



A new species of *Acer* (*Aceraceae*) from northern Thailand

Y.-S. Chen¹

Key words

Acer pseudowilsonii
Aceraceae
new species
Thailand

Abstract A new species of maples from northern Thailand, *Acer pseudowilsonii*, is described and photographed. This species has been previously misidentified as *A. wilsonii*. *Acer pseudowilsonii* is somewhat similar to *A. wilsonii*, but differs in its much larger samaras and nutlets, larger and more leathery leaves, abaxial axillary tuft of brown hairs and flowering in winter.

Published on 8 November 2010

INTRODUCTION

The maple family (*Aceraceae*) includes two genera and about 131 species, with about 100 species in China (Xu et al. 2008). There are about 23 species of maples in the Himalaya region and Southeast Asia (Chen unpubl. data). In a revision of Thailand maples, Santisuk (1998) recognized six species from Thailand.

While examining Asian specimens of *Aceraceae* at Harvard University Herbaria, an unusual specimen (*R. Pooma*, *A. Mauric*, *M. Greijmans 1447*) from Northern Thailand caught my attention. Santisuk (1998) cites this specimen under *A. wilsonii* Rehder as a new record for Thailand. *Acer wilsonii*, based on *Wilson 303* from Patung county, Hubei province (Rehder 1905), is a very common species in China. After comparing the unusual specimen with type specimens and many other specimens of *A. wilsonii* from China, I found it differs from *A. wilsonii* by its much larger samaras and nutlets, much longer infructescence, subleathery leaves and brown axillary tuft hairs on the abaxial leaf surfaces. In leaf shape and size this specimen is very similar to *A. calcaratum* Gagnep. from Thailand, Vietnam, Myanmar and newly reported from Yunnan, China (Chen 2007), but it has much larger and longer pendulous inflorescences and much larger samaras.

As it is different from *A. wilsonii* and other maple species in Southeast Asia and China, this specimen and others from the same locality (*Santisuk et al. s.n.* and *Santisuk 8592*) represent a new species.

Acer pseudowilsonii Y.S.Chen, *sp. nov.* — Fig. 1, 2

Species *A. wilsonii* affinis, sed differt samarae, nuculae et foliae majoribus; petiolis crassioribus; pilis axillaribus brunneis; florescentia hiemali. — Typus: *R. Pooma*, *A. Mauric*, *M. Greijmans 1447* (holo A; iso BKF, CMU), Thailand, Nan province, Pua, Doi PhuKha National Park, scattered in disturbed area in gallery montane forest, alt. 1300 m, 26 Feb. 1997.

Acer wilsonii auct. non Rehder (1905): Santisuk in Nat. Hist. Bull. Siam Soc. 46 (1998) 93–104 (except Chinese specimens).

Deciduous tree, up to 30 m tall; branchlets smooth, brownish green, glabrous. *Terminal buds* absent; winter buds small, ovoid, dark brown, imbricate scales about 4 pairs; glabrous,

dropping off soon after leaves have matured. *Leaves* opposite, subleathery; petioles 4.5–5.5 cm long, glabrous; blade 10–13 by 11.5–14 cm, usually nearly equal in length and wide, usually 3-lobed to halfway (sometimes 4- or 5-lobed in young shoots), base rounded, deep green above, pale green beneath, both surfaces glabrous, but axillary tufts of brown hairs present between main veins and secondary veins, and secondary and third-order veinlets on abaxial surfaces, basal lobes usually triangular-ovate, apex acuminate, middle lobes triangular-ovate, apex acuminate, margin entire or remotely toothed with a few very shallow small teeth, especially in the upper part, primary veins 3, slightly raised on the upper surface, conspicuously prominent below, venation reticulate, conspicuous in abaxial surface, central lobe with 7–10 pairs of nearly parallel lateral veins. *Inflorescence* long, paniculate, pendulous; flowers 5-merous, sepals yellowish green, petals white, stamens red (flower morphology is described on basis of colour photos by Santisuk (1998)). *Infructescence* glabrous, c. 18.5 cm long, in pendulous raceme, arising from terminal of the one year old branchlet with one or two pair of leaves at base. *Fruits* 9–13 per raceme, light green when young, brown-yellow when mature; wings together with nutlets 4.2–4.8 cm long, wings 1.2–1.3 cm wide, spreading at obtuse angles of 140–160°; nutlets slightly veined, glabrous, elliptical, c. 1 cm long and 5–7 mm wide; fruiting pedicels 1.3–1.8 cm long, glabrous.

Distribution — Endemic to Doi Phu Kha National Park in Nan province, northern Thailand.

