



西双版纳热带
常野生花卉

TROPICAL WILD FLOWERS AND
PLANTS IN XISHUANGBANNA

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TROPICAL WILD FLOWERS AND PLANTS IN XISHUANGBANNA

许再富 陶国达 编著

谭家昆 摄影

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序

野生花卉是地方天然风景和植被的重要组成部分，有的是现有栽培花卉的祖先，是未来栽培新花的不尽源泉，还是花卉育种重要的种质资源和原始材料。因此，野花在国外备受重视，并且越来越受到更多的重视。如在美国、苏联、丹麦和日本，全国乃至一州(共和国)、一地(市、县)的野花图志、野花画谱、野花日历、野花明信片、野花幻灯片乃至野花研究专著等，纷纷出版问世，受到群众和专业工作人员的普遍欢迎。

我国被西方誉为“世界园林之母”，主要因为中华乃百花的故乡，不仅栽培种如梅、兰、菊、荷、牡丹、芍药、杜鹃、山茶、桂花、水仙等“十大名花”品质优异，种类、品种繁多，而且野生的奇花异草特为丰富，有些还是全球特有的珍稀种质资源。外国人对我国的野生花卉，发生了浓厚的兴趣，正是由于他们过去从中国引种，尝到了甜头，而在创造全新品种的研究时，又切盼从中国搞到渴望已久的全新种质资源。广西的金花茶，四川的百合、木兰，云南的杜鹃、山茶、报春，西藏的龙胆、绿绒蒿、大花黄牡丹(*Paeonia lutea* var. *ludlowii*) 等等，对国外都具有吸引力，原因正在于此。

从发展的观点来看，野生花卉更是适应国际园林新趋向——从前些年提出环境园艺到新近崛起的城市园艺——的需要而引种、育种并创造新园林植物和全新品种的不尽源泉。环境园艺要求从生态角度出发，栽培并配置抗污染、甚至吸收多种有毒气体的园林植物；城市园艺则着眼于保护城市环境、改善城市环境、恢复城市生态平衡，并从节约能源，经济利用城市园林自给性生产等方面着重考虑，故要求创造并引种既好看，又实惠，适应性强，抗寒、耐热、抗旱、耐瘠薄、耐粗放管理，甚至不要任何人工管理的植物新类型、新品种。现美国、波兰等国正在城市及近郊进行大量试验，已在宅园做到果、蔬自给自足并收获若干经济副产品。西双版纳野花种质资源丰富异常，可为我国园林建设与革新提供多方面有用的原始材料和素材。如热带林下的野花，很多极为耐阴甚至喜阴，象野秋海棠(*Begonia* spp.)、野凤仙花(*Impatiens* spp.)、黄栀子(*Gardenia soontepense*)、梭果玉蕊(*Berringtonia macrostachya*)

等，都可以通过引种栽培，成为室内优良盆花和热带园林荫生新花。又如多种热带附生植物，象石斛(*Dendrobium spp.*)、鸟巢蕨(*Neottopteris nidus*)等，大可用以在热带城市园林中布置“空中花园”，美妙奇特，生机无限。喜阳而抗旱耐热的野花，如黄秋葵(*Abelmoschus manihot*)、虾子花(*Woodfordia fruticosa*)、五爪龙(*Merremia vitifolia*)等，生命力特强；石斛既是高雅的切花，又系珍贵的中草药；嘉兰(*Gloriosa superba*)既有美花，又可提炼昂贵而有用的秋水仙碱；还有多种既开美丽花朵，又产调味香料的姜科野花等；另有花朵美大，既可观赏，又可作蔬菜炒食或凉拌的野花，如火烧花(*Mayodendron igneum*)、白花树(*Bauhinia variegata*)等等——它们是在热带城市园艺中通过防护、观赏，并结合经济副产品生产，从而发挥园林综合功能的生力军。

这样看来，对本国、本地的野生花卉，实有系统调查、研究之必要。但是，外国人那么重视的野生花卉种质资源，国内迄今却从未出版过任何专书或其它形式的印刷品。作为世界园林之母的中国，这真是一个很不应有的空白点。

