

***Justicia larsenii* and *J. saksuwaniae*, Two New Species of Acanthaceae from Peninsular Thailand**

**KANOKORN RUEANGSAWANG¹, DAVID A. SIMPSON²
AND PRANOM CHANTARANOTHAI^{3*}**

¹*Department of Biology, Faculty of Science, Ramkhamhaeng University, Bangkok, 10240, THAILAND*

²*Royal Botanic Gardens, Kew, Richmond, Surrey TW9 3AB, UNITED KINGDOM*

³*Department of Biology & Centre of Excellence on Biodiversity (BDC), Faculty of Science, Khon Kaen University, Khon Kaen 40002, THAILAND*

* Corresponding author. Pranom Chantaranothai (pranom@kku.ac.th)

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ABSTRACT.— Two new species in the genus *Justicia*, *J. larsenii* and *J. saksuwaniae* from peninsular Thailand are described, illustrated, discussed and compared with their closest presumed relatives. The conservation status of both species is assessed.

KEY WORDS: Conservation status, Narathiwat, Phatthalung, taxonomy

INTRODUCTION

Justicia L. is a large pantropical genus of subtribe *Justiciineae*, Acanthaceae (Scotland and Vollesen, 2000) and contains around 600 species (Graham, 1988; Mabberley, 2017). The majority of species are distributed in tropical East Africa followed by South Africa and Asia. In Thailand, Imlay (1938) recognised 48 species with keys to the species and descriptions. Fifty-seven taxa (55 species and two varieties) were enumerated in the recent treatment by Rueangsawang (2012).

During an ongoing revision of the genus *Justicia*, several un-named specimens from Narathiwat and Phatthalung provinces, Peninsular Thailand were discovered. These specimens were collected by the late Professor Kai Larsen et al. in 1974 and 1993 respectively. They are distinct from all other known taxa, and are described here as new species.

MATERIALS AND METHODS

The study was based on herbarium material. Specimens were examined from AAU, BK, BKF, BM, C, CMU, E, K, KEP, KKU, L, M, QBG and SING (abbreviations following Thiers, 2019). Identification was confirmed after consulting type specimens. Qualitative observations and measurements were made from the specimens, and using these data, descriptions and illustrations were prepared. Distribution, ecology and phenology were recorded from specimen labels. Preliminary conservation assessments were prepared using the Categories and Criteria of IUCN (2012).