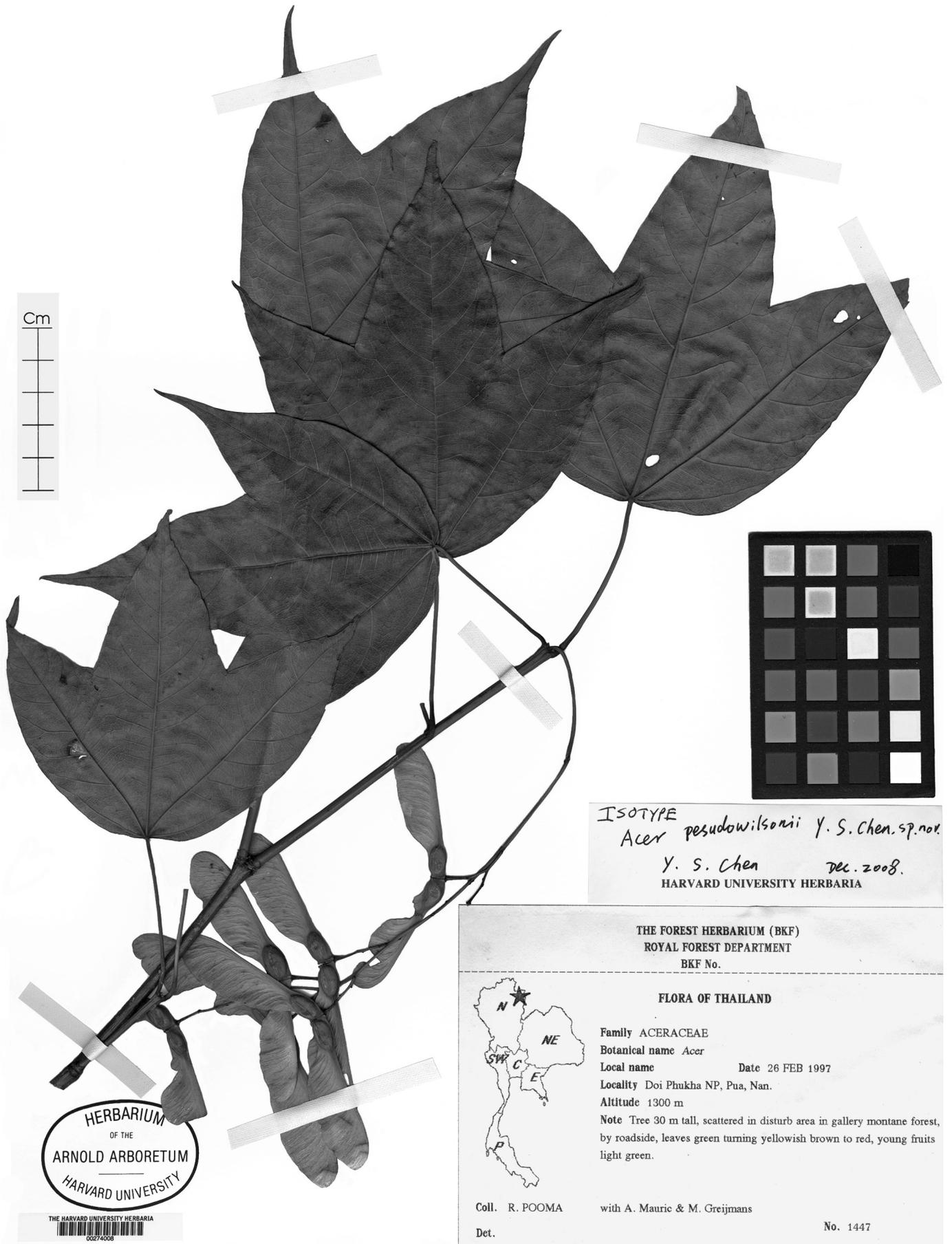
Habitat & Ecology — Scattered on steep slopes in shady stream valleys in lower montane rain forest between 1100–1700 m. Flowering: November; fruiting: February to March.

Etymology — The specific name refers to its similarity to *Acer wilsonii*.

Notes — *Acer pseudowilsonii* obviously belongs to *Acer* sect. *Palmata* ser. *Sinensia* Pojark. based on the 4-paired bud scales, lack of terminal buds, 3-lobed leaves, obscurely serrate lobes, long paniculate inflorescences, slightly or nearly not veined nutlets. De Jong (1994) considered *A. tonkinense* as a very primitive species in sect. *Palmata* due to its large trilobate leaves, very large drooping inflorescences and small flowers with white petals. It is interesting to note that *A. pseudowilsonii* shares these morphological characters with *A. tonkinense*.

