

A NEW SPECIES OF *SPELAEANTHUS* (GESNERIACEAE: DIDYMOCARPOIDEAE) FROM VIETNAM

D. J. Middleton 

The species *Spelaeanthus vietnamensis* D.J.Middleton from Tam Đảo National Park in northern Vietnam is described as new to science, and photographs are provided. The genus now includes two species: one from Vietnam and one from Peninsular Malaysia.

Keywords. Didymocarpoideae, Loxocarpinae, Tam Đảo National Park, Trichosporeae.
Received 28 February 2023 Accepted 9 August 2023 Published 5 September 2023

Introduction

A plant growing on rocks in Tam Đảo National Park in northern Vietnam has been collected several times between 1930 and 2011; however, it has remained unnamed, in part probably due to uncertainty regarding the genus to which it should be assigned. Its general appearance is that of an *Ornithoboea* Parish ex C.B.Clarke, but the flower lacks the very characteristic circlet around the mouth of the corolla that is observed in members of that genus (see Scott & Middleton, 2014). It also lacks the palatal beard found in all but the smallest-flowered species of *Ornithoboea*. Instead, the flowers are more similar to those of *Damrongia* Kerr, although the base of the corolla is broader than in any known *Damrongia* species, and *Damrongia* species have a chiritoid stigma, which is not present in the Tam Đảo plant. The covering of glandular hairs on all plant parts is reminiscent of *Spelaeanthus* Kiew *et al.*, but the only known species of that genus, *Spelaeanthus chinii* Kiew *et al.*, is acaulescent (Kiew *et al.*, 1998). The plant fails to satisfactorily key to any known genus in the keys provided by Weber *et al.* (2020).

The plant has a slight but characteristic twist in the fruit, which places it in subfamily Didymocarpoideae, tribe Trichosporeae, subtribe Loxocarpinae (Puglisi *et al.*, 2016). There has been considerable realignment of the genera in subtribe Loxocarpinae, but there has been insufficient sampling and poor resolution in the clades that include the morphologically heterogeneous species of *Boea* Comm. ex Lam., *Emarhendia* Kiew *et al.*, *Loxocarpus* R.Br., *Orchadocarpa* Ridl., *Senyumia* Kiew *et al.*, and *Spelaeanthus* (Puglisi *et al.*, 2016). It is likely that the Tam Đảo plant belongs to one of these genera, and until they have been better sampled and defined, it must be described as a member of the genus with the most similar morphological characters. I conclude that this is *Spelaeanthus* based on the glandular indumentum, large lower corolla lip, small upper corolla lip, and weakly twisted fruit, although the consequence is that *Spelaeanthus* now includes both acaulescent and

caulescent species. However, the presence of both acaulescent and caulescent species in the same genus is not unusual in the Loxocarpaceae (Puglisi *et al.*, 2016).

It could be argued that because it is not entirely certain that this species belongs in *Spelaeanthus*, its description should await sequence data and improved phylogenetic resolution of the Loxocarpaceae. Various unpublished phylogenies that have incorporated this plant, including those generated using next-generation sequencing techniques, differ widely regarding the placement of the species in a genus. However, I have been aware of this new species for more than 10 years, and because the Loxocarpaceae are proving resistant to satisfactory resolution, in large part due to a lack of sampling, description of the species in the most morphologically similar genus should proceed until such time as the group is better known and the genera are better defined. Additionally, Liu *et al.* (2022) have discussed the reasons why undescribed species have a higher extinction risk than known species, and by describing the species here, even if the genus may later be changed, it can at least be included in IUCN conservation assessments and potentially in Vietnam conservation action plans.

Species description

Spelaeanthus vietnamensis D.J.Middleton, sp. nov.

Differs from *Spelaeanthus chinii* in the caulescent habit (vs acaulescent), the purple or blue corolla (vs white), and the larger flower (20–22 mm long vs c.6 mm long). – Type: [Vietnam], Tonkin, Massif du Tam Dao [Tam Đảo National Park], 1200 m, v 1931, *Pételot s.n.* (holotype P [P03934225]; isotypes B n.v., K, MO n.v., NSW n.v.). [Figure](#).

