

Impatiens tanintharyiensis, a new record of *Impatiens* sect. *Semeiocardium* (Balsaminaceae) for Thailand

SAROJ RUCHISANSAKUN^{1*}, PIYAKASET SUKSATHAN², PRAMOTE TRIBOUN³ & CHALIT SINROTTHANAKORN⁴

ABSTRACT

Impatiens tanintharyiensis (Balsaminaceae) is reported in Thailand for the first time from a population in Ngao Waterfall National Park, Ranong Province. This population differs from that at the type locality in Myanmar by having smaller, purple flowers (vs bigger purplish-pink flowers). An expanded description of this taxon and colour photographs are provided.

KEYWORDS: asymmetric flower, balsam, South-East Asia, waterfall, Ericales.

Accepted for publication: 28 December 2021. Published online: 8 February 2021

INTRODUCTION

Thailand has 63 native species of *Impatiens* L. (Balsaminaceae) reported to date (Shimizu, 1970, 1977, 1991, 2000; Shimizu & Suksathan, 2004; Suksathan & Triboun, 2009; Ruchisansakun *et al.*, 2014, 2020; Ruchisansakun & Suksathan, 2019), and around 36 species are in *Impatiens* section *Semeiocardium* (Zoll.) S.X.Yu & Wei Wang – the group of taxa with connate lateral united petals mainly distributed in South-East Asia (Ruchisansakun *et al.*, 2015). *Impatiens tanintharyiensis* Ruchis., Suksathan & Saw-Lwin was described and reported as endemic to Myanmar by Ruchisansakun *et al.* (2017, 2018), but on September 10th, 2020, we saw photographs of *I. tanintharyiensis*, taken in Thailand, posted on Facebook. We immediately contacted the photographer to get the locality and travelled to Ranong Province to examine this plant on September 13th, 2020, and here we formally report it as native to Thailand.

DESCRIPTION

Impatiens tanintharyiensis Ruchis., Suksathan & Saw-Lwin, *Phytotaxa* 296(2): 172. 2017. Type: Myanmar, Tanintharyi Region, Dawei, Thet Kal Kwet village, Hawang falls, ca 146 m elevation, 17 Aug. 2015, *Ruchisansakun & Thet Yu Nwe 707* (holotype **L!**; isotypes **L!**, **RAF!**, **RANG!**). Figs. 1–2.

Terrestrial to lithophytic, annual, glabrous herb, 15–25 cm high. *Stems* erect to decumbent, cylindrical with small ridges near the nodes, 3–7 mm in diam., simple to moderately branched, upper part sometimes slightly zig-zagged, purplish red to green or pellucid green with dark purple dots. *Leaves* spirally arranged, sometimes opposite on the lowest node; petioles 1–9 cm long, 1–2 mm in diam., green to pellucid green to red with dark red dots; lamina 2.2–7 × 1.5–4.4 cm, elliptic to ovate to lanceolate to broadly ovate, 1–1.9 length/width, apex acute, base obtuse to attenuate to round, margin shallowly serrate, adaxial green with pale green midrib, abaxial pale green with purple dots at midrib; lateral veins

¹ Department of Plant Science, Faculty of Science, Mahidol University, Ratchathewi, Bangkok 10400, Thailand.

² Queen Sirikit Botanic Garden, The Botanical Garden Organization, Chiang Mai 50180, Thailand.

³ National Biobank of Thailand, National Science and Technology Development Agency, 111 Thailand Science Park, Khlong Nueng, Khlong Luang, Pathum Thani 12120, Thailand.

⁴ Ngao Waterfall National Park, Ranong 85000, Thailand.

