Resources Investigation of Indigenous Plants in Nanchang and Their Application in Urban Landscape

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Abstract: To improve bio-diversity in cities, we need to focus on indigenous plants in greening initiatives. In this study, the indigenous plants in Nanchang were investigated to analyze the current situations of indigenous plants in this region and their application in urban greening in Nanchang. The problems in using indigenous plants for greening in Nanchang City were analyzed and corresponding suggestions were made.

1 Introduction

Biodiversity is an essential condition for human survival, a basis of sustainable socio-economic development, and the guarantee of ecological safety and food security. Currently, nations across the world have been taking measures to address the crisis of global biodiversity. The biodiversity in cities is closely connected to plant diversity, and hence plant landscaping should rely mainly on indigenous plants, with introduced plants as supplements. Indigenous plants refer to the plant species native to the local region [1], featuring high adaptability, strong resilience, and convenient maintenance; they often do no harm to the local ecosystem and are likely to form regional landscapes. Many cities in China present identikit landscapes, as they introduce ornamental plants from other places and overlook the indigenous ones, which leads to a shortage of local specialties and reduces biodiversity. Nanchang boasts a rich range of indigenous plants, and landscape designers have encouraged use of these resources. However, heavy dependence on introduced species is still pronounced because the urban planners often pursue novelty, excellence, rarity and peculiarity in planning, but give short the indigenous plants short shrift. Thus, to understand the distribution and fully utilize indigenous plants is of great value for protecting the ecological well-being and biodiversity in cities.

2 Study area and research methods

2.1 Natural conditions of the study area

Nanchang (115°27’ – 116°35’E, 28°10’ – 29°11’ N) is located in mid-north of Jiangxi Province, in the lower reaches of Ganjiang River and Fuhe River, and on the southwestern bank of Poyang Lake. It is adjacent to Yugan and Dongxiang to the east, Linchuan and Fengcheng to the south, Gao’an, Fengxin and Jing’an to the west, and Yongxiu, Duchang, and Poyang to the north. Its maximum south-north stretch is 121 km, and the maximum east-west stretch is 108 km, with the Xiyaowu Hill in Xiyao Lake at the peak of Dianmei Mountain marking its highest altitude of 841.4 m. The area is dominated by Poyang Lake Plain, with mountains, hills, ridges and plains interwoven into the local geological fabric. The eastern and southern areas are flat, while the western and northern parts are dominated by hills. The region is watered densely by rivers and dotted by lakes and ponds. Nanchang is subject to the subtropical monsoon climate, featured by humidity and mild temperatures, sufficient sunlight, longer summers and winters but shorter springs and autumns. The average annual temperature is within a range from 17℃ to 17.7℃, with the highest temperature in history reaching 40.9℃, and the historically low temperature at -15.2℃. Situated in the subtropical area in the northern hemisphere, Nanchang is subject to the impact of East Asian monsoon, thus features a subtropical monsoon climate. In winters, the northerly wind dominates, and in summers the southerly wind prevails. The annual precipitation reaches 1600 – 1700 mm, with 147 – 157 raining days; the average days with rainstorms per year are 5.6 days, and the annual average relative humidity is 78.5%. The annual sunshine duration is 1723 – 1820 hours, and the average yearly percentage of sunshine is 40%, with June and August witnessing the largest percentage, while February and March marking the lowest percentage. The annual frost-free days are 251 – 272 days, which is favorable for growth of plants.

2.2 Investigation methods

Path investigations and key investigations were combined in this study to investigate the inside areas and the peripheries of Nanchang City. The peripheries involve the Meiling Forest Park, Shengshuitang Forest Park, and Xiangshan Forest Park. Inside the city, the investigated areas include large parks and gardens like

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Yaohu Lake Forest Botanical Garden, Aixi Lake Wetland Park, Bayi Park, People's Park, residential communities, organizations and roads with good greening effects. The investigation items include the types, features, biotope and the ornamental value of the plants. Fieldwork was conducted and statistical analysis was made, together with photo-shooting, recording and archiving.

