

中国野生牡丹研究 (一) 芍药属牡丹组新分类群*

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STUDY ON THE CHINESE WILD WOODY
PEONIES (I) NEW TAXA OF PAEONIA L.
SECT. MOUTAN DC.

Hong Tan Zhang Jia-xun Li Jia-jue

Zhao Wen-zhong Li Ming-rui

〔摘 要〕 牡丹为我国特产珍贵花树和药用树种, 已有1500余年栽培历史, 建国以来, 各地栽培品种已达500余个。

有关牡丹分类的主要研究成果多为西方科学家根据18—19世纪从我国引种到英、美、法等国的栽培牡丹和腊叶标本加以描述和定名。

作者近几年来在安徽、河南、湖南、山西、陕西、甘肃、四川、云南等地对我国野生牡丹进行了较广泛的调查和研究。

本文发表3个新种和1个新等级, 这对研究我国栽培牡丹的起源和栽培品种的自然分类, 发掘、保护、利用我国珍稀野生牡丹基因资源, 培育新品种, 扩大牡丹栽培地区等方面提供了科学理论依据。

关键词 芍药属牡丹组; 杨山牡丹; 稷山牡丹; 延安牡丹; 紫斑牡丹

杨山牡丹 新种 图1

Paeonia ostii T. Hong et J. X. Zhang, sp. nov.

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* 中信宁波公司与中国林科院科研合作项目

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Species insignis, a *P. rockii* (Haw & Lauener) T. Hong et J. J. Li differt foliolis anguste ovato-lanceolatis, saepe integris, subtus glabris; petalis intus infra et basi dilute rubido-purpurascens, filamentis, disco, stigmatibusque atro-purpuratis.

Frutex deciduus circa 1.5m altus, cortice brunneo-griseo, striato, basi surculo praeditus. Ramuli annui 20cm longi, pallide flavo-virentes, leviter canaliculati. Folia bipinnata, pinnis 3, foliolis ad 15, anguste ovato-lanceolatis vel anguste longeque ovatis, 5—10cm longis, 2—4cm latis, apice acuminatis, basi cuneatis, rotundatis vel truncatis, saepe integris, interdum foliolis terminalibus 1—3-lobis, supra prope basin secus nervo medio sparsim hirsutis, subtus glabris, nervis lateralibus utroque latere 4—7, foliolis lateralibus subsessilibus raro petiolulatis, petiolulis 6mm longis. Flores solitarii, terminales, 12.5—13cm diam.; bractae ovato-lanceolatae vel anguste longeque ovatae, 3—5.5cm longae subtus glabrae; sepala triangulo-ovato-rotundata vel late elliptica, 2.7—0.5—1.5cm latae, 3.1cm longa, 1.4—1.8cm lata, apice caudata; petala 11, alba obovata, 5.5—6.5cm longa, 3.8—5cm lata, apice emarginata, basi cuneata, intus infra et basidilute rubido-purpurascens; stamina numerosa, antheris flavis, linearibus, filamentis atro-purpuratis; discus atro-purpuratus; carpella 5, dense hirsute-sericea, stigmatibus atro-purpuratis. Folliculi 2—3.2cm longi, dense brunneo-griseo-hirsuti. Semina nitida, nigra, 0.8—1cm longa, glabra. Florescentia medio et fine Aprilis.

Henan: Zhengzhou Institute of Aeronautical Industrial Management, Arboretum of Rare and Endangered Trees, Cultivated, introduced from Yangshan of Songxian, May 10 1990, Hong Tao 905010 (Holotypus, CAF); Songxian, Yangshan, alt. 1200m, in thickets on slopes, October 10 1980, Zhang Jia-xun 801010.

Hunan: Longshan County, alt. 1400m, in thickets, October 20 1982, Zhang Jia-xun 821020; Zhengzhou Institute of Aeronautical Industrial Management, Arboretum of Rare and Endangered Trees, Cultivated, introduced from Longshan County, May 10 1990, Hong Tao 905010.

Gansu: Liangdang County, Forestry Bureau, Cultivated, April 21 1991, Hong Tao 914021.

Shaanxi: Meixian, Taibaishan, alt. 1000m, peasant cultivated, May 8 1989, Hong Tao 895080; Liuba County, Zhang Liang Temple, in thickets, wild, November 20 1988, Zhi Fu-cang 881120.

