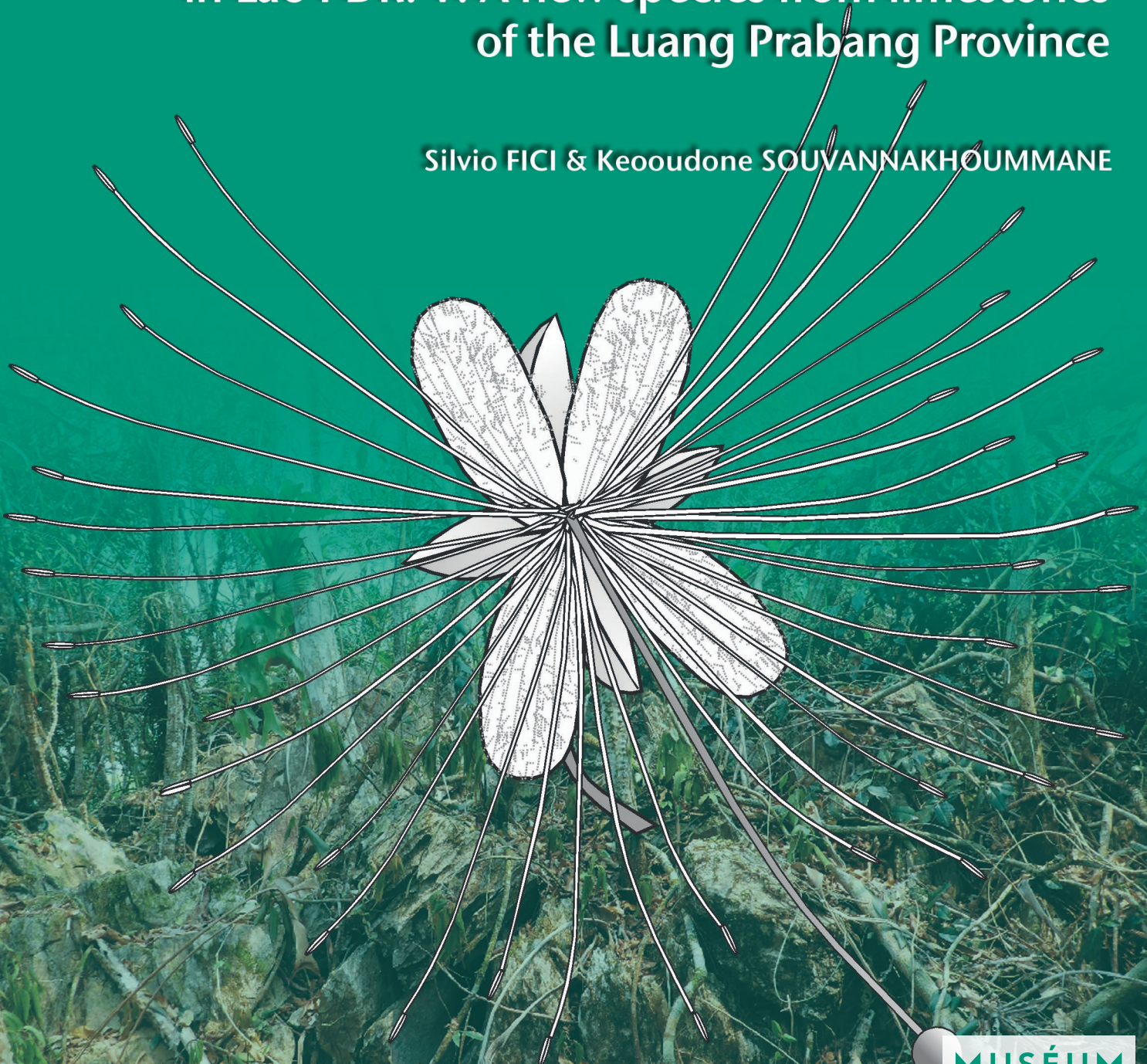


Studies on the genus *Capparis* L. (Capparaceae) in Lao PDR. V: A new species from limestones of the Luang Prabang Province

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Studies on the genus *Capparis* L. (Capparaceae) in Lao PDR. V: A new species from limestones of the Luang Prabang Province

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ABSTRACT

A new species of *Capparis* L., *C. lianosa* Fici & Souvannakhoummane, is described and illustrated from limestones of the Muang Ngoi District, Luang Prabang Province, in northern Lao PDR. The new species, belonging to *Capparis* sect. *Monostichocalyx* Radlk., is related to *C. zeylanica* L., differing in several characters as the shorter stipular thorns, the leaves with apex acuminate, the shorter, glabrous or glabrescent gynophore and the flattened stigma.

