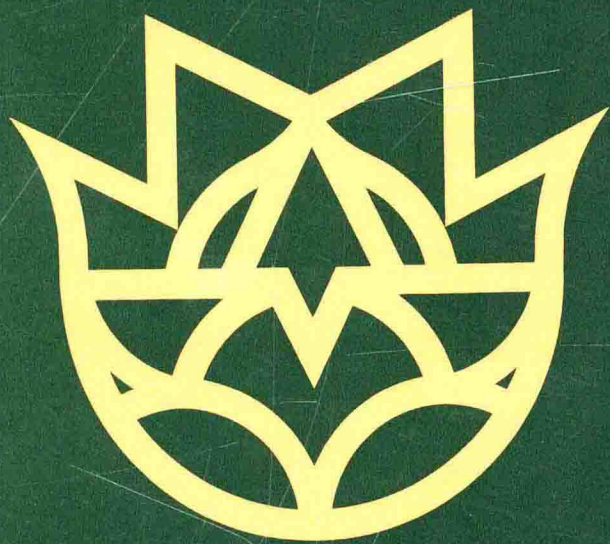


Flora of China



Introduction

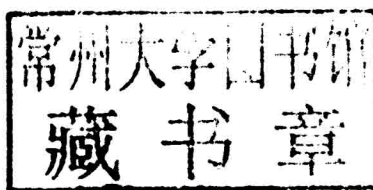
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Flora of China

Introduction

Wu Zhengyi (吴征镒) and Peter H. Raven
Co-chairs of the editorial committee

Hong Deyuan (洪德元)
Vice co-chair of the editorial committee



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1

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The *Flora of China* logo (above) is a composite image, derived from the outlines of leaf shapes from genera of woody plants occurring in both China and the U.S.A., that symbolizes the collaboration between the two nations. It was designed by Charles P. Reay.

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Flora of China

Introduction

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Professor Wu Zhengyi (吴征镒 Wu Cheng-yih), who died on 20 June 2013 in Kunming, China, was co-chair of the Joint Editorial Committee of the *Flora of China*. As a leading botanist, Prof. Wu was best known for his research in plant taxonomy, floristic geography, and biodiversity conservation in China and throughout the world. Through his scientific career of more than 70 years, he contributed greatly to building the science of botany in China and in bringing Chinese botanists into contact with their colleagues around the world. He also was a leader in the effective conservation of plant diversity and the sustainable utilization of plant resources in China and other areas of eastern and southeastern Asia.

Professor Wu was born in Jiujiang, Jiangxi Province, on 13 June 1916. He grew up in Yangzhou, Jiangsu Province, as the son of a wealthy and respected family and exhibited signs of great scholarly ability as a young child. He received his BA in Biology from Tsinghua University in Beijing in 1937. He taught at the National Southwestern Associated University in Kunming as an assistant to his mentor Prof. Wu Wenzhen (吴韞珍), a lecturer after whose death in 1942 Prof. Wu Zhengyi took over his post at the University. Prof. Wu began his comprehensive botanical studies by working through Handel-Mazzetti's catalog of Chinese plant species, using a handwritten copy that had been created by Wu Wenzhen. He also studied and organized a large collection of photographs of type specimens of Chinese plants that had been taken by Ching Renchang (秦仁昌 Qin Renchang) in several European herbaria during the 1930s. He made a card for each species included in these sources, adding any additional information he had available from the literature concerning the habitats and distribution of the individual species. He eventually accumulated some 30,000 cards, which proved very useful in writing the successive volumes of *Flora Reipublicae Popularis Sinicae* (FRPS).

Professor Wu was appointed director of Kunming Institute of Botany in 1958. He was a founding member (1959–2004), associate editor-in-chief (1973–1986), and the fourth editor-in-chief of the Editorial Committee of FRPS (1987–2004). Some 82 books of 54 volumes were published under his editorship. The work was finally completed in 2004, constituting the largest Flora in the world. During the compilation of FRPS, Prof. Wu was also editor-in-chief of *Flora Yunnanica*, *Flora Xizangica*, *Vegetation of China*, and *Vegetation of Yunnan* (co-edited with Zhu Yancheng 朱彦承). The former is the largest Chinese provincial Flora completed and was awarded the grand prize of the 2010 Yunnan Provincial Science and Technology Award. *Flora of China*, the English-language revision of FRPS, was initiated in 1988 by Prof. Wu and Prof. Peter H. Raven, who co-chaired the Joint Editorial Committee, thus making a great contribution to our knowledge of Chinese plants.

