Study on Evaluation Method of Eco-Tourism City to Hainan Island

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Abstract Hainan Island has 18 city and county-level administrative regions. The evaluation and rational distribution of eco-tourism cities are significant for tourists to choose tourist destination and the future development of the international tourist of Hainan Island. The simple and easy index system was constructed and the integrated evaluation to the eco-tourism city in Hainan Island was conducted through the methods of the combination of quantitative and qualitative evaluation, the combination of single-objective, multi-objective evaluation and cluster analysis method. The evaluation results revealed that Sanya, Haikou, Wanning, Qionghai, Wenchang, Lingshui, Baoting, Wuzhishan, and Ledong were selected as top ten eco-tourism cities and counties in Hainan Island.

Keywords Eco-tourism city · Evaluation methods · Evaluation index system · Cluster analysis · Hainan Island

1 Introduction

In 2008, the Hainan provincial government released "construction action plan for Hainan international tourism island" for the first time, in which it was proposed to build Hainan Island into the world class, international tropical island vacation, and leisure travel destination with the characteristics of the internationalization of

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tourism facilities, tourism services, tourism products, and eco-tourism environment, distinctive features, security, and foreign tourists yearning, after 20 years of efforts [1]. According to the construction action plan of Hainan International Tourism Island, Hainan will be built into "the Island of tourism and opening up, the Island of enjoy and Sun, the Island of leisure and holiday, the Island of ecological harmony, the Island of civilized service." It is the core of the construction of the international tourist city to improve the construction of Hainan eco-tourism increasingly during the process of building Hainan International Tourism Island, in addition to the software and hardware construction.

Since the 1980s, eco-tourism has been considered a critical endeavor by environmentalists, so that future generations may experience destinations relatively untouched by human intervention [2]. What is eco-tourism? It is difficult to give an authorized definition, but eco-tourism is defined as "responsible travel to natural areas that conserves the environment and improves the well-being of local people" [3]. Eco-tourism in Wikipedia free encyclopedia is defined as a form of tourism involving visiting fragile, pristine, and relatively undisturbed natural areas, intended as a low impact and often small-scale alternative to standard commercial (mass) tourism. No matter which definition, the purpose of ecotourism may be to educate the traveler, to provide funds for ecological conservation, to directly benefit the economic development and political empowerment of local communities, or to foster respect for different cultures and for human right [2]. The so-called international eco-tourism city refers to a tourist city to open natural and cultural landscapes for tourists from around the world and the one with sustainable development under the standards of no ecological environmental pollution and destruction through limiting the number of visitors [4]. Including Sansha city newly established, Hainan Province has a total of 19 cities and counties. Is it not very clear by now which cities have conditions and competitiveness of eco-tourism. The purpose of this study was to systematically evaluate and select top ten eco-tourism cities from Hainan Island, by selecting the reasonable evaluation method and constructing the evaluation index systems, in order to provide the reference for tourists to make the decision on the destination selection and also provide a useful practice for the construction of the eco-tourism city.

2 The Advantages of Hainan Island Eco-Tourism Resources

Hainan Island tourism resources are very rich, distinctive, high quality, and deeply welcomed by domestic and foreign tourists. Hainan has about 335 of natural tourism resources, in which resource numbers of physiographic landscape, biological landscapes, water scenery, and the planetarium climates accounted for 50.0, 22.1, 21.0 and 6.9 %, respectively. The data indicated that the natural tourism resources in Hainan are mainly the categories of landscape class, biological landscape, and water scenery [5]. The main advantages of eco-tourism in Hainan Island were as following:

