

Exploration to the construction pattern of Wetland Park---Taking Haizhu Wetland Park as an example

Yan Lv, and Shao Ping Guan*

School of Design, South China University of Technology, Higher Education Mega Centre, Panyu District, Guangzhou, China

Abstract. China has been increasingly attaching importance to the construction of wetland parks. But at present, the design methods adopted by most of the domestic wetland parks constructed are sameness, with a short construction period, neither taking into account of the land usage and surrounding environment of the land, nor in-depth land design and mostly the study is from the angle of comprehensive planning or focus on the design of some special projects (such as plant arrangement). In this way, the ecological restoration of the wetland and the minimal intervention in the design of the wetland park cannot be truly realized, nor integration of regional characteristics, resulting in low ecological, landscape and economic value of the constructed wetland park. Some wetland parks have been abandoned once again due to their isolated habitat. This paper aims to probe the construction pattern of wetland park in China. Through the study on the typical cases of wetland parks at home and abroad and taking Haizhu Wetland Park as a major example to reflect on the construction and development of wetland park in China.

1 Introduction

Nowadays, the construction and conservation of wetlands have been generally paid much attention. In recent years, an increasing number of wetlands have been constructed in China. As an important ecological remediation means, the construction of wetland park is the optimal path to conserve wetlands and give play to the multi-purpose function of wetlands. But how can we truly realize the maximization of wetland protection and wetland utility?

1.1 The status quo of wetland park in China

The construction of wetland park, as a significant means of wetland conservation and ecological restoration, has been developed rapidly in China in more than a decade, which has become hot spots especially in recent years. A large number of wetland parks have been built across the country. By the end of 2017, there have been 898 national wetland parks (including pilot projects) in the whole country, a total of 258 were officially opened after

* Corresponding author: shpguan@scut.edu.cn

the acceptance inspection, of which, the well-known practice cases include Xixi Wetland Park and Poyang Lake Wetland Park. The construction trend of wetland park embodies the increasing attention to wetland protection in China, yet the construction of wetland park in China is still at the exploratory stage, so a lot of problems are still existed in its concrete construction process.

1.2 There are general issues in the construction practice of wetland park

The primary and essential goal for the construction of the wetland park is to protect the wetland habitat, restore ecosystem, etc., and basically, all the practice will also claim like that. However, for most of the wetland parks, these problems have not been settled. And they have not achieved the goal of protecting biodiversity and carrying out ecological restoration through planning and design or technology application with positive attitude and effective achievements[1], which deviates from the original intention of the construction. The problems in construction are generally reflected in the following aspects:

- It is not well disposed for the disturbance of human activities to wetland organisms: most of the parks do not really solve the interference of human on birds and other wetland habitat animals, so as to realize the minimum intervene to the organism in the block;
- The science popularization education is insufficient: the science popularization education for the conservation of biodiversity in the wetland park is merely reflected in some exhibition halls, which does not enable people to truly establish the awareness of organism conservation;
- Landscape has been attached importance in the construction: For most of the wetland park construction, it focuses too much on creating landscape value but ignores the original intention of building wetland park;
- The design is predominantly sameness: mostly vanity projects, without on the basis of regional features;
- After completion, it cannot give economic benefits to the the plot around: most of the domestic wetland parks are routinist in construction, and they are neglected in management after completion, and it fails to promote the surrounding environment and the economic value through the construction of the wetland park.

All these points result in the weak construction significance of most existing wetland parks.

1.3 The research on wetland parks in China is less

The theoretical basis for guiding the ecological restoration and construction and development of wetland parks in China is not adequate. At present, there are no laws and regulations on wetland protection in China. The domestic “Management Measure of Wetland Park”, “Planning Guideline of Wetland Park”, “Construction Standard of Wetland Park” and “Check and Acceptance Method of National Wetland Park” are all development-guided in wetland park from the planning level[2], while the “Guidelines for Urban Wetland Park Design” only gives the major principles of wetland park planning and design, and fail to elaborate the construction means and other details of wetland park. There are few theory books on wetland research in China.

1.4 Research significance and objectives

The construction trend of the wetland park, the situation with the universal problem that is insufficient synchronization with is weak in study and extensive in practice, all indicate the

importance of promoting wetland park research. The construction of wetland park should be integrated with ecology, science popularization, leisure and culture.

