

Study on Ecological Protection and Restoration of Urban River Landscape from the Perspective of Ecological Civilization

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Abstract: Urban river is the lifeblood of a city and the foundation on which people depend for survival. Driven by the urbanization process, the city scale is expanding and the population is increasing. However, the process of urbanization is bound to be accompanied by the deterioration of urban ecological environment. Developing and harnessing urban rivers is related to the improvement of people's living quality along the coast and the development of urban economy. Urban rivers are closely related to urban development, and the transformation of urban development and management ideas affects the management, development and utilization of urban rivers. It is an important part and basic content of ecological civilization to adhere to the principle that water resources should not be over exploited and polluted, to realize the sustainable use of water resources, to support the harmonious development of economy and society, and to ensure the virtuous cycle of ecosystem. Based on the analysis of the existing problems and causes of urban river development, this paper discusses the ecological protection and restoration strategies of urban river landscape from the perspective of ecological civilization, so as to provide development countermeasures for urban river development and utilization.

1. Introduction

As the lifeblood of urban development, urban river is an important basis for people's survival. Especially with the continuous innovation and development of urban construction, urban rivers play a crucial role [1]. Ecological restoration is a common method to improve urban river water body, which has been widely used. Urban river is an important factor of urban ecological balance and the green lifeline of a city. It has many functions, such as flood control and drainage, waterway transportation, water supply, tourism and entertainment, beautifying the environment, and maintaining the natural ecology [2]. Water ecological civilization refers to the ethical form of human water harmonious culture, which follows the concept of human water harmony, adheres to the principle that water resources cannot be over exploited and polluted, and takes the sustainable utilization of water resources, supports the harmonious development of economy and society, and guarantees the benign cycle of ecosystem as the main body. It is an important part and basic content of ecological civilization [3]. Ecological civilization is a social form in which human society follows the objective law of harmonious development with nature, and human and nature coexist harmoniously, have a virtuous circle, develop in an all-round way, and prosper continuously [4]. Under the development concept of changing the development mode, adjusting the industrial structure and ecological civilization construction, many cities in China have entered a new period of river development and utilization, which has aroused the exploration and thinking of water ecological civilization, river ecological ethics and river comprehensive development and utilization from all walks of life [5].

With the development of urbanization, many rivers have been cut straight and channelized seriously, which further damages the ecological diversity of urban rivers [6]. It can be seen that there is an urgent need for ecological landscape restoration design of urban river to alleviate the pressure of urban river. Rivers are so important to the development of modern people and cities, and in the rapid development of urban river environment, and people's awareness of environmental protection is not strong enough, it highlights many very serious environmental deterioration problems [7]. In the process of urban river regulation, we should not only focus on technology and

management, but also comprehensively and objectively analyze the actual situation of the river from the perspective of the ecological value and ecological civilization of the river itself, and then carry out ecological regulation [8]. It is of great significance for protecting the ecological environment, promoting the construction of urban ecological civilization and realizing the harmony between human and water to explore the Countermeasures of scientific development and sustainable development of urban rivers. Based on the analysis of the existing problems and causes of urban river development, this paper discusses the ecological protection and restoration strategies of urban river landscape from the perspective of ecological civilization, so as to provide development countermeasures for urban river development and utilization.

2. Basic principles of urban river landscape planning

People's production and life are closely related to urban rivers, but with the rapid development of economy and modern industry, the rapid expansion of the city, the urban river has been seriously polluted, and the river ecosystem nearly collapsed. On the premise of ensuring the safety of river flood control, the application of multi natural river management method has a good effect on the restoration of water quality and the maintenance of river natural ecology and natural landscape. The ecological restoration of rivers should not be limited to a single channel, but should consider the river basin as a whole. The construction of water ecological civilization should adhere to the development policy of giving priority to conservation and protection, and take water security, water environment governance, water ecological restoration, water economic development, water management implementation and water culture cultivation as the main framework to build a resource-saving and environment-friendly society with harmonious and sustainable development of human and water [9]. Excessive exploitation of groundwater leads to the decline of groundwater level, the depletion of water resources, the deterioration of ecological environment, and the gradual decline of water areas that people can rely on. People's idea of river management is to exploit and conquer the great natural. As a result, urban rivers become more and more artificial and lose their natural state. In the planning and construction of urban river landscape, while optimizing the river bank width and fully connecting with the urban green line, the unique hydrophilic facilities are planned to improve the relationship between people and water and shorten the distance between people and water.

To harness urban rivers with the concept of water ecological civilization and develop urban river landscape is to achieve the goal of naturalization, ecology, human culture and landscape of urban rivers, enhance the perceived value of rivers, promote the construction of water ecological civilization, uphold the concept of harmony between human and water, create flood control safety, ecological safety and create urban rivers with diverse landscapes. River ecosystem is also called river ecosystem, which belongs to a kind of water ecosystem. It refers to the ecosystem of river water body, which can promote the material circulation in the biosphere and link the ocean and land together as a link between the two. In addition to considering the nature and hydrophilicity, the construction of urban river landscape must also fully integrate the history and humanity into the natural landscape with the help of the city's historical spots and cultural heritage, enhance the historical and humanistic connotation of urban river landscape, and increase the characteristics and ornamental value of urban rivers [10]. In a healthy river ecosystem, the river itself has the function of self purification, which is affected by the river flow, flow velocity, water temperature, sediment content and the number of microorganisms. After pollutants enter the river, the self purification function of water body begins to play a role. After a period of time, the river ecosystem can return to the state before pollution. At this stage of river recovery, the decomposition products gradually tend to be stable. Due to the improvement of water quality, more oxygen can be dissolved in the water. Urban river landscape is an open public activity space, so that people can fully enjoy the fun of natural landscape. Therefore, the needs of different ages and groups should be taken into account in urban river planning.