1. The advantage in natural resources. It includes the advantages of tropical coastal scenery resource, tropical rainforest resources, tropical climate resources, tropical agricultural cash crop resources and hot spring resources, etc, such as: Yalong Bay, Shimei Bay, and Perfume Bay. Numerous national and provincial nature reserves and ecological demonstration zones—Jianfengling, Wuzhishan, Diaoluoshan tropical rainforests, and mangrove wetland system, etc.
2. The advantage in natural environments. Such as: fresh air and high density of negative oxygen ions due to the island surrounded by the sea and covered by dense vegetations, sunny weather, light industrial pollution, etc. Moreover, the average life expectancy in Hainan Province ranks first in China. Therefore, many Chinese and foreigners take Hainan Island as "rare unspoilt virgin land in the world today."
3. The advantage in geographic location. Hainan is located in the circular belt of western Pacific, only way that must be passed in the traffic between the Pacific and Indian Ocean, the crossroads between China, Japan, South Korea, and Southeast Asian countries, and ideally transit and rest place for the past travelers.
4. The advantage in policy. Hainan is the China's largest special economic zone and enjoys country's unique special policies, such as "landing visa," "offsite visa," duty-free shops, and others.
5. The advantage in ethnic customs and overseas Chinese. Hainan is a multiethnic province, in which Hainan Li and Miao ethnic customs, folk dance, ethnic costumes were very popular to tourists. Hainan overseas Chinese have more than 200 million, which is a valuable asset for Hainan to expand tourist markets [6].

3 Selection of Evaluation Methods

The selection of evaluation methods is the core of the evaluation, because the evaluation method is related to the credibility of the evaluation results. The evaluation results on the same item might be totally different if different evaluation methods were adopted, due to differences of the theoretical basis of the evaluation method, the application scope, and inherent characteristics; therefore, the selection of evaluation methods must consider the evaluated item and characteristics of evaluation methods at the same time. There are many evaluation methods to be used by now, but the analysis of hierarchy process (AHP), clustering, principal component analysis, and entropy weight methods were commonly used to evaluate the eco-tourism, such as AHP used to evaluate ecological tourism resource [7]. Other evaluation methods were also used in practice, such as: the method of principal component analysis used in tourism attraction grade assessment [8] and clustering method used to evaluate the tourism competitiveness factor of cities [9]. AHP is a subjective evaluation method, in which the evaluation weights need to be designed according to human's ideas. The entropy and principal component

analysis methods are the objective evaluation method, in which the weighting was calculated objectively according to the differences of the evaluation index data. Because the empowerment method is completely dependent on the differences of evaluation index data, the result of the evaluation often exists some differences with the actual situation, so those methods can only be suited for secondary evaluation means [10]. The cluster analysis is also an assist evaluation method. It will achieve ideal effects when only combined with other evaluation methods. This paper attempts to use the methods of combining quantitative and qualitative evaluations, single-objective, multi-objective and clustering evaluation to evaluate the eco-tourism cities in Hainan Island.

4 The Construction of Evaluation Index Systems

4.1 The Principles of Constructing Index Systems for the Eco-Tourism City Evaluation

1. Rich in eco-tourism resources, high-impact index, and high quality. Such as the categories, quantities, scale, well-known and reputation, esthetic and recreational values of tourism resources.
2. A large number of tourists accepted and events held frequently.
3. Beautiful ecological environment to accord with eco-tourism requirements. Such as air and water quality, sanitation condition, vegetation covering rate, biodiversity index, tourism capacity, etc.
4. Great development potential in eco-tourism resources. Such as the development of new eco-tourism items, improvement on the quality of tourism items, and infrastructure investments.
5. Distinct characteristics in tourism resources, beautiful human environments, sound finance, etc.

4.2 The Construction of Evaluation Index System for Eco-Tourism Cities

According to the principles of constructing evaluation index system for eco-tourism cities, ten indicators were initially selected as the evaluation index system for eco-tourism cities, such as (1) number of the city's scenic spots, (2) number of A and over A level scenic spots, (3) number of golf course, (4) major events, (5) proposed projects on 12th Five-Year Plan, (6) GDP, (7) tourists accepted in hotels, (8) tourists accepted in restaurants, (9) landing typhoons, and (10) times of mud-rock flow and landslides.

4.3 Features of Evaluation Index System for Eco-Tourism Cities

The evaluation index system was simple, but covering the most important aspects possessed by an eco-tourism city. Among them, the number of tourists accepted in hotels and restaurants is an indicator of reflecting the number of visitors. The greater the number of tourists accepted in hotels and restaurants, the more abundant in tourism resources and the higher the quality of tourism resources. GDP is an indicator of the overall urban economic level. With the improvement of the GDP, eco-tourism facilities, ecological environmental conditions, quality of service, and potential development on tourism resources, etc. will be improved and enhanced. The quantities of scenic spots, A and over A level scenic spots, golf courses, and large-scale events and activities can fully reflect the scale, quality, and influence of tourism resources in a city. Landing typhoons, mud-rock flow, and landslides are the natural disaster indicators, which will have bad effects on the eco-tourism cities.