2 Examples of excellent wetland parks

The wetland park can be divided into urban wetland park, suburban wetland park and exurb wetland park according to the relationship between the site selection of the park and the city[3]. The geographical position of the urban wetland park is relatively superior, which also causes the relatively large pedestrian volume involved in the urban wetland park. It requires more attention to coordinate with the surrounding plot, and the economic value that it can bring and the impact on the city are higher than other wetland parks. The construction of urban wetland park has more factors to be considered than other ones, The wetland park can be divided into urban wetland park, suburban wetland park and exurb wetland park according to the relationship between the site selection of the park and the city. The geographical position of the urban wetland park is relatively superior, which also causes the relatively large pedestrian volume involved in the urban wetland park.

In the construction of urban wetland park, there are many good cases, and the construction of London Wetland Park and Hong Kong Wetland Park is very worthy of reference.

2.1 London Wetland Park

London Wetland Park is built in metropolitan center, just 4.8km from downtown London.

On the basis of the habitat and hydrological characteristics of species, the park is set to be relatively independent for each area, taking into account the different environmental requirements of breeding and reproduction of various species. As a public place, London Wetland Park is undoubtedly open to the public. In order to realize the purpose of wetland park construction, it is inevitable to consider the harmonious coexistence of "people" and the creatures in the plot.

How can visitors observe wildlife at close range without disturbing the rest of the creatures? The solution to this problem in London Wetland Park is to disperse stream of people and design the streamline sequence for people stream. Definite dynamic and static partitions are set up in the park to separate the stream of people from the visitor center, undoubtedly, the small-sized people flow has relatively low disturbing force on the environment. Tourists visit through various winding paths and are guided to the static and dynamic zones in the park successively. Through the dual experience in dynamic and static zones, tourists can comprehend the value of wetlands and cultivate their awareness of protecting biodiversity subjectively[4].

2.2 Hong Kong Wetland Park

The design of Hong Kong Wetland Park is similar to that of London Wetland Park, which is also a way to gather and disperse people to reduce the interference of people on the block. Beyond that, in the design of Hong Kong Wetland Park, the design idea of environmental protection is highlighted. In the processing of building and other details, environmental protection materials are used in large, which greatly improves the service efficiency of energy[5]. Noise isolation design is also ubiquitous in the park, and all of these practices achieve the minimum interference from visitors to the block.

2.3 Case summary

The construction of the above two wetland parks embodies the respect for nature and humanity in the design, and the point of strength for the design is on ecological remediation. Meanwhile, the construction of the two parks not only lift the environmental quality and ecological restoration of the land within the plot, but also significantly boost the environmental quality of the surrounding area. By reselling the surrounding site, the real estate developers promote the land value and achieve win-win results.

3 The probe for the construction mode of wetland park---taking Haizhu Wetland Park as an example

3.1 Basic information of Haizhu Wetland Park

Haizhu Wetland Park, located in Guangzhou, is the largest wetland park in the central urban area of megacities in China, which is honoured as “Guangzhou Wetland”. Haizhu Wetland Park is very advantageous in geographical location, lied on the new central axis of Guangzhou. The unique geographical position of Haizhu Wetland Park also signifies that itself can create economic value for the region and even the whole city. However, the improvement of this economic value cannot be achieved at the cost of damaging the internal environment of the wetland park, nor can it occupy the land within the wetland park to build profitable architectures.

Haizhu park has a lot for reference in the process of construction. Superior geographical location results in the pedestrian volume into the wetland park is ineluctably large. Therefore, more emphasis on should be laid on the principle of minimum interference to the natural background of wetlands through design.

In the construction process of Haizhu Wetland Park, in line with the principle of minimum interference to the natural background of the wetland, the people filament lines that can minimize disturbances to the land parcel are set up. For example, the design of the path avoids the main habitat of the organism[6], and adopts the approach of aerial trails in areas with high ecological sensitivity, as well as the approach of structures, such as building bird watching house to accelerate people’s understanding of wetland organisms. All these approaches, from the design of optimized paths and functional zoning, taking the path of static and dynamic zoning as sequential progression, allow visitors to establish the awareness of protecting species subjectively between static and dynamic.

