An Investigation on the Present Situation of Wild Rhododendron Resources and Its Tourism Development and Utilization in Panxi Area

Yuan Ying[1], Luo Qiang[1]

[1](Xichang University College of Agricultural Sciences, Xichang, Sichuan, 615013)

Abstract: Panxi region is an important origin and distribution center of wild Rhododendron spp., which has important ornamental and tourism development value. This study investigated the present situation of wild Rhododendron resources in Sichuan Province, and analyzed the species number, horizontal distribution, vertical distribution, correlation with existing scenic spots and traffic accessibility, and put forward the prospect and suggestions of making full use of the rich wild Rhododendron resources in Panxi area for tourism development and boosting rural revitalization.

1 Introduction

Rhododendron spp. is a large genus with the most species and characteristics in Ericaceae. There are about 967 species in the world, including 8 subgenera [1] and about 570 species in China, belonging to 6 subgenera, 10 groups and 49 subgroups (Fang Mingyuan et al., 2005), which are distributed everywhere except Xinjiang and Ningxia. Because of its cold resistance, it is mainly distributed in the middle and high mountain areas of northwest Yunnan, southeast Tibet and southwest Sichuan. Rhododendron has important economic value. [2] Rhododendron is one of the world's four largest alpine flowers and one of China's ten famous flowers, with high ornamental value and garden application value. Rhododendron contains ketone chemicals and volatile oil, which has antibacterial, anti-inflammatory, antitussive, antiasthmatic and expectorant effects. It can treat many diseases and it has very important medicinal value. Rhododendron plants mostly grow on dry ridges, hilltops or cliffs, which are barren and drought-resistant, with dense branches and developed roots, and often clump into impenetrable shrubbery, which can maintain water and soil and have high ecological utilization value.

Panxi region is located in the southwest of Sichuan Province, on the eastern edge of Hengduan Mountains, and consists of Panzhihua City and Liangshan Prefecture, which are composed of 3 districts, 2 cities (county-level cities) and 17 counties. This area is the core area of the resource "Golden Triangle" in Southwest China, which is known as "plant kingdom" and "biological gene bank". Panxi region takes subtropical climate as the base band and south subtropical climate as the main one, with abundant sunshine, abundant rainfall, distinct dry and wet seasons, small annual temperature difference and large daily temperature difference. In winter, it is sunny and dry due to the sinking of the south branch of westerly wind. In summer, it is rainy and humid under the influence of southwest monsoon. The area is rich in heat, with annual sunshine hours of 2300 ~ 2800 h, annual total solar radiation of 580 ~ 630 KJ/cm and frost-free period of over 300d. The annual average temperature is 17.5 ~ 21.0℃, and the temperature difference between day and night is 13.1 ~ 14.4℃. The annual rainfall is 800～1200 mm. There are high mountains and deep valleys in Panxi area, and the relative height difference of canyons is about 3000 m. The special geographical environment of "one mountain is divided into four seasons, ten miles are different days" and the unique conditions of "sunshine in the north of China, temperature in the south and climate in the Indian Ocean" have bred abundant wild Rhododendron germplasm resources in Panxi area, making Panxi area an important origin and distribution center of wild Rhododendron plants.

2 Research methods

2.1 Historical data collation

The Chinese flora, illustrations of Chinese higher plants, papers related to the species and distribution of Rhododendron resources in Panxi area were consulted, and the historical distribution data of Rhododendron plants in Panxi area were obtained and summarized through Chinese virtual herbarium (http://www.cvh.ac.cn/).

2.2 Field survey statistics

From April 2016 to June 2020, the project team conducted a field investigation on the species and distribution of wild

Rhododendron in Panxi area, collected samples and registered the species identification, and analyzed the floristic geographical distribution and ecological causes of wild Rhododendron in Panxi area.

3 Results and analysis

3.1 Species composition

According to the data and investigation results, there are 64 species, 5 varieties and 1 subspecies [5][6][7][8][9] of wild Rhododendron in Panxi area. See Table 1 for the species, characters and distribution of wild Rhododendron.

Table1. Species, Characters and Distribution of Wild Rhododendron Plants in Panxi Area

