



## Validation of the name *Pogostemon petelotii* (Lamiaceae)

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### Abstract

*Dysophylla petelotii*, originally described from Vietnam in 1936, is an invalidly published name because of the lack of a Latin diagnosis. It was later transferred to *Pogostemon* as *P. petelotii* (Doan) Phuong and *P. petelotii* (Doan) Budantzev, but neither Phuong nor Budantzev validly published the name *P. petelotii* because the basionym had not yet been validly published and neither of them provided a Latin diagnosis. Based on the studies of herbarium material, *P. petelotii* can be recognized as an independent species. We validate the name through providing an English diagnosis. *Pogostemon petelotii* is very closely related to *P. cruciatus*, but can be easily distinguished from the latter by leaf characters.

**Key words:** nomenclature, taxonomy, Thailand, Vietnam

### Introduction

The genus *Pogostemon* Desfontaines (1815: 154) consists of about eighty species and is distributed mainly in tropical and subtropical Asia with another five species endemic to Africa (Bhatti & Ingrouille 1997, Harley *et al.* 2004). It belongs to the tribe Pogostemoneae, subfamily Lamioideae of the family Lamiaceae (Harley *et al.* 2004, Scheen *et al.* 2010, Bendiksby *et al.* 2011). The most recent revision of the genus was published by Bhatti & Ingrouille (1997), with 79 species recognized. Bhatti & Ingrouille (1997) re-circumscribed the genus with the reduction of *Dysophylla* Blume (1826: 826) and divided the genus into three subgenera: *P.* subgen. *Pogostemon*, *P.* subgen. *Allopogostemon* Bhatti & Ingrouille (1997: 97) and *P.* subgen. *Dysophylla* (Blume 1826: 826) Bhatti & Ingrouille (1997: 107).

In the *Flore Générale de L'Indo-Chine*, Doan (1936) described many new taxa of Lamiaceae in French. But according to Art. 39.1 of the ICN (McNeill *et al.* 2012), these names were not validly published because no Latin diagnoses were provided. A number of invalid new combinations have been made based on Doan's names (e.g., Hara 1985, Phuong 1995, Paton 1997, Budantzev 1999, Chuakul 2002). Suddee and his colleagues validly published most names of Doan except for those names which they did not accept (Suddee *et al.* 2004a, 2004b, 2005, Suddee & Paton 2006).

*Dysophylla petelotii* Doan (1936: 967) is one of those names published by Doan. Later it was transferred to the genus *Pogostemon* by Phuong (1995, 2000) and Budantzev (1999), who both made new combinations, *Pogostemon petelotii* (Doan) Phuong (1995: 44) and *Pogostemon petelotii* (Doan) Budantzev (1999: 23), respectively. Neither Phuong or Budantzev validated the name *Pogostemon petelotii* because the basionym had not yet been validly published, and neither of them provided the necessary Latin diagnosis or description when they made the new combination. When they validated some names of Lamiaceae, Suddee & Paton (2006) recognized that either “*Dysophylla petelotii*” or “*Pogostemon petelotii*” might be conspecific with *Pogostemon cruciatus* (Bentham 1830: 30) Kuntze (1891: 530) and thus did not validate the names “*Dysophylla petelotii*” or “*Pogostemon petelotii*”.

In the course of studying the phylogeny and taxonomy of the genus *Pogostemon*, we checked the collection *Petelot 1300* (Fig. 1 A) cited by Doan under “*Dysophylla petelotii*”, and concluded that it can be separated from *P. cruciatus* (Fig. 1 B). Because the taxon was not validly described before, we validate it here, using the epithet “*petelotii*” originally proposed by Doan (1936), through an English diagnosis as allowed by recent changes of the Code (Art. 39.2 ICN, McNeill *et al.* 2012; see also Knapp *et al.* 2011), even though it was first described seventy-five years ago.

## Taxonomic treatment

*Pogostemon petelotii* Doan ex Gang Yao, Y. F. Deng & X. J. Ge, *sp. nov.*

**Diagnosis:**—The species is similar to *Pogostemon cruciatus* (Benth.) Kuntze in habit, but differs from the latter in its stems and leaves being whitish adpressed tomentose, leaf margins not revolute and dentate apically, midrib conspicuously elevated, and lateral veins in 3–5 pairs.

**Type:**—VIETNAM. Thonh Hoa: Bim-son, anciennes rizieres, December 1923, *P. A. Pételot 1300* (holotype P! [sheet no. P00344448]; isotypes P! [sheets nos. P00344449, P00344450]).

