Floristic characteristics of Pu Mat National Park, Nghe An Province, Central Vietnam

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Abstract: Pu Mat National Park(PMNP) is situated in Nghe An Province, Central Vietnam and in the core area of the well-known biodiversity richness Annamite district. Based on the identification of specimens, 2 018 species and 771 genera belonging to 184 families of vascular plant were recorded in the protected area of PMNP. The flora of PMNP represents 21% of the total Vietnamese flora. In the floristic composition of PMNP, magnoliophyta contributes 90.98% species, 90.4% genera, and 83.7% families of the total flora. The families with most species richness in the flora include Rubiaceae(37 genera/129 species), Euphorbiaceae(36/99), Orchidaceae(34/73), Lauraceae(11/66), Moraceae(10/54), Papilionaceae(24/51), Fagaceae(4/50), Myrsinaceae(5/48) and Rutaceae(14/45). From the study on the geographical elements of seed plants, 11 areal types at family level and 14 areal types at generic level were recognized. Tropical elements in total make up 85.6% of the total family and 90.1% of the total genera, in which tropical Asian elements contribute to 31.4% of the total genera. It is concluded that the flora of PMNP is typically tropical in nature, and is part of tropical Asian flora.

Key words: Pu Mat National Park; floristic composition; geographical elements; Vietnam

CLC Number: Q948.5 **Document Code:** A **Article ID:** 1000-3142(2008)05-0620-07

1 Introduction

Vietnam is located in Mainland Southeast Asia and has a total area of 331 211 km^2 with mountains making up 75% of the total land area. It has a forest cover of 37.4% of the total area(MARD, 2006). The flora of Vietnam includes 9 628 species of vascular plants in 2 010 genera of 291 families(Phan, 1996). It is one of the centers of high biodiversity in the world. Floristically, Vietnam is part of the Indochina region of the paleotropical kingdom(Takhtajan, 1986). The region with the highest biodiversity in Vietnam is just located at the eastern flank of the Annamite mountain range.

Situated in the eastern flanks of the Annamite, Pu Mat Nature Reserve was established in 1995, and raised to the Pu Mat National Park(PMNP) in 2001. The Biodiversity Action Plan for Vietnam listed Pu Mat National Park among the 12 highest priority sites for biodiversity conservation in the country(Government of SRV/GEF, 1994).

The flora of the PMNP was studied during surveys in 1993 that aimed at preparing a feasibility document for the creation of a protected area. Baseline surveys of the flora at PMNP were conducted in more details in 1998- 1999 by the program of biodiversity surveys in the protected area (SFNC, 2001a).

The investigation on medicine plants has also been done in 1998 by the scientists from Hanoi University and Vinh University, the result of this survey recorded 512 medical plant species belonging to 325 genera of 115 families (Nguyen *et al*., 2001).

In 2001, scientists from Biological Faculty of Ha-

Received date: 2007-06-18 **Accepted date:** 2007-11-23

Foundation item: 国家自然科学基金(30570128)[Supported by the National Natural Science Foundation of China(30570128)]

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noi National University carried out surveys on the diversity of the limestone flora (SFNC, 2001b).

In 2002, further surveys were conducted in high altitude areas of the PMNP by Sub-FIPI(Forest Inventory and Planning Institute), and these surveys were followed up in 2003 with further investigations of the conifer communities of these high altitude areas (SFNC, 2002, 2003).

The studies on the flora of PMNP were also carried out by the monitoring of forest resources through sample plots(SPs) and biodiversity monitoring and evaluation. The SPs were established during 2000– 2002 with a total of 12 plots(50 m×50 m). These plots covered different forest types in the protected area.

The specimen collections from these surveys were kept in the Herbarium of Pu Mat National Park (HPNP), the Herbarium of Hanoi University(HNU) and the Herbarium of Botany Department, National Centre for Natural Sciences and Technology (HN). Based on intermittent specimen collections of ten years in the National Park and data from sample plots, the present paper studied the plant diversity and the floristic composition of the protected area.