落叶灌木, 高约 1.5m, 枝皮褐灰色, 有纵纹, 具根蘖。一年生新枝长达 20cm, 浅黄绿色, 具浅纵槽。二回羽状 5 小叶复叶, 小叶多达 15 片, 小叶窄卵状披针形、窄长卵形, 长 5—10cm, 宽 2—4cm, 先端渐尖, 基部楔形, 圆或近平截, 全缘, 通常不裂, 顶生小叶有时 1—3 裂, 上面近基部沿中脉疏被粗毛, 下面无毛, 侧脉 4—7 对, 侧生

小叶近无柄，稀具柄，小叶柄长达 6 mm。花单生枝顶，花径 12.5—13 cm；苞片卵状披针形、椭圆状披针形或窄长卵形，长 3—5.5 cm，宽 0.5—1.5 cm、下面无毛；萼片三角状卵圆形或宽椭圆形，长 2.7—3.1 cm，宽 1.4—1.8 cm，先端尾尖；花瓣 11 片，白色倒卵形，长 5.5—6.5 cm，宽 3.8—5 cm，先端凹缺，基部楔形，内面下部及基部有淡紫红色晕；雄蕊多数，花药黄色，花丝暗紫红色；花盘暗紫红色；心皮 5，密被粗丝毛，柱头暗紫红色。蓇葖果 5，长 2—3.2 cm，密被褐灰色粗硬丝毛。种子长 0.8—1 cm，黑色，有光泽，无毛。花期 4 月中下旬。

河南：郑州航空工业管理学院，珍稀树木园栽培，从嵩县杨山引种，1990 年 5 月 10 日，洪涛 905010（主模式，存中国林科院树木室）；嵩县，杨山，海拔 1200 m，生于山坡灌丛中，1980 年 10 月 10 日，张家勋 801010。

湖南：龙山，海拔 1400 m，生于灌丛中，1982 年 10 月 20 日，张家勋 821020；郑州航空工业管理学院，珍稀树木园栽培，从湖南龙山引种，1990 年 5 月 10 日，洪涛 9050101。

甘肃：两当县，林业局栽培，1991 年 4 月 21 日，洪涛 914021。

陕西：眉县，太白山，海拔 1000 m，农民栽培，1989 年 5 月 8 日，洪涛 895080；留坝县，张良庙，生于灌丛中，野生，1988 年 11 月 20 日，支富仓 881120；宝鸡市植物园栽培。

本种与紫斑牡丹有显著区别：其小叶为窄卵状披针形，通常不裂；花瓣内面下部及基部有淡紫红色晕，花丝、柱头及花盘均为暗紫红色。而紫斑牡丹的小叶多为卵圆形，3—5 裂；花瓣内面基部有紫黑色斑块，花丝、柱头及花盘均为淡黄白色。

稷山牡丹 新种 图 2

Paeonia jishanensis T. Hong et W. Z. Zhao, sp. nov.

Varietati *P. suffruticosae* Andr. var. *spontaneae* Rehd. affinis, sed petalis albis, filamentis omnino fertilibus differt.

Frutex deciduus, circa 1.2 m altus, cortice brunneolo, striato. Rami floriferi brunneo-rufi, viriduli, lenticellis indistinctis; floricanthae grisellae, lenticellis punctiformibus nigris notatae. Folia bipinnata, pinnis 3, foliolis ad 15, leviter rotundatis vel ovatis, 2.8—5.5 cm longis, 1.3—4.9 cm latis, apice obtuso-acutis, basi rotundatis, late cuneatis vel leviter cordatis, 1—5-lobis, dentatis, supra glabris, subtus sericeis, postremo glabris, nervis lateralibus utroque latere 2—3, foliolis lateralibus subsessilibus raro petiolulatis, petiolulis 6 mm longis, basi comosis. Flores solitarii, terminales; bracteae lanceolato-ellipticae, anguste oblongae vel lineares, 3—5.8 cm longae, 0.5—1.4 cm latae, subtus pubescentes; sepala late ovata vel oblongo-elliptica, 4—5 cm longa, 1.8—2.5 cm lata, apice rotundata vel obtuso-acuta; petala 10, leviter rugosa, plus minusve rotundata, 4—5.5 cm longa, 4—5 cm lata, apice pauci-dentata, alba, ex parte erubescens, basi dilute purpureo-rubescens; stamina numerosa, antheris flavis, linearibus, 0.8—1.1 cm longis, filamentis juxta apicem albis ceterum atro-purpuratis, 0.8—1 cm longis; discus atro-purpuratus,

apice dentatus; carpella 5, dense flavo-albo-hirsute sericea, stigmatibus atro-purpuratis. Folliculi juveniles 1.8—2cm longi, dense albo-griseo-hirsuti. Semina nitida, nigra, glabra. Florescentia fine Aprilis ad initium Maji.

Shanxi: Jishan, Xiqiu (West mound), alt. 1200m, in forests and thickets, May 10 1991, Hong Tao 915010 (Holotypus, CAF); Majiagou forestry farm, Chayu-angou, alt. 1450m, on mountain slope, May 14 1982, Liu Tian-wei et Zeng Zhao-zhen 165 (PE).