RESULTS

SYSTEMATICS

***Justicia larsenii* Rueangs. & Chantar., sp. nov. (Figs. 1, 2, 4)**

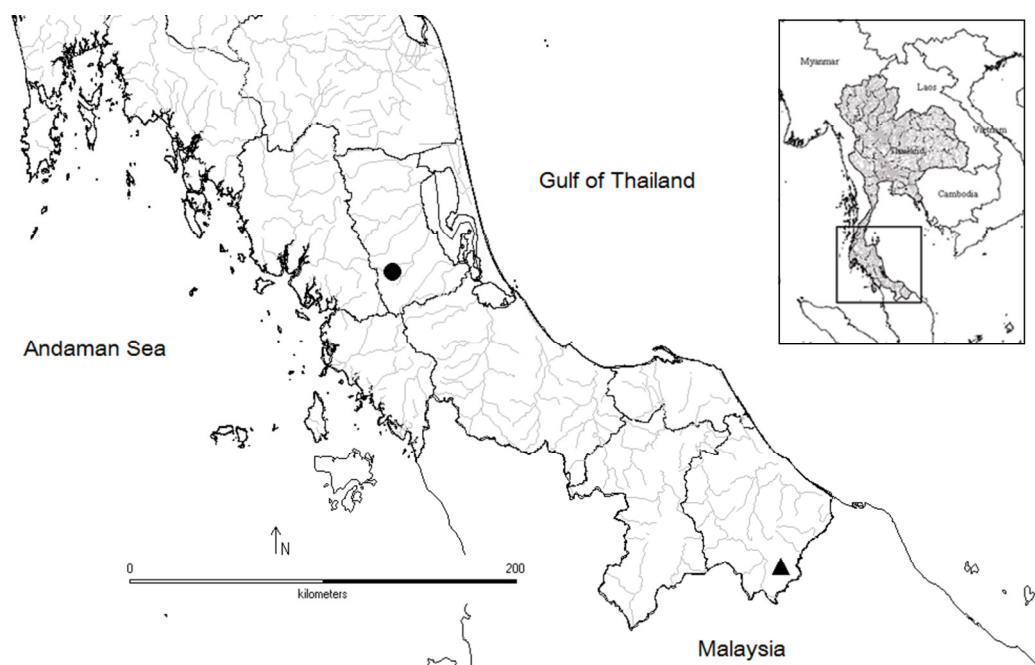


FIGURE 1. Distribution of *Justicia larsenii* (closed circle) and *J. saksuwaniae* (closed triangle) from peninsular Thailand

The species is closely similar to *Justicia grossa* C.B. Clarke but differs in its acuminate or caudate leaf apex, imbricate bracts with brown and membranaceous when dry, glabrous inflorescence and each bract supports 1 flower. Type: Thailand, Narathiwat, Sungei Kolok district, Nikom Waeng, 5° 50' N, 101° 50' E, 50–100 m alt., 3 Mar. 1974, *Larsen & Larsen* 32888 (holotype **BKF!** [BKF086709]; isotypes **L!** [L985008408], **K!**).

Small shrubs 50–70 cm tall. *Stems* woody, terete, slender, glabrous, swollen at nodes. *Leaves* chartaceous, 16–20 × 6.5–9 cm, obovate or elliptic, base cuneate or obtuse, margin entire or slightly undulate, apex acuminate or caudate, cystoliths linear, conspicuous on both surfaces; upper surface dark green; lower surface pale green; glabrous; lateral veins in 5–7 pairs; petioles

2–4.5 cm long, grooved above, glabrous. *Inflorescences* terminal and in upper axils; spikes 2.5–7.7 cm long, unbranched or with up to 3 pairs of branches; rachis glabrous; peduncles 1–1.5 cm long, glabrous. *Flowers* sessile, opposite at inflorescence node, each flower subtended by 1 bract and 2 bracteoles; bract imbricate, pale brown, 5–6.5 × 1.5–2 mm, ovate-triangular, margin entire, rarely ciliate, apex acute, surfaces glabrous, chartaceous, as long as or shorter than calyx; bracteoles 5–6 × 1–2 mm, ovate-triangular, margin entire, apex acute, surfaces glabrous, shorter than calyx. *Calyx* deeply 5-lobed, greenish, 8–10 × 1–1.5 mm; lobes linear-lanceolate, apex acuminate or narrowly acute, margin entire, glabrous on both sides. *Corolla* pale green, without marking on palate of lower lip, 5–10 mm long, glabrous outside, sparsely pubescent