2 Geography

Pu Mat Nature Reserve is located between 104°24′ – 104°56′ E and 18°46′ – 19°12′ N in Nghe An Province in North Central of Vietnam. The PMNP is divided into three administrative districts: Tuong Duong, Con Cuong and Anh Son. The southern boundary of the PMNP follows the international border between Laos and Vietnam. Total area of the National Park is about 91 113 hm^2, which is one of the largest protected areas in Vietnam (Fig. 1).

The area has a mosaic of land-use types, including primary forest patches, secondary vegetation, and anthropogenic vegetation. In the National Park, elevations range from 100 to 1 841 m (above sea level), and 90% of the reserve is in the area below 1 000 m in elevation. The steep terrains in the PMNP formed obstacles to extensive clearance of forest (SFNC, 2001a). Four main rivers named the Khe Thoi, Khe Bu, Khe Choang and Khe Khang go through the park. All of four rivers flow into the Ca River, which runs from west to east, through a wide valley to the north of the protected area in the park. The Reserve is located in a tropical climate region. It is strongly influenced by the cold northeastern monsoon and dry and hot southwestern monsoon (from Laos). The annual mean temperature is 23.6 ℃, with the maximum temperature of 42.7 ℃ and minimum of 1.7 ℃. The annual mean rainfall is 1 791 mm with an average of 140 rainy days per year (Fig. 2).

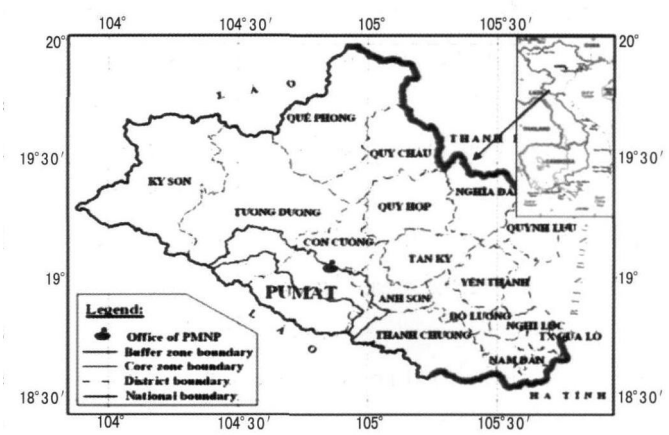

Fig. 1 Location of Pu Mat National Park in Vietnam

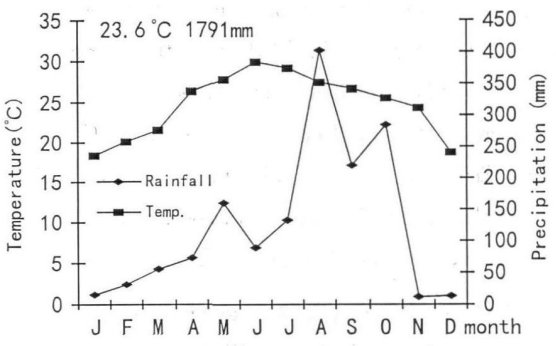

Fig. 2 Climate diagram in Pu Mat National Park

The PMNP experiences a tropical climate, but with conspicuous seasonal variation. Temperature and rainfall are heavily influenced by the south-west monsoon which creates a hot and humid summer(May to October), regarded as the rainy season, and a dry and cooler winter(November to April). During the winter, fog is quite common in the areas of lower elevation.

The area is dominated by three main soil types,

including typical feralite soil, feralite humus soil on the mountains and alkaline humus soil developing mainly on sedimentary rocks with a heavy and light mechanical composition(SFNC, 2003).

Based on the classification system of vegetation type on Vietnamese tropical forests by Thai Van Trung(1978), the PMNP primary vegetation can be divided into four main types as following: Elfin forest, Tropical evergreen seasonal forest, Coniferous closed tropical evergreen rain forest and Tropical evergreen broad-leaved forest.

