

NOTES ON THE GENUS *AMORPHOPHALLUS* (ARACEAE) – 3<sup>1</sup>  
TWO NEW SPECIES FROM VIETNAM

W.L.A. HETTERSCHIED<sup>2</sup> & M.M. SEREBRYANYI<sup>3</sup>

SUMMARY

Of the genus *Amorphophallus*, two new species are described here, *A. scaber* and *A. pusillus*, both from Vietnam.

INTRODUCTION

During field excursions by the second author and colleagues in Vietnam, several living plants of *Amorphophallus* species were collected and subsequently cultivated in the Moscow Main Botanical Garden and in Leiden. Two remarkable new species originating from these collections are described here. One of these (*A. pusillus* Hett. & Serebryanyi) shows a remarkable suite of rare characters in *Amorphophallus*.

DESCRIPTIONS

*Amorphophallus scaber* Serebryanyi & Hett., *spec. nov.* — Fig. 1a, b

Ab *A. koratensi* Gagnep. in appendice spadicis partibus ceteris multo maiore, dimensionibus generatim multo maioribus differt. — Typus: *Serebryanyi 8906* (MHA holo; spirit coll.), South Vietnam, Vungtau-Condau district, 10 km E of Vungtau Port, near Ngoc Thau Vien, a south-east facing slope in limestone hills, c. 150 m below the Jesus Christ Monument, in open places in thickets.

*Tuber* subglobose or depressed-globose, up to c. 20 cm in diam. and c. 15 cm high, weighing up to c. 3.5 kg, dark brown with numerous, strongly elevated, annular root scars, seasonally developing offsets, these rhizomatous, up to c. 20 cm long and c. 2 cm in diam. *Leaf* solitary or paired; petiole up to 180 cm long and c. 6 cm in diam. at the base, background colour in juvenile plants usually dark brown and with scattered whitish spots, in mature plants dark olive-green (the base sometimes nearly black with a pinkish hue), nearly entirely covered by large, rounded to elliptic, confluent, whitish or pinkish spots with a dark green centre, towards the top of the petiole grading to whitish green and elliptic, surface strongly scabrate-verrucate, verrucae elongate and often laterally fused; *lamina* three-sect, highly decompound, up to

1) The first two papers in this series were published in, respectively, *Blumea* 36 (1991) 467–475 and 39, the present issue, pages 237–281.

2) Chrysantenstraat 28, 1214 BM Hilversum, The Netherlands.

3) Main Botanical Garden, Russian Academy of Science, Botanicheskaya Ul. 4, 127276 Moscow, Russia.