3 Investigation results

3.1 Plant resources of Nanchang

In China, Nanchang is located in the northern part of the mid-Asian subtropical evergreen broad-leaved forest area, at the conjunction of the castanopsis, nanmu, and schima superba forests of mountains and hills in Hunan and Jiangxi Province, the castanopsis, nanmu, schima superba, and coniferopsida forests in the mountains and hills of Jiuling Mountain of the cultural vegetation region, the castanopsis, nanmu, and coniferopsida forests of the mid- and upper-reach of Jinjiang River and Yuanshui River, the castanopsis, nanmu and coniferopsida sub-forests of the lower reaches of Ganjiang River, Fuhe River, and Xinjiang River. The dominating plants include pines, cedars and camphor trees, the gingko renowned as "living fossils", metasequoia, as well as trees of Actinidia chinensis that is known as the "king of fruits".

Fieldwork investigation results and statistical analysis reveal that Nanchang boasts 1708 higher plants, dominated by timber woods and fuelwood forests. The major families of plants include species of the Fagaceae, Lauraceae, Rosaceae, theaceae, hamamelidaceae, Elaeocarpaceae, Euphorbiaceae, Aquifoliaceae, symplocaceae, and Poaceae.

3.2 Overview of the types of indigenous plants in Nanchang

According to the Flora of Jiangxi [2]-[4], the investigation results revealed that the indigenous plants in Nanchang include 129 families, 317 genera and 451 species, among which there are 14 families, 16 genera and 17 species of pteridophyte, 3 families, 3 genera and 3 species of gymnosperm, 112 families, 298 genera and 431 species of angiosperm, as shown in Table 1.

Statistical analysis shows that the greening plants in Nanchang belong to 125 families, 385 genera and 577 species. The indigenous greening plants in Nanchang include 58 families, 87 genera and 96 species of plants, 3 families, 3 genera and 3 species of gymnosperm, 52 families, 83 genera and 92 species of angiosperm. Among these categories, there are 6 families, 6 genera and 6 species of evergreen arbor trees, 10 families, 11 genera and 11 species of deciduous arbor trees, 6 families, 7 genera and 8 species of evergreen deciduous shrubs, 2 families, 2 genera and 2 species of evergreen vines, 4 families, 5 genera and 5 species of deciduous vines, as shown in Table 2.

Table 1. The components of families, genera and species of indigenous plants in Nanchang

Family	Genus	Species
Lycopodiaceae	1	1
Selaginellaceae	1	1
Equisetaceae	1	1
Osmundaceae	1	1
Gleicheniaceae	1	1
Lygodiaceae	1	1
Lindsaeaceae	1	1
Hypolepidaceae	1	1
Hemionitidaceae	1	1
Pteridaceae	2	2
Pteridiaceae	1	1
Athyriaceae	1	1
Blechnaceae	1	1
Dryopteridaceae	2	3
Pinaceae	1	1
Taxodiaceae	1	1
Cephalotaxaceae	1	1
Dicotyledoneae	1	1
Schisandraceae	2	3
Lauraceae	4	8
Ranunculaceae	6	11
Ceratophyllaceae	1	1
Berberidaceae	2	2
Lardizabalaceae	2	2
Menispermaceae	2	2
Aristolochiaceae	1	2
Saururaceae	1	1
Chloranthaceae	2	2
Papaveraceae	1	1
Fumariaceae	1	2
Cruciferae	2	4
Violaceae	1	4
Polygalaceae	1	1
Crassulaceae	1	3
Caryophyllaceae	3	3
Molluginaceae	1	1
Portulacaceae	1	1
Polygonaceae	3	7
Amaranthaceae	2	2
Geraniaceae	1	1
Oxalidaceae	1	1
Lythraceae	1	1
Onagraceae	1	1
Thymelaeaceae	1	1
Pittosporaceae	1	1
Cucurbitaceae	2	2
Theaceae	6	11
Actinidiaceae	1	1
Myrtaceae	1	1
Melastomataceae	3	3
Hypericaceae	1	3
Tiliaceae	2	2
Elaeocarpaceae	1	2
Malvaceae	2	2
Euphorbiaceae	9	16
Daphniphyllaceae	1	1
Iteaceae	1	1
Hydrangeaceae	2	3
Rosaceae	8	18
Mimosaceae	2	2
Caesalpiniaceae	1	2
Fabaceae	10	15
Stachyuraceae	1	1
Hamamelidaceae	4	4
Buxaceae	1	1
Salicaceae	1	1
Myricaceae	1	1
Betulaceae	1	1
Corylaceae	1	1
Fagaceae	5	9
Ulmaceae	3	3
Moraceae	3	8
Urticaceae	7	12