5 The Application of the Evaluation Method

Only 18 cities and counties in Hainan Island were evaluated in this chapter, in which newly established Sansha city was not included, because the tourism projects in Sansha city has not yet officially launched, and data used as the evaluation have not happened. Top ten will be selected from 18 cities and counties in Hainan Province by above-selected evaluation methods. The evaluation data were mainly collected from the local chronicles and the Hainan Provincial tourism resources Web sites. Original data for 18 cities and counties in Hainan Island were listed in Table 1.

5.1 The Single-objective Evaluation

According to the data in Table 1, evaluation results over various evaluation factors were listed in Table 2. The results showed that six counties and counties of Sanya, Wanning, Haikou, Qionghai, Danzhou, and Wenchang were kept in the top ten among 18 cities and counties in the ranking of all single-objective evaluations; therefore, these six cities and counties were evaluated as the candidates of top ten eco-tourism cities in Hainan Province. Three evaluation indicators of tourists accepted in hotels, tourists accepted in restaurants, and GDP for Baoting were outside the top ten. Two evaluation indicators of events and activities and GDP for Lingshui were outside the top ten. The indicator of the quantities of scenic spots

Table 1 Original data used as the evaluation of eco-tourism cities

Cities and counties in Hainan Island	No. of *A* and over *A* level scenic spots	No. of scenic spots	No. of proposed projects on 12th Five-Year Plan	Tourists accepted in restaurants in May 2012 (10,000 people)	Tourists accepted in hotels in May 2012 (10,000 people)	No. of landing typhoon in past 12 years	No. of mud-rock flow and landslides	Events and activities	Golf courses	GDP in the first half of 2011(RMB 10,000)
Sanya	9	16	12	56.3	69.01	5	0	19	7	1,352,526
Wanning	7	10	8	21.86	23.19	3	0	6	0	592,283
Haikou	5	11	7	43.61	71.12	1	0	74	7	3,521,093
Qionghai	4	8	5	8.53	13.86	1	1	6	2	690,115
Danzhou	3	17	5	4.77	7.52	0	0	4	2	1,733,047
Lingshui	2	3	8	7.92	9.37	1	2	1	1	314,835
Baoting	2	7	6	1.33	2.05	0	0	4	0	83,197
Dingan	1	6	8	2.23	3.45	0	0	4	0	215,752
Wuzhishan	1	5	8	1.85	2.8	0	0	0	0	79,871
Chengmai	1	2	6	2.15	4.27	0	0	5	0	632,079
Wenchang	1	8	4	5.35	10.15	10	0	2	0	752,208
Dongfang	0	4	6	1.21	3.26	0	0	2	1	536,174
Baisha	0	3	6		1.14	0	0	0	0	76,953
Ledong	0	1	5	0.7	2.34	1	0	1	0	296,649
Lingao	0	1	5	0.65	1.75	0	0	1	0	405,559
Tunchang	0	3	4	0.57	1.36	0	0	4	1	136,647
Changjiang	0	1	4	1.86	2.73	0	0	1	0	316,062
Qiongzhong	0	2	2	1.09	1.97	0	0	0	0	62,928