When Santisuk (1998) recognized *A. wilsonii* as a new record to Thailand, he cited three Thailand specimens (including *R. Pooma*, *A. Mauric*, *M. Greijmans 1447*), all from Doi Phu Kha National Park. He also cited ten Chinese specimens under

¹ State Key Laboratory of Systematic and Evolutionary Botany, Institute of Botany, Chinese Academy of Sciences, Beijing 100093, China; e-mail: maple@ibcas.ac.cn.



ISOTYPE
Acer pseudowilsonii Y. S. Chen, sp. nov.
 Y. S. Chen Dec. 2008.
 HARVARD UNIVERSITY HERBARIA

THE FOREST HERBARIUM (BKF)
 ROYAL FOREST DEPARTMENT
 BKF No.

FLORA OF THAILAND

Family ACERACEAE
 Botanical name *Acer*
 Local name _____ Date 26 FEB 1997
 Locality Doi Phukha NP, Pua, Nan.
 Altitude 1300 m
 Note Tree 30 m tall, scattered in disturb area in gallery montane forest, by roadside, leaves green turning yellowish brown to red, young fruits light green.

Coll. R. POOMA with A. Mauric & M. Greijmans
 Det. _____ No. 1447

HERBARIUM
 OF THE
 ARNOLD ARBORETUM
 HARVARD UNIVERSITY

THE HARVARD UNIVERSITY HERBARIA
 00274008

Fig. 1 Fruiting branch of *Acer pseudowilsonii* Y.S.Chen (R. Pooma, A. Mauric, M. Greijmans 1447).

Table 1 Morphological and geographical differences between *Acer pseudowilsonii* and related species.

	<i>A. wilsonii</i>	<i>A. calcaratum</i>	<i>A. tonkinense</i>	<i>A. sichouense</i>	<i>A. pseudowilsonii</i>
Petioles	2–5 cm long, 0.5–0.7 mm diam	1.5–4.6 cm long, 0.6–0.8 mm diam	1.5–3.5 cm long, 1.3–1.5 mm diam	4–6 cm long, 0.5–0.6 mm diam	4.5–5.5 cm long, 1.0–1.2 mm diam
Blade size	7–12 by 9–12 cm	6–15 by 5–21 cm	8–17 by 6–15 cm	5–10 by 4–9 cm	10–13 by 11.5–14 cm
Blade texture	membranous or chartaceous	subleathery	subleathery	chartaceous	subleathery
Blade lobes	3–5-lobed to halfway	deeply 3-lobed	3-lobed to c. 1/3 of blade, rarely with two additional small basal lobes	5-lobed to halfway	3-lobed to halfway, 4–5-lobed in young shoots
Leaf base	rounded, subcordate or truncate	rounded, rarely subcordate	rounded or subcordate	broadly cuneate	rounded, rarely subcordate
Axillary tufts	white hairs	brown hairs	brown hairs	brown hairs, nearly glabrous	brown hairs
Lobe shape	ovate-oblong, triangular-ovate, or lanceolate	triangular-ovate, apex acuminate	triangular-ovate, apex acute	triangular-oblong, apex acuminate	triangular-ovate, apex acuminate
Lobe margin	entire or serrate	entire	entire or serrate in young shoots	serrate	entire or remotely toothed with a few very shallow small teeth
Inflorescence	panicle, 5–6 cm long, terminal on a 2-leaved branchlet	corymb, short, terminal on a 2-leaved branchlet	long panicle, 10–13 cm long, pendulous, terminal on a 2- or 4-leaved branchlet	panicle, 10–13 cm long, terminal on a 2-leaved branchlet	panicle, long, pendulous, terminal on a 2- or 4-leaved branchlet
Samara size	2.5–3 by c. 1 cm	4–6 by 1.4–1.7 cm	1.8–3 by 0.6–1 cm	3.2–3.5 by 0.8–0.9 cm	4.2–4.8 by 1.2–1.3 cm
Nutlets	ovoid, 5–6 by 3–4 mm, slightly veined	ovoid, 6–8 by 6–7 mm, distinctly veined	ovoid, 5–6 by 4–5 mm, slightly veined	elliptical, 8–9 by 4–5 mm, slightly veined	elliptical, 10 by 5–7 mm, slightly veined
Flowering	April	November to January	April to May	unknown	November
Distribution	China (Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shaanxi, Sichuan, Zhejiang)	China (Yunnan), Myanmar, Thailand, Vietnam	China (Guangxi, Guizhou, Xizang, Yunnan), Myanmar, Thailand, Vietnam	China (Yunnan)	Thailand (Nan province)