* Corresponding author: saraj.ruc@mahidol.edu

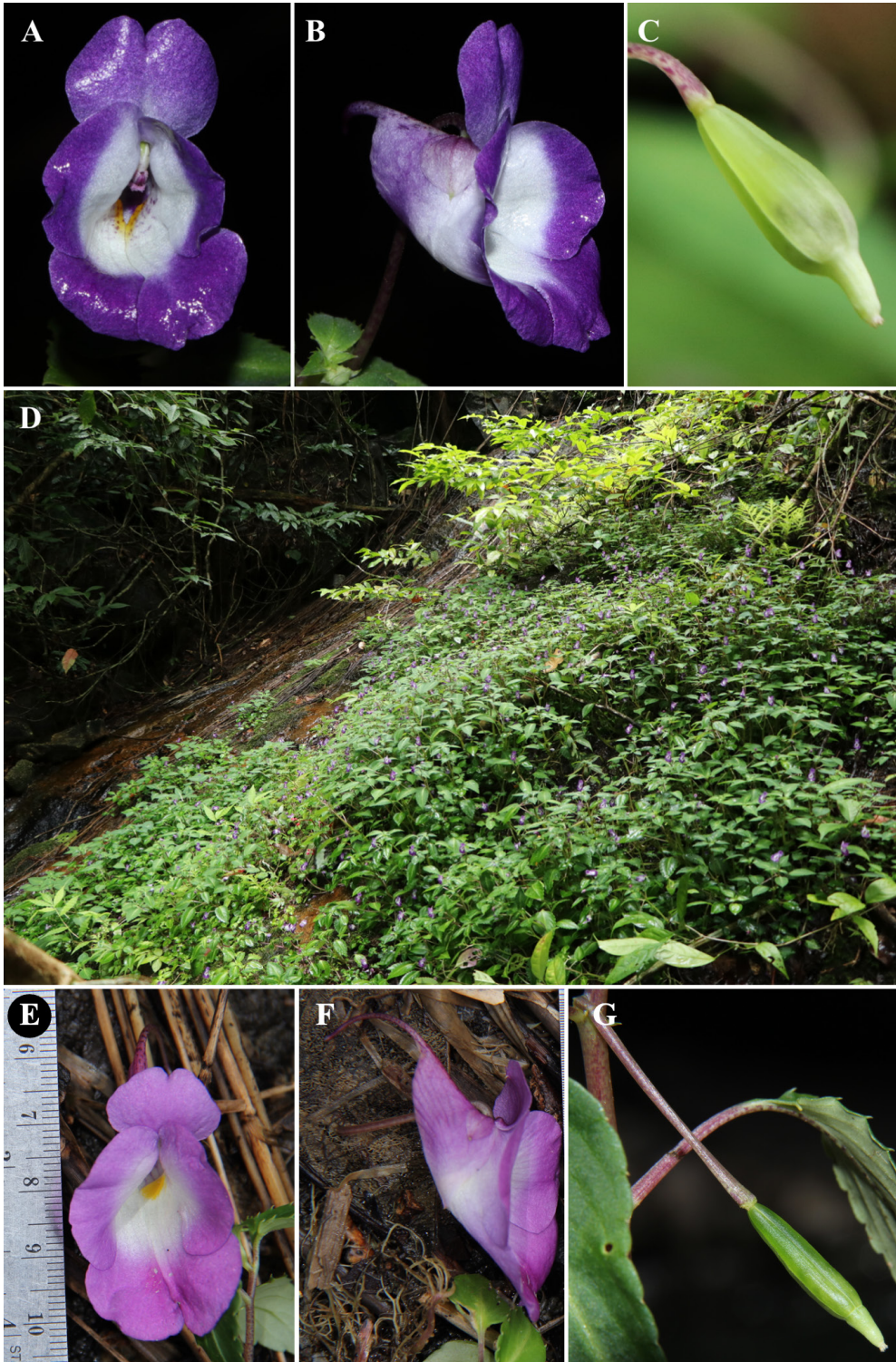


Figure 1. *Impatiens tanintharyiensis* Ruchis., Suksathan, & Saw-Lwin: A. flower (front view); B. flower (side view); C. fruit. D. natural habitat: E–G. The population in Myanmar; E. flower (front view); F. flower (side view); G. fruit.

