

Research on the Landscape Design of Leech Delta Riverside Park Based on Coupling Ecological and Geographically Cultural Factors

Xiaodong Fang

Bo Wen College OF Management of Guilin University of Technology, Guilin 541006, China

332850191@qq.com

Keywords: Ecological landscape, The rule of coupling, Riverside Park, Landscape design

Abstract: According to Guilin's development planning requirement of the construction of humanistic service system, building diversified tourism products during 13th Five-Year, in this paper, an investigation is did on the status of island beach landscape around Li Jiang, and a research is conducted on the landscape design of Leech Island Riverside Park by coupling the development research strategy of ecological park landscape and regional culture. In this paper, a new method is proposed that by adjusting the local conditions, reducing the design, using the plant's self-restoring ability, supplementing the artificial landscape, and integrating the regional culture to do the landscape design, which will provide new ideas for the landscape improvement and function upgrading of riverside parks around the Lijiang River, and provide a new urban natural environment ecological landscape planning and design method.

1. Introduction

Guilin is located in the northeast of the Guangxi Zhuang Autonomous Region. It is an international scenic resort which is famous in the word for its unique karst landform and the clear and beautiful Lijiang River water. Guilin is low in latitude but have clearly four seasons. The rainfall and the light is abundant in Guilin because it belongs to the subtropical seasonal wind climate. The Lijiang River in Guilin is the main tributary of the Pearl River. The river is clear and has rich tourism resources. On the west side of the Lijiang River, there is an island which is located in the northern part of Guilin, between the Yushan Bridge and Fulong Island, and is about 5.3 hectares. The inhabitants of the island have a living of fishing, and some residents set up wild fish restaurants along the river. In recent years, due to the lack of supervision mechanism and management, the residents of the island operate restaurants without business license and discharge pollutants into the Lijiang River, which has polluted and destroyed the ecological environment of the Lijiang River. And the noise generated in these restaurants seriously interferes with the residents' lives. All the pollution destructing the ecological environment of the Lijiang River.

2. The landscape of Leech Island

Leech Island has its name due to the shape of land area which is similar to leech. The island is located on the west side of the main waterway of Lijiang River in the northern part of Guilin. The island is a long strip extending southeast and its north is Yushan Bridge. The 500 meters downstream of the Leech Island is the entrance of the wooden Dragon Lake, which is one lake of water system in Guilin. This island and downstream Fulong Island and Zi Island together form the essence landscape of the section of the Lijiang River in the urban area .In the early years, the residents in the Lijiang River have a living of fishing and boat transport. With the development of the economy, residents of the island started to set up fish restaurants for economic benefit. At its peak, there were more than a dozen fish restaurants on the island. In order to increase the income of the restaurants, a simple floating bridge and a variety of signs are set up at the door of each hotel. Environmental pollution, sewage discharge, stinking, noise pollution has become synonymous with the Leech Island.

3. The ecological park planning of Leech Island

The construction of Binjiang ecological park in Leech Island is intended to follow the concept of ecological landscape construction, integrate into the regional traditional culture of Guilin, and adopt the "coupling" method of planning and design. On the basis of making full use of natural resources, we should grasp the ecological restoration of the park, the renewal of the landscape environment, the reconstruction of the regional cultural concept, carry forward the historic culture of the Guilin area. So the unique natural features and geographical advantages of the Leech Island and Lijiang River can be recovered, and that can make the ecological park of the Leech Island become an important scenic spot of the Lijiang landscape corridor and the bond that has the cohesion of the city.

In the planning and design, the design of the coupling of ecology and regional culture should be put in the first place, according to local conditions, respect for the culture of the Guilin, the four elements of the present situation, ecology, culture and art should be associated [1]. The whole environment of the Lijiang River should be considered as a system and Leech Island is a subsystem of the system. In the planning and design, the "compatibility" of the Lijiang River water environment and the landscape of the bank, the river levee and the wharf on the island should be increased, and the coupling development should be made by using the design elements of the water and land in order to improve the environment ecology of the Leech Island. The site landscape planning should maximize the integration of current roads, greening and water resources on the island, and optimize the allocation of existing dock and bank landscape resources with the least human intervention to achieve the goal of the island waterfront ecological design, and build a ecological, green and recreational space. The design principle can be used to carry forward the existing design elements of the site, deal with other landscape elements of the site, and make the island park into a comprehensive Binjiang ecological park with various functions such as leisure and recreation, ecological environmental protection, regional historical and cultural display and so on

