

Analysis of garden plant configuration and maintenance management technology

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Abstract: With the rapid development of society and economy, people's cultural levels is improving, and the demand for green space is increasing year by year. The construction of gardens and green spaces has become an important way to improve the quality of life. As a crucial part of landscaping, garden plant configuration and maintenance have been paid more and more attention by gardeners. Therefore, it is vital to find out and solve the problems in garden plant configuration and maintenance. Aiming at the current weak situation of the configuration and maintenance of garden plants in my country, this paper analyzes the problems existing in the configuration and maintenance of garden plants, and proposes corresponding solutions.

1. Introduction

The design concept of modern urban parks is no longer a simple mixture of gardens and forests, but a concept cultural and artistic atmosphere, which requires space and content to complement each other and coordinate development to improve the park's Aesthetic mood. Generally speaking, when arranging park plants, the lines, shapes and colors of the plants are required to be reasonably matched. Make plants compatible with the ecological adaptability of the environment, and they are required to show the beauty of color , form and artistic conception between individual plants and groups. However, the task of urban greening and beautification cannot be completed only by relying on scientific plant configuration, and the maintenance of garden plants is needed to realize the sustainability of plant landscaping, thereby improving the quality of the ecological environment and achieving the harmonious between man and nature. To this end, research has been carried out on the plant configuration of Nanchang's parks, taking six representative park landscape plants in Nanchang as the object of investigation. We discussed the optimal configuration and maintenance status of modern urban park landscape plants, and analyzed some problems existing in the park plant configuration in Nanchang. This paper put forward suggestions and countermeasures for the optimal allocation and maintenance of landscape plants in modern urban parks from the perspective of landscape aesthetics and ecology.

2. Current status of garden plant in Nanchang

2.1 Distribution characteristics of plant communities in parks in Nanchang

A. Types of plant communities

Combining with the special factors of urban park plant communities and related classification standards, the plant communities in this study are divided into 7 types (as shown in Figure 1) [1]. As shown in Figure 1, among the investigated plant communities, there are 2 evergreen broad-leaved forests, 1 deciduous coniferous forest, 6 deciduous broad-leaved forests, 12 mixed coniferous and broad-leaved forests, 1 palm forest, 9 evergreen and deciduous broad-leaved forests.

The number of sample

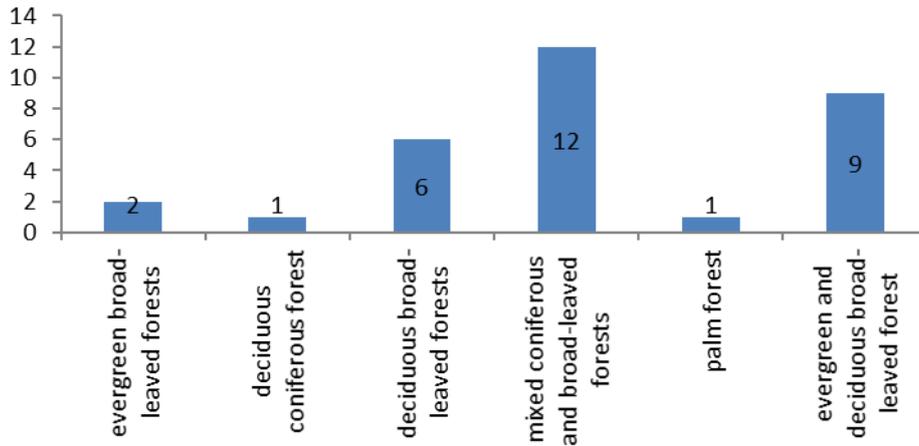


Fig.1 Types of plant communities in parks in Nanchang

B. The vertical structure type of the plant community

Vertical structure is called hierarchical structure or stratification. During the formation of plant communities, different plants have different adaptations to the environment. The different heights of leaves, branches, stems, and roots along the vertical ground direction and the depth of the soil occupy different spaces. The combined vertical structure of plant communities in the park is mainly divided into two types: single-layer communities and multi-layer communities [2]. The plant communities studied is mainly multi-layered communities, including arbor-shrub-grass type, arbor-grass type, shrub-grass type, arbor-shrub type and vine type (as shown in Figure 2).

The number of sample

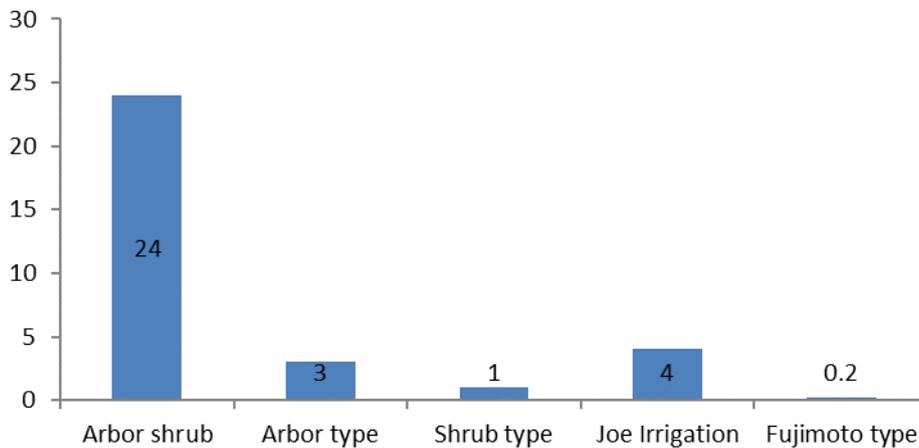


Fig.2 Type and number of plant communities' vertical structure in Nanchang City Park