Professor Wu was influential in phytogeography. Because of his deep familiarity with the composition, characteristics,

IN MEMORIAM



DR. WU ZHENGYI (吴征镒)
(13 June 1916 – 20 June 2013)

floristic divisions, and affinities of the flora of China, he was able to develop an analytic approach to phytogeography that has been widely useful in China and elsewhere. Often working with coauthors, Prof. Wu published a series of books and papers on the phytogeography of China. Based on an analysis of the distribution patterns of some 3100 genera of seed plants in China, Prof. Wu established a scheme of classification of the different types of distribution areas for these genera, recognizing 15 types and 31 subtypes. This scheme has been employed at various levels in China and has proved helpful in understanding biogeographic issues such as endemism, vicariance, and disjunct distributions. As Prof. Wu accumulated floristic data from outside China, he enlarged his scheme to describe the area-types of all families of seed plants, with 18 types recognized.

Professor Wu was also concerned with the utilization of plant resources and the conservation of biodiversity in China. In the 1970s, he, along with other scientists, conducted a thorough survey of Chinese medicinal plants. He wrote to the then Premier Zhu Rongji (朱镕基) in 1999, proposing the establishment of a national germplasm bank for wild plant species in southwest China. His suggestion was adopted by the central government, and the germplasm bank was established in Kunming in 2007. Prof. Wu was awarded the International Cosmos Prize in 1999 and the National Supreme Science and Technology Award of China in 2007.

Professor Wu devoted his entire life to botanical research. He worked diligently while living a plain and simple life. He was called the “living dictionary” of Chinese plants. He knew not only the plants of China but also those of the whole North Temperate Zone better than any of his contemporaries and made deeply important contributions to our understanding of them, their relationships, and their geography.

Foreword

We Chinese people have based our lives and the quality of our health on plants since the misty beginnings of their civilization. Shennong (simplified Chinese: 神农; traditional Chinese: 神農), one of the legendary “Three Emperors,” who are considered to have lived some 5000 years ago, is thought to have taught the ancient Chinese not only their practices of agriculture but also their use of herbal drugs. In the amazing botanical richness of the Chinese lands, there was much from which to choose!

The *Flora of China* is a monumental work, which catalogs, describes, and illustrates the known species of vascular plants that occur in China. It is the product of an international effort that began with the suggestion made by Wu Zhengyi (吴征镒), director of the Kunming Institute of Botany, and Yü Te-tsun (俞德浚 Yu Dejun), deputy director of the Institute of Botany, Beijing, at a joint meeting of Chinese and American botanists in Berkeley, California, in the spring of 1979. The first volume of this flora was published in 1994 and the last in 2013. Over the years it grew into an international project involving hundreds of botanists and resulting in many productive partnerships. This work sets an example for China’s science to become completely international in scope; as such, it opens a new chapter for China’s international collaboration in science and scholarship generally.

The *Flora of China* has been published in 49 volumes treating 31,362 species of vascular plants, 15,623 of which are found only in China; only two countries, Brazil and Indonesia, have a comparable number of plants recorded now (but probably many more still to be found in each of them). Wu Zhengyi and Peter H. Raven led the project from its beginning, until Wu Lao’s death in June 2013, for many years being joined by Hong Deyuan (洪德元). I congratulate them and all of our other colleagues, as well as those institutions and individuals who contributed financially and in other ways to its success.

It would be of great importance for the future of China if all of the other organisms in our country, perhaps as many as a million of them (other than bacteria)—fewer than one sixth of them with scientific names so far—could be classified in a way comparable to vascular plants, and I urge the formation of a National Biological Inventory to meet this objective. To understand and protect the biodiversity of our nation, or more generally our planet, would require concerted efforts from scientists with different academic backgrounds from around the world.

