

NEW SPECIES, *Impatiens lobulifera* (Balsaminaceae) IN THE FLORA OF VIETNAM

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ABSTRACT

Impatiens lobulifera S. X. Yu, Y. L. Chen & H. N. Qin, previously known as an endemic of SE China, is found first in Vietnam, in Ba Be National Park (Bac Kan Province). The voucher herbarium specimens of this species collected in Vietnam are housed in the herbaria of the Vietnam National University of Forestry (VNF) and the Komarov Botanical Institute (LE). An amended morphological description of this species, accompanied by color photos, new data on ecology, and phenology are additionally provided.

Keywords: Balsaminaceae, *Impatiens*, *Impatiens lobulifera*, new record, plant diversity, plant geography, Vietnam

BỔ SUNG LOÀI *Impatiens lobulifera* (HỌ Balsaminaceae) CHO HỆ THỰC VẬT VIỆT NAM

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TÓM TẮT

Trên thế giới, chi Bóng nước (*Impatiens* L.) thuộc họ Bóng nước (Balsaminaceae) gồm khoảng 1.000 loài phân bố chủ yếu ở vùng nhiệt đới và cận nhiệt đới châu Mỹ, châu Âu và Đông Nam Á, cũng như ở Đông Á. Ở Việt Nam, chi này có 42 loài, bao gồm cả loài *Impatiens monticola* Hook.f. mới ghi nhận gần đây. Trong quá trình nghiên cứu chi Bóng nước (*Impatiens*) ở một số khu vực núi đá vôi miền Bắc Việt Nam, chúng tôi phát hiện loài *Impatiens lobulifera* S.X.Yu, Y.L.Chen & H.N.Qin phân bố ở Vườn Quốc gia Ba Bể, Bắc Kạn. Loài *Impatiens lobulifera* có một vài đặc điểm đặc trưng lá hình trứng, cuống lá có 2 tuyến tròn; cụm 2 - 3 hoa, hoa màu vàng xanh, móng gắn xẻ 2 phía chót, hạt có lông. Đây là loài bổ sung cho hệ thực vật Việt Nam và trước là đặc hữu của Trung Quốc.

Từ khóa: Balsaminaceae, *Impatiens*, *I. lobulifera*, ghi nhận mới, Việt Nam.

INTRODUCTION

Impatiens L. (Linnaeus 1753: 937) (Balsanaminaceae) is one of the most diverse groups of angiosperms, with more than one thousand species. The genus is distributed mainly in tropical and subtropical America, Europe, and Southeast Asia (Grey-Wilson, 1980). In Vietnam, 35 species of this genus were recorded before 2010 (Tardieu, 1944; Pham 2003). Over the last decade, however, seven species were additionally reported, namely *Impatiens purpureifolia* S. H. Huang & Y. M. Shui, sp. nov. (Shui *et al.*, 2011), *Impatiens kamtilongensis* Toppin (Vu *et al.*, 2015), *Impatiens parvisepala* S. X. Yu & Y. T. Hou (Hoang *et al.*, 2015), *Impatiens morsei* J. D. Hooker (Hoang *et al.*, 2016), *Impatiens napoensis* Y. L. Chen (Nguyen *et al.*, 2018), *Impatiens siculifer* Hook. f. (Pham *et al.*, 2019), and *Impatiens monticola* Hook.f. (Nguyen *et al.*, 2021). During the botanical fieldwork in limestone areas of Ba Be National Park in Northern Vietnam in October 2023, the authors collected an unusual species of *Impatiens*. After careful examination of the species and analysis of available literature as well as collections of different herbaria, namely HN, HNU, NHNP, LE, VNM, and VNF, we identified this plant as *Impatiens lobulifera* S. X. Yu, Y. L. Chen & H. N. Qin, which was previously reported only from China (Yu *et al.*, 2009). This is the first record of this species in the flora of Vietnam, the data for which are presented below.

Impatiens lobulifera S. X. Yu, Y. L. Chen & H. N. Qin, Botanical Studies (Taipei) 50: 365. 2009; Yu *et al.*, 2009, in Sh.-X. Yu, Y. T. Hou, Y. L. Chen & H. N. Qin (eds.), Botanical Studies (Taipei) 50: 365-370.

Type: China, Guangxi Zhuangzu Autonomous Region, Baise Shi, Napo Xian, Pingmeng Xiang, Nianjing Cun, 23°00'29.6'' N, 105°52'24.9''E, alt. ca. 800 m, S. X. Yu 3220 (holotype PE!, isotype: IBK!).

