan is one of the best tourist destinations they have visited. In addition, the satisfaction of group tourists is significantly higher than that of self-guided tourists.

Through the analysis of variance, it is found that there are significant differences in the impact of occupations on the tourists' experience of exploring Huangshan. Farmers / workers and public institution personnel generally believe that the Huangshan tourism experience exceeds expectations, but retired people believe that the experience of Huangshan tourism has not exceeded expectations.

4.5.3. Tourist loyalty

Regarding tourist loyalty, this monitoring mainly evaluates tourists' willingness to revisit and recommendation intention. About 70% of tourists indicate a willingness to revisit. In the short term (in the past two years), they may visit mountain-like attractions similar to Huangshan, but the possibility and willingness to revisit Huangshan in the short term are not high. 72.7% of tourists agree or strongly agree to visit Huangshan again. 66.1% of tourists indicate that they will go to similar tourist attractions in the next two years, but only 53.3% of tourists said they will visit Huangshan again in the next two years. Tourists showed a more positive attitude in recommending behavior. About 90% of tourists said they would recommend Huangshan as a tourist destination to relatives, friends and others. 91% of tourists indicated that they would recommend Huangshan to others, 93.1% would recommend it to relatives and friends, and 91% would encourage others to travel to Huangshan.

Through the analysis of variance, it is found that there is a difference in the influence of age and the number of times visiting similar destinations on the willingness to revisit. The older the tourists, the lower the willingness to revisit. The more times that tourists have visited similar destinations, the lower the willingness to revisit Huangshan in the short term.

Through the T test, it was found that among the options for tourists to revisit Huangshan and similar attractions in the short term, male tourists were more willing to revisit than females; in terms of recommended behavior of tourists, group tourists were more willing to recommend.

4.5.4. Tourist evaluation

The tourist evaluation section includes landscape value evaluation, scenic traffic evaluation, scenic restaurant and accommodation evaluation, scenic entertainment shopping evaluation, tourism information acquisition and clarity evaluation, environment and health evaluation, scenic security assurance evaluation, scenic cultural experience evaluation, and tourist education function of the scenic area.

The landscape value of Huangshan Scenic Area is relatively high, and tourists have greater satisfaction with its landscape value. The monitoring data show that the strange pine rocks in Huangshan Scenic Spot have strong attraction for tourists, and 93.5% of the tourists agree or agree with Huangshan's strange pine rocks that are very unique. Compared with other attractions, the advantages of natural scenery in Huangshan Scenic Area are more obvious. 89.2% of tourists agree or strongly agree that Huangshan's natural landscape is more spectacular than other attractions, and 90.2% of tourists agree or strongly agree that Huangshan is a symbolic Chinese landscape. The data analysis further found that the perception of the landscape value obtained with the group tour and the self-guided tour was not significantly different, and the guide's explanation played an important role in the process of the tour.

In terms of scenic area traffic evaluation, tourists highly approve of the convenience of internal and external transportation in Huangshan Scenic Area, and have low approval for accessibility facilities that can provide convenient action for special groups. 84% of tourists agree or highly agree that the external access to the scenic area is convenient, and the internal traffic of the scenic area recognition rate is 85%, and both of them exceed the average. It can be seen that the traffic construction inside and outside the scenic area is in good condition and the accessibility is high. 76.3% of tourists agree or strongly agree that the scenic area provides facilities and tools for all types of people to facilitate movement. There are also tourists also think that the transportation costs in the scenic area are too high. The data shows that 52.6% of the tourists agree or strongly agree that the transportation prices in the scenic area are reasonable, and 29.7% of the tourists are neutral. Although the approval rate has exceeded the average, it is at a lower level.

For restaurants in the scenic area, tourists generally believe that there are few types of restaurants in the scenic area, and they lack of local characteristics, and prices are a bit high. According to the monitoring data, only 38.7% of tourists think the catering prices in the scenic area are reasonable, and 42.6% are neutral. And only 51.9% of tourists agree with or strongly agree with the statement that “the local cuisine left a deep impression on me”. In

terms of accommodation, tourists generally think that the quality of the accommodation service in Huangshan Scenic Area is average, and there is a large room for improvement. 57% of tourists agree or strongly agree that the quality of accommodation service in Huangshan Scenic Area is very high, and 39.4% of tourists expressed neutrality.