Chen Yiyu (陈宜瑜)

National Nature Science Foundation of China (NSFC)

Preface

Volume 1 is the concluding volume of the *Flora of China*. There are now 49 volumes altogether (in 45 books). The 25 text volumes were published as follows: vol. 17 (1994), vol. 16 (1995), vol. 15 (1996), vol. 18 (1998), vol. 4 (1999), vol. 24 (2000), vol. 8 (2001), vol. 6 (2001), vol. 9 (2003), vol. 5 (2003), vol. 14 (2005), vol. 22 (2006), vol. 13 (2007), vol. 12 (2007), vol. 11 (2008), vol. 7 (2008), vol. 25 (2009), vol. 10 (2010), vol. 23 (2010), vol. 19 (2011), vol. 20–21 (2011), vol. 2–3 (2013), and vol. 1 (2013). The 24 corresponding volumes of the *Flora of China Illustrations* were published as follows: vol. 17 (1998), vol. 16 (1999), vol. 15 (2000), vol. 18 (2000), vol. 4 (2001), vol. 24 (2002), vol. 8 (2003), vol. 6 (2003), vol. 9 (2004), vol. 5 (2004), vol. 14 (2006), vol. 22 (2007), vol. 13 (2008), vol. 12 (2008), vol. 11 (2009), vol. 7 (2009), vol. 25 (2010), vol. 10 (2011), vol. 23 (2012), vol. 19 (2012), vol. 20–21 (2013), and vol. 2–3 (2013).

Michael G. Gilbert compiled the lists (contributors and new taxa), statistics, and indices for this volume. Lisa J. Pepper compiled the nomenclatural novelties list and coordinated and edited the contributions to the volume. Zhang Libing (张丽兵) edited the contributions to the volume and, together with Michael G. Gilbert, compiled the comparisons of classification. Anthony R. Brach composed the online Corrigenda, the basis for the Corrigenda published here. Candy McCandliss cross-checked the indices. Allison M. Brock helped with the production and proofreading of the volume. Patricia M. Prather typeset the volume for publication.

Wu Zhengyi (吴征镒)

Peter H. Raven

Hong Deyuan (洪德元)

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Michael Bradford (K) and Nicola Nicolson (K) are thanked for extracting and providing nomenclatural data from The International Plant Names Index (<http://www.ipni.org>).

Li Dezhu (李德铢) and Peter H. Raven prepared the tribute to Wu Zhengyi (吴征镒).

Bruce Bartholomew, David E. Boufford, Lisa J. Pepper, and Zhang Libing (张丽兵) provided valuable reviews of the "*History of the Flora of China Project*."

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Jason Bernth, Andrew Colligan, Victoria McMichael, and Mary Stiffler, of the Peter H. Raven Library (MO), are warmly thanked for their assistance with this volume, including ILL and archive requests (and for sending the editors copies of the *Flora of China Newsletter*).

Victoria C. Hollowell, Allison M. Brock, Tammy Charron, Cirri Moran, and Laura Slown, of Missouri Botanical Garden Press, played an important role in finalizing the production of this volume.

Deep appreciation is expressed to all of the botanists who have authored and/or reviewed manuscripts for the Flora and to the illustrators for their wonderful artwork.

We are grateful to the regional advisors Eona M. M. Aitken (retired, E), Alisa E. Grabovskaya-Borodina (LE), Robert DeFilipps (deceased, US), Mark Hughes (E), Rudolf V. Kamelin (LE), Sigizmund S. Kharkevich (deceased, Vladivostok, Russia), Kai Larsen (deceased, AAU), Jin Murata (TI), Ching-I Peng (彭镜毅; HAST), Alexei K. Skvortsov (deceased, MHA), and Willem J. J. O. de Wilde (L), for their reviews of the text volumes.

The project is indebted to the directors, curators, and librarians of the following institutions for their continued assistance in sending loans, images, or other details of specimens and/or providing library or herbarium facilities to the authors and editors of the *Flora of China*: A, B, BISH, BH, BM, C, CANT, CAS, CDBI, CSF, CSFI, E, EIU, F, FHO, GH, HAST, HIB, HNWP, IBK, IBSC, ILL, JIU, K, KUN, L, LE, LZU, MBK, MICH, MO, MT, NAS, NOCC, NWTC, NY, P, PE, S, SCFI, SHM, SZ, TAI, TI, UC, UPS, US, W, WAG, WIN, WU, WUG, XJA, XJU, YUKU, and ZM.