Family	Genus	Species
Cannabaceae	1	1
Aquifoliaceae	1	6
Celastraceae	1	2
Rhamnaceae	2	2
Vitaceae	3	5
Rutaceae	2	3
Simaroubaceae	2	2
Meliaceae	1	1
Aceraceae	1	4
Sabiaceae	2	3
Staphyleaceae	2	2
Anacardiaceae	2	3
Juglandaceae	2	2
Alangiaceae	1	1
Araliaceae	6	7
Umbelliferae	5	7
Ericaceae	1	4
Ebenaceae	1	1
Myrsinaceae	3	4
Styracaceae	2	4
Symplocaceae	1	6
Strychnaceae	1	2
Oleaceae	2	4
Apocynaceae	1	1
Asclepiadaceae	1	1
Rubiaceae	11	15
Caprifoliaceae	4	7
Valerianaceae	1	2
Compositae	23	27
Primulaceae	1	2
Plantaginaceae	1	1
Campanulaceae	2	2
Lobeliaceae	1	3
Boraginaceae	2	2
Solanaceae	1	2
Convolvulaceae	2	2
Cuscutaceae	1	1
Scrophulariaceae	6	6
Acanthaceae	2	2
Verbenaceae	5	8
Labiatae	10	13
Hydrocharitaceae	1	1
Potamogetonaceae	1	1
Commelinaceae	1	1
Zingiberaceae	1	1
Liliaceae	7	8
Smilacaceae	2	3
Araceae	4	4
Lemnaceae	2	2
Typhaceae	1	1
Iridaceae	1	
Stemonaceae	1	1
Dioscoreaceae	1	1
Juncaceae	1	2
Cyperaceae	7	12
Gramineae	19	24

Table 2. Statistical analysis results of indigenous plants in urban landscape in Nanchang

Plant name	Family	Genus	Latin name	Category
Masson pine	*Qinaceae*	*Pinus*	*Pinus massoniana*	Evergreen tree
Fir	*Taxodiaceae*	*Cunninghamia*	*Cunninghamia lanceolata*	Evergreen tree
Cinnamomum camphora	*Lauraceae*	*Cinnamomum*	*Cinnamomum camphora*	Evergreen tree
Sassafras tzumu	*Lauraceae*	*Sassafras*	*Sassafras tzumu*	Deciduous tree
Muskroot-like semiaquileg-ia herb	*Ranunculaceae*	*Semiaquilegia*	*Semiaquilegia adoxoides*	Perennial herb
Nandina domestica	*Berberidaceae*	*Nandina*	*Nandina domestica*	Evergreen shrub
Japanese Snailseed Root	*Menispermaceae*	*Cocculus*	*Cocculus orbiculatus*	Deciduous vine
Houttuynia cordata	*Saururaceae*	*Houttuynia*	*Houttuynia cordata*	Perennial herb
Indian rorippa herb	*Eutrema*	*Rorippa*	*Rorippa indica*	Annual herb
Chinese violet	*Violaceae*	*Viola*	*Viola philippica*	Perennial herb
Japonese pearlwort herb	*Caryophyllaceae*	*Sagina*	*Sagina japonica*	Annual herb
Chickweed	*Caryophyllaceae*	*Stellaria*	*Stellaria media*	Annual herb
Persicaria hydropiper	*Polygonacae*	*Polygonum*	*Polygonum hydropiper*	Annual herb
Creeping oxalis	*Oxalidaceae*	*Oxalis*	*Oxalis corniculata*	Perennial herb
Sasanqua	*Theaceae*	*Camellia*	*Camellia oleifera*	Evergreen shrub
Tea tree	*Theaceae*	*Camellia*	*Camellia sinensis*	Evergreen shrub