4. Design principles

4.1 To adapt to local conditions and maintain the integrity of the site

The riverside landscape planning and design of Leech Island should be carried out in accordance with the characteristics of the environment of it and adapt to local conditions. The site planning and design should be based on the historical material to shows the culture of the Leech Island, excavating the historical and cultural connotations of the Lijiang River, Leech Island and Fulong Island, improving the natural landscape value and the quality of the ecological environment, making the park construction not only connecting the regional culture of the Guilin City, but also meeting the demands of citizens' sightseeing and leisure activities [2]. The Binjiang ecological park of Leech Island is an important organic part of the Lijiang River water system. Its landscape design must plan the direction of the development of the site and the tourism development project based on the whole of the Lijiang River. The construction of the Leech Island Park will promote the development of the landscape of Zi Island and Fulong Island, and promote the transformation and development of the tourism quality of the Lijiang River in Guilin.

4.2 To innovate the landscape space and stimulate the vitality of the site

Leech Island, the main open space of Qixing District, Guilin City, has an important value in Guilin City. In the planning and design, under the comprehensive consideration of the site, the site elements are thoroughly investigated and analyzed. From the perspective of the development of the city section of the Lijiang River, the local environment of the city is reintegrated to create the environment of the Binjiang Park which is in line with the modern city life. At the same time, from the functional characteristics of the Lijiang River and the Leech Binjiang Park, through the space, the factor coupling and the benign development, the citizens and visitors can return to the ecology and feel the nature. In the design, the potential of the waterfront resources and the value of the resources should be excavated, and the creative, functional, layout, art, and signs should be used in the design.

Efforts should be made to improve the landscape quality of Lijiang City by coupling strategies.

4.3 The principle of reduction - design and rational utilization of protection resources

Leech Park is one of the most natural sites in the Lijiang River, and one of the most important scenic spots in Mulong Lake, Diecai Mountain and Fubo Mountain. The island is rich in ecological resources and has an important landscape position. Therefore, the principle of the ecological landscape design should be followed by the the landscape design of leech park. Using the "coupling" design strategy between the island site and the various elements, the principle of reduction - design, utilizing and protecting the resources according to local conditions is designed to be built into a river landscape, raw leisure, cultural tourism and daily leisure. It will set these functions into the urban space of the body. The design should minimize human intervention and restore the island's ecology and vegetation to make the park a resource-saving, environmentally-friendly, cultural and environmental ecological park, and effectively protect and utilize natural resources and artificial plant vegetation communities. The planning and design should provide opportunities for the tourism development of Leech ecological park. Modern science and technology, advanced engineering technology, local plant and high quality materials should be adopted to save investment and make the project feasible. On the basis of fully protecting the greening resources of Binjiang water ecological environment and vegetation, the rational human intervention and exploitation are carried out by using the concept of reduction design to minimize the impact of the construction project planning and design on the Leech Island and the surrounding landscape environment. And it is easy to implement in stages, so that the design scheme is flexible.

5. The landscape design strategy of Leech Island Landscape

5.1 The coupling of Binjiang landscape design project and Leech delta site

The strategy for coupling the project with the site is to plan and design a project that is suitable for the construction of the Leech ecological park in a specific area of Leech Island. Binjiang landscape design content fully coupled with the site, so that we can make the project development scientifically, reasonably and sustainably. After the project is coupled to the site, the preliminary planning drawings can be generated after the sub projects are identified. In the preliminary formation process of the planning general plan, the design elements in the site should be studied and analyzed, and the relationship between the design elements and the site should be coupled on this basis.

5.2 The coupling design of space, ecology, culture and site of Leech delta

The four main elements of coupling design for the urban Binjiang ecological landscape are space, ecology, culture and function. The coupling between the elements and the site environment will affect the environment of the whole island, and the elevation, orientation, drainage and island of each element from the macro landscape structure to the basic site factor level. By means of GIS analysis and other methods, we can fully recognize the site and complete the evaluation study of suitability and ecological sensitivity.

