



都江堰生物多样性小丛书
A Series Books of Biodiversity in Dujiangyan

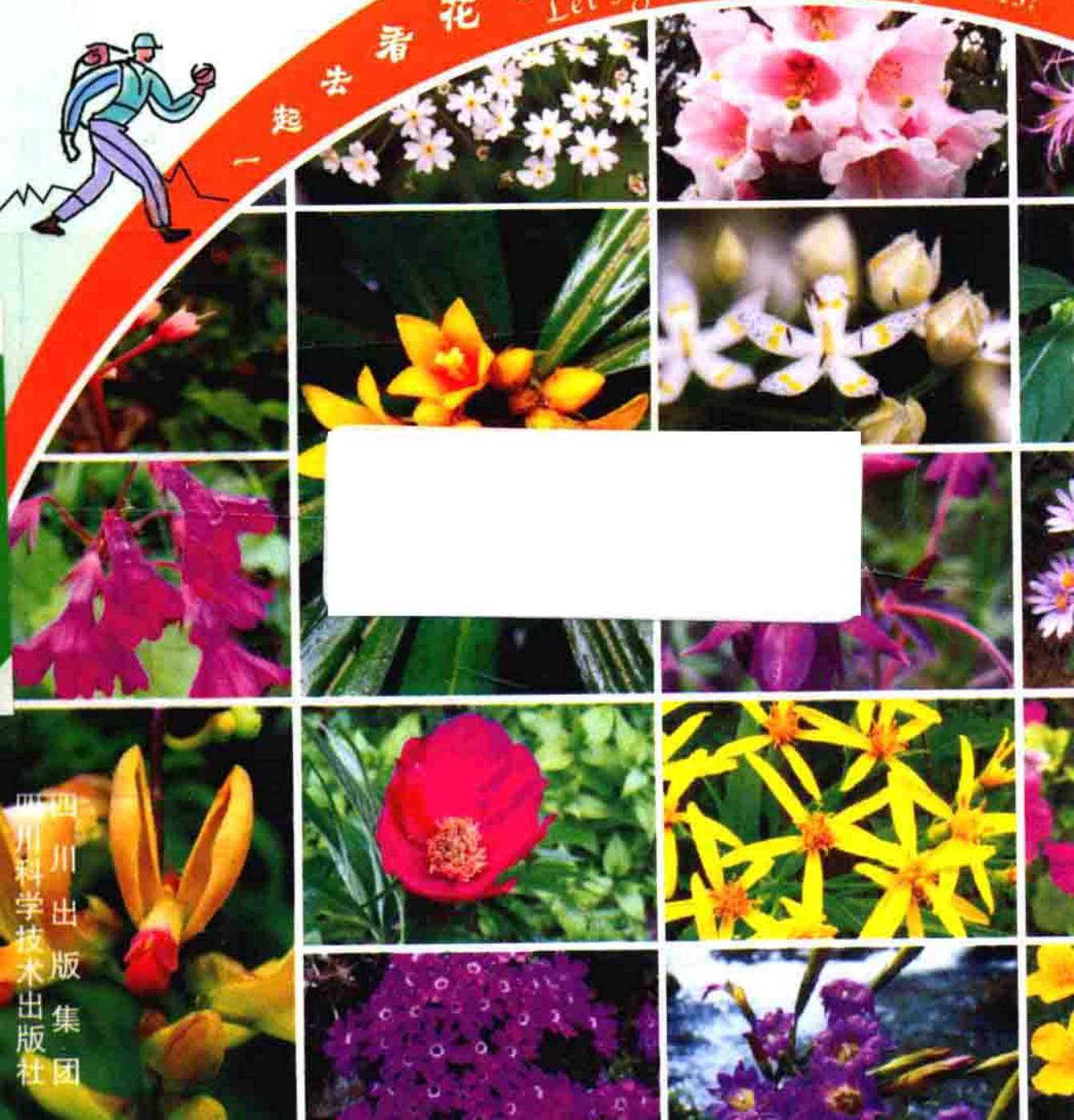
Colourful Plants

多彩的植物

龙溪-虹口国家级自然保护区管理局
The Management Bureau of Longxi-Hongkou National Nature Reserve



一起去赏花识草吧！
Let's go and find these plants!