Serial Number	Chinese Name	Latin Name	Character	Distribute Counties (Cities)	Distribution Altitude	Habitat
1	Liang Mao Dujuan	*Rhododendron microphyton Franch.*	Evergreen erect shrub	Xichang, Dechang, Puge, Huili, Huidong, Miyi, Mianning and other counties (cities)	1300-3200m	In the thicket
2	Rhododendron scabra	*Rhododendron scabrifolium Franch.*	Bush	Xichang, Mianning, Yanyuan, Leibo, Yanbian, Miyi and other counties (cities)	2200-4000m	Under forests or shrubs
3	Rhododendron longistamens	*Rhododendron stamineum Franch.*	Evergreen shrubs or small trees	Mei Gu, ningnan county	2400-3100 m	Under forests or shrubs
4	Burst stick flower	*Rhododendron spinuliferum Franch.*	Bush	Liangshan counties (cities)	1900-2500m	Under forests or shrubs
5	Rhododendron pilosa	*Rhododendron pubescens Balf. f. et Forrest*	Undershrub	Xichang, Miyi, Yanbian, Mianning, Dechang, Yanyuan, Muli and other counties (cities)	2700-3500m	In the thicket
6	Rhododendron cosmetology	*Rhododendron calophytum Franch*	Evergreen shrubs or small trees	Counties (cities) in Panxi area	1300-4000 m	Woodland retreat
7	Rhododendron axillaris	*Rhododendron racemosum Franch.*	Undershrub	Xichang, Leibo, Meigu, Butuo, Zhaojue, Puge, Dechang, Yanyuan, Muli, Miyi, Yanbian and Huili counties (cities)	1500-3800 m	Under forests or shrubs
8	Rhododendron hybridum	*Rhododendron oreotrephes W. W. Sm.*	Evergreen shrubs	Leibo, Butuo, Yanyuan, Muli, Miyi, Yanbian, Huili and other counties	1800-3700 m	Under forests or shrubs
9	Rhododendron dewdrop	*Rhododendron irroratum Franch.*	Shrubs or small trees	Miyi, Yanbian County and Liangshan counties (cities)	1700-3200m	Under forests or shrubs
10	Rhododendron magna	*Rhododendron rex Levl.*	Small evergreen trees	Yanbian, Miyi County and Liangshan counties (cities)	2300-3300m	Woodland retreat
11	Rhododendron dauricum	*Rhododendron decorum Franch.*	Evergreen shrubs or small trees	Counties (cities, districts) in Panxi area	1000-3300m	Under forests or shrubs
12	Rhododendron purpurea	*Rhododendron amesiae Rehd. et Wils.*	Bush	Jinyang, Ganluo, Mianning, Muli and other counties	2200-3000m	Woodland retreat
13	Rhododendron auriculatum	*Rhododendron auriculatum Hemsl.*	Evergreen shrubs or small trees	shaojue county	1500-2000m	Woodland retreat
14	Rhododendron glabra	*Rhododendron vernicosum Franch.*	Evergreen shrubs or small trees	Xichang, Ganluo, Muli, Yanyuan and Zhaojue counties (cities)	2650-4300m	Woodland retreat
15	Rhododendron tomentosa	*Rhododendron radendum Fang*	Evergreen shrub	ningnan county	3000-4100m	Under forests or shrubs

16	cuckoo	*Rhododendron simsii Planch.*	Sheepberry	Xichang, Huili, Ningnan, Leibo, Meigu and other counties (cities)	1000-2700m	Under forests or shrubs
17	Rhododendron glabra	*Rhododendron nitidulum Rehd. et Wils.*	Evergreen shrub	puge county	2800-3000m	On the meadow
18	Rhododendron multicolour (Rhododendron multicolour var.)	*Rhododendron rupicola W. W. Smith var. muliense (Balf. f. et Forrest) Philip. et M. N. Philip.*	Evergreen shrub	Muli and Yanyuan counties	3000-4500m	In the thicket
19	Rhododendron multicolor	*Rhododendron rupicola W. W. Smith*	Evergreen shrub	Muli and Yanyuan counties	3000-4500m	In the thicket
20	Mahonia fimbristipula	*Rhododendron leptothrium Balf. f. et Forrest*	Shrubs or small trees	ningnan county	1700-3200m	In the thicket
21	Rhododendron nobilis (subspecies)	*Rhododendron decorum subsp. diaprepes (Balf. f. & W. W. Sm.) T. L. Ming*	Green shrubs or small trees	Counties (cities) in Panxi area	1000-3300m	Under forests or shrubs
22	Rhododendron Pink (Rhododendron montanum var.)	*Rhododendron oreodoxa Franch. var. fargesii (Franch.) Chamb. ex Cullen et Chamb.*	Often Green shrubs or small trees	Butuo county	1800-3500m	Under forests or shrubs
23	Rhododendron cinereus	*Rhododendron hippophaeoides Balf. f. et W. W. Smith*	Evergreen shrub	Mianning, Ganluo, Yuexi and Xide counties	2000-2300m	Under forests or shrubs
24	Rhododendron tonkinensis	*Rhododendron hypoglaucum Hemsl.*	Evergreen shrub	meigu county	1500-2100m	Woodland retreat
25	Rhododendron maculatum	*Rhododendron clementinae Forrest*	Evergreen shrubs	Jinyang, Meigu and Leibo counties	3200-4100m	In the thicket
26	Rhododendron concave	*Rhododendron davidsonianum Rehd. et Wils*	Bush	Xichang, Dechang, Leibo, Muli, Yanyuan, Huili and other counties (cities)	1500-2800m	In the thicket
27	Rhododendron chrysanthum	*Rhododendron lutescens Franch.*	Bush	Leibo, Meigu, Miyi and other counties	1700-2100m	Under forests or shrubs
28	Rhododendron xiuya	*Rhododendron concinnum Hemsl.*	Bush	Xichang, Leibo, Meigu, Yuexi, Mianning, Muli, Yanyuan and other counties (cities)	2300-3000m	In the thicket
29	Rhododendron truncatum	*Rhododendron orbiculare Decne.*	Evergreen shrubs, rare small trees	Mianning, Meigu and other counties	2000-3500m	Woodland retreat
30	Huang Mao Dujuan	*Rhododendron rufum Batalin*	Often Green shrubs or small trees	Yuexi, Huidong and other counties	2300-3800m	Woodland retreat
31	Rhododendron Quercus	*Rhododendron phaeochrysum Balf. f. et W. W. Smith*	Evergreen shrubs	Xichang, Muli, Yanyuan, Huili and other counties (cities)	3300-4200m	In the thicket
32	Rhododendron dauricum	*Rhododendron thymifolium Maxim.*	Evergreen erect subshrub; evergreen erect subshrub	Xichang, Muli, Zhaojue and other counties (cities)	2400-4800m	Under forests or shrubs
33	Rhododendron hirsutum	*Rhododendron cephalanthum Franch.*	Evergreen shrub	Muli county	3000-4000m	On the meadow
34	Rhododendron Longshu	*Rhododendron przewalskii Maxim.*	Evergreen shrubs	Muli and Yanyuan counties	2900-4300m	Woodland retreat
35	Rhododendron yunnanensis	*Rhododendron yunnanense Franch.*	Deciduous, semi-deciduous or evergreen shrubs, occasionally small trees	Xichang, Yanyuan, Huili and other counties (cities)	2000-4000m	Under forests or shrubs
36	Rhododendron primrose	*Rhododendron primuliflorum Bur. et Franch.*	Evergreen shrub	Muli and Yanyuan counties	3700-4100m	In the thicket