Candy McCandliss and Rosemary Tanaka (both MO) are thanked for their years of service to the project and their excellent work maintaining the online *Flora of China* Checklist and designing the *Flora of China* text volumes, respectively.

Special thanks are due to the staff of Missouri Botanical Garden Press for their tremendous support and help along the way. We are most grateful to its editors and the Editors-in-Chief of *Journal of Systematics and Evolution* (formerly *Acta Phytotaxonomica Sinica*), Chen Zhiduan (陈之端) and Qiu Yinlong (仇寅龙), and previously Yang Qiner (杨亲二), for editing and facilitating publication of relevant preliminary papers.

We gratefully acknowledge Anthony R. Brach, Anne Marie Countie, Myriam Fica, Chris Freeland, Paul Morris, Song Hong (宋宏), and Donna Tremonte for their help with the *Flora of China* website; Mike Dallwitz, Bryan Heidorn, Hong Cui, Hong-Ping Liang, and Jean-Marc Vanel for helpful comments and suggestions; and Xiangying Wen (文香英) and Yong Yang (杨勇) for Chinese translations of character sets.

Many other persons including all former and current members of the editorial committee have contributed either directly to the production of the printed volumes or played important roles at various stages of the project. To all of these, the project is most grateful.

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HISTORY OF THE *FLORA OF CHINA*

Peter H. Raven and Hong Deyuan (洪德元)

INTRODUCTIONS: THE BEGINNING

The organization of the *Flora of China*, a joint effort involving Chinese and foreign botanists, forms part of the story of China's re-opening to the world in the 1970s after nearly 30 years of comparative isolation. Botanical studies by Chinese scientists had begun in the 1920s, were largely interrupted by World War II, and resumed in the late 1940s. Since the 1890s, however, China had been struggling to find its footing and full independence in the modern world, with decades of struggle ensuing. After 1949, the country was essentially closed for more than two decades to exchanges of any kind with outsiders. In botany, there was limited interaction with the former Soviet Union between 1949 and 1959. During this closed period, a major effort was mounted to inventory all of China's plants. These efforts extended to regions such as Xinjiang, Xizang, and Nei Mongol, from which relatively few specimens had been collected earlier (Tang, 1981).

As they were accumulating hundreds of thousands of new plant specimens, Chinese botanists began to believe that it would be feasible for the first time to prepare a comprehensive Flora of their country. In 1959, in response to the wishes of some of these botanists, the Chinese government appointed a committee to prepare a national Flora. The committee was centered in the Institute of Botany, Chinese Academy of Sciences, Beijing, and with additional centers at the South China Institute of Botany, Guangzhou, and ultimately at the Kunming Institute of Botany and the Jiangsu Institute of Botany, Nanjing, as well.

The first volume of the national Flora, *Flora Reipublicae Popularis Sinicae* (FRPS), dealing with some groups of pteridophytes, was published in 1959. It was edited by Ching Ren-chang (秦仁昌 Qin Renchang; Institute of Botany, Chinese Academy of Sciences, Beijing), Secretary General of the Flora and an internationally recognized student of this group, the scientist to whom volume 2–3 of the *Flora of China* is dedicated. Subsequent volumes of FRPS, which occupied the efforts of virtually all systematic botanists in China during these years, appeared over the next 45 years. In addition to the first volume, the treatments of *Pedicularis* and part of the Cyperaceae were published before the Cultural Revolution. Their publication was followed by almost a ten-year gap before the next volume of the Flora was published, but subsequent volumes appeared regularly over the next three decades until the work was completed in 2004. Ultimately, this Flora, the first comprehensive account of all the vascular plants of the country, was completed in 80 volumes, organized into 126 parts (Ma & Clemants, 2006). During most of the course of preparation of FRPS, however, the limited access to literature and historical specimens gathered over the preceding two centuries by foreigners and sent abroad to their home institutions created many practical difficulties for the Chinese authors of the new work.