C. The characteristics of the plant community composition in the parks of Nanchang City.

In the 32 plant community sample plots, families and genera are relatively rich in species. There are a total of 48 families, 65 genera, and 76 plant species. However, plant varieties are not widely, and native plants with local characteristics are less widely. The hierarchical structure of the plant community is dominated by trees, shrubs and grass, accounting for 75% of the surveyed communities. There are few humanized recreational facilities around the plant communities in the surveyed plots. Therefore, the plant community needs to add some humanized recreational facilities on the basis of openness, and improve the greenness of the plant community.

D. The landscape characteristics of the main ornamental plants in the sample plot

Table 1 shows the landscape characteristics of the main ornamental plants in the sample plot. From Table 1 it can be seen that the landscape characteristics of the main plants in the studied plant communities are diverse. The life form structure mainly includes deciduous broad-leaved trees,

evergreen broad-leaved trees and evergreen shrubs. The ornamental characteristics are foliage plants and flower plants, as well as a few plants with branches and stems, which fully shows that the ornamental types of plants in Nanchang City Parks are diverse. Among them, autumn ornamental plants are dominated by color-leaf plants, a total of 15 species; there are 19 main flowering plants in spring; and the ornamental types of summer plants are mainly evergreen plants.

Table 1 Landscape characteristics of main ornamental plants in the plot

Plant name	Life type	Ornamental characteristics	Ornamental season
<i>Taxodium distichum</i>	deciduous coniferous tree	leaf	autumn
<i>Acer palmatum</i> 'Atropurpureum'	deciduous broad-leaved tree	leaf	autumn
<i>Elaeocarpus decipiens</i> Hemsl	evergreen broad-leaved tree	leaf	autumn
<i>Osmanthus fragrans</i>	evergreen broad-leaved tree	flower fragrant	autumn
<i>Ancuba japonica</i> Thunb. var. <i>variegata</i> D'ombr	evergreen broad-leaved shrub	leaves	all year
<i>Ginkgo biloba</i> L.	evergreen broad-leaved tree	leaf	autumn
<i>Eriobotrya japonica</i> (Thunb.) Lindl	evergreen broad-leaved tree	leaves and fruits	autumn
<i>Punica granatum</i> L.	evergreen broad-leaved shrub	leaves and fruits	autumn
<i>Acer palmatum</i>	evergreen broad-leaved small tree	leaf	autumn
<i>Rhododendron</i>	evergreen broad-leaved shrub	flower	spring
<i>Swartzia</i> spp.	evergreen broad-leaved shrub	leaves, flowers spring	all year
<i>Fatsia japonica</i> (Thunb.) Decne. et Planch	evergreen broad-leaved shrub	leaves	all year round
<i>Salix babylonica</i>	evergreen broad-leaved tree	leaf	spring
<i>Michelia figo</i>	evergreen broad-leaved small tree	flower	spring
<i>Sapium sebiferum</i>	deciduous broad-leaved tree	leaf	autumn
<i>Koelreuteria paniculata</i>	deciduous broad-leaved tree	leaves and flowers	summer and autumn
<i>Phragmites communis</i>	grass	flower	summer
<i>Michelia alba</i>	deciduous broad-leaved tree	flower	autumn
<i>Iris pseudacorus</i>	perennial herbaceous flower	flower	spring
Lotus flower	perennial herb	flower	summer

Cedar	Evergreen coniferous tree	Branches and leaves	summer, all year
Lagerstroemia	deciduous broad-leaved shrub	flower	summer, winter
Phoenix orchid	evergreen broad-leaved shrub	flower, leaf	summer, autumn
Nantian bamboo	evergreen broad-leaved shrub	leaf	autumn
Japanese evening cherry	deciduous broad-leaved small tree	tree	flower spring
Longevity peach	deciduous broad-leaved small tree	flower	spring
Golden locust	evergreen broad-leaved tree	branch	winter
Purple leaf sandalwood	evergreen broad-leaved shrub	leaves	all year round
Camellia sasanqua	evergreen broad-leaved	shrub	flower winter
Trachycarpus fortunei	evergreen broad-leaved tree	leaves	all year round

2.2 Problems in plant landscape configuration

A. Blindly introduce and apply exotic plants

In order to pursue park quality, most parks in Nanchang City blindly introduce and apply plants from other places. There are few applications of local characteristic plants. This not only violates the plant cultivation principles, but also leads to the waste of people, property, and materials. And the expected landscape effect cannot be achieved.

