



Pueraria omeiensis (Fabaceae), a new species from Southwest China

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ABSTRACT: *Pueraria omeiensis* (Fabaceae, Phaseoleae) is a new species described and validly published in this study. Morphologically, it resembles *Pueraria bouffordii*, *P. montana*, and *P. xzhuui*, but it differs in having densely lenticellate stems and round to suborbicular terminal leaflets. The molecular phylogeny also supported it as a distinct species. This climber occurs in montane forests of Chongqing, Guangxi, Guizhou, Sichuan, and Yunnan, and it is here evaluated as Least Concern (LC) according to IUCN criteria.

KEY WORDS: Leguminosae, Phaseoleae, *Pueraria bouffordii*, *Pueraria montana*, *Pueraria xzhuui*, *Pueraria edulis*.

INTRODUCTION

The genus *Pueraria* de Candolle (1825; Fabaceae, Phaseoleae) contains 20 species of trifoliolate climbers, occurring in tropical and wetter temperate regions of East Asia (Wu and Thulin, 2010). Ten species have been recorded in China, of which three are endemic (Wu and Thulin, 2010). *Pueraria sensu lato* was shown to be polyphyletic and has undergone generic revisions and redefinition by separating out multiple genera, such as *Haymondia* and *Toxicopueraria* (Egan and Pan, 2015a,b; Egan *et al.*, 2016; Le and Zhu, 2009; Lee and Hymowitz, 2001; van der Maesen, 1985). The redefined *Pueraria* s. str. is characterized by tuberous roots, peltate and dorsifixed stipules, pseudoracemes with 2–3 flowers per node, bilaterally symmetric papilionaceous flowers, and indehiscent pods (Egan and Pan, 2015b).

“*Pueraria omeiensis* F.T. Wang & Tang” (1955) was treated as a new species in the *Flora Illustralis Plantarum Primarum Sinicarum*, Leguminosae, based on materials from Sichuan and Yunnan, China. However, this name was not validly published because only a Chinese description was provided, contrary to Article 39.1 of the *International Code of Nomenclature for algae, fungi, and plants* (Turland *et al.*, 2018). Morphologically, this species can be distinguished from other *Pueraria* species by having round or suborbicular terminal leaflets (Wang and Tang, 1955). The name *Pueraria omeiensis* has been accepted in some herbal medicine papers in Southwest China (Huang, 2017; Sang and Min, 2000; Sang *et al.*, 2002). However, it has been treated as a synonym of *P. montana* var. *montana* (Lour.) Merr. in previous taxonomic studies (van der Maesen, 1985; van der Maesen and Almeida, 1988; Ward, 1998; Wu *et al.*, 1994).

To verify and confirm the taxonomic status of *Pueraria omeiensis*, we collected specimens of *Pueraria*

species in Southwest China from 2018 to 2021. Both morphological characters and phylogenetic analyses strongly supported *Pueraria omeiensis* as a distinct species. Therefore, we validly published the name *Pueraria omeiensis* by providing a full description and designating a type specimen. Moreover, illustrations, morphological comparisons, a distribution map, and a diagnostic key are also given.

MATERIALS AND METHODS

Pueraria omeiensis were collected from Mt. Emei (Sichuan), Nanchuan (Chongqing), and Honghe and Yanshan (Yunnan). Morphological observations and measurements were based on both living plants and 250 herbarium specimens, which are deposited at the following herbaria, CDBI, CQNM, GFS, GZTM, HGAS, HITBC, IBK, IBSC, IMC, IMDY, KUN, LBG, NAS, P, PE, QNUN, SM, WUK, and ZY. Characters of allied species were obtained from the *Flora of China* (Wu and Thulin, 2010).

For the phylogenetic analyses, a total of 29 accessions representing 23 taxa from 13 genera, including 11 *Pueraria* taxa (17 samples) and 12 other species (12 samples) of the tribe Phaseoleae, were included in this study (Table S1). *Apios carnea* (Wall.) Benth. ex Baker was selected as the outgroup according to previous phylogenetic analyses (Egan *et al.*, 2016). Thirteen samples of *Pueraria* taxa are newly sequenced. The remaining sequences were downloaded from Genbank (www.ncbi.nlm.nih.gov/Genbank).

Plastid *matK* and nuclear ribosomal DNA ITS were used in this study. Silica-gel dried leaves of collected samples were used for extraction of total genomic DNA following a modified CTAB method (Doyle and Doyle, 1987). After assessment of DNA quantity, the total DNA

Table 1. Morphological comparison of *Pueraria omeiensis* and the related species.