Annual herb, to 40 cm tall. Stem terete, unbranched or rarely branched, straight, erect, striate on lower portion, adpressed whitish tomentose with long hairs. Leaves 4–6-verticillate, sessile; blades elliptic-linear, 1–3 cm × 3–7 mm, apex obtuse, margin not revolute, sometimes dentate apically, base rounded or broadly cuneate, tomentose on both surfaces, hairs unicellular, midrib elevated abaxially, lateral veins 3–5 on each side of midrib. Inflorescence terminal, 5–7 cm × 38 mm, densely flowered, not interrupted, tomentose; bracts linear, villose, longer than the calyx, long-hairy; calyx campanulate, 1.5–1.8 mm in length, 4-angled and more or less quadrangular, villose outside, lobes 5, subequal; corolla pinkish, very shortly exerted from the calyx tube, lobes oblong, subequal, pubescent outside, corolla tube about 2 mm in length; stamens 4, about 4 mm in length, inserted at the mid-part of the corolla tube; filament twice as long as the corolla, joined to the middle of the corolla tube, hairy; anther stalks tapered at the base which is pubescent, bearded at the mid part and more than twice as long as the corolla; anther 1-locular, cell apex dehiscent. Ovary glabrous; stigma shortly bifid at apex. Nutlets not seen.

**Distribution and habitat:**—*Pogostemon petelotii* is found in Thailand and Vietnam. It grows in grassland in open places at elevations of 1000–1300 m.

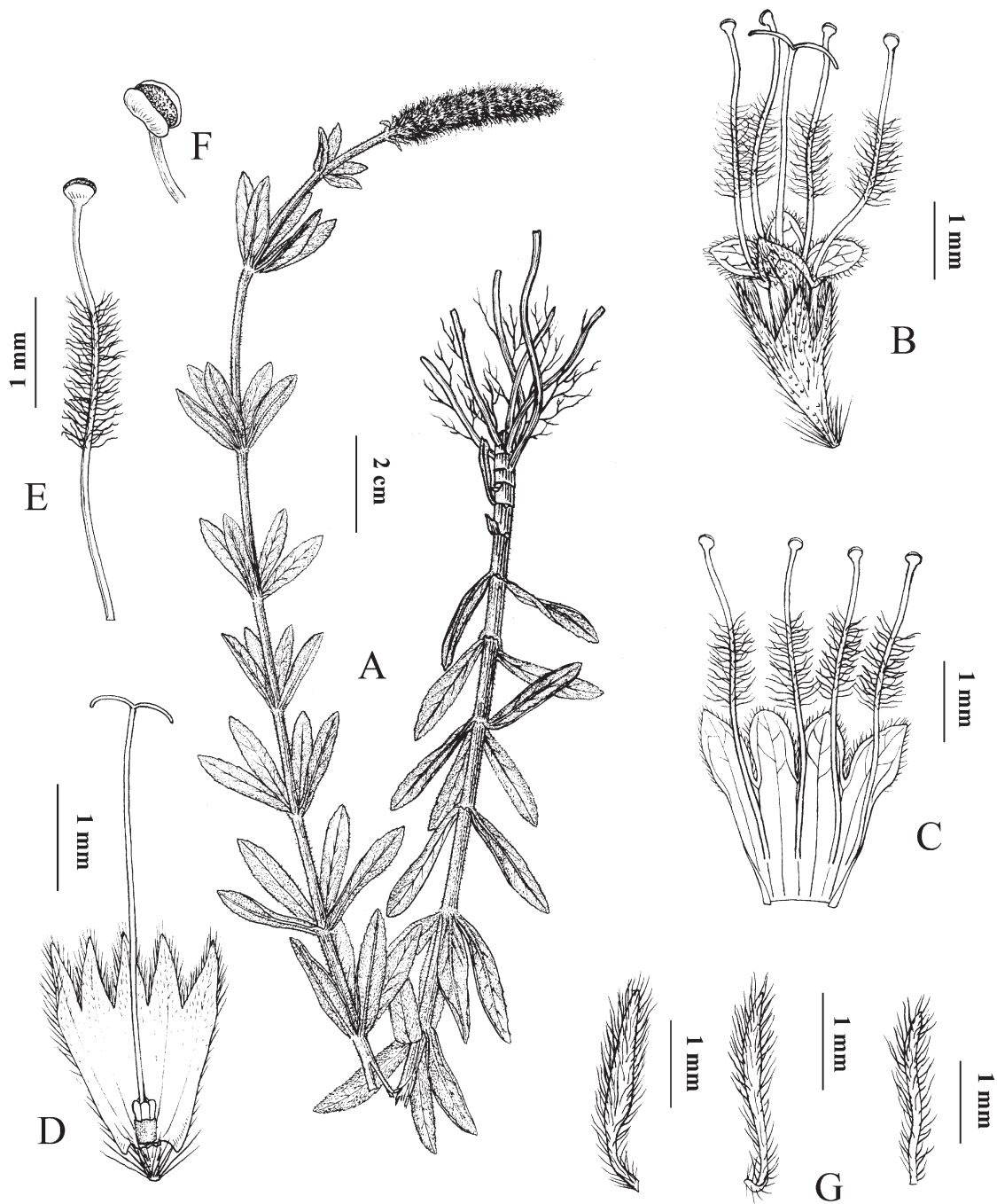
**Etymology:**—The specific epithet “*petelotii*” was originally proposed by Doan (1936) for the species to be in honor of French botanist P. A. Pételot (1885–after 1940), who first collected the species in Vietnam.

**Discussion:**—According to the classification of Bhatti & Ingrouille (1997), *Pogostemon petelotii* belongs to *P.* subgen. *Dysophylla*. Obviously, it is closely related to *P. cruciatus*, but differs from the latter by having the stems and leaves whitish adpressed tomentose (Fig. 1 C), leaf margins rarely revolute and sometimes dentate apically, midrib elevated conspicuously (Fig. 3) and lateral veins in 3–5 pairs (Fig. 1 C). *Pogostemon cruciatus* has the stems and leaves brown spreadingly hirsute (Fig. 1 D), leaf margin usually revolute and quite entire, midrib inconspicuously elevated (Fig. 1 D) and lateral veins invisible (Fig. 1 D). *P. cruciatus* is distributed in India, Nepal, Myanmar, China, Thailand, Vietnam, Laos and Cambodia.

Trichomes are widely used in taxonomic studies in the family Lamiaceae (Cantino 1990, Gairola *et al.* 2009, Xiang *et al.* 2010, Hu *et al.* 2012). In *Pogostemon*, most species have multi-cellular, simple hairs except for two species that have unicellular hairs (Bhatti & Ingrouille 1997). We observed the trichome morphology of leaves of *P. petelotii* and *P. cruciatus* under scanning electron microscopy and light microscopy. The results showed that *P. petelotii* has unicellular hairs (Fig. 3 F) more densely covered on the leaf surfaces (Fig. 3 B, D), and *P. cruciatus* has 2–3-cellular hairs (Fig. 3 E) more sparsely covered on the leaf surfaces (Fig. 3 A, C).



**FIGURE 1.** A. Holotype of *Pogostemon petelotii* (Pételot 1300, P); B. Isotype of *P. cruciatus* (Wallich 1541, K); C. Leaves of *P. petelotii* (Pételot 1300, P); D. Leaves of *P. cruciatus* (Wallich 1541, K). Scale bars: C, D = 1 cm. A and C reproduced with permission by the Muséum National d'Histoire Naturelle (MNHN), Paris; B and D with permission by Herbarium of the Royal Botanic Gardens, Kew (K)