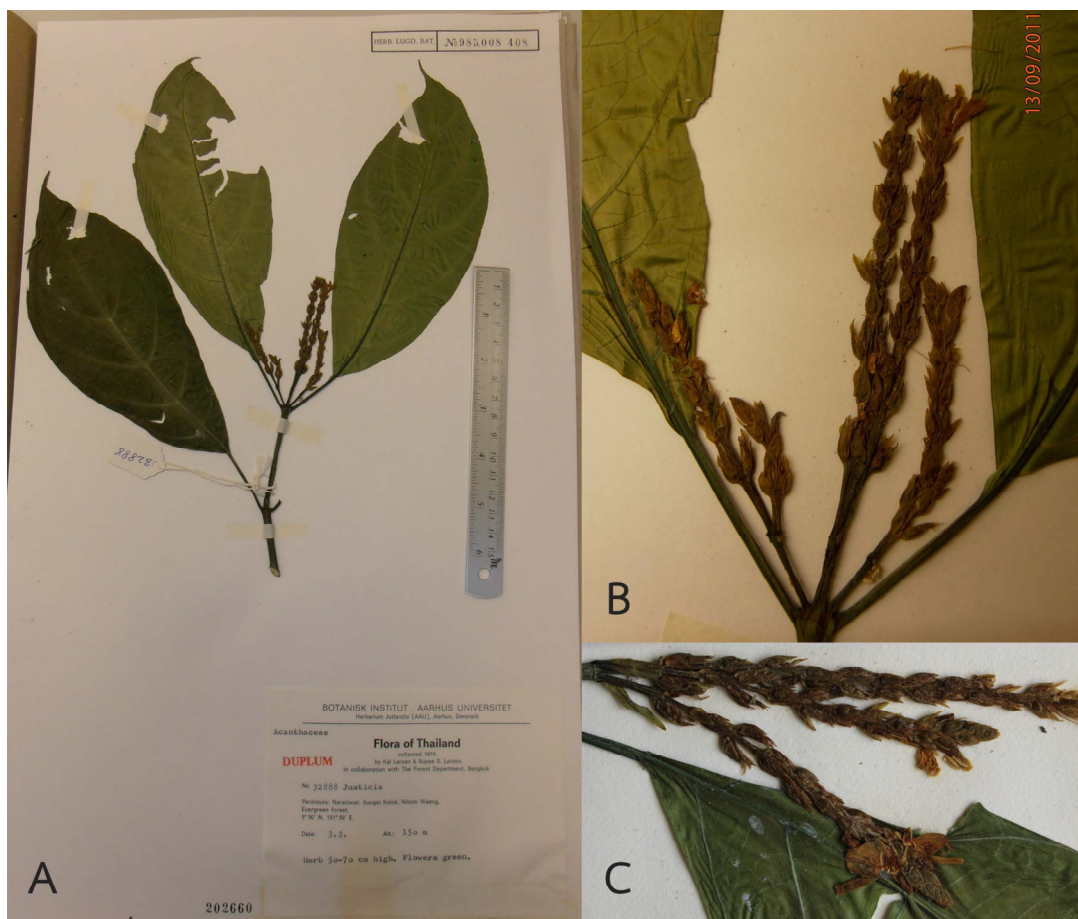


FIGURE 2. *Justicia larsenii*. A. plant with an inflorescence. B. inflorescence. C. inflorescence with flowers. Photos by K. Rucangsawang, from *Larsen & Larsen 32888* (L)

inside; tube cylindrical 3–5 mm long, slightly enlarged in throat; upper lip ca 5 mm long, broadly triangular, slightly hooded, not emarginate; lower lip obovate, spreading, middle lobe broader, palate with conspicuous venation. *Stamens* 4–5 mm long, sparsely strigose near lower part, attached near middle part of corolla tube; filaments straight; anthers separated, pubescent, 2-theous, ca 1.5 mm long, thecae superposed, subequal, lower theca 0.8–1 mm long, with tail ca 0.2 mm long,

upper theca 1–1.4 mm long. *Ovary* narrowly oblong, glabrous; style 9–11 mm long, filiform, strigulose in lower half; stigma with 2 unequal lobes. *Capsules* not seen.

Thailand.— PENINSULAR: Narathiwat [Sungei Kolok district, Nikom Waeng, 5° 50' N, 101° 50' E, 50–100 m alt., 3 Mar. 1974, *Larsen & Larsen 32888* (BKF, L, K)].

Ecology and distribution.— Evergreen forest, 50–100 m alt. Peninsular Thailand, near the border of Malaysia and possibly occurring in Malaysia (Fig. 1).

