

云南常见

Illustrated Handbook of Common Wetland Plants in Yunnan

湿地植物图鉴【第1卷】

主编 彭华

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中国科学院昆明植物研究所
编

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云南常见湿地植物图鉴

Illustrated Handbook of Common Wetland Plants in Yunnan

Preface 序

湿地被誉为地球之“肾”，它同森林、海洋一道被称为地球三大生态系统，是人类经济社会可持续发展的战略资源。湿地植物是湿地生态系统的重要组成部分，也是湿地生态过程和湿地生态系统服务的要素。人们从湿地生态系统中获得的各种效益，包括供给、调节以及文化等服务，均与湿地中的植物关联。

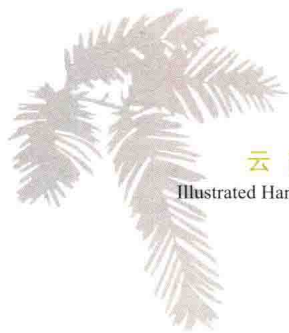
2012年云南省启动了第二次湿地资源调查，省林业厅委托中国科学院昆明植物研究所完成重点湿地植物调查，并指导各州（市）、县（区、市）林业部门完成一般湿地的植物调查。此次调查，全省共布设湿地植物调查样方3380个，调查范围内发现湿地植物204科876属2274种，其中被子植物133科725属1974种，裸子植物4科10属11种，蕨类植物31科71属128种，苔藓植物36科70属161种。根据专家建议，对生活型较严格归于湿地植物的种类作了划分，有1619种，隶属171科642属，国家重点保护野生植物12种，其中国家Ⅰ级重点保护野生植物5种，国家Ⅱ级重点保护野生植物7种，云南特有种116种，中国特有种489种。云南湿地植物、国家重点保护野生植物和特有种的种类均居全国之首。

为了使湿地资源调查成果得到广泛运用，指导湿地保护工作者科

学实施湿地管理，引导更多的公众走进大自然，认识湿地植物，享受野性自然中湿地植物散发的馥郁芬芳，云南省林业厅组织编写了这本《云南常见湿地植物图鉴》。相信本书的出版，将有利于湿地科学知识的普及，有利于湿地的宣传和保护。由于条件有限，该书仅收集了500种湿地植物，今后我们将陆续完成其余湿地植物的编写工作，为探究自然奥秘、建设生态文明提供有益的基础资料。

侯新华

2014年12月



云南常见湿地植物图鉴

Illustrated Handbook of Common Wetland Plants in Yunnan

Preface

Wetland is known as the Earth's Kidney. Together with forest and ocean, it is one of the three major ecosystems on Earth and is the strategic resources for the sustainable development of economy and society for the human being. Wetland plants are integral parts of wetland ecosystem and the key element realizing the ecological process and ecosystem services. The human being benefits in various ways from the wetland ecosystem, including provision, regulation and cultural services, all closely associated with wetland plants.

In 2012, Yunnan Province initiated the second major inventory on wetland resources. Yunnan Provincial Forestry Department entrusted Kunming Institute of Botany to undertake the inventory on plants species of key wetlands and guided the forestry technicians of different prefectures (municipalities) and counties to carry out the inventory on plants of other wetlands. With the completion of the inventory, the basic data of wetland plants in the province is collected. A total of 3,380 quadrat sampling sites were established. Altogether 204 families, 876 genera and 2,274 species of wetland plants have been recorded in this inventory. Of these, there are 133 families, 725 genera, 1974 species of angiosperm and 4 families, 10 genera, 11 species of gymnosperm and 31 families, 71 genera, 128 species of fern and 36 families, 70 genera, 161 species of lichen plants. Following the suggestions of the experts, plants whose life circle is closely related to wetlands are classified into 1,619 species belonging to 171 families and 642 genera. Twelve species are key national protected plants, 5 species are Grade I national protected plants and 7 species are Grade II national protected plants; 116 species are endemic

species in Yunnan and 489 species are endemic in China. Yunnan Province tops the list in China both in wild plant species and endemic species.

For the purpose of wider dissemination and application of inventory data and guiding the wetland management staff members to carry out scientific protection and assisting the public to have a better understanding of wetlands, and enjoying the fragrance from wetland plants in the wild, Yunnan Provincial Forestry Department organized the compilation and editing of *Illustrated Handbook of Common Wetland Plants in Yunnan, China*. It is believed that publication of this illustrated handbook will benefit the protection wetlands, the popularization of scientific knowledge and the publicity of wetland protection. Due to difficulties in photo taking and collection, this handbook only includes 500 species of wetland plants. The editors will continue the work to cover other wetland plants in future editions, providing fundamental data for the exploration of mysteries of the nature and construction of ecological civilization.