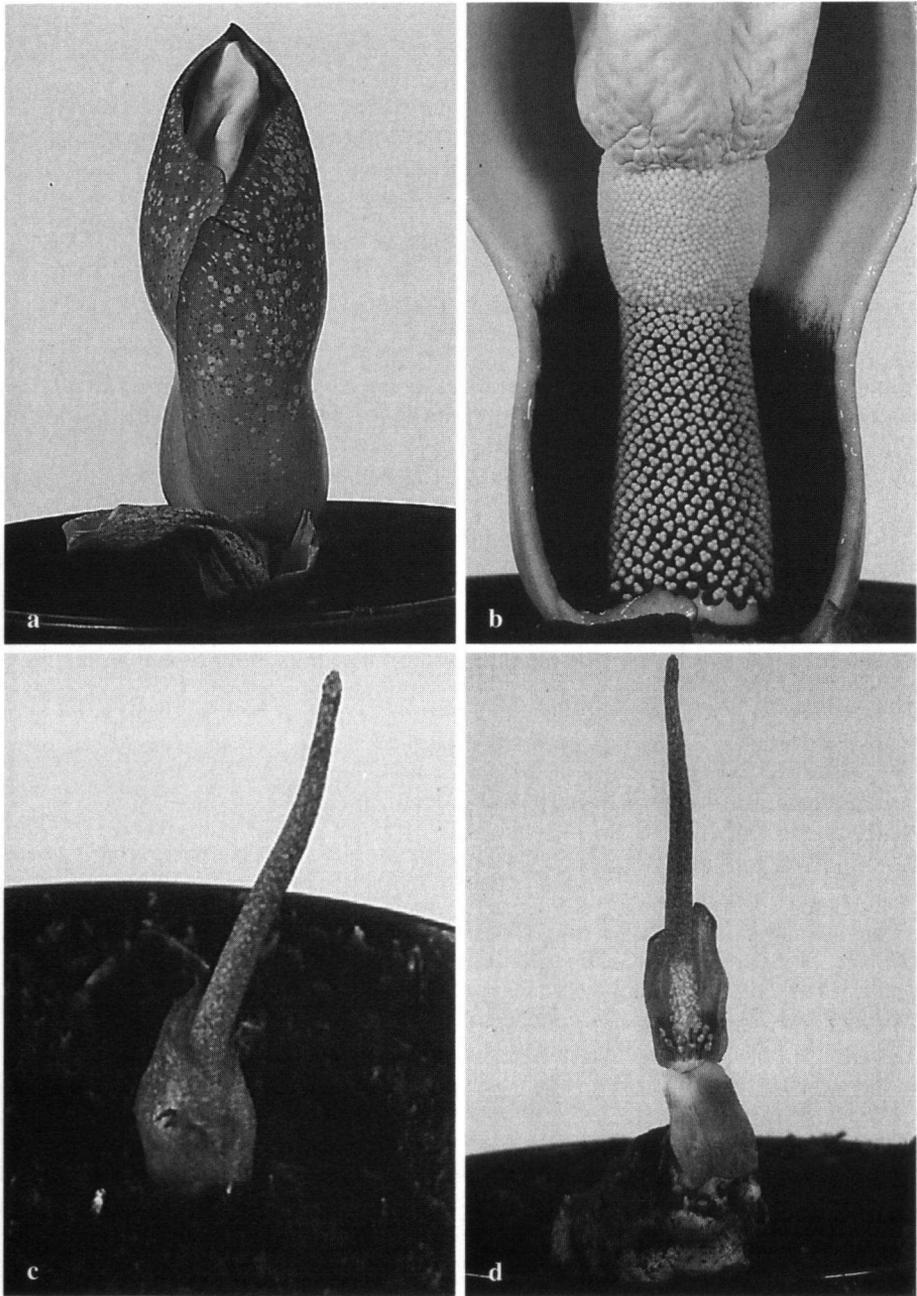


Fig. 1. — a, b: *Amorphophallus scaber* Serebryanyi & Hett. (H.AM.180); a: inflorescence, c.  $\times 0.27$ ; b: inflorescence cut open, c.  $\times 0.5$ . — c, d: *A. pusillus* Hett. & Serebryanyi (H.AM.246); c: inflorescence, half buried, c.  $\times 1.5$ ; d: entire plant exposed, spathe cut open, c.  $\times 1$ .

c. 180 cm in diam.; *leaflets* elliptic, elliptic-oblong or lanceolate, often asymmetric, acuminate, subcoriaceous, 6–22 cm long and 3.5–9 cm broad, base decurrent on one side, primary and secondary veins deeply impressed, upper surface green, margin at first reddish violet, later whitish. *Inflorescence* solitary, near sessile or short peduncled; *peduncle* densely verrucate, paler than petiole, (1–)5–10 cm long, 0.9–2.2 cm in diam.; *spathe* erect, broadly ovate, for the greater part convolute, hooded, only slightly opened at anthesis, coriaceous, 16–30 cm long, 15–32 cm in diam., apex acute, base strongly truncated, separated from the limb by a shallow constriction, outside dirty green or grey with a greenish tinge, with scattered, whitish circular spots and more numerous blackish, punctiform dots, limb often with a brownish or purplish hue, base inside very dark maroon, verrucate, limb inside bright pale green with occasional small, white spots and a brownish upper margin. *Spadix* subsessile, shorter than spathe and largely hidden by it, 9–25 cm long; *female zone* slightly to clearly conic, 2–8 cm long, 1.8–4 cm in diam. (at the base), flowers congested; *male zone* obconic or broadly fusiform, c. 3.5 cm long, 1.5–3.8 cm in diam., flowers congested; *appendix* ovoid, elongate conic or broadly fusiform-conic, obtuse, in larger specimens with a few longitudinal, broad, deep or shallow furrows, creamy white, surface smooth but at the base with a few irregular fissures, separating shieldlike staminodes, 3.5–13 cm long, 2–6 cm in diam. at the base, during female anthesis producing a smell reminiscent of strong cheese, dirty socks or decaying meat and heating up considerably. *Ovaries* depressed, circular or diamond-shaped in cross section, c. 3 mm in diam., c. 2 mm high, dark maroon, 2- or 3-locular; *style* slender, c. 2.5 mm long, c. 1 mm in diam., dark maroon; *stigma* large, distinctly 2- or 3-lobed, c. 1.5 mm high, 1.2–2 mm in diam., bright or pale yellow, minutely echinate-scabrate, lobes rounded. *Male flowers* consisting of 3 or 4 stamens; *stamens* elongate, c. 4 mm long; *filaments* short, c. 0.5 mm long, basally connate; *anthers* truncated, c. 3.5 mm long, 1.5–2 mm in diam., pale salmon pink, pores apical, elongate. *Pollen* released in strings, orange, psilate.