Herb to 45 cm tall; stems densely glandular pubescent with hairs of greatly varying lengths. Leaves opposite; petioles 2.2–4.5 cm long, densely glandular pubescent with hairs of greatly varying lengths; lamina very thin, ovate, 2.5–11 × 1.3–6.2 cm, base cordate to obtuse, often asymmetrical, apex acuminate, margin coarsely serrate, 6–9 pairs of secondary veins, densely glandular pubescent above and beneath, the hairs on the venation generally longer. Inflorescences axillary, cymose, 3.6–8 cm long, 2- to 6-flowered, axes with pubescence as on petioles; peduncles 2–4.5 cm long; bracts small, caducous; pedicels 7–11 mm long. Calyx of 5 lobes free to base, the 2 lateral lobes of the dorsal 3 lobes slightly falcate, 4.4–5.5 × 1.2–1.7 mm, glandular pubescent. Corolla purple or blue, tube broad from base, somewhat dorsoventrally flattened, limb 2-lipped, lower lip straight, upper lip slightly reflexed, 20–22.5 mm long, outside sparsely short glandular pubescent, inside with short glandular hairs in upper part of tube dorsally; tube 11–13 mm long to sinus between upper and lower lips; upper lip 4.5–5.2 mm, lobes broadly orbicular, apices rounded, 3.2–3.5 × 6.7–7 mm; lower lip c.11 mm long, lobes orbicular, apices rounded, lateral lobes 4.7–7 × 6.8–7.2 mm, central lobe 5–7 × 7–8 mm. Stamens inserted at 3–3.5 mm from corolla base; filaments narrow at base, curving and widening at c.1/3