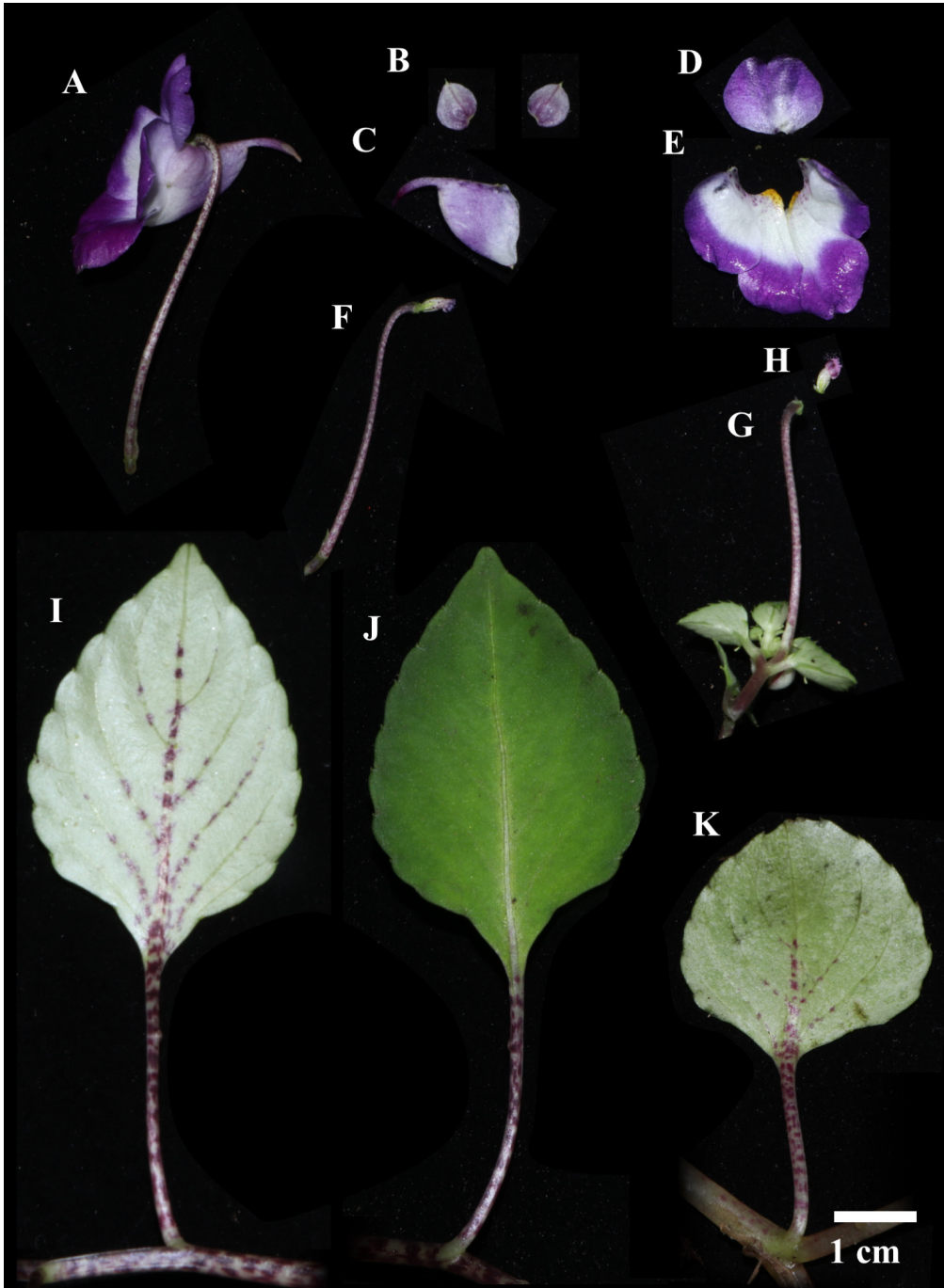


Figure 2. *Impatiens tanintharyensis* Ruchis., Suksathan, & Saw-Lwin: A. flower; B. lateral sepals; C. lower sepal; D. dorsal petal; E. lateral united petals; F. pedicel and stamens; G. shoot with pedicel; H. stamens; I–K. leaves. Photographs by S. Ruchisansakun from Ruchisansakun *et al.* 1533.