Description. Herbs perennial, up to 80 cm tall. *Stems* succulent, glabrous, erect, often branched in the upper part. *Leaves* petiolate, alternate, aggregated towards the stem apex. *Petioles* 3.5 - 6 cm long, bearing two big glands close to the base of the blades. *Leaf blade* 14 - 17 cm long, 6 - 8 cm wide, ovate or broadly ovate; lateral veins 7 - 9 pairs; crenate-serrate, with simple narrow teeth; apex acute, base rounder or obtuse. *Inflorescences* arising from upper axils, 2 - 3 flowered; peduncles 4 - 5 mm long; bracts ca. 3 mm long, ovate-lanceolate, inconspicuous. *Pedicels* 2 - 2.5 cm long, slender, glabrous. *Flowers* yellow-green. *Lateral sepals* 4, the outer pair 1.4 - 1.6 cm long, 1.1 - 1.3 cm wide, ovate-orbicular, conchate, 6 - veined, apex mucronate; inner lateral sepals 2 - 3 mm long, ovate-lanceolate, acute. *Lower sepal* ca. 2.3 cm long, 1 cm deep excluding spur, infundibuliform, base abruptly constricted into a spur; spur 1 - 1.2 cm long, incurved, bilobed to the middle, mucronate. *Dorsal petal* 1.7 - 1.9 cm long, 0.9 - 1.1 cm wide, elliptic or ovate-elliptic, apex mucronate, with a narrow crest abaxially. *Lateral united petals* 2.6 - 3.2 cm long, 2 - lobed, basal lobe 2.1 - 2.3 cm long, 1.4 - 1.5 cm wide, shortly stalked, ovate-orbicular, with a mid-vein ending in a conspicuous mucro; distal lobe dolabriform, ca. 1.6 cm long, ca. 8 mm wide, obovate-oblong, with a mid-vein ending in a mucro, connected with each other with a small lamella. *Stamens* 5; filaments 6-7 mm long, flat; anthers obtuse. *Ovary* fusiform, glabrous. *Capsule* clavate, glabrous, ca. 2 cm long, apex

abruptly pointed. *Seeds* obscurely rectangular-ellipsoid, ca. 2.6 mm long and 2 mm wide, densely covered with spiral vessel-shaped hairs and longitudinal grooves along the raphes, hilum prominent. Fig. 1, 2.

Flowering and fruiting. September - November.

Distribution. Vietnam (Bac Kan Province, Ba Be National Park). China (Guangxi Zhuang Autonomous Region).

Habitat and ecology in Vietnam. Primary and secondary evergreen broad-leaved lowland forests, usually along watershed at elevations 150 - 400 m a.s.l. in association with *Aeschynanthus* sp., *Burretiodendron hsienmu*, *Cymbidium aloifolium*, *Costus tonkinensis*, *Dracaena cochinchinensis*, *Ficus* sp., *Ocimum* sp., and *Selaginella argentea*.

Specimens examined. Vietnam, Bac Kan Province, Ba Be National Park, elevation 400 m, 22°24'57.7"N 105°36'47.7"E, 21 October 2023, *Nguyen Huu Cuong* (VNF: NHC 2023102115). Vietnam, Bac Kan Province, Ba Be District, Ba Be National Park, dry evergreen broad-leaved secondary forest on cliffs composed by white crystalline marble-like highly eroded limestone along lake shore on point 22°25'46"N 105°36'58"E at elevation of about 170 m a.s.l., erect lithophytic herb to 0.6

m tall on exposed and shady rocks, flowers yellow, locally common, 20 October 2023, *Nguyen Huu Cuong*, *Chu Ngoc Quan*, *L.Averyanov*, *Nguyen Van Ly*, *T.Maisak*, AL2332 (photos LE LE01124444 <https://en.herbariumle.ru/?t=occ&id=207146>).

Vietnam, Bac Kan Province, Ba Be District, Ba Be National Park, dry evergreen broad-leaved secondary forest on cliffs composed by white crystalline marble-like highly eroded limestone along lake shore on point 22°24'58"N 105°36'48"E at elevation of about 160 m a.s.l., erect lithophytic herb to 0.5 m tall on exposed rocks, flowers yellow, locally very common, 21 October 2023, *Nguyen Huu Cuong*, *Chu Ngoc Quan*, *L.Averyanov*, *Nguyen Van Ly*, *T.Maisak*, AL2349 (photos . LE 01124461 <https://en.herbariumle.ru/?t=occ&id=207163>).