In terms of entertainment and shopping evaluation, Huangshan, as a sightseeing-oriented tourist area, has a lower evaluation of entertainment and shopping. According to Huangshan Scenic Area survey data, only 30.2% of tourists disagree or strongly disapprove of the value of souvenirs in the area. And only 32.1% of tourists think that the souvenirs and crafts in the scenic area are neutral. In terms of entertainment experience, Huangshan Scenic Area mainly relies on the precipitous and wonderful mountains and rocks to give tourists a pleasant experience. The entertainment method of Huangshan is relatively simple.

In terms of tourism information acquisition and clarity evaluation, according to monitoring data, 78.1 % of tourists agree or strongly agree that Huangshan is convenient in terms of information acquisition, but the approval rate for scenic area maps and brochures is only 68.7%. In terms of information clarity, 72.9% of the tourists agreed or strongly agreed with the clarity of the information on the road signs and boards on the scenic spot; 68.6% of the tourists agreed or strongly agreed with the clarity of the description of the scenic spots. Further data analysis shows that there is a difference in the approval rate based on the way of travelling, and group tourists get to know more about the attractions than self-guided tourists.

Regarding the environment and sanitation in the scenic area, the mean value of the environmental and sanitary evaluation of Huangshan Scenic Spot around 3.5-4.1, and they are generally satisfied. It shows that the landscape facilities of Huangshan Scenic Area are well-built and the satisfaction of tourists is high. In terms of public facilities, 78.2% of tourists agree or strongly agree that the toilets in the scenic area are very hygienic, while tourists have a higher evaluation of the trash bin distribution, with an average evaluation value of 4.07 and a reasonable distribution approval rate of 84.5%

In terms of scenic area security, tourists generally feel very safe and a, but most tourists do not know or know little about medical and rescue information in Huangshan Scenic Area, which is an important aspect to improve the security protection of scenic spots. According to the data, 77.8 % of tourists agree or strongly agree that the tourist order of the scenic area is well maintained; in terms of medical rescue, the approval rate of timeliness is only 51.4%, and 45.4% of tourists are neutral. The approval rate for rescue information was only 52.8%, and 39.2% of tourists were neutral, indicating that it is inconvenient to obtain relevant information such as the contact information of the medical services and rescue teams

in the scenic spots, and it is difficult for tourists to pay attention to such information; in terms of tourists' self-experience, 74.9% of tourists think that the ropeway and fences make them feel safe, and 73.8% of tourists agree or strongly agree that it is safe to visit Huangshan.

In terms of scenic cultural experience, compared with other similar scenic spots, the landscape and local cultural image of Huangshan Scenic Area are more prominent, and tourists have a higher degree of experience in the landscape and local culture of Huangshan. The interaction of tour guides, local residents and tourists also plays an important role in the cultural experience of the scenic spot. According to the survey data, the average evaluation value of the service quality of tour guides in Huangshan Scenic Area is 3.73, and the approval rate is 66.2%, while the average rating of warm and friendly evaluation of local residents is 68.1%. A high approval or strong approval rate indicates that tourists in Huangshan Scenic Area are interacting with guides and residents.

In terms of the tourist education function of the scenic spot, the tourist education function of the Huangshan Scenic Area is generally at the middle and upper levels. According to data, 65.2% of tourists agree or strongly agree that the education function of Huangshan Scenic Area is very good. Specific to the education of tourists in terms of cultural heritage, ecological environment and sustainable development of tourism, 73.9% of the tourists agreed or strongly agreed that Huangshan has given tourists education in cultural heritage, and the corresponding percentages of ecological environment and sustainable development of tourism were respectively 75.9% and 75.8%. As for the specific performance of Huangshan's education function, 82.7% of the tourists agreed or strongly agreed that they would take more care of the ecological environment after the tour, and 79.8% of the tourists agreed or strongly agreed that they would pay more attention to the traditional cultural heritage after the tour.

4.6. Summary of this chapter

From this year's monitoring data, compared with last year, it has a high degree of convergence in terms of visitor organization structure, but in terms of overall satisfaction, Huangshan Scenic Area has already shown a high level. However, in terms of sustainable development, in order to continue to improve the level and connotation of development, Huangshan should also attach importance to people's livelihood and cultural connotation, and continue to innovate the development mode.