Table 2 Single-objective ranking

Single-objective ranking	No. of *A* and over *A* level scenic spots	No. of scenic spots including proposed projects on 12th Five-Year Plan and golf courses	Tourists accepted in restaurants in May 2012	Tourists accepted in hotels in May 2012	Events and activities	GDP in the first half of 2011
1	Sanyan	Sanya	Sanya	Haikou	Haikou	Haikou
2	Wanning	Haikou	Haikou	Sanya	Sanya	Danzhou
3	Haikou	Danzhou	Wanning	Wanning	Wanning3	Sanya
4	Qionghai	Wanning	Qionghai	Qionghai	Qionghai3	Wenchang
5	Danzhou	Qionghai	Lingshui	Wenchang	Chengmai5	Qionghai
6	Baoting6	Dingan	Wenchang	Lingshui	Danzhou6	Chengmai
7	LIngshui6	Baoting7	Danzhou	Danzhou	Dingan6	Wanning
8	Chengmai8	Wuzhishan7	Dingan	Chengmai	Baoting6	Dongfang
9	Dingan8	Lingshui9	Chengmai	Dingan	Tunchang6	Lingao
10	Wenchang8	Wenchang9	Changjiang	Dongfang	Wenchang10	Changjiang
11	Wuzhishan8	Dongfang	Wuzhishan	Wuzhishan	Dongfang10	Lingshui
12	Tunchang12	Baisha	Baoting	Changjiang	Lingshui12	Ledong
13	Dongfang12	Chengmai13	Dongfang	Ledong	Changjiang12	Dingan
14	Ledong12	Tunchang13	Qiongzhong	Baoting	Ledong12	Tunchang
15	Lingao12	Ledong15	Ledong	Qiongzhong	Lingao12	Baoting
16	Changjiang12	Lingao15	Lingao	Lingao	Wuzhishan16	Wuzhishan
17	Baisha12	Changjiang	Tunchang	Tunchang	Qiongzhong16	Baisha
18	Qiongzhong12	Qiongzhong	Baisha	Baisha	Baisha16	Qiongzhong

Note Same figures behind the city names mean the coordinate ranking

for Chengmai was outside the top ten. The indicator of GDP for Dingan was outside of top ten.

Only indicator of the quantities of scenic spots for Wuzhishan was in the top ten. Other cities and counties were all ranked in outside of top ten.

5.2 Multi-Objective Ranking

Based on the same weight coefficient for each evaluation index, sequence numbers of six evaluation indexes in Table 2 for each city or county was added to get a numeric value, which was considered as the multi-objective evaluation score. Based on those scores, 18 cities and counties were ranked. Multi-objective ranking results and scores obtained were listed in Table 3. According to the multi-objective ranking scores, the sequence of top ten cities or counties were as follows from top one to top ten: Sanya, Haikou, Wanning, Qionghai, Danzhou, Wenchang, Lingshui Chengmai, Dingan, and Baoting. Among them, the top six cities and counties of Sanya, Haikou, Wanning, Qionghai, Danzhou, and Wenchang were the same results with single-objective evaluation results.

5.3 Selecting Eco-Tourism Cities According to the Layout of the Construction and Development Plan for Hainan International Tourism Island (2010–2020)

According to the plan, the land use in Hainan Province was divided into six functional areas [11]: (1) integrated industrial development area for the northern cities, including Haikou, Wenchang, Lingao, and Chengmai (2) integrated tourism development area for the eastern cities, including Wenchang, Qionghai, and Wanning (3) integrated tourism development area for the southern cities, including Sanya, Lingshui, and Ledong (4) industrial town development area for the western cities, including Danzhou, Changjiang, Dongfang, and Ledong (5) terraced agricultural comprehensive development areas around the Island, including terraced area around the Island of Haikou, Wenchang, Qionghai, Wanning, Dingan, Tunchang, Chengmai, Lingao, Danzhou, Baisha, Changjiang, Dongfang, and Ledong, etc. cities (counties) (6) central ecological protection area, including the part areas of Wuzhishan, Qiongzhong, Baoting, Danzhou, Baisha, Changjiang, Dongfang, Ledong, Sanya, and Lingshui. According to the plan, the eastern and southern cities and counties, such as Wenchang, Qionghai, Wanning, Sanya, Lingshui, and Ledong, were classified into the tourism development areas; therefore, those six cities and counties should be among the top ten eco-tourism cities. With the exceptions of Ledong, other five cities were already selected as the top ten, based on the multi-objective evaluation results.

