

Study on regional characteristics of plant landscape in yao village of longsheng county

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Abstract. Taking the plant landscape of Baimian Yao Village and Huangluo Yao Village in the regional environment of Longsheng Autonomous County as the research object, combing and analyzing the status quo of their plant species and plant communities, and combining the folk culture and living area of the minority ethnic group in Guangxi—the Yao nationality, it summarizes the characteristics of plant landscape such as the application of native plant varieties, the level of plant vertical landscape space, and the combination of plant application and folk culture. In order to provide theoretical and practical guidance for the future plant landscape construction in this area.

1 Introduction

Regionality refers to the comprehensive characteristics of a certain area under the influence of the natural environment, things and activities, and historical and social context^[1]. The time category of the concept of regionalism is variable, it not only refers to the comprehensive characteristics of a region in a specific space-time background, but also refers to the regional comprehensive characteristics presented by a region in the process of time, which has the characteristics of changing with time^[2]. With the development of globalization and the improvement of economic foundation, people's requirements for the quality of plant landscape are increasingly high, the highly distinctive garden plant landscape has become the aesthetic object that people expect, there is also mutual learning and reference in the construction of plant landscape between different regions. In this process, problems such as "one thousand cities, one side of the same landscape in different regions" appeared in the rural landscape design, so it is very necessary to develop and protect the regional landscape of garden plants^[3].

As one of the basic types of traditional settlements, the landscape features of ancient villages have been enriched with the historical process of human settlement activities^[4]. In the context of ecological civilization, the economy has driven the rapid development of tourism, due to the long-term effect of modern elements on the traditional ethnic minorities, the plant landscape in the traditional ethnic minority villages is affected by the urban and rural greening pattern, and deviates from the traditional construction method of ethnic local plant landscape. Minority folk villages contain rich ethnic history and culture as well as distinctive ethnic local features and features, they often form ethnic minority

villages based on the characteristic natural landforms and combined with their own living customs and cultural traditions. Therefore, to study the regional characteristics of plant landscape in a few folk villages is not only conducive to coordinating the development, protection and coordinated development of traditional ethnic villages, but also helpful to provide basic information and design ideas for local rural landscape planning and urban garden design.

2 Materials and methods

2.1 Overview of the study area

Longsheng County, located in the northeast of Guangxi, is a south subtropical monsoon climate zone^[5]. There is plenty of sunshine and rainfall, and the average temperature is 18.1 degrees Celsius. There are four types of soil: yellow brown soil, yellow red soil, red soil and yellow soil. Its zonal vegetation is dominated by subtropical monsoon evergreen and deciduous mixed forest, with diverse plant habitats and rich species^[6]. The forest coverage rate is as high as 76.9%, including woodland, shrubbery, forest and suitable woodland. Among them, economic forest is about 134,000 square hectares, accounting for 65.1%. The other ecological forests accounted for 34.9% of the woodland area. Due to the influence of human activities, the forest native vegetation stock is small, mainly composed of Moraceae, Camelaceae, Hamamelisaceae, Lauraceae, Araceae and other species of plants.

2.2 Survey contents and methods

Plant landscape is an indispensable part of environmental construction, and shows the overall plant style and

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landscape construction level. Taking into account the history, construction characteristics, conservation and management level of a few folk villages and other factors comprehensively, two typical plant communities with good effects in two folk villages were selected to take photos and draw the plan. The plant name, number (tree record, shrub and grass record tree/cluster number), plant community structure, DBH, crown width or tree degree, crown height and growth and development information in the survey area were recorded.

3 Results and analysis

3.1 The regional characteristics of plant species of Yao nationality in Longsheng

A field survey of plant species in two typical ethnic minority villages in Longsheng Autonomous County was

carried out, a total of 66 species of garden plants, belonging to 49 families and 62 genera, were counted. According to the distribution of families and genera in the region, the plants in the survey area are mainly subtropical species, mainly distributed in Moraceae, Camelliaceae, Araceae, Rutaceae. According to "Flora of Guangxi", the native plants and exotic plants in the tree layer accounted for 76% and 24%, respectively, according to the statistics of plant sources in the region; the proportion of native plants and exotic plants in shrub layer was 80% and 20%, respectively, the proportion of native and exotic plants in herbaceous layer was 88% and 12%, respectively. Therefore, in the plant landscape communities of Baimian Yao Village and Huangluo Yao Village, there are abundant and diverse native plants planted in the arboreal layer, and the proportion of exotic plants in the arboreal layer is large. The main native tree, shrub and herb species with high planting amount are shown in Table 1.