In China, as the intensity of the Cultural Revolution, especially strong during the period 1966–1969, began to wane by the early 1970s, Chinese and American leaders in many fields began to look for ways to resume ties between the two countries, ties that had been virtually non-existent since 1949. In 1971, although Chinese politics remained tumultuous, Arthur Galston of Yale University and Ethan Signer of the Massachusetts Institute of Technology were invited to visit China for three weeks; Galston returned with his family for a longer stay on a commune in the summer of 1972. Meanwhile, U.S. President Richard M. Nixon famously visited China in February 1972, opening the way for subsequent exchanges of many kinds.

During the following years, the Committee on Scholarly Communication with the People's Republic of China (CSCPRC) was able to sponsor visits to China by small delegations of American scientists. In 1975, Anne Keatley of the CSCPRC contacted Peter Raven, then president of the Botanical Society of America (BSA), inviting proposals for interchange with scientists in the PRC and specifically to contact his counterpart Wang Fuxiong (王伏雄 Wang Fu-Hsiung), the president of the Botanical Society of China, to investigate what kind of botanical exchanges might be possible. Meanwhile, Bruce Bartholomew, then at the University of California Botanical Garden at Berkeley and subsequently at the California Academy of Sciences in San Francisco, was able to make a short private visit to China in November 1975. He returned with the desire to organize a visit by a delegation of American botanists to China. Earlier the same month, Raven had enlisted Galston's help, appointing him chair of a BSA committee charged to develop a program of such exchanges, with Bartholomew subsequently joining the committee.

Ultimately, the negotiations for a group of American botanists to visit China were successful. A ten-person U.S. delegation, headed by Lawrence Bogorad of Harvard University and with Bartholomew as the coordinator, was approved in 1977. In addition to Bogorad and Bartholomew, the group's members included Thomas S. Elias (Cary Arboretum of the New York Botanical Garden), Richard H. Hageman (University of Illinois), Richard Howard (The Arnold Arboretum of Harvard University), J. William Schopf (University of California at Los Angeles), Jane Shen-Miller (a Chinese botanist, returning to the mainland for the first time since her childhood; Metabolic Biology Program, National Science Foundation), Richard C. Starr (The University of Texas at Austin), William Tai (戴威廉; Department of Botany and Plant Pathology at Michigan State University), and Anitra Thorhaug (Florida International University). The delegation visited academic centers and botanical institutes in China from May 20 to June 18, 1978 (Shen-Miller, 1979; Thorhaug (ed.), 1979a; Thorhaug, 1979b). During their trip, which took the group to nine different cities, they were able to visit most of the major herbaria and observe progress on FRPS as well as the production of many regional floras (Bartholomew et al., 1979). Like Shen-Miller, William Tai returned to China for the first time since his family left in the 1940s. He devoted most of his energy for the rest of his life to the pursuit of opportunities for and facilitation of collaboration between Chinese and American botanists. Funding for the visit was provided by the U.S. National Science Foundation.

The following year the American botanical community made plans to welcome a return visit of Chinese botanists, most of whom had met their American counterparts during the 1978 visit to China. Raven invited Tai, who had been a postdoctoral student with Raven at Stanford University from 1967 to 1969, to organize the itinerary for the visit, which was once again funded by the National Science Foundation. Tai and Bartholomew organized the visa applications and visits by the Chinese delegates to various institutions throughout the U.S., where the delegation was generously hosted during the course of their visit.

The Chinese delegation, headed by Yin Hung-chang (殷宏章 Yin Hongzhang), director of the Shanghai Institute of Plant Physiology, visited North America between May 1 and June 2, 1979. It included both Wu Zhengyi (吴征镒 Wu Cheng-yih), director of the Kunming Institute of Botany, and Yü Te-tsun (俞德浚 Yu Dejun), deputy director of the Institute of Botany, Chinese Academy of Sciences, Beijing. Additional delegates included Fang Shengding (方圣鼎 Fan Sheng-ting) of the Shanghai Institute of Materia Medica, Li Hsin-hsueh (李星学 Li Xingxue) of the Nanjing Geology Institute, Sheng Chenggui (盛诚桂 Sheng Cheng-kui) of the Nanjing Zhongshan Botanical Garden, Su Fenglin (苏凤林) of the Foreign Affairs Bureau, Xu Ren (徐仁 Hsu Jen) of the Botany Institute of Beijing, and delegation interpreter Qiu Bingjun (邱秉钧 Chiu Ping-chun) (Tai & Raven, 1977). In addition, Tang Peisong (汤佩松 Tang Pei-sung), who was director of the Institute of Botany, Chinese Academy of Sciences, Beijing, visited from June 1 to July 10. Tang was a strong promoter of exchange between botanists in China and those in the U.S. for the rest of his life.

