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LECTOTYPIFICATION OF *STEPHANIA PIERREI* (MENISPERMACEAE)

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Stephania pierrei Diels (Menispermaceae) is a species recorded from the Indo-Chinese Peninsula. It is the only species of the genus bearing apetalous flowers. Diels did not cite a holotype in his publication in 1910. We provide here a more precise description of *Stephania pierrei* and select a lectotype for this name.

Keywords. Apetalous flowers, Cambodia, lectotypification, *Stephania erecta*, *Stephania pierrei*.

Introduction

The genus *Stephania* Lour. (Menispermaceae) consists of c.60 species distributed in tropical and subtropical Asia, tropical Africa and Oceania (Lo *et al.*, 2008). Plants of this genus are commonly used in Asian folk medicine to treat a wide range of ailments including malaria, fever, dysentery and tuberculosis (Semwal *et al.*, 2010).

Stephania pierrei Diels is a species recorded from the Indo-Chinese Peninsula (Forman, 1988, 1991). The tuber is traditionally used in Cambodia for the treatment of body oedema, migraine and heart disease (Dy Phon, 2000). Its tuber extract possesses antimalarial, anticancer and anticholinesterase activities (Likhitwitayawuid *et al.*, 1993; Semwal *et al.*, 2010).

Lectotypification

Stephania pierrei was originally described by Diels (1910). His description was based on the specimens collected in Cambodia by the French botanist Jean Baptiste Louis Pierre: *Pierre* 753 (male flowers), *Pierre* 755c (fruits) and *Pierre* 755d (male flowers). In the notes following the diagnosis of *Stephania pierrei*, Diels additionally described *Pierre* 754 (Deon ba, Vietnam; that we identified as *Pierre* 754c – see the remark below), *Harmand* s.n. A & B (along the Mekong, Laos), *Teysmann* s.n. (Thailand),

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and *Ducloux* 73 (Yunnan, China). The two latter specimens could not be found. However, according to Diels, *Ducloux* 73 has petalous flowers. For this reason, it cannot be considered to be *Stephania pierrei*. We confirm that *Pierre* 754c and *Harmand* s.n. A & B are specimens of *Stephania pierrei*.

Diels did not designate a holotype in his publication in 1910. Hence, we select among the syntypes a specimen as the lectotype of the name *Stephania pierrei* (Art. 8.2 & 9.2 in McNeill *et al.*, 2012) and, based on our recent collections, we provide a more precise description of the species. The syntype which best fits the protologue of *Stephania pierrei* is *Pierre* 755d; it includes male flowers, mature leaves, and a diagnostic illustration of the flowers drawn by E. Delpy. It has been selected as the lectotype of *Stephania pierrei*.

Note. It is known that Pierre coded his specimens long after he collected them and they were often mixed. Indeed, three and six specimens were identified with the vouchers *Pierre* 754 and *Pierre* 755, respectively. The nine specimens were collected in different places in Cambodia, Laos and Vietnam, and at different times. Two specimens of *Pierre* 754 correspond to *Stephania pierrei* Diels (Kompong Speu, 'Samrong Tong Province', Cambodia, iv 1870: *Pierre* 754a; Deon La, Vietnam, vi 1866: *Pierre* 754c) while one is *S. oblata* Craib (Kompong Speu, 'Samrong Tong Province', Cambodia, April 1870: *Pierre* 754b). The six specimens of *Pierre* 755 were distinguished in a previous work (Hul *et al.*, 2014) by adding the letters *a* to *d*. Four of them correspond to *Stephania pierrei* (*Pierre* 755c, three specimens, and *Pierre* 755d, a single specimen).

Description

Stephania pierrei Diels, Pflanzenreich IV, 94 (Heft 46): 276 (1910), *emend.* Hul & Dary. – Type: Cambodia, Kamput (Kampot), v 1874, male flowers, *Pierre* 755d (lecto P!, P00748190, chosen here; isolecto MPU, MPU026852); Kompong Speu, 'Samrong Tong Province', Chereer (Chereev) Mountain, iv 1870, male flowers, *Pierre* 753 (syn B!, B100294302; isosyn MPU, MPU026854); Pursath (Pursat), vi 1870, fruits, *Pierre* 755c (syn P!, P02384062; isosyn Herbarium of the Faculty of Pharmacy in Phnom Penh; K, K000644772; MPU, MPU026853; P, P02384063; RUPP). Laos, 'Sud du Laos, Bords du Mé-Kông', 1875–77, male flowers, *Harmand* s.n. A (syn P!, P00966753); loc. cit., fruits, *Harmand* s.n. B (syn P!, P02384064; isosyn P!, P02384067). Vietnam, Tay Ninh, Deon la (Deon ba), vi 1866, fruits, *Pierre* 754c (syn P!, P02315815; isosyn P!, P02315816; VNM, VNM00001593). **Fig. 1.**

Stephania erecta Craib, Bull. Misc. Inform. Kew: 229 (1922). – Type: Thailand, Phetchabun, *Kerr* 5689 (holo K, K000644771).