Elfin forest occurs mainly above 1 500 m altitude and covers 1 450 hm^2, representing 1.6% of the core zone. Tropical evergreen seasonal forest occurs on the mountain above 800 m in the north and northwest of the core zone. Coniferous closed tropical evergreen rain forest distributed on montane slopes above 1 000 m altitude in the north of the PMNP and above 900 m in the south of protected area. Tropical evergreen broad-leaved forest is the main vegetation type in PMNR and covers 70% of the total area, below 800 m altitude.

3 Floristic composition

Based on identification of specimens in the Herbarium of Pu Mat National Park(HPNP), the Herbarium of the Vietnam National University, Hanoi(HNU), and the Herbarium of Botany Department, National Centre for Natural Sciences and Technology, Hanoi(HN), 2 018 species belonging to 771 genera in 184 families of vascular plants were recorded from PMNP.

Table 1 Diversity of plant groups represented in the flora of PMNP

Taxa	No. of family	%	No. of genus	%	No. of species	%
Psilotophyta	1	0.54	1	0.13	1	0.05
Lycopodiophyta	2	1.09	4	0.52	18	0.89
Equisetophyta	1	0.54	1	0.13	1	0.05
Polypodiophyta	20	10.87	59	7.65	149	7.38
Pinophyta	6	3.26	9	1.17	13	0.64
Magnoliophyta	154	83.70	697	90.40	1 836	90.98
Total	184	100	771	100	2 018	100

Magnoliophyta, contributing 1 836 species(90.98% of the total flora), 697 genera(90.4%) and 154 families (83.7%), is the major plant group. Polypodiophyta with 149 species, 59 genera and 20 families, is the second largest group. Others are Lycopodiophyta with 18 species, 4 genera and 2 families; Pinophyta with 13 species, 9 genera and 6 families and Equisotophyta as well as Psylotophyta(1 species, 1 genus and 1 family respectively) (Table 1).

Distribution of taxa of the PMNP flora is similar to Vietnamese flora(Table 2): the Magnoliophyta makes up 91% of the total flora, followed by Polypodiophyta, which contributes 7%.

The PMNP flora represents 21% of the total Vietnamese flora. The PMNP flora contains representatives of all groups of the Vietnamese flora, including half of Equisetophyta and the whole of Psilotophyta.

Table 2 Species numbers and percentage of the total Vietnamese flora in the PMNP

Taxa	Pu Mat National Park		Vietnam		% of total Vietnamese flora recorded at PMNP
	No. of species	%	No. of species	%	
Psilotophyta	1	0.05	1	0.01	100
Lycopodiophyta	18	0.89	56	0.58	32.14
Equisetophyta	1	0.05	2	0.02	50.00
Polypodiophyta	149	7.38	621	6.45	23.99
Pinophyta	13	0.64	45	0.47	28.89
Magnoliophyta	1 836	90.98	8,903	92.47	20.62
Total	2 018	100	9 628	100	20.96

In PMNP, the twenty families with most species contribute 970 species (48.1%) and 314 genera (40.2%) of the total flora(Table 3).

The families with most species richness include Rubiaceae (37 genera/129 species), Euphorbiaceae (36/99), Orchidaceae (34/73), Lauraceae (11/66), Moraceae (10/54), Papilionaceae (24/51), Fagaceae (4/50), Myrsinaceae (5/48), Rutaceae (14/45), Verbenaceae (8/43), Annonaceae (12/34), Compositae (20/34), Caesalpiniaceae (13/32), Ericaceae (5/32), Melastomataceae (12/32), Theaceae (8/31), Apoeynaceae (15/30), Gramineae (23/30), Urticaceae (11/30) and Acanthaceae (13/27).

Some families have only a small number of species in PMNP, but they are the dominant families in phytosociological importance (dominant in individuals), such

as Dipterocarpaceae, Juglandaceae and Illicinaceae.