Character	<i>P. omeiensis</i>	<i>P. bouffordii</i>	<i>P. montana</i>	<i>P. xyzhunii</i>	<i>P. edulis</i>
Branch	densely lenticellate	not lenticellate	not lenticellate	not lenticellate	not lenticellate
Stipule	ovate-oblong, persistent, 10–12 mm	ovate-oblong, caducous, ca. 6–8 mm	ovate-oblong, persistent, 8–25mm	ovate-oblong, caducous, ca. 6 mm	sagittate, persistent, ca. 8–20 mm
Stipel	4 stipels in each leaf, 5–8 mm	4 stipels in each leaf, 2–4 mm	4 stipels in each leaf, 5–18 mm	4 stipels in each leaf, 4–5 mm	6 stipels in each leaf, 5–7 mm
Terminal leaflet	round to suborbicular, margin entire, lower surface pale green, to 16 × 13 cm	ovate, entire or shallowly lobed, lower surface pale green to whitish green, to 14.5 × 12 cm	ovate, entire or lobed, lower surface green, to 19 × 18 cm	ovate, narrowly lobed, lower surface green, to 8 × 6.5 cm	ovate, 3-lobed or entire, lower surface green, to 15 × 10 cm
Inflorescence	unbranched or with one branch, (10–) 20–45 cm	usually multiple branched, to 17 cm	unbranched or with one branch, 15–30 cm	larger and branched, to 20–48 cm	unbranched or with one branch, 17–30 cm
Flower	lilac to bluish purple, 14 mm	white or pink, with tips of petals purple, ca. 12 mm	purplish red to blue, 14–22 mm	purple, ca. 11 mm	reddish purple, ca. 18 mm
Calyx lobe	all lobes nearly equal in length	all lobes nearly equal in length	unequal, lowest lobe the longest	all lobes nearly equal in length	all lobes nearly equal in length

was sheared to 500 bp for library construction following Illumina standard protocols (NEBNext Ultra IITMDNA Library Prep Kit for Illumina). The Illumina HiSeq X Ten platform (Illumina, San Diego, CA) was used for sequencing the libraries to produce about 4 GB of data with 150 bp paired-end reads at Novogene company in Tianjin, China. Nucleotide sequences of these two markers were assembled from genome skimming data using the GetOrganelle toolkit version 1.7.5 (Jin *et al.*, 2020). The two DNA regions were annotated and extracted using Geneious version 11.0.4 (Kearse *et al.*, 2012).

We performed sequence alignment using MAFFT version 7.450 (Kato and Standley, 2013) in Geneious with manually adjustment if it was necessary. Alignments of these two DNA regions were concatenated. We conducted phylogenetic analyses using Bayesian inference (BI) with MrBayes version 3.2.7a (Ronquist *et al.*, 2012) and maximum likelihood (ML) with IQ-TREE version 2.2.0 (Nguyen *et al.*, 2015). The best substitution model for both BI and ML was estimated by the ModelFinder2 (Kalyaanamoorthy *et al.*, 2017). For the BI analysis, 200,000 generations were run with a sampling frequency of 1,000 using a random starting tree. Trees were sampled every 1,000 generations and 30% of trees were discarded as burn-in. For the ML analysis, branch support was assessed by 1,000 standard bootstraps, using a random starting tree.

RESULTS AND DISCUSSION

Morphological comparisons

Shapes of stipules in *Pueraria* can be classified into two types, namely 2-lobed at base (sagittate) and unlobed at base (Wu and Thulin, 2010). All species with unlobed stipules bear linear and hirsute pods, except *P. bella* Prain (Jiang *et al.*, 2022). Species with sagittate stipules are confined to India, the Indo-Burma region and SW China,

while the ones with unlobed stipules have a wider distribution range in temperate and tropical Asia. The leaflets of the latter group are highly variable, from unlobed to lobed to various degrees, which may vary within one plant (van der Maesen, 1985). *Pueraria omeiensis* is always mixed with the other taxa of this group, both in the field and the herbarium. Herbarium specimens of this species were labelled with multiple names, e.g. *P. hirsuta* Kurz, *P. lobata* (Willd.) Ohwi, *P. lobata* var. *montana* (Lour.) Maesen, *P. montana* (Lour.) Merr., *P. montana* var. *lobata* (Willd.) Maesen & S.M. Almeida ex Sanjappa & Predeep, *P. pseudohirsuta* Tang & Wang, *P. thomsonii* Benth., and *P. thunbergiana* Benth. (Wu *et al.*, 1994), due to the complex morphological variation.

However, *P. omeiensis* is morphologically distinct from the other species of *Pueraria*, by its round terminal leaflet and the presence of dense lenticels along branches (Table 1). *Pueraria omeiensis* resembles *P. montana* in terms of the unlobed leaflets and unbranched inflorescences but differs from the latter by having subequal calyx lobes (vs. unequal calyx lobes in *P. montana* with the lowest lobe the longest). *Pueraria omeiensis* is also similar to *P. bouffordii* H. Ohashi and *P. xyzhunii* H. Ohashi & Iokawa, all of which have the lowest calyx lobe subequal to other calyx lobes. It can be distinguished from the latter two species by the unbranched inflorescences (vs. branched in *P. bouffordii* and *P. xyzhunii*), and bluish purple flowers (vs. white in *P. bouffordii*, purple in *P. xyzhunii*).