落叶灌木，高约1.2m，干皮带褐色，有纵纹。花枝褐红色及淡绿色，皮孔不明显，二年生枝带灰色，皮孔细点状，黑色。二回羽状5小叶复叶，小叶多达15片，小叶近圆形或卵形，长2.8—5.5cm，宽1.3—4.9cm，先端钝尖，基部圆、宽楔形或稍心形，1—5裂，裂片具粗齿，上面无毛，下面被丝毛，后渐脱落，侧脉2—3对，侧生小叶近无柄或具柄，柄长达6mm，基部有簇生毛。花单生枝顶；苞片披针状椭圆形、窄矩圆形或条形，长3—5.8cm，宽0.5—1.4cm，下面被柔毛；萼片宽卵圆形或矩圆状椭圆形，长4—5cm，宽1.8—2.5cm，先端圆或钝尖；花瓣10，稍皱，近圆形，长4—5.5cm，宽4—5cm，顶端有几个浅缺刻，白色，部分微带红晕，基部淡紫红色；雄蕊多数，花药黄色，长0.8—1.1cm，花丝近顶部白色，其余暗紫红色，长0.8—1cm；花盘暗紫红色，顶部齿裂；心皮5，密被黄白色粗丝毛，柱头暗紫红色。幼果长1.8—2cm，密被白灰色粗毛。种子黑色，有光泽，无毛。花期4月下旬至5月上旬。

山西：稷山，西丘，海拔1200m林内，1991年5月10日，洪涛915010（主模式，存中国林科院树木室）；马家沟林场茶园沟，海拔1450m山坡，1982年5月14日，刘天慰、曾昭珍165（中科院植物所标本馆）。

本种与矮牡丹 (*Paeonia suffruticosa* Andr. var. *spontanea* Rehd.) 的主要区别点：花瓣白色，无瓣化雄蕊。

美国树木分类学家 A. Rehder 根据 W. Purdom 1910 年在延安以西 50 华里地方所采集的 338 号标本于 1920 年定名发表牡丹新变种（即矮牡丹），其原始拉丁文描述记载花为粉红色，有时具瓣化雄蕊。（*Journal of Arnold Arboretum* 1:193, 1920）

英国科学家 S. G. Haw & L. A. Lauener 于 1990 年将 A. Rehder 的变种改为亚种 *Paeonia suffruticosa* Andr. subsp. *spontanea* (Rehd.) Haw & Lauener，并将分布于山西稷山马家沟开白花的野牡丹也鉴定为矮牡丹。作者认为：矮牡丹具瓣化雄蕊，这是野生牡丹经过栽培后所产生的重要特征，故矮牡丹应降为栽培品种 cv. 'Spontanea'。

延安牡丹 新种 图 3

Paeonia yananensis T. Hong et M. R. Li, sp. nov.

Species *P. rockii* (Haw & Lauener) T. Hong et J. J. Li affinis, sed foliolis ad 11, petalis 4—5 cm longis, dilute purpureo-roseis; stigmatibus discoque atro-purpureis differt.

Frutex deciduus, circa 40cm altus, cortice ravido, striato. Ramuli

annui virides. Folia bipinnata, foliolis ad 11, ovato-rotundatis vel ovatis 2.5—7.5cm longis, 1.9—8.3cm latis, apice obtuso-acutis, basi anguste cuneatis, cuneatis vel late cuneatis, partitis vel lobatis et dentatis, subtus sericeis, postremo glabratis, nervis lateralibus utroque latere 2—3, foliolis lateralibus subsessilibus vel petiolulatis, petiolulis 0.1—1.1cm longis, dispersim vel fasciculate longe sericeis. Flores solitarii, terminales; bracteae anguste elliptico-lanceolatae vel oblanceolatae, 6—8cm longae, 1—1.5cm latae, subtus sericeae; sepala late elliptica vel oblongo-elliptica, 3.8—4cm longa, 2—2.8cm lata, apice rotundata; petala 10, obovata, 4—5cm longa, 3—4.5cm lata, apice emarginata, dilute purpureo-rosea vel alba, basi purpureo-nigro-maculata; stamina numerosa, antheris flavis, linearibus, 4—6mm longis, filamentis 0.7—1.1cm longis, superne albis, ceterum purpureis; discus atro-purpuratus; carpella 5, dense hirsuto-sericea, stigmatibus atro-purpuratis. Folliculi non visi. Florescentia Medio Maji.

Shaanxi: Yanan, Wanhua Mountain, in *Platycladus* forests, rare, May 13 1991, Hong Tao 915013 (Holotypus, CAF).

落叶灌木，高约40cm，干皮带灰色，有纵纹。新枝绿色。二回复叶，顶生5小叶，两侧为3小叶，小叶卵圆形或卵形，长2.5—8.5cm，宽1.9—8.3cm，先端钝尖，基部窄楔形、楔形或宽楔形，具深裂、浅裂及粗齿，上面无毛，下面被长丝毛，后渐脱落，侧脉2—3对，侧生小叶无柄或有柄，柄长0.1—1.1cm，小叶柄被长丝毛或簇生丝毛。花单生枝顶；苞片窄椭圆状披针形或倒披针形，长6—8cm，宽1—1.5cm，下面被丝毛；萼片宽椭圆形或矩圆状椭圆形，长3.8—4cm，宽2—2.8cm，先端圆；花瓣10片，倒卵形，长4—5cm，宽3—4.5cm，先端凹缺，淡紫红色或白色，基部有暗紫黑色斑块；雄蕊多数，花药黄色，长4—6mm，花丝长0.7—1.1cm，上部白色，下部紫红色，花盘紫红色；心皮5，密被硬丝毛，柱头紫红色。蓇葖果未见。花期5月中旬。