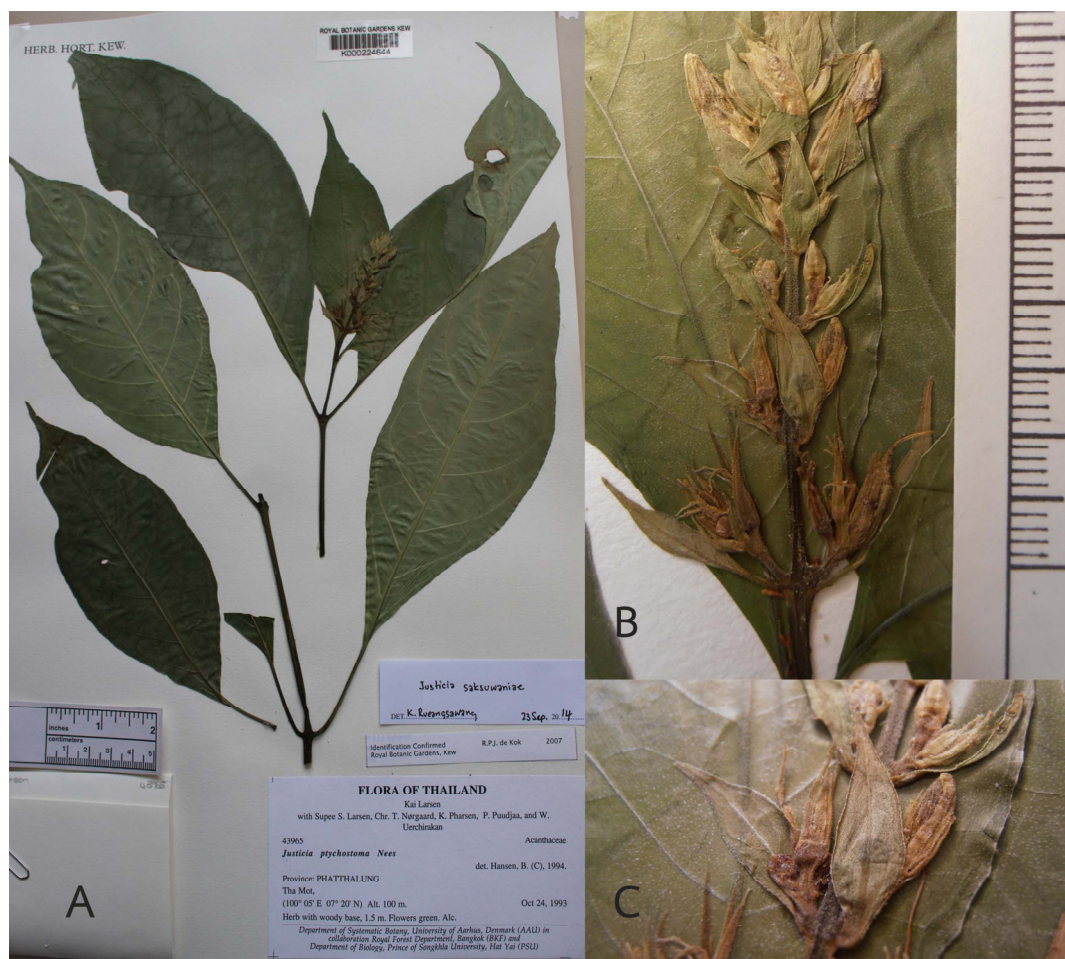


FIGURE 3. *Justicia saksuwaniae*. A. plant with an inflorescence. B. inflorescence. C. Bract. Photos by K. Rueangsawang, from Larsen et al. 43965 (K).

Etymology.— This species is dedicated to the late Professor Kai Larsen, a Danish botanist from AAU, for his outstanding and prolific fieldwork on the Thai flora and as one of the collectors of the type material.

Conservation status.— This species is rare, currently known from the type locality at Nikom Waeng, Sungei Kolok district, close to the Thai-Malaysian border. This area remains underexplored and it is possible that more populations will be discovered.

Therefore, the species is assessed as Data Deficient (DD).

Notes.— *Justicia larsenii* is a member of section *Grossa* (sensu Hansen, 1987). It resembles *J. grossa* in having a similar leaf shape and size, and inflorescence with pale green flowers. The new species is differed from *J. grossa* by having acuminate or caudate leaf apex (vs acute leaf apex), imbricate bracts which are brown and membranaceous when dry (vs not imbricate).

