Planning, Design, and Practice of Village-level Forest Parks in the Context of Rural Revitalization: A Case Study of Xijiao Village, Henghe Town

Haiyan FAN, Ren CHEN, Boyang CHEN, Yan TAN

Guangdong Tamping Ecological Environment Co., Ltd., Huizhou 516100, China

Abstract Within the context of the rural revitalization strategy and the construction of ecological civilization, this study examines the village-level forest park construction project in Xijiao Village, Henghe Town, as an empirical case to investigate its planning, design, and practical implementation pathways. Drawing upon the distinctive natural landscape and local cultural assets of Xijiao Village, the research systematically addresses ecological conservation, functional zoning, and landscape development through vegetation transformation and infrastructure development, thereby comprehensively enhancing regional landscape quality and recreational functions. The project exemplifies that scientifically grounded and rational planning and construction can substantially improve rural living environments, foster the growth of rural ecotourism, and offer replicable planning models and practical insights for the development of village-level forest parks in comparable regions.

Key words Rural revitalization, Village-level forest parks, Planning and design, Practice, Henghe Town

1 Introduction

China is actively advancing the comprehensive implementation of the rural revitalization strategy. Ecological livability, as a critical component of rural revitalization, serves as a fundamental basis for achieving high-quality rural development. The establishment of village-level forest parks represents not only a significant measure to improve the rural living environment and enhance villagers' quality of life, but also an effective approach to embodying the principle that "clear waters and green mountains are invaluable assets" and facilitating the realization of the value of ecological products.

2 Project background and construction significance

2.1 Project background Xijiao Village encompasses a total area of 11.86 km^2 and possesses abundant forest resources, with approximately 600 hm^2 of forested land, providing a favorable ecological foundation for the development of the park. In recent years, the comprehensive advancement of rural greening, beautification, and living environment improvement has been significantly accelerated alongside the thorough implementation of the rural revitalization strategy. In 2022, the General Office of the Central Committee of the Communist Party of China and the General Office of the State Council issued the *Action Plan for Rural Construction*, which reiterated the importance of "vigorously promoting rural greening and beautification initiatives". This plan emphasizes the protection of ancient and notable trees, as well as the development of small and micro parks and public green spaces within villages, tailored to local conditions. The initiation of the Xijiao Village Forest Park project is both a tangible implementation of the directives and plans established by higher authorities and a public welfare initiative that addresses the local community's desire for an enhanced quality of life. However, the preliminary research of the project identified two primary issues. First, certain local areas exhibit a homogeneous forest structure, such as regions dominated exclusively by eucalyptus forests, resulting in minimal seasonal variation and limited ecological stability. Second, the village lacks adequate leisure service facilities, leaving residents without access to high-quality public spaces for recreational activities. Furthermore, the abundant natural and cultural resources, including ancient trees and mountainous and aquatic landscapes, have not been fully integrated or utilized, and the distinctive rural characteristics remain insufficiently emphasized.

2.2 Construction significance From an ecological standpoint, enhancing the regional biodiversity protection system through interventions such as forest form transformation, vegetation restoration and improvement, and the implementation of mountain closure for natural regeneration can, to a certain extent, improve the stability and functional services of the forest ecosystem, thereby reinforcing the role of the regional ecological security barrier. Concurrently, from a social perspective, these measures can offer local residents a high-quality environment for leisure, recreation, physical fitness, entertainment, and cultural education. This, in turn, facilitates increased communication and interaction among villagers, enhances their overall well-being, and strengthens their sense of belonging, cultural identity, and pride in the local heritage. Finally, regarding economic benefits, the development of the forest park can be aligned with the existing conditions of Xijiao Village, which serves as a cultivation base for valuable medicinal herbs such as *Santalum album* and *Dendrobium officinale*. By integrating the forest park with these distinctive resources, it is possible to promote rural tourism and leisure industries, including forest sightseeing, nature education, and ecological experiences. This integration is expected to attract tourists, generate employment opportunities, and enhance both the collective economic income of

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Haiyan FAN, bachelor's degree, forestry technician, research fields: implementation of forestry engineering projects.

the village and the individual earnings of its residents. Moreover, it supports the transformation of natural landscapes—characterized by green mountains and clear waters—into invaluable assets. The forest park can also serve as a model for nearby villagers to learn about sustainable ecological development and provide a reference for other local villages and towns, thereby facilitating the coordinated advancement of ecological construction and rural revitalization.