RÉSUMÉ

Une nouvelle espèce de *Capparis* (Capparaceae) des calcaires de la province de Luang Prabang, Lao PDR. Une nouvelle espèce de *Capparis* L., *Capparis lianosa* Fici & Souvannakhoummane, est décrite et illustrée des calcaires du district de Muang Ngoi, province de Luang Prabang, nord du Laos PDR. La nouvelle espèce appartient à *Capparis* sect. *Monostichocalyx* Radlk., et ressemble à *C. zeylanica* L., dont elle se distingue par plusieurs caractères comme les épines stipulaires plus courtes, les feuilles à sommet acuminé, le gynophore plus court, glabre ou glabrescent et le stigmate plat.

KEY WORDS

Capparaceae,
Capparis,
Lao PDR,
sect. *Monostichocalyx*,
new species.

MOTS CLÉS

Capparaceae,
Capparis,
Lao PDR,
sect. *Monostichocalyx*,
espèce nouvelle.



FIG. 1. — Known distribution of *Capparis lianosa* Fici & Souvannakhoumane, sp. nov.

INTRODUCTION

The genus *Capparis* L. includes more than 80 species in the Indo-Pacific area, with a main centre of speciation in the Indochinese peninsula (Jacobs 1965). The taxonomic treatment of this genus is still critical in Lao PDR, due to the complex variation of several species and to the discordant number of taxa recorded by different authors. Gagnepain (1908) and Inthakoun & Delang (2008) reported in the country 10 species, whereas Newman *et al.* (2007) and Lee (2016) recorded 14 species, all belonging to sect. *Monostichocalyx* Radlk. Field and herbarium investigations carried out during the last years allowed to clarify the taxonomic and chorological aspects of various poorly known species and to describe some new intrageneric taxa (Fici 2016; Fici *et al.* 2018, 2020; Souvannakhoumane *et al.* 2018). During recent floristic researches in the Luang Prabang Province a population of *Capparis*, showing differential characters from known species, was discovered on hardly accessible limestone formations of the Muang Ngoi District. Based on herbarium investigations, this population turned out to belong to a new species of sect. *Monostichocalyx*. The new species, characterized by the habit, indumentum, and by the leaf and flower features, is here described and illustrated.

SYSTEMATICS

Capparis lianosa Fici & Souvannakhoumane, sp. nov.
(Figs 2; 3)

A C. zeylanica L. *spinis stipularibus minoribus, foliis cum apice acuminato, petalis brevioribus, gynophoro brevioris glabro vel glabrescente, stigmate plano praecipue differt.*

TYPUS. — Lao PDR, Luang Prabang Province, Muang Ngoi Neua, evergreen forest on limestone, 510 m, 17.III.2019, Fici *et al.* 1911 (holo-, PAL!).

PHENOLOGY. — Flowering in March–April.

DISTRIBUTION AND ECOLOGY. — The new species is only known from the type locality (Fig. 1), where few scattered individuals were observed in the evergreen forest at the top of a Permo-Carboniferous limestone formation, with *Dracaena cambodiana* Pierre ex Gagnep., *Euphorbia antiquorum* L., *Ficus* sp., *Schefflera pueckleri* (K. Koch) Frodin, *Platycerium holttumii* Joncheere & Hennisman, *Asplenium nidus* L. var. *nidus* (Fig. 3); 410–510 m a.s.l.

CONSERVATION STATUS. — Following the IUCN Red List Categories and Criteria (IUCN 2012), the new species is here assessed as Vulnerable (VU D1) due to its restricted area of occupancy, in a single location so far known, and low number of individuals observed. However due to the inaccessibility of most limestone outcrops in the area, its population size is possibly larger.

DESCRIPTION

Large woody climber up to *c.* 20 m long. Stem to 15 cm diameter bearing knobs with thorns; twigs pubescent with dense, simple, greyish hairs mixed with stellate, reddish or greyish hairs.

Stipules

Stipular thorns recurved 1.5–2.5 mm long, pubescent.

Leaves

Petioles sulcate, 0.6–1 cm long, pubescent. Leaf blades ovate or elliptical, wider at or below the middle, (2.3–) 2.5–2.8 times as long as wide, (9.5–) 11–13.6 × (4–) 4.4–5.5 cm; base acute; apex obtuse or rounded, acuminate with tip 3–5 mm long; mature leaves with upper surface glabrous, lower surface mostly glabrous, sparsely pubescent along the midrib and lateral veins, young leaves pubescent on both surfaces; veins *c.* 4–5 on each side of the midrib, thin, decurrent along the margin.