现在好了，中国科学院云南热带植物所编著的《西双版纳热带野生花卉》一书，不仅填补了这个空白，而且以其饶有特色的热带野花，配上美丽逼真的彩照，向读者作一系统介绍，真是图文并茂，相得益彰。读之如饮香茗，令人神往。全书从西双版纳的自然环境，热带的野花分布、热带野花的特点，谈到热带野花的引种栽培等各个方面，内容丰富，深入浅出，文笔流畅，引人入胜，确系以野花为主题的一部优秀作品。许再富同志系云南热带植物研究所副所长，在西双版纳调查研究、不遗余力地奋斗多年，是编著本书的主力。该所陶国达、谭家昆同志协同作战，分工合作，也付出了辛勤的劳动。现趁本书付梓之际，特缀数语以为贺。并盼更多的野花专书及其它出版物源源问世，从而丰富花卉爱好者的知识，为繁荣、革新社会主义祖国园林事业，做出新的贡献。

陈俊愉

Preface

Wild flowers are important in comprising local natural landscape and vegetation, some of them are ancestors of cultured ornamentals nowadays, they are inexhaustible source of new cultivars in the future germplasm resources which are critical in ornamental breeding. So, wild flowers are valued greatly in other countries, and more and more attention is paid on them. In the United States, the Soviet Union, Denmark and Japan, for example, widely published are illustrated collections, calendars, postcards and slides of, and even special research books on, wild flowers of a country or even of a local state (republic) and a local area (municipality, county), which are very popular with the public and specialists as well.

China are known to westerners as "mother of garden", mainly because China is the homeland of a large number of ornamentals. Not only good in quality and rich in variety are the cultured "ten famous ornamentals", that is *Prunus mume* (*Prunus mume*), Orchid (*Cymbidium*), Chrysanthemum (*Pendranthema x morifolium*), Lotus (*Nelumbo mucifera*) Tree Peony (*Paeonia suffruticosa*), Peony (*Paeonia lactiflora*), Rhododendron (*Rhododendron*), Camellia (*Camellia*), Osmanthus (*Osmanthus fragrans*), and Narcissus (*Narcissus tazetta* var. *chinensis*), but also various and abundant are the native wild flowers, some of them are special and rare in China, thus globally valued. Researchers in other countries are very interested in wild flowers in China, just because they have drawn great benefit from introducing wild flowers from China, and in order to produce thoroughly new cultivars, it is necessary to get thoroughly new species which China possesses. That is why so attractive to foreigners are Camellia (*Camellia*) in Guangxi; Lily (*Lilium*) and Magnolia (*Magnolia*) in Sichuan; Rhododendron (*Rhododendron*), Camellia (*Camellia*) and *Primula* in Yunnan and *Gentiana*, *Meconopsis* and *Paeonia lutea* var. *ludlowii* in Tibet.

In the long run, wild flowers will play a more and more important role in environmental horticulture and the newly raised urban horticulture, which need thoroughly new types of ornamentals which may source from those wild flowers. Environmental horticulture emphasizes that landscape plants should be pollution tolerant and able to absorb more than one toxic gases. While urban horticulture stresses on the protection and improvement of urban environment, restoration of

ecological balance, and pays much attention to economic use of energy and urban space to improve self-supporting agricultural production, so it is important to have new cultivars and new types of ornamentals that are economic to grow, resistant to cold, heat, drought and barren, easy to manage even need no care at all, as well as visually pleasant. Recently, great efforts have been made in urban and suburban areas in the United States and Poland to grow fruits and vegetables in gardens and considerable self-support products have been achieved successfully. Xishuangbanna is very rich in wild flower germplasm which is valuable to the improvement of China's landscape gardening and ornamental horticulture. Some wild flowers in the tropical forest, for example, are very shade-enduring and even shade demanding, among them are *Begonia* spp., *Impatiens* spp., *Gardenia soontepense*, *Borringtonia macrostachya*, etc. Through domesticating and cultivating, they can be used as excellent potted flowers and as beautiful shade-bearing ornamentals in tropical gardens. Many epiphytes in tropical forest, such as *Dendrobium* spp., *Neottopteris nidus* etc., can be used in tropical areas to create "aerial garden", which may seem to be wonderful and spectacular. Plants that are heliophilous, drought-enduring and heat-resisting, such as *Abelmoschus manihot*, *Woodfordia fruticosa*, *Merremia vitifolia*, etc., are hardy and have great vitality. *Dendrobium* spp. is not only a kind of magnificent cut-flowers, but also a rare medicinal herb; Colchicine can be extracted from *Gloriosa superba*, which also has beautiful flowers; a large number of species of *Zingiberaceae* which have pleasing flowers are also popular flavourings; some species, with colorful flowers, are also edible and can be cooked as vegetables or tossed as salads, among them are *Mayodendron igneum*, *Bauhinia variegata*, etc., they can be used in landscaping in tropical cities to serve the purpose of environmental protection, beautification and as self-supporting by-products.