4–5 on each side of midrib; extra-floral nectaries present as stalked short glands on each side of the base of the leaf margin, sometimes very small. *Inflorescences* solitary or raceme with 1 floret; peduncles up to 3 mm long; bracts minute, 2–5 × ca 1 mm, narrowly triangular, apex acute, base cuneate, green to pink. *Flowers* highly asymmetric due to anticlockwise distorted lateral united petals, 2.2–4 × 1.5–1.8 cm, 2–2.5 cm thick, purplish pink to purple, centre white with two yellow marks. *Pedicels* slender, 2–3 cm long, ca 1 mm in diam., the same colour as stems. *Sepals* 3; lateral sepals 2, 5–7 × 5–6 mm, ovate to broadly obliquely ovate, apex acute to acuminate and mucronate, base rounded to subcordate, purplish pink to pale purple with green tips; lower sepal 1–1.6 × 0.6–1 cm, 0.7–1.5 cm deep, saccate-bucciniform, purplish pink outside, sometimes white at margin, whitish inside with dark pink reticulate veins and yellow marks at the throat, distal part gradually constricted into a slightly incurved spur, 0.6–2.2 cm long, pink with dark pink dots. *Petals* 5; dorsal petal strongly reflexed, 1–1.3 × 1.1–1.7 cm, broadly ovate to broadly elliptic to broadly obovate, purplish pink to purple with a green tip, apex cordate and mucronate, base cuneate to round with a basal triangular crest; lateral united petals connate, asymmetric due to distorted lateral united petals; upper petals 0.9–1.5 × 1.0–2.2 cm: the left one (Thailand population) 0.9–1.1 × 1–1.3 cm; the right one (Thailand population) 1–1.1 × 1.1–1.2 cm, broadly depressed obovate, apex round to truncate, purplish pink to purple with white base; lower petals connate, 2.3–3 × 0.9–1.3 cm: the left one (Thailand population) 1.5–1.8 × 0.7–0.8 cm, obovate in outline; the right one (Thailand population) 1.6–1.7 × 0.8–0.9 cm, obovate in outline, anticlockwise distorted, apex round to shallowly bilobed, purplish pink to purple, the base white with a yellow mark. *Stamens* 5; filaments ca 4 mm long, flat, white; anthers white to purple. *Ovary* 3–4 mm long, ca 1 mm in diam., 4-carpellate, green, glabrous. *Fruits* loculicidal dehiscent capsules, 4-lobed, 1.5–1.7 cm long, ca 3 mm in diam., clavate. *Seeds* ca 2.5 mm long, 8–16 per capsule, brown.

Distribution.— Southern Thailand and Tanintharyi Region in Myanmar (Tenasserim Range).

Habitat and ecology.— Growing on rock with some organic materials in an open area with sunlight, along a waterfall; 150–250 m elevation.

Phenology.— Flowering and fruiting from August to October.

Common name.— Thian thawai (เทียนทวาย) (Dawei balsam).

Specimens examined.— THAILAND: Ranong [Mueang Ranong District, Ngao, Ngao Waterfall National Park, 230 m elevation, 13 Sept. 2020 (fl. & fr.), *Ruchisansakun et al.* 1533 (BK, BKF, QBG)]. MYANMAR: Tanintharyi Region [Dawei, Thet Kal Kwet village, Rachaung falls, 155 m elevation, growing on rocks in a shady area along a waterfall, 17 Aug. 2015, *Ruchisansakun & Thet Yu Nwe* 708 (L, RAF, RANG)].

Preliminary conservation status.— Endangered (ENB2 ab(iii,v)) based on the IUCN red list categories and criteria (IUCN, 2012). This species was found in two localities in Myanmar and one locality in Thailand. The population in Thailand is the largest and safest one so far, there are more than 500 individuals in the area around 200 m². However, the populations in Myanmar are under severe pressure as documented in *Ruchisansakun et al.* (2017).

Note.— The flower of *Impatiens tanintharyiensis* are highly asymmetric due to anticlockwise distorted lateral united petals. The population of *I. tanintharyiensis* in Ranong Province has some different characters from the population in Myanmar: the flower is smaller and darker in colour and the lamina shape is more variable (see Table 1).

ACKNOWLEDGEMENTS

We thank Ngao Waterfall National Park for the collaboration, Mahidol University, Thailand, for funding support, and Mark Zuckerberg who launched Facebook, a social network that makes biodiversity observation much easier.

REFERENCES

- IUCN (2012). IUCN Red List Categories and Criteria, Version 3.1. Second edition. International Union for Conservation of Regional and Natural Resources, Gland, Switzerland and Cambridge, UK.
- Ruchisansakun, S. & Suksathan, P. (2019). *Impatiens jenjittikuliae* (Balsaminaceae), a new species from Thailand. *Phytokeys* 124: 139–147.

