Investigation and Evaluation of Plant Resources Based on Modern Digital Rural Ecotourism Development

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Abstract. The establishment of natural ecological reserves has effectively protected the original ecological environment and natural resources to a certain extent. Bima Mountain Nature Reserve is rich in animal and plant resources. The main plants in the reserve are naturally growing subtropical evergreen broad-leaved forest. There are 36 species of national key protected plants in the reserve, such as silver fir and dove tree. The clouded leopard, black langur and white-headed langur are the first class protected animals in the state. According to the results of the survey and evaluation, combined with the local ecotourism foundation put forward the following Suggestions: the best characteristics of ornamental plants in country garden, characteristic feature edible plants in the country kitchen, healthy development of green economy, open up knowledge, white horse hill features of plant industry, increase the reserve famous trees protect plants, the protection of both inside and outside. This study through field investigation, the early use of analytic hierarchy and private access methods, such as the white horse hill ecological nature reserve resources comprehensive evaluation on the plants, and in a lot of Zhu Wu kinds of screening and recommend a more suitable for local ecological tourism development characteristics of ornamental plants, edible plants, medicinal plants, as well as the key protection plant, to the local developing ecological tourism provides an important reference basis, also for the reasonable solution to reserve conflicts between people and provides a reference model.

Keywords: Plant Resources, Ecological Protection Zone, Ecotourism

1. Introduction
The establishment of natural ecological reserves, to a certain extent, has effectively protected the original ecological environment and natural resources. But, because of the nature reserve is a whole space, the interior of the space is not only contains the natural ecological environment, and the figures of the few human life breath, and the establishment of nature reserves to a great extent on the local people caused great distress, therefore, the development of local economy and the natural ecological protection has become a local growing contradiction. The original intention of the establishment of natural ecological reserves is to protect the original natural ecological environment, but if they can promote the economic development of local people on the basis of protecting the natural ecological environment, it is urgently needed at present [1]. Only by taking the path of harmonious development
between human and natural ecology can we achieve a win-win situation. Ecotourism, which has been on the rise in recent years, provides an effective solution to this problem. The villages and towns around the natural ecological reserve have become the basis for the development of ecotourism due to their superior geographical location and abundant local plant resources. In the study of ecotourism development, the configuration of plant landscape has become a key point of the study. In the traditional plant landscape research, it mainly focuses on the plant landscape configuration in the city. Through the research and analysis, it provides important reference materials for the green space parks, residents' gathering areas and road construction in the city. So far, there is a lack of research on plant configuration in rural areas, and there are many problems in the actual operation. In the current development of ecotourism, attention is paid to the experience of local characteristics and folk customs, but the application and configuration of local plant landscape is still lack of emphasis. Therefore, the study and application of the local plant landscape and collocation has become the focus of the development of ecotourism in the natural ecological reserves. This study takes Baima Mountain Natural Scenic Area in Chongqing as an example.

2. Overview of the study area

2.1. Nature reserve overview

Baima Mountain Natural Scenic Area is located in the central and southern part of Wulong County, Chongqing, with a geographical location of 107°32’19’’-107°37’42’’ east longitude and 29°09’58’’-29°18’35’’ north latitude, with a total area of about 7225hm². This area was approved to be constructed as a provincial nature reserve of Sichuan Province in 2000. The core area of Baima Mountain Nature Reserve is about 2441hm², the buffer area is about 1496hm² and the test area is about 3287hm². Baima Mountain is located on the northwest side of Jilong Mountain in Dalou Mountain, adjacent to Daozhen County in Guizhou Province in the south and Nanchuan City in the west. [2] The annual rainfall in this area is 1200~1400mm, the annual average temperature is 9~12°C, and the annual sunshine time is about 1100h. The nature reserve and its surrounding countryside are about 800 ~ 1950m above sea level.

Bima Mountain Nature Reserve is rich in animal and plant resources. (Figure 1) The main plants in the reserve are naturally growing subtropical evergreen broad-leaved forest. There are 36 species of national key protected plants in the reserve, such as the Chinese fir and the dove tree. The clouded leopard, black langur and white-headed langur are the first class protected animals in the state.

![Figure 1. Baima Mountain ecological nature reserve](image-url)
There are three towns around the Baima Mountain Nature Reserve area -- Zhao Jia Town, Baima Town and Huangying Township. Among them, the altitude of Zhao hometown is about 800 ~ 1000m, within the territory of a large reservoir mountain, so the local fishery is relatively developed, the area of arable land is also more, the main agricultural crops are corn, rice, wheat, cash crops are flue-cured tobacco, gastrodia elata, coptis, etc. In the early stage, local villagers began to develop and manage farmhouse entertainment spontaneously by taking advantage of their superior natural environment resources, so there was a certain basis for ecotourism in the local area. Chepan Village and Zhuba Village in Baima Town are about 1200m above sea level. [3-4] This area is a summer resort with mild climate and rich natural resources, and its main crops include potatoes and corn. The main cash crops are flue-cured tobacco, Magnolia officinalis and so on; Tianshi Ping Village is rich in oil tea, tea; What is more prominent in Huangying Township is that it has developed an economic development mode based on trade and catering service. The main crops in the country are corn, rice and potato, and the economic crops include tung, rape, raw lacquer, flue-cured tobacco and Chinese medicinal materials. The three towns in the protection area have their own characteristics in terms of economic development, so the direction of eco-tourism development can be designed according to their different natural basic conditions.

