

Orchidantha virosa Škorničk. & Q.B.Nguyễn, sp. nov. (Lowiaceae), a new species endemic to northern Vietnam

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ABSTRACT

Orchidantha virosa Škorničk. & Q.B.Nguyễn, sp. nov. (Lowiaceae), a new species from Phú Thọ province, northern Vietnam is described and illustrated here. The new species is unique among other species in Vietnam and Laos in its robust habit and size (up to 2 m) and the non-petiolate leaves in mature individuals. The key to *Orchidantha* N.E.Br. species of Laos and Vietnam is accordingly updated.

KEY WORDS

Orchidantha,
Vietnam,
new species.

RÉSUMÉ

Orchidantha virosa Škorničk. & Q.B.Nguyễn, sp. nov. (Lowiaceae), une nouvelle espèce endémique du nord Vietnam.

Orchidantha virosa Škorničk. & Q.B.Nguyễn, sp. nov. (Lowiaceae), une espèce nouvelle de la province de Phú Thọ (au nord du Vietnam) est décrite et illustrée ici. Elle se distingue des autres espèces connues au Vietnam et au Laos par son port robuste, sa grande taille (jusqu'à 2 m) et ses feuilles sessiles dans les individus adultes. La clé de détermination des *Orchidantha* N.E.Br. du Laos et du Vietnam est révisée en conséquence.

MOTS CLÉS

Orchidantha,
Vietnam,
espèce nouvelle.

INTRODUCTION

Lowiaceae Ridl., with a single genus *Orchidantha* N.E.Br., is one of the three small families in Zingiberales, currently accommodating 20 species. A brief introduction to the genus has been given recently by Trần & Leong-Škorničková (2010) and therefore is not repeated here. Even though most of the *Orchidantha* species are usually locally common, the fact that most of them are endemics and occurs within very limited area has direct conservation implications.

The number of *Orchidantha* species has increased nearly double-fold in last twenty years with latest additions from southern Vietnam, *O. stercorea* H.Đ.Trần & Škorničk., and from Peninsular Malaysia, *O. lengguanii* Škorničk. Lowiaceae are severely under-represented in herbaria and are sometimes misidentified. The “ordinary” looking leaves, which in sterile stage can be easily mistaken for *Hanguana* Blume, *Aspidistra* Ker Gawl., *Tupistra* Ker Gawl. or other monocot genera, do not attract particular attention. The flowers are seasonal and usually hidden in leaf-litter, so they get rarely noticed. The foul smell emitted by flowers, often reminding of dead rotten animal or dung further divert any potential collectors, except specialists. While it can be expected that more species yet remain to be found in both peninsular Asia as well as in Borneo, the increase in species diversity is not expected to be as steep as in e.g., *Aspidistra* (Asparagaceae Juss.), which is another excellent example of herbaceous monocot genus, of which vast diversity has been overlooked until recently (e.g., Tillich & Averyanov 2012).

The second author noticed the new *Orchidantha* species in 2004 and 2011, but only during a recent effort to monograph the family by the first author, we have been able to verify that this species is indeed new. During our recent expedition to northern Vietnam we were able to collect ample amount of flowering material, which enable us to describe and illustrate this species in detail below. The key to the species *Orchidantha* in Vietnam and Laos given by Trần & Leong-Škorničková (2010) is modified to include the latest addition.

SYSTEMATICS

Genus *Orchidantha* N.E.Br.

Orchidantha virosa

Škorničk. & Q.B.Nguyễn, sp. nov.

(Figs 1; 2)

Similar to O. fimbriata Holttum in its robust habit and non-petiolate leaves in mature individuals, but differs by greenish sepals with more or less purple tinge externally, lateral sepals overlapping at tips and supporting the deep purple to maroon labellum, and stigma with minutely fimbriate margin and Y-shaped viscidium (versus dark purple sepals, lateral sepals spreading, labellum with narrow dark purple base and creamy white distal part, and stigma with long fimbriae and broadly v-shaped viscidium in O. fimbriata).

TYPUS. — **Vietnam.** Phú Thọ Province, Tân Sơn District, Xuân Sơn National Park, alt. 497 m, 21°06'36.5"N, 104°57'50.2"E, mixed broadleaved evergreen forest on limestone, fl., 10.IV.2013, *Leong-Škorničková J., Nguyễn Q. B., Śida O. & Thame A. JLS-2149* (holo-, SING! [mounted on two sheets SING 0200289 & SING 0200290; incl. spirit]; iso-, E!, P!, PR! [incl. spirit], VNMN! [incl. spirit]).

