Bull. Natn. Sci. Mus., Tokyo, Ser. B, **26**(2), pp. 35–42, June 22, 2000

New Species of the Thai *Impatiens* (Balsaminaceae) 2

Tatemi Shimizu

Shimizu Botanical Laboratory, 211–3 Okada-matsuoka, Matsumoto 390–0312, Japan.
E-mail: tshimizu@bb.mbn.or.jp

Abstract Three new spepcies, *Impatiens chumphonensis*, *I. namkatensis* and *I. santisukii* are described from Thailand to contribute to the Flora of Thailand.

Key words: *Impatiens chumphonensis*, *Impatiens namkatensis*, *Impatiens santisukii*, new species

Shimizu (1991) described three *Impatiens* species from Thailand. Among his *Impatiens* collection in Southeast Asia, some more species have been found new to science. The present paper aims to describe three of them to be continued from his previous paper, J. Jap. Bot. **66**: 106–171.

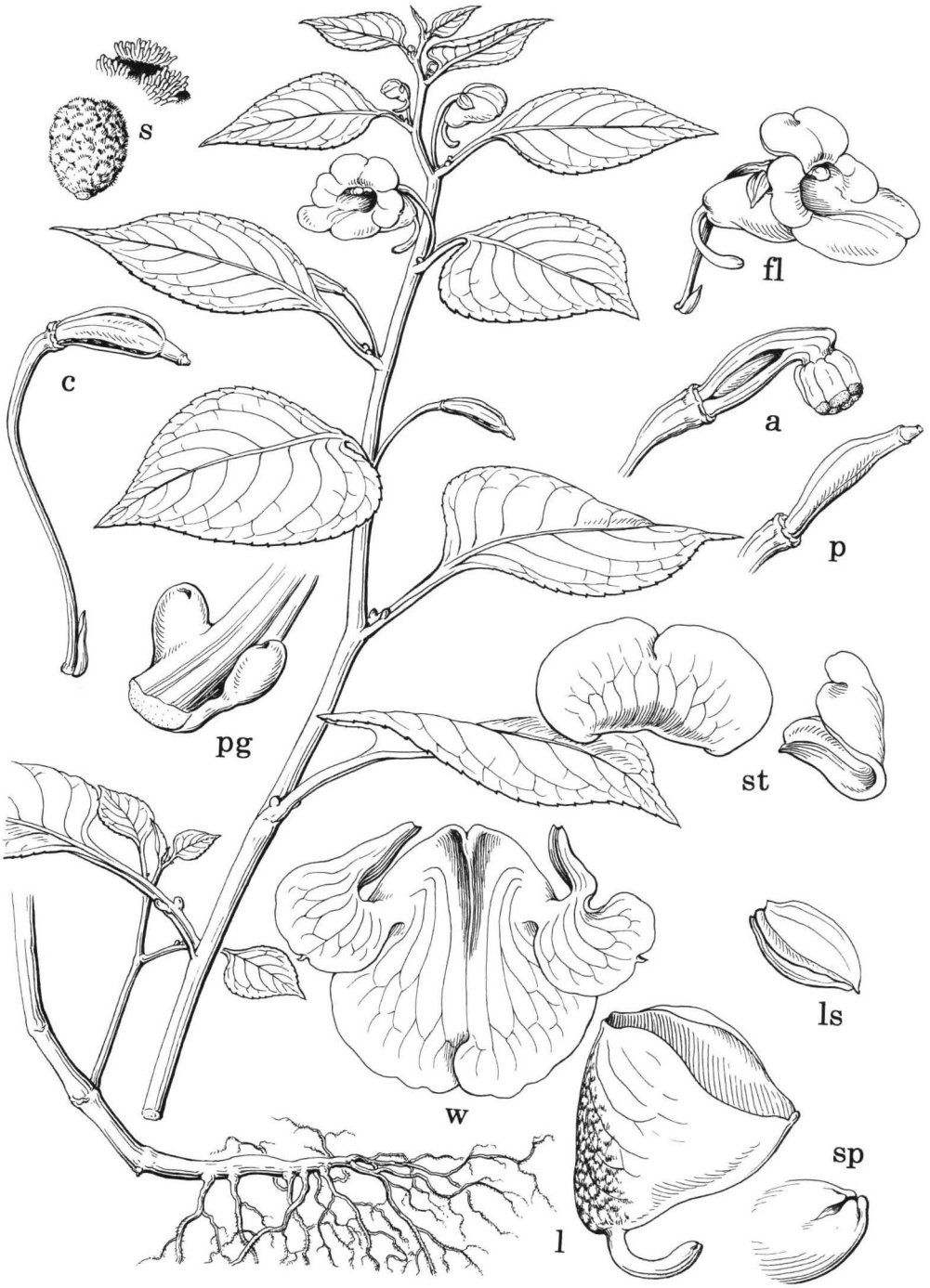
Impatiens chumphonensis T.Shimizu, sp. nov. [Fig. 1]