Thus, we can see it is necessary to have a systematic surveying and investigation on wild flower resource of the country or a local region. But till now, we do not have any forms of publications on the treasure which are highly valued in other countries. It is a pitiful gap which should not have existed in China—the mother of garden.

Fortunately, the book "Tropical Wild Flowers In Xishuangbanna", compiled by Yunnan Tropical Botanical Research Institute, The Academy of Science of China, will not only fill the gap, but will also stretch before readers a panorama of the unique tropical wild flowers, with its vivid descriptions illustrated with colorful artistic photographs. Reading such a book is just as pleasant as sipping a cup of fragrant tea. It starts systematically from the natural landscape and environment of Xishuangbanna, goes through the distribution of tropical wild flowers, their characteristics and then to the

domestication and cultivation, all are interesting and absorbing. Xu Zai-fu, vice director of Yunnan Tropical Botanical Research Institute, who has years of experience in investigating and researching in Xishuangbanna, is the main co-author; the other co-authors are Tao Guo-da, Tan Jia-kun, who have also made great efforts in compiling this book. On the publication of this book, I express my great congratulations with those few lines as above, and hope that more and more books and publications on wild flowers will come to appear.

Chen Jun-yu

前言

德国大诗人歌德在 1790 年提出“花是由叶子变来的。”经科学家们的研究，花确是缩短的、变态的枝条，是有花植物的重要繁殖器官。花卉是指那些在花的结构、形态、颜色或气味等方面能给予人们欣赏、享受和美化环境的植物。某些植物的其它器官，如叶片的形态、颜色等的特殊异样也同花卉一样，产生较高的观赏价值。

西双版纳是我国野生植物资源最丰富的地区之一，已知的有花植物种类在 4000 种以上，具有较高观赏价值的植物众多，有的野生花卉可供直接栽培、观赏；有的花卉在育种上具有巨大的潜力。本书重点介绍原产于西双版纳的主要热带野生花卉。

植物的有性器官是比较稳定而保守的，它不象营养器官那样容易受环境的影响而发生变化，因而从形态解剖学的观点来讲，热带花卉与温带花卉并不存在本质的差别。但是热带植物的花器官是千百万年来在热带自然条件下发展、进化而形成的。不仅种类繁多，而且在花器官的结构、形态、颜色、^①气味、生物学特性和生态学特性等方面均有异于人类长期栽培的花卉，更相异于人们熟知的大多数温带花卉。

本书介绍了西双版纳野生花卉的种类、分布、观赏特征、生态环境等，多数植物均有野生状态下的彩色照片，以生动形象体现文字描述。本书还论及其中一些花卉的引种栽培和繁殖的方法、措施等。

本书是由许再富、陶国达、谭家昆负责编著。本所李延辉、童绍全、马宜中、夏聚康等同志帮助鉴定有关学名及提供了部分照片；中国科学院植物研究所陈心启、吉占和两同志帮助鉴定部分兰花学名；本所裴盛基同志对本书作了审阅和修改，在此表示谢意。

中国科学院
云南热带植物研究所

Introduction

Just as the greatest German poet Goethe recited in 1790: flowers are modified forms of leaves, scientists have verified that flowers are compacted modifications of stems, and are the important reproductive organs of flowering plants. Ornamentals usually have flowers enjoyable in structure, form, color and fragrance, and can be used to beautify our environment. While some ornamentals are admirable not because of their flowers, but other organs such as their peculiarly formed or colored leaves.