四川出版集团
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序

《都江堰生物多样性小丛书》

Preface

of A Series Books of Biodiversity in Dujiangyan

生物多样性是数以百万计的动物、植物、微生物和它们所拥有的基因以及它们与其生存环境形成的复杂的生态系统。

生物多样性是人类赖以生存的物质基础。多种多样的生物不仅给我们带来全部的食物、许多药物和工业原料，而且还有巨大的间接价值。据估计，生物多样性在固定太阳能、调节气候、保持水土、吸收和分解污染物、贮存营养元素并促进养分循环、维持进化过程等方面，每年为人类创造约33万亿美元的价值。

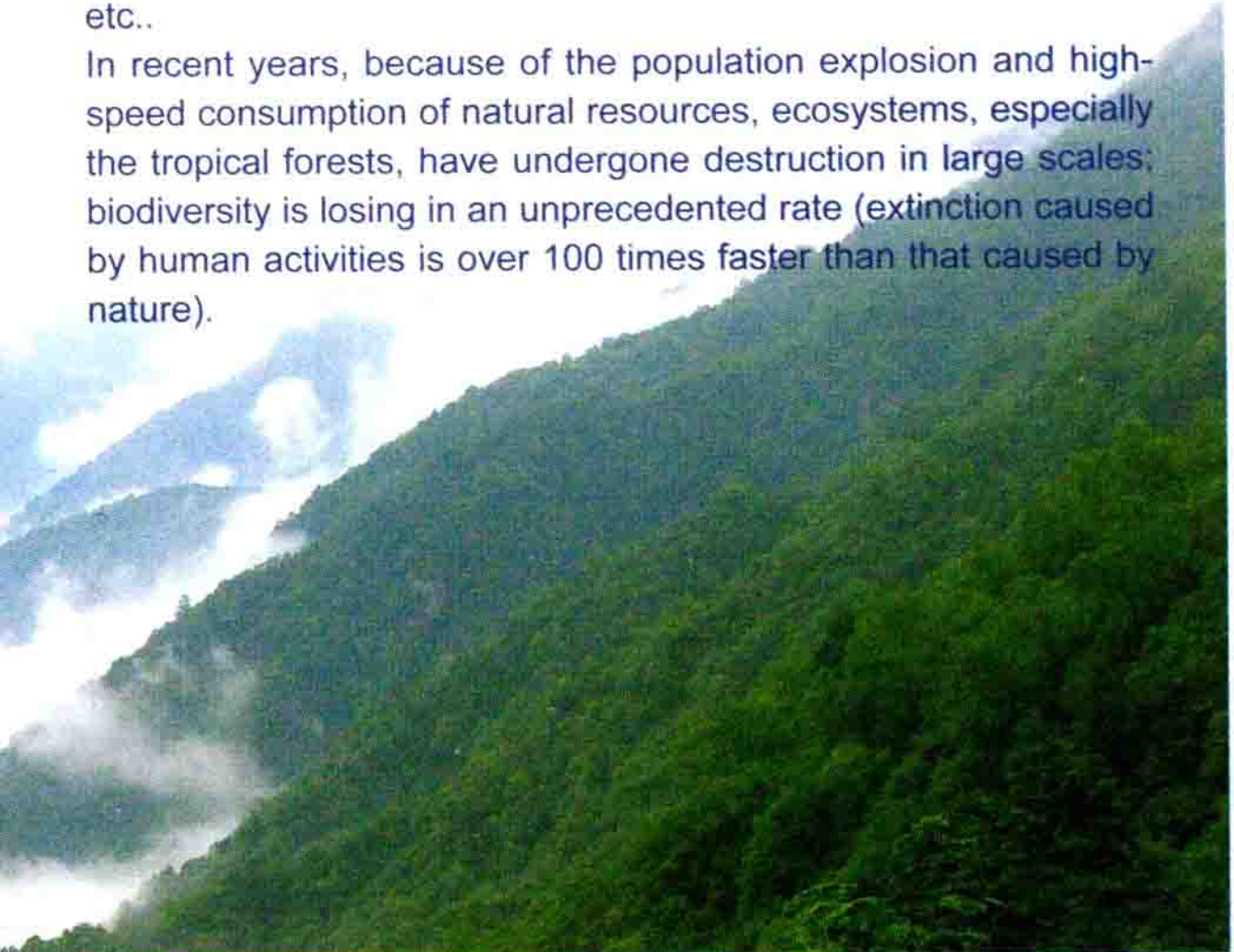
近年来，由于人口的剧增、自然资源的高速消耗，使生态系统特别是热带的森林遭到大规模破坏，造成生物多样性以空前的速度衰减（人类活动造成生物物种灭绝的速度比自然灭绝高100倍以上）。



Biodiversity is the grandeur of the biosphere on planet Earth composed of plant, animals and microbe with their constantly changing genetic materials, millions of species, various morphology and functions, as well as complex ecosystems.