B. The limitations of configuration

Most parks do not pay enough attention to the characteristics and rules of plant configuration, and the design methods are simple, which makes the park landscape lacking new ideas. Most of the park plants have monotonous colors and do not express the beauty of the seasons. The color-leaf and deciduous tree species are not used rationally [3].

C. The unreasonable community level

In the local community structure, there are too many levels of plants, which causes congestion as plants grow. Because each kind of plant does not have enough growth space, the plant grows into a deformed form, destroying the stability of the plant community structure. On the contrary, in some communities that need to enrich plant clusters, the plant hierarchical design has only trees and grass, which causes visual unsightly phenomenon [4]. Where plants need to weaken the facade of the building around the building, there are only two levels of palm plants and ground cover. As a result, a large area of the building facade is exposed, giving people a rough and rigid feeling, and lack of middle-level shrubs or small trees to decorate the building facade.

2.3 Problems in the maintenance process

A. Poor capital investment for maintenance

This phenomenon is the most intuitive manifestation of the maintenance work that has not received due attention for a long time. It is necessary to strengthen the awareness of the importance of maintenance to improve the status of maintenance in the construction of green spaces, and then drive capital investment.

B. The maintenance operation does not conform to seasonal changes

Conservation is not about watering the soil as soon as it dries and pruning immediately if the branches and leaves are too dense. It should be based on the growth characteristics of the plant, and

consider the impact of seasonal changes on plant growth at the same time.

C. Increasing the amount of pesticides casually

Pesticide prevention and control of pests and diseases is the most effective and convenient method in garden plant maintenance. To achieve the purpose of prevention and control, gardeners tend to increasing the frequency of pesticide or the combined pesticide that improves efficacy of prevention and control. However, long-term repeated use of a large number of pesticides will affect the reproduction of the soil microorganisms, resulting in reduced efficacy, and increased resistance to pests and bacteria, forcing the pesticides frequency increasing further. On the other hand, the superimposed effect caused by the combined multiple pesticides poses a threat to the ecological environment.

3 Suggestions for optimal design of plant configuration and maintenance

3.1 Improve plant configuration

A. The configuration should be ecological and constitute a plant structure with a reasonable layout.

Plant configuration should be scientifically guided by ecological knowledge, and take the harmonious coexistence between man and nature as a goal, with protection of the natural environment and maintaining ecological balance. The scientific rationality of the factory configuration is the ultimate goal. At the same time, to avoid affecting the growth of positive trees, no positive trees should be placed in the lower layer of the dense canopy.

B. Increase the variety of park plants and increase the diversity of urban park species.

With the continuous development and changes of park ecological gardens, modern urban parks have gradually transformed from traditional functions of rest, sightseeing, walking, entertainment, and fitness into functional models that protect the natural environment and biodiversity and maintain ecological balance. In the selection of species, not only should we attach great importance to the application of native tree species, but also scientifically introduce them to improve the diversity of plant species in Nanchang Parks, and pay close attention to the level of plant diversity.

C. Vigorously develop ground cover plants.

There are three main forms of ground cover plants in park applications: One is planting near the woods, and it is necessary to choose ground cover plants with negative tolerance, such as *Ophiopogon japonicus*, to form a park landscape with significant contrast effects [5]; The second is to select plants such as kudzu vines that have strong root systems, do not require strict soil fertility, and can spread quickly, and plant them on the shore or slopes to achieve the purpose of preventing soil erosion and maintaining ecological balance; The third is to plant some flowering plants, such as ground cover dianthus and celosia, to show the group effect of plants.

3.2 Effective measures to strengthen greening and maintenance

The completion of the garden project does not mean the end of the garden construction management. The greening and maintenance work are more important. Greening and maintenance work has a certain complexity, maintenance personnel must be patient and careful to carry out maintenance work, especially to master the growth habits of different plants, only in this way, we can provide a good growth environment for plants and promote the plants growth.

A. Strengthen landscaping maintenance and management.

One of the planting and transplantation points is that maintenance personnel need to reasonably determine the location of plants according to the actual situation of the garden project and plant habits. In the process of planting and transplanting plants, maintenance personnel must strictly follow relevant planting techniques to avoid damage to plants. The maintenance staff should strengthen the management to improve the survival rate of the plants after the plants are planted or transplanted.

B. Scientifically control pests and diseases

At present, Chinese gardens mainly adopt two measures: biological control and drug poisoning to carry out pest control. The maintenance personnel need to choose the corresponding control measures based on the actual situation of garden plants, and adopt the simplest control methods to

improve the survival rate of plants. Gardeners should avoid arbitrarily increasing the use of pesticides and reduce environmental pollution.

C. Strengthen the monitoring and management of plants

To maintain landscaping, it is necessary to design supervision department, and arrange for someone to regularly check the condition of the growth of landscaping plants, ensuring the green plants growth healthily. In addition, the management department should strengthen ties with other departments, and improve the maintenance level of garden projects through joint supervision of multiple departments, and urge more people to participate in the greening and maintenance work.

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