5.3 Multi- scheme optimal selection based on coupling design

The process of using coupling method to study the landscape construction of Binjiang ecological park in Leech Island is the process of site evaluation, coupling degree evaluation, project suitability evaluation and scheme optimization. In the process of project selection, the coupling evaluation strategy should be used to consider the different design schemes. The Binjiang Park, which has small ecological disturbance to the site, small damage to the site greening, conforming to the ecological design concept, is the basic principle of evaluation. The process of scheme optimal selection should be objective, and more scientific comparison should be made between the designs schemes to find the best solution to the environmental improvement of the island.

6. Design theme and design ideas

6.1 Design theme

To design the landscape project of Binjiang ecological park in Leech Island, the proper choice of the theme is particularly important. The Guilin Development and Reform Commission suggested that the Leech Island should be built into an ecological green park, locating the park as an ecological, green and open space. By gaining experiences and drawing lessons from the construction project of the first phase of Zizhou Park in Guilin City, combining with the city government's needs for the transformation and development of tourism during the 13th Five-Year, the landscape transformation design project of Leech Island is positioned as an open ecological park, the theme of the design is Binjiang ecological park. This Binjiang Park is positioned as an urban open green park that reflects the historical features and characteristics of the times and echoes the Lijiang River, Fubo Mountain, Diecai Mountain and Fulong Island Landscape Area, making it a strong spatial form that has superior riverside ecological environment of the Lijiang River urban section and strong regional culture of Guilin.

6.2 Design ideas

The planning and design of Binjiang ecological park in Leech Island should be closely linked to the theory of landscape planning and design of the ecological park, carry forward the historical and cultural traditions of the Lijiang River, respect the regional context of the Lijiang River, and inherit the culture of the people on board, and the park is connected with the landscape of Yushan bridge, Fulong Island, Mulong Lake, Diecai Mountain and Fubo Mountain park to form a continuous space in public space [3]. The physical landscape elements of Leech Island should include waterfront landscape, landscape sketches, greening, waterscape, waterfront embankment, bank, wharf and other structures. The spatial and morphological relationships between the above landscape elements should be integrated and developed, and the Binjiang regional planning and design methods should be used to strengthen the smooth visual contact and accessibility of urban waters; pay attention to the sharing of banks and banks in function, let the citizens enjoy the waterfront area; Binjiang regional design should fully consider the requirements of flood control, design a good drainage system, and gradually form the unique natural style and historical accumulation of Lijiang urban section that can effectively maintain the good identification of landscape City and get the general recognition of the public and tourists [4].

7. The overall landscape design

After the project is coupled to the site, the preliminary planning drawings can be generated after the sub projects are identified. In the preliminary formation process of the planning general plan, the design elements in the site should be studied and analyzed, and the relationship between the design elements and the site should be coupled on this basis. The current architecture, vegetation and road is thoroughly analyzed, and the integrity and adaptability of ecological construction are fully recognized. It should be carefully study that the coupling of material landscape and site (landscape architecture, landscape sketches, cultural relics, roads, etc.) and the coupling of cultural landscape and site culture (regional characteristics, historical culture, customs, ethics, religious belief and so on) and it should be fully considered that how to do the overall layout of the layout of the relationship between the functions and what function to build [5].

On the Leech Island, there are a large number of unlicensed wild fish restaurants. More than a dozen poor floating bridges are in the west side of the Island. In addition, the flow of water in the west side is less and the flow rate is slow. The large amount of domestic waste produced by the fish restaurants is accumulated in the river, and the residential district on the west side releases the living sewage to the river at will, making the water body very nutritious and very stinky. Therefore, it is necessary to clean up the river course along the west side of the riverside of Leech Island in the design, to treat the polluted water, and at the same time, to change the sewage discharge status and

clean the downstream water quality through the treatment of the sewage pipes in the surrounding residential areas. Optimize the ecological environment of the river, pay attention to the comprehensive treatment of river sediment, the restoration of natural ecology and environment of water body, and make the water quality clear in a short time through the river purification and the reparation of the bank.

The plant design of the Leech Island should strengthen the design concept according to local conditions, highlight the strategy of reduction-design, and make use of the original plants for ecological restoration. The layout of each landscape node should take full consideration of the ecological restorability of the plant to minimize the disturbance to the ecological balance of the island and create a suitable space for survival and reproduction for the plants. The Binjiang ecological landscape project of Leech Island should have an open network of traffic along the river. Each design element should be connected with each other, making the design of the road become an extension of the waterfront area. Attention should be paid to road alignment, pavement design, road alignment and classification. We can integrate the bridges and road projects leading to the island and combine the bicycle lanes, the pedestrian Green Road and the Leech Island. Such treatment can increase the openness of the island landscape along the river, can attract people, make people easier to like this river, and achieve the purpose of the openness of ecological Green Park.