The seeds for what subsequently grew to become the *Flora of China* were sown at a joint meeting held in the Alumni House at the University of California, Berkeley, on June 1, 1979. This Colloquium on Increasing Communication, Cooperation, and Exchanges in Botany between the United States and the People's Republic of China was organized by Bartholomew at the suggestion of Raven in order to try to identify how future botanical collaboration could be encouraged. At that meeting, satisfaction was expressed with the exchanges that had already taken place, with joint proposals made to expand the level of exchange in all fields of botany, to facilitate the exchange of people and scientific materials, and to organize joint projects of various kinds. Significantly, however, Yü Te-tsun and Wu Zhengyi presented at the meeting the desirability of translating FRPS into English and bringing it up to date. In the translation, the errors and omissions in FRPS that had been caused by China's recent isolation from the world scientific community would be corrected. Later that summer, August 20, 1979, Yü Te-tsun wrote Raven thanking the American botanists for hosting the Chinese delegation and for the publications they had been given. He said they all had been very busy, but that the various proposals made at the Berkeley meeting were being actively and enthusiastically considered.

American botanists at that time were very eager to undertake additional field work in China. Consequently, a few days after the joint meeting, Raven appointed Bruce Bartholomew, Thomas S. Elias, and Stephen A. Spongberg (Harvard University) to organize a proposal for a joint botanical and horticultural expedition to the PRC. Raven called Bartholomew's attention to his former student David E. Boufford, then at the Carnegie Museum of Natural History in Pittsburgh, and suggested that he be involved in the field trip also. The group was completed with the addition of Theodore Dudley of the U.S. National Arboretum. The collecting trip was proposed for Shennongjia as well as the *Metasequoia* area, both in Hubei Province, and took place from August to October 1980, with Bartholomew the leader of the American team (Bartholomew et al., 1983a, 1983b). Before the trip began, Elias dislocated his shoulder in a jogging accident

and was replaced by James Luteyn, who was also from the New York Botanical Garden. Most of the funding for foreign participation was provided by the Committee for Research and Exploration of the National Geographic Society, with a smaller grant from the American Association of Botanical Gardens and Arboreta. The trip brought Chinese and American botanists closer together but proved to be very expensive, that expense making it difficult to organize additional joint trips over the next few years. During the same years, however, individual field trips, both official and unofficial, began to take place with increasing frequency, the arrangements becoming simpler as the years passed.

In accordance with the call for more meetings and increased contact, Bartholomew proposed in late 1979 a symposium on the developing Chinese-American relationships in botany, including a review of the observations of the American botanists on the 1978 delegation. This symposium was held in the summer of 1979 at the annual meeting of the American Institute for Biological Sciences in Stillwater, Oklahoma; it helped to increase American interest in interchange with the PRC.

In the summer of 1980, Raven, along with Tai, visited China. For Raven he was returning to the country for the first time since he left Shanghai as a one-year-old baby in June 1937! Raven and Tai held discussions intended to promote exchange at a number of Chinese institutions, emphasizing the further development of cooperative programs, and seeking permission for additional joint field trips. By the autumn of that year, the American group was considering Yü Te-tsun and Wu Zhengyi's earlier proposal to translate FRPS and possibly other botanical works into English. On November 1, 1980, Raven stated to Bartholomew that he would continue to try to organize a committee for the translation of FRPS, and that he would seek funding as well as approval by the Chinese Academy of Sciences.

At that point, the program was viewed as one that would result in a rapid, literal translation of FRPS, with that translation then to be revised to take into account new information or corrections that were missed or had become available in the years since the original publications of FRPS volumes. To promote that aim as well as to investigate the possibilities for field work, Raven made numerous trips to China over the next two decades, first accompanied by William Tai and then later by Zhu Guanghua (朱光华; Missouri Botanical Garden). As various aspects of the Flora project developed, they were discussed with the leadership of FRPS and other Chinese botanists and officials, especially from the Chinese Academy of Sciences, so that the problems could be solved easily during the course of the formal meetings.