Flowers

Flowers serial; pedicels 0.6–1.3 cm long, pubescent. Sepals acute, densely pubescent outside and at margins, glabrous inside, outer pair boat-shaped, coriaceous, 7 × 4–6 mm, inner pair thinner, 5–6 × 3–3.5 mm. Petals oblong, white or yellowish, 7–9 × (2.5–) 3–4 mm, pubescent at margins and inside, glabrous outside. Stamens *c.* 37–40; filaments (1.4–) 1.8–2.2 cm long, pink or reddish; anthers basifixed, *c.* 1 mm long. Gynophore 1.9–2.3 cm, white, pink or reddish in the available material, glabrous or glabrescent; ovary ovoid or ellipsoid, 1.5–2 × 1–1.5 mm, glabrous, with flattened stigma.

Fruit

Unknown.

REMARKS

Capparis lianosa, sp. nov. belongs to sect. *Monostichocalyx*, which includes several species in south-eastern Asia. It is mainly distinguished from related taxa by its short stipular thorns, leaves ovate or elliptical with base acute and apex shortly acuminate,

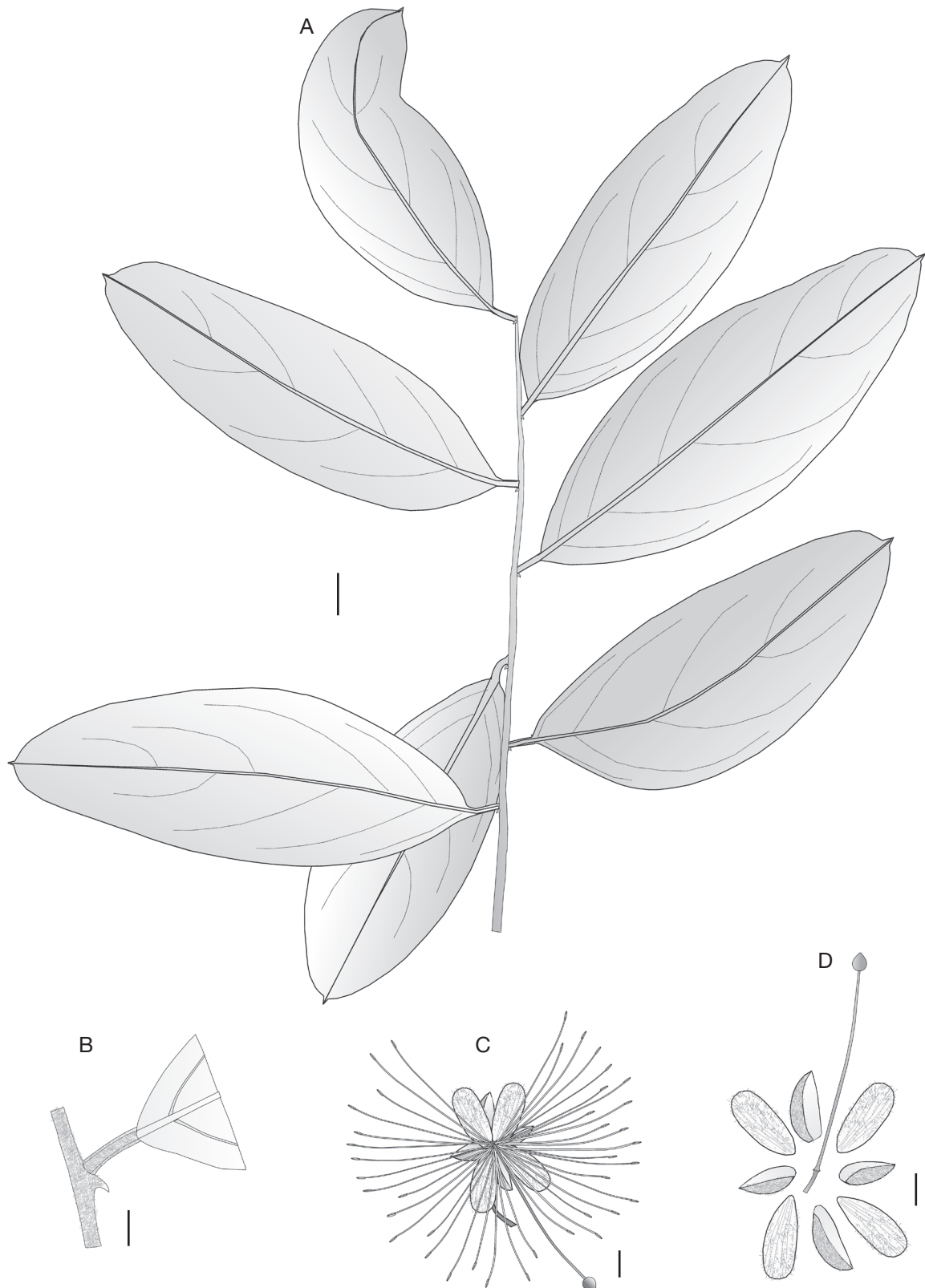


FIG. 2. — *Capparis lianosa* Fici & Souvannakhoumane, sp. nov.: **A**, vegetative branch; **B**, leaf base with stipular thorn; **C**, flower; **D**, dissected flower showing sepals, petals, gynophore and ovary. (All from the holotype). Drawn by S. Fici. Scale bars: A, 1 cm; B, 4 mm; C, D, 3 mm.

petals pubescent inside, gynophore glabrous or glabrescent and ovary with flattened stigma (Figs 2, 3). With regard to the lianous habit, the length of stems – up to *c.* 20 m – of

the new species appears noteworthy if considering the available data for other climbing species of sect. *Monostichocalyx* (Jacobs 1960, 1965).



FIG. 3. — *Capparis lianosa* Fici & Souvannakhoumane, sp. nov.: **A**, habitat; **B**, view of the vegetation in the type locality; **C**, base of stem bearing knobs with thorns; **D**, vegetative branch; **E**, base of young leaf with stipular thorn; **F**, leaf; **G**, flower. Photos by S. Fici.