8. Summary and Prospect

At present, the landscape planning and design of the Binjiang ecological park in Guilin City shows a complex development model with multiple functions and various targets, which is also one of the main trends of the development of the ecological park landscape in Guilin. According to different planning projects, how to get along well with different functions and different target systems is an important problem to be solved in the construction of Binjiang ecological park. The landscape planning and design strategy of Binjiang Park based on the coupling development emphasizes the harmonious symbiosis between the planning site and the design elements. The present "coupling" method is used as the research method and expression strategy of the landscape planning and design of the Leech Ecological Park, which is applied in the different space and scale landscape planning and design project. These planning research and prospect has brought adaptability and feasibility for the coupling development model that ecological landscape combined with regional culture in the riverside space design of the Lijiang River.

In this paper, the landscape of the Binjiang Park of the island in Guilin City is planned based on the concept of ecological landscape, the regional traditional culture of Guilin is integrated into that, and the coupling design strategy is used to carry out specific analysis and planning. It is expressed in this paper that the landscape designer should respect the history, culture, local environmental factors of the Lijiang River and respect the unique ecological environment of Leech Island. It should break the formalism of the design thought in planning and design, and let the ecological landscape and the regional culture of the Lijiang River be coupled in order to avoid the single landscape design. In the overall design, the design concept should be innovated, and the design ideas should be clarified. It should be our design goal that mining deeper and forming the landscape of Binjiang Ecological Park, that landscape will more in line with the characteristics of Lijiang River basin and will make sustainable development of landscape and natural ecology. In view of the characteristics of the urban waterfront landscape, combined with the design strategy of "coupling concept", it breaks the previous landscape design from a single level which create a one-sided view of Binjiang landscape. Coupling is a method that emphasizes fully understanding and respect the objective environment of Leech Island and mastering the use of the flow dynamics of the Lijiang River when the design scheme evolves. Rational construction of ecological bank, dock, and the landscape design nodes on the island combined with the natural order and elements of the Lijiang river flow, the design of the island water, vegetation and other design elements of the rational use of the whole island to improve the quality of the island's ecological environment. When the environment in the island is designed, the designer should taking the idea of "reducing" design, fully respecting the present situation of the

vegetation in the island, using reasonable artificial means to plant trees at the base of the original trees, and making the scientific beautification of the greening landscape in the design. Because of the multidisciplinary nature of project design, the geography of urban design, landscape, plant design, site design and other knowledge system is used to meet the needs of the Binjiang landscape construction in the new period, and promote the rational development and repair of the riverside block.

At present, many excellent planning cases have been formed in the landscape planning and design of urban parks in riverside, which is worth learning from. But in the process of large-scale and mass planning design practice, there will be some problems, such as the blind pursuit of large scale landscape, the urban image project which aims at the promotion of economic benefit, the consciousness of regional landscape is not strong, and it does not pay attention to the protection of the ecological system and many other questions. The author hopes that through this planning prospect, the paper can provide a reference for the benign development of Binjiang City Park and waterfront space in Guilin City in the future, and do a little effort to construct the ecological and pleasant city Binjiang space system, and guide the landscape planning and the development of Guilin City Park as the theme of the landscape and regional culture.

Acknowledgements

This work was funded by Guangxi Department of Education Program of improving the basic ability of young teachers in Colleges and universities (KY2016YB819, Study on the Application of Ecological Landscape concept in Landscape Design of Guilin City).

References

- [1] Yu ning cheng, Theory and method of modern landscape design, Southeast university press, 2010, pp.113 ~ 145.
- [2] Yi Deng. Design method of urban ecological park, China construction & industry press (2007).
- [3] Ding Yuan, Waterfront landscape design, Higher education publishing house (2010).
- [4] Information on http://www.gldrc.gov.cn/fzgh_9489/201603/t20160301_566893.htm
- [5] Siqi Zhang, Research on urban waterfront landscape design based on river ecological restoration concept (2009).