37	Rhododendron flavum	*Rhododendron wardii W. W. Smith*	Bush	Muli and Yanyuan counties	3000-4000m	Under forests or shrubs
38	red azalea	*Rhododendron neriiflorum Franch.*	Evergreen shrubs	Huidong, Huili and ningnan county	2500-3600m	Woodland retreat
39	Rhododendron obscureum	*Rhododendron amundsenianum Hand.-Mazz .*	Evergreen shrubs	Muli and Yanyuan counties	3900-4250m	On the meadow
40	Rhododendron Miyi	*Rhododendron miyiense W. K. Hu*	Bush	Miyi, Yanbian, Huili and Huidong counties	1700m	Woodland retreat
41	Rhododendron Xichang	*Rhododendron xichangense Z.J.Zhao*	Bush	Xichang City	2400-2600m	Woodland retreat
42	Rhododendron rusticus	*Rhododendron siderophyllum Franch.*	Bush	Xichang, Yanyuan, Huili and other counties (cities)	2700-3100m	Under forests or shrubs
43	Rhododendron rubrum	*Rhododendron rubiginosum Franch.*	Often Green shrubs or small trees	Xichang, Yanyuan, Huili and other counties (cities)	2900-3300m	Woodland retreat
44	Rhododendron polytrichum	*Rhododendron polylepis Franch.*	Shrubs or small trees	Xichang, Yanyuan and other counties (cities)	2700-3100m	Woodland retreat
45	Rhododendron polytrichum	*Rhododendron augustinii Hemsl.*	Evergreen shrubs	Xichang, Yanyuan, Huili, Zhaojue, Jinyang, Meigu and other counties (cities)	2300-2700m	Woodland retreat
46	Ki Mao Dujuan	*Rhododendron rigidum Franch.*	Bush	Xichang, Yanyuan and other counties (cities)	2400-2800m	In the thicket
47	Rhododendron sclerophyllum	*Rhododendron tatsienense Franch.*	Bush	Xichang, Yanyuan, Huili and other counties (cities)	3100-3300m	Woodland retreat
48	Dianhong Mao Dujuan	*Rhododendron rufohirtum Hand.-Mazz.*	Bush	Xichang, Yanyuan, Huili and other counties (cities)	1700-2400m	In the thicket
49	Rhododendron floribundum	*Rhododendron floribundum Franch.*	Shrubs or small trees	Xichang, Yanyuan, Huili and other counties (cities)	2700-3000m	In the thicket
50	Rhododendron crispate (Rhododendron variegatum)	*Rhododendron denudatum Levl*	Shrubs or small trees	Xichang, Yanyuan, Huili and other counties (cities)	2500-3000m	In the thicket
51	Broken rice flower	*Rhododendron spiciferum Franch.*	Undershrub	Xichang, Yanyuan, Huili and other counties (cities)	1800-2700m	Woodland retreat
52	Rhododendron purpureum (Rhododendron barbadense var.)	*Rhododendron strigillosum Franch. var. monosematum (Hutch.) T. L. Ming*	Often Green shrubs or small trees	Xichang City	2900-3500m	Woodland retreat
53	Rhododendron pulveratum	*Rhododendron impeditum Balf. f. et W. W. Smith*	Evergreen shrubs	Xichang City and Yanyuan County	2500-3100m	On the meadow
54	Rhododendron pseudogalactica (Rhododendron magna var.)	*Rhododendron rex Levl.subsp.fictolacteum(Balf.f.)Chamb.ex Cullen et Chamb.*	Small evergreen trees	Yanyuan County	2900-4000m	Under forests or shrubs
55	Rhododendron sparsifolia	*Rhododendron hanceanum Hemsl.*	Evergreen shrubs	Yanyuan County	2400-2700m	Under forests or shrubs
56	Rhododendron polytrichum	*Rhododendron polycladum Franch.*	Evergreen erect shrub	Yanyuan County	3000-4300m	On the meadow
57	Rhododendron prairie	*Rhododendron telmateium Balf.f. & W. W. Sm.*	Undershrub	Yanyuan County	3200-3800m	In the thicket
58	Rhododendron Zhaotong	*Rhododendron tsaii Fang*	Evergreen shrub	Yanyuan County	2900-3380m	In the thicket