Erect herb or slender climber to 3 m, dioecious, with colourless sap, glabrous; root tuberous, subglobulose or obovoid, rarely hemispherical, 9–20(–25) cm diam., up to 8 kg. *Leaves* simple, peltate, glabrous, sometimes ± papillate on both surfaces, abaxially whitish; petiole geniculate and slightly swollen at base, (1–)1.5–4.5(–6) cm;

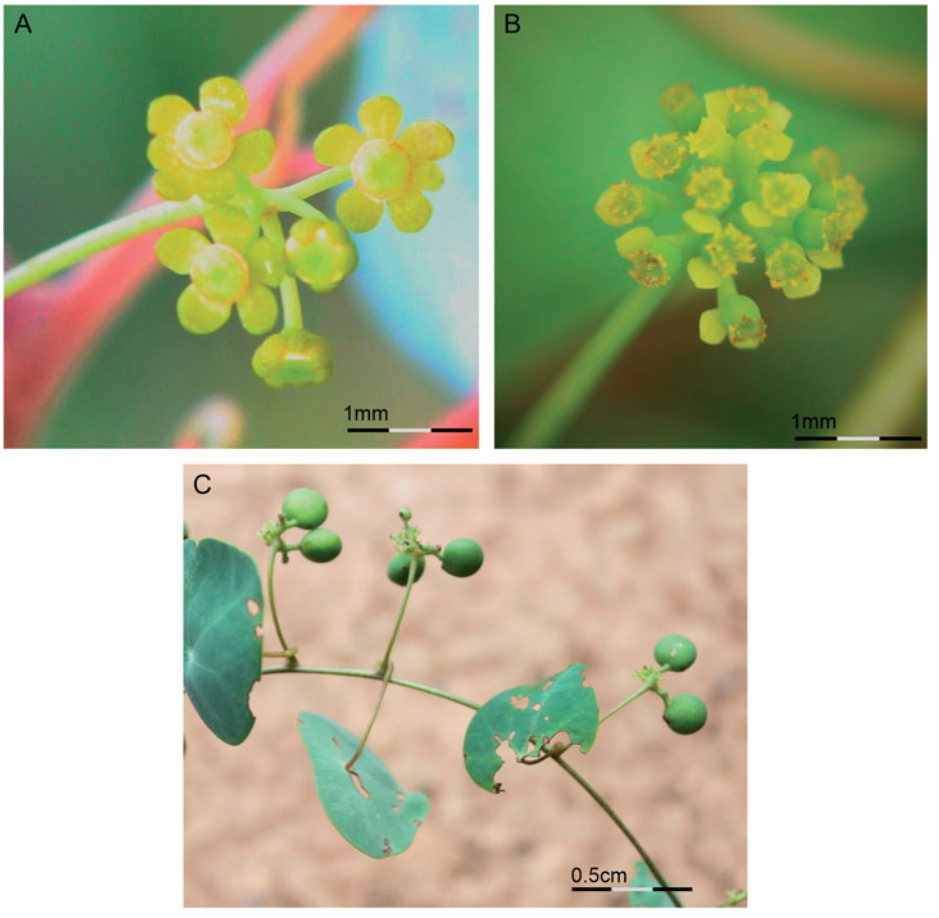

FIG. 1. *Stephania pierrei*. A, male flowers (*Hul, Peou & Dary* 5001). B, female flowers (*Hul, Peou & Dary* 5005). C, fruits (*Dary & Li* 12). Photo: C. Dary.