Hou Xinhua
December, 2014

Foreword 前言

湿地植物是湿地的重要指示标志之一，一个区域是否为湿地，需要通过湿地生境和植物的自身生长特性才能做出准确界定。但何谓湿地植物却是不易回答的问题。本书收录了在生活史中明确依赖水生生境或偏好生活于水畔的植物，比如河岸和体现云南特色的高山草甸。书中收录的种类尽量考虑到常见性、广布性和典型性。

2013年完成的云南省第二次湿地资源调查，我们在调查范围内发现湿地植物204科876属2274种，其中被子植物133科725属1974种，裸子植物4科10属11种，蕨类植物31科71属128种，苔藓植物36科70属161种。生活型较严格归于湿地植物划分的种类1619种，隶属171科642属。该名录汇聚了许多通过样方调查获得的种类，有些种类是否应归入湿地植物尚值得商榷。根据对历史资料记载的生境的细查和我们多年的野外经验总结，确认的云南湿地维管植物也有1000余种，其中还不包括在高山草甸等分布较为狭窄的种类，而高山草甸正是云南生物多样性较高的生境之一。由此可见，云南的湿地植物的种类极

为丰富，且有待科学而全面的调查。对这些种类的详细分布和群落信息，我们也还知之甚少，与之相比，更为缺乏的是对具体湿地的长期监测，湿地的组成和结构在不断得到了解，但其生态功能和产出方面的定量数据几乎是空白。而这一切工作开展的前提就是对湿地植物的准确认知。

本图鉴共收录湿地植物84科265属500种（其中含国家Ⅰ级重点保护野生植物5种，国家Ⅱ级重点保护植物4种），拉丁学名参照了 *Flora of China* 的处理，蕨类植物依然沿用了秦仁昌系统，裸子植物采用郑万钧系统，被子植物采用哈钦松系统，科内按拉丁字母顺序排列。书中大部分种类为野生，但也收录了极少数常见的栽培植物，分别介绍了其生态类型（除水生植物外，全部标注为湿生植物，未再做细分）、生境（除湿生生境外，对该物种的其他的生境也有介绍）、分布（参考《云南植物志》，并增加了根据我们多年野外调查和相关可靠资料而获得的新分布点）和关键鉴定特征等，大部分种类还通过相近种的比较，以获取尽可能多的物种识别特征，基本做到了通过看图和简短的文字说明，就能达到认识这些湿地植物的目的。另外本书小巧便于携带，适宜于野外考察，或作为案头小书，不时翻阅，亦可欣然有得。

本图鉴主要面向云南省从事生态和生物多样性保护的一线工作人员、湿地爱好者和大中院校的学生，希望通过这本图鉴，让大家对云南的湿地植物有一个较为系统的了解，并通过直观的照片进一步认识这些种类，在今后的湿地日常监测和保护事业中发挥积极作用。还希望通过本书与读者的交流，不断扩大我们的知识，为本书的不断修订和完善积累资料。

在编写此书的过程中，我们也深切感觉到不足，本书的出版并不是一个终结，而应看成良好的开端。一方面湿地植物照片的质量有待进一步提高，以更加精细地反映植物的生境和鉴定特征；另一方面，该书还存在较多的遗漏，如仅记载产于西双版纳的尖瓣花科和仅分布

于云南南部的花蔺科等，本书尚未收集。我们衷心希望在不远的将来，包含剩余云南湿地植物的第二本图鉴和各具体湿地的湿地植物图鉴也能陆续面世，为云南丰富的湿地资源的保护和利用提供更大的帮助。