Phylogenetic analyses

The nrITS matrix was 865 bp in length including 505 variable sites and 301 parsimony-informative sites among examined genera, while 178 variable sites and 138 parsimony-informative sites among *Pueraria* species. Plastid *matK* was 1581 bp in length including 363 variable sites and 181 parsimony-informative sites among

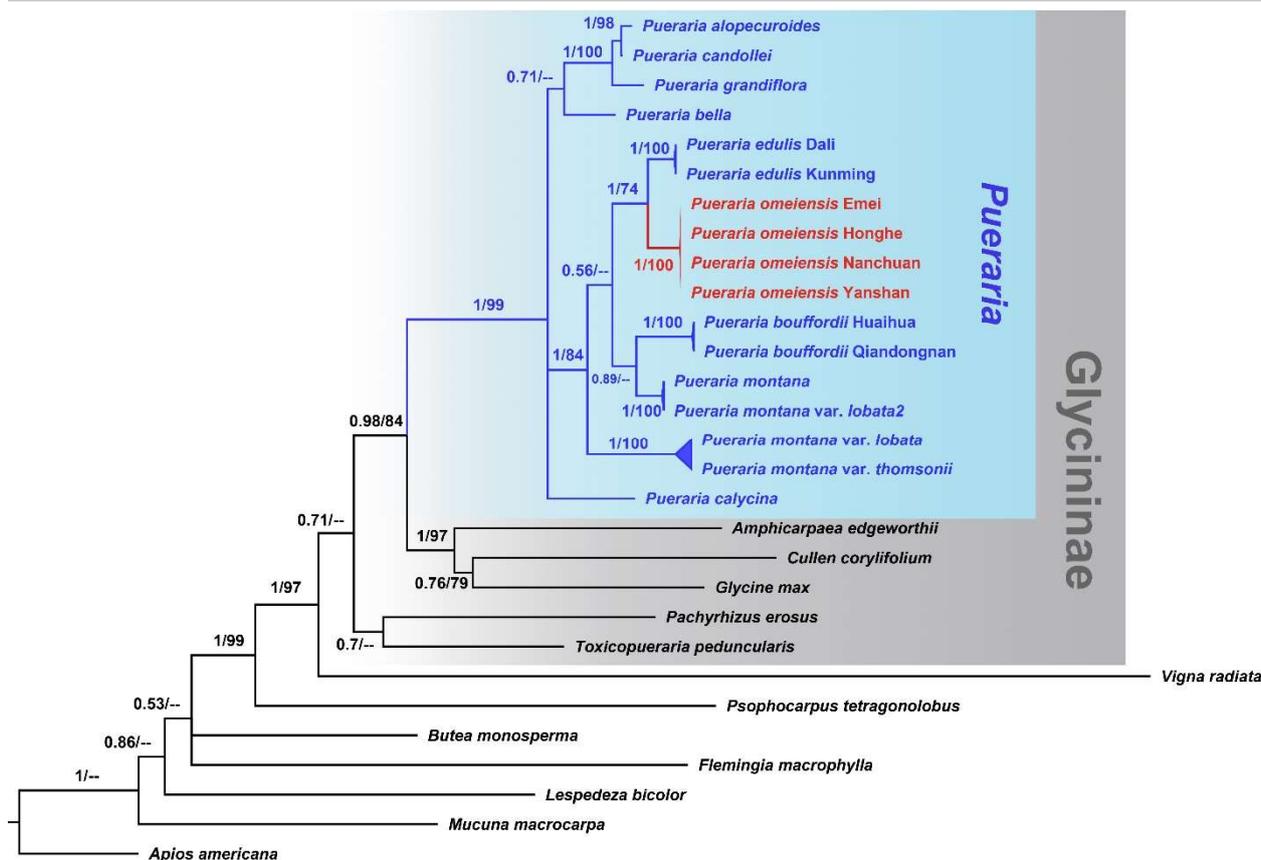


Fig. 1. Phylogenetic relationships among 23 taxa from 13 genera of Tribe Phaseoleae based on the combined dataset of *matK* + ITS. Numbers on each branch are support values estimated in MrBayes (posterior probability) and IQ-TREE (bootstrap value), respectively. Dashes (--) indicate the bootstrap value < 70. Samples of *Pueraria omeiensis* are shown in red and other *Pueraria* species in blue. The subtribe Glycininae is indicated by the shaded box.

examined genera, while 35 variable sites and 14 parsimony-informative sites among *Pueraria* species. The best-fit model for BI and ML analysis was GTR+I+G and GTR+R4+F, respectively.

The ML and BI analyses resulted in consensus trees with very similar topologies, so we only show the BI tree for the concatenated dataset of ITS + *matK* (Fig. 1). The genus *Pueraria* forms a monophyletic clade with strong support (posterior probability (PP) = 1.00 and bootstrap (BS) = 99) (Fig. 1). This topology is consistent to those of Egan *et al.* (2016) and Lee and Hymowitz (2001). *Pueraria bella*, *P. bouffordii*, *P. grandiflora* B.Pan bis & Bing Liu, and *P. omeiensis* are confirmed as *Pueraria* members by phylogenetic evidence for the first time. *Pueraria grandiflora* is sister to *P. alopecuroides* Craib + *P. candollei* Wall. ex Benth. (PP=1.00 and BS=100). Four individuals of *P. montana* and its varieties formed two clades not sister to each other, which indicated varieties of *P. montana* are still not well defined. *Pueraria bouffordii* is sister to to one clade of *P. montana* (PP=0.89 while BS < 70). Four individuals of the new species *P. omeiensis* from different locations formed a strongly supported clade (PP=1.00 and BS=100) sister to *P. edulis*

Pamp. (PP=1.00 and BS=74), which is morphologically distinctive in the presence of four stipels at the insertion of lateral leaflets, while all the other congeners have two stipels (van der Maesen, 1985).

TAXONOMIC TREATMENT

Pueraria omeiensis F.T. Wang & Tang ex B. Pan bis, W.B. Yu & R.T. Corlett, *sp. nov.*

峨眉葛 Figs. 2–3

Type: CHINA. Sichuan: Mt. Emei, Linggongli, on roadside bushes, 1300 m, 9 September 2020, *Bo Pan 3818* (holotype: HITBC!).