blades orbicular, suborbicular, sometimes ovate, 2–6 × 2–5 cm, papyraceous, base ± truncate or rounded, margin entire, apex obtuse, emarginate (or acuminate), usually mucronulate; palmately nerved with veins slightly raised on the abaxial surface, ± reticulate on both surfaces. *Male inflorescences* axillary, umbelliform cymes, 4–10 × 5–9 mm, peduncles 1–4 cm long, slender; bracts lacking. *Flowers* 4–6(–10), pedicellate; pedicels 1.5–2 mm long (Fig. 1A), sometimes with minute subulate bracteoles, 1–1.5 × 0.2–0.3 mm; sepals (4–)5–6(–8), yellowish-greenish, fleshy, orbicular-obovate, 1–2 × 0.5–1 mm, concave, ± unguiculate; petals 0; synandrium 5–8-locular, sessile or subsessile. *Female inflorescences* as the male but condensed (Fig. 1B), 3–5 × 4–7 mm; peduncles 1–2.5 cm long, slender; bracts lacking. *Flowers* 7–15(–18), pedicellate; pedicels 1.5–2(–2.5) mm long, accrescent, sometimes with minute subulate bracteoles, 1 × 0.2 mm; sepals 1–2, yellowish, broadly ovate or obovate, concave, 0.5–1.5 × 1 mm;

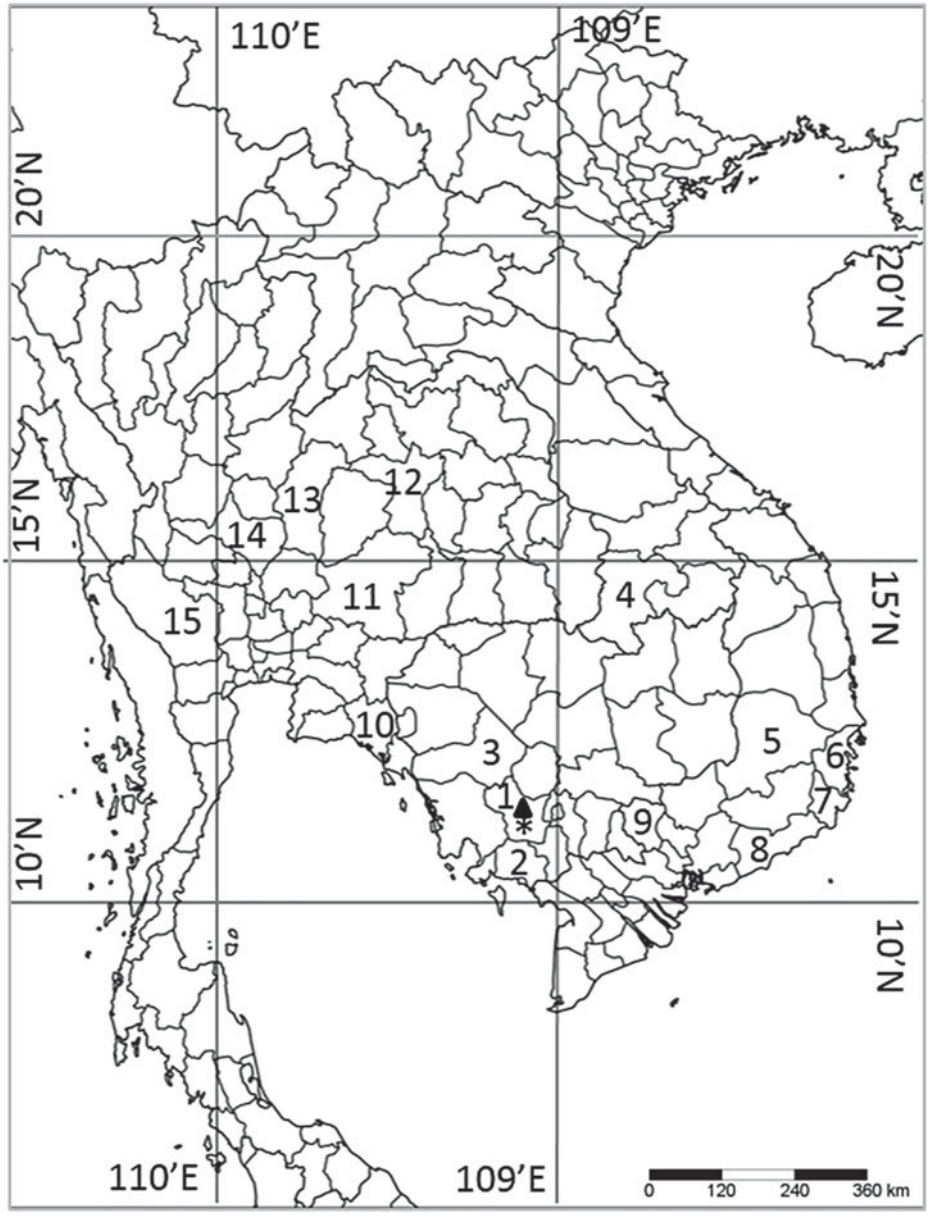

FIG. 2. Collection sites of *Stephania pierrei* reported by Gagnepain (1938) and Forman (1991). Cambodia: Kampong Speu (1), Kampot (2), Pursat (3); Laos: Champasak (4); Vietnam: Dak Lak (5), Khanh Hoa (6), Ninh Thuan (7), Binh Thuan (8), Tay Ninh (9); Thailand: Chanthaburi (10), Nakhon Rachasima (11), between Khon Kaen and Sithan (12), Phetchabun (13), Nakhon Sawan (14), Kanchanaburi (15). The triangle and the asterisk stand for the localities where *Dary & Li* 11 & 12 and *Hul, Peou & Dary* 5001 to 5005 were collected, respectively.