Table 3 Multi-objective ranking

Multi-objective ranking	1	1	3	4	5	6	7	7	9	10	11	12	13	14	14	16	17	17
Cities and counties	Sanya	Haikou	Wanning	Qionghai	Danzhou	Wenchang	Lingshui	Chengmai	Dingan	Baoting	Dongfang	Wuzhishan	Changjiang	Ledong	Tunchang	Lingao	Baisha	Qiongzhong
Ranking score	10	10	22	25	30	42	49	49	50	60	64	69	73	79	79	80	93	93

5.4 Cluster Analysis

Sample clustering is clustered one by one, based on the distance between the samples. The samples with close relationship were clustered into a small-class unit first, then those with distant relationship were clustered into a large class unit until all the samples were clustered. Based on the data in Table 1, 18 cities and counties were clustered through the sample clustering analysis method, with Euclidean squared distance coefficient, the average linkage (between groups) clustering method. Clustering results were shown in the dendrogram of Fig. 1. According to Fig 1, the 18 cities and counties were clustered into three categories: (1) Haikou, (2) Sanya, Danzhou, (3) the others. Haikou, Sanya, and Danzhou in category (1) and (2) were selected as the candidates of top ten eco-tourism cities by the multi-objective evaluation method.

After excluding Haikou, Sanya, and Danzhou, re-clustering results were shown in Fig. 2. Based on the dendrogram in Fig. 2, 15 cities and counties were clustered into four categories: (1) Wanning, Chengmai, Dongfang, (2) Qionghai, Wenchang, (3) Baisha, Baoting, Wuzhishan, Qiongzhong, Tunchang, (4) Lingshui, Changjiang, Ledong, Dingan, Lingao. One to two cities in each clustering category were the top ten candidates obtained with the multi-objective evaluation method. They were Wanning and Chengmai in category (1), Qionghai and Wenchang in category (2), Baoting in category (3), and Lingshui and Dingan in category (4). The clustering results showed that top ten candidates were evenly distributed in each category. It indicated that the distribution of eco-tourism cities was reasonable and representative.

5.5 Qualitative Analysis Between Ledong and Dingan, Wuzhishan and Chengmai

Dingan and Chengmai were top ten candidates in multi-objective ranking; however, Ledong and Wuzhishan were not in the top ten. Dingan and Ledong were not close to each other in the multi-objective ranking, but the cluster analysis showed that they belong to the same category, so they were highly similar in the evaluation index. The tourism resources in Dingan were rich than those in Ledong, but features were not prominent. Tropical montane rainforest ecosystem in Ledong is typical in the world. In addition, the southern part of Ledong was classified into the integrated tourism development area in the construction development plan for Hainan International Tourism Island; therefore, Ledong will have a huge potential for development in the future. Furthermore, Ledong was an important part of the central ecological protection region in the construction development plan and Li Autonomous County. According to the above points of view, Ledong was selected into one of top ten eco-tourism city to replace Dingan.