Table1. List of major native plant species.

A scientific name	Family name	Generic name	Life attribute
Eucalyptus	Myrtaceae	Eucalyptus	Evergreen trees
Osmanthus	Oleaceae	Osmanthus	Evergreen trees
Taxus chinensis	Taxaceae	Paclitaxel	Evergreen trees
Syzygium jambos	Myrtaceae	Syzygium	Evergreen trees
FicusbenjaminaL.	Moraceae	Ficus	Evergreen trees
Cinnamomum pedunculatum.	Lauraceae	Cinnamomum	Evergreen trees
Ficus microcarpa	Moraceae	Ficus	Evergreen trees
Cycas revoluta	Cycadaceae	Cycas	Evergreen trees
Trachycarpus fortunei.	Palmae	Trachycarpus	Evergreen trees
Lithocarpus corneus	fagaceae	Lithocarpus	Evergreen trees
Ailanthus altissima	simaroubaceae	ailanthus	Deciduous trees
Ovate Catalpa,	Bignoniaceae	Catalpa genera	Deciduous trees
Camptotheca Acuminata	Nyssaceae	Camptotheca	Deciduous trees
Hovenia acerba Lindl.	Rhamnaceae	Hovenia	Deciduous trees
Pterocarya stenoptera	Juglandaceae	Pterocarya	Deciduous trees
Magnolia denudata Desr.	magnoliaceae	magnolia	Deciduous trees
Liquidambar formosana	hamamelidaceae	sweetgum	Deciduous trees
Larix gmelinii	Pinaceae	Iarix	Deciduous trees
Diospyros kaki	Ebenaceae	Diospyros L	Deciduous trees
Ficus virens Ait.	Moraceae	Ficus	Deciduous trees
Glycosmis pentaphylla	Rutaceae	Mountain small orange	Small evergreen trees
Zanthoxylum bungeanum	Rutaceae	Zanthoxylum L.	Deciduous small trees
Aegiceras corniculatum Linn.	Myrsinaceae	Parmentiera	Evergreen shrubs or small trees
Ficus variolosa	Moraceae	Ficus	Evergreen shrubs or small trees
Ilex cornuta Lindl	Aquifoliaceae	Ilex	Evergreen shrubs or small trees
Lagerstroemia indica L.	Lythraceae	Lagerstroemia	Deciduous shrubs or small trees
Mallotus japonicus	Euphorbiaceae	Mallotus	Deciduous shrubs or small trees
Ficus pumila Linn.	Moraceae	Ficus	Evergreen shrubs
Camellia japonica L.	theaceae	Camellia	Evergreen shrubs
Ardisia crenata Sims	Myrsinaceae	Ardisia Swartz	Evergreen shrubs
Oreocnide frutescens	Urticaceae	Oreocnide	Evergreen shrubs
Gardenia jasminoides	rubiacaeae	gardenia ellis	Evergreen shrubs
Loropetalum chinense	Hamamelidaceae	Loropia	Evergreen shrubs
Malvaviscus arboreus	Malvaceae	Platanus	Small evergreen shrubs
Indocalamus tessellatus	The Grass Family	Indocalamus	Small evergreen shrubs
Ligustrum vicaryi	Oleaceae	Ligustrum L.	Semi-deciduous shrub
Celastrus orbiculatus	Celastraceae	Celastrus L.	Vines shrubs
Palhinhaea cernua	Rosaceae	Cotoneaster	Evergreen, deciduous shrubs
Desmos chinensis Lour.	custard apple familyln	Desmos Lour	Erect or climb shrubs
Dendranthema morifolium	compositae	Chrysanthemum	Herbs perennial
Rumex acetosa	Polygonaceae	Rumex	Herbs perennial