3. Methods

3.1. Plant survey methods
The method of plant survey can be based on the specific local topography and landforms, with mountain paths, valleys and mountain girders as the main dividing lines to make grid division of the whole region, and focus on the investigation of plant types in different environments and different elevations in the region. Survey work can start from the beginning of the year, divided into spring, summer, autumn and winter four seasons of the same type of plant survey. In memory investigation, the main work content is the first plant types within the region division, then according to different environment and different altitude carries on the elaboration, in the spring began to photograph statistics of plant type, specimen collection, indoors for species identification, finally, after identification of the plant according to the standard evaluation system of evaluation for the use of the filter.

3.2. Evaluation methods of plant resources

3.2.1. Folk access method. In the natural protection area, on a visit to local residents, according to the local some eating habits and customs of classifying plants screening, to differentiate whether plants can be applied to food or applied to drug therapies, and for the local residents were interviewed to obtain a degree of support for the development of ecological tourism for local residents.

3.2.2. Analytic hierarchy process evaluation. Analytic Hierarchy Process (AHP) refers to the combination of qualitative and quantitative evaluation results and the use of specific quantitative indicators as the standard to evaluate plants. This evaluation method improves the effectiveness, reliability and feasibility of the evaluation results to a certain extent. [5-7] The plant resources in Baima Mountain Ecological Nature Reserve were evaluated by analytic hierarchy process (AHP), which mainly evaluated and screened the local plants in terms of their edible, ornamental and medicinal properties, so as to select excellent plant species. In this method, firstly, field investigation is carried out, and the plant species in the region are investigated and counted, as well as specimen collection. Then, AHP is used to evaluate the investigated plants. Then, relevant experts are invited to conduct in-depth evaluation and score on the selected plants, and finally the scores are ranked to make recommendations. Plants with important protective properties should be treated as ornamental plants. Plants with high edible value should be processed in accordance with local customs. Plants with high medicinal value can be processed as edible drugs with local characteristics.
4. Results and analysis

4.1. Composition of plant species in Baima Mountain

Through field investigation and specimen collection in the early stage, a large number of local plant information was collected. [8] Relevant literature and systematic search were used to conduct statistics and analysis on the collected information, and finally the number of plant species in Baima Mountain Ecological Nature Reserve was obtained as shown in Table 1.

Table 1. The number of plant species in Baima Mountain Ecological Nature Reserve

| Category | Fern | Gymnosperms | Angiosperms |
|----------|------|-------------|-------------|
| Families | 11   | 6           | 131         |
| Belong to | 12   | 12          | 513         |
| Kind     | 25   | 14          | 1181        |

4.2. Recommended resource plants of Baima Mountain

According to the preliminary investigation and systematic analysis and evaluation, the plant species and genus in Baima Mountain Ecological Nature Reserve were selected, and the list of high-quality resource plants and key protected plants was obtained.

After screening, a total of 11 edible plants were obtained, among which four edible plants, Chinese bamboo shoot, oil tea, Chinese kiwifruit and Yang lotus, ranked the highest, and were the four wild edible plants with the most characteristics, nutrition and development potential in Baima Mountain.

With medicinal plants after screening score, gastrodia elata, medicinal lily, silk crack straight ladybell, sichuan and dangshen [9-10], concave Ye Houpiao the highest score of the five kinds of plants, in the rhizoma gastrodiae, medicinal lily, silk crack straight ladybell, sichuan is dangshen white horse hill distribution and the economic value of the highest four kinds of wild medicinal plants, concave Ye Houpiao is white horse hill cultivation of medicinal plants, with the largest, therefore, high medicinal value, the five kinds of plants in the local also has certain development foundation.

After scoring the plants with high ornamental value, Luoxin, Rhododendron zhongshan and Southwest Hongshan tea rank the first with the same score, and they are the most potential ornamental plants in Bema Mountain Ecological Nature Reserve at present, especially Rhododendron zhongshan, which has high ornamental value. Secondly, lily, wild rose, creeping honeysuckle, Kunming Mountain Begonia and other plants, respectively, are the best wild plant resources to create flower borders, flower walls, flower walls and other features of the landscape.

5. Conclusion

According to the results of the investigation and evaluation, the following suggestions are proposed based on the local ecotourism.

① Create the most beautiful rural garden with characteristic ornamental plants.
② Create characteristic rural kitchen with characteristic edible plants.
③ Develop a green and healthy economy and open up a way to keep healthy.
④ Develop characteristic plant industry of Baima Mountain.
⑤ Strengthen the protection of protected plants, ancient and famous trees inside and outside the Nature Reserve.

In the establishment of natural ecological reserves, the people in the area must be done due diligence. The establishment of the natural ecological reserve is not only for the purpose of protecting the ecological environment, but also for the combination of the people in the region and the reserve, so as to achieve the purpose of harmony between man and nature. In this way, the original ecological environment can be protected, and the advantages of the protection zone can be utilized to develop the economy of local residents, so as to resolve the contradiction between the protection zone and the...
people.

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