Herba annua glabra. Caulis ascendens ramosus superiore atropurpureus. Folia alterna haud congesta longe petiolata; lamina elliptica vel ovalis 4–8 cm longa 2.5–5 cm lata apice breviter attenuata basi cuneata vel late cuneata margine crenato; petiolus 1.5–5.5 cm longus inferiore biglandulosus ad basis arculatus. Flores axillares solitarii pro maximam partem albi; pedicelli 1–2 cm longi ad basis articulati et bracteati; sepala lateralia 2 elliptica ca. 10 mm longa 5 mm lata viridis; labellum saccatum intus ad fudum atropurpureo-maculatum apice fulvo-variegatum calcari subbasalis recurvatis viridis instructum; vexillum cordatum ca. 1.8 cm longum 2.3 cm latum costa extus carinata; alae inter se connatae lobis distalibus intra medio basi fulvo-variegatis haud cornutis lobis basalibus orbicularibus ca. 10 mm in diametro. Ovaria glabra 4-locularia. Semina ignota.

Specimens examined. Chumphon: Siep Zuan, Put 954 (**holotype** in K; **isotype** in BM); Wat Tham Samuk, Ban Sieb Yuang, Muang Distr., T. Shimizu, F. Konta & T. Smitinand 1018 (BKF, K, KANA, L, TNS); Thun Sanuk, Ban Sieb Yuan Distr., S. Takao s.n. Aug. 29, 1985 (BKF, KANA, L, TNS); bei Chumphon, Bogner 444 (BM); Rompibon, J. Kingdonward 37539 (SING).

Distr. Endemic in Peninsular Thailand.

This new species is most closely related to *I. cardiophylla* Hook.f. which is growing on rather dry limestone cliffs in Peninsular Thailand and Cambodia. The flowers of these species are characterized by articulate pedicels, 2 lateral sepals, single spur of the lip, connate wing petals and four carpellate pistils. Therefore, they be-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long to *Semeiocardium* group of the genus *Impatiens*. However, the former can be easily distinguished in having petioles patently biglandulose near the base, pedicels articulate at the base, basically white flowers and subbasal spur of the lip. The petioles of *I. cardiophylla* are not glandulose, glands of which are at the base of leaf blade. Its flowers are basically red purple, bearing basal spur of the lip. Its pedicels are articulate in the middle (Shimizu 1970).

The new species is also growing on limestone cliffs, but rather shady and wet cliffs covered with dense vegetation.

The species was named after the name of the province where the type specimens were collected.

Impatiens namkatensis T.Shimizu, sp. nov. [Fig. 2]

Herba annua toto glabra. Caulis erectus tenuis 10–40 cm altus. Folia alterna haud congesta longe petiolata; lamina membranacea ovata 2–6 cm longa 1–3.5 cm lata apice breviter attenuata basi late cuneata vel truncata margine crenato subtus ad basin biglandulosa; petiolus tenuis 0.5–2.5 cm longus. Flores axillares solitarii vel binati vel tripli pro maximan partem albi; pedicelli 0.4–1.5 cm longi ad basin articulati et bracteati; sepala lateralis 2 ovata ca. 5 mm longa 3 mm lata viridis; labellum saccatum intus fusco-reticulatum calcari recurvatis atropurpureis instructum; vexillum ovatum ca. 6 mm longum ca. 5 mm latum extus inferiore purpureum costa ad basis extus carinata; alae inter se connatae lobis distalibus inferiore rubro-maculatis superiore fusco-striatis ad basis haud cornutis. Fructi clavati ca. 10 mm longi glabri 4-loculati. Semina fusiformis ca. 2 mm longa pustulosa.