59	Rhododendron densiflora	*Rhododendron fastigiatum Franch.*	Evergreen shrubs	Yanyuan County	3000-4500m	In the thicket
60	Rhododendron capillaris	*Rhododendron trichostomum Franch.*	Evergreen shrubs	Yanyuan County	3000-4000m	Under forests or shrubs
61	Rhododendron yunjinense	*Rhododendron fortunei Lindl.*	Often Green shrubs or small trees	Yanyuan County	1500-2000m	Woodland retreat
62	Rhododendron viridis	*Rhododendron searsiae Rehd. et Wils.*	Bush	Yanyuan County	2300-3000m	Under forests or shrubs
63	rhododendron bachii	*Rhododendron bachii H. Lév.*	Evergreen shrubs	Yanyuan County	2400-2700m	In the thicket
64	Rhododendron brevipedunculata	*Rhododendron brachypodum Fang et P. S. Liu*	Bush	Yanyuan County	1200-1500m	Woodland retreat
65	Rhododendron glandularis	*Rhododendron adenogynum Diels*	Evergreen shrubs	Yanyuan County	3200-4200m	Under forests or shrubs
66	Luo Mao Dujuan	*Rhododendron detonsum Balf. f. et Forrest*	Evergreen shrubs	Yanyuan County	3000-3900 m	Under forests or shrubs
67	Rhododendron splendens	*Rhododendron heliolepis Franch.*	Often Green shrubs or small trees	Huili city	3200-3700 m	Under forests or shrubs
68	Rhododendron lactiflorum	*Rhododendron lacteum Franch.*	Often Green shrubs or small trees	Huili city	3300-3700 m	Under forests or shrubs
69	Rhododendron rusticus	*Rhododendron bureavii Franch.*	Evergreen shrubs	Huili city	3000-3700 m	In the thicket
70	Rhododendron mianningensis	*Rhododendron simsii Planch.*	Evergreen shrubs	Mianning County	3550-3900 m	In the thicket

3.2 Horizontal distribution

According to the statistics of counties (cities), wild Rhododendron plants are widely distributed in all counties (cities) in Panxi area, and Yanyuan County, Xichang City and Huili County have concentrated resource distribution. Among them, Yanyuan County has the most concentrated distribution, with 40 species, 3 varieties and 1 subspecies, accounting for 62.5%, 60% and 100% of the distributed species in Panxi area respectively; Secondly, there are 27 species, 2 varieties and 1 subspecies distributed in Xichang City, accounting for 42.2%, 40% and 100% of the distributed species in Panxi area respectively; The third is Huili County, which has 24 species, 1 variety and 1 subspecies, accounting for 37.5%, 20% and 100% of the distributed species in Panxi area respectively. There are 6 species and 1 subspecies and 5 species and 1 subspecies in Yuexi County and Xide County, respectively. See fig. 1 for species distribution of wild rhododendrons in counties (cities) of Panxi region.