Although proposals for additional joint expeditions continued to be made to the Chinese Academy of Sciences from 1980 onward, it was not until 1984 that comprehensive programs for field studies began to be implemented with a joint trip to Diancang Shan (苍山 Cang Shan) in western Yunnan (Boufford & Bartholomew, 1986) and another to northeastern Guizhou in 1986 (Ying et al., 1991). By the end of those trips, the American botanists had concluded that it would be best to abandon the pursuit of major joint expeditions and relegate the pursuit of field opportunities in both directions to individuals and institutions. By 1997, major projects in the Gaoligong Shan region (led in the U.S. by the California Academy of Sciences) and the Hengduan Mountains (led in the U.S. by Harvard University) had emerged as realities, but as major inter-institutional projects, much better in conception than the "Joint Field Trips" that were considered the main goal of negotiations earlier. A spirit of joint discovery and publication had developed between Chinese and foreign botanists as trust and understanding grew.

A NEW FLORA OF CHINA

Meanwhile, in the early 1980s, most Chinese and American botanists continued to consider that the *Flora of China* would be a corrected translation of FRPS. Following this line of reasoning, Raven attempted in 1980–1982 to find an appropriate and willing publisher for such a huge work—comprising 80 volumes, published as 126 individual books, and taking into account that translations into English from Chinese take roughly 50 percent more space than the original! American botanists interested in taking part in the project met in St. Louis in February 1981 and considered how they might be able to move forward. On July 27, 1981, Raven wrote Bartholomew about a good set of discussions he had had on a recent trip to Beijing and stated that the "flora translation project" was back on line. Rough translations were to be prepared in China and then come to editorial centers for editing, processing, and preparation of camera-ready copy. It did not prove to be possible, however, to find a publisher willing to deal with the logistics of publishing such a massive work.

Consequently, in an effort to solve this problem, Raven suggested in 1982 that the *Flora of China* be published in a format similar to *Flora Europaea*, with short diagnoses and no illustrations. The illustrations were eliminated at this point from the revision in an effort to reduce the size of the overall work, and with the thought that they were already available in FRPS. After preliminary discussions of the feasibility of adopting such a format, Raven wrote Tang Peisong on June 23, 1982, with copies to a number of other Chinese and American botanists, that the formation of a joint committee for the translation of FRPS and its organization into the abbreviated format be appointed. He reported that University Microfilms (IMI) had just withdrawn from its consideration of publishing the project because of its size, and called for further consideration of the role of Science Press. On July 12, 1982, Yü Te-tsun, chairman of the FRPS editorial committee, wrote Raven that he agreed with the idea of appointing the joint editorial committee, but pointed out that, in view of the 40 volumes still needed to complete FRPS, the new work might have to move a bit slowly for the time being. Yü Te-tsun was, however, looking forward to a formal meeting of a joint committee after the end of that year. In 1983, Raven re-emphasized the *Flora Europaea* type concept to him, with the reasoning that it would provide a good format for revision. He emphasized the high desirability of providing a framework in which Chinese botanists would have the chance to revise their concepts while discussing their ideas with foreigners, something that they were interested in doing. It had become clear that one of the reasons the translation project was not moving forward was that it would have been a mechanical process that would not allow much opportunity for revision or meaningful participation by Chinese botanists. It was, however, seen as a good idea to move on with the preparation of the new joint work and to initiate the cooperation implied by undertaking such an effort. After Yü Te-tsun indicated that he hoped that translations of some parts of FRPS could be completed in 1982, Raven again suggested to Tang Peisong that a joint committee be established for that purpose.

On September 23–25, 1982, the Missouri Botanical Garden held a systematics symposium entitled “Biological Relationships between Temperate Eastern Asia and North America,” intended to deepen relationships and mutual understanding. A number of Chinese botanists attended the symposium, including Hong Deyuan (洪德元), who from that point onward worked closely with the *Flora of China* project and was appointed as vice co-chair of the Joint Editorial Committee in August 2001.

Gu Hongya (顾红雅) enrolled at Washington University in May 1983, the first Chinese graduate student in botany there, and became associated later with the new effort. Now assistant dean of Life Sciences at Peking University, she contributed a great deal to the organization and progress of the *Flora of China* project in its early years.