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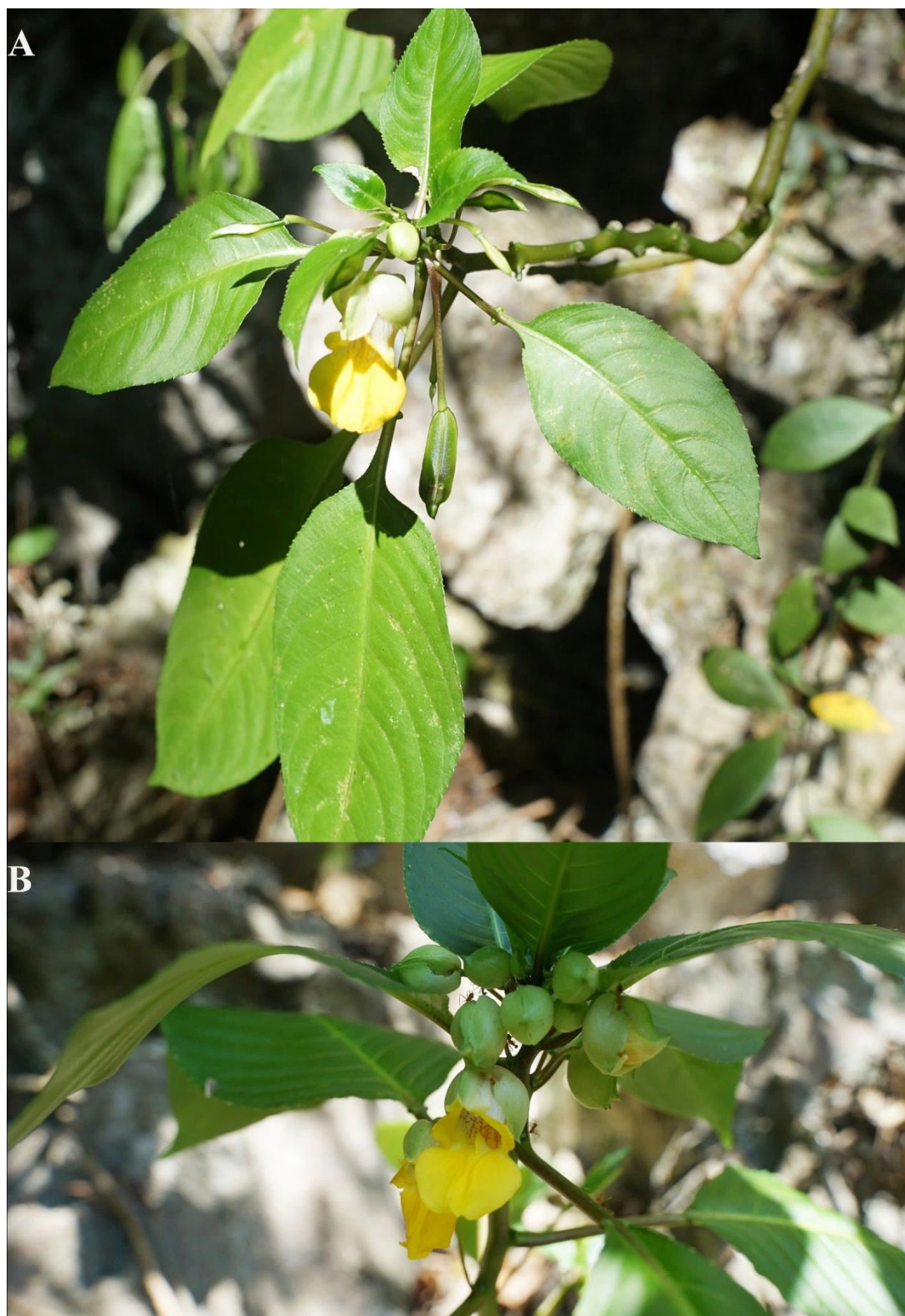


Fig. 1. *Impatiens lobulifera* S. X. Yu, Y. L. Chen & H. N. Qin. Flowering plants in natural habitat (A, B). Photos, correction, and plate design by Cuong Huu Nguyen.

