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## Research

### *Primulina elegans* (Gesneriaceae), a new species from North Vietnam

Yi-Hua Tong, Bing-Mou Wang, Tien Chinh Vu and Nian-He Xia

Y.-H. Tong (<https://orcid.org/0000-0002-5034-005X>) and N.-H. Xia ✉ ([nhxia@scbg.ac.cn](mailto:nhxia@scbg.ac.cn)), Key Laboratory of Plant Resources Conservation and Sustainable Utilization & Guangdong Provincial Key Laboratory of Digital Botanical Garden, South China Botanical Garden, Chinese Academy of Sciences, Guangzhou, PR China, and: Center of Conservation Biology, Core Botanical Gardens, Chinese Academy of Sciences, Guangzhou, PR China. – B.-M. Wang, Panyu Central Hospital, Guangzhou, PR China. – T.-C. Vu, Vietnam Natl Museum of Nature, Vietnam Academy of Science and Technology, Hanoi, Vietnam, and: Graduate Univ. of Science and Technology, Vietnam Academy of Science and Technology, Hanoi, Vietnam.

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*Primulina elegans* (Gesneriaceae), a new species from Vietnam is described. This species is similar to *P. gemella* and *P. diffusa* in having stolons and papillose-hispid leaves, but is easily distinguished from them by having 9–15 cymes and corollas with two brown stripes on the adaxial lip and nine purplish lines on the abaxial lip. Furthermore, *Primulina elegans* differs from *P. gemmella* by its broadly infundibuliform corollas with purplish glandular pubescent filaments, and from *P. diffusa* by having three slightly purplish glandular pubescent staminodes.

Keywords: Gesneriaceae, new species, *Primulina*, Vietnam

## Introduction

The newly redefined *Primulina* Hance is one of the largest genera of the Old World Gesneriaceae, currently comprising over 200 species distributed in south and southwest China and North Vietnam (Weber et al. 2011, Möller and Clark 2013, Möller et al. 2016, Xu et al. 2017, Möller 2019, Wen et al. 2019, International Plant Name Index 2020). More than 40 taxa have been described during the last five years (Möller 2019, Wen et al. 2019, International Plant Name Index 2020). The karst regions of south and southwest China and North Vietnam have the highest diversity of *Primulina* species, and most of them are endemic species with small populations distributed at only one or a few localities (Wen and Zhong 1998, Li and Wang 2004, Wei et al. 2010, Kang et al. 2014).

In 2019, during a field trip to Quang Ninh Province in North Vietnam, we collected some individuals without flowers of an unknown species of Gesneriaceae and cultivated it at the nursery of the South China Botanical Garden. In May 2020, it bloomed vigorously with many beautiful flowers. This species has stolons, papillose-hispid leaves and purplish blue flowers, which made us think of *P. gemella* (D. Wood) Yin Z. Wang, another species from north Vietnam. But the shape and the pattern of the corolla are very different (Wood 1972). After a detailed examination of the morphological characters of our material and species similar to it, we concluded that this species is new to science, as described below.



*Primulina elegans* B. M. Wang, Y. H. Tong & N. H. Xia sp. nov. (Fig. 1)

**Type:** Vietnam, Quang Ninh Province, Quang Hanh District, limestone hill, ca 70 m a.s.l., 23 May 2020, T. C. Vu et al. 2477 (holotype: VNM, isotype: IBSC). The type specimens were collected from wild plants introduced and cultivated at nursery.

***Etymology***

The species epithet refers to its beautiful flowers, which gives this species a high ornamental value.

***Description***

Herb, perennial, acaulescent. Rhizome subterete, ca 5 cm long, ca 1.5 cm in diameter. Stolons multicellular papillose-hispid, 4–5 cm long, ca 5 mm in diameter, arising from a leaf rosette,