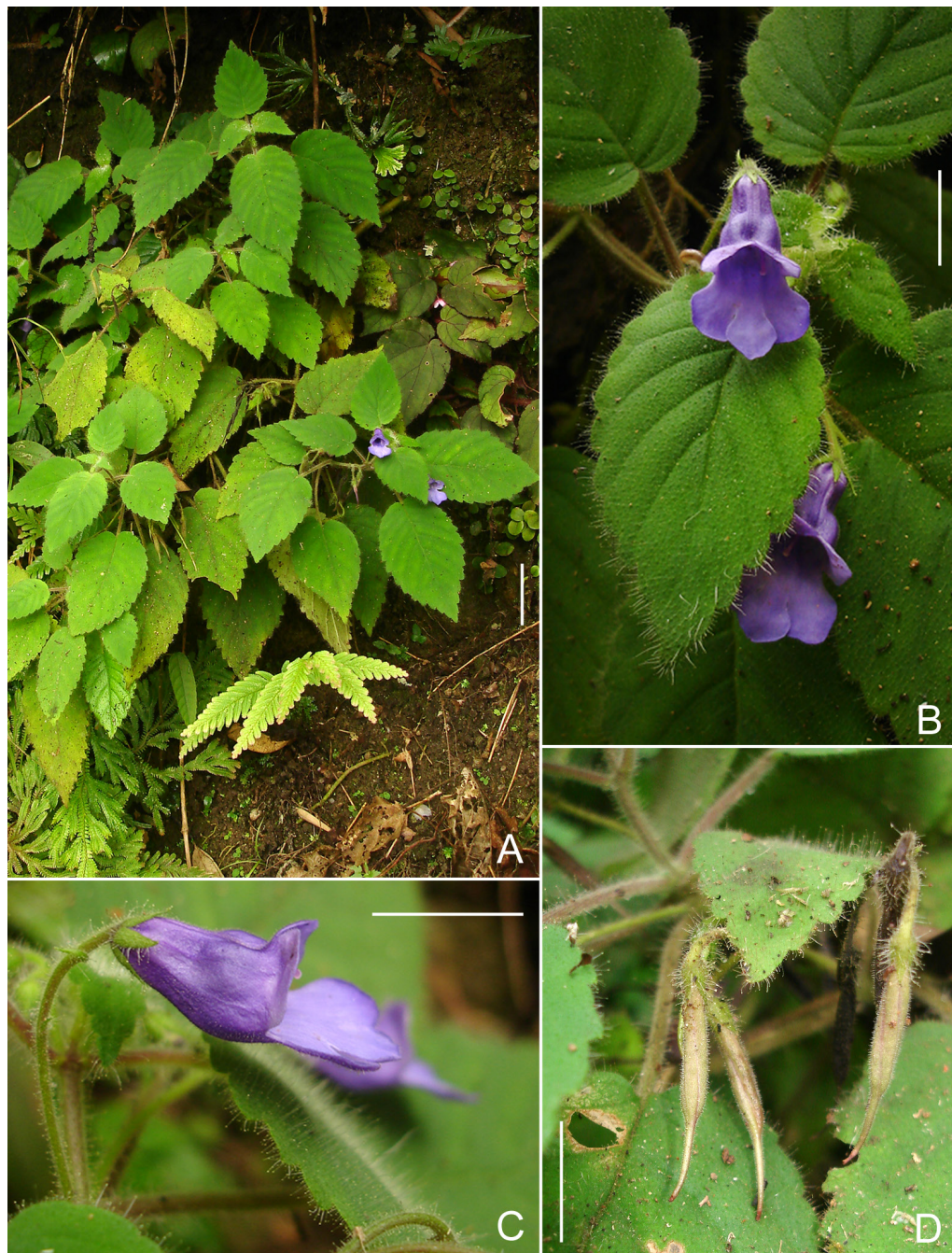


Figure. *Spelaeanthus vietnamensis* D.J.Middleton, sp. nov. A, Habit; B, flowers (front view); C, flower (side view); D, young fruit. Scale bars: A, 5 cm; B–D, 1 cm. All photographs of Nguyễn Quốc Bình, Jana Leong-Škorničková, Trần Hữu Đăng VMN-B1489, taken by J. Leong-Škorničkova.

length from base, 8–9 mm long, with short glandular hairs only in upper 1–1.5 mm; anthers 1.6–1.8 × 2.8–3.5 mm, thecae divergent, with occasional glandular hair, adnate face to face; staminodes near base of corolla, all of a similar size and c.0.3 mm or lateral staminodes longer to 1 mm long. *Nectary* a thickened lobed ring, 0.6–0.8 mm long. *Pistil* c.15 mm long; ovary 5–5.5 mm, densely pubescent with glandular hairs; style enantiostylous, 9.5–10 mm, densely pubescent with glandular hairs; stigma simple, not bifid. *Fruit* a capsule, almost straight to slightly twisted, 1.2–1.5 cm long. *Seeds* apiculate at each end, ovoid, c.0.5 × 0.2 mm.

Distribution. Known only from Tam Đảo National Park, northern Vietnam.

Habitat and ecology. On rocks in primary forest, from 1064 to 1200 m.

Etymology. The epithet *vietnamensis* refers to the country where this species is endemic.

Proposed IUCN conservation category. Data Deficient (DD). Although the species is known from a few collections, only one of the collections is relatively recent. Tam Đảo National Park is a protected area; however, because the status of the populations and any possible threats are not known, an assessment should await a more detailed survey.

Additional specimens studied. VIETNAM: Vinh Phuc province: Tam Đảo National Park, Tam Đảo 2, 1064 m, 22 ix 2011, Nguyễn Quốc Bình, Jana Leong-Škorničková, Trần Hữu Đăng VMN-B1489 (E, PR, SING, VNMN n.v.); Massif du Tam Dao, xi 1930, Pételot s.n. (P [P03511103, P03934199]).

Acknowledgements

I thank Jana Leong-Škorničková (SING) for the photographs used in the figure, and Serena Lee (SING) for arranging the images to create the composite. I also thank the curatorial staff of the herbaria that have loaned specimens or made them available online. Finally, I thank Michael Möller (E), Carmen Puglisi (MO) and Choo Le Min (SING) for useful discussions on the intractability of the Loxocarpiinae phylogeny.

ORCID iD

D. J. Middleton  <https://orcid.org/0000-0003-3754-1452>

References

- Kiew R, Weber A, Burt BL. 1998 [1997]. Three new genera of Gesneriaceae from limestone of Peninsular Malaysia. *Beiträge zur Biologie der Pflanzen*. 70:383–403.
- Liu JJ, Slik F, Zheng SL, Lindenmayr DB. 2022. Undescribed species have higher extinction risk than known species [letter]. *Conservation Letters*. 2022;15:e12876. <https://doi.org/10.1111/conl.12876>.
- Puglisi C, Yao TL, Milne R, Möller M, Middleton DJ. 2016. Generic recircumscription in the Loxocarpiinae (Gesneriaceae), as inferred by phylogenetic and morphological data. *Taxon*. 65(2):277–292. <https://doi.org/10.12705/652.5>.

-
- Scott SM, Middleton DJ. 2014. A revision of *Ornithoboea* (Gesneriaceae). Gardens' Bulletin Singapore. 66(1):73–119. https://www.nparks.gov.sg/sbg/research/publications/gardens-bulletin-singapore/-/media/sbg/gardens-bulletin/gbs_66_01_y2014_v66_01/4-4-66-1-09-y2014-v66p1-gbs-pg73.pdf.
- Weber A, Middleton DJ, Clark JL, Möller M. 2020. Keys to the infrafamilial taxa and genera of Gesneriaceae. Rheedea. 30(1):5–47. <https://dx.doi.org/10.22244/rheedea.2020.30.01.02>.