Biodiversity is the material basis of human's survival. It not only provides us with all the food, many medicines and industrial raw materials, but also has great indirect value. It is estimated that biodiversity contributes to approximately 33,000 billion dollars per year, in the aspects of stabilizing solar power, regulating the climate, conserving water and soil, absorbing and degrading contaminative substance, keeping nutrient elements and facilitating their circulation, maintaining the evolution process, etc..

In recent years, because of the population explosion and high-speed consumption of natural resources, ecosystems, especially the tropical forests, have undergone destruction in large scales; biodiversity is losing in an unprecedented rate (extinction caused by human activities is over 100 times faster than that caused by nature).



为保护和持续利用生物多样性，1992年在巴西首都里约热内卢召开的联合国环境与发展大会上，来自150多个国家的首脑共同签署了《生物多样性公约》。公约于1993年12月29日正式生效，目前已有188个国家和地区成为缔约方。我国是第一批签署《生物多样性公约》的国家。

都江堰是我国生物多样性的代表地区，拥有“四川大熊猫栖息地世界自然遗产”“青城山—都江堰世界文化遗产”“龙溪—虹口国家级自然保护区”，既是保护生物多样性的的重要基地，也是生物多样性的展示窗口。

都江堰地理位置独特，地质历史悠久。地处青藏高原东缘、横断山北段，属中国地貌三大阶梯中第一阶梯向第二阶梯过渡区域。境内最高峰光光山在距今十亿年前就已出露海面，中高山则是受第三纪、第四纪两次喜马拉雅造山运动的强烈影响迅速抬升而成。市域内有平原、河谷、丘陵、低山、中山和高山峡谷等多种地貌类型。海拔从592米到4 582米，相对高差达3 990米；气候垂直变化显著，植被亦呈现典型的垂直分布。

都江堰市位于我国中部一个气候、植被、植物区系、动物地理多种地理要素交汇、过渡的大尺度复合性生态过渡区。气候区划上，都江堰市处于在中亚热带、北亚热带



In order to preserve and ensure sustainable use of biodiversity resources, heads from more than 150 countries signed the Convention on Biological Diversity at the United Nations Conference on Environment and Development, which was held in the year of 1992 in Rio de Janeiro, Brazil. The convention came into effect on 29th December, 1993; by now, there are 188 signatory parties. China was among the first group of states that signed the convention.

Dujiangyan is a representative region of biodiversity in China, owning World Natural Heritage of Sichuan Giant Panda Habitat, World Cultural Heritage of Mount Qingcheng and Dujiangyan, and Longxi-Hongkou Nature Reserve. It is both an important base of preserving biodiversity, and a window of displaying it.

Dujiangyan has a unique location and ancient geology. It is situated on the east margin of Qinghai-Tibet Plateau and northern part of Hengduan Mountains, often known as the transition region from the first step to the second step down the "three steps of topography in China". Guangguang Mountain is the highest peak in this region, which has emerged from the sea surface as early as one billion years ago; mid-high mountains were quickly lifted by the strong influence of Himalayan orogeny in the Tertiary and Quaternary Periods. In this territory, there are various topography features including plains, river valleys, uplands, low mountains, mid mountains, alpine canyons, etc.. The elevation ranges from 592 to 4,582 metres, rendering the relative difference as huge as 3,990 metres. The vertical change of climate is very obvious; hence, the vegetation is also vertically distributed.

Dujiangyan lies in large-scaled ecological transition zone, where converge mixed types of climate, vegetation, flora and fauna. In



和青藏高原三个气候区的交汇带；中国森林植被区划上，都江堰市处在青藏高原高寒植被区域与亚热带常绿阔叶林区域的交汇处；从植物区系上讲，都江堰市属于横断山脉植物区系地区向华中植物区系地区的过渡区。

得天独厚的地理条件使这里植被类型和生物物种极为丰富。市域内由低到高分布着常绿阔叶林、常绿和落叶阔叶混交林、针阔混交林、亚高山暗针叶林、高山灌丛、高山草甸和高山流石滩稀疏植被7个植被带；有维管植物3284种，脊椎动物568种。这里生物多样性的显著特点是：区位独特，起源古老，类型多样，结构复杂，种类丰富，特有性强，濒危物种多。

我国陆地11个生物多样性保护关键区域中排列第二的“岷山-横断山北段”，保护国际列出的“中国西南山地生物多样性热点地区”（全球25个生物多样性热点地区之一），均涵盖了都江堰市所在区域。

都江堰市委、市政府历来十分注重生物多样性保护和生态建设。特别委托龙溪-虹口国家级自然保护区管理局编写了这套《都江堰生物多样性小丛书》。小丛书将分景观、植物、动物等多册陆续出版，旨在让大众更多了解都江堰市丰富的生物多样性，从而更加热爱大自然，自觉保护大自然。



terms of the climate, it is in a mixing region of middle subtropical climate, north subtropical climate and Qinghai-Tibet Plateau climate. Regarding to vegetation, Qinghai-Tibet Plateau alpine vegetation and subtropical evergreen broadleaf forests intersect here. As for the floristic regions, it belongs to the transition area from the Hengduan Mountains to Central China.

