

# Study on Coordinated Development Planning of River Cultural Heritage Restoration and Landscape Ecology in Liao-shen Area

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**Abstract:** Rivers are the longest living belts between land and sea, and their bodies of water are mobile and have their own ecosystems, which maintain the circulation of organic matter and the conservation of energy on Earth, has the extremely vital function in the earth civilization history. With the frequent human activities and the high level development of society, the ecological nature of rivers has been eroded and threatened. The revival of the cultural heritage of rivers and the restoration and protection of their ecological landscape have become the inevitable requirements of social development, it is also an important manifestation of sustainable development. Based on the study of the relationship between the concept of river natural life and river cultural life and the protection of river ecological landscape, the landscape design strategy of river ecological protection and restoration in Liaoshen area is obtained.

## 1. Introduction

Water is the source of life, is one of the important elements of urban system. The river is the main body of the river system, by each single river composed of the river network into the river, including the main mainstream and the branches of the mainstream, the final flow into the ocean for the outflow system, on the other hand, it flows into inland lakes or wastelands.

### 1.1. River natural life

The natural life of river means that river, as an important part of the earth water system, has the characteristics and attributes of river ecosystem. The flow state of a river is an important indicator of river life, and non-flow can not be called a river. Each river produces different runoff changes in the four seasons of the year and has different discharge in different spaces. River is a functional integrity, structural stability of life, and a relatively stable value.

### 1.2. River cultural life

River cultural life is explained from a philosophical point of view, which has an impact on human spiritual and material life. In the history of human civilization, the river cultural heritage is not only a natural phenomenon, but also a belief and pursuit of the harmonious development of man and nature, which embodies the humanistic spirit of the river on the philosophical level, even philosophical ethics. In today's cultural development, many works of art and folk customs, there can be a river for the evolution of human civilization. The city river also bears the function of cultural commemoration and display of shaping the city characteristics. For a long time, the river merges into the city life, which not only shapes the city's physical form, but also shapes the city's cultural spirit, reflects the historical accumulation of the city.

### 1.3. Landscape Ecology

The landscape ecology was proposed by the German geographer Troll. It is a comprehensive theory of the interaction between ecology and the types and spatial forms of landscape units. As a corridor in the urban landscape, the function of the river will be affected by the input of fertilizer to the farmland, and the patch of the river will change.

#### **1.4. The relationship between River culture and ecological landscape**

River culture and ecological landscape are closely related. The ecological environment of river directly affects the visual effect of landscape, and good ecological environment is also an important prerequisite for excellent landscape. In the design of ecological landscape, the participation of human activities is indispensable, and the mode of human activities has more or less influence on the ecology of the environment. The significance of the existence of landscape ecology is to solve the above-mentioned problems, the internal relationship between the balanced use function and the cultural connotation makes the internal ecological function of the river more closely integrated with the external landscape representation, and provides a more scientific theoretical basis for the expression of the landscape.

### **2. The expression of Liaoshen River culture in Landscape Ecology**

To promote the ecological development of urban landscape by river culture is the upsurge of urban renewal in Liaoshen City. At present, every city is doing its best in river management, not only for the purification of its ecological environment, but also for the improvement of its ecological environment, at the same time, in order to restore the vitality of humanity, we must grasp the value and connotation of the river cultural heritage and harness it through landscape ecological restoration, the river landscape in Liao-shen area has its own characteristics and cultural affinity.

#### **2.1. Liaoshen River Cultural Heritage Protection**

Inheriting and protecting the cultural heritage of Liaoshen River is an important way to improve the quality and taste of the river, and it is also an important idea to shape the image of the river. In the protection of river landscape ecology, it is very important to accurately grasp the content of river culture, which can be expressed through landscape techniques.

To protect the river culture, it is necessary to excavate the classic cultural elements, to integrate the Chinese traditional culture into the river landscape, and to promote the landscape is also a kind of innovation. Based on its ecological function, the river culture in Liaoshen Area should refine its cultural elements, find its historical points, protect its cultural heritage from all angles, and study its historical and cultural attributes in depth.