Table 3 Twenty families with most species-richness in Pu Mat National Park, Vietnam

Family	No. of species	%	No. of genera	%
Rubiaceae	129	6.39	37	4.74
Annonaceae	34	1.68	12	1.54
Euphorbiaceae	99	4.91	36	4.61
Compositae	34	1.68	20	2.56
Orchidaceae	73	3.62	34	4.35
Caesalpiniaceae	32	1.59	12	1.54
Lauraceae	66	3.27	11	1.41
Ericaceae	32	1.59	5	0.64
Moraceae	54	2.68	10	1.28
Melastomataceae	32	1.59	12	1.54
Papilionaceae	51	2.53	24	3.07
Theaceae	31	1.54	8	1.02
Fagaceae	50	2.48	4	0.51
Apocynaceae	30	1.49	15	1.92
Myrsinaceae	48	2.38	5	0.64
Gramineae	30	1.49	23	2.94
Rutaceae	45	2.23	14	1.79
Urticaceae	30	1.49	11	1.41
Verbenaceae	43	2.13	8	1.02
Acanthaceae	27	1.34	13	1.66
Total	970	48.07	314	40.20

Table 4 Twenty genera with most species richness in Pu Mat National Park

Genus	No. of species	%
Ficus	39	1.93
Smilax	13	0.64
Ardisia	26	1.29
Symplocos	13	0.64
Lithocarpus	20	0.99
Elaeocarpus	12	0.59
Syzygium	18	0.89
Cinnamomum	12	0.59
Litsea	17	0.84
Bulbophyllum	12	0.59
Diospyros	16	0.79
Piper	12	0.59
Rhododendron	16	0.79
Lasianthus	12	0.59
Castanopsis	16	0.79
Mussaenda	12	0.59
Bauhinia	15	0.74
Psychotria	12	0.59
Quercus	13	0.64
Clerodendrum	12	0.59
Total	318	15.76

At the generic level, twenty genera with most species richness contribute 318 species (15.8%) of the total flora (Table 4). *Ficus* has the highest species richness with 39 species (1.9% of the total species in PMNP). Other genera with high species richness include *Ardisia* (26 species), *Lithocarpus* (20), *Syzygium* (18), *Litsea* (17), *Diospyros* (16), *Rhododendron* (16), *Castanopsis* (16), *Bauhinia* (15), *Quercus* (13), *Smilax* (13), *Symplocos* (13), *Elaeocarpus* (12), *Cinnamomum* (12), *Bulbophyllum* (12), *Lasianthus* (12), *Mussaenda* (12), *Psychotria* (12), *Piper* (12), *Clerodendrum* (12).

4 Geographical elements

The seed plants in PMNP (Pinophyta and Magnoliophyta) include 1 849 species belonging to 706 genera and 160 families. The geographical elements of seed plants of PMNP flora were analyzed in Table 5 and Table 6.

According to the areal types of World families of seed plants published by Wu Zheng-Yi (2003), the distribution types of the PMNP flora at family level were concluded in Table 5.

Table 5 Distribution types of family of seed plants in Pu Mat National Park

Distribution patterns	No. of family	%
1. Cosmopolitan	34	21.3
2. Pantropic	72	45.0
3. Trop. & Subtr. E. Asia & (S.) Trop. Amer. disjuncted	12	7.5
4. Old World Tropics	6	3.8
5. Trop. Asia to Trop. Australia Oceania	6	3.8
6. Trop. Asia to Trop. Africa	3	1.9
7. Trop. Asia= Trop. SE. Asia+ Indo-Malaya+ Trop. S. & SW. Pacific Isl.	4	2.5
8. N. Temperate	14	8.8
9. E. Asia & N. Amer. disjuncted	4	2.5
12. Medit., W. to C. Asia	2	1.3
14. E. Asia	3	1.9
Total	160	100

In the flora of PMNP, families of strictly tropical distribution contribute 19.5% of the total sum of the flora. These families include those of Old World tropical distribution, such as Alangiaceae, Leeaceae, Pandanaceae, Pittosporaceae, Sonneratiaceae; Tropical Asian to tropical American distribution, including Elaeocarpaceae, Gesneriaceae, Styracaceae, Pandaceae and Verbenaceae; Tropical Asia to Tropical Australia, such as