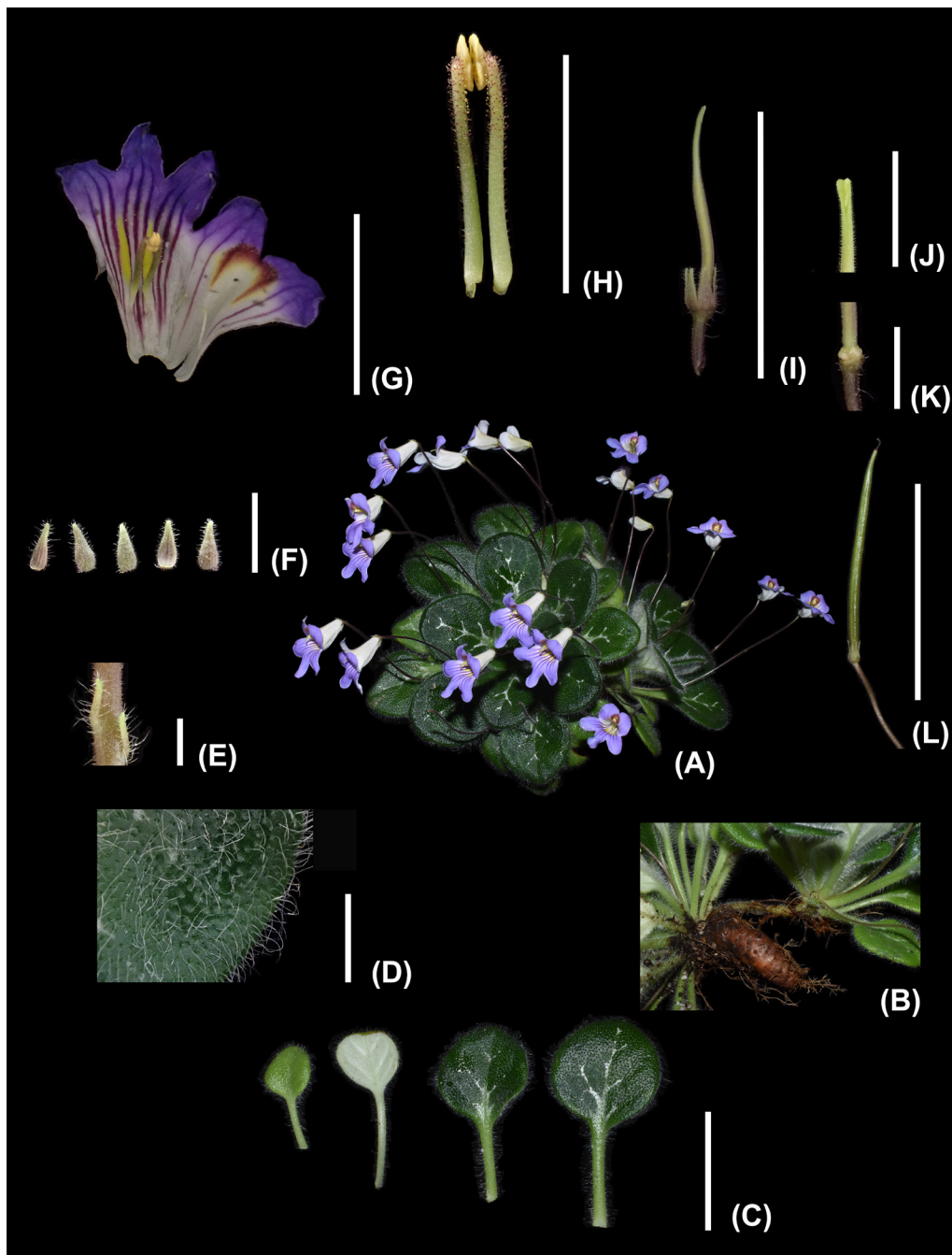


Figure 1. *Primulina elegans* sp. nov. (A) flowering plants, (B) rhizome and stolon, (C) leaves, (D) close up view of leaf blade, showing trichomes, (E) bracts, (F) calyx lobes, (G) opened corolla, (H) fertile stamens, (I) calyx and ovary, (J) stigma, (K) disk; (L) fruit. Scale bars: (C) and (L) 5 cm; (D), (F), (J) and (K) 0.5 cm; (E) 0.2 cm; (G) and (I) 2 cm; (H) 1 cm.

Table 1. Morphological comparison among *Primulina elegans*, *P. gemella* and *P. diffusa*.

Character	<i>P. elegans</i>	<i>P. gemella</i>	<i>P. diffusa</i>
Leaf blade shape	broadly ovate-round or subround	elliptic or obovate	slightly ovate-elliptic or nearly round
Leaf blade size (cm)	3.0–5.2 × 2.5–4.5	1.0–2.0 × 0.6–1.3	1.8–4.0 × 1.5–2.0
Number of cymes	9–15	2–5	2–4
Corolla pattern inside	two brown stripes and four purplish lines on adaxial lip and two yellow stripes and nine purplish lines on abaxial lip	without stripes and lines on adaxial lip, two yellow stripes and without lines on abaxial lip	without stripes and lines on adaxial lip, two yellow spots and without lines on abaxial lip
Corolla indumentum	outside puberulent, inside glabrous except for the glandular pubescent brown strips	subglabrous on both sides	outside puberulent with both glandular and eglandular hairs, inside glabrous
Corolla shape	broadly infundibuliform	campanulate	infundibuliform
Filament indumentum	purplish glandular pubescent	densely villous	sparsely glandular pilose
Number of staminodes	3	3	2
Staminode indumentum	slightly purplish glandular pubescent	glabrous	glabrous