陕西：延安，万花山侧柏林内，稀少，1991年5月13日，洪涛915013（主模式，存中国林科院树木室）。

本种与紫斑牡丹的区别：其小叶达11枚；花瓣长4—5cm，淡紫红色或白色，花丝上部白色，下部紫红色，柱头及花盘均为紫红色。而紫斑牡丹的小叶多达19枚；花瓣长6—7.5cm，白色，花丝、柱头及花盘均为淡黄白色。

紫斑牡丹 新等级 图4

Paeonia rockii (S. G. Haw & L. A. Laeuner) T. Hong et J. J. Li, stat. nov. — *Paeonia suffruticosa* Andr. 'Rock's Variety' ('Joseph Rock') Hort. — *P. suffruticosa* Andr. subsp. *rockii* S. G. Haw & L. A. Laeuner, Edinburgh Journal of Botany 47 (3) : 273—281 (1990). — *P. suffruticosa* sensu Stern, Stud. Gen. *Paeonia* 40 (1946), p. p.; Fang, Acta Phytota-

conomica Sinica 7(4): 302 (1958), p. p. non Andr.—*P. suffruticosa* Andr. var. *papaveracea* sensu K. Y. Pan, Fl. Reip. Pop. Sin. 27: 45 (1979), nom. Kerner.

英国植物分类学家 H. C. Andrews 于 1806 年依据从中国广州引种英国, 栽植在 Abraham Hume 爵士的花园中一株开白花带紫斑的牡丹定名发表新种 *Paeonia papaveracea* Andrews, 后经 Kerner 将其改为牡丹的变种 *P. suffruticosa* Andr. var. *papaveracea* (Andr.) Kerner (1816)。

英国科学家 Bean 研究了 Abraham Hume 爵士花园的牡丹, 认为既不是一个种, 也不是牡丹的变种, 乃于 1976 年将其降为牡丹的栽培品种: *P. suffruticosa* Andr. cv. 'Papaveracea' (Trees and Shrubs Hardy in the British Isles, 8th ed., 4: 81, 1976)。

S. G. Haw & L. A. Lauener 支持 Bean 的观点, 认为中国植物志芍药属作者将分布于中国甘肃南部、陕西太白山等地开白花带紫斑的野生牡丹误定为 Kerner 的变种, 将这种野牡丹定名为牡丹的亚种 *Paeonia suffruticosa* Andr. subsp. *rockii* Haw & Lauener.

作者认为: *Paeonia suffruticosa* Andr. 为栽培牡丹品种群的统称。而紫斑牡丹为我国特产野生牡丹, 从其栽培后代演变为若干品种, 形成紫斑牡丹系列品种群 (李嘉珏, 《临夏牡丹》, 北京科学技术出版社, 1989), 故应提升为种的等级。

ABSTRACT

Woody Peony is a kind of precious flower and medicinal tree endemic to China, which has had a cultivation history of over 1500 years. So far, there are over 500 cultivars in China.

Most of the research on the classification of woody peony and the description and identification of peony species were conducted by scientists of the western countries on the basis of the peony plants and specimens introduced into England, USA and France etc. from China during the 18th—19th century.

In recent years, the author has conducted a series of investigation and study on Chinese wild woody peonies in Anhui, Henan, Shanxi, Shaanxi, Gansu, Sichuan and Yunnan Provinces of China.

The present paper proposes 3 new species and 1 new status of Chinese wild woody peonies. This achievement leads to provide the scientific and theoretical basis for the study on the origin and natural classification of peony cultivars and exploitation, protection, utilization of Chinese precious, rare and endangered gene resources of wild woody peonies as well as the hybridization of new cultivars and expansion of peony cultivated area etc.

Osti's Peony (*Paeonia ostii* T. Hong et J. X. Zhang sp. nov.)

The species name "ostii" is dedicated to Dr. Gian Lupo Osti, the Italian Vice President of International Dendrology Society. We do appreciate his friendly, valuable and precious help to promote the scientific research of Chinese wild woody peonies!

Osti's Peony differs from Rock's Peony and its congeners are in more or less lanceolate leaflets with entire margin, glabrous beneath and 4—7 pairs of veins, the terminal leaflets 1—3 lobed; petals white or slightly tinged with dilutely reddish color, but without purple basal blotch; filaments, disks and styles dark purplish red all together.

Jishan Peony (*Paeonia jishanensis* T. Hong et W. Z. Zhao sp. nov.)

It differs from *P. suffruticosa* Andr. subsp. *spontanea* (Rehd.) Haw & Lauener in its white flowers and without petaloid stamens.