On the one hand, we must continue to dig out the local characteristic culture of Huangshan and upgrade tourism products so that local people and tourists can discover

something between "Historical Huangshan" and "Modern Huangshan". On the other hand, while attaching importance to cultural attributes, we must also implement "humanistic care" in the details, from strengthening the construction of the summer relief system and improving the intelligent navigation of scenic spots; strengthening the development of cultural tourism products and experiencing products; pay attention to the impact of weather to provide tourists with good experience. Enrich the tourist experience and improve the overall satisfaction of tourists.

Case study

Session 1 Investigation Report on the Distribution Status of Trash Bins and Interpretation Boards in Huangshan Scenic Area

1. Research background

With the development of China's tourism, the demand for tourists has been increasing, and new challenges have been continuously raised for the management of scenic spots. As a mountain-type scenic area dominated by natural tourism, on the one hand, the establishment of trash cans can effectively reduce the phenomenon of littering by tourists and facilitate the development of clean and sanitary work in the area; on the other hand, as a world-class natural heritage site and forest park With geopark, the Huangshan Scenic Area should also bear the corresponding education function of the preservation of natural environment, and this function will be reflected in the trash bin and corresponding commentary system in the scenic area.

How to satisfactorily meet the environmental sanitation needs of the scenic area while taking into account environmental education is the core of the problem of the design of the trash cans and commentary boards in the scenic area. Therefore, the purpose of this special survey is to investigate the distribution of trash cans and commentary boards in the main tourist routes of Huangshan Scenic Area through GPS data collection, observation, and interviews based on previous years of monitoring. Through data collection and analysis, potential potential problems are discovered, and corresponding improvement suggestions are put forward, as a reference for enhancing tourist experience and enhancing the nature education function of Huangshan Scenic Area.

2. Research process

This special survey on the monitoring of the sustainable development of tourism in Huangshan was conducted by a PhD student, a master student and 4 undergraduates from the

School of Tourism Management of Sun Yat-sen University. The survey period is from July 15 to July 20, 2019. This special survey mainly uses GPS information and data collection, assisted by fixed-point observation methods and semi-structured interviews. they collected information on the number of trash cans and comment boards in the Qianshan area of Huangshan Scenic Area, and their distribution locations. The use of barrels was observed, while simple interviews were conducted with tourists and sanitation workers responsible for garbage collection.

3. Overview of the status of garbage bins in Huangshan Scenic Area

The survey collected the distribution data of the trash cans in the former mountain area of Huangshan Scenic Area. After careful screening, a total of 374 trash can points were obtained. According to the GIS image display and field observations, the trash cans on the main trails in the former mountainous area of Huangshan Scenic Area are distributed along the road line along the mountain body and at the rest places, showing the characteristics of "even overall distribution and dense distribution at important places" as shown in picture 2). From the perspective of type, there are mainly the following types: (1) cylindrical stump-like type; (2) square slate pile type; (3) plastic bucket bag type (as shown in Figure 3). From the perspective of selected materials and design, the overall conformity to the natural landscape style of the scenic spot can be effectively integrated into the landscape of mountains, trees and stone roads, and it will not form a strong sense of impact in the visual sense. There are signs that allow visitors to quickly identify their location.



Figure 2 Overview of the distribution of trash cans along the main trails of the Qianshan area of Huangshan Scenic Area

This study found that (1) despite the dense distribution of garbage bins at the rese places, according to feedback from sanitation workers, there are still many littering phenomena; (2) despite the even distribution of garbage bins, the amount of garbage in each bin shows uneven state. It can be seen that there is some room for optimization in the distribution of Huangshan trash bins.



Figure 3 The main types of trash bins for the main trails in the Qianshan area of Huangshan Scenic Area

3.1. The main problems

There are two problems in the design of the trash bin in Huangshan Scenic Area:

(1) The trash can has not become an effective part of the environmental education commentary in the scenic spot. With the continuous change of social environmental awareness, the concept of garbage classification has become more and more popular. Garbage classification requires the support of the background (that is, the part that tourists cannot see), including the corresponding equipment, complete processing procedures and management, and the effort on the forefront's (the part that tourists can see, that is, sanitation personnel and trash cans) mutual cooperation. Huangshan Scenic Area already has a garbage classification system, but it is overly dependent on sanitation personnel. Because Huangshan Scenic Area lacks the design of garbage bin garbage classification, tourists throw different types of garbage into the same garbage bin. The scenic garbage bin system not only does not play the role of environmental education to promote garbage classification, but also increases the work load of the sanitation workers' sorting of garbage.