3 Planning, design and construction practice

3.1 Planning concept The project planning is guided by the principles of "respecting nature, preserving cultural heritage, and prioritizing human well-being". It employs an ecological design approach characterized by "minimal intervention", emphasizing the protection of the original topography, landforms and vegetation communities, and minimizing earthwork disturbances to the natural ecology to the greatest extent. Grounded in comprehensive research and analysis of local natural resources and the needs of villagers, the park is organized into four functional zones based on resource distribution and terrain conditions.

3.2 Functional zoning

3.2.1 Ecological conservation area. This area is designated for strict protection, primarily encompassing the existing dense forest and stream water systems. Apart from the establishment of essential patrol paths, no development or construction activities are permitted. The strategy of closing mountains for afforestation is employed to safeguard the habitats of wild fauna and flora, preserve the natural succession processes, and thereby function as the ecological foundation and barrier supporting the sustainable development of the park.

3.2.2 Core tourist area. This area is developed around the village's core resources, including historical and cultural relics, ancient and notable trees, and observation platforms. Through the design of tour routes and the creation of viewing spaces employing ecological methods, the natural heritage and cultural history of Xijiao Village are emphasized, constituting the central attraction of the park's landscape and cultural experience.

3.2.3 Leisure activity area. Areas within the forest that are relatively flat, open, and easily accessible have been selected for development. The planned construction includes a leisure square beneath the forest canopy, a simple fitness equipment area, a children's sandpit, and various amusement facilities. These features are designed to accommodate the diverse needs of villagers for daily social interaction, physical exercise, and parent-child activities. This area represents the most active public space within the park.

3.2.4 Management service area. The area is situated near the main entrance of the park and features essential supporting service facilities, including ecological parking lots, public restrooms, tourist service points (which also function as science popularization and information boards), and designated garbage classification collection points, all arranged in a centralized manner. The design of this area prioritizes both functional convenience and environmental sustainability, serving as a foundation for the efficient operation and management of the park.

3.3 Construction content and key technologies The project's construction activities are primarily focused on two core objectives: enhancing the landscape through greening and beautification, and improving functionality to enrich user experience (Fig. 1).