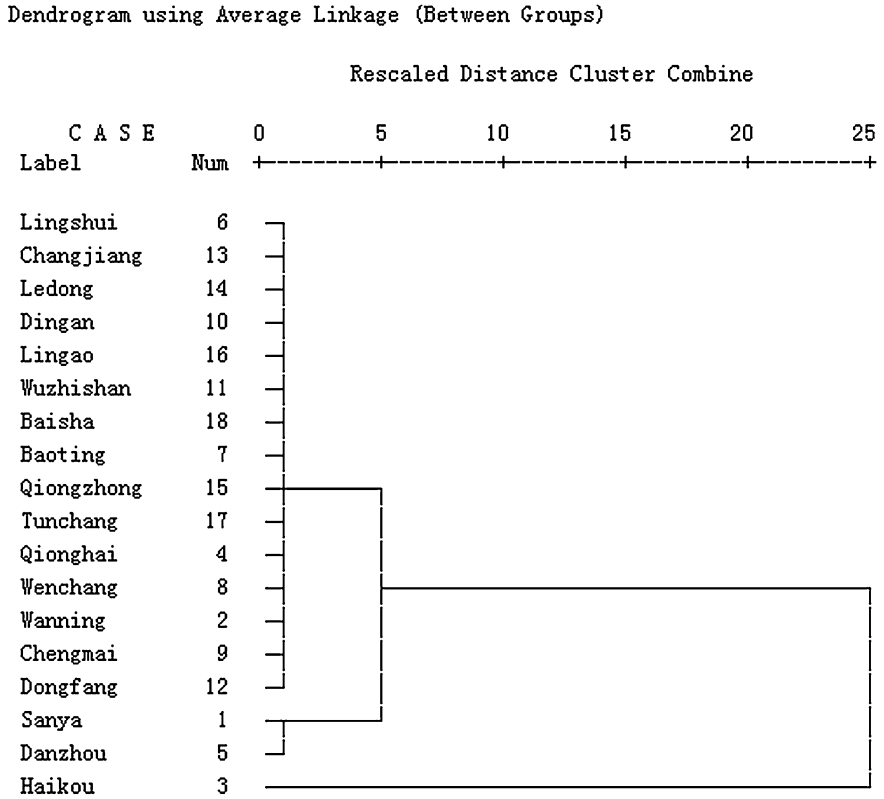

Fig. 1 The dendrogram of 18 cities and counties

Wuzhishan and Chengmai were not close either in the multi-objective evaluation ranking, but compared with Wuzhishan, tourism resources in Chengmai were not rich and Chengmai belongs to the non-tourist development areas in the plan. In contrast, Wuzhishan was classified into the central ecological protection areas, and the tropical rainforest ecosystem in Wuzhishan was very famous in China. Therefore, Wuzhishan was selected into the one of top ten eco-tourism cities to replace Chengmai.

6 Results and Discussion

Based on the combination of quantitative and qualitative evaluation methods, single-objective, multi-objective, and clustering evaluation methods, the final evaluation results of top ten eco-tourism cities in Hainan were Haikou, Sanya, Wanning, Danzhou, Qionghai, Lingshui (Li Autonomous County), Wenchang,