A. Rehder, an American dendrologist, identified and nominated it as a new variety (*P. suffruticosa* Andr. var. *spontanea* Rehd.) in 1920, based on the specimen No. 338 collected by W. Purdom in 1910 at a place located at 25 kilometers away from the west of Yanan. The original Latin description of its main characteristics is: "floribus roseis, interdum staminibus petaloideis praeditis" (flowers roseate, sometimes presence of petaloid stamens).

In 1990, S. G. Haw & L. A. Lauener changed Rehder's variety into subspecies (*P. suffruticosa* subsp. *spontanea*) and identified the white-flowered wild peony which is distributed over Majiagou Jishan County in Shanxi Province at the alt. 1450m to the same subspecies.

The author thinks that the petaloid stamens is one of the most important characteristics of Peony Cultivars originating from wild species after cultivation. It shouldn't be confused with wild peony. Therefore, Haw's subspecies should be lowered and changed to cultivar. The Jishan Peony is an undoubted wild woody peony species.

Yanan Peony (*Paeonia yananensis* T. Hong et M. R. Li sp. nov.)

It's a rare and endangered wild woody peony species which has a superficial resemblance to Rock's Peony being dark purplish blotched at the base of petals, but is easily distinguished by few leaflets (up to 11), smaller and dilutely purplish roseate or white petals, reddish purple stigma and disk etc.

Rock's Peony [*Paeonia rockii* (Haw & Lauener) T. Hong et J. J. Li stat. nov.]

It's identified and nominated by S. G. Haw & L. A. Lauener as a

new subspecies (*P. suffruticosa* Andr. subsp. *rockii*) based on "Rock's Variety" which was bred from seeds collected by an American Geographer, Joseph Rock in 1925—1926 from a peony with big white flower and dark purple basal blotch in a lamasery of Choni County in the south of Gansu Province.

The author of Genus *Paeonia* of Fl. Reip. Pop. Sin. was mistaken to identify the peony with white flower and dark purple basal blotch which is distributed over the south of Gansu and Mt. Taibai of Shaanxi Provinces etc. as *Paeonia suffruticosa* Andr. var. *papaveracea* (Andr.) Kerner.

H. C. Andrews, a British plant taxonomist, studied a peony plant with white flower and dark purple basal blotch, which was introduced to England from Guangzhou, China and cultivated in the garden of Sir Abraham Hume, and identified and nominated it as a new species, *Paeonia papaveracea* Andr. in 1806. After that, Kerner changed it as a variety, *P. suffruticosa* Andr. var. *papaveracea* (Andr.) Kerner in 1816.

Bean, a British scientist, studied the peony planted in Sir Abraham Hume Garden. He thought it is neither a species nor a variety and reduced it as a cultivar, *P. suffruticosa* Andr. cv. '*Papaveracea*'.

The author thinks that *Paeonia suffruticosa* Andr. is a name for a big group of various cultivars while Rock's Peony is a wild woody peony species, from which originating a series of cultivars. So the author raised Haw's subspecies to species grade, *Paeonia rockii* (Haw & Lauener) T. Hong et J. J. Li stat. nov.

Key words *Paeonia*; Sect. *Moutan*; *P. ostii*; *P. jishanensis*; *P. yananensis*; *P. rockii*