Pueraria omeiensis F.T. Wang & Tang, 1955 In: Flora Illustralis Plantarum Primarum Sinicarum, Leguminosae, pp: 679–680. a name not validly published contrary to Article 39.1 (Turland *et al.*, 2018).

Diagnosis: *Pueraria omeiensis* is morphologically similar to *P. montana*, but it can be distinguished by the round (vs. ovate) terminal leaflet, densely lenticellate (vs. not lenticellate) branches, and calyx lobes nearly equal in length (vs. the lowest lobe the longest). *P. omeiensis* also resembles *P. bouffordii* but differs by the bluish purple corolla (vs. white or pink), and unlobed leaflet (vs. shallowly lobed).

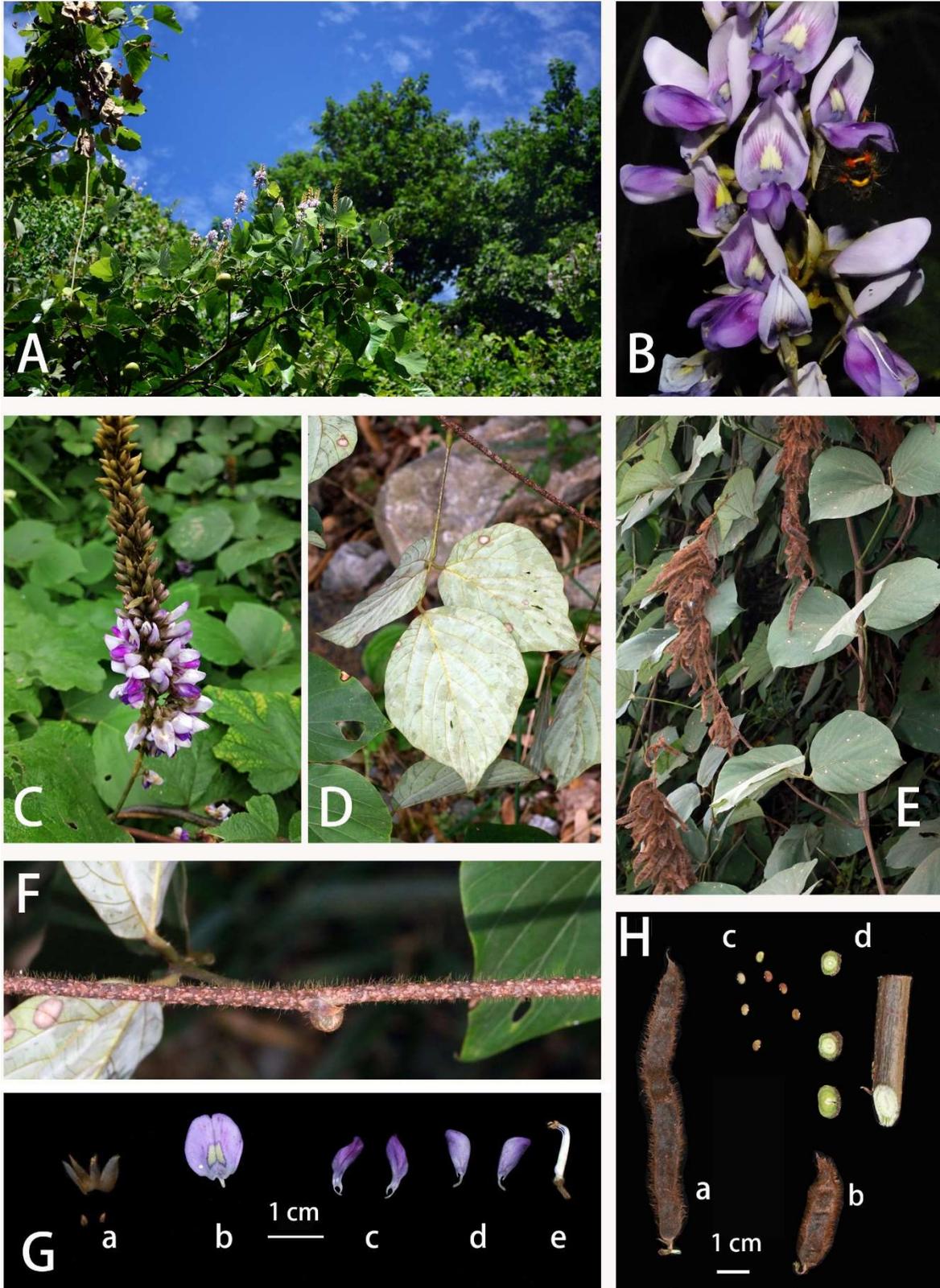


Fig. 2. Morphology of *Pueraria omeiensis* F.T. Wang & Tang ex B. Pan bis, W.B. Yu & R.T. Corlett. **A:** Habitat. **B:** Flowers. **C:** Inflorescence. **D:** Abaxial surface of leaf. **E:** Infructescence. **F:** Lenticellate branch. **G:** Flower dissection (**a**: Calyx & bracteoles; **b**: Standard; **c**: Wings; **d**: Keels; **e**: Pistil & stamens). **H:** Fruits (**a** & **b**), seeds (**c**), & cross sections of branches (**d**). (Photos: **A** by Jin-Chao Yang, **B** by Si-Rong Yi, **C** by Ce-Hong Li, **D–H** by Bo Pan)