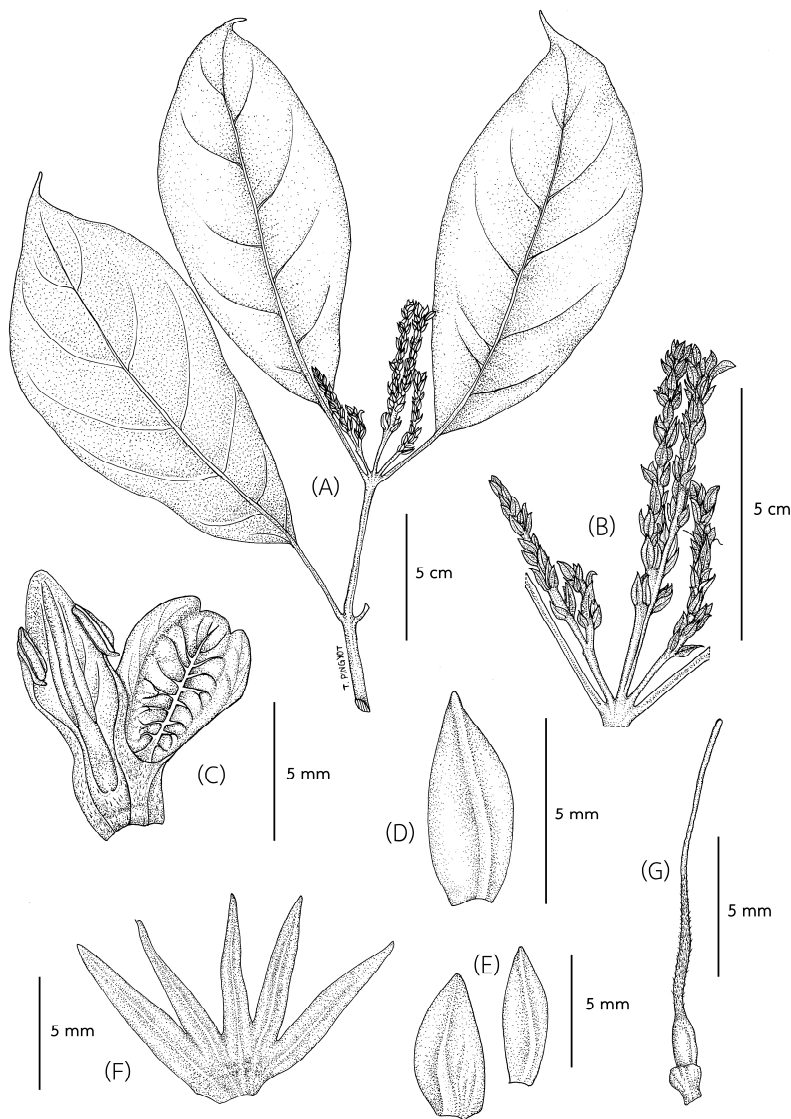


FIGURE 4. *Justicia larsenii*. A. plant with an inflorescence. B. inflorescence. C. dissected corolla with stamens attached. D. bract in abaxial surface. E. bracteoles in abaxial surfaces. F. calyx. G. pistil. All from the type. Drawn by T. Pingyot

bracts and dark green, chartaceous bract), glabrous inflorescence (vs densely pubescent with glandular hairs) and each bract supports

1 flower (vs 2–7 flowers). A comparison of these species is presented in Table 1.

TABLE 1. Comparison of *J. larsenii*, *J. grossa*, *J. saksuwaniae* and *J. ptychostoma*

Characters	<i>J. larsenii</i>	<i>J. grossa</i>	<i>J. saksuwaniae</i>	<i>J. ptychostoma</i>
Leaf texture	chartaceous	subcoriaceous	chartaceous	chartaceous
Leaf shape	obovate or elliptic	widely elliptic or obovate	obovate or elliptic	ovate or elliptic
Leaf apex	acuminate or caudate	acute	acuminate	acute or caudate
Leaf base	cuneate	cuneate, obtuse or oblique	cuneate	oblique, obtuse or shortly auriculate
Leaf size (cm)	16–20×6.5–9	16–26×6–9	14.5–20×5.7–7	12–17×4.5–8
Petiole length (cm)	2–4.5	1–5	2–4	2.5–8
Inflorescence length (cm)	2.5–7.7	10–15	5.5	1.2–12
Indumentum	glabrous	densely pubescent with glandular hairs	pubescent	sparsely pubescent or almost glabrous
Number of flowers on each side of inflorescence node	1	2–7	3	1
Corolla colour	pale green without markings on palate	green with brown markings on palate	white with brown markings on palate	white to green without markings on palate
Bract shape	ovate-triangular	elliptic, lanceolate or triangular	lanceolate	rounded, ovate, apex subacute or obtuse, shortly stalked
Bract size (mm)	5–6.5×1.5–2 as long as/shorter than calyx	2–4×1–3 as long as/shorter than calyx	10–16×3–4 longer than calyx	7–9×6–10 longer than calyx
Bract indumentum	glabrous	densely pubescent with glandular hairs	pubescent, margin rarely ciliate	almost glabrous margin with white bristles
Calyx size (mm)	8–10×1–1.5	5–6×1–2	7–9×5–7	2–3×0.2–0.5

There is no specimen of *Larsen & Larsen 32888* at AAU, even though a complete of the collections of the late Prof. Kai Larsen were deposited at AAU.