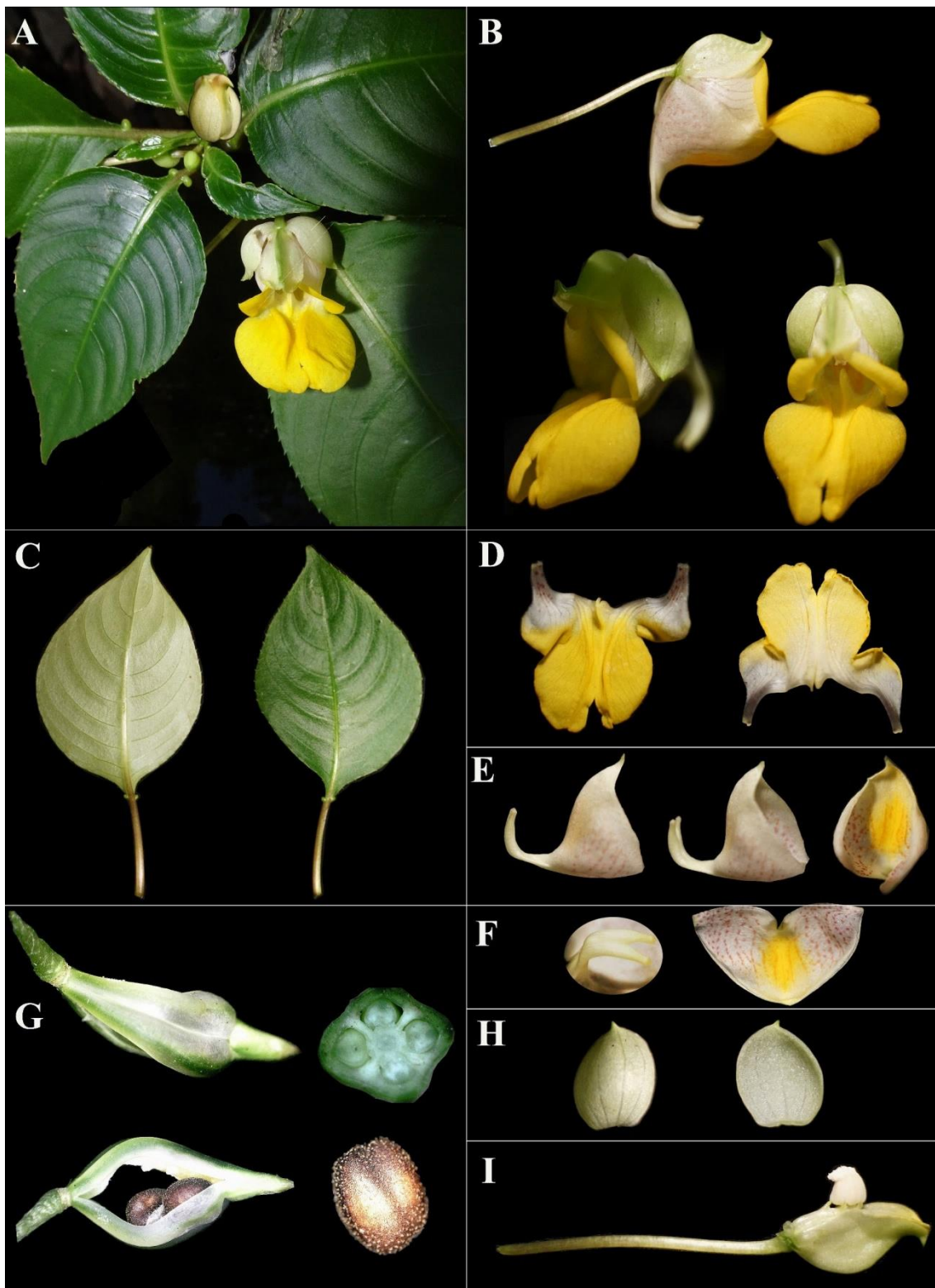


Fig. 2. *Impatiens lobulifera* S. X. Yu, Y. L. Chen & H. N. Qin.

(A) Apex of flowering shoot. (B) Flowers, views from different sides. (C) Abaxial and adaxial surface of leaf. (D) Lateral united petals. (E, F) Lower sepal. (G) Fruits and seeds. (H) Lateral sepal. (I) Dorsal petal and stamens. Photos, correction, and plate design by Cuong Huu Nguyen.

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