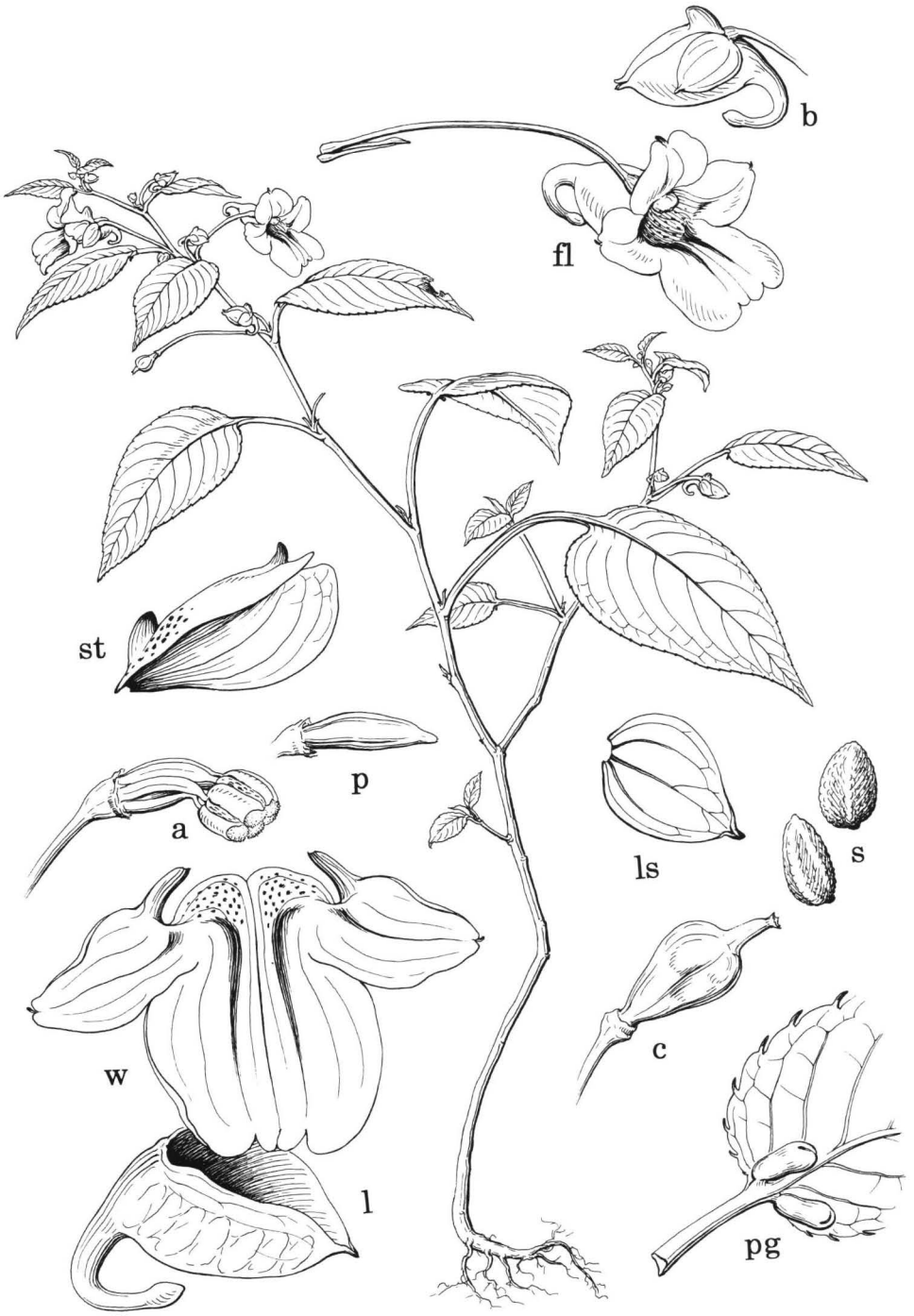
Specimens examined. Mae Hongson: east of Ban Nam Kat, Mae Hongson Distr. 830 m, T. Shimizu et al. T20050 (**holotype** in TNS; **isotype** in BKF, K, KANA).