Typhonium giganteum	Araceae	Typhonium Schott	Herbs perennial
womb doix miev	Verbenaceae	Caryopteris	Herbs perennial
Baphicacanthus cusia	Acanthaceae	Baphicacanthus	Herbs perennial
Bothriochloa ischaemum	The Grass Family	Bothriochloa	Herbs perennial
Chrysosplenium grayanum	Saxifragaceae	Chrysanthemum	Herbs perennial
Pistia stratiotes	Acanthaceae	Pistia Linn.	Floating perennial herbs
Phragmites australis	The Grass Family	Phragmites	Herbs aquatic or wet for many years
Siraitia grosvenorii	Cucurbitaceae	Momordica	Perennial climbing herb
Senecio scandens	Composite	Senecio	Perennial climbing herb
Commelina communis	Commelinaceae	Commelina	Herbs of annual spreading
Lablab purpureus	Leguminous	Leguminosae	Annual twining grass lianas
Urena lobata Linn.	Malvaceae	urena	Erect subshrubby herbs
Eichhornia crassipes	Pontederiaceae	Eichhornia Kunth	Floating herb
Passiflora edulis Sims	Passifloraceae	passiflora	Careless qualitative fujimoto

It can be seen from Table 1 that the local plant resources in the counties and autonomous regions of Longsheng are not only rich in application, but also highly adaptable and of high ornamental value, which provides guarantee for the biodiversity and ecosystem stability of a few folk villages. While planting local plants in a reasonable way, the planting of exotic plants in a few folk villages also takes up a certain proportion. The exotic plants have been cultivated and domesticated for many days and months, and have been adapted to the local environmental conditions and shown a good growth state, they have played a positive role in enriching the biodiversity of a few folk villages and constructing the landscape of plant communities. The species of exotic trees, shrubs and grasses with high planting amount are shown in Table 2.

Table2. List of major exotic plant species.

A scientific name	Family name	Generic name	Life attribute
Casuarina equisetifolia Forst.	Casuarinaceae	Casuarina L.	Evergreen trees
Grevillea robusta	Proteaceae	Grevillea	Evergreen trees
Punica granatum	Punicaceae	Punica L	Deciduous trees
Prunus cerasifera	Rosaceae	Prunus	Deciduous small trees
Schefflera octophylla	Araliaceae	Schefflera	Evergreen shrubs
Bougainvillea spectabilis	Nyctaginaceae	bougainvillea	Vines shrubs
Fatsia japonica	Araliaceae	Illicium	Evergreen shrubs or small trees
Epipremnum aureum	Araceae	Epipremnum	Evergreen vine
Ricinus communis	Euphorbiaceae	Ricinus L	Herbs annual or perennial
Hymenocallis littoralis	Amaryllidaceae	Hymenocallis	Herbs of perennial bulbs
Crinum asiaticum	Amaryllidaceae	Crinum	perennial herbs

3.2 The regional characteristics of the plant community of Yao nationality in Longsheng

Plant community refers to the combination of all plants living in a certain area, which is formed by mutual influence of each individual plant through reciprocity and competition, and is the result of their adaptation to the common living environment. Each relatively stable plant community has certain species composition and structure [7]. In this study, the plant planting collocation in the two selected typical minority folk villages was investigated and statistics were made, and the community structure and ornamental characteristics were analyzed, and 8 plant communities with rich structure and high ornamental value were obtained (Table 3). As shown in Table 3, the plant communities in a few folk villages take native plants as the backbone tree species and exotic plants as the ornament, so that the composition of the plant communities can most intuitively express the natural plant landscape with regional characteristics.

Table3. 8 typical plant communities.

Main plant communities	Community structure	Main viewing season
liquidambar+Loro petalum safflower+ Schefflera+indocalamus+ castor+dayflower	Large tree + small tree + large shrub + small shrub + herb	Spring, summer, autumn, winter
Ficus lacor+ Lithocarpus corneus+ camellia+Gold waist+ Bothriochloa ischaemum	Large tree + small tree + herbs	Spring, summer, autumn
eucalyptus+osmanthus+ Sichuan Pepper + Xun son+Fatsia japonica	Large tree + small tree + small shrub	Spring, summer, autumn, winter
Cinnamomum japonicum+Aegiceras corniculatum+Mallotus+Urena lobata	Large tree + large shrub + small shrub	Summer, autumn

yulan+horsetail beefwood+Ilex pern -yi+Ficus variolosa+ HYmenocAllisSpciosia	Large trees + small shrubs + herbs	Spring, summer, autumn, winter
Purple Leaf Plum+ Ligustrum vicaryi+ gardenia+Malvaiscus arboreus+sen-ecio	Small trees + large shrubs + small shrubs + herbs	Spring, summer, autumn
Grevillearobusta+Mal- vaiscus arboreus+ Chrysanthemum	Large trees + small shrubs + herbs	Spring, summer, autumn
Syzygium jambos+ Cycas revoluta+Ardisia crenata+Celastrus orbiculatus+Oreocnide frutescens	Large trees + small shrubs	Spring, summer, autumn