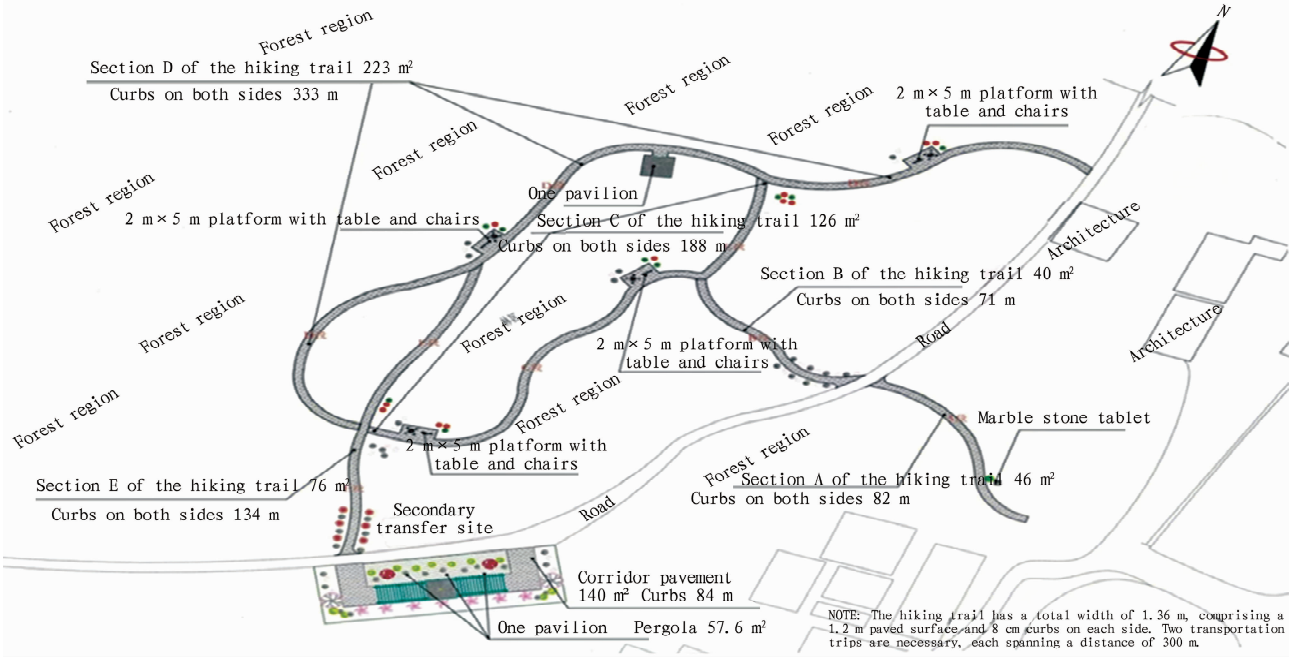

Fig. 1 Planning and design of Xijiao Village Forest Park

3.3.1 Vegetation landscape renovation and improvement. In response to the prevailing issues of monoculture forest composition, minimal seasonal variation, and inadequate ecological stability, a systematic plant landscape strategy aimed at "expansion, color enhancement, and efficiency improvement" has been implemented. The "expansion" approach is employed, which involves planting appropriate trees and shrubs along forest edges, forest gaps, clearings, and open areas with gentle slopes, utilizing available spaces without compromising the existing vegetation. Regarding the selection of tree species, *Ceiba speciosa*, *Bauhinia variegata*, *Plumeria rubra*, *Eugenia uniflora*, *Michelia figo*, *Ficus microcarpa*, and *Osmanthus fragrans* were carefully chosen due to their excellent ecological adaptability (as native or naturalized species) and their notable ornamental attributes, including attractive flowers, fruits, foliage, and fragrance. Regarding configuration methods, the traditional row planting style is replaced by a natural cluster arrangement to better simulate the natural community structure of plants. Emphasis is placed on integrating evergreen and deciduous species, as well as fast-growing and slow-growing plants, alongside creating undulating forest canopy lines and varied forest edge contours. The objective is to develop a near-natural plant community landscape characterized by rich coloration, diverse stratification, and distinct seasonal scenery, thereby comprehensively enhancing the region's biodiversity and aesthetic value.

3.3.2 Construction of recreational facilities and associated projects. The construction of recreational facilities and associated projects consistently adheres to the principles of "ecological priority, adapting measures to local conditions, and human-centered design".

(i) Mountain hiking trail system. To facilitate effective connectivity among various functional areas while minimizing disturbance to the ground surface, approximately 0.808 km of hiking trails have been constructed in accordance with the mountain's terrain. The pavement prioritizes the use of ecologically permeable materials, such as permeable stone or crushed stone, with a consistent width of 1.36 m, allowing two individuals to walk side by side comfortably. In hazardous sections, including steep slopes, sharp bends, and areas adjacent to cliffs, necessary safety guardrails and rest seats have been installed to ensure the safety and comfort of visitors. The route planning strategically utilizes existing mountain roads and fire lanes, optimizing and widening them to effectively connect various functional areas, thereby creating a convenient and comfortable circular tour route.

(ii) Landscape and recreational facilities. To improve the landscape aesthetics and functional services, two pavilions and one corridor have been constructed within the park. Their design and materials are harmoniously integrated with the surrounding natural environment, offering villagers sheltered spaces to protect against wind and rain, as well as areas to pause and appreciate the scenery. Additionally, a stone tablet has been installed to provide an introduction to the park and to reinforce its cultural heritage.

(iii) Supporting service facilities. An ecological parking lot, constructed using grass pavers, has been established. Additionally, classified garbage bins and other facilities have been installed to enhance the park's service functions and to maintain a clean and orderly environment.

4 Conclusions

Amid the rapid growth of forest and rural tourism, rural forest parks that combine scenic forest landscapes with distinctive rural characteristics are increasingly recognized as popular leisure destinations. These parks not only fulfill rural residents' desires for spiritual and cultural enrichment and a healthy lifestyle but also significantly contribute to the advancement of rural tourism, thereby enhancing farmers' incomes and promoting prosperity. The development of the forest park in Xijiao Village, Henghe, represents a concrete initiative and an active effort to implement the comprehensive objectives of the national rural revitalization strategy, which emphasizes "thriving industries, a pleasant living environment, civilized rural customs, effective governance, and prosperous livelihoods". Furthermore, this project offers valuable insights and serves as a reference model for other regions.

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