TABLE 1. — Diagnostic characters among *Capparis lianosa* Fici & Souvannakhoummane, sp. nov. and related taxa.

	<i>C. lianosa</i>	<i>C. zeylanica</i>	<i>C. acutifolia</i>	<i>C. echinocarpa</i>	<i>C. pyrifolia</i>	<i>C. tenera</i>	<i>C. urophylla</i>
Shape of stipular thorns	recurved	recurved	wanting or straight	recurved	straight or slightly curved upwards	recurved	mostly wanting, or curved upwards
Length of stipular thorns (mm)	1.5-2.5	3-6	up to 4	2-4	1-3 (-4)	3-4	up to 1
Length of leaf blade (cm)	(9.5-) 11-13.6	4-10 (-18)	(3.5-) 5-13 (-22.5)	3.5-6 (-7.5)	5-9.5 (-15)	(4-) 5-7 (-11.5)	(3-) 4-8.5
Leaf base	acute	rounded or subcordate, rarely acute	acute, cuneate, rounded or narrowed into the petiole	rounded or acute	rounded or blunt	rounded, subcordate or acute	acute
Leaf apex	acuminate	acute to rounded, rarely slightly acuminate	acuminate	acuminate	acuminate	acuminate	gradually caudate
Length of sepals (mm)	5-7	6-11 (-15)	(4-) 6-8 (-9)	c. 5	4-5	(2.5-) 3-4.5 (-5.5)	c. 3-5
Length of petals (mm)	7-9	9-12 (-19)	(6-) 9-12 (-14)	6	6-8	4- 5 (-7)	6-7
Number of stamens	c. 37-40	30-45 (-70)	(20-) 28-35	8-10	c. 20	(7-) 8-18	c. 14-20
Length of anthers (mm)	c. 1	1.6-2	1-1.5	c. 1	1	c. 1.3	1-1.3
Gynophore length (cm)	1.9-2.3	(2-) 4-5 (-6.5)	(1.25-) 1.75-2.75 (-3.75)	1.5-2	1.8-2 (-2.5)	(1.2-) 1.5-2 (-2.5)	1-2
Indumentum of gynophore	glabrous or glabrescent	hairy at the base	glabrous or rarely puberulous at the base	glabrescent or sometimes puberulous at the base	glabrous	glabrous	glabrous
Shape of ovary	ovoid or ellipsoid	ellipsoid	pear-shaped	pear-shaped	ovoid or ellipsoid	pear-shaped	ellipsoid
Stigma	flattened	elongate	slightly elongate	knob-shaped	elongate	knob-shaped	slightly elongate