With particularly favorable geographic conditions, this region is rich in vegetation types and species. From low to high, there are 7 vegetation zones: evergreen broadleaf forest, mixed evergreen broadleaf and deciduous broadleaf forest, mixed coniferous-deciduous broadleaf forest, subalpine evergreen coniferous forest, alpine shrub, alpine meadow and alpine talus vegetation; it includes 3,284 vascular plant species and 568 vertebrate animal species. The biodiversity is features unique location, ancient origin, diverse types, complex structure, rich species, high endemism and many endangered species.

Dujiangyan area is covered by both the “Minshan-north Hengduan Mountains” critical conservation regions of biodiversity (ranked 2 out of 11 in mainland China), and the “Southwest China mountains biodiversity hotspot”, one of the 25 global hotspots listed by Conservation International.

Dujiangyan municipal Party committee and government have always paid attention to the conservation of biodiversity and ecological restoration. Therefore, the Management Bureau of Longxi-Hongkou Nature Reserve was entrusted to compile *A Series of Books on Dujiangyan Biodiversity*. This series of books will be published with the volumns of landscape, flora, fauna, etc., aiming to popularize the knowledge on biodiversity of Dujiangyan, encouraging readers to appreciate and protect the nature.



前言

“多彩的植物”

Preface

of Colourful Plants

特殊的地理环境和优越的气候条件让都江堰成为植物物种富集的地区。

都江堰有维管植物3 284种，占全国总数的1/10左右，其中包含了许多古老的孑遗植物（珙桐、水青树等）、四川特有植物（四川润楠、岷江杜鹃等），都江堰特有植物（灌县花楸、青城榆等）以及模式标本采自都江堰的植物（青城报春、深绿细辛、舌叶金腰等）。

在本书中，我们把都江堰的植物分濒危植物、观赏植物、药用植物、食用植物和芳香植物五大类别加以介绍。精选每类中有代表性的植物，用图文并茂、中英对照的形式，生动展示都江堰丰富的植物资源，希望能让读者对都江堰的植物多样性有一个大致的了解。



Distinctive geographic environment and advantageous climate conditions make Dujiangyan abundant in botanic species.

There are 3,248 species of vascular plants, accounting for one tenth of the total number nationwide, including primitive relicts (e.g. *Davidia involucrata*, *Tetracentron sinense*, etc.), Sichuan-endemic plants (*Machilus sichuanensis*, *Rhododendron hunnewellianum*, etc.), Dujiangyan-endemic plants (*Sorbus guanxianensis*, *Ulmus kunmingensis* var. *qingchengshanensis*, etc.) and type specimens collected in Dujiangyan (*Primula chienii*, *Asarum porphyronotum* var. *atrovirens*, *Chrysosplenium glossophyllum*, etc.).

In this book we introduce typical Dujiangyan plant species from aspects of conservation, ornamental, medicinal, culinary and aromatic values, with bilingual texts and pitures, hoping readers could acquire a general knowledge on Dujiangyan's biodiversity.



使用指南

A Guide to the Book



认识一种植物，首先需要找到它。在四川西部多山的环境中，海拔高度是决定植物分布范围的重要因素，此外季节物候的变化也需要留心。对于每种植物，我们不仅介绍了拉丁学名以及科属，还特地标注了其生活区域的海拔和花期，让读者能一目了然。

接下来就是如何观察植物的形态了。根、茎、叶、花、果实和种子六大器官都有它们的特征，其中又以花、果等生殖器官的特征对植物分类最为重要。当然，其生活习性和生境也是识别植物必不可少的外在条件。在正文和鉴别特征这两个部分，我们对每种植物的这些信息作了精要的介绍。

本书一共收录了147种都江堰地区的植物，其中7种为中国特有，14种为四川特有。

为了帮助普通读者理解花冠、对生等常见的植物分类描述术语，在书末我们专门做了带有示意图的附录。为了使读者对整本书的植物信息有全面了解，便于查找

To familiarize with a plant, the first thing is to find it. In a mountainous area of West Sichuan, elevation becomes a key factor to determinate the distribution of vegetation. Also, attention should be paid to the change of seasons. To every kind of plant, introduction is not only given to its Latin name and category, but also the habitat, elevation and florescence, to make it clear at a glance.