PARATYPI. — **Vietnam.** Phú Thọ Province, Tân Sơn District, Xuân Sơn National Park, fl., 2.V.2011, Binh, *Nguyễn Q. B. VNM-B0001356* (SING, VNMN); *ibidem*, Xuân Sơn commune, proximity of Côi village, alt. 280 m, 21°09'09"N, 104°56'30"E, fl., 13.IV.2013, *Leong-Škorničková J., Nguyễn Q. B., Śida O. & Thame A. JLS-2179* (PR, SING, VNMN).

ETYMOLOGY. — The specific epithet “*virosa*” refers to the strong pungent smell reminding of a dead rat.

DESCRIPTION

Robust herb to 2 m. Leaves of juvenile plants distinctly petiolate, petiole up to half length of the entire leaf. Leaves of mature plants not petiolate, leaf blades mid green up to 2 m long, up to 22 cm at widest point in upper 1/3, narrowly oblanceolate, midrib impressed above and prominent beneath, lamina gradually tapering into narrow wings in lowermost part of the leaf. Inflorescence on branched, cream-coloured, burrowing stem with prominent bracts and/or their scars. Prophyll, second and third bracts cream to light green; prophyll 26–33 × 16–22 mm with two keels, second bract 32–34 × 18–20 mm, third bract 38–40 × 17–29 mm. Floral bract appear-



FIG. 1. — *Orchidantha virosa* Škorničk. & Q.B.Nguyễn, sp. nov.: **A**, habit of mature plants; **B**, flower (front view); **C**, young plants with petiolate leaves; **D**, base of clump with flowers; **E**, young fruit in floral bract; **F**, detail of lateral petals overlapping stigma. Photos by Jana Leong-Škorničková.

ing above the soil or with the proximal part buried, dark purple, minutely mucronate, 48-77 mm long, *c.* 30 mm wide, sheathing the 75-90 mm long ovary extension. Flowers open in the morning, are presented above the ground, and emit a strong smell of dead rats. Pedicel up to 50 mm, ovary extension 70-90 mm, cream white with purple tinge in apical third. Sepals greenish internally, with more or less purple tinge externally, minutely cuspidate, unequal; dorsal sepal obovate, 78-110 × 28-33 mm; lateral sepals overlap at tips, and support the labellum 78-117 × 10-13 mm. Lateral petals overlapping at base covering stamens and style, purple-black with velvety appearance, unequally oblong, apiculate, internal margin straight, exposed margins irregularly fimbriate, 23-30 × 7-8 mm. Labellum deep purple to maroon, fairly shiny ("plastic" looking), narrow at basal third (*c.* 16 mm wide), rhomboid at apical 2/3, with a median raised midrib *c.* 5 mm broad, margins slightly crenulate and serrate, 71-105 × 35-38 mm. Stamens 14-15 mm long; filaments 4-5 mm long, dark purple-black at base, cream-coloured towards thecae, thecae cream-coloured, introrse, *c.* 10 mm long, longitudinally dehiscent throughout the length. Style purple, *c.* 13 mm long, stigma 11 mm long, deeply 3-lobed, the lobes forming a tube, truncate, conduplicate, minutely fimbriate at the margins, fimbriae of equal length, unbranched; lateral lobes *c.* 5 mm long; median lobe 8-9 mm, viscidium (secretion tissue on ventral side) Y-shaped and pronounced in side view forming a small bump. Young fruit 3-locular, loculicidal capsule embedded in the soil, cream coloured (parts in the ground), tinged with maroon to very dark purple (exposed parts above ground), ovoid, somewhat trigonous, capsule *c.* 45 mm long and 18 mm in diameter, with a beak *c.* 20 mm long. Seeds (immature, still white and soft) 6-7 mm long, 5-6 mm in diameter, puberulent, ampulliform with a seed coat swelling forming a neck that bears 4-7 white, 3-8 mm long aril-threads. The description is based on living material of JLS-2149 & JLS-2179.