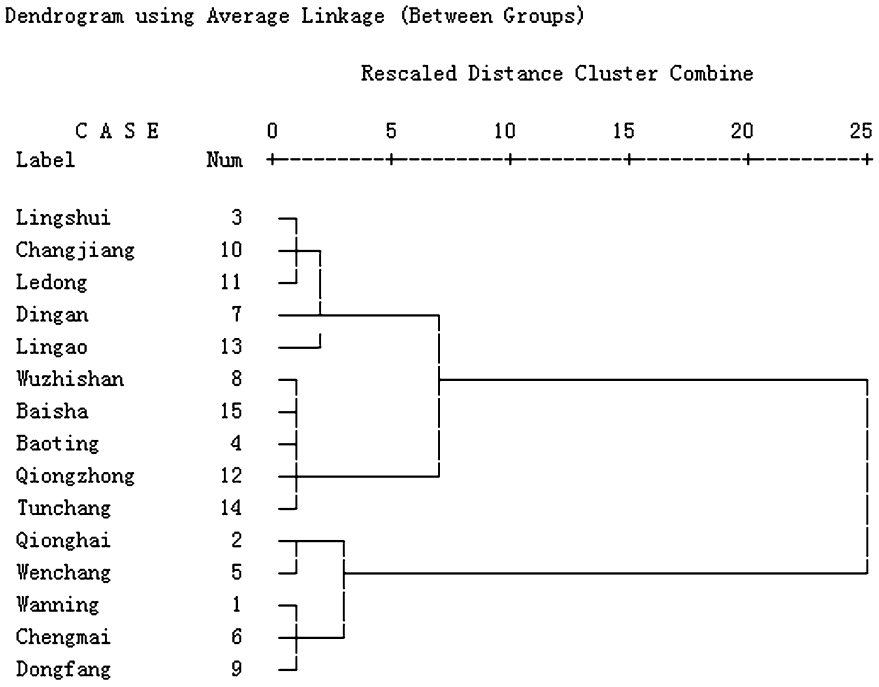

Fig. 2 The dendrogram of 15 cities and counties

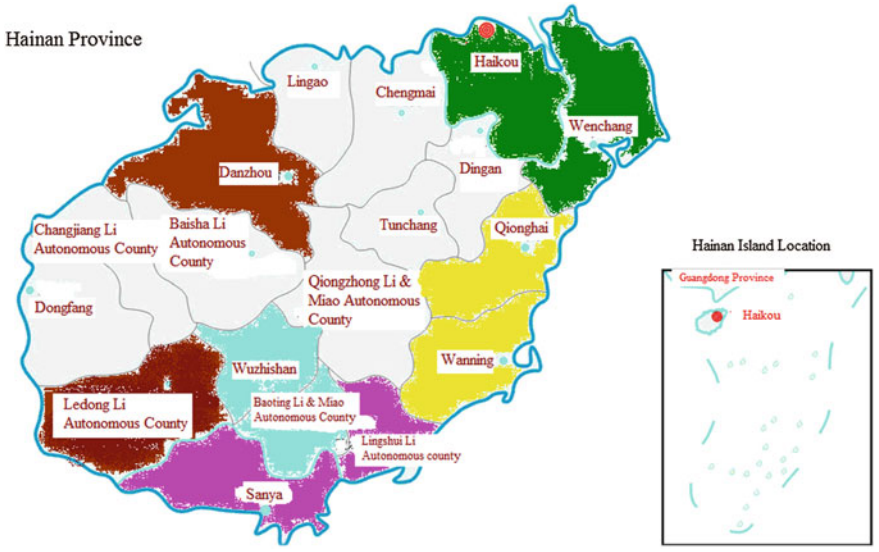

Fig. 3 The distribution map of top ten eco-tourism cities and counties in Hainan Island

Table 4 Major feature of top ten eco-tourism cities and counties

Cities and counties	No. of *A* and over *A* level scenic spots	No. of scenic spots	No. of proposed projects on 12th Five-Year Plan	Land use function	Characteristics	Human environment	Natural environment	Famous scenic spots
Haikou	5	11	7	Integrated industrial development area-northern cities	Capital city and convenient on transportation	Political, economic and cultural center; many famous historical and cultural monuments	Healthy City in the world, China Excellent Tourism City, excellent living environment and excellent garden city, national historical, and cultural famous city	1. Haikou Geopark with Rock Hill and volcanic group 2. Barbette 3. Hainan Tropical Wildlife Park 4. Holiday Beach in Haikou 5. Haikou Tropical Ocean World 6. five Ancestral 7. Ever Green Park 8. Jinniuling Park 9. Dongzhaigang 10. Qiongya former site of first congress
Sanya	9	16	12	Integrated tourist town development region-Southern cities	The most beautiful tourist destination	Important port for foreign trade	Many beautiful harbor, bay, and Island	1. Ends of the earth 2. Westerly Island 3. Yalong Bay 4. Zhujiang Nantian hot spring 5. Wuzhizhou Island 6. fish spa 7. Daxiaodongtian, 8. Luhuitou 9. Nanshan Cultural Tourism Zone 10. Dadonghai

(continued)

Table 4 (continued)

Cities and counties	No. of *A* and over *A* level scenic spots	No. of scenic spots	No. of proposed projects on 12th Five-Year Plan	Land use function	Characteristics	Human environment	Natural environment	Famous scenic spots
Wanning	7	10	8	Integrated tourism development area-eastern cities	Hometown of overseas Chinese		Tourism resources rich city	1. Xinglong Tropical Botanical Garden of the Southern medicine 2. Shimei Bay 3. Xinglong Tropical Garden 4. Wanning Dongshan Ridge 5. Shenzhou Peninsula 6. Xinglong Hot Springs 7. Sun Moon Bay Haimen 8. Xinglong Asian style garden 9. Perfume Bay 10. Coconut Island
Danzhou	3	17	5	Industrial development area-Western cities	Old shire	Yangpu Economic Development Zone, the bonded port area, "National Poetry town," "village" of Chinese couplets, the "hometown of Chinese folk art"	Excellent Tourism City	1. Yangpu Economic Development Zone 2. Baimajing monuments 3. Yunyue lake 4. tone flower water tunnel 5. Liangyuan Botanical Garden 6. Songtao Reservoir 7. Lanyang Spa 8. Dongpo Academy 9. Egret Paradise 10. Sugar Palm hut nunnery

(continued)

Table 4 (continued)