petals 0; carpels ovoid, 1 × 0.5 mm, stigma 2–10-fid. *Drupes* suborbicular or obovoid (Fig. 1C), 6–8 × 5–7 mm; pedicels 3–5 mm long; horseshoe-shaped endocarp, condyle perforate, abaxially marked by 4 rows of 16–20 ± flattened and sharp projections.

Distribution. Cambodia, Laos, Thailand and Vietnam (Fig. 2).

Habitat and ecology. Semi- and evergreen forest, free land next to rice fields, bushes, and open vegetation.

Proposed IUCN status. EN A2cd. We consider the natural populations of *Stephania pierrei* to be under threat from habitat destruction and over-collecting. Our observations in the last three years showed that hundreds of tubers were used to produce traditional medications. A less harmful use of *Stephania pierrei* consists of collecting leaves to make a local jelly dessert called 'Cha Huoy' in the Kampong Speu province (C. Dary and S. Hul, pers. obs.). Moreover, the area of occupancy is only 64 km^2, and the collection sites of the species in Cambodia, Laos, Thailand and Vietnam belong to multiple-use areas. For these reasons, and despite its large extent of occurrence of 406,284 km^2 (GeoCAT tool; Bachman *et al.*, 2011), we recommend the IUCN status 'Endangered' (IUCN, 2001).

Phenology. Flowering in April–August, fruiting in May–September.

Additional specimens examined. Cambodia. sin. loc., 1883–85, male flowers, *Couderc* s.n. (P). **Kompong Speu:** Samrong Tong, Chereer Mountain, iv 1870, male flowers, *Pierre* 754a (P); Chbar Môn, 11°24′41″N, 104°29′510″E, viii 2013, male flowers, *Dary & Li* 11 (Herbarium of the Faculty of Pharmacy in Phnom Penh; P); loc. cit., fruits, *Dary & Li* 12 (Herbarium of the Faculty of Pharmacy in Phnom Penh; P); Samrong Tong, 11°23′920″N, 104°29′132″E, 28 vii 2014, male flowers, *Hul, Peou & Dary* 5001 (P; RUPP), 5002 (P; RUPP), 5003 (P; RUPP), 5004 (P; RUPP), and 5005 (female flowers and fruits; P; RUPP); **Pursat:** Bakan, 12°38′59″N, 103°47′36″E, 3 vii 2015, sterile, *Hul, Peou & Thi* 5045 (Herbarium of the Faculty of Pharmacy in Phnom Penh; P; RUPP).

Laos. 'Iter Mekong austro Cochinchinae', i 1877, male flowers, *Pierre* 755e A (leg. *Harmand*) (P); loc. cit., fruits, *Pierre* 755e B (leg. *Harmand*) (P).

Thailand. **Chanthaburi:** 12°52′N, 102°10′E, 27 viii 1972, *Larsen et al.* 32132 (P).

Vietnam. **Binh Thuan:** Phanthiet, Ambulance, 25 x 1924, fruits, *Evrard* 1524 (P); from Lagi to Pho Tri, 2 vii 1925, male flowers, *Evrard* 2307 (P); **Dac Lac (Dak Lak):** Buon Ho, v 1965, male flowers, *Dournes* s.n. (P); loc. cit., v 1965, female flowers, *Dournes* s.n. (P); **Khanh Hoa:** Nui-hon-heo, 27 ix 1922, female flowers, *Poilane* 4761 (P; VNM); **Ninh Thuan:** Phan Rang, Balap, 25 vi 1919, male flowers, *Poilane* 88 (P; VNM); Phan Rang, 26 vi 1919, male flowers, *Poilane* 94 (P; VNM); Song-long-song, 29 vi 1919, female flowers and fruits, *Poilane* 135 (P; VNM); Cana, 15 vii 1930, fruits, *Poilane* 17870 (P); near Phan Rang, vi–viii 1959, male flowers, *Schnell* 10632 (P).

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