REMARKS

With leafy shoots reaching up to 2 m, *Orchidantha virosa* sp. nov. is larger and more robust than any other species previously recognised in

Vietnam, Laos and Thailand. The leaves, which are not petiolate in adult individuals as well as large flowers make it quite distinct and easy to recognize among other *Orchidantha* species in the Indochinese floristic region (*sensu* Takhtajan 1986). In peninsular Southeast Asia it vegetatively reminds of *O. fimbriata* Holttum, a native to the Malay Peninsula, but the latter has flowers with dark purple sepals and labellum with narrow dark purple base and creamy white and somewhat mucilaginous distal part which is usually three-lobed (Holttum 1790). In its habit and non-petiolate adult leaves, *Orchidantha virosa* Škorničk. & Q.B.Nguyễn, sp. nov. also resembles most of the robust Bornean species, of which *O. quadricolor* L.B.Pedersen & A.L.Lamb (Pedersen 2001), *O. inouei* Nagam. & S.Sakai (Nagamasu & Sakai 1999) and *O. grandiflora* Mood & L.B.Pedersen (Pedersen 2001) differ by lanceolate to narrowly lanceolate dorsal sepal strongly reflexed at anthesis, and the latter two species also by having lateral sepals spreading at anthesis (vs dorsal sepal obovate, not reflexed and lateral sepals overlapping at tips and supporting the labellum in *O. virosa* Škorničk. & Q.B.Nguyễn, sp. nov.). *Orchidantha holttumii* K.Larsen (Larsen 1993), *O. suratii* L.B.Pedersen, J.Linton & A.L.Lamb and *O. sabahensis* L.B.Pedersen & A.L.Lamb (both Pedersen 2001) have similarly positioned sepals like *O. virosa*, but differ in shape of labellum, which is in all three species broadly to narrowly lanceolate with apical part more or less undulate and up to some degree involute (vs straight labellum with narrow basal third and rhomboid at apical part). *Orchidantha virosa* sp. nov. is also unique by its Y-shaped viscidium (vs V-shaped, broadly U-shaped and heart-shaped viscidia previously reported in the genus). The intriguing anatomy of the stigma in Lowiaceae has been described in detail by Pedersen & Johansen (2004).

The genome size of this species (methodology as outlined in Leong-Škorničková *et al.* 2007) has been estimated at $2C = 5.67$ pg (internal standard *Bellis perennis* $2C = 3.42$ pg). This value is nearest to genome size of *O. laotica* K.Larsen ($2C =$



FIG. 2. — *Orchidantha virosa* Škorničk. & Q.B.Nguyễn, sp. nov.: **A**, inflorescences (scale in cm above, inches below); **B**, dissection of flower: entire flower with flower bract and labellum attached, third bract, second bract and prophyll, dorsal sepal and two lateral sepals (scale in cm above, inches below); **C**, details of petals, anthers and stigma unmanipulated (left), with sepals removed and style, stigma and anthers joined (middle), dorsal view of style and stigma (right) (scale in mm). Photos by Jana Leong-Škorničková.

KEY TO *ORCHIDANTHA* N.E.BR. IN LAOS AND VIETNAM

1. Labellum more than 6 cm long; ovary extension 7-9 cm long 2
— Labellum up to 5 cm long; ovary extension 3-4 cm long 3
2. Robust plant up to 2 m high, leaves of adult plants not petiolate, lateral petals purple-black, labellum narrow at basal third, rhomboid at apical 2/3, 7-10.5 × 3.3-3.8 cm
..... *O. virosa* Škorničk. & Q.B.Nguyễn, sp. nov.
— Plant up to 0.8 m tall, leaves of adult plants petiolate, petioles 10-27 cm, lateral petals whitish cream with a light violet tinge, labellum lanceolate 6.5-7.8 × 2.0-2.2 cm.....
..... *O. vietnamica* K.Larsen
3. Plant up to 0.8 m; petiole up to 45 cm long; floral bract longer than ovary extension; labellum 2.0-2.5 cm long, brown with yellow stripes *O. laotica* K.Larsen
— Plant up to 1.2 m; petiole up to 70 cm long; floral bract as long as or shorter than ovary extension; labellum 3.3-3.9 cm long, dark violet with a yellow-cream patch at base
..... *O. stercorea* H.Đ.Trần & Škorničk.

6.04 pg) and *O. stercorea* H.Đ.Trần & Škorničk. (2C = 5.44 pg), and within the variation range of genome sizes of Indochinese *Orchidantha* species, ranging from 2C = 5.03 pg in *O. foetida* Jenjitt. & K.Larsen to 2C = 6.25 pg in *O. siamensis* K.Larsen.

ECOLOGY, DISTRIBUTION & PRELIMINARY IUCN ASSESSMENT

So far known only from Xuân Sơn National Park where it grows around 250-500 m asl. on slopes and wet places. Extent of occurrence is less than 20 000 km², the area of occupancy is less than 2000 km² and is known from less than ten locations. According to the IUCN guidelines version 3.1. (IUCN 2012), the species is suggested to be treated under the category Vulnerable – VU B1 + 2ab(ii,iii); C2a(i).

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