**Etymology** – The species epithet refers to the surface sculpturing of the petiole and peduncle.

**Distribution** – Vietnam (only known from the type locality).

**Ecology** – Flowers in May.

**Additional specimens** – *Kuznetsov s.n.* (L, prepared from plant cult. by the first author, *H.AM.180*), type locality; *Kuznetsov s.n.* (L, prepared from plant cult. by the first author, *H.AM.210*), type locality, 1991; *Kuznetsov s.n.* (L, prepared from plant cult. by first author, *H.AM.212*), type locality, 1991; *Serebryanyi s.n.* (L, prepared from plant cult. by the first author, *HAM.144*), 1989.

**Note** – *Amorphophallus scaber* belongs to an as yet informal species-group containing *A. hirsutus* Teijsm. & Binn. [Indonesia (Sumatra)], *A. koratensis* Gagnep. [Thailand], *A. opertus* Hett. [Vietnam, see previous article in this issue], *A. paeoniiifolius* (Dennst.) Nicolson [tropical Asia, eastward to Polynesia and Australasia], and *A. prainii* Hook. f. [S Thailand, Malaysia (Malacca), Singapore, Indonesia (Sumatra)], and which is recognised by their tubers having large, annulate thickened root scars, elongate offsets, large lobed stigmas, very long and narrow anthers and often scabrate-echinate petioles. *Amorphophallus scaber* resembles *A. koratensis* and *A. opertus*, especially since these species share the hooded, narrowly opening spathe.

*Amorphophallus koratensis* differs in having smaller dimensions and a much smaller, massive, acute, triangular appendix with deep cracks at the base and *A. opertus* differs in having entire stigmas and unilocular ovaries. All other species of this group possess campanulate spathes. The leaf of *A. scaber* seems unique in this group in carrying reddish violet margined leaflets.

***Amorphophallus pusillus* Hett. & Serebryanyi, spec. nov. — Fig. 1c, d**

A speciebus omnibus in tubere parvo elongato ramoso, spathae basi connata semi-infossa differt. — Typus: *Hetterscheid H. AM. 247-T* (L. holo; spirit coll.), 11-i-1993, cult. Hort. Bot. Leiden ex Vietnam, Xuen Moc Reserve, easternmost part of Dong Nai Province (orig. coll. A. Kuznetsov, 1991).