***Justicia saksuwaniae* Rueangs. & Chantar., sp. nov.** (Figs. 1, 3, 5)

The species is closely related to *Justicia ptychostoma* Nees but differs in its cuneate leaf base, 3 flowers on each side of inflorescence node, a persistent and lanceolate-shaped bract, rarely with ciliate

margin. Type: Thailand, Phatthalung, Tha Mot district, 07° 20' N, 100° 05' E, ca 100 m alt., 24 Oct. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Uerchirakan 43965* (holotype **K!** [K000224644]).

Small shrubs up to 150 cm tall. *Stems* woody, terete, slender, glabrous, swollen at nodes. *Leaves* chartaceous, 14.5–20 × 5.7–7 cm, obovate or elliptic, base cuneate, margin entire or subundulate, apex acuminate, cystoliths linear, conspicuous on both surfaces; upper surface dark green; lower

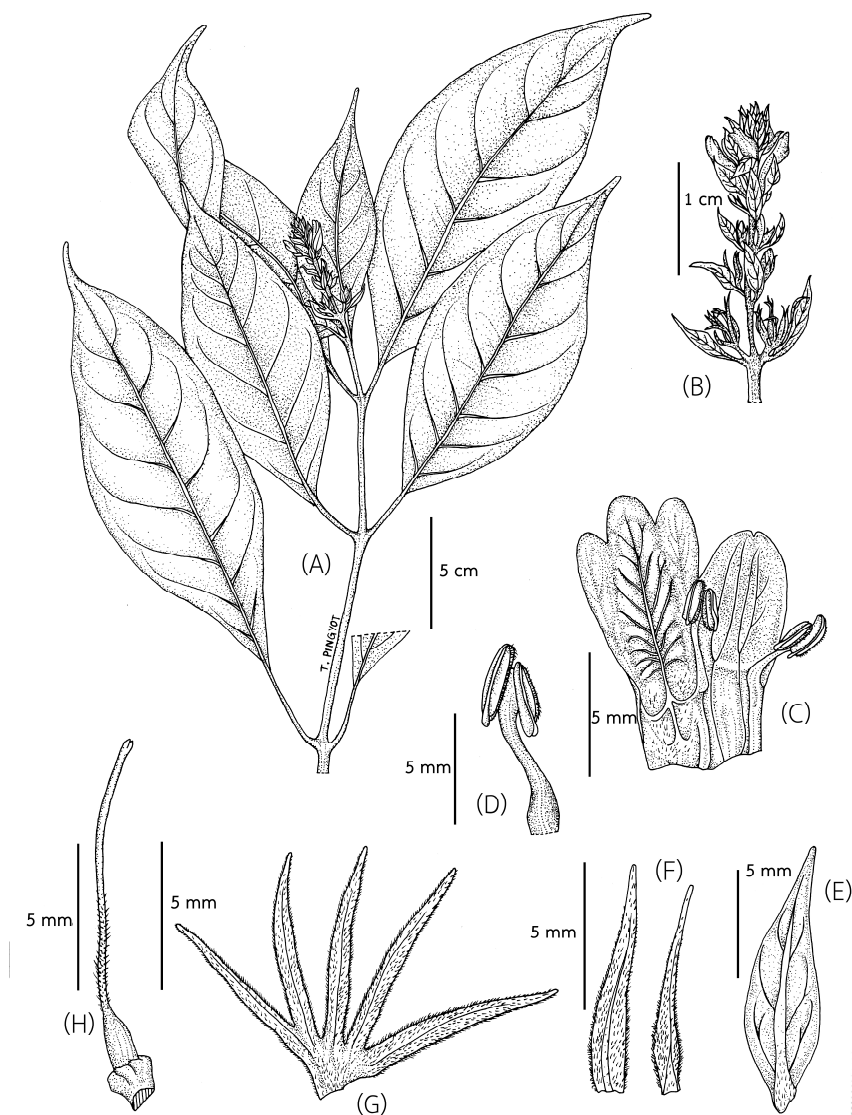


FIGURE 5. *Justicia saksuwaniae*. A. plant with an inflorescence. B. inflorescence. C. dissected corolla with stamens attached. D. stamen. E. bract in abaxial surface. F. bracteoles in abaxial surfaces. G. calyx. H. pistil. All from the type. Drawn by T. Pingyot