leafy at apex. Leaves 15–30, all basal, compact, petiolate; petiole multicellular papillose-hispid, 2.0–4.5 × 0.4–0.5 cm; leaf blade carnos, broadly ovate-round or subround, 3.0–5.2 × 2.5–4.5 cm, obtuse or round at apex, broadly cuneate or obtuse at base, equilateral or slightly inequilateral, with entire margin, densely erect semitransparent or white multicellular papillose-hispid on both surfaces; lateral veins 3–4 on each side, impressed adaxially and prominent abaxially, more or less with white patches along main and lateral veins adaxially. Inflorescence a degraded cyme with solitary flower, 9–15-flowered per individual; peduncle 7.3–9.2 cm long, hispid and hirsute; bracts 2, opposite or subopposite, lanceolate or subulate, 1.5–2.0 × 0.2–0.3 mm, with margin entire, acute at apex, papillose-hispid with trichomes dense at lower part, becoming sparse towards the apex; pedicel 3.5–4.0 cm long, hispid and hirsute. Calyx 5-parted to the base, with lobes narrowly triangular or lanceolate-linear, 2.0–3.0 × 0.6–1.0 mm, outside densely hispid and puberulent, especially so along the margin, inside nearly glabrous. Corolla blue to purplish blue, inside with two brown stripes and four purplish lines on adaxial lip and two yellow stripes and nine purplish lines on abaxial lip, 2–3 cm long, outside puberulent, inside glabrous except for the glandular pubescent brown strips; corolla tube broadly infundibuliform, 1.0–1.5(–2.0) cm long, 1.0–1.2 cm in diameter at throat; limb distinctly 2-lipped; adaxial lip 2-lobed to over half the length, with lobes oblong or round, round at apex, 5–6 × 7–8 mm; abaxial lip 3-lobed to over half the length, with lobes oblong with the central one smaller, round at apex, 7–8 × ca 5 mm. Stamens 2, adnate to ca 5 mm above the corolla tube base; filaments 9–10 mm long, purplish glandular-pubescent, geniculate at the base; anthers reniform, glabrous, ca 2.5 mm long; staminodes 3, the lateral ones ca 4 mm long, slightly purplish glandular-pubescent, apices capitate, adnate to ca 4 mm above the corolla tube base; middle one ca 0.2 mm long, adnate to ca 1.5 mm above the corolla tube base. Disc annular, ca 0.8 mm high, glabrous. Pistil 1.4–1.5 cm long; ovary linear, 9–10 mm long, pubescent; style ca 5 mm long, pubescent,

stigmas narrowly cordate, 1.0–1.2 mm long, apex slightly 2-lobed. Fruit linear, pubescent, 3.90–4.80 × 0.20–0.25 cm.

#### Phenology

*Primulina elegans* flowers in May to June and fruits in June.

#### Distribution and habitat

This new species is known only from the type locality, Quang Hanh District, Quang Ninh Province, Vietnam. It grows on the rocks of a limestone hill under subtropical broad-leaved evergreen forests at an elevation of ca 70 m. Associated species include *Bonia tonkinensis* Balansa, *Primulina drakei* (B. L. Burt) Mich. Möller & A. Weber, *Chromolaena odorata* (L.) R. M. King & H. Rob., etc.

#### Similar species

Stolons are not reported much in *Primulina* species. Among those *Primulina* species with stolons, only *P. gemella*, *P. diffusa* Xin Hong, F. Wen & S. B. Zhou and this new species have papillose-hispid leaves, while the other species all have appressed pubescent leaves, such as *P. yingdeensis* Z. L. Ning, M. Kang & X. Y. Zhuang, *P. hochiensis* (C. C. Huang & X. X. Chen) Mich. Möller & A. Weber. *Primulina elegans* can be distinguished from *P. gemella* and *P. diffusa* by having much more cymes (9–15 versus 2–5) and corollas with two brown stripes on the adaxial lip (versus without brown stripes) and nine purplish lines on the abaxial lip (versus without purplish lines). Furthermore, *Primulina elegans* differs from *P. gemella* by its larger leaves (3.0–5.2 × 2.5–4.5 cm versus 1.0–2.0 × 0.6–1.3 cm) and flowers with broadly infundibuliform (versus campanulate) corollas and purplish glandular-pubescent (versus villous) filaments (Wood 1972), and from *P. diffusa* by having 3 (versus 2) slightly purplish glandular-pubescent (versus glabrous) staminodes. Besides, *Primulina elegans* flowers in May to June, while the other two species flowers in October to December (Wood 1972, Zhou et al. 2014). A detailed comparison of the three species is summarized in Table 1.

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