(2) The uniformly distributed form of the trash bins does not conform to the habit of tourists' garbage disposal, and it needs to be improved. The number of trash bins in the scenic area is sufficient and evenly distributed, potentially cultivating the awareness of tourists to throw away garbage. Due to the uniform and dense distribution of garbage bins, sanitation personnel need to inspect the garbage bins along the road one by one. The number of stops increases, which reduces the efficiency of patrols, which is not conducive to the quality assurance of sanitation work to a certain extent.

3.2. Suggestions for improvement

Without dismantling the existing trash can, different types of trash can can be changed according to the actual situation, so as to set up different types of classified trash cans. In addition, comprehensively recycled garbage bins are kept in densely populated areas. In each line, the commentary system can be used to classify some garbage bins, thereby turning the garbage bins into a part of the environmental commentary education system, and improving tourists' experience to a certain extent. It will also improve the efficiency of sanitation workers. In addition, Huangshan Scenic Area should increase or decrease the corresponding number of trash bins according to the amount of trash in the scenic spot, so as to avoid the problem of blindly setting up trash bins to a certain extent.

4. Overview of commentary board distribution in Huangshan Scenic Area

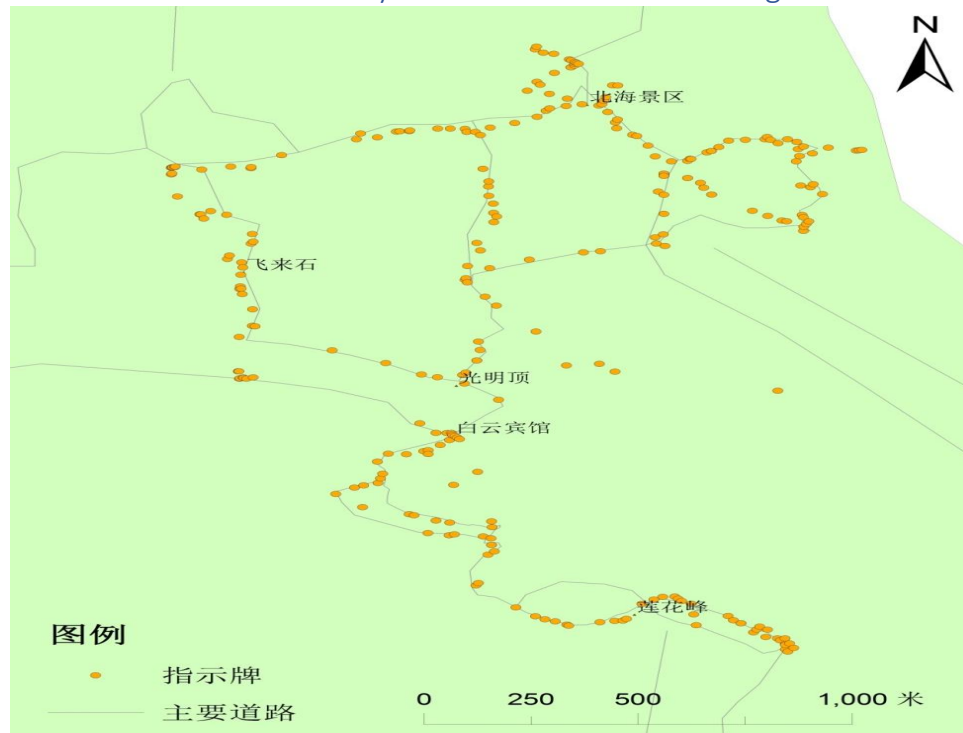


Figure 4 Overview of the distribution of tourist commentary boards in the main trails in the Qianshan area of Huangshan Scenic Area

The commentary board system is generally divided into three types, namely, commentary boards, guidance boards, and warning boards. Because Huangshan Scenic Area has the triple status of World Heritage, Forest Park, and Geopark, it has four themes in the commentary board, namely: attraction introduction board, animal and plant commentary board, geological structure commentary board, and climate astronomical landscape commentary. This survey collected 273 different types of commentary boards. Except for animal commentary boards, the distribution of commentary boards for other topics is at the corresponding attractions, and animal commentary boards are randomly interspersed in the main trails.