Cities and counties	No. of *A* and over *A* level scenic spots	No. of scenic spots	No. of proposed projects on 12th Five-Year Plan	Land use function	Characteristics	Human environment	Natural environment	Famous scenic spots
Qionghai	4	8	5	Integrated tourism development area-eastern cities	One of the key provincial tourist area	Boao Forum for Asia, a lot of businessmen of overseas Chinese	Ecological beauty	1. Boao Aquarium 2. Kuantang Spa 3. Baishi Ridge 4. Boao Jade Belt Beach 5. Wanquan River 6. Coconut Village and Farmhouse 7. The site of Boao Forum for Asia 8. Boao Oriental Culture Garden 9. leisure rafting in Wanquan River 10. Statue of the Red Detachment of Women in Qionghai
Lingshui	2	3	8	Integrated tourism development area-Southern cities	Feng shui treasure	Site of Soviet government, South Tyrant Manor, a street in the Qing Dynasty, Li Autonomous County	Bays, beaches, islands, coconut, virgin forests, waterfalls, hot springs, monkeys, ostriches	1. Boundaries Island 2. Nanwan Monkey Island 3. Diaoluo Mountain 4. Coconut field and Li and Miao village 5. Soviet government site

(continued)

Table 4 (continued)

Cities and counties	No. of *A* and over *A* level scenic spots	No. of scenic spots	No. of proposed projects on 12th Five-Year Plan	Land use function	Characteristics	Human environment	Natural environment	Famous scenic spots
Wenchang	1	8	4	Integrated industrial development area-northern cities	Cultural village, the hometown of overseas Chinese, coconut Township, volleyball township, the hometown of the generals, the hometown of the mother of the country	Song ancestral	Coconut Grove, harbor, natural bath	1. Coconut Grove in eastern outskirts 2. Qizhou Islands 3. Song ancestral 4. Tonggu Ridge 5. Gaolong Bay 6. Mangrove in Bamen Bay 7. Qixing Ridge 8. Yun-long Bay 9. Coconut Grand Park 10. Mulan Bay
Wuzhishan	1	5	8	Central Ecological protection area-central cities	Mountain city with the highest elevation in Hainan Island, Original Prefecture of Hainan Li and Miao Autonomous		"Natural air conditioning," "natural oxygen bar", "jade mountain," "natural animal and plant kingdom," "fairyland paradise" and "China's health city"	1. Wuzhi Mountain 2. Rafting in Wuzhishan Grand Canyon 3. Li villages 4. Taipingshan Falls 5. Baoting Tropical Botanical Garden 6. Emerald Hill 7. Maoan Miao Village 8. Qiongya Memorial Pavilion of Public School

(continued)

Table 4 (continued)

Cities and counties	No. of *A* and over *A* level scenic spots	No. of scenic spots	No. of proposed projects on 12th Five-Year Plan	Land use function	Characteristics	Human environment	Natural environment	Famous scenic spots
Baoting	2	7	6	Ecological protection area-central cities	Planting base for Southern medicine, special local product-rambutan	Li and Miao culture, Li and Miao Autonomous County	The forest coverage rate of 81.5 %, rich in natural resources and tourism resources	1. Qixianling Spa 2. Yanoda rainforest 3. Baoting Betel Palm Park 4. Maogan Xianan Stone Forest 5. Betel Palm Valley 6. Li and Miao style tourist village 7. MaoganQianlong hole
Ledong	0	1	5	Integrated tourism development area-southwest cities	White sand and blue see, first choice of vacation and leisure	Li Autonomous County	"Bananas town in China"	1 Jianfengling National Forest Park

Baoting (Li and Miao Autonomous County), Wuzhishan, and Ledong (Li Autonomous County). The distribution pattern of the ten eco-tourism cities was as following: one in the southwest, one in the western, two in the southern, two in the central, two in the eastern, and two in the northern (Fig. 3). The main characteristics for top ten eco-tourism cities were shown in Table 4.

This chapter was a preliminary evaluation to eco-tourism cities in Hainan, because the evaluation index system was relatively simple and needs to be further improved. The results indicated that only if the multi-objective evaluation method was taken as the foundation method, cluster analysis as an assistant means, and the qualitative analysis considered, the relatively satisfied evaluation results will be achieved.

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