Then, it comes to close observation. 6 organs, namely root, stem, leaf, flower and fruit, have their own features, among which reproductive organs such as flower and fruit are the most significant. Certainly, habit and habitat are also necessary external conditions to identify a plant. In the main text and identification part, essential and concise introduction is made to this information of every kind of vegetation.

This book has collected 147 kinds of plants in Dujiangyan, among which there are 7 endemic to China and 14 endemic to Sichuan.

In order to facilitate readers to understand terms those are frequently used to describe plants, such as "corolla" and "opposite", a graphic appendix is added in the end. Likewise, there is an index to help readers obtain a comprehensive grasp about the plants in this book.

Hope this book could become your friend, bringing you the knowledge of plants in



希望本书能成为您了解都江堰植物，热爱大自然的朋友。

峨眉含笑

中国特有种

Michelia wilsonii

木兰科, 含笑属

海拔: 700~1600米

花期: 3~5月

国家二级重点保护植物

特有种标签: 是否四川或中国特有

植物名称: 中文名称和拉丁学名

分类信息: 植物所在的科属

植物分布的海拔高度范围以及一年中开花的月份

古老的木兰科植物, 是研究有花植物演化的重要材料。中国南方分布着世界木兰科一半以上的物种, 其中又有半数属中国特有。含笑属的花因为芳香清丽而备受青睐, 四川人喜爱的黄桷(角)兰即是含笑属的成员。

正文:
阐述该植物的特色、生态和文化意义以及其他趣味知识

鉴别特征 Identification

花 淡黄色, 芳香, 直径5~6厘米。单生叶腋。叶 革质, 上面无毛, 有光泽, 下面灰白色有稀疏毛。习性 常绿乔木。生境 山地森林。





Ancient Magnoliids are significant to the study of angiosperm phylogeny. South China is home to more than half Magnoliaceae species of the world, and half are endemic to China. Flowers in the *Michelia* genus receive wide popularity for their fragrance, such as *M. champaca*.

Flowers light yellow, fragrant, with a diameter of 5-6cm; solitary in leaf axils. Leaves leathery; glossy above, greyish white pubescent beneath. Habit: evergreen tree. Habitat: mountain forests

鉴别特征:
对花、叶等器官的显著特征的描述

植物图片:
在野外生境拍摄的植物照片, 反映植物的姿态形态以及它们的生境

A typical entry of a plant species:

 <p>峨眉含笑</p> <p><i>Michelia wilsonii</i></p> <p>木兰科, 含笑属</p> <p>海拔: 700~1600米</p> <p>花期: 3-5月</p> <p>国家二级重点保护植物</p>		<p>Label of endemic species: Sichuan-endemic or China-endemic</p> <p>Name: Chinese name and Latin name</p> <p>Classification: the genus and family of the plant</p> <p>the range of its elevation and its annual florescence</p>
<p>古老的水兰科植物。是研究有花植物演化的重要材料。中国南方分布着世界木兰科一半以上的物种。其中又有半数属中国特有。含笑属的花因为芳香清丽而备受青睐。四川人喜爱的黄桶（角）兰即是含笑属的成员。</p> <p>中国特有 <i>Michelia wilsonii</i></p> <p>花 淡黄色, 芳香。直径5-6厘米。单性总状。叶 革质, 上面无毛, 有光泽, 下面被白绢状蛛丝毛。习性 常绿乔木。生境 山地森林。</p> <p>Flowers light yellow, fragrant, with a diameter of 5-6cm; solitary in leaf axils. Leaves leathery; glossy above, greyish white pubescent beneath. Habit evergreen tree. Habitat mountain forests.</p>	<p>Ancient Magnoliids are significant to the study of angiosperm phylogeny. South China is home to more than half Magnoliaceae species of the world, and half are endemic to China. Flowers in the <i>Michelia</i> genus receive wide popularity for their fragrance, such as <i>M. champaca</i>.</p>	<p>Main text:</p> <p>Introducing the characteristics, habit habitat, cultural meanings and other interesting knowledge of the plant</p>
		<p>Identification:</p> <p>Description of distinct features of organs such as flower, leaf, etc.</p> <p>Picture of Plants:</p> <p>Pictures of plants taken in the wild, reflecting their look and habitats.</p>

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