4.1. The main problems

On the whole, the commentary board of Huangshan Scenic Area is relatively systematic, and it satisfies the educational functions its status as the forest park, geopark, and world heritage. However, there are still several optimizable options: (1) some commentary boards are severely damaged and the content of its explanation are unidentifiable ; (2) The warning signs in the scenic area are mainly for personal safety and forest fire prevention, and the warnings for other natural environment education are still missing; (3) The guide signs

lack information about the relative distance and the time or length of the trail (4) The position of some commentary boards is unreasonable; (5) The system is not uniform, and the aesthetics is reduced, reflecting the problem of weak systemic design.



Figure 5 The explanation board is severely damaged (left) and the position is not reasonable (right)



Figure 6 There is the problem of inconsistent standards

4.2. Suggestions for improvement

According to the previous analysis, the scenic spot can consider the following commentary board system: (1) improve planning and management, unify the system, so that the commentary boards of different places can also have a sense of integrity; (2) in the case of sufficient funds, choose the appropriate materials that can withstand the weather, refurbish the commentary boards; (3) Adjust the position of some commentary boards to make it easier for tourists to obtain commentary content; (4) Consider establishing an online commentary system to promote paperless commentary.

4.3. Survey Summary

In this study, through the collection of data, the team found some problems in the rationality of garbage bin distribution in the Huangshan Scenic Spot from the garbage bin

layout plan. Based on this, the team analyzed and proposed optimization suggestions with reference significance. On the whole, Huangshan has a sufficient number of garbage bins and is evenly distributed, which is very convenient for tourists to throw away garbage, which ensures the sanitation and cleanliness of the scenic area and the landscape environment. However, the waste bins are not included in the natural environment education system, leading to the efficiency of sanitation workers being reduced, and many trash cans have not been fully used, so corresponding optimization can be performed, including adding and removing trash cans and designing a classification system. Its core idea is to incorporate the trash can and commentary board system into the natural environment commentary education system of the scenic area, and assume a certain educational function, thereby exerting the educational function and value of Huangshan Scenic Area as a world heritage.

This study also conducts preliminary descriptive research on the commentary board system. The Huangshan Interpretation Board system is relatively complete and evenly distributed, and plays an important role in guiding and alerting. However, due to climate, material, design, and management issues, there is still much room for optimization. The establishment of a paperless commentary system can be considered in the improvement of the future commentary system.

This special survey has certain reference value for Huangshan Scenic Area and similar types of mountain scenic areas. However, due to the limitation of technology and other objective factors, the data obtained is relatively rough, so the analysis and conclusions only provide reference value. Further research can estimate the total amount of garbage actually discarded by tourists, the average amount of various types of garbage, the actual frequency of use of the trash can, and other information to more accurately propose an optimization plan.

Session 2 Irrational Consumption? Walking sticks, raincoat purchase and use experience

1. Background

The discussion of tourists' irrational consumption behavior in tourism has a long history. Irrational consumption behavior refers to irrational consumption decisions made by consumers under the influence of various factors. It generally shows that consumers do not consume according to the pursuit of maximum utility, or do not consider income constraints when consuming, or consumption does not follow the law of diminishing marginal utility, or

lack of understanding of consumer goods. In the research on this topic, the discussion of tourists' irrational consumption behavior is mainly focused on whether the utility (use value) of the goods and the actual expenditures are matched.

At the foot of Huangshan Scenic Area, there are many hawkers selling raincoats and walking sticks. However, is it reasonable for tourists to pay for such "disposable consumables" and low-reuse-value goods which do not match the actual utility? In order to answer this question, the monitoring team conducted a special survey.

