DOI: 10.1111/curt.12525

PLANT PORTRAIT

CURTIS'S
Botanical Magazine

1068. *Amorphophallus ongsakulii* Hett. & A.Galloway

Araceae

Steven Dodsworth[1,2] | **Charlotte Phillips**[1,2] | **Deborah Lambkin**[2]

[1]School of Biological Sciences, University of Portsmouth, Portsmouth, UK

[2]Royal Botanic Gardens, Kew, Richmond, UK

Correspondence
Steven Dodsworth, School of Biological Sciences, University of Portsmouth, Portsmouth PO1 2DY, Hampshire, UK.
Email: steven.dodsworth@port.ac.uk

Summary
Amorphophallus ongsakulii Hett. & A.Galloway is illustrated from plants cultivated by the authors. Its ecology, distribution, and systematics are described, along with notes on cultivation.

Amorphophallus Blume ex Decne. is a well-known and yet enigmatic genus from the aroid family (Araceae) that includes 242 accepted species (POWO, 2023) or more species, distributed across the paleotropics. This genus is perhaps best known due to the exceptional fame of *A. titanum* (Becc.) Becc. (Titan Arum), which reportedly boasts the largest unbranched inflorescence known amongst the flowering plants, as well as an equally famed scent of rotten flesh or fish. The genus also includes *A. konjac* K. Koch which is well known as a food source; its ground tubers are used as both a thickening agent and as flour for a variety of culinary uses. The smell of carrion and faeces is of course a very common feature of many aroids, which tend to attract copro-necrophagous insects such as beetles or flies as their main pollinators, and beetles seem to be the most significant in the case of *Amorphophallus* (Claudel, 2021). In some cases, though, the chemical volatiles emitted can even be sweet and floral, and detailed pollination ecology is still lacking, as well as investigations of other potential pollinators such as stingless bees.

Less well known to gardeners and even some botanists, is the morphological diversity found across the genus. This includes many features of both vegetative and reproductive morphology, however one particular variation that is rather fascinating and perhaps peculiar is the size differences found between species of this genus. The leaf length and inflorescence length for *A. titanum* can be up to 6 and 3 m, respectively, whereas the leaf and inflorescence length for *A. ongsakulii* are both a mere 16 cm in the largest plants. This represents an approximate 38-fold difference in leaf length! Exactly which selection pressures, ecological, and genomic drivers underpin these enormous differences in size are currently unknown, but would make a fascinating topic for much further study.

Amorphophallus ongsakulii is known only from one locality within Laos, Khammouane Province (Figure 1), and phylogenetically it sits within a small clade of similarly miniature species from Southeast Asia, the Pulchellus-clade, within subgenus *Amorphophallus* (Claudel et al., 2017). The taxa in this strongly monophyletic clade include *A. pulchellus* and *A. myosuroides*, and all three taxa share the development of a synflorescence of 1–3 inflorescences alongside the leaf, as well as inconspicuous infructescences that bend over towards the soil once mature (Hetterscheid & Claudel, 2012). Described very recently, in the last twenty years (Hetterscheid, 2006) from cultivated material provided by Alan Galloway, the original collection was made by Annop Ongsakul. This species is now rather widespread in cultivation across Europe (and probably beyond). The leaf size is very small for an *Amorphophallus*, and yet it is heavily divided, which results in extremely tiny leaflets, often described as 'fern-like' (Plate 1068). It thus resembles more familiar *Amorphophