

Stemona fimbriatepala (Stemonaceae), a new species from northern Laos

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ABSTRACT

Stemona fimbriatepala (Stemonaceae), a new species from northern Laos, is described and illustrated. It is morphologically similar to *S. hirtella* and *S. kerrii* but clearly differs in longer peduncle, longer tepals, longer petaloid outgrowth of the connective and fimbriate margin of inner tepals. A detailed description, distribution, ecology, etymology, preliminary conservation status and photographs of this species are provided. A key to discriminate between the three hairy species is presented.

KEYWORDS: fimbriate, new taxon, Stemonaceae, *Stemona fimbriatepala*, taxonomy.

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INTRODUCTION

Stemona Lour. is a small genus in the family Stemonaceae, with approximately 20 species, distributed in China and Japan, through eastern Malesia to Australia (Duyfjes & Inthachub, 2011). In a Checklist of the Vascular Plants of Lao PDR (Newman *et al.*, 2007), six species of this genus were reported.

The Botanical Garden Organization, Thailand collaborated with Pha Tad Ke Botanical Garden and the Ministry of Agriculture and Forestry, Laos PDR to conduct botanical expeditions in northern Laos between 2014 and 2020. In 2014, an interesting specimen of unknown *Stemona* was collected and photographed by Charun Maknoi and Wittaya Pongamornkul during botanical exploration in Louangphrabang Province. Later, the authors rechecked the unidentified specimen of *Stemona* in Laos, and after carefully consulting the relevant literature (Hooker, 1894; Wright, 1896; Gagnepain, 1934; Telford, 1986; Duyfjes, 1993; Chuakul, 2000; Ji & Duyfjes, 2000; Inthachub, 2008; Inthachub *et al.*, 2010; Duyfjes & Inthachub, 2011; De Wilde &

Duyfjes, 2019), comparison of its morphological characters with the protologues and study of the type specimens, we found that it did not match with any known species and that it clearly represents an undescribed species.

In this paper, *Stemona fimbriatepala* from Louangphrabang Province of northern Laos, is described and illustrated below. The description is based on both herbarium specimens and field observations. Terminology used here follows Inthachub *et al.* (2010), Duyfjes & Inthachub (2011) and De Wilde & Duyfjes (2019).

DESCRIPTION

***Stemona fimbriatepala* Rakarcha, Pongamornkul & Thammara., sp. nov.**

Stemona fimbriatepala is similar to *S. hirtella* W.J.de Wilde & Duyfjes and *S. kerrii* Craib by its hairiness on nearly all parts of the plant, but clearly differs in longer peduncle, longer tepals, longer petaloid outgrowth of the connective and fimbriate margin of inner tepals instead of entire margin in

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S. hirtella and *S. kerrii*. The twiner habit and pedunculate inflorescence of *S. fimbritepala* is similar to *S. kerrii*, but *S. hirtella* is an erect herb with sessile inflorescence. The abaxial surface of tepals of *S. fimbritepala* is glabrous but hairy in *S. hirtella* and *S. kerrii*. Type: Laos, Louangphrabang Province: Xieng Ngeun District, Ban Lak Sib, Phou Souang Protected Nature Reserve, 19°51.635'N, 102°11.331'E, 21 July 2014, C. Maknoi, W. Pongamornkul & P. Yadee L3-238 (holotype **QBG!** [sheet no. 86234]; isotypes **BKF!**, **HNL!**). Figs. 1 & 2.

Twiner ca 1 m tall. *Stem* terete, greenish, with sparse hairs when young, becoming glabrous when older. *Leaves* simple, alternate; petiole 1.5–3.2 cm long, hairy; lamina ovate-lanceolate, 6–16.5 × 2.5–6 cm, bullate, apex acuminate, mucronate up to 2 cm long, base cordate, margin entire, adaxial surface glabrous, abaxial surface hairy on veins, basal veins 9. *Inflorescences* with apically a dense raceme, 2–9-flowered, axillary; peduncle 2.5–5.5 cm long, filiform, hairy; bracts triangular-ovate, sessile, 4–6 × 0.5–1 mm, apex acute, adaxial surface glabrous, abaxial surface hairy. *Flowers*: pedicel 5–15 mm long, filiform, sparsely hairy at base, becoming less hairy towards the apex, or glabrous. *Tepals* 4, lanceolate, 13–20 × 2.5–7 mm, veins 7–9, glabrous; outer tepals 2, adaxial side dark brownish-red at basal part with a yellowish-green at apex when young, becoming dark brownish-red when mature, abaxial side yellowish-green with green stripes from the base towards the apex, margin entire; inner tepals 2, adaxial side dark brownish-red at basal part with a yellowish-green at apex when young, becoming dark brownish-red when mature, abaxial side yellowish-green with brownish-red tinge towards the margin, margin fimbriate. *Stamens* 4, dark brownish-red with a yellowish-green apex when young, becoming dark brownish-red when mature, 15–20 × ca 0.5 mm, abaxial surface conspicuously squamulose-rugose; filaments ca 1.5 mm long, basally connate; anthers 3–5 mm long with a longitudinal ridge separating thecae ca 0.5 mm high, the surface squamulose-rugose, continuing above the thecae on the outgrowth of the connective with a distal, ca 2 × 1 mm, patent, elongate, yellowish-green, succulent body; petaloid outgrowth of the connective 12–15 mm long, margin involute at base and patent at the apex, with

squamulose-rugose surface; additional appendage absent. *Ovary* superior, ovoid, ca 1 × 0.5 mm, style absent, stigma inconspicuous. *Fruits* ellipsoid, ca 18 × 10 mm, glabrous. *Seeds* 3–4, ellipsoid, 5–7.5 × 4.5–6 mm, base surrounded by finger-like aril.

Distribution.—Northern Laos: Louangphrabang Province.

Ecology.—Found on limestone under semi-shade, climbing on other plants, at 860 m alt. Flowering and fruiting from July to August.

Etymology.—The specific epithet '*fimbritepala*' refers to the fimbriate margin of the two inner tepals (Fig. 2H).

Preliminary conservation status.—*Stemona fimbritepala* is endemic to Laos and currently known only from one locality. The extent of occurrence was estimated to be less than 100 km². The number of mature individuals is less than 50 in three populations within Phou Souang Protected Nature Reserve and the species occurs in an area at risk of human disturbance because of trails used in the region. Therefore, the conservation status is provisionally evaluated as Critically Endangered, CR B2ab(iii); D, according to IUCN Standards and Petitions Committee (2019).

Notes.—*Stemona fimbritepala* is easy to distinguish from other species of *Stemona* in the combination of the presence of hairs on many of the vegetative and reproductive organs, dark brownish-red flowers, glabrous tepals and fimbriate margin of the two inner tepals. *Stemona fimbritepala*, *S. hirtella* and *S. kerrii* all are hairy on nearly all parts of the plant, and *S. fimbritepala* is compared to these taxa in Table 1.

The description of 'body' on the outgrowth of the connective (Figs. 1D & 2F) as described above follows Inthachub *et al.* (2010) and Duyfjes & Inthachub (2011). These authors noticed that it resembles an additional thecae-appendage, but that it is not connected with the apices of the thecae. The fleshy succulent body of *S. fimbritepala* is attached far from thecae, and about 7 mm from the apex of the outgrowth of the connective (Fig. 2F). Later, the body is caducous. This feature can also be found in other *Stemona* species, like *S. kerrii*.

KEY FOR THREE HAIRY SPECIES OF *STEMONA*

1. Inflorescences sessile. Erect herb, 30–40 cm tall **S. hirtella**
 1. Inflorescences pedunculate. Twiner, 50–100 cm tall or more **S. kerrii**
 2. Adaxial surface of leaves and abaxial surface of tepals hairy. Margin of two inner tepals entire with short hairs **S. kerrii**
 2. Adaxial surface of leaves and abaxial surface of tepals glabrous. Margin of two inner tepals fimbriate **S. fimbritepala**

Table 1. Morphological comparison between *Stemona fimbritepala* and *S. hirtella* (from De Wilde & Duyfjes, 2019), and *S. kerrii* (from Inthachub, 2008; Inthachub *et al.*, 2010; Duyfjes & Inthachub, 2011).

Characters	<i>S. fimbritepala</i>	<i>S. hirtella</i>	<i>S. kerrii</i>
Habit	twiner	erect herb	twiner
Indumentum	simple hairs	simple hairs	simple hairs
Leaves:			
shape	ovate-lanceolate	ovate	broadly ovate
size (cm)	6–16.5 × 2.5–6	11–16 × 5.5–9	4–7 × 3–5
apex	acuminate	acute-acuminate	acuminate
base	cordate	cordate	cordate
Inflorescence:			
no. of flowers	2–9	1–4	1–4
length of peduncle (cm)	2.5–5.5	sessile	1–2.5
Tepals:			
colour	dark brownish-red	violet with white	yellowish-purple
shape	lanceolate	narrowly ovate to lanceolate	narrowly ovate
size (mm)	13–20 × 2.5–7	10–11 × (2–)3	10–12 × 3–4
abaxial surface	glabrous	hairy	hairy
margin of inner tepals	fimbriate and glabrous	entire	entire with short hairs
Stamens:			
colour	dark brownish-red	unreported	dark purple or maroon
length (mm)	15–20	ca 12	8–12
anther length (mm)	3–5	ca 8	2–4
petaloid outgrowth of the connective length (mm)	12–15	ca 5	ca 6
additional appendage	absent	present	absent
Distribution	Laos	Vietnam	China, Laos, Thailand

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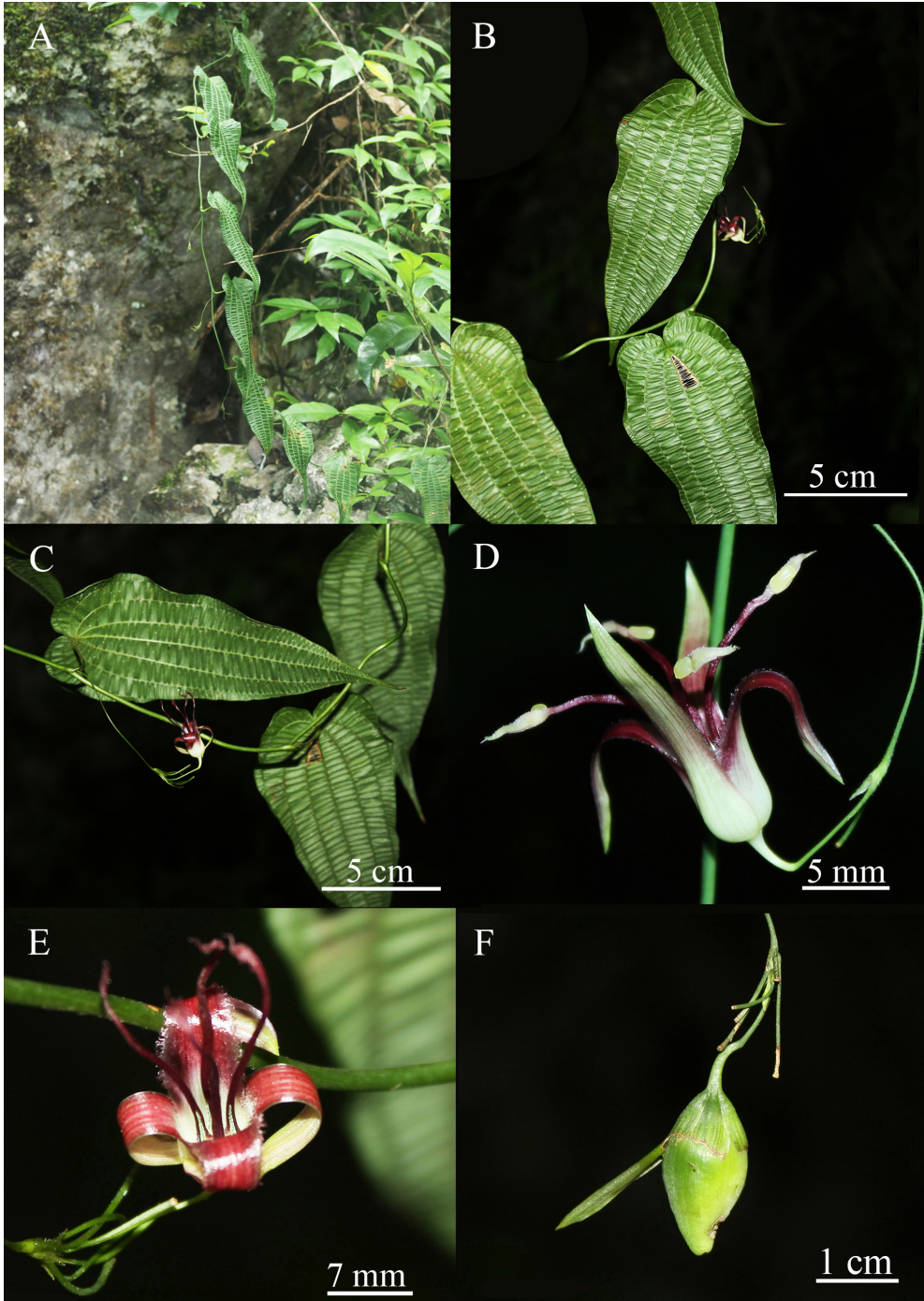


Figure 1. *Stemonafimbritepala* Rakarcha, Pongamornkul & Thammar.: A. habit; B. part of twig showing adaxial surface of leaves; C. idem, showing abaxial surface of leaves; D. younger flower, showing yellowish-green bodies; E. mature flower; F. fruit. Photos by W. Pongamornkul.

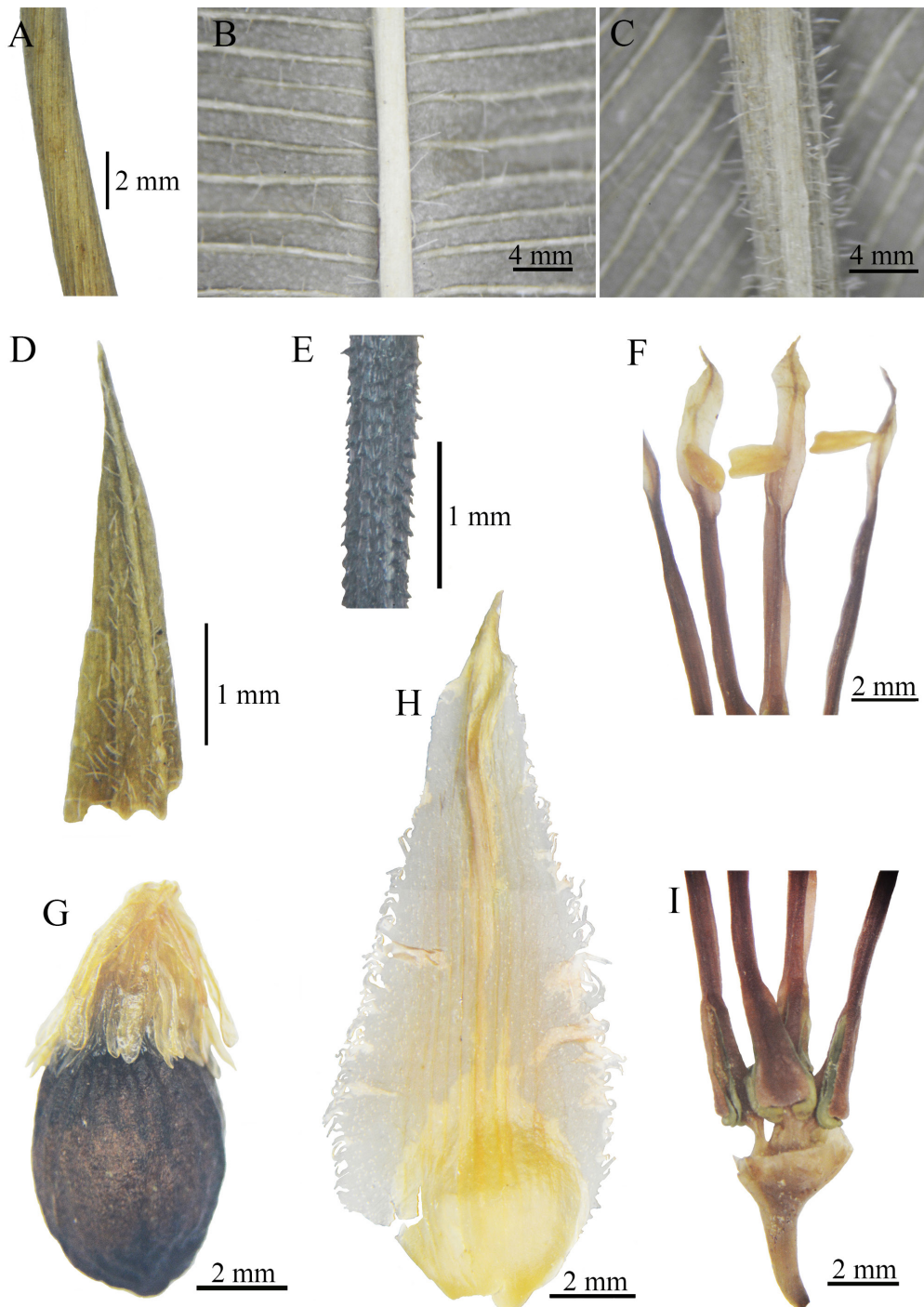


Figure 2. *Stemona fimbritepala* Rakarcha, Pongamornkul & Thammar.: A. stem; B. abaxial surface of leaf; C. peduncle; D. bract; E. abaxial surface of petaloid outgrowth of connectives in dry specimen; F. & I. younger flower, tepals removed, note connectives with bodies; G. seed, note finger-like aril; H. inner tepal. Photos by S. Rakarcha from *Maknoi et al. L3-238*.

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