Boufford, who had graduated from Washington University in 1978, encouraged work on the *Flora of China* at the Carnegie Museum in Pittsburgh, but he ultimately moved to the Arnold Arboretum in 1981, becoming assistant director for collections at the Harvard University Herbaria in 1986 and senior research scientist at the Arnold Arboretum in 2006. Boufford's new position gave him improved opportunities to pursue field work and joint projects in China. He, together with Stephen A. Spongberg, with funding from the National Science Foundation, organized two trips for a delegation of Chinese botanists in North America in 1982, at a time when especially the Chinese botanists considered that all field work should take place on a reciprocal basis. Boufford also established what was then termed a “translation center” at Harvard. Visits in both directions were becoming more frequent, as were longer-term stays, and mutual understanding was increasing steadily. For example, the exchange of specimens and literature had become routine.

Pending formal Chinese approval of the *Flora of China* project, the American botanists continued to seek a publisher for the condensed edition, hoping that permission to proceed with the new project might be forthcoming soon. Negotiations continued with Oxford University Press, Hong Kong, and with Science Press, the publishing arm of the Chinese Academy of Sciences, which began to seem the more desirable alternative. Through these years American botanists thought that the Arnold Arboretum might become the lead institution for the *Flora of China* project because of its long history of involvement in China and with Asian botany generally.

On July 14, 1986, Yü Te-tsun, head of FRPS committee, died, having done a great deal to advance Sino-American botanical cooperation. He had always worked hard and consistently to encourage the development of botanical interchanges. After Yü Te-tsun's death, Wu Zhengyi of the Kunming Institute of Botany became head of the FRPS editorial committee. With his colleagues on the editorial committee, he thus became the person ultimately in charge of the Chinese decision about the joint project, provided that permission from the Chinese Academy of Sciences was forthcoming.



Peter H. Raven (seated, left) and Wu Zhengyi (seated, right) sign the 1988 agreement to produce the Flora of China. Pictured standing are William Tai, David E. Boufford, Chen Xinqi, Huang Chengjiu, and Chen Shouliang.

The FRPS editorial committee continued to study the American proposal for a joint project with an abbreviated format. Finally, on July 27, 1987, at the XIV International Botanical Congress in Berlin, Wu Zhengyi informed Raven that the project had been approved and that they should appoint and plan for a meeting of the joint committee. Discussions continued in the U.S. about this project, emphasizing that it should be a revision of FRPS rather than simply a corrected translation. This strategy encouraged foreign botanists to become much more deeply involved in the study of Chinese plants, which proved advantageous both to Chinese and to foreign scientists.

The original founding meeting for the *Flora of China* project was held in St. Louis on October 1–9, 1988. The members who attended were Wu Zhengyi (co-chair), Kunming Institute of Botany, with Li Xiwen (李锡文 Li Hsi-wen), from the same institute; Chen Xinqi (陈心启 Chen Sing-chi), Cui Hongbin (崔鸿宾 Tsui Hung-pin), and Dai Lunkai (戴伦凯), Beijing Institute of Botany; Chen Shouliang (陈守良), Nanjing Zhongshan Botanical Garden; Huang Chengjiu (黄成就 Huang Cheng-chiu, Huang Ching-chieu), South China Institute of Botany; Peter H. Raven (co-chair), Missouri Botanical Garden, with William Tai and Nancy R. Morin, also from Missouri, the former who joined the staff earlier that year; Bruce Bartholomew, California Academy of Sciences; and David E. Boufford, Harvard University Herbaria. Secretariat was Chen Jiarui (陈家瑞 Chen Chia-jui) and Gu Hongya, Beijing. Four observers were also in attendance: Bryan E. Dutton, University of Maryland; Li Mingde (李明德), Chinese Embassy in the United States; Ching-I Peng (彭镜毅), Academia Sinica, Taipei; and Su Fenglin, Bureau of International Cooperation, Chinese Academy of Sciences.

The Chinese and American participants in this meeting reached an agreement to establish a joint committee consisting of seven Chinese botanists and five Americans, essentially those who participated in the editorial meeting in St. Louis,