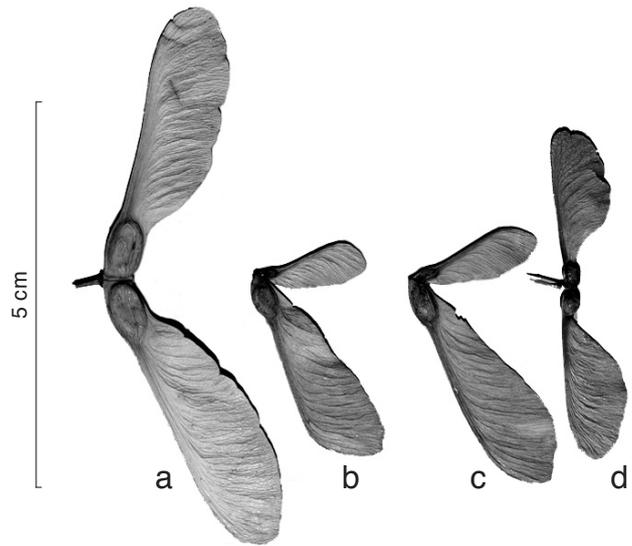


Fig. 2 Samaras of *Acer pseudowilsonii* Y.S.Chen, *A. sichouense* (W.P.Fang & M.Y.Fang) W.P.Fang and *A. wilsonii* Rehder. a. *A. pseudowilsonii*, Thailand, Nan; b. *A. sichouense*, Yunnan, Szemao, 5 000 ft; c. *A. sichouense*, Yunnan, Si-chou hsien, Shiang-ping-shan, 1500–1800 m, 30 Aug. 1947; d. *A. wilsonii*, Hubei, Patung (a. *R. Pooma et al.* 1447 (A, type); b. *A. Henry* 12044 (A); c. *K.M. Feng* 11514 (A, iso); d. *Wilson* 303 (A, type).

A. wilsonii. After checking all these Chinese specimens, I find that these specimens represent several different species: *S.P. Ko* 54033 (IBCAS, KUN) from Guangdong is the paratype of *A. pubinerve* var. *kwangtungense* (Chun) W.P.Fang; *S.H. Chun* 13095 (IBK, IBSC, KUN) and *S.H. Chun* 13288 (IBK, IBSC, KUN) are *A. tonkinense* Lecomte; *K.M. Feng* 11514 (A, KUN, PE), *K.M. Feng* 11910 (A, KUN, PE) and *C.W. Wang* 84488 (KUN) from southeast Yunnan are specimens of *A. sichouense* (W.P.Fang & M.Y.Fang) W.P.Fang (which is characterized by its leaves usually 5-lobed and toothed); *C.W. Wang* 82882 (KUN, PE) from Yunnan is *A. kuomei* W.P.Fang & M.Y.Fang; only three specimens, *B. Bartholomew* & *D.E. Boufford et al.* (*Sino-American Guizhou Botanical Expedition*) 1592 (A) from Guizhou, *S.P. Ko* 54560 (IBSC, KUN) from Guangdong and *C. Wang* 39265 (A, SYS, n.v.) from Guangxi are true *A. wilsonii*. I don't understand why Santisuk's concept of *A. wilsonii* is so wide.

Acer wilsonii is obviously the species most closely related to *A. pseudowilsonii*, but the latter differs from *A. wilsonii* by its much larger samaras and nutlets (see Table 1). The abaxial axillary tufts of *A. pseudowilsonii* are light brown, white in *A. wilsonii*. The flowering period of these two species is also different, *A. wilsonii* flowers in April, *A. pseudowilsonii* in November.

Acer wilsonii was also reported from Vietnam (Ho 1993), however, the illustration of the flowering branchlet (4829b) is more like *A. tonkinense*. Murray (1978) published *A. wilsonii* subsp. *burmense* A.E.Murray based on *A. Kurz* 1365 (K). After examining the type, I found it is *A. calcaratum*. The treatment of *A. wilsonii* subsp. *burmense* as a synonym of *A. wilsonii* in Flora of China (Xu et al. 2008) is a mistake. Van Gelderen (1994) and Chen (2007) both treated it as a synonym of *A. calcaratum*. The report of *A. wilsonii*'s distribution in Myanmar by Kress et al. (2003) was possibly based on the name *A. wilsonii* subsp. *burmense* or the wrong identification of *A. tonkinense*. *Acer tonkinense* resembles *A. wilsonii* in the 3-lobed leaves and paniculate inflorescence, but its leaves are much larger, with stouter petioles, much shallower lobes that are never toothed, fruit pedicels much shorter. Xu et al. (2008) reported *A. tonkinense* for Myanmar, Thailand and Northern Vietnam. After checking all the Asian maple specimens from A, BM, E, GH, K and MO, I never found *A. wilsonii* from outside