Xishuangbanna is one of the regions in China that are richest in wild plants, the known number of flowering plants is more than 4000. Many of them are of great ornamental value, some can even be directly introduced and cultivated as ornamentals; some possess tremendous potential value in ornamental breeding.

The reproductive organs of plants are not as changeable as vegetative organs when influenced by changing environment. In the view of anatomy, no essential distinctions exist among tropical and temperate ornamentals. But flowers of the tropical plants are developed and evolved in the tropical environment, thus, they do are different from those of long-cultured ornamentals and even more different from those of most well known temperate ornamentals in structure, form, color and scent, and both in biological and ecological characteristics.

In this book, systematically described are species of wild flowers in Xishuangbanna, their distribution, their ornamental characteristics, their ecological surroundings, etc. In most cases, literal descriptions are illustrated with color photographs taken in natural sites. The domestication, cultivation and propagation of some tropical wild flowers are also discussed.

The compilation of this book was organized by Xu Zai-fu, Tao Guo-da and Tan Jia-kun, Li Yan-hui, Tong Shao-quan, Ma Yi-zhong, Xia Ju-kang, etc. from the same institute provided help in identifying some species and provided some photographs: Chen Xin-qi and Ji Zan-he from Botanical Research Institute, The Academy of Science China provided help in identifying some species of orchids. The co-authors would like to thank Mr. Pei Sheng-ji for his reviewing and correcting the manuscript.

Yunnan Tropical Botanical Research Institute
The Academy of Science of China

编	文	许再富	陶国达	
摄	影	谭家昆		
翻	译	俞孔坚	吉庆萍	江汶
校	订	苏雪痕		

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一、自然环境

西双版纳位于云南省南部，地处北纬 $21^{\circ}10' \sim 23^{\circ}40'$ ，东经 $99^{\circ}55' \sim 101^{\circ}50'$ 之间，总面积约 19200km^2 。“西双”在傣语中是数字“12”，“版纳”是行政单位——“千田”，即西双版纳是一个包括有 12 个“版纳”的地区。西双版纳傣族自治州管辖着景洪、勐海及勐腊三个县，首府是景洪市。

(一) 地形与土壤

西双版纳是一个热带北部边缘的内陆低山地区，山地面积占本区总面积的 95%，在山地之间分布着大小不等的“平坝”，即盆地，有 30 多个，仅占总面积的 5%。绵延于云南西部的怒山及中部的无量山的余脉，由北向南徐徐下降，延伸入本区而成扫帚状的低山丘陵地带。著名的澜沧江从西北流入本区，又从东南流入老挝、缅甸及泰国交界处的三角地区，把本区切割成东西两大部分。西部的火山、粘天岭，东部的大小庐山、营盘山、白马山等主要山峰构成了本区地形的骨架。大小山岳、丘陵连绵起伏，形成了西北高、东南低的地形。海拔 $430 \sim 2300\text{m}$ ，高差变化甚大。

西双版纳的土壤主要是地带性的砖红壤性红壤。在海拔 $900 \sim 1000\text{m}$ 以上的地区分布的主要是红壤，在局部地区分布有二叠纪石灰岩发育的石灰岩碳酸盐土(主要分布在勐腊县境内)及沿河流两岸的冲积砂壤等。

(二) 气候

西双版纳的气候属我国西部季风区，一年中受西南季风及东北季风的交替影响。本区地理位置特殊，山脉南北走向，北高南低，南面及东南面距印度洋及太平洋较近。在夏季，西南季风带来了充裕的水气；北部由于有高原的屏障，冬季的冷空气不易侵入，因而形成了终年温暖、湿润的热带气候(也称为边缘热带气候)(丘宝剑，1982)，优越的热带气候为热带森林的发展、热带野