3.3 Summary of regional characteristics of Longsheng Yao plants

Both Baimian Yao Village and Huangluo Yao Village have remarkable characteristics of native plants. In the application of native plants in the landscape, the two Yao villages have their own application principles and aesthetic characteristics. Is common, there are some regional plant application such as *osmanthus*, *liquidambar*, *Chinese beech*, *eucalyptus*, *fields* such as strong adaptability, growth in good condition of native plant species as the backbone, the plant landscape of the whole ecological function, decoration, space, define functions are rev to the leading role, showing LongSheng County living style and features. The application of some regional plants is unique and has certain aesthetic value and ecological significance, such as the application of fruiting plants such as *Orangeberry* and *Ardisia crenata*. For example, the preservation of wild vegetation, such as *Polygonum capitatum*, *climbing groundsel herb*, and *Cibotium barometz*, not only makes the villages' aesthetic features remarkable, but also shows the unique features of the mountainous areas of ethnic minorities. In general, the plant landscape inside the Yao Village in Longsheng County is different from the conventional plant landscape configuration in the general urban park and green space. The plant species selection is rich, the form is characteristic, and the scale and distribution are suitable for the internal space of the village.

4 Plant landscape characteristics of Yao Village in Longsheng County

Baimian Yao Village and Huangluo Yao Village are both villages with the characteristics of Yao style plant landscape, and are related to the folk culture and living area of Yao minority. Yao nationality is a minority nationality with profound historical and cultural deposits in China. The regional characteristics of its main living environment have created a variety of local plant species, and also increased people's application and love of plants.

4.1 Application of native plant varieties

Local plants are plants that are native to the region or have been introduced, cultivated and propagated for a long time, and have many advantages such as adapting to the local natural environment, maintaining the local ecological stability, strong growth adaptability and low maintenance and management cost^[8]. Moreover, some local plants are closely related to local legends, allusion and customs. In the greening of traditional villages, the application of native plant varieties is not only conducive to improving the local greening environment, but also can well reflect the regional natural characteristics and traditional local culture of a village. At the same time, because native plants have low requirements for living environment and are easy to survive, the cost of planting and maintenance is relatively low. Therefore, the construction of local plants as the main plant landscape has become one of the important development directions of gardens.

4.2 Plant vertical landscape space level

The rational collocation of plants not only makes the landscape spatial hierarchy diverse^[9], but also has different visual senses. Therefore, the plant landscape can be divided into four landscape levels, namely, large tree - small tree, large shrub -- small shrub, erect herbaceous - ground covering herbaceous. The top plants are mainly *Ficus* in *Moraceae* and *Phyllostachys gramineae*, which are mostly planted at the border of the village to construct the green skyline of Yaozhai. The second layer is dominated by small trees and large shrubs, mostly planted with evergreen or color shrubs and crape myrtle to highlight the seasonal image. The third layer is small shrubs and perennial, erect herbs, the plants are mainly ornamental (flower, fruit), medicinal type; the lowest layer for the floor of the herb can be eaten. Among them, the lianas are shade-resistant and climbing with other plants, while the lianas are sunny and climbing on the bamboo fence, so that the whole plant landscape is connected in series, presenting the stylized style of Yao Village.