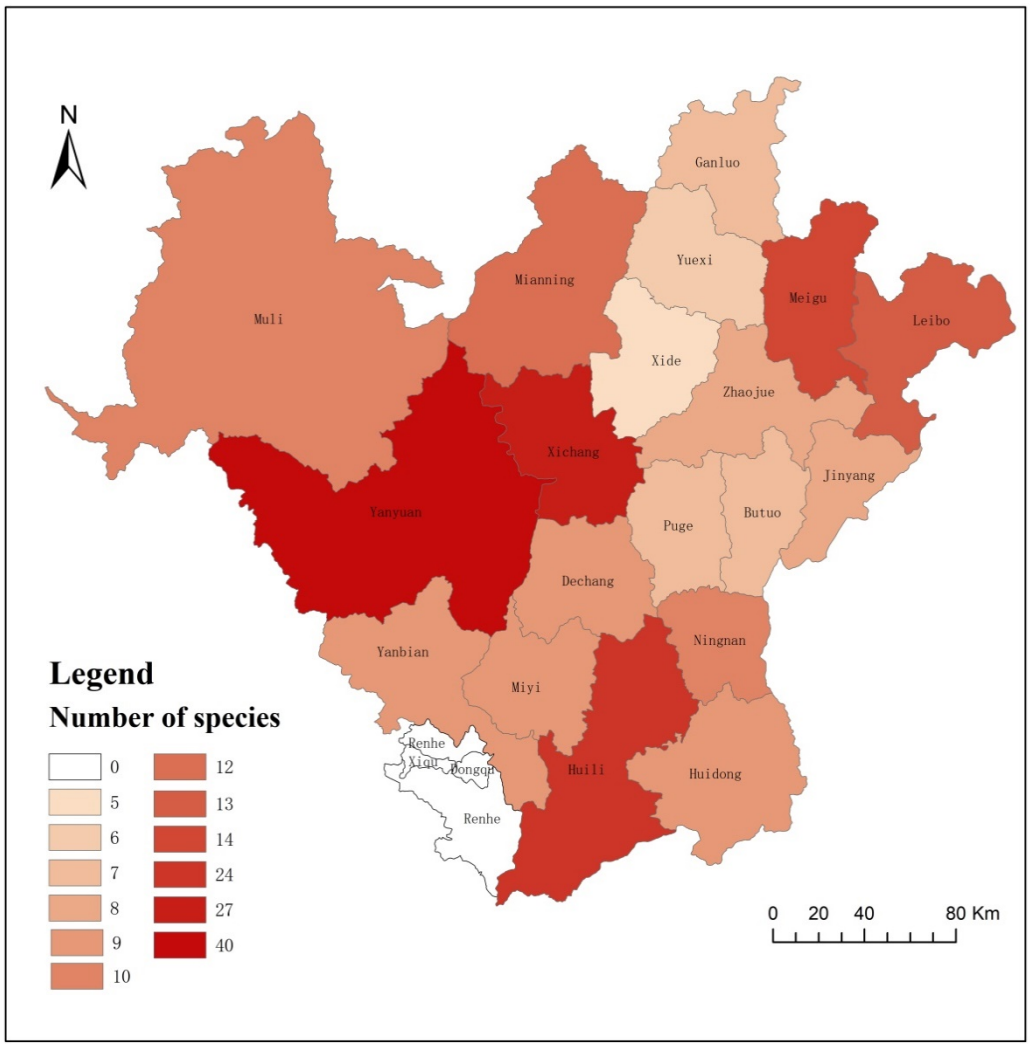

Figure 1. Schematic diagram of species distribution of wild Rhododendron in counties (cities) of Panxi area

3.3 Vertical distribution

According to the vertical distribution statistics, wild Rhododendron plants in Panxi area are distributed in the range of 1000-4500 m above sea level, and the altitude difference reaches 3300 m. The vertical distribution of each species is quite different, and the species richness generally shows a trend of increasing first and then decreasing with the altitude. 2200-4000m above sea level is the vertical section where the species of this genus are concentrated, with the highest species richness, including 60 species, 4 varieties and 1 subspecies. From the altitude distribution range of each species, the distribution range of Rhododendron cosmetology is the largest, ranging from 1300 to 4000 m, with a vertical height difference of 2700 m; Secondly, Rhododendron axillaris distributed in the range of 1500-3800 m, with a vertical height difference of 2300 m; The distribution range of Rhododendron Miyi is relatively narrow, and it is only found at 1700 m above sea level at present. The altitude distribution of wild Rhododendron species in Panxi area is shown in Figure 2.