#### **2.2. The construction method of Liaoshen River Ecological Landscape**

##### **2.2.1. Build an ecological barge**

The ecological construction of river barge should consider the ecological relationship between water and land, the main aim is to stabilize the barge, prevent soil erosion, filter sediment and so on. The ecological construction method of river revetment in Liao-shen area can be protected by different revetment types, and the connection degree between water body and land will be different with different revetment types, can make the soil more stable, the aquatic plant has a certain barrier effect, but the strength is not great, to effectively ensure the retention of rainwater and pollutants, can increase soil mounds to maintain stability, such as soft revetment, the concrete stone revetment can protect the basic function of revetment. This kind of revetment is mainly suitable for the place where the river flow is rapid and the water level changes greatly, and belongs to the hard revetment. The above two kinds of revetment can be combined and interspersed to diversify the revetment form, enrich the landscape effect, increase the aesthetic ornamental value and superimpose the ecological effect.

##### **2.2.2. Ecological greening measures**

As a key element in the ecosystem, the selection of plant species is very important. We should follow the law of nature and choose tree species suitable for the growth of Liao-shen area, can plant poplar, willow, maple and other water conservation, moisture-resistant, fast-growing tree species. Most of the river landscape ecological value in Liao-shen area comes from the planting of aquatic plant and wet plants. It is more conducive to the purification of water bodies and the application of

aquatic plants in wastewater treatment, it is necessary to absorb pollutants and purify water as soon as possible, and it is better to select plants with fast growth and developed roots, such as Reed, Calamus, etc.. Some projects also need to sterilize the water, adsorption of heavy metals to reduce pollution, the use of shallot, bleaching, water hyacinth and so on. The selection of plant species should be based on the selection of aquatic plants with ecological functions. In order to improve the ecological landscape of wetlands, water pollutants need to be removed.

### **2.2.3. Rain garden**

Rain Gardens are not only a means of ecological landscape construction, but also an important way to protect river culture, by means of wet ponds and sunken green areas to retain rainwater resources, so that rainwater retention, rainwater purification is carried out by aquatic plants, and the aim of rainwater purification is achieved by storing water for a long time.

### **2.2.4. Ecological landscape public facilities**

To set up some ecological landscape pieces in the river area, such as the landscape gallery, chairs, landscape walls, etc.. The main use of ecological and environmental protection of natural materials and recyclable materials-based, local materials, reduce construction costs, make the public facilities in the site not only have cultural characteristics, but also have landscape attributes. Facilities are the main carrier of cultural communication. To display the river cultural symbols in landscape sketches is not only a kind of popular science expression, but also an important means to display the river cultural theme.

### **2.2.5. Permeable pavement**

The permeable pavement is also the permeable pavement, which is mainly used for the inflow of both sides of the river system, the pedestrian walkway and the Riverside Road surface which bear less load, and the permeable cushion should be laid on the roadbed to reduce the runoff. Some areas can not use permeable pavement of the ground, according to not less than 0.5% slope to the surrounding green or permeable pavement. Many rivers in Liao-shen area are close to traffic roads, therefore, the ground elevation on both sides of the road can be reduced appropriately, and some small diversion ditches can be built on both sides of the road, so that the rainwater on the road can be divided from the middle to the two sides, the runoff flows into the nearest recessed green space.

## **2.3. The construction method of Liaoshen River Ecological Landscape**

The expression of river culture is mainly through the extraction of elements, using its symbolization or literalization in landscape sketch or paving design, for example, the content of river culture as a poem to be displayed in sketch, or the river culture of the story or transmission routes designed as relief wall, so that the construction of environmental space is a cultural context and heritage. The plants in the ecological landscape belt of the whole river select the plant varieties with cultural themes, and the theme of each landscape space is linked by the river cultural characteristics and some representative folk culture, link the entire sequence of spaces. The combination of river cultural elements and landscape design is not only a kind of artistic expression, but also the importance and cultural energy of people to feel the revival of river cultural heritage through aesthetics.

River culture can also be expressed through symbolic means, which are often used in Chinese garden, mainly through some artistic treatment, to express the characteristics of river culture, the use of symbolic means, it can make the process of landscape expression simple and profound, create a deeper artistic conception on the basis of re-viewing the landscape entity, enhance the expression of the landscape, enhance the landscape art effect.