本图鉴的编写受云南省林业厅的委托，照片绝大部分来自本研究组近年来野外湿地调查及具体区系研究，极少数来自省内外湿地相关工作者。照片提供者包括唐颖（143）、尹志坚（131）、王泽欢（92）、董洪进（86）、上官法智（48）、余姣君（14）、陈丽（13）、向春雷（12）、刘艳春（11）、陈亚萍（8）、李嵘（6）、林萍（6）、陆树刚（6）、徐洲峰（6）、周亚东（3）、李璐（2）、彭华（2）、肖波（2）、Bufford（1）、何德明（1）、和兆荣（1）、林广旋（1）、刘恩德（1）、刘兴剑（1）、潘跃芝和张荣（1）、周繇（1）。括号内数字为每个人提供照片的物种数，有些物种的照片来自多个照片提供者，但文中只显示了主体照片提供者的名字。云南省湿地保护管理办公室代表省林业厅在编写和出版过程中负责具体的组织和协调工作，田昆、向建英、赵厚涛和李敏帮助联系图片，李恒、李德铎、田昆、王红、陆树刚诸先生参加立项咨询，在此一并致谢。

《云南常见湿地植物图鉴》编写组

2014年12月



云南常见湿地植物图鉴
Illustrated Handbook of Common Wetland Plants in Yunnan

Foreword

Wetland plants are the key indicators of wetlands. Whether an area is designated as wetland depends on the habitats and the features of the plants growing there. Yet, it is no easy task to give a definitive answer to the question “What are wetland plants?” This illustrated handbook is a collection of plants whose life process involves aquatic habitats or plants with preference to aquatic environment, such as river bank and alpine meadow habitats bearing Yunnan characteristics. Commonality, distribution and representativeness are primary criterion in the selection of plants to be included in this illustrated handbook.

In 2013, Yunnan Province accomplished the second comprehensive inventory on wetland resources. Altogether 204 families, 876 genera and 2,274 species of wetland plants have been recorded in this inventory. Of these, there are 133 families, 725 genera, 1974 species of angiosperm and 4 families, 10 genera, 11 species of gymnosperm and 31 families, 71 genera, 128 species of fern and 36 families, 70 genera, 161 species of lichen plants. This list includes a lot of plant species recorded through quadrat sampling method and whether certain species should be designated as wetland plants is still under question. Based on the reviews of existing records on habitats and years of fieldwork experiences, more than 1,000 species of wetland vascular plants have been recognized in Yunnan, not including the less widely distributed alpine meadow species. The alpine meadow is, in fact, is one of the habitats with the highest biodiversity.

This clearly shows that Yunnan has an abundance of wetland plant species. And further comprehensive researches are yet to be carried out for a better and scientific understanding of wetland plants in Yunnan. Still, we don't have enough knowledge and the detailed distribution and community information of these species. On top of this, what is mostly needed is the long-term monitoring of specific wetlands. Certain work has been done on the composition and structure wetlands, yet there are almost no quantitative data on the ecological function and output of wetlands. The premise to address this issue is the accurate knowledge of wetland plants.

This illustrated handbook covers 84 families, 265 genera, 500 species of wetland plants, of which 5 and 4 species are Grade I and Grade II national protected plants. The Latin names of these plants have references from *Flora of China*. Fern species adopts the Qin Renchang system and gymnosperm species follows Zheng Wanjun system and angiosperm species follows the J. Hutchinson system. Plants within the same family are listed alphabetically. Most plants included in this handbook are wild species and a few are cultivated. The habitat types of these plants are described in detail (except aquatic plants, all others are marked as wetland plants). As for habitat types, in addition to wetland habitats, other types of habitats of relevant plant species have been described in detail. The distribution of the wetland species finds references in *Yunnan Flora*. And further data, i.e. newly discovered distribution sites and key identification features, obtained over the years through field inventory and relevant literature retrieval, have been added. Most species included in this handbook have been compared with similar species, aiming at obtaining more identification features. In a word, through illustration and description, these wetland plant species could be easily identified and recognized. This illustrated handbook is portable and is easy to be carried around, suitable for fieldwork or bedside reference.

The target readers of this illustrated handbook are: grass root staff members in the field of ecology and biodiversity protection, nature reserves, wetland lovers, high school and university teachers. It is hoped, through this handbook, people will have a better and comprehensive understanding of wetland plants in Yunnan. With the photos, people can easily identify and recognize these plant species, contributing to the monitoring and protection work in the future. The editors also hope to communicate with the readers through this handbook, enhancing knowledge on wetland plants for successive editions and accumulating data on these species.

In the compiling process of this handbook, the editors feel that there are still a lot to

be done. The publishing of this edition is not an end, but a beginning. On the one hand, the photo qualities need to be improved, aiming at reflecting the fine features of wetland plant habitats and plant identification. On the other hand, this handbook is not inclusive in that still many plants are not included in it. A case in point is the *Sphenocleaceae* found only in Xishuangbanna and *Butomaceae* distributed only in Southern Yunnan. The editors sincerely hope in the near future, the second illustrated handbook will be compiled, including the species not selected in this edition and species in specific wetlands will be clearly illustrated, contributing to protection and utilization of rich wetland plants species in Yunnan.