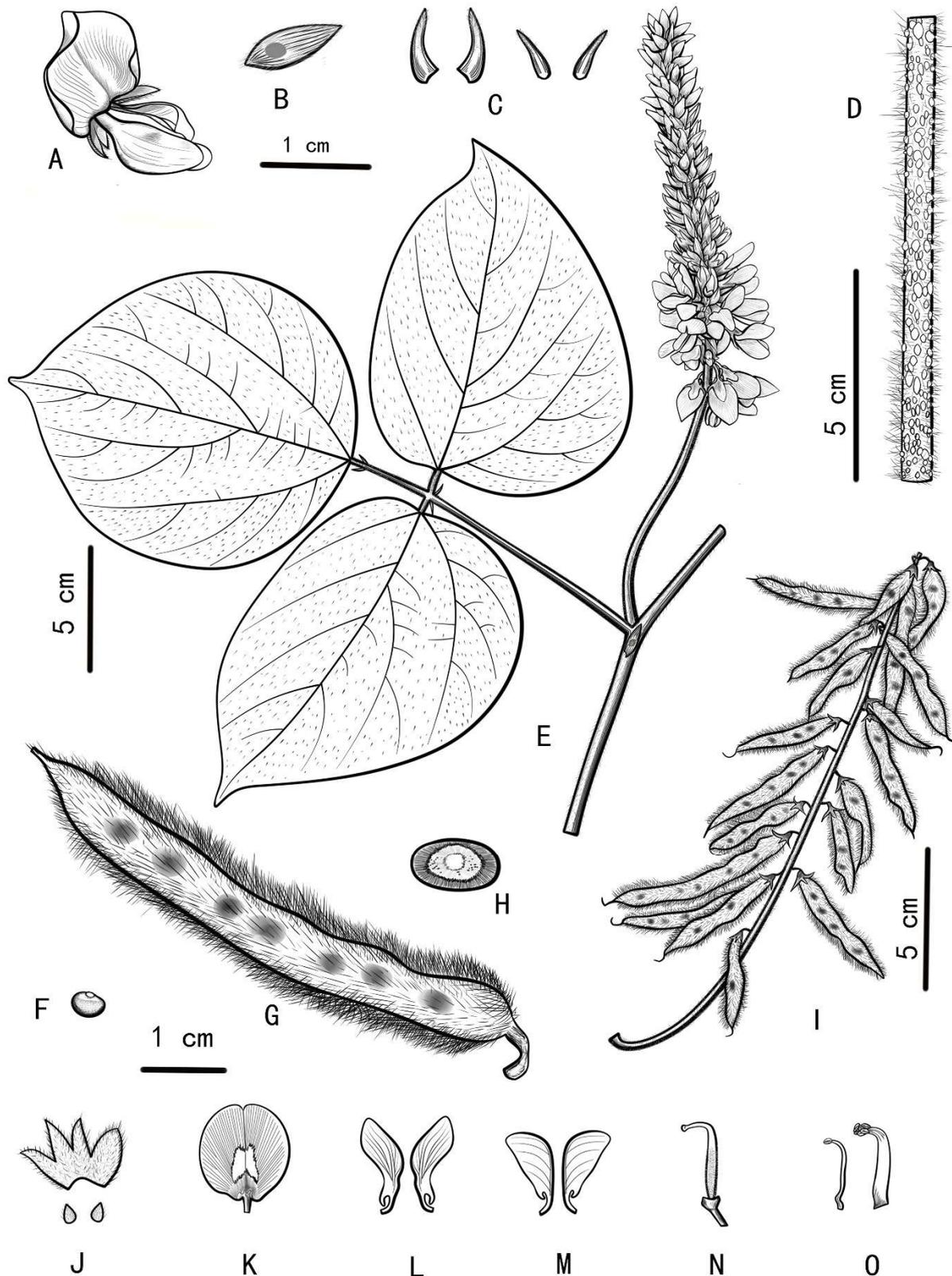


Fig. 3. Illustration of *Pueraria omeiensis* F.T. Wang & Tang ex B. Pan bis, W.B. Yu & R.T. Corlett. **A:** Flower. **B:** Stipule. **C:** Stipels. **D:** Hirsute branch with dense lenticels. **E:** Flowering branch. **F:** Seed. **G:** Densely hirsute fruit. **H:** Cross section of branch, showing lateral compressed stem. **I:** Infructescence. **J:** Calyx and bracteoles. **K:** Standard. **L:** Wings. **M:** Keels. **N:** Pistil. **O:** Stamens. Illustrated by Bo Pan based on materials from type locality.