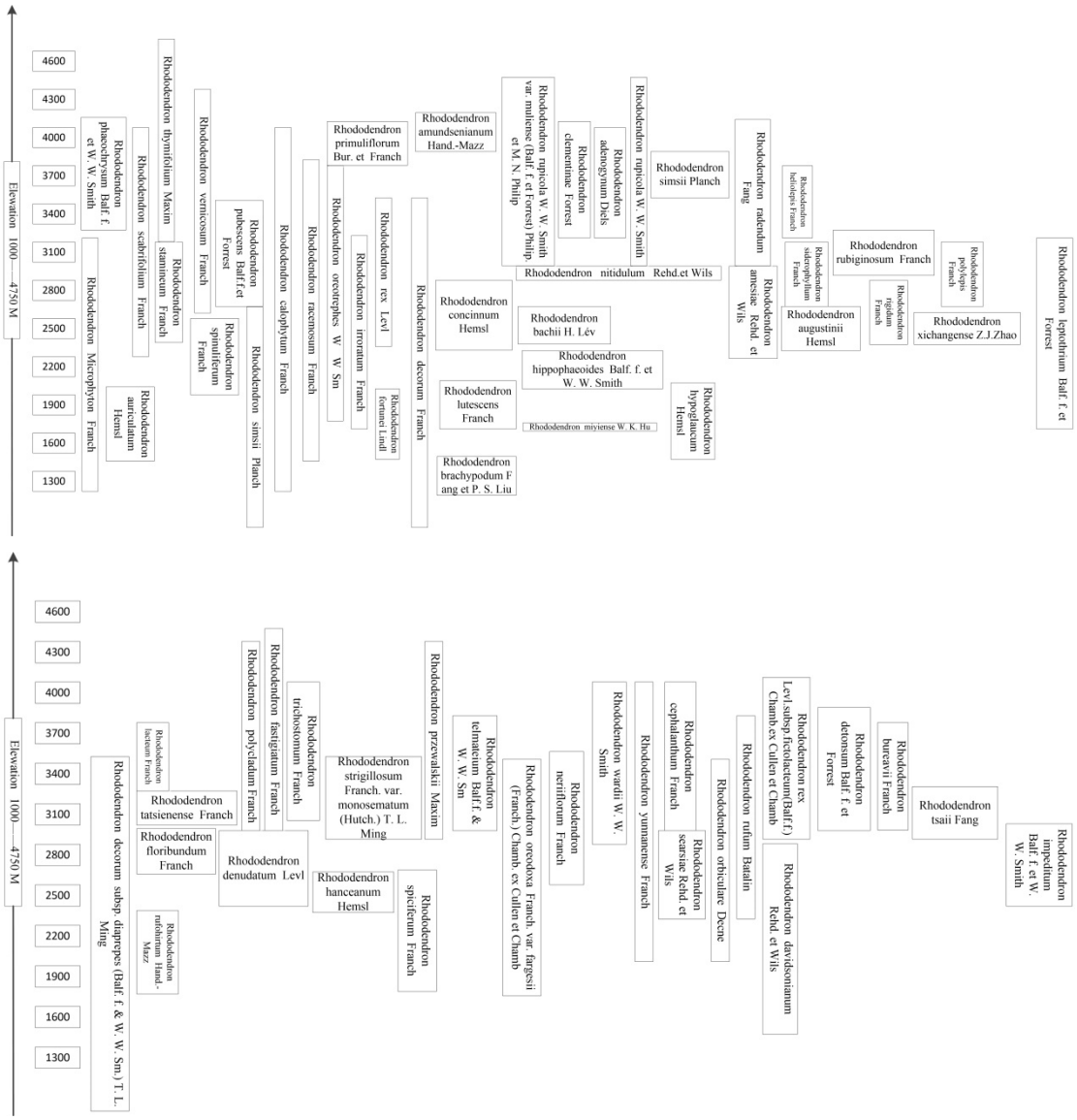

Figure 2. Schematic diagram of altitude distribution of wild Rhododendron plants in Panxi area

3.4 Habitat distribution

According to the statistics of vegetation types, there are 19 species and 1 variety of wild Rhododendron plants distributed under forests in Panxi area, accounting for 29.7% and 20% of the total distribution species; There are 18 species and 2 varieties distributed in shrubs, accounting for 28.1% and 40% of the total distribution species; There are 22 species, 2 varieties and 1 subspecies distributed under forests or shrubs, accounting for 34.4%, 40% and 100% of the total distribution species; There are 5 species distributed in meadow, accounting for 7.8% of the total distribution species. The habitat distribution of wild Rhododendron species in Panxi area is shown in Table 2.

Table2. Habitat distribution of wild Rhododendron species in Panxi area

Serial Number	Habitat Type	Number and Proportion Of Species					
		Grow	Proportion (%)	Mutation	Proportion (%)	Subspecies	Proportion (%)
1	Woodland retreat	19	29.7	1	20	0	0
2	In the thicket	18	28.1	2	40	0	0
3	Under forests or shrubs	22	34.4	2	40	1	100
4	On the meadow	5	7.8	0	0	0	0

3.5 Geographical spatial distribution and traffic accessibility

According to the geographical spatial distribution of wild Rhododendron plants, they are distributed in all counties and cities in Panxi area except the eastern, western and Renhe districts of Panzhihua. Among them, the number of wild Rhododendron species in the north of Panxi area is small, and it is found in the field investigation that most of them are scattered and less concentrated. There are abundant species of wild Rhododendron in the eastern, western and southern regions, especially in Yanyuan and Xichang in the west and midwest, Huili in the south, and Meigu and Leibo counties (cities) in the east. In the field investigation, it is found that the concentrated contiguous distribution is very obvious, which is highly ornamental in full bloom and has good tourism development value. From the correlation with the existing scenic spots, at present, the most famous scenic spots in Panxi area are Lugu Lake Scenic Area and Qionghai-Lushan Scenic Area. Yanyuan County, where Lugu Lake Scenic Area is located, and Xichang City, where Qionghai-Lushan Scenic Area is located, both belong to the areas with the largest number of species and the most obvious concentrated contiguous distribution, which lay a good foundation for the development of tourism resources. From the point of view of geographical spatial distribution and traffic accessibility, because wild azaleas are distributed in the fractured terrain areas with high altitude, complex and varied topography and large fluctuation, subways and expressways will deliberately avoid the fractured terrain areas due to construction requirements, so neither railways nor expressways directly reach the wild azaleas landscape areas with good tourism development value. Xichang City, which has the best traffic conditions, has a small economic service radius, and its radiation driving ability can only radiate to two rhododendron landscape areas, namely Zhaojue Qiliba and Puge Haikou Ranch, which attract the most tourists at present. Therefore, traffic accessibility is a major constraint factor in the development of tourism resources. See fig. 3 for the geographical spatial distribution of wild rhododendrons in Panxi area.