C. lianosa, sp. nov. resembles in the habit and indumentum *C. zeylanica* L., a species showing wide distribution from India eastwards to the Philippines and Indonesia, which however differs in qualitative characters as the gynophore hairy at the base and the stigma elongate (Jacobs 1965). Furthermore in *C. zeylanica* the stipular thorns are 3-6 mm long, leaf-blade is 4-10 (-18) cm long, with base rounded or subcordate, rarely acute and apex acute or rounded, rarely slightly acuminate, with a stiff, recurved mucro, petals are 9-12 (-19) mm long, anthers are 1.6-2 mm long and gynophore is (2-) 4-5 (-6.5) cm long (Table 1). *C. lianosa*, sp. nov. shows also affinities with *C. acutifolia* Sweet, a species widespread from India to southern China, Taiwan and Vietnam, which mainly differs in the thorns straight or wanting, leaf apex more markedly acuminate, lower number of stamens (< 35), gynophore filiform and ovary pear-shaped (Table 1). Some other species of sect. *Monostichocalyx* recorded in south-eastern Asia and characterized by innovations hairy with often reddish stellate hairs and flowers serial in supra-axillary rows (Jacobs 1965), as *C. pyrifolia* Lam., *C. urophylla* Chun, *C. tenera* Dalz. and *C. echinocarpa* Pierre, can be easily distinguished

from *C. lianosa* by the shorter sepals (up to c. 5 mm long) and by the lower number of stamens (up to 20) (Table 1).

The Central Indochina limestone karst ecoregion, represented in Lao PDR and Vietnam (Inthakoun & Delang 2008), is a relevant centre of differentiation for the genus *Capparis*. In Lao PDR most species of this genus are linked with carbonatic substrata and three new species have been recently described from the Khammouan karst (Fici *et al.* 2018, 2020; Souvannakhoummane *et al.* 2018).

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REFERENCES

- FICI S. 2016. — Studies on the genus *Capparis* L. (Capparaceae) in Lao PDR. *Webbia* 71:169-175. <https://doi.org/10.1080/00837792.2016.1232928>
- FICI S., BOUAMANIVONG S. & SOUVANNAKHOUMMANE K. 2018. — Studies on the genus *Capparis* L. (Capparaceae) in Lao PDR. II: A new species from the Khammouan karst. *Webbia* 73: 5-7. <http://doi.org/10.1080/00837792.2017.1402476>
- FICI S., SOUVANNAKHOUMMANE K., LANORSAVANH S. & LAMXAY V. 2020. — Studies on the genus *Capparis* L. (Capparaceae) in Lao PDR. IV: A new species from the Khammouan Province. *Phytotaxa* 429 (1): 73-79. <https://doi.org/10.11646/phytotaxa.429.1.6>
- GAGNEPAIN F. 1908. — Capparidacées, in LECOMTE M. H. (ed.), *Flore générale de l'Indo-Chine*. Vol. 1. Masson et Cie, Paris: 171-206. <https://biodiversitylibrary.org/page/31182154>
- INTHAKOUN L. & DELANG C. O. 2008. — *Lao Flora. A Checklist of Plants Found in Lao PDR with Scientific and Vernacular Names*. Lulu Press, Morrisville, 238 p.
- IUCN 2012. — *IUCN Red List Categories and Criteria: Version 3.1. 2nd ed.* IUCN, Gland, Switzerland and Cambridge, United Kingdom, 32 p.
- JACOBS M. 1960. — Capparidaceae. *Flora Malesiana*, Ser. 1: 61-105.
- JACOBS M. 1965. — The genus *Capparis* (Capparaceae) from the Indus to the Pacific. *Blumea* 12: 385-541.
- LEE Y. M. 2016. — *A Checklist of Plants in Lao PDR*. Korea National Arboretum, Seoul, 403 p.
- NEWMAN M., KETPHANH S., SVENGUSUKSA B., THOMAS P., SENGDALA K., LAMXAY V. & ARMSTRONG K. 2007. — *A Checklist of the Vascular Plants of Lao PDR*. Royal Botanic Garden Edinburgh, Edinburgh, 394 p.
- SOUVANNAKHOUMMANE K., FICI S., LANORSAVANH S. & LAMXAY V. 2018. — Studies on the genus *Capparis* L. (Capparaceae) in Lao PDR. III: A new species from the deciduous forest of the Hin Nam No National Protected Area. *Webbia* 73: 175-177. <https://doi.org/10.1080/00837792.2018.1470708>

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