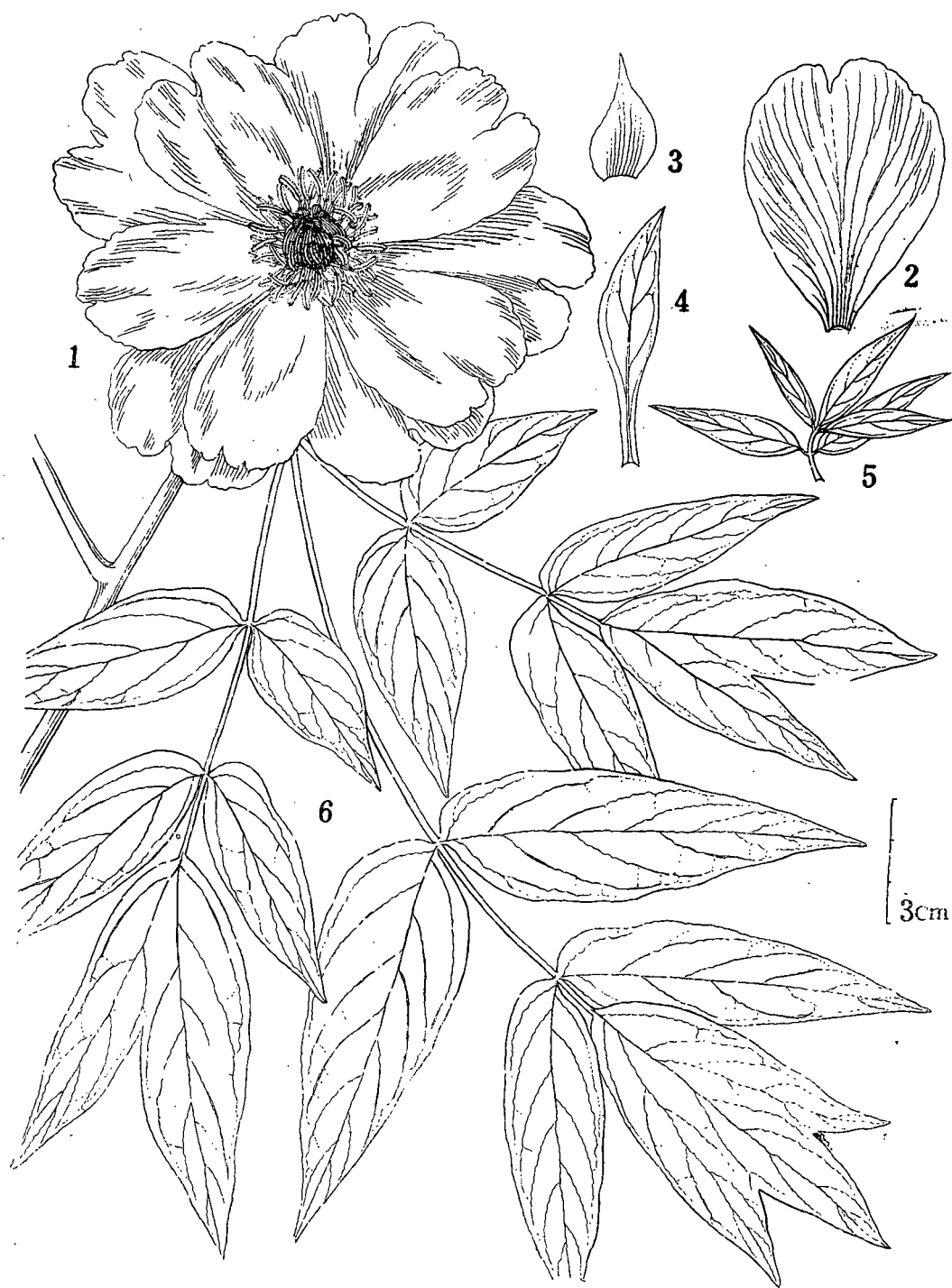


图1 杨山牡丹 *Paeonia ostii* T. Hong et J. X. Zhang:
 1. 花; 2. 花瓣; 3. 萼片; 4. 苞片; 5. 花枝羽状复叶; 6. 2回羽状复叶. (张泰利绘)