Gurgeon stopper	*Myrtaceae*	*Syzygium*	*Syzygium buxifolium*	Evergreen shrub
Hypericum monogynu-m	*Hypericaceae*	*Hypericum*	*Hypericum monogynum*	Evergreen shrub
Elaeocarpu-s glabripetalu-s	*Elaeocarpaceae*	*Elaeocarpu-s*	*Elaeocarpus glabripetalus*	Evergreen tree
Acalypha brachystach-ya	*Euphorbiaceae*	*Acalypha.*	*Acalypha supera*	Annual herb
Humifuse euphorbia herb	*Euphorbiaceae*	*Euphorbia*	*Euphorbia humifusa*	Annual herb
Under-leaf pearl	*Euphorbiaceae*	*Phyllanthus*	*Phyllanthus urinaria*	Annual herb
Sapium sebiferum	*Euphorbiaceae*	*Sapium*	*Sapium sebiferum*	Deciduous tree
Mock-strawberry	*Rosaceae*	*Duchesnea*	*Duchesnea indica*	Perennial herb
Freyn cinquefoil herb	*Rosaceae*	*Potentilla*	*Potentilla freyniana*	Perennial herb
Pyracantha crenatoserr a-ta	*Rosaceae*	*Pyracantha*	*Pyracantha fortuneana*	Evergreen shrub
Rubus althaeoides	*Rosaceae*	*Rubus*	*Rubus corchorifolius*	Deciduous shrub
Rubus rosaefolius	*Rosaceae*	*Rubus*	*Rubus rosifolius*	Deciduous shrub
Mimosa pudica	*Mimosaceae*	*Mimosa*	*Mimosa pudica*	Perennial herb
Japanese clover herb	*Papillionaceae*	*Kummero-wia*	*Kummerowia striata*	Annual herb
Pueraria lobata	*Papillionaceae*	*Pueraria*	*Pueraria motana* var. lobata	Deciduous vine
Liquidamb-ar Styraciflua	*Hamamelidaceae*	*Liquidamb-ar*	*Liquidambar formosana*	Deciduous tree
Loropetalu-m chinense	*Hamamelidaceae*	*Loropetalu-m*	*Loropetalum chinense*	Deciduous shrub
Chinese waxmyrtle	*Myricaceae*	*Myrica*	*Myrica rubra*	Evergreen tree
Quercus alba	*Fagaceae*	*Quercus*	*Quercus fabri*	Deciduous tree
Chinese hackberry root-bark	*Ulmaceae*	*Celtis*	*Celtis sinensis*	Deciduous tree
Chinese-elm	*Ulmaceae*	*Ulmus*	*Ulmus parvifolia*	Deciduous tree
Common papermulbe-rry root-bark	*Moraceae*	*Broussoneti-a*	*Broussonetia papyrifera*	Deciduous tree
Boehmeria clidemioide-s var diffusa	*Urticaeae*	*Boehmeria*	*Boehmeria clidemioides* var. diffusa	Perennial herb
Ramie	*Urticaeae*	*Boehmeria*	*Boehmeria nivea*	Deciduous shrub
Suspended leaf ramie	*Urticaeae*	*Boehmeria*	*Boehmeria tricuspis*	Perennial herb
Hirsute gonostegia herb	*Urticaeae*	*Gonostegia*	*Gonostegia hirta*	Perennial herb
Pilose nanocnide herb	*Urticaeae*	*Nanocnide*	*Nanocnide lobata*	Perennial herb
Japanese cayratia	*Vitaceae*	*Cayratia*	*Cayratia japonica*	Deciduous vine