Daphniphyllaceae, Stemonaceae, Xanthophyllaceae; Tropical Asia to Tropical Africa, such as Ancistrocladaceae, Pandaceae; and Tropical Asian, such as Pentaphylaceae, Pentaphragmataceae, Sabiaceae. The families that have species diversity in tropical areas but range beyond the tropics contribute 45% of the total flora. These families include Acanthaceae, Apocynaceae, Araceae, Euphorbiaceae, Lauraceae, Meliaceae, Vitaceae, Urticaceae, etc. The families, which are distributed mainly in subtropical area, make up 14.5%, including Aceraceae, Aquifoliaceae, Busaceae, Ericaceae, Fagaceae, Hamamelidaceae, Magnoliaceae, Sabiaceae, Symplocaceae, and Ulmaceae. Families of mainly temperate distribution contribute 21.3% of the total flora, such as Ranunculaceae, Umbelliferae, Compositae, Gramineae, Rosaceae, Scophulariaceae, Cruciferae and Labiatae.

Based on the plant book (Mabberley, 1997) and Wu's (1991) classification of generic distribution types, the distribution patterns of the seed plants in PMNP at the generic level are quantified and given in Table 6.

Table 6 Distribution type of genera of seed plants in Pu Mat National Park

Distribution patterns	No. of genera	%
1. Cosmopolitan	22	3.1
2. Pantropic	165	23.4
3. Trop. As. & Trop. Am. disjuncted	34	4.8
4. Old World Topics	82	11.6
5. Tropical Asia & Trop. Australasia	60	8.5
6. Tropical Asia to Trop. Africa	51	7.2
7. Trop. Asia (Indo-Malesia)	222	31.4
Type 2-7 (Total Tropical elements)	(636)	(90.1)
8. North Temperate	18	2.5
9. E. Asia & N. Amer. disjuncted	21	3.0
10. Old World Temperate	4	0.6
12. Mediterranean, W. Asia to C. Asia	4	0.6
14. E. Asia	22	3.1
Type 8-14	(69)	(9.8)
16. Endemic to Vietnam	1	0.1
Total	706	100

The genera of Tropical Asian (centre of the Old World tropics) distribution, such as *Alphonsea*, *Artocarpus*, *Calamus*, *Chukrasia*, *Citrus*, *Duabanga*, *Knema*, *Mycetia*, *Wendlandia* etc., show the highest percentage among all distribution types, contributing to 31.4% of the flora. Genera of pantropical distribution, such as *Ardisia*, *Bauhinia*, *Capparis*, *Croton*, *Cryptocarya*, *Dioscorea*, *Gnetum*, *Lasianthus*, *Piper*, *Trema*, *Uncaria* etc., contribute to 23.4% of the flora. Following are the genera with Old World tropical distribution, such as *Adenia*, *Antidesma*, *Canarium*, *Canthium*, *Elatostema*, *Fissistigma*, *Loranthus*, *Toxocarpus*. Genera with distribution from tropical Asia to tropical Australia include *Adenosma*, *Ailanthus*, *Balanophora*, *Caryota*, *Cinnamomum*, *Hoya*, *Lagestroemia*, *Madhuca*, *Melastoma*, *Tetrastigma*, *Wikstroemia*. Genera with the tropical Asia to tropical Africa distribution include *Ancistrocladus*, *Artabotrys*, *Bombax*, *Flacourtia*, *Garcinia*, *Markhamia*, *Ochna*, *Phrynium*, *Premma*, *Quisqualis*, *Strobilanthes*, *Strophanthus*, *Taxilus* and *Urophyllum*.