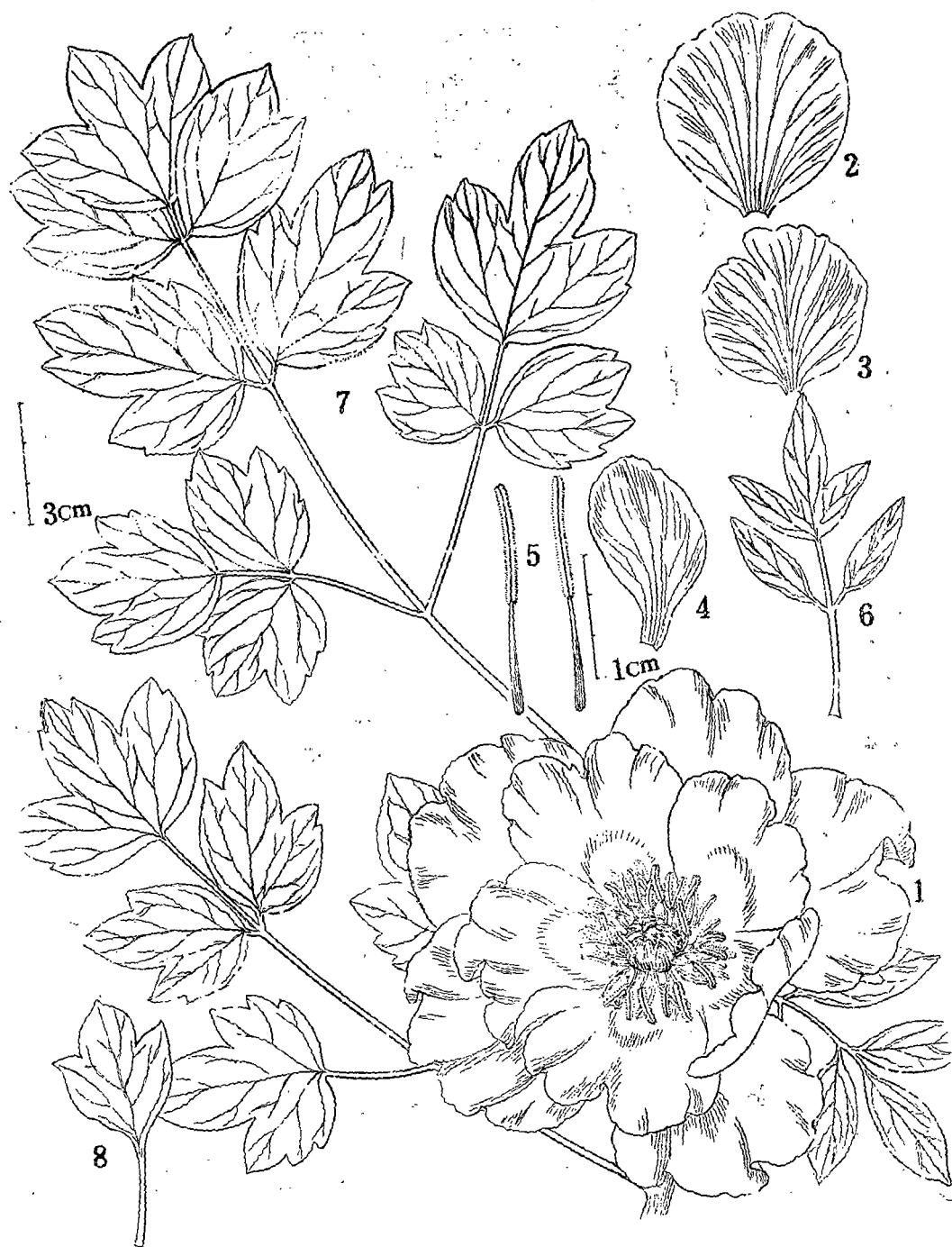


图2 稷山牡丹 *Paeonia jishanensis* T. Hong et W. Z. Zhao:

1. 花; 2—3. 花瓣; 4. 萼片; 5. 雄蕊; 6. 花枝3小叶; 7. 2回羽状复叶; 8. 1片小叶示变异。
(张泰利绘)