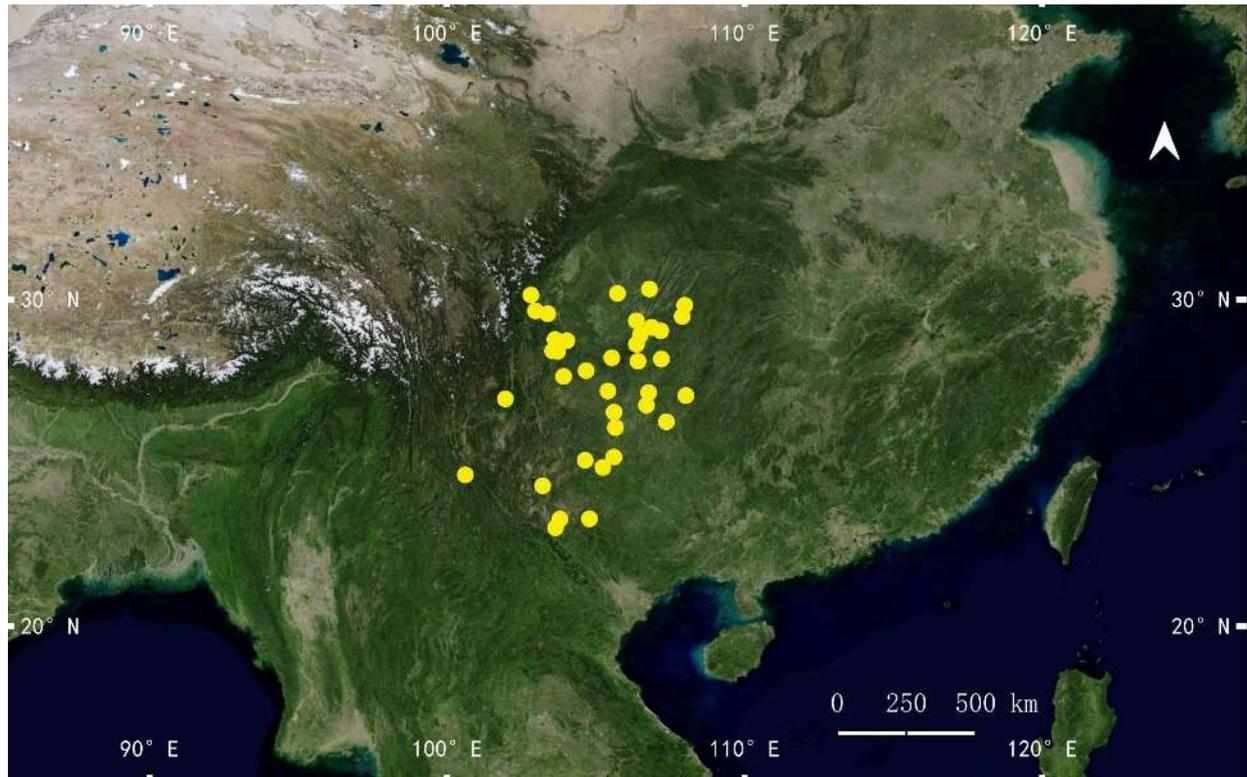


Fig. 4. Distribution of *Pueraria omeiensis* F.T. Wang & Tang ex B. Pan bis, W.B. Yu & R.T. Corlett (yellow dots).

Description: Woody climber 5–15 m long. **Roots** tuberous. **Stems** laterally compressed, long yellowish-brown hirsute, gradually glabrescent, densely lenticellate. **Leaves** trifoliolate and alternate; stipules dorsifixed, ovate-oblong and peltate, ca. $10\text{--}12 \times 3$ mm; stipels linear-lanceolate, 5–8 mm; petioles 5–17 cm long with appressed hairs; petiolules ca. 10 mm long; leaflets broad ovate, round or suborbicular, $6.5\text{--}16 \times 4.5\text{--}13$ cm, margin entire, lateral veins 5–6 pairs, upper surface dark green, sparsely hairy, lower surface pale green, densely whitish hairy; terminal leaflet round or suborbicular, apex acuminate; lateral leaflets broadly ovate, a little oblique, base truncate or sometimes cordate. **Inflorescence** axillary pseudoraceme, 3 flowers per node, usually unbranched or with one lateral branch, 20–45 cm, erect; peduncle 4–13 cm, appressed hairy; pedicels 2–5 mm. **Flower** lilac to bluish purple, 14 mm long; bracts caducous soon after flowering, 3–5 mm; bracteoles 2, lanceolate, 2 mm; calyx ca. 8 mm long, brown pubescent; calyx lobes 4, lanceolate, acuminate, with the upper two teeth completely fused, 5–6 mm long, the lower lobe slightly longer than the others. Corolla bicolored, ca. 14 mm; standard obovate, lilac to light blue with a yellow patch in the middle, 14×10 mm, auriculate, with a short 2 mm claw; wings bluish purple, darker than the standard, falcate, ca. 11×3 mm, base with linear auricles; keel oblanceolate, with very small and acute auricles, 11×3.5 mm; stamens 10, vexillary stamen connate with the other 9 in the middle, free at both ends; ovary linear, hairy.

Fruit a long-elliptic and flattened legume, valves papery, indehiscent, ca. $4\text{--}10 \text{ cm} \times 7\text{--}8 \text{ mm}$, 4–5 seeded, densely long brown hirsute, apex acute. **Seed** reniform, lateral compressed, ca. 4×2.5 mm.

Distribution and habitat: *P. omeiensis* is widely distributed in Chongqing, Guangxi, Guizhou, Sichuan, and Yunnan, SW China (Fig. 4). It climbs on the montane forests or thickets at an elevation of 300–2200 m.

Phenology: Flowering June to September; fruiting July to November.