Genera with tropical Asia & tropical America distribution include *Ageratum*, *Helicteres*, *Homalomena*, *Meliosma*, *Phoebe*, *Sapindus*, *Sloanea* and *Turpina*. The genera of tropical distribution (types 2-7) composed 90.1% (636 genera) of the total number of genera, while genera of subtropical and temperate elements make up to 9.8% of the total number of genera. These genera include those of north temperate, such as *Acer*, *Betula*, *Carpinus*, *Fagus*, *Myrica*, *Prunus*, *Rhododendron*, *Vaccinium*; East Asia and North America distribution, such as *Ampelopsis*, *Disporum*, *Illicium*, *Maclura*, *Osmanthus*, *Photinia*; Old World temperate distribution, such as *Lactuca*, *Ligustrum*, *Paris*, *Zeikova*; and East Asia distribution, such as *Actinidia*, *Aucuba*, *Cephalotaxus*, *Enkianthus*, *Otochilus* and *Pterocarya*. The Vietnamese endemic has only one genus, i.e. *Poilannammia*. These data show that the flora of Pu Mat National Park is tropical in nature and has strong tropical Asiatic affinity.

5 Conclusions

5.1 Assessment of plants diversity

The flora of PMNP includes all vascular plant phyla and contains representatives of all plant groups of Vietnamese flora. It has 2 018 species, 771 genera belonging to 184 families. Each family has an average of 4.2 genera and 10.1 species, and each genus has 2.6

species. The flora of PMNP makes up 20.96% of the total 9 628 Vietnamese species. The largest group is Magnoliophyta with 1 836 species belonging to 697 genera in 154 families and accounts for 90.98%, 90.40% and 83.70% of the total species, genera and families of the flora of PMNP respectively.

The top 20 families with most species richness, representing only 10% of all families but contribute 48.07% of the total species and 40.20% of the total genera in the flora. They are Rubiaceae, Euphorbiaceae, Orchidaceae, Lauraceae, Moraceae, Papilionaceae, Fagaceae, Myrsinaceae, Rutaceae, Verbenaceae, Annonaceae etc. The top twenty genera with most species, representing 2.56% of all genera in the flora but contribute 15.76% (318 species) of the total species. They include *Ficus*, *Ardisia*, *Lithocarpus*, *Syzygium*, *Litsea*, *Diospyros*, *Rhododendron*, *Castanopsis*, *Bauhinia*, *Quercus*, *Smila*, *Symplocos*, *Elaeocarpus* etc.

5.2 The characteristics of the flora

In floristic elements, the total 160 seed plant families could be classified into 11 distribution types, and the total 706 genera could be classified into 14 distribution types. At the family level, the pantropical distribution contributes to the most in tropical elements, and the north temperate distribution contributes to the most in the temperate elements. At the generic level, the tropical Asian and pantropical distributions are the dominant tropical elements. The East Asia distribution is the most dominant temperate element.

The tropical families in total contributes to 85.6% of the families, and the temperate families in total contribute to 14.4%. Tropical floristic elements at generic levels make up a majority and contribute to 90.1% of the total flora of PMNP. It is revealed that the flora of PMNP is tropical in nature and has strong tropical Asian affinity.

Acknowledgments

The authors are grateful to the directorate of Pu Mat National Park for allowing the research work; also to the Herbarium of Hanoi National University (HNU) and the Herbarium of Institute of Ecology and Biological Resources of Vietnam (HN) for specimen checking. We also thank Mr. Vo Cong Anh Tuan, Mr. Le Dong Hieu who are working in scientific section of PMNP for designed the map and field assistance.

References:

Blanc L, Maury LG. 2000. Structure, floristic composition and natural regeneration in the forests of Cat Tien National Park, Vietnam: An analysis of the successional trends[J]. *J Biogeography*, **27**(1): 141–157

Brummitt RK. 1992. Families and genera of vascular plants[M]. Kew: Royal Botanic Gardens

Centre for Resource, Environmental Studies (CRES)–Hanoi National University (HNU). 2001. Checklist of plant species of Vietnam, Vol. 1[M]. Vietnam: Hanoi Agricultural Publishing House

Forest Inventory Planning Institute (FIPI). 1993. An Investment Plan for Establishment of the Pu Mat Nature Reserve, Nghe An Province[A]. Vietnam: Hanoi (In Vietnamese)

Government of SRV/GEF. 1994. Biodiversity action plan for Vietnam[M]. Hanoi: Government of the Socialist Republic of Vietnam and the Global Environment Facility