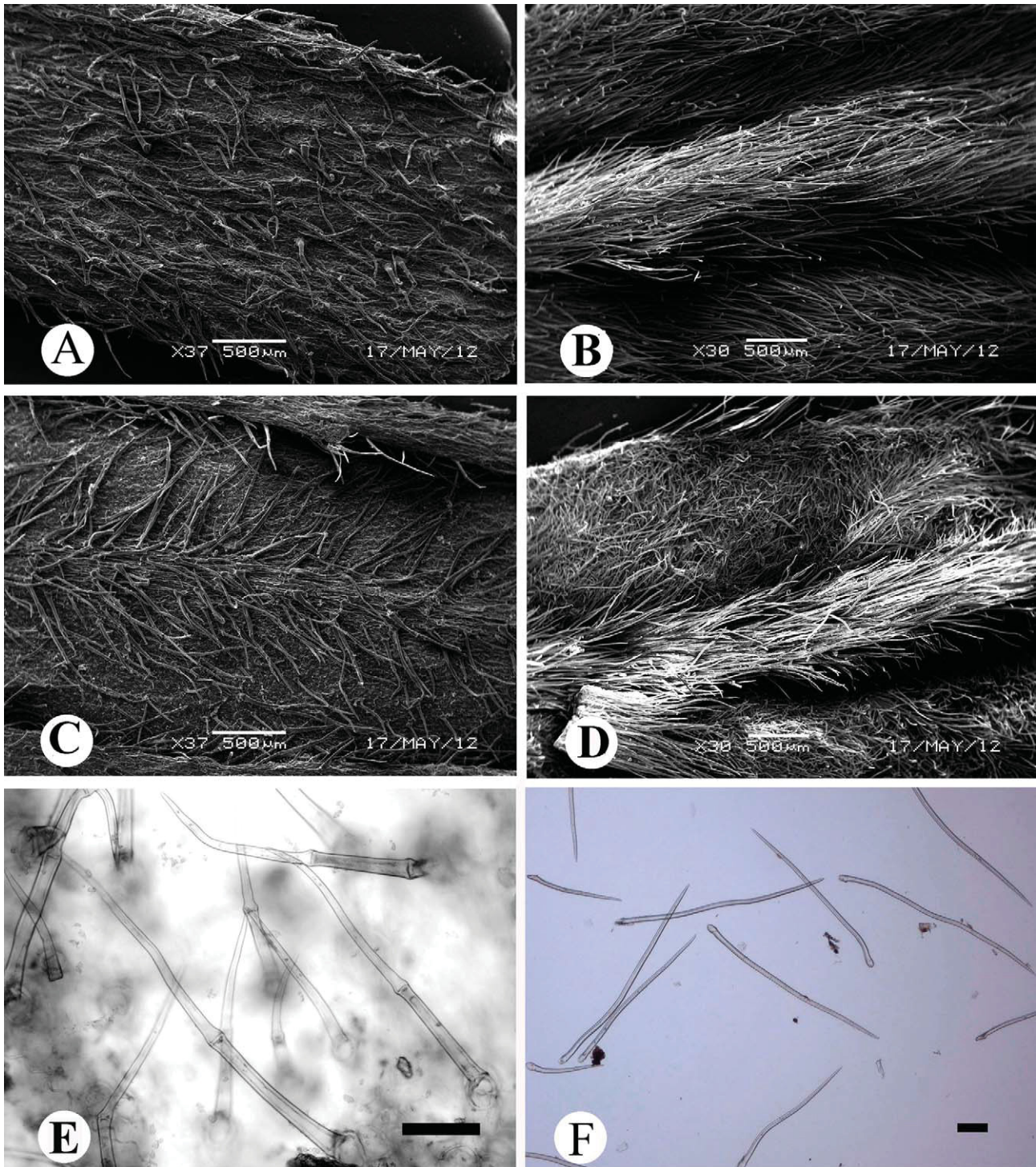


**FIGURE 2.** *Pogostemon petelotii*. A. Habit; B. Flower; C. Corolla split with stamens; D. Calyx split with style; E. Stamen; F. Anther; G. Bracts. Based on *G. Murata et al. T-42045* (IBSC).

**The identification key to distinguish *Pogostemon petelotii* and *P. cruciatus* is provided below.**

- 1a. Stems and leaves whitish adpressed tomentose; hairs on leaves unicellular; leaf margin rarely revolute and sometimes dentate apically, midrib conspicuously elevated, and lateral veins in 3–5 pairs; calyx tube 4-angled ..... *P. petelotii*
- 1b. Stems and leaves brown spreadingly hirsute; hairs on leaves 2–3-cellular; leaf margin revolute and quite entire; midrib inconspicuously elevated, and lateral veins invisible; calyx tube rounded ..... *P. cruciatus*

**Additional specimens examined:**—THAILAND. Northeastern: Loei: Phu Kradung, S. of Loei, 16°53'N, 101°53'E, 1100 m, 7 November 1970, *C. Charoenphol, K. Larsen & E. Warncke 4610* (AAU, E!); Udawn, Phu Kradung, on the plain at its summit, 1100–1200 m, 28 November 1965, *M. Tagawa, K. Iwatsuki & N. Fukuoka T479* (E!); Phu Kradung, 16°52'N, 101°48–50'E, along the trail to the headquarter of National Park, 900–1200 m, 30 October 1984, *G. Murata, C. Phengkklai, S. Mitsuta, T. Yahara, H. Nagamasu & N. Nanlasan T-42045* (IBSC! [sheet no. 0567266]); Phu Kradung, 1300 m, 29 November 1958, *T. Sørensen, K. Larsen & B. Hansen 6313* (KUN! [sheet no. KUN213610]).



**FIGURE 3.** Trichome morphology of leaves under scanning electron microscope and light microscope. *Pogostemon cruciatus* (*G. Forrest 25140*, IBSC): A. Trichome on the upper surface; C. Trichome on the lower surface; E. 2–3-cellular trichome. *P. petelotii* (*T. Sørensen et al. 6313*, KUN): B. Trichome on the upper surface; D. Trichome on lower surface; F. unicellular trichome. Scale bars: E–F = 0.1 mm.

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