The compiling of this handbook is under the authorization of Yunnan Provincial Forestry Department. Most photos are taken by the research team members during the field researches on wetlands and specific flora researches. A few pictures are from wetlands practitioners in and outside Yunnan Province. The photo contributors are Tang Ying (143), Yin Zhijian (131), Wang Zehuan (92), Dong Hongjin (86), Shangguan Fazhi (48), Yu Jiaojun (14), Chen Li (13), Xiang Chunlei (12), Liu Yanchun (11), Chen Yaping (8), Li Rong (6), Lin Ping (6), Lu Shugang (6), Xu Zhoufeng (6), Zhou Yadong (3), Li Lu (2), Peng Hua (2), Xiao Bo (2), Bufford (1), He Deming (1), He Zhaorong (1), Lin Guangxuan (1), Liu Ende (1), Liu Xingjian (1), Pan Yuezhi and Zhang Rong (1), Zhou Yao (1). The number in the brackets means the number of photos provided by relevant contributors. Photos of some species are from different contributors, yet only the name of the main photo(s) contributor is indicated. Wetland Protection and Management Office of Yunnan Province, on behalf of Yunnan Provincial Forestry Department, is responsible for the specific organization and coordination during the compiling and publication process of this handbook. Tian Kun, Xiang Jianying, Zhao Houtao and Li Min assisted in the collection of photos. Li Heng, Li Dezhu, Tian Kun, Wang Hong and Lu Shugang attended the consultation discussions of this project. The editors sincerely acknowledge their contribution to the realization of this handbook.

Compiling Team of *Illustrated Handbook of Common
Wetland Plants in Yunnan*

December, 2014



云南常见湿地植物图鉴
Illustrated Handbook of Common Wetland Plants in Yunnan

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碎米荠 <i>Cardamine hirsuta</i>	61
弹裂碎米荠 <i>Cardamine impatiens</i>	62
大叶碎米荠 <i>Cardamine macrophylla</i>	63
独行菜 <i>Lepidium apetalum</i>	64
高河菜 <i>Megacarpaea delavayi</i>	65
豆瓣菜 <i>Nasturtium officinale</i>	66
无茎荠 <i>Pegaeophyton scapiflorum</i>	67
小籽焐菜 <i>Rorippa cantoniensis</i>	68
银条菜 <i>Rorippa globosa</i>	69
焐菜 <i>Rorippa indica</i>	70
沼泽焐菜 <i>Rorippa palustris</i>	71
遏蓝菜 <i>Thlaspi arvense</i>	72
圆叶小堇菜 <i>Viola biflora</i> var. <i>rockiana</i>	73
灰叶堇菜 <i>Viola delavayi</i>	74
苣 <i>Viola moupinensis</i>	75
齿果草 <i>Salomonina cantoniensis</i>	76
溪畔落新妇 <i>Astilbe rivularis</i>	77
岩白菜 <i>Bergenia purpurascens</i>	78
锈毛金腰 <i>Chrysosplenium davidianum</i>	79
肾萼金腰 <i>Chrysosplenium delavayi</i>	80
肾叶金腰 <i>Chrysosplenium griffithii</i> var. <i>griffithii</i>	81
山溪金腰 <i>Chrysosplenium nepalense</i>	82
突隔梅花草 <i>Parnassia delavayi</i>	83
无斑梅花草 <i>Parnassia epunctulata</i>	84
长瓣梅花草 <i>Parnassia longipetala</i>	85
凹瓣梅花草 <i>Parnassia mysorensis</i>	86
青铜钱 <i>Parnassia tenella</i>	87
三脉梅花草 <i>Parnassia trinervis</i>	88
扯根菜 <i>Penthorum chinense</i>	89
七叶鬼灯檠 <i>Rodgersia aesculifolia</i>	90
羽叶鬼灯檠 <i>Rodgersia pinnata</i>	91
橙黄虎耳草 <i>Saxifraga aurantiaca</i>	92
异叶虎耳草 <i>Saxifraga diversifolia</i>	93
芽生虎耳草 <i>Saxifraga gemmipara</i>	94
多叶虎耳草 <i>Saxifraga pallida</i>	95