3.2 Optimization measures for Haizhu Wetland Park

In China, the construction of wetland park is still in the exploration stage, and the designers concern more on ecological restoration and landscape value, but overlook that the wetland park also needs the integration of local culture.

Haizhu Wetland Park has taken notice of blending in local features on the basis of reconstructing its ecological background, such as the entrance memorial archway, which shows Lingnan characteristics, and the pavilions in the wetland park are also adopted Lingnan architectural style. Yet, in addition to this, Haizhu Wetland Park still lacks the expression of Lingnan culture.

As the wetland park should pay more attention to ecological restoration and put emphasis and foundation on ecological restoration, it is not recommended to build a large number of structures for the purpose of constructing regional features. However, the regional features can be reflected from the facilities of landscape. Through the reconstruction of landscape facilities, the wetland park is integrated in local characteristics on the basis of ecological restoration. For example, the construction of trash cans

promoting Lingnan culture and the laying of floor tiles with Lingnan culture will make the tourists tour in them, with interest and pursuit. It can publicize Lingnan culture in details, thus the Haizhu Wetland Park is blended in local characteristics. Moreover, besides reflecting Lingnan cultural characteristics from the plant configuration, it can also be incarnated from the unique Sangji fish pond in Lingnan. Setting Sangji fish pond as an experience area can not only play the role of popular science and leisure, but also achieve the role of cultural publicity.

3.3 Wetland park construction promoting park city interaction

Because of the special geographical location of Haizhu Wetland Park, it means that Haizhu Wetland Park cannot only meet the ecological restoration, and the impact of it on the economic value of surrounding plots is also huge. On the foundation of wetland background repair and wetland protection, local features can be integrated to increase landscape benefits, accordingly, to attract more tourists and improve the surrounding environment quality, making the value of the Haizhu Wetland Park plot itself and surrounding plots enhance. As a result, the real estate developers will invest more energy and capital to create more value for the whole city, and meanwhile, the government will truly realize the economic value of the wetland park as well. The protection of wetlands is not only to awaken public awareness of conservation, but the government also plays an important role. In this way, the government will have more “impetus” to spend mind and energy on the construction of the wetland park and intensify efforts to promote ecological conservation. The construction of the wetland park can further accelerate the interaction between the park and the city, and embody more significant ecological and social benefits in ecological restoration and urban image promotion.

4 Conclusion

The construction of wetland park can intensively embody the ecological, economic and social benefits. In addition to restoring the ecology and maintaining the regional ecological balance, the environment of the region can be improved so as to boost the economic value of the surrounding land, and science popularization education can be conducted to the society as well. Therefore, the construction of the wetland park is particularly crucial. Majority wetland park construction is not based on local characteristics, and most of the wetland parks built are vanity projects. The government should also strengthen the control over the construction of wetland parks, and build wetland parks that can truly regulate regional climate and balance regional ecology, so as to maximize the benefits of wetland parks. This can make the constructed wetland park not only elevate the environmental quality of the plot, but also enhance the economic value of the surrounding area, to achieve better interaction between the park and the city.

Acknowledgments

The work is supported by “the Fundamental Research Funds for the Central Universities” (project number: XMS17).

References

1. Yurui Liu, Research contents and problems of Urban Wetland Parks. *Jiangxi agriculture* **17**(2017)

2. Yinyu Liang, Study on Design of Wetland Park in Pearl River Delta. *South China University of Technology, Guangzhou* (2015)
3. Shengyong Wang, Xiaoyan Wang and Yanbo Sun, Understanding and discussion of Wetland Park classification. *Journal of Shandong Forestry Science and Technology* **4**(2007) p95-96
4. Jinghua Bu and Yang Wang, Function Mode and Design Conception of London Wetland Center. *Huazhong Architecture* **2**(2015) p103-105
5. Ruifang Lin, Concepts and Principles of Planning for the Hong Kong Wetland Park. *Wetland Science and Management* **1**(2006) p51-54
6. Technical Approach to Ecological Restoration of Guangzhou Haizhu National Wetland Park. *Wetland Science and Management* **12**(2016)