3. Landscape design of urban rivers

3.1. Urban river landscape design function

When designing the river course plane, we should try our best to keep the natural curved shape of the river course, and the cross section of the river course should be folded and unfolded, without insisting on the same shape. The key to river section treatment is to design a waterway that can guarantee water all the year round and a riverbed that can cope with different water levels and quantities. This is especially important for the landscape design of northern cities, and it is an effective method to adopt compound section structure. The construction of coastal buffer zone can significantly alleviate the erosion of surface runoff caused by rainwater, effectively reduce the surface pollution sources formed in this process, not only hinder and decompose pollutants, but also prevent soil erosion and river blockage. Enhance the safety and stability of river bank slope protection, promote biological species diversity, change the nutrient enrichment of rivers, increase urban green space landscape, and improve the biological habitat environment and population environment [11]. Traditional urban rivers adopt hard cement bunds, which on the one hand limit the infiltration of water into the bunds along the river, and on the other hand make aquatic organisms lose their colony space, thus destroying the ecological environment of rivers. Urban ecosystem is a special artificial ecosystem built by human beings to process and transform the ecosystem in order to adapt to the natural environment. It is a comprehensive system and a unified whole formed by the interaction between urban residents and their surrounding environment.

Waterfront road design should combine road traffic, water traffic, waterfront buildings and water buildings organically in combination with the actual conditions of river reach, make overall consideration, and strengthen the connection between interchange roads and surrounding green spaces and service facilities, so that citizens can easily approach the water surface. The construction of water culture zone should focus on the protection of historical water cultural heritage, and introduce modern technology, culture and concepts into the construction of water culture to create and promote water cultural activities with water as the carrier. A city is an open system, which includes not only houses and other facilities for human life and urban development, but also water, air, fuel and other materials that can be obtained from the outside world. The organic integration of river landscape and urban landscape plays an important role in beautifying the urban environment and increasing the vitality of urban rivers.

3.2. Combination of river landscape and ecology

The landscape design of rivers should be based on the safety of flood control and drainage and follow the principle of "ecological priority". River ecological restoration is to rebuild the damaged ecosystem, restore its function, reproduce a natural and self-regulating ecosystem, and make it form a complete unity with the ecological landscape. The development and utilization of urban rivers should conform to the rational allocation of water resources in river basins and regions. On the basis of correctly analyzing various water consumption of urban residents, such as domestic water, industrial water, agricultural water, river ecological water, landscape water and other water, the available supply water sources of urban water systems should be fully investigated, and the available ecological supply water and basic ecological water consumption of rivers should be calculated and analyzed. Ecological landscape design should not only pursue the aesthetic feeling in form but neglect the restoration of ecosystem. Only the scientific combination of landscape and ecology can restore the damaged river ecosystem, ensure the healthy development of urban rivers, and provide people with comfortable leisure and entertainment space to meet people's spiritual and cultural needs.

In the planning and design of urban water landscape, the specific scope and form of water landscape plates, corridors and nodes in water surface, waterfront areas and river banks should be drawn up according to different spatial patterns of water landscape. According to the planning and layout of urban river system and the functional division of water landscape, the spatial pattern of water landscape should be analyzed, and the waterfront landscape should be emphasized. The waterfront should reflect the sharing and integrity, and strengthen the coordination with flood

control projects. The waterfront open space should form a complete network system with the open space system inside the city. Urban flood control channels are generally long in cities, which will show different forms according to the changes of urban forms, but their main functions are flood control and drainage functions, which play an important role in the process of urban construction and development.

4. Conclusions

Urban river landscape planning and design is the further requirement of current urbanization development. Ecological restoration is to use the knowledge of ecology, horticulture, aesthetics, planning and design theory and many other disciplines to improve the water environment and plant environment by various means and methods, so as to enhance the ornamental and ecological value of urban rivers. As an indispensable part of urban ecosystem, urban river has an inseparable relationship with urban development and people's daily production and living activities. Historical experience makes people realize that people can't transform nature at will, and only by achieving harmonious coexistence and common development between man and nature is the right choice and the only way out. Ecological restoration and landscape design of urban rivers is to combine the natural, historical and cultural landscapes of river waterfront organically under the principle of ecological priority, and to combine landscape design with ecological restoration, so as to fundamentally achieve the goal of "win-win". Urban rivers and urban development accompany each other. To guide and guide the construction of urban river landscape with the concept of water ecological civilization, to constantly repair and protect the urban water ecological environment, and to enhance the water ecological civilization are the foundation and lifeline for protecting human survival, and to create a sustainable and virtuous cycle of urban river landscape.

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