Plant name	Family	Genus	Latin name	Category
herb				
Parthenocis-sus tricuspidata	*Vitaceae*	*Parthenocis-sus*	*Parthenocissus tricuspidata*	Deciduous vine
Ailanthus	*Simarubaceae*	*Ailanthus*	*Ailanthus altissima*	Deciduous tree
Chinaberry tree fruit	*Meliaceae*	*Melia*	*Melia azedarach*	Deciduous tree
Acer fabri	*Aceraceae*	*Acer*	*Acer fabri*	Evergreen tree
Rhus semialata	*Anacardiaceae*	*Rhus*	*Rhus chinensis*	Deciduous shrub
Chinese wingnut	*Juglandaceae*	*Pterocarya*	*Pterocarya stenoptera*	Deciduous tree
Ivy	*Araliaceae*	*Hedera*	*Hedera nepalensis* var. sinensis	Evergreen vine
Asiatic pennywort herb	*Umbelliferae*	*Centella*	*Centella asiatica*	Perennial herb
Nepal pennywort herb	*Umbelliferae*	*Hydrocotyl-e*	*Hydrocotyle nepalensis*	Perennial herb
Lawn pennywort herb	*Umbelliferae*	*Hydrocotyl-e*	*Hydrocotyle sibthorpioides*	Perennial herb
Common hedgeparsle-y fruit	*Umbelliferae*	*Torilis*	*Torilis scabra*	Annual herb
Ligustrum quihouicarr.	*Oleaceae*	*Ligustrum*	*Ligustrum quihoui*	Deciduous shrub
Retinervus	*Apocynaceae*	*Trachelosp e-rmum*	*Trachelosperm-um jasminoides*	Evergreen vine
Cape jasmine	*Rubiaceae*	*Gardenia*	*Gardenia jasminoides*	Evergreen shrub
Oldenlandi-a chrysotrich a	*Rubiaceae*	*Hedyotis*	*Hedyotis chrysotricha*	Perennial herb
Paederia scandens var. tomentosa	*Rubiaceae*	*Paederia*	*Paederia scandens* var. tomentosa	Deciduous vine
June snow herb	*Rubiaceae*	*Serissa*	*Serissa japonica*	Evergreen shrub
Chinese abelia	*Caprifoliaceae*	*Abelia*	*Abelia chinensis*	Deciduous shrub
Aster tataricus	*Compositae*	*Aster*	*Aster ageratoides*	Perennial herb
Horseweed herb	*Compositae*	*Conyza*	*Conyza canadensis*	Perennial herb
Lapsana apogonoide-s	*Compositae*	*Lapsanastr um*	*Lapsanastrum apogonoides*	Biennial herb
Sowthistle	*Compositae*	*Sonchus*	*Sonchus oleraceus*	Annual herb
Dandelion	*Compositae*	*Taraxacum*	*Taraxacum mongolicum*	Perennial herb
Asiatic plantain herb	*Plantaginaceae*	*Plantago*	*Plantago asiatica*	Perennial herb
Chinese lobelia herb	*Chinese lobelia*	*Lobelia*	*Lobelia chinensis*	Perennial herb
Pedunculat-e trigonotis herb	*Boraginaceae*	*Trigonotis*	*Trigonotis peduncularis*	Biennial herb
Black nightshade herb	*Solanaceae*	*Solanum*	*Solanum nigrum*	Perennial herb
Brittle falsepimper nel herb	*Scrophulariace ae*	*Lindernia*	*Lindernia crustacea*	Annual herb
Fortune paolownia flower	*Scrophulariace ae*	*Paulownia*	*Paulownia fortunei*	Deciduous tree
Creeping rostellularia herb	*Acanthaceae*	*Justicia*	*Justicia procumbens*	Perennial herb
Negundo chastetree	*Verbenaceae*	*Vitex*	*Vitex negundo*	Deciduous shrub
Hempleaf negundo chastetree	*Verbenaceae*	*Vitex*	*Vitex negundo* var. cannabifolia	Deciduous shrub
Slender clinopodiu-m herb	*Labiatae*	*Clinopodiu -m*	*Clinopodium gracile*	Perennial herb
Nodalflowe-r synedrella herb	*Hydrocharitace ae*	*Vallisneria*	*Vallisneria natans*	Perennial submerged aquatic grass
Curly pondweed	*Potamogetonac eae*	*Potamoget-on*	*Potamogeton crispus*	Perennial submerged aquatic grass
Common dayflower herb	*Commelinacea e*	*Commelina*	*Commelina communis*	Annual herb
Hupeh liriope root tuber	*Liliaceae*	*Liriope*	*Liriope spicata*	Perennial herb
Bodinier lilyturf root tuber	*Liliaceae*	*Ophiopogo -n*	*Ophiopogon bodinieri*	Perennial herb
Dwarf lilyturf root	*Liliaceae*	*Ophiopogo -n*	*Ophiopogon japonicus*	Perennial herb
Taro rhizome	*Araceae*	*Colocasia*	*Colocasia esculentum* var. antiquorum	Perennial herb
Common ducksmeat herb	*Lemnaceae*	*Lemna*	*Lemna minor*	Annual floating herb
Common ducksmeat herb	*Lemnaceae*	*Spirodela*	*Spirodela polyrrhiza*	Perenial floating herb
Reed canary-grass	*Cyperaceae*	*Fimbristyli s*	*Fimbristylis miliacea*	Perennial herb
Shortleaf kyllinga herb	*Cyperaceae*	*Kyllinga*	*Kyllinga brevifolia*	Perennial herb
Prairie junegrass	*Gramineae*	*Beckmanni-a*	*Beckmannia syzigachne*	Perennial herb
Common crabgrass herb	*Gramineae*	*Digitaria*	*Digitaria ciliaris*	Annual herb
Common crabgrass	*Gramineae*	*Digitaria*	*Digitaria sanguinalis*	Annual herb
Miscanthus floridulus	*Gramineae*	*Miscanthus*	*Miscanthus floridulus*	Perennial herb
Folium bambosae	*Gramineae*	*Oplismenu-s*	*Oplismenus compositus*	Perennial herb
Oplismenus	*Gramineae*	*Oplismenu-s*	*Oplismenus undulatifolius*	Perennial herb
Climbing fern	*Lygodiaceae*	*Lygodium*	*Lygodium japonicum*	Fern
Serrulate brake herb	*Pteridaceae*	*Pteris*	*Pteris multifida*	Fern