生花卉的生长发育和演化提供了良好的条件。

西双版纳一年中接受太阳的辐射量较高,以首府景洪为例,年辐射量为 $110.47\text{kcal}/\text{cm}^2$ 。本区的热量受地形、海拔及地被植物的影响而再分配,变化颇大。年平均气温在 $18.1\sim 21.7^\circ\text{C}$ 之间,海拔每升高 100m ,气温下降 $0.5\sim 0.7^\circ\text{C}$,表现出北低南高、西低东高的气温分布图式(图 1)。这与地形的变化基本一致。根据图 1,西双版纳大体上可划分为三个分区,即(1)以澜沧江河谷的景洪、橄榄坝等为主的低海拔河谷及丘陵地带(海拔在 800m 以下)的热区;(2)以勐海、勐遮为主的中高海拔盆地及高山地区(海拔在 1000m 以上)的低热区;(3)介于上述两区的盆地及丘陵、低中山地(海拔在 $800\sim 1000\text{m}$ 之间)的中热区。西双版纳历年极端最低温度的分布与海拔高度、地形的变化密切相关,即北低南高,西低东高。一般而言,在海拔 800m 以下的地区,历年极端最低温度在 2°C 以上, 1000m 以上的地区在 $-2\sim -5^\circ\text{C}$ 以下,而在 $800\sim 1000\text{m}$ 的地区则在 $0\sim -1^\circ\text{C}$ 。由于西双版纳属内陆河谷山地,在特定地形条件下,低

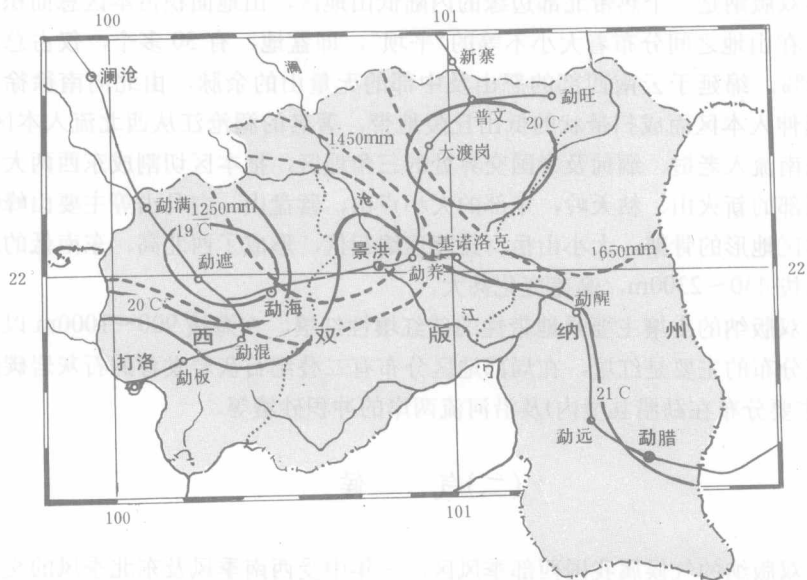


图 1 西双版纳地区年平均气温、年降雨量分布图(谭连森, 1981)

Figure 1 The distribution patterns of mean annual temperature and annual rainfall in Xishuangbanna (from Lian-sen Tan, 1981)

温季节存在着逆温现象。例如小勐养的阿土寨,海拔高度 1000m,年平均气温 19.7℃;相邻的小勐养盆地,海拔高度 764m,年平均气温 20.9℃。但绝对最低气温阿土寨(4℃)反而比盆地(-0.5℃)高 4.5℃。

西双版纳各地的降雨量为 1200~1679mm 之间,平均为 1430mm,可谓充沛。海拔、地形对水分的再分配也起了较大的作用,降雨分布大体可以澜沧江划界(图 1)。澜沧江以东地区,除承受西南暖湿季风的影响外,东南暖湿气流对其影响比西部明显,因此,除高山背风狭谷地方雨量偏少外,大部分地方降雨量在 1500mm 以上。澜沧江以西地区除在山地和南坡降雨量较多外,大部分地方均在 1400mm 以下。由于季风的强烈影响,在一年中,西双版纳的降雨量很不均匀,雨季和干季明显。5 月上、中旬至 10 月下旬,来自赤道海洋的西南季风,气流深厚而稳定,降水频繁而均匀,成为本区的雨季,集中了一年降雨量的 80~90%。11 月至翌年的 5 月上旬,由于西风南支急流把印度半岛北部的干暖热带大陆气团引导过来,形成晴天多、气温高、湿度小的干季。本区由于地形及热带森林的调节作用,在干季时雾日多,雾量大,雾日一般在 110~150 天(张克映, 1963; 谭连森, 1981)(照片 1)。这对于减少植物水分的蒸腾及土壤水分的蒸发、缓和干旱起着很大的作用,有利于植物的生长发育。很多附生的花卉植物布满在石灰岩季节性雨林中裸露的岩石上,并且在干季中有的处在持续生长阶段,有的开着繁花,就是因为它们分布在“雾线”以上,得到了雾露的滋润。