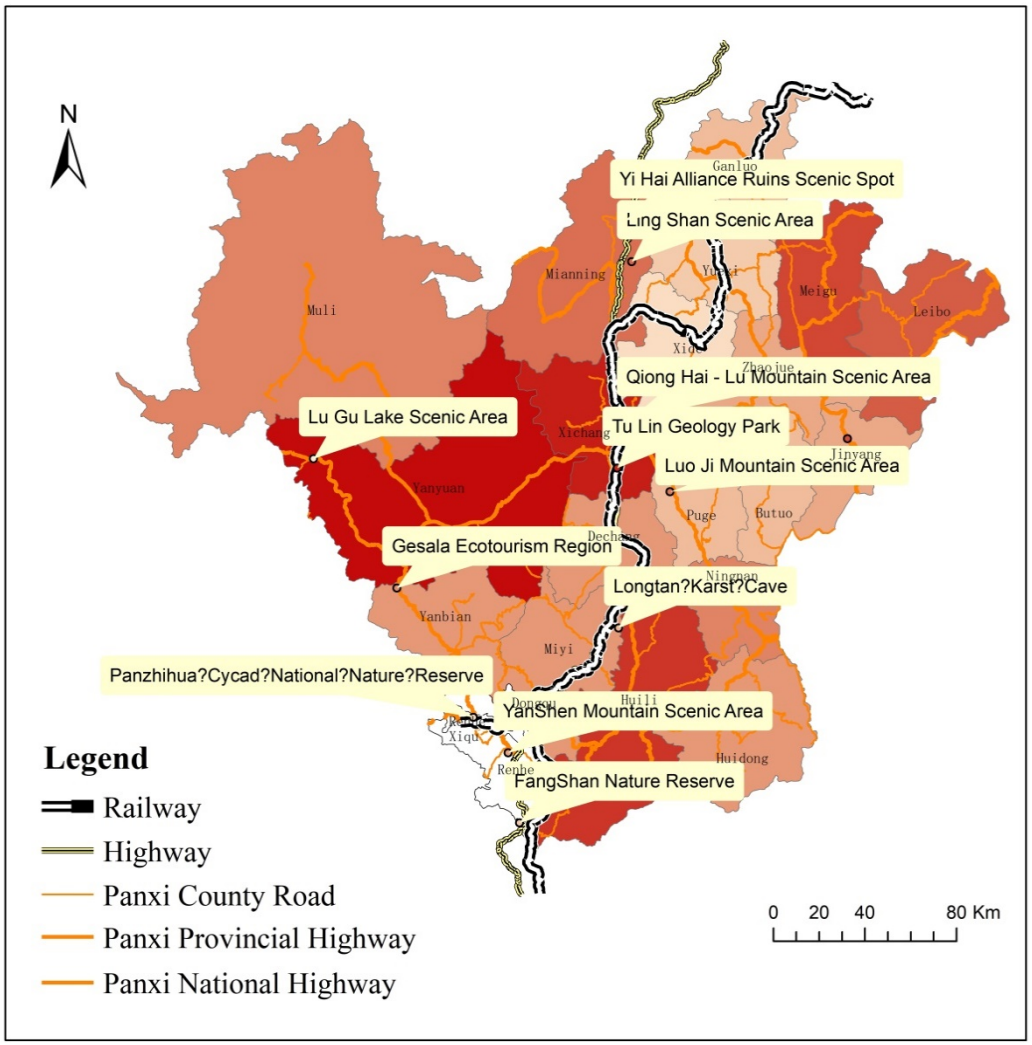

Figure 3. Schematic diagram of geographical spatial distribution of wild Rhododendron in Panxi area

4 Discussion and conclusion

Panxi region has a special climate type, complex terrain and high altitude difference. Wild Rhododendron plants have a large number of species, wide distribution range, obvious concentrated distribution and long flowering period, forming an ornamental area with unique ornamental value. At present, the natural landscape of wild azaleas in Longelbow Mountain in Huili County, Houlongshan and Huangcao in Yanyuan County, Haikou Ranch in Puge County, Gukede and Riha in Zhaojue County, Yingpan Mountain and Aunt Mountain in Dalucao Township in Dechang County, Baicaopo in Jinyang County, Xiaoxiangling Ridge in Xile County, and Chajin in mana in Muli County have had great influence in Panxi area, and also have a certain popularity in Sichuan Province. With the unique beauty of azaleas, Panxi area, especially Liangshan Prefecture, is the key area of poverty alleviation in China, and it is the most important thing at present to consolidate and expand the achievements of poverty alleviation and effectively link up with rural revitalization. Industrial prosperity is the key to rural revitalization. One of the effective ways to achieve industrial prosperity in Panxi area is to develop rural tourism by using rich wild azalea resources in combination with local natural landscape and ethnic customs, cultivate new rural formats and models, activate the endogenous driving force of rural development, and promote the "trinity" development of rural production, life and ecology.