## **3. The strategy of coordinated development of river culture and landscape in Liaoshen area**

### **3.1. Pass on the cultural context, shaping the symbiosis and co-prosperity of people and rivers**

At present, our country attaches great importance to the inheritance of culture, which also

requires us to re-examine the river culture, and should have cultural self-confidence for the inheritance of river culture in Liao-shen area, and guide people from the political, economic, institutional and other angles to explore the river culture. Taking the river culture as the main body, it occupies an important position in the landscape ecological governance of the river environment, and establishes the harmonious relationship between people and the river, also embodies the river culture and landscape ecology coordinated development planning of important ideas.

### **3.2. Create a new image of river culture, create an ecological river landscape**

River is an important water-friendly space for human beings, and the perfect walking system is an important node to improve people's quality of life, so that the public can understand the significance of natural ecology and cultural heritage. Through the design of various landscape elements, including greening, water treatment, lighting, paving, recreational facilities, to create a new service for the citizens of the Ecological River Landscape Zone.

### **3.3. Integration of landscape resources, strengthen the popular science of river culture**

In the river landscape area to establish a comfortable experience area, and set up some propaganda column, the construction of popular science education and learning base, in the river can observe the natural landscape, a variety of biological, the bird species that frequently inhabit the Liaoshen River area can be made into science popularization display boards to popularize scientific knowledge for people, and river culture promotion can also be carried out regularly by the river, the river landscape belt will be developed into a cultural and creative industrial park, showing the unique cultural connotation of Liaoshen area, thus driving the development of the whole region.

## **4. Conclusion**

The living environment of human beings can not be separated from the water source, the spiritual life depends on the natural and beautiful ecological environment, and the river in the city is an important base for human production and life. River cultural heritage has become the main achievement of the combination of landscape ecology and river ethics research and practice, and the revival of river life will also become the inevitable requirement of sustainable development society. Although ecological landscape design can not improve the environment fundamentally, but has an important role in ecological education, which embodies the essence of cultural heritage. We should display the image of the beauty of the river's own ecosystem and its cultural life in front of the whole city. The Liaoshen River, as an environmental element of the urban development in Liaoshen area, is also the main driving force for the birth of life and the development of urban civilization. Through excavating the connotation of the river culture and protecting the landscape ecology, the historical resources are protected, and the river landscape design in Liaoshen area is carried out from the angle of the river ecology restoration and the River Cultural Heritage Revival, so that the city and river together symbiosis co-prosperity, more ecological sustainable, harmonious symbiosis of benign interaction complement each other, coordinated development.

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## **References**

- [1] Pabst W.Naturgemaesser Wasserbau[J].Schweizer Ingenieur und Architekt,1938, 33(12):361-366.
- [2] Seifer A.Naturnaerer Wasserbau[J].Deusche Wasser Wirtschaft,1983.33(12):361-366.

- [3] Service R F. Will busting dams boost salmon [J]. Science, 2011, 334(6058):888-892.
- [4] Chen Yunxia, Xu Youpeng, Li Jiajun. Analysis of ecological function and ecological construction of urban rivers. Journal of Science and Technology, 2006, 22(3):299-303
- [5] Yan Shuiyu, Wang Xiangrong. The significance and application of Urban River in urban ecological construction. Urban Environment and Urban Ecology, 1999, 12(6):36-38
- [6] Chen Xingru. Research progress on River Ecological Restoration at home and abroad [J]. Journal of Aquatic Ecology. 2011, 05:122-128.
- [7] Gao Jia Lai, Feng Ze Shen, Gao Yang, etc.. River near-nature assessment i-method and application [M]. Beijing: China Water Conservancy and Hydropower Press. 2010:110-135.
- [8] Jing Yanwen, Hu Xiuling, Xu Zhilan, Liu Hucheng. Research and demonstration of water remediation using biological floating bed technology, 2003, (6):20-22
- [9] Liu Xiaohai, Gao Yuntao, Chen Jianguo, Zhang Junli. Application of artificial aeration technology in River Pollution Control, Yunnan environmental science. 2006, 25(1):44-46