(三) 热带植被

西双版纳在我国素有“绿色宝库”的誉称。在 50 年代,本区森林的覆盖率达 60% 左右,到处是浩瀚的林海,由于近代的不合理开发,造成森林的严重破坏。目前,天然森林的覆盖率仅约 30%。当然,西双版纳还是我国森林覆盖率最高的地区之一。在本区,已建立了勐腊、勐仑、勐养及曼搞四个自然保护区,总面积达 200kha,约占西双版纳土地面积的 12%,本区的热带植被及热带植物资源主要就保存在这些自然保护区中。

西双版纳的植物区系属于古热带植物区系,并与东南亚热带植物区系有极密切的关系。这里的热带植物资源极其丰富,热带性显著,如有龙脑香科(Dipterocarpaceae)、四数木科(Tetrameleaceae)、肉豆蔻科(Myristicaceae)、藤黄科(Guttiferae)、棕榈科(Palmae)、山榄科(Sapotaceae)等。由于本区具有

热带北缘的性质,植物区系成分中又有不少属于南亚热带的成分,如山毛榉科(Fagaceae)、樟科(Lauraceae)、山茶科(Theaceae)等(吴征镒、李锡文, 1963; 吴征镒, 1979)。

由于地形和气候的特殊,西双版纳分布着我国发育最好的热带植被。各种植被类型在西双版纳的分布由于海拔高度、地形及水热条件的不同而有较大的差异。总的说来,在这个地区的南部、东南部,沿澜沧江及其支流的两侧,海拔高度在 900m 以下的山地、丘陵、河谷阶地分布着热带植被;而在本区的西部、北部,海拔高度在 900m 以上的山地,则分布着南亚热带的常绿阔叶林(图 2)。

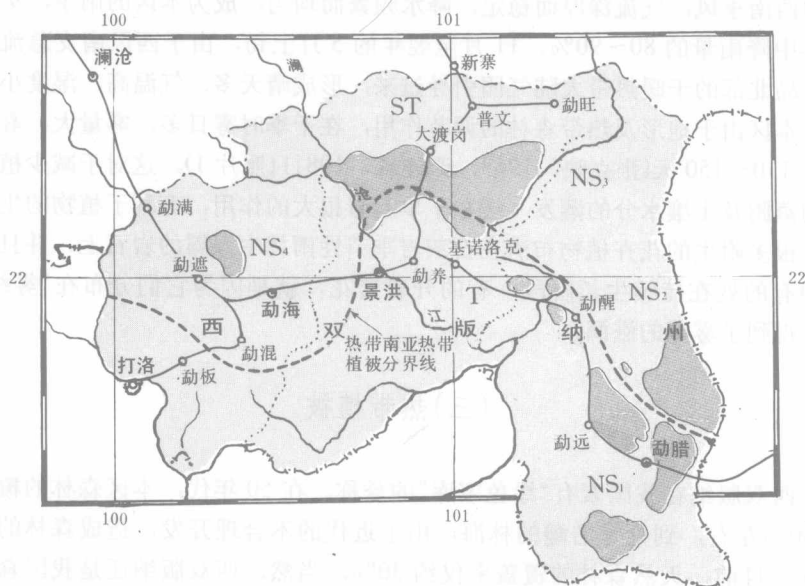


图 2 西双版纳热带植被及自然保护区分布图

T—热带植被 ST—南亚热带植被
NS₁—勐腊自然保护区 NS₂—勐仑自然保护区
NS₃—小勐养自然保护区 NS₄—曼稿自然保护区

Figure 2 The distribution of tropical vegetation and natural reserves in Xishuangbanna

T—Tropical vegetation; ST—South subtropical vegetation;
NS₁—Mengla natural reserve; NS₂—Menglam natural reserves;
NS₃—Xiaomengyang natural reserve; NS₄—Mangao natural reserve.