*Tuber* shortly napiform, slightly irregular, up to 3.5 cm long, c. 2 cm in diam., weighing c. 10 gr, dirty white to pale brownish, producing small, globose offsets. *Leaf* solitary; petiole up to c. 8 cm long, c. 3 mm in diam.; *lamina* up to c. 30 cm in diam., rhachises unwinged; *leaflets* 5, elliptic, acute-acuminate, up to c. 11 cm long, c. 5 cm in diam., upper surface moderately glossy dark or mid green, with or without round, white spots, most numerous and confluent near the midrib. *Inflorescence* ± short peduncled, half buried; *peduncle* subterraneous, 0.2–1.7 cm long, 1–2 mm in diam., white, smooth; *spathe* broadly triangular, tubular, 2–2.8 cm long, 2.5–3.2 cm in diam., acute-apiculate, limb poorly differentiated, shortly triangular, base truncate, lower 0.5–0.8 cm connate, remaining part convolute, outside pale pinkish with a pale brownish tinge and some scattered, larger, irregular blackish spots, these near the margin and near the top confluent, veins brownish, inside base pale violet, above a narrow dark violet band, above that the colour as on the outside but slightly paler, base within smooth with slightly raised veins and a few, scattered, shallow elevations. *Spadix* sessile, longer than spathe, 4.4–5.7 cm long; *female zone* 3–4 mm long, c. 7 mm in diam. (incl. styles), flowers congested; *male zone* slightly conic or cylindric, 10–12 mm long, c. 4 mm in diam., flowers distant, the lower ones often staminodial, axis between flowers exposed, white, with a triangular purple-brown spot above each flower or only with scattered, punctiform, purple-brown spots; *naked zone* between the male and female zones c. 1 mm long, white; *appendix* elongate cylindric-conic, subacute, base constricted, 3.5–4.5 cm long, slightly curved, shallowly rugulose, greyish white or white, largely covered by numerous, minute, elongate purple-brownish confluent spots, producing a faint, suffocating scent. *Ovaries* slightly depressed globose, 1.7 mm in diam., 1 mm high, unilocular, one basal anatropous ovule, base whitish, remainder suffused with numerous, tiny, blackish purple or brownish purple spots, confluent near the top; *style* 1–2 mm long, c. 0.5 mm in diam., colour as ovary; *stigma* 1–3 mm in diam., c. 0.2 mm high, 1–5-lobed with a distinct central depression and radiating grooves separating the lobes, or cup-shaped with 3–7 marginal, ± conic, spreading lobes or sometimes the entire surface variously folded, sometimes nearly ‘closed’, directed towards the spathe, dirty yellowish brownish with a faint purple hue or dirty greyish whitish, surface minutely rugulose. *Male flowers* consisting of 1, rarely 2 or 3 stamens; *stamens* 1–1.3 mm long; *filaments* 0.1–0.3 mm long; *anthers* 0.9–1 mm long, c. 1 mm in diam., rectangular or butterfly-shaped in cross section, truncate, ivory-white but between the pores an elongate zone of purplish brown, confluent tiny spots, pores

elongate, apical but sometimes variously extending laterally, sometimes confluent; staminodes (when present)  $\pm$  pyriform, 1–2.5 mm long, 0.5–1 mm in diam., single or paired, white with tiny purple-brownish spots. *Pollen* finely striate.

**Etymology** – The species epithet refers to the diminutive proportions of this species.

**Distribution** – Vietnam (only known from the type locality).

**Habitat** – In dipterocarp forest on sand.

**Additional specimen** – *Kuznetsov s.n.* (cult. by first author *H.AM. 146*), type locality.

**Note** – *Amorphophallus pusillus* shows a unique suite of often remarkable characters, viz. minute dimensions, leaf often variegated, spathe partly hypogaeal, connate spathe base (also in *A. elliottii* Hook. f.), irregular multilobed, variously folded stigma (also in *A. harmandii* Engl. & Gehrm.) and unistaminate male flowers. Its general likeness is to *A. harmandii* (Cambodia), the latter differing in being larger, having a long peduncle, the spathe being entirely epigeal, the spathe base being convolute, having 2- or 3-locular ovaries and 2–4-staminate male flowers.

#### ACKNOWLEDGEMENTS

Both authors wish to thank Dr. A. Kuznetsov (Moscow) for providing part of the living material that was examined for this paper, Dr. A. Hay (Sydney) and Mr. P.C.Boyce (Kew) for correcting the manuscript, Dr. J.F. Veldkamp (L) for preparing the Latin diagnoses, and Dr. R.W.J.M. van der Ham (L) for providing the pollen data.