4 Problems and suggestions

4.1 Types and proportion of indigenous plants in urban greening plants in Nanchang

Indigenous plants account for 21.29% among all greening plants in Nanchang, where the gymnosperm takes up 66.67%, and the angiosperm takes up 21.35%. Nanchang has a wide spectrum of indigenous plants that can be used for greening purposes, but currently, a few indigenous plants like masson pines, cinnamomum camphora, osmanthus fragrans, and claeocarpus glabripetalus have been overused in urban greening, while lots of other indigenous plants are largely overlooked. Aside from several species like Cinnamomum camphora, white oak, sweetgum, and sasanqua that have been used in greening areas in Nanchang, many other indigenous plants including *Cephalotaxus fortunei*, *Lindera aggregate*, *Schima superba*, *Castanopsis fargesii*, *Castanopsis sclerophylla*, *Cyclobalanopsis glauca*, *Quercus variabilis*, *Cyclobalanopsis jenseniana*, *Symplocos sumuntia*, *Ilex chinensis*, and *Sambucus williamsii* are hardly used for greening purposes in the city.

4.2 Utilization rate of indigenous plants for greening purposes in Nanchang

The utilization rate of indigenous plants for greening purposes in Nanchang approaches 17%, and the city still

relies more on introduced plants for greening. Protecting species diversity is a premise of protecting biodiversity. Therefore, plant landscaping should rely mainly on indigenous plants and take introduced plants as supplements, and the proportion of indigenous trees in the overall number of trees for greening in the city should be above 80%. Investigations also revealed that there are over 60 invasive species in Nanchang, and hence it is necessary to be cautious in introducing plants from outside to reduce the risk of invasion of species, especially the herbaceous plants that may cause ecological hazards.

4.3 Proportion of different categories of indigenous plants in greening plants in Nanchang

(1) Among greening plants in Nanchang, there are 16 species of evergreen indigenous trees and 25 species of deciduous indigenous trees. The local vegetation of Nanchang is evergreen broad-leaf forests, with evergreen trees being the dominating species. In urban greening, evergreen tree species take up a large proportion, and hence presents a pattern of "green throughout seasons". Thus, there are viewable sceneries throughout the year, and the sceneries are of distinct seasonal features. Therefore, evergreen tree species account for above 65% of the overall tree species used for greening in Nanchang.

(2) Among all species used for greening in Nanchang, there are 17 species of indigenous trees and 17 species of shrubs. Trees play a dominating role, have good ornamental effects, and can be used for shading of buildings, isolated planting, and shading along sidewalks. The shrubs, though playing a less dominating role, are of high ornamental value and can enrich the diversity of sceneries. They can be used as green fences, quickset hedges, or ground covers, and can be trimmed into different shapes for ornamental purposes. Besides, they are often co-planted with trees to create multi-layered community structures of trees, shrubs, and grasses. Thus, the optimal ratio of trees to shrubs in greening should be 1:3.

4.4 Vertical greening

Among all species used for greening purposes in Nanchang, there are 7 species of indigenous vines (2 species of evergreen vines, and 5 species of deciduous vines), taking up 17.5% of all indigenous vines in the region, a very small proportion. Indigenous vines of great potentials include *Stauntonia obovatifoliola*, *Aristolochia debilis*, *Actinidia chinensis*, *Clematis finetiana*, and *Akebia quinate*, the flowers, fruits and gestures of which are of high ornamental value, and these species have strong adaptability, feature easy maintenance and good ecological effects.

5 Conclusion

Biodiversity in cities is based on diversity of landscape plants. Excessive introduction of species from outside will inevitably result in gradual disappearance of indigenous plants, reduce species diversity, undermine the local specialty of landscapes, and thereby reduce biodiversity. Nanchang boasts a rich reserve of indigenous plants, but the utilization rate of these plants remains low, and introduced plants play a dominating role in greening; the matching of evergreen and deciduous plants, the trees, shrubs and vines is disproportionate. Investigation of the resources of indigenous plants in Nanchang in this study is expected to provide more options for greening in the city, reduce the risk of species invasion, increase diversity of plants in the region, promote better development of indigenous plants in Nanchang and lead Nanchang towards the goal of becoming a "garden city".

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