Le Tran Chan. 1999. Some basic characteristics of Vietnam flora [M]. Vietnam: Hanoi Science and Technics Publishing House

Mabberley DJ. 1997. The Plant-book: a portable dictionary of vascular plants[M]. (2nd edition). Cambridge: Cambridge University Press

MARD. 2006. Annual report 2006-Ministry of Agriculture and Rural Development of Vietnam[A]. Vietnam: Hanoi

Nguyen Nghia Thin, Nguyen Thanh Nhan. 2004. Plant diversity in the Pu Mat National Park[M]. Vietnam: Hanoi Agricultural Publishing House

Nguyen Nghia Thin, Nguyen Thi Hanh, Ngo Truc Nha. 2001. Medicinal plants of Thai people at Con Cuong district, Nghe An province, Vietnam [M]. Vietnam: Hanoi Agricultural Publishing House

Nguyen Nghia Thin. 1997. The vegetation of Cuc Phuong National Park, Vietnam[J]. Sida, **17**(4): 719–759

Nguyen Nghia Thin. 1998. The Fansipan flora in relation to the Sino-Japanese floristic regions[A]. Bulletin of the Univ[M]. Museum, the Univ of Tokyo, **37**: 111–122

Phan Ke Loc. 1996. On the systematic structure of the Vietnamese flora[M]//Zhang AL, Wu SG. Floristic characteristics and diversity of East Asian. Beijing: China Higher Education Press and New York: Springer-Verlag: 120–129

Ruang Panit N. 1995. Tropical seasonal forest in monsoon Asia: With emphasis on continental Southeast Asia[J]. *Vegetatio*, **121**: 31–40

SFNC (Social Forestry and Nature Conservation). 2001a. Pu Mat: A biodiversity survey of a Vietnamese protected area[M]. Vietnam: Hanoi Labour and Social Publishing House

SFNC. 2001b. Diversity of flora on Limestone Mountains at Pu Mat Nature Reserve[M]. Vietnam: Project Report, Vinh City

SFNC. 2002. Diversity of high mountainous flora in the Pu Mat National Park[A]. Forest Inventory and Planning Unit, North-central Region, Vinh[M]. Vietnam: Project Report, Vinh City

SFNC. 2003. A rapid biodiversity survey and assessment of the Pu Mat National Park, Nghe An Province, Vietnam[M]. Vietnam: Bird life Indochina, Hanoi Project Report, Vinh City

Takhtajan A. 1986. Floristic regions of the world (translated by

T. J. Crovello & A. Cronquist) [M]. Berkeley: University of California Press

Zhu H, Yan LC, Qin HL. 2003. Floristic composition and characteristic of Vietnamese flora[J]. *Acta Scientiarum Naturalium Universitatis Synyatseni*, **42**(6): 98- 102

越南蒲马特国家自然保护区植物区系特征

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摘 要: 蒲马特国家公园位于越南中部的义安省, 国际著名的生物多样性极为丰富的 Annamite 山系的核心地区。基于植物标本鉴定, 在蒲马特国家公园保护区内记录有维管束植物 184 科, 771 属, 2018 种(包括变种和亚种)。该植物区系占整个越南植物区系的21%, 其中的木兰亚纲植物占该植物区系总种数的 90. 98%, 总属数的 90. 4%及总科数的 83. 7%。含种数最多的科包括茜草科(37 属/ 129 种), 大戟科(36/ 99), 兰科(34/ 73), 樟科(11/ 66), 桑科(10/ 54), 蝶形花科(24/ 51), 壳斗科(4/ 50), 紫金牛科(5/ 48) 及芸香科(14/ 45) 等。在种子植物地理成分组成上, 有 11 个科的分布区类型及 14 属分布区类型, 其中, 热带分布型分别占总科数的 85. 6% 和总属数的 90. 1%, 并且在其热带分布属中, 热带亚洲成分占总属数的 31. 4%。这些特征显示, 蒲马特国家公园植物区系是典型热带性质的植物区系, 属于热带亚洲植物区系的一部分。

关键词: 蒲马特国家公园; 植物区系组成; 地理成分; 越南