Table 1. Comparison of morphological characters of *Impatiens tanintharyiensis* in Ranong, Thailand, and in Dawei, Myanmar.

Characters	Population in Ranong, Thailand	Population in Dawei, Myanmar (Ruchisansakun <i>et al.</i> , 2017)
Stems	erect to decumbent, green to pellucid green to purple	erect, purplish red
Petioles	2–9 cm	1–3 cm
Lamina	2.2–7 × 2–4.4 cm, elliptic to ovate to lanceolate to broadly ovate	4–6.5 × 1.5–2.5 cm, elliptic to ovate to lanceolate
Flowers	2.2–2.6 cm long	3.5–4 cm long
Flower colour	purple	purplish pink
Peduncles	ca 3 mm	absent
Bracts	up to 2–5 × ca 1 mm	ca 2 × ca 1 mm
Lateral sepals	5–6 × ca 5 mm	5–7 × 5–6 mm
Lower sepal	1–1.1 cm long, 0.6–0.7 cm wide, 0.7–0.9 cm thick	1.3–1.6 cm long, 0.8–1 cm wide, 1.4–1.5 cm thick
Spur	0.6–1 cm long	1.9–2.2 cm long
Dorsal petal	1–1.2 × 1.1–1.3 cm	1.2–1.3 × 1.5–1.7 cm
Upper petals	0.9–1.1 × 1–1.3 cm	1.2–1.5 × 1.8–2.2 cm
Lower petals	1.5–1.8 × 0.7–0.9 cm	2.3–3 × 0.9–1.3 cm
Anther	purple	white
Ovary	ca 3 mm long	ca 4 mm long
Fruits	ca 1.9 cm long, ca 5 mm in diam.	1.5–1.7 cm long, ca 3 mm in diam.

- Ruchisansakun, S., Suksathan, P., van der Niet, T., Saw-Lwin & Janssens, S.B. (2017). *Impatiens tanintharyiensis* (Balsaminaceae), a new species from Southern Myanmar. *Phytotaxa* 296(2): 171–179.
- Ruchisansakun, S., Suksathan, P., van der Niet, T., Smets, E.F., Saw-Lwin & Janssens, S.B. (2018). Balsaminaceae of Myanmar. *Blumea* 63: 199–267.
- Ruchisansakun, S., van der Niet, T., Janssens, S.B., Triboun, P., Techaprasan, J., Jenjittikul, T., & Suksathan, P. (2015). Phylogenetic Analyses of Molecular Data and Reconstruction of Morphological Character Evolution in Asian *Impatiens* Section *Semeiocardium* (Balsaminaceae). *Systematic Botany* 40: 1063–1074.
- Ruchisansakun, S., Triboun, P. & Jenjittikul, T. (2014). A new species of *Impatiens* (Balsaminaceae) from Southwestern Thailand. *Phytotaxa* 174(4): 237–241.
- Ruchisansakun, S., Triboun, P. & Suksathan, P. (2020). *Impatiens capillipes* (Balsaminaceae), a new record for Thailand. *Thai Forest Bulletin (Botany)* 48(1): 48–51.
- Shimizu, T. (1970). Contributions to the Flora of Southeast Asia II. *Impatiens* of Thailand and Malaya. *Southeast Asian Studies* 8: 187–217.
- _____. (1977). Some additional note on *Impatiens* (Balsaminaceae) of Thailand. *Acta Phytotaxonomica et Geobotanica* 23: 31–34.
- _____. (1991). New species of the Thai *Impatiens* (1). *The Journal of Japanese Botany* 66: 166–171.
- _____. (2000). New species of Thai *Impatiens* (Balsaminaceae) 2. *Bulletin of the National Science Museum, Series B (Botany)* 26: 35–42.
- Shimizu, T. & Suksathan, P. (2004). Three new species of the *Impatiens* (Balsaminaceae), part 3. *Bulletin of the National Science Museum, Series B (Botany)* 30: 165–171.
- Suksathan, P. & Triboun, P. (2009). Ten new species of *Impatiens* (Balsaminaceae) from Thailand. *The Gardens' Bulletin Singapore* 61: 159–184.