



Integrated Framework for Understanding Ecological Health Assessment Wetlands

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Description

Special consideration should be given to the differential coupling relationships between natural and anthropogenic factors on ecological degradation and ecological restoration. However, few studies have focused on how to quantify the contribution rate of social ecological interactions to vegetation growth and determine the impact thresholds of vegetation coverage at the county scale. Notably, it is more conducive to evaluating the impact of anthropogenic factors on vegetation coverage by integrating ecological land use policy into the research framework. This study combined remote sensing technology, as well as the Geo-detector model and elasticity coefficient to identify the key factors affecting ecological degradation and ecological restoration and quantitatively determine the impact thresholds from the aspects of climate change, topography, hydrological condition, human disturbance, and ecological land use policy. Under ecological degradation and ecological restoration, the threshold of altitude was 1500 mm, and the threshold of drainage density was 10 and 14, respectively.

Ecological Space Preference Development Scenario

The information from this study is expected to enhance the practical value of ecological research and provide an important reference for ecological standards and sustainable environmental management. Ecological network is an important landscape approach for biodiversity and ecosystem conservation. However, the lack of further spatial analysis and ecological zoning makes it difficult to implement ecological conservation and restoration measures based on ecological network. In this study, we proposed a framework for ecological zoning based on ecological network with a case study in Yunnan Province, China. The results showed that the ecological network in the study area was consisted of ecological sources with the total area. Key ecological nodes needed restoration to enhance the overall connectivity. Non-ecological network zone needed to be paid attention to local ecological conservation. The zoning framework based on ecological network can help to implement ecological conservation and restoration in light of local conditions. As a kind of sustainable landscape pattern, ecological network forms a network-based structure by protecting important ecological sources, ecological corridors and ecological nodes to improve landscape connectivity and protect regional ecological security, and has been widely used in biodiversity conservation, spatial planning, ecological protection and restoration,

and other fields Ecological sources refer to patches with important ecological functions in one landscape, providing habitat for wildlife and key ecosystem services for human beings With the rapid economic development and continuous growth of urbanized area, the ecological status of rivers is undergoing profound changes, especially in the plain river network area, which will have a negative impact on the sustainable development. In order to systematically evaluate the ecological status of rivers, the river ecological status of rivers of 21 main streams and tributaries in Jiangsu Province was evaluated in the context of urbanization in this article. A system of river ecological evaluation indexes and the evaluation model for plain river network area were built, with 4 indexes of aquatic environment, natural ecological system, social service function and water management and protection, as well as 12 pieces of divided criteria. The ecological status of these rivers in Jiangsu Province was assessed as a case study, and 71.4% were deemed to be in good condition. Simultaneously, we investigated the fluctuations in river ecological status under different levels of urbanization, as well as the relationship between river ecological status and ISC, to investigate the link between urbanization and river ecological status. The results showed that, rivers' ecological status deteriorates as urbanization levels rise, and there is a significant negative correlation between urbanization level and comprehensive index, water quality, riparian vegetation coverage, the embankment compliance rate, and the water quality compliance rate in water function areas. Furthermore, according to the linear fitting results, the reference value of the ISC red line of river ecological quality from good to medium, directing the ecological river building and urbanization planning Rivers are the source of life and the foundation of human activities. With the advancement of urbanization, people have carried out a great deal of exploitation and utilization of rivers in various ways. However, the excessive transformation and channelization of rivers, sluice control projects, and the discharge of a large number of industrial and agricultural pollutants have also affected the ecological status of rivers to varying degrees as a result of unreasonable river usage, water pollutants, inadequate ecological water and shrinking aquatic surroundings have been seemingly large, and river ecological problems are becoming an increasing number of distinguished. Aiming on the giant control troubles in ecological operation and ecological irrigation, this paper proposed a singular ecological irrigation technique ecological infiltration irrigation, and installed a multi-scale ecological operation version of reservoir group coupled with EII for the irrigation and restoration of river valley grasslands first off, the ecological available water substances in ecological intervals were acquired with the aid of long-time period ecological operation. Then, reservoirs on mainstream and tributaries accumulated flood peaks through actual-time ecological operation to create artificial ecological flood techniques. in the end, *via* the joint operation of EII tasks, the water degree of artificial flood was raised, and the synthetic flood become controllably brought into irrigation districts for the precision irrigation of river valley grasslands. The rationality of ecological operation model and the feasibility of EII era were then established through case analysis.

Wuhan Metropolitan Place

Consequences indicate that *via* the division of ecological irrigation districts, analysis of the ecological water demand, multi-scale ecological operation, EII generation and tasks, and other measures, suitable synthetic floods may be created and completely brought into

ecological irrigation districts to recognize the timely and appropriate irrigation of river valley grasslands; inside the essential ecological duration in 2018, the middle protected location changed into basically absolutely irrigated *via* EII, with an effective irrigation charge of eighty two.4% and a flora coverage of 74.8 %, which basically met the ecological water call for of river valley forests and grasses; and for animal husbandry, after the use of EII generation for grassland irrigation, the average forage yield of river valley grasslands has an growth of 25%, and the direct monetary advantage has an average boom of 18.9 million yuan consistent with 12 months, successfully improving the economic profits of local herdsmen. The research outcomes have critical theoretical and practical importance for the ecological protection and restoration of river valley plants. The contradiction among the ecological surroundings and economic development restricts the sustainable development of Wuhan Metropolitan Place (WMP). As a crucial service of the environment in WMA, the exchange of ecological area can efficaciously replicate the ecological environment of WMA. thus, based on numerous development needs and the Markov-FLUS version, this paper simulated the distribution of ecological space in WMA in 2035 beneath 5 scenarios, and discussed the characteristics of panorama shape and atmosphere provider value of ecological space under five one of a kind eventualities. The consequences show that the Markova-

FLUS version can nicely simulate the destiny distribution of ecological space in WMA. as compared with 2020, the size of ecological space below the natural improvement state of affairs, the balanced and coordinated development state of affairs and the Ecological Space Preference Development Scenario (ESPDD) increases, whilst the scale of the manufacturing space choice improvement situation and the residing area choice improvement scenario decreases in the 5 eventualities, the areas of ecological spatial exchange are predominantly focused within the primary urban vicinity of Wuhan, the urban creation location of Ezhou, Huangshi and Huanggang, and the Dabie Mountain location in the northeast of Huanggang beneath the have an impact on of human sports, the panorama structure of ecological area in WMA tended to be smaller in length, simplersize, less difficult in boundary, more dispersed in distribution, and more uneven. Water and wooded area land play a primary position inside the ecosystem service value of ecological space in WMA, accounting for greater than ninety five% of the fee, and normally play hydrological and climate law capabilities. The sustainable development and protection of ecological area under the BCD mode can offer reference for the coverage implementation of sustainable development of territorial space and local ecological safety in WMA in the destiny.