2. Research process

The community survey for monitoring the sustainable development of Huangshan Tourism was completed by a total of 16 doctors, graduate students and undergraduates from the School of Tourism Management of Sun Yat-sen University. The survey was conducted from July 16 to July 22, 2019, for a total of 7 days. Aiming at this topic, research was conducted using non-participatory observation methods and semi-structured interview methods. A total of 5 observations were made on the purchase process of walking sticks and raincoats by tourists (including the process of bargaining with the store), the use and consumption behavior of 23 tourists, and a total of 23 interviews with the psychological experience of using walking sticks and raincoats.

The team observed the purchase process of shopkeepers and tourists and the use behavior of tourists, and interviewed the tourists about their experience. They then recorded the interview process, transcribe it into text, and make a targeted summary to make it available research material. This article attempts to restore the game (confrontation process) between tourists and stores in order to analyze and analyze tourists' consumption behavior characteristics and consumption psychology.

3. Results analysis

3.1. Purchase process of walking sticks and raincoats

It was found in the survey that the seller saw the tourist looking at the raincoat and came forward to talk to the tourist. The tourist hesitated to buy or not. The seller's persuasion mainly includes: 1) "It will rain on the mountain tomorrow"; 2) "You cannot bring an umbrella on the mountain, no". When people ask the seller if the tourist area stipulates that umbrellas cannot be used, the seller does not answer directly, but continues to emphasize that there is no one on the mountain, and the wind is strong, and the umbrella will attract thunder and lightning; The raincoat is better, the seller said, "I said that expensive ones are better but

tourists don't necessarily buy it, it depends on what you need", but emphasized that "two dollars raincoat is easy to be torn apart," suggesting that tourists buy the more expensive raincoat.

In this process, sellers obviously have undergone "long-term training and practice" in selling raincoats and walking sticks, and almost all "promotion strategies" are consistent. Tourists will also slowly "compromise" in this case, mainly due to price considerations (after all, goods within 2-15 yuan are still acceptable ranges), and secondly, herd mentality is working (in partnership travel after someone consumes in the team, others will also tend to buy). Therefore, from the perspective of tourists' purchase intentions, it seems that the consumer behavior is not the initiative of tourists, but "forced and induced". In this sense, this consumption behavior seems irrational, but it is also necessary to examine the specific experience of tourists in order to know how the actual utility of these goods is.

3.2. Using walking sticks and raincoats

In terms of the experience of using walking sticks and raincoats, the following judgments can be basically obtained through surveys and studies: 1) Tourists have a good experience with walking sticks, and "fortunately" purchased walking sticks before to make the climbing journey easier. High-quality raincoats have better protection effects, and low-quality raincoat tourists do not have much expectations. The "preparedness" mentality is the main state; 2) The purchase of walking sticks is not an irrational purchase decision. For most tourists, walking sticks are a necessity and play an important role in the entire climbing process. In addition, the price of walking sticks is low, most of them are within 5 yuan, and the cost-effectiveness is high; 3) The walking sticks have recycling ways, which will not cause a significant impact on the mountain. Tourists generally take walking sticks down the mountain, or stay in the hotel, the next batch of guests can use it, or take it directly home; 4) For tourists, raincoats are also a necessary commodity. The weather in Huangshan is changeable, and it is not convenient to use umbrellas when it rains. Therefore, many tourists will choose to buy disposable raincoats. When it rains, the frequency of use of raincoats is extremely high, and basically no abandoned raincoats are seen in the trash cans along the way.

4. conclusions and recommendations

Through this special survey, it was found that: 1) tourists' purchase of consumables such as raincoats and walking sticks is rational, and the amount paid and the actual use value (utility) are matched, even "quality and cheap"; 2) Purchase and use belong to two different

processes. During the purchase process, the tourists' psychological state is "reluctant". However, in the process of using, tourists have a good experience of the goods and feel that they exceed the expected value; 3) Whether raincoats and walking sticks are "disposable consumables" is still questionable, and the recycling mode is possible.

However, in order to prevent contamination such as raincoats and walking sticks from being arbitrarily discarded the exacerbate environmental pollution of Huangshan Scenic Area, it is suggested to develop a recyclable sales / lease model:

Raincoats of high quality and uniform style can be prepared, and deposits are rented to encourage recycling. Tourists can return raincoats after climbing down to get some discounts. According to the survey, high-quality raincoat tourists experience better and tend to take it home to continue using it. And to ensure the timely cleaning and disinfection of raincoats after use is also an important part of this recycling method.