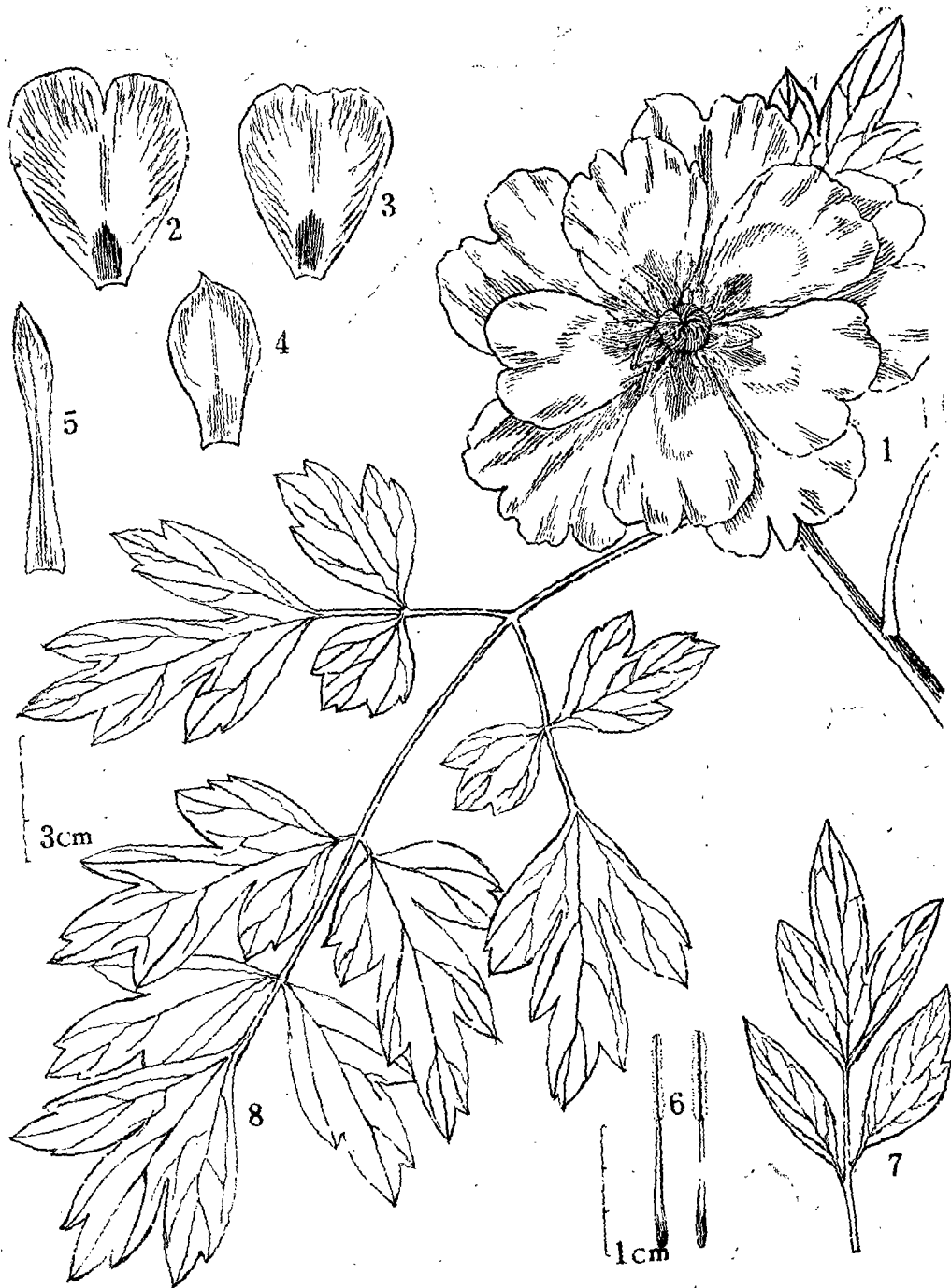


图3 延安牡丹 *Paeonia yananensis* T. Hong et M. R. Li:
 1. 花; 2—3. 花瓣; 4. 萼片; 5. 苞片; 6. 雄蕊; 7. 花枝3小叶; 8. 2回羽状复叶。 (张泰利绘)

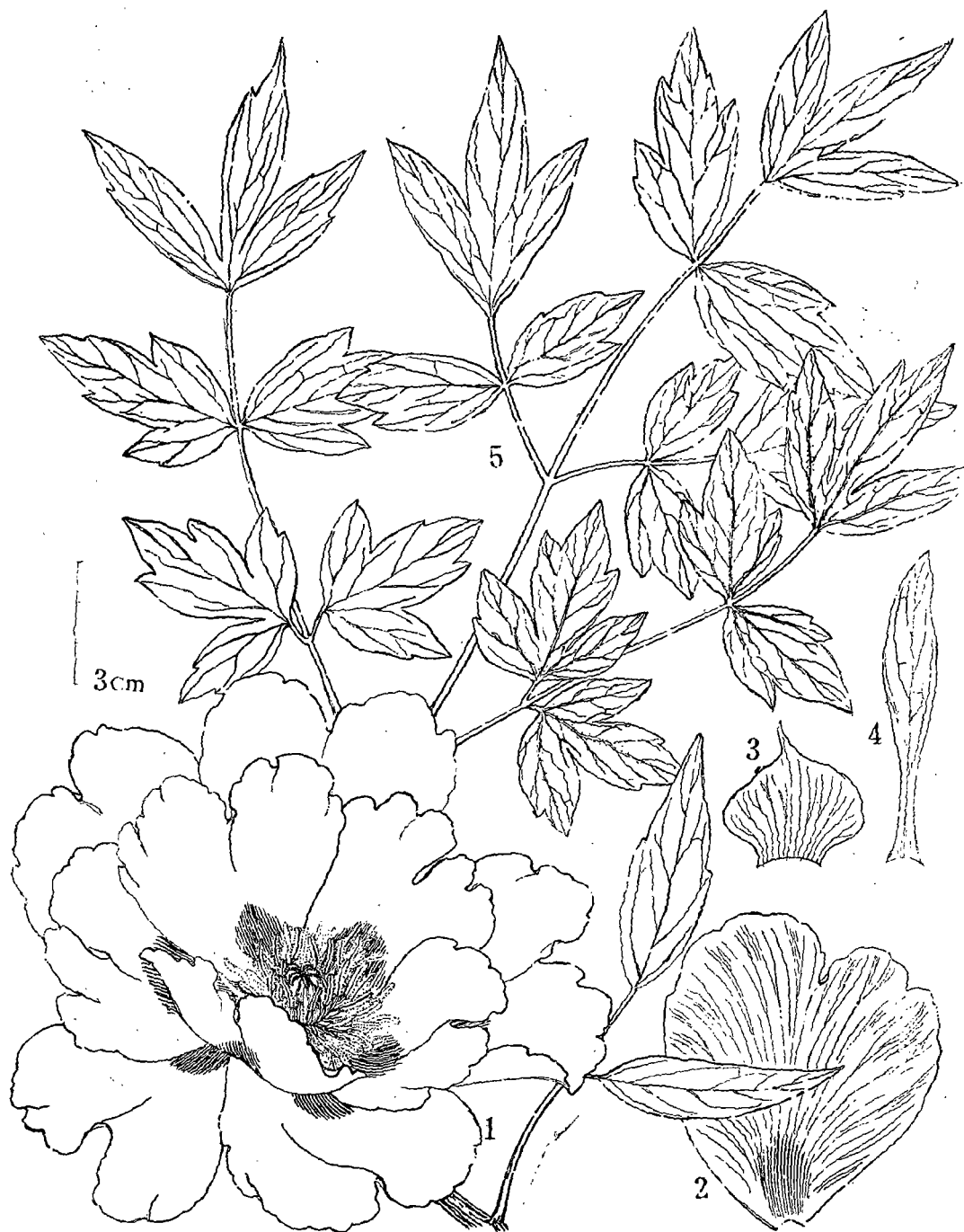


图4 紫斑牡丹 *Paeonia rockii* (Haw & Lauener) T. Hong et J. J. Li;
1. 花; 2. 花瓣; 3. 萼片; 4. 苞片; 5. 2回羽状复叶。 (张泰利绘)