surface pale green; glabrous; lateral veins in 6–7 pairs; petioles 2–4 cm long, grooved above, glabrous. *Inflorescences* terminal and in upper axils; spikes ca 5.5 cm long, unbranched; rachis densely pubescent; peduncles ca 1.2 cm long, densely pubescent.

Flowers sessile, opposite at inflorescence node, 3-flowered on each side of inflorescence node, each cluster of flowers subtended by 1 bract and each flower subtended by 2 bracteoles; bract 10–16 × 3–4 mm, lanceolate, margin ciliate, apex acute, surfaces pubescent,

subchartaceous, longer than calyx; bracteoles $5\text{--}7.5 \times 0.8\text{--}1$ mm, lanceolate, margin ciliate, apex narrowly acute, surfaces densely pubescent, shorter than calyx. *Calyx* deeply 5-lobed, greenish, $7\text{--}9 \times 5\text{--}7$ mm; lobes linear-lanceolate, apex acuminate or narrowly acute, margin entire, densely pubescent on both sides. *Corolla* white with brown marking on palate of lower lip, ca 14 mm long, pubescent outside, sparsely pubescent inside; tube cylindrical, slightly enlarged in throat; upper lip broadly triangular, slightly hooded, emarginate; lower lip obovate, spreading, middle lobe broader, palate with conspicuous venation. *Stamens* 4.5–5 mm long, sparsely strigose near lower part, attached near middle part of corolla tube; filaments straight; anthers separated, 2-theous, 2.5–3 mm long, thecae superposed, subequal, lower theca ca 2 mm long, with tail ca 0.4 mm long, upper theca ca 0.2 mm long. *Ovary* narrowly oblong, glabrous; style 7–11 mm long, filiform, strigulose in lower half; stigma with 2 unequal lobes. *Capsules* not seen.

Thailand.— PENINSULAR: Phatthalung [Tha Mot district, $07^\circ 20' \text{N}$, $100^\circ 05' \text{E}$, ca 100 m alt., 24 Oct. 1993, *Larsen, Larsen, Nørgaard, Pharsen, Puudjaa & Uerchirakan 43965 (K)*].

Ecology and distribution.— Evergreen forest, in light and shaded areas, ca 100 m alt. Peninsular Thailand, near the border of Malaysia and possibly occurring in Malaysia (Fig. 1).

Etymology.— The specific epithet honours Supee Saksuwan Larsen for her outstanding contribution to the Flora of Thailand project.

Conservation status.— Currently known only from a single locality in evergreen forest at Tha Mot district. The first author visited this area in November 2016 but was unable to locate this species because that is dominated by plantations. The information

available is insufficient for establishing the conservation status of this species. Therefore, it is classified as Data Deficient (DD).

Notes.— *Justicia saksuwaniae* most closely resembles *J. ptychostoma*, another species of evergreen forest in peninsular Thailand. They share some similar characteristics in size and shape of the leaf. The main difference is that *J. saksuwaniae* has a cuneate leaf base (vs oblique sometimes obtuse or shortly auriculate base in *J. ptychostoma*). The inflorescences are shorter than those *J. ptychostoma*, 3 flowers (vs 1 flower) on each side of inflorescence node. *J. saksuwaniae* has a persistent, lanceolate-shaped bract, rarely with ciliate margins and (vs caducous, rounded, ovate and margins with white bristles). The corolla is white with brown markings on the palate of the lower lip (vs white to green without markings). A comparison of the two species is given in Table 1.

In addition, the specimens of *Larsen et al.* 43965 in AAU and K are not homogenous. The collection in AAU differs from that in K in leaf base shape, bract shape and size, and in having one flower at the inflorescence node. The AAU sheet is a perfect match with *J. ptychostoma* whilst the K sheet is *J. saksuwaniae*.

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