Distr. Endemic in Northern Thailand.

The flowers of this species are also characterized by connate wing petals and four carpellate pistils. Therefore, likewise in the previous species it belongs to the *Semeiocardium* group. In having hard slender stems, membranaceous and not congested leaves, 2 lateral sepals and simple spur of the lip, it is most closely related to *I. psittacina* Hook.f. which is distributed in Burma and Northern Thailand. However, the present species is much smaller than the latter in any part of plant, bearing basically white flowers. In *I. psittacina*, plant height, size of leaf blades, lateral sepals and standards are more than 30 cm high, 5–13 cm long, ca. 10 mm long and 16–18 mm long, respectively (Shimizu 1970). Its flowers are mottled with white, red-purple and yellow.

This new species was also found on dry limestone rocks likewise in *I. psittacina*.

Fig. 1. *Impatiens chumphonensis* T.Shimizu. a: androecium, c: capsule, fl: flower, l: lip, p: pistil, pg: petiolar gland, s: seed, sp: spur of lip, st: standard, w: wing petals.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The species was named after the name of the village where the type specimens were collected.

Impatienss santisukii T.Shimizu, sp. nov. [Fig. 3]

Herba annua. Caulis erectus 5–30 cm altus aquosus ramosus inferiore glabrescens superiore sursum dense pubescens. Folia alterna longe petiolata; lamina ovata vel anguste ovata 1.5–6 cm longa 0.5–2.5 cm lata margine crenulato supra pubescens subtus glabrescens; petiolus patente glandulosus. Flores solitarii axillares vel binati rubropurpurei; pedicellli 5–25 mm longis dense pubescentes ad basis bracteati; sepala lateralia 2 minuta ca. 1 mm longa pubescentia; labellum saccatum pubescens calcari elongatis recurvatis instructum; vexillum obcordatum ca. 8 mm longum ca. 10 mm latum costa extus pubescenti et distincte cornuta; alae librae 10–12 mm longae intus albo-variegatae haud flavo-maculatae lobis distalibus majoribus cum basalibus. Ovaria fusiformis dense pubescentes. Semina globosae ca. 2 mm longae pustulosae.

Chromosome number: 2n=10 (Voucher from Doi Pui, Chiang Mai, T. Shimizu 29624, TNS) [Fig. 4]

Specimens examined. Mae Hongson: west of Pai, Pai Distr. 1380 m, T. Shimizu et al. T-20123 (BKF, K, KANA, L). Chiang Mai; Doi Nang Ka, Put 3378 (BK, BM, K); Doi Sutep 5000 ft., A. F. G. Kerr 7504A (K, BM); ibid., T. Shimizu et al. T9523 (BKF, E, KYO, L); ibid., T. Shimizu et al. T3222 (BKF, KYO); ibid., Th. Sørensen et al. 4297 (BKF); Doi Sutep-Gipfel, C. C. Hosseus 200 (BM); Doi Pui, 1500–1685 m G. Murata et al. T15346 (KANA); ibid. 1500 m, T. Shimizu et al. 18588 (**holotype** in TNS; **isotype** in BKF, K,KANA); ibid. 1450–1630 m, H. Koyama et al. T39639 & T39650 (TNS); ibid. 1350–1680 m, F. Konta et al. T29699 (K, TNS); ibid., S. Takao s.n. Oct., 1977 (KANA, TNS); ibid. surrounding of the top, C. F. van Beusekom et C. Phengklai 1258 (BKF, E, KYO, P); ibid., Boke Hah 4200 fl, L. G. Suvatea 25 (BK); Doi Chang, Maetaeng Distr. 1650 m, T. Shimizu et al. T20416 (BKF, KANA, TNS), ibid., H. Koyama et al. T32709 (TNS); ibid. T. Shimizu 29517 (voucher of seedling, TNS).