China, and it is most likely restricted to Central and Southern China. Xu et al. (2008) reduced *A. sichouense* to *A. wilsonii*, thus extending the distribution of *A. wilsonii* into Yunnan, but most likely the specimens from Yunnan are not conspecific and *A. sichouense* should be recognized as a distinct species. When Rehder (1905) published *A. wilsonii*, he cited another specimen from Southeast Yunnan (*A. Henry 12044*; A, MO), and noted that "Henry's No. 12044 from Yun-nan differs in the firmer more copiously serrate leaves, and in the larger fruits which are about 4 centimetres long, with wings spreading at right angles, less narrowed at the base and decurrent on the nutlet. It certainly represents a distinct form." *Henry 12044* is more similar to typical *A. sichouense* (sometimes misidentified as *A. wilsonii* or *A. sinense* Pax), which differs from my new species by its usually smaller and 5-lobed (rarely 3- or 4-lobed) leaves, copiously serrate lobes, slender petioles and smaller samaras (Table 1).

Additional specimens (2 collections). THAILAND, Nan province, Pua, Doi PhuKha National Park, *Santisuk et al. s.n.* (BKF); same locality, *Santisuk 8592* (BKF).

Acknowledgements The author is grateful to Dr. Piet C. de Jong for his valuable comments on the paper and the curators of the herbaria (A, BM, E, GH, IBK, IBSC, K, KUN, MO, P, PE, TI) for the access to the herbarium collections or their loan of type specimens. Support for this research was provided by the National Science Foundation of China (30470128) and Flora of China project of Missouri Botanical Garden and Institute of Botany, CAS.

REFERENCES

- Chen YS. 2007. Two newly recorded species of *Acer* (Aceraceae) in China. *Acta Phytotaxonomica Sinica* 45: 337–340.
- De Jong PC. 1994. Taxonomy and reproductive biology of maples. In: Van Gelderen DM, De Jong PC, Oterdoom HJ (eds), *Maples of the world*. 69–103. Timber Press, Portland, Oregon.
- Ho PH. 1993. An illustrated Flora of Vietnam. Vol. 3, part 2. Montreal.
- Kress WJ, De Filippis RA, Farr E, Kyi DYY. 2003. A checklist of the trees, shrubs, herbs, and climbers of Myanmar. *Contributions from the United States National Herbarium* 45: 1–590.
- Murray E. 1978. *Acer* notes no. 8. *Kalmia* 8, 3: 17–20.
- Rehder A. 1905. The maples of eastern continental Asia. In: Sargent CS (ed.), *Trees and shrubs: Illustrations of new or little known ligneous plants*. Volume 1, part 5: 151–182. The Riverside Press, Boston & New York.
- Santisuk T. 1998. A systematic study of the genus *Acer* (Aceraceae) in Thailand. *Natural History Bulletin of the Siam Society* 46: 93–104.
- Van Gelderen DM. 1994. Maple species and infraspecific taxa. In: Van Gelderen DM, De Jong PC, Oterdoom HJ (eds), *Maples of the world*. 105–239. Timber Press, Portland, Oregon.
- Xu TZ, Chen YS, De Jong PC, Oterdoom HJ, Chang CS, 2008. Aceraceae. In: Wu C, Raven P, Hong DY (eds), *Flora of China*. Vol. 11: 515–553. Missouri Botanical Garden Press, St. Louis and Science Press, Beijing.

IDENTIFICATION LIST

The abbreviations after the collectors number refer to the following taxa:

Acer

- 1 = *kuomeii*
- 2 = *pseudowilsonii*
- 3 = *pubinerve* var. *kwangtungense*
- 4 = *sichouense*
- 5 = *tonkinense*
- 6 = *wilsonii*

- Bartholomew & Boufford 1592: 6.
 Chun 13095: 5; 13288: 5.
 Feng 11514: 4; 11910: 4.
 Henry 12044: 4.
 Ko 54033: 3; 54560: 6.
 Pooma, Mauric, Greijmans 1447: 2.
 Santisuk 8592: 2.
 C. Wang 39265: 6 – C.W. Wang 82882: 1 – Wilson 303: 6.