4.3 The combination of plant application and folk culture

The application of plants in Longsheng Autonomous County is closely related to the culture and folk custom of Yao Nationality. They believe that the tree deity can protect the peace of the village, help the Yao people eliminate disasters and diseases, and bless the Yao people, so the Yao people have the traditional idea of worships trees. Especially for maple trees, Yao people think that maple trees are the incarnation of their ancestor Chiyou and their protectant god^[10]. In one of the main courtyards of the village, there is a sacred monument to be worshipped by people. Behind the sacred monument are towering ancient maple trees, which can not be damaged unless they are pruned by special personnel on festivals and festivals. In addition, the residents of Huangluo Yao Village pick wild plants with decorative effects in the garden in front and back of the house, forming a landscape

with Yao characteristics together with other landscape elements in the village, such as residential buildings, castellan rules and steles. The main plants such as *Cinnamomum camphora* and *eucalyptus* are known as "feng shui trees", which signify protection from evil spirits, longevity and good luck. There are also *Cedar* and *Ficus virens*, which symbolize good life and evergreen life. *Maple*, *Taxus chinensis*, *Lindera glauca*, *Musa acuminata*, *Momordica Grosvenori* and *Crassocephalum crepidioides* are all plants of Yao culture and folk custom in Yao village of Longsheng Autonomous County. The application of plants in Yao village in Longsheng autonomous county reflects the combination with folk culture and forms the unique plant culture and plant landscape in Yao village.

5 Conclusion

However, due to the development of tourism, the distinctive style of Yaozhai village has gradually disappeared, first, in the construction of public green space, the planting, variety and pruning methods of plants are the most common and most used in the greening of surrounding towns in these two areas, which destroys the original plant landscape ecology to a certain extent; second, with regard to the greening of the small courtyards in front of and behind the villagers' houses, since Longsheng Yaozhai itself is located in a mountainous region, the available construction area is limited, so the area of courtyards for residents is even more limited. The relevant local departments should strengthen the protection and conservation management of plants to avoid the encroachment of green space or plant space by infrastructure construction, especially in some plants and landscapes with characteristics, such as maple trees. In this perfect the construction of some characteristic regional landscape, and increase the application of native plant varieties. At the same time, combined with the garden characteristics of Yao people, the space of Yao village is decorated to interpret and show the Yao culture.

References

1. S.K.Xu, S.Q.Fang, Y.P.Gan. Tourism Destination Image Perception in Poor Counties: A Case Study of Longsheng Ethnic Autonomous County in Guangxi. *Journal of Nanning Normal University (Natural Science Edition)*, 36(04), 94-101(2019).
2. D.N.Zhang, L.W.Zhou, C.Y.Duan, X.X.Chen, W.He, Q.M.Teng, Y.J. Sun, Z.F.Zhang. Heavy metal content and potential ecological damage in soil and fruit of Monohan in Longsheng County. *Plant in Guangxi*, 9 (02), 243-250, (2021).
3. X.L.Sun, X.X.Huang. The expression of regional characteristics of waterfront plant landscape in Suzhou. *China Urban Forestry*, 17(03), 24-28(2019).
4. L.Wang, B. Gong, J.D.Zhao. Investigation and analysis of plant landscape in ancient village of Dangjiacun in Shaanxi Province. *Journal of Northwest Forestry University*, 30(06), 284-288(2015).
5. C.L.Qin, C.F.Qin. Reflection on the construction of greening plant landscape in Baimian Yao Village of Longsheng County. *Heilongjiang Agricultural Sciences*, no.09, 84-87(2018).
6. L.Zhou, L.Dong. Research on plant landscape characteristics of Xihua Garden in Kunming. *Guizhou Agricultural Sciences*, 39(02), 188-191(2011).
7. Q.Wang, B.Gong, X.Wang, J.Z.Sun. Research on regional expression of plant landscape in waterfront green space: A case study of Fenhe waterfront green space in Linfen City. *Journal of Northwest Forestry University*, 29(05), 227-231+242(2014).
8. S.H.Li. Construction of Plant Landscape Architecture Theory System Based on the "Three Talents of Heaven and Earth"--Research on Landscape Architecture Design Theory Based on the "Three Talents of Heaven and Earth" (II). *Chinese Landscape Architecture*, 27(07), 51-56(2011).
9. J.F.Zhou, Y.Ou, L. Zhou, X.C. Liu, R. Bao. Study on plant landscape and application in traditional villages of Dai nationality in Dehong, Yunnan. *Guangxi Botany*, 39(03), 346-358(2019).
10. J.C.Yang, J.K. Li. Long Shenghongyao. *Guangxi CPPCC News*, no.03(2010-06-05).