Etymology: The epithet refers to Mt. Emei, the type locality, where this plant is common. This name was widely adopted in Southwest China, because locals collect the tubers for medicine (Huang, 2017; Sang and Min, 2000; Sang *et al.*, 2002), though previously it was not validly published. Here we adopt this name rather than giving a new name for convenience. The Chinese name is the translation of the scientific name.

Additional specimens examined: CHINA. Chongqing: Ba'nán District, Shitanzhen, Fangdou, 705 m, 24 June 2015, *Ba'nán Team 500113150624926LY* (IMC); Fengdu County, Longhe, 340 m, in riverine bushes, 22 September 1997, *Zheng-Yu Liu 972267* (IMC); Fuling District, Bancang, 7 August 1978, *Anonymous s.n.* (SM); Hechuan County, Huayingshan, in forest, 1100 m, 7 September, *Da-Hua Du 5174* (PE); Jiangjin District, Luolaishan, 736 m, 15 June 2012, *Jiangjin Team 500116-733* (IMC); Jiulongpo District, Taojiazhen, Jianqiang, 360 m, 18 June 2015, *Jiulongpo Team 500107150618730LY* (IMC); Nanchuan District, Jinfoshan, Chasha, 850 m, in montane bushes along forest edge, 16 August 1984, *Zheng-Yu Liu 840777* (IMC); Qijiang District, Changtian, 860 m, in forest, 1 August 2007, *Zheng-Yu Liu & Jun Zhang 70379* (IMC); Wulong District, Tudi, moist place, 650



m, 17 September 1978, *Wen-Hua Wang 3743* (CDBI). **Guangxi:** Longlin County, Yacha, Dahongbao, 1460 m, 14 September 1987, *Shao-Qing Tang 214* (IBK). **Guizhou:** Anlong County, Wangyuan, hillside bushes, 1300 m, 14 June 1956, *Guizhou Team 5303* (PE); Bijie, on woodland, 1250 m, 21 July 1932, *Xi-Tao Cai 52753* (KUN); Duyun, Doupengshan, Dadipo, roadside, 19 July 2007, *Shu-Heng He 200810831* (QNUN); Kaiyang County, Shuangliu, Dapo, hillside bushes, 1300m, 20 July 2003, *Ji-Yin Yu 5-039* (PE); Liupanshui, Mugang, Mugangchong, 1818 m, 7 July 2014, *Hui-Jiang Xiong & Fen Huang 520203140706005* (GZTM); Shibing County, Zijingguan, in valley bushes, 13 July 1959, *Qiannan Team 2755* (KUN); Suiyang County, Kuankuoshui, July 1987, *Ming-Hong Li 50* (ZY); Xifeng County, Yanglongsi, 11 July 1936, *Shi-Wei Deng 90552* (IBSC); Xingren, Longchang, 18 August 1960, *Guizhou Team 7837* (HGAS); Xingyi, Dingxiao, 7 July 1960, *Guizhou Team 6606* (HGAS); Xishui County, Xisa, Xihekou, ravine bushes, 500 m, 27 August 2003, *Cong-Wan Wu 1325* (PE); Xiuwen County, Zhazuo, 13 September 1987, *Hua-Hai Zhang 2022* (GFS). **Sichuan:** Emeishan, Mt. Omei, July 1931, *Fa-Tsuan Wang 23210* (IBSC, LBG, NAS, P, PE, WUK); Emei, Guanxinqo, 1300 m, 24 July 1957, *Guang-Hui Yang 56107* (KUN); Gulin County, Deyue, Gaofeng, on the rock in the valley at forest edge, 1100 m, 9 July 1976, *Gulin Team 307* (SM); Hanyuan County, Xianglingshan, 2400 m, 19 August 1938, *Fa-Tsuan Wang 8834* (PE); Hejiang County, Fubao, Yuanxing, 500 m, in valley, 25 June 1977, *Hejiang Team 373* (SM); Hongya, Shuangdongxi, 25 July 1938, *Zhong-Wu Yao 2515* (PE); Jinyang County, August 1978, *Wen-Duo Mao 216* (SM); Junlian County, Xiaoxueshan, Dapian, along montane ridges, 27 April 1959, *Chuanjing Team 0212* (KUN); Pingshan County, Longhuasi, 5 June 1959, *Chuanjing Team 0918* (KUN); Leibo County, Huangxiang, Shuanghe, 1000 m, 10 July 1979, *Leibo TCM Team 834* (SM); Mabian County, 1120 m · 13 July 1934, *Da-Hua Du 5632* (PE); Miyi County, Weipu, hillside along the valley, 2300 m · 24 August 1978, *Miyi Team 351* (CQNM); Tianquan County, Yongxing, Laochang, roadside, barren slope, 950 m, 24 June 1982, *Ding-Yi Peng 45673* (CDBI); Xuyong County, Shuiwei, Guangmu, Huagaoxi, Qinglongzui, 1000 m, 14 June 2013, *Xin-Fen Gao, Zhang-Ming Zhu, & Wen-Bin Ju HGX12162* (CDBI). **Yunnan:** Dagan County, Huanglianhe, on rocks and bushes in valley, 1400m, 16 June 1973, *Bi-Xing Sun 609* (KUN); Fuyuan County, Dongshan, Shiyakou, on roadside rocks, 2200 m, 27 June 1987, *Aromatics Team 870186* (KUN); Jingdong County, Anding tea plantation, Niujingtou, 1850 m, in forest valley, 6 June 1963, *Quan-An Wu 9508* (KUN); Malipo County, Dongding, 800 m, 23 November 1947, *Kuo-Mei Feng 13611* (KUN); Mengzi, Mingjiu, Huayuanqing, in moist forest valley, 1900 m, 4 July 1958, *Yue-Ying Hu & Shao-Kang Wen 580616* (KUN); Pingbian County, Xinxian, Maka, 1653 m, 10 July 2012, *Pingbian TCM Team 5325230724* (IMDY); Xichou County, Fadou, 1400 m, open bushes, 13 September 1947, *Kuo-Mei Feng 11700* (KUN).