This new species is most closely related to *I. violiflora* Hook.f. which is widely distributed from South China via Burma to northaern Thailand. However, the former can be easily distinguished in having smaller flowers, wing petals white-variegate near the base , their distal lobes longer than basal ones. In the flowers of *I. violiflora*, lateral sepals are 2.5–3.5 mm long, standard ca. 1.5 cm long and ca. 2 cm wide, and the basal lobes of wing petal apparently larger than distal ones with yellow spot surrounded by white patch, and standard minutely carinate at apex (Shimizu 1970). The seed coat of these two species is characterized by pustulose surface.

The seedling type of them is same, belonging to Group I Subgroup C (Shimizu

Fig. 2. *Impatiens namkatensis* T.Shimizu. a: androecium, b: bud, c: capsule, fl: flower, l: lip, p: pistil, s: seed, ls: lateral sepal, st: standard, w: wing petals.


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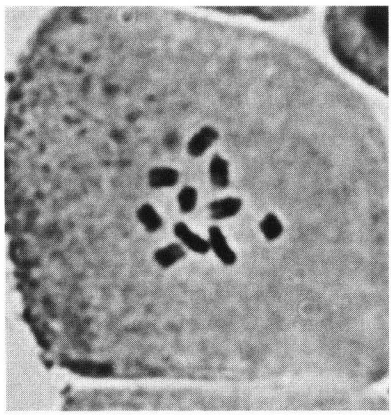

Fig. 4. Somatic chromosomes of *Impatiens santisukii* T. Shimizu. ×1200.

1982). The chromosome number of *I. violiflora* was reported to be 2n=10 and 12 by Larsen (1981) based on materials from Doi Sutep, Chiang Mai. I also counted the chromosome number of this species by using materials from Doi Internon, Chiang Mai, and found to be 2n=12 (unpublished). Since there occur two species in Doi Sutep, *I. santisukii* on the high elevation and *I. violiflora* on the low elevation, the previous count of 2n=10 might be for the present new species.

The species was named in honor of Dr. T. Santisuk, the former director of the Forest Herbarium, Royal Forest Department, who kindly guided us during our expedition throughout Thailand.

I am much obliged to Mr. M. Kawamoto, a former staff of Faculty of Science, Kanazawa University, for his drawings of these three new species. Also I wish to express my hearty thanks to the directors and curators of the herbaria of the Forest Herbarium, Royal Forest Department (BKF), of the Botany Department, Natural History Museum, London (BM), of the Royal Botanic Garden, Edinburgh (E), of the Royal Botanic Gardens, Kew (K), of the Faculty of Science, Kanazawa University, Kanazawa (KANA), of the Faculty of Sceience, Kyoto University, Kyoto (KYO), of Rijksherbarium, Leiden (L), of Laboratory of Phanerogams, the National Museum of Natural History, Paris (P), of the Department of Botany, National Science Museum, Tokyo (TNS) and of Botanic Garden, Singapore (SING).

References

Larsen, K., 1981. Chromosome numbers in *Impatiens* from Thailand. *Nord. J. Bot.* **1**: 43–44.

Fig. 3. *Impatiens santisukii* T.Shimizu. a: androecium, c: capsule, fl: flower, l: lip, p: pistil, s: seed, ls: lateral sepal, sp: spur of lip, st: standard, t: trichome, w: wing petals.

Shimizu, T., 1970. Contributions to the Flora of Southeast Asia II. *Impatiens* of Thailand and Malaya. *Tonanajia-kenkyu* **8**: 187–217.

Shimizu, T., 1982. Seedling morphology in some Thai *Impatiens* and its taxonomic significance. *Jour. Fac. Lib. Arts, Shinshu Univ., Nat. Sci.* No. 16, 85–97.

Shimizu, T., 1991. New species of the Thai *Impatiens* (1). *J. Jap. Bot.* **66**: 166–171.