However, on the one hand, to develop rural tourism, the first priority is to attract tourists. Therefore, traffic accessibility is very important for the development and utilization of wild azalea tourism resources. At present, the eight azalea natural landscape groups with good development value mentioned above are only accessible by national or provincial roads, and it needs a long distance of township roads to reach the core landscape area. Therefore, in order to realize the economic development and utilization of wild rhododendron resources in Panxi area, it is necessary to further transform the traffic environment in Panxi area, strengthen infrastructure construction and improve traffic accessibility.

On the other hand, the flowering period of wild Rhododendron is mainly from May to July, and the ornamental value is poor outside the flowering period. Therefore, it is very important to use the existing traffic and scenic spots to establish landscape belts and extend the tourism value chain. In tourism development, other natural and cultural scenic spots around scenic spots can be integrated to create a landscape group integrating ethnic minorities' cultural customs and natural landscapes, enhance the agglomeration of regional tourism elements, and realize the effective development and utilization of tourism resources featuring wild Rhododendron plant resources in Panxi Plateau. Qionghai-Lushan Scenic Area is one of the most well-known scenic spots in Liangshan Prefecture. Besides, as it is located in the suburb of Xichang City. The regional economic radiation radius is stronger than other scenic spots. The Luoji Mountain Scenic Area and Huanglian Soil Forest Scenic Area around the scenic spot can integrate Zhaojue Qiliba Rhododendron Landscape with Puge Haikou Ranch Rhododendron Landscape, enhance the gathering of regional tourism elements, create natural landscape groups, enhance the visibility of the landscape and attract more adult traffic; Lugu Lake Scenic Area can integrate Houlongshan and Huangcao Rhododendron landscape in Yanyuan County and Chajin Rhododendron landscape in mana, Muli County, and establish Lugu Lake-Houlongshan in Yanyuan County and Huangcao-mana Chajin landscape belt in Muli County, so as to integrate Rhododendron viewing, Lugu Lake natural scenery and Yi-Tibetan ethnic customs experience, improve tourism quality and extend industrial chain. At the same time, special attention should be paid to the scarcity of wild Rhododendron resources, which cannot be recovered once destroyed. Therefore, the development of wild Rhododendron resources as tourism resources must be comprehensively utilized under the premise of protection.

Project Fund:

Key Project of Sichuan Education Department "Study on Conservation and Utilization of Wild Rhododendron Germplasm Resources in Panxi Area" (13ZA0269)

About the author:

Yuan Ying, female, associate professor, has been engaged in the research on plant classification and development and utilization of plant resources for a long time.

References

1. Huang Maoru . Rhododendron[M] . Shanghai: Shanghai Scientific & Technical Publishers, 1999.
2. Wang Yuan, Ju Bo. Exploitation and utilization of Rhododendron in China [J]. JOURNAL OF BIOLOGY, 2006, 23(1):43-44.
3. Wang Fuming, Zhou Jin. Influence of ecological factors on law of azalea's shape and growth on Luoji Mountain[J]. Journal of Southwest Minzu University (Natural Science Edition), 2003, 29 (6): 173-177.
4. Ding Bingyang, Jin Xiaofeng. Taxonomic Study on Rhododendron subgen Tsutsusi sensu Steumer(Ericaceae)[M'] . Beijing: Science Press, 2009, 246-255.
5. Zhang Xudong, Luo Qiang, Lin Jianlin. Rhododendrom resources suevey and developemnt of Panxi [J]. Forest By-Product and Speciality in China, 2007, 88(3):64-66.
6. Tian Qi, Ge Binjie, Wang Zhengwei. New Records of Rhododendron from Sichuan, China [J]. Acta Botanica Boreali-Occidentalia Sinica, 2011, 31(1):192-194.

7. Institute of Botany, the Chinese Academy of Sciences. Iconographia Cormophytorum Sinicorum [M]. Beijing: Science Press,1974.
8. Yang Hanbi et al. Flora Reipublicae Popularis Sinicae (Tomus 57(1)) [M]. Beijing: Science Press, 1974:88.
9. Li Xiaofang, Ma Jinhua. Distribution & Development and Utilization of Rhododendron Resources in Liangshan Prefecture of Sichuan[J]. Journal of Anhui Agricultural Sciences. 2009, 37 (27): 13060-13063.