Conservation status: Because it is widely distributed in Southwest China, we consider it as **Least Concern (LC)** according to IUCN (2019).

Key to the taxa of *Pueraria* with unlobed stipules.

- 1a. Leaflet elliptic; standard margin inflexed; pod glabrous, winged along both sutures *P. bella*
- 1b. Leaflet not elliptic; standard margin flat; pod densely hirsute, not winged 2
- 2a. Terminal leaflet round or suborbicular, unlobed; branch densely lenticellate *P. omeiensis*
- 2b. Terminal leaflet ovate, lobed or unlobed; branch not lenticellate .. 3
- 3a. Calyx lobes nearly equal in length; inflorescence branched 4
- 3b. Lowest calyx lobe longest; inflorescence simple or with one lateral branch 5
- 4a. Leaflet shallowly lobed; flower white or pink *P. bouffordii*
- 4b. Leaflet sharply lobed; flower purple *P. xizhuyii*
- 5a. Calyx 7–8 mm long *P. montana* var. *montana*
- 5b. Calyx 8–20 mm long 6
- 6a. Calyx 8–10 mm long *P. montana* var. *lobata*
- 6b. Calyx to 20 mm long *P. montana* var. *thomsonii*

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Table S1. Sampled taxa and the GenBank accessions for sequence data (ITS and *matK*) used in the study. Asterisk (*) indicates accessions sequenced in this study.

Taxon	Voucher specimens	location	ITS	<i>matK</i>
<i>Amphicarpaea edgeworthii</i>	/	/	AF417013	MW421594
<i>Apios americana</i>	/	/	AF467019	KF856618
<i>Butea monosperma</i>	/	/	KJ436384	MT240945
<i>Cullen corylifolium</i>	/	/	FJ606754	MK069582
<i>Flemingia macrophylla</i>	/	/	MN177593	MZ274347
<i>Glycine max</i>	/	/	FJ609734	NC_007942
<i>Lespedeza bicolor</i>	/	/	KY174454	NC_046836
<i>Mucuna macrocarpa</i>	/	/	AB775133	MG867571
<i>Pachyrhizus erosus</i>	/	/	AY293846	KJ468100
<i>Psophocarpus tetragonolobus</i>	/	/	FJ873687	MN966643
<i>Pueraria alopecuroides</i> *	B. Pan 3706 (HITBC)	Xishuangbanna, Yunnan, China	OP654531	OP620398
<i>Pueraria bella</i> *	B. Pan 3809 (HITBC)	Yingjiang, Yunnan, China	OP654533	OP620400
<i>Pueraria bouffordii</i> *	B. Pan 3649 (HITBC)	Qiandongnan, Guizhou, China	OP654528	OP620395
<i>Pueraria bouffordii</i> *	B. Pan 3655 (HITBC)	Huaihua, Hunan, China	OP654529	OP620396
<i>Pueraria calycina</i> *	B. Pan 3704 (HITBC)	Dali, Yunnan, China	OP654530	OP620397
<i>Pueraria candollei</i>	/	/	LC424309	/
<i>Pueraria candollei</i> *	B. Pan 3908 (HITBC)	Myanmar	/	OP620404
<i>Pueraria edulis</i> *	B. Pan 3604 (HITBC)	Dali, Yunnan, China	OP654525	OP620392
<i>Pueraria edulis</i> *	B. Pan 3607 (HITBC)	Kunming, Yunnan, China	OP654526	OP620393
<i>Pueraria grandiflora</i> *	B. Pan 3801 (HITBC)	Panzhihua, Sichuan, China	OP654532	OP620399
<i>Pueraria montana</i>	/	/	AF338216	MZ145063
<i>Pueraria montana</i> var. <i>lobata</i>	/	/	JN407469	MN180247
<i>Pueraria montana</i> var. <i>lobata</i>	/	/	AF338214	MT818508
<i>Pueraria montana</i> var. <i>thomsonii</i>	/	/	AF338217	MZ145062
<i>Pueraria omeiensis</i> *	B. Pan 3645 (HITBC)	Nanchuan, Chongqing, China	OP654527	OP620394
<i>Pueraria omeiensis</i> *	B. Pan 3818 (HITBC)	Emei, Sichuan, China	OP654534	OP620401
<i>Pueraria omeiensis</i> *	B. Pan 3820 (HITBC)	Yanshan, Yunnan, China	OP654535	OP620402
<i>Pueraria omeiensis</i> *	B. Pan 3821 (HITBC)	Honghe, Yunnan, China	OP654536	OP620403
<i>Toxicopueraria peduncularis</i>	/	/	MK501004	LC197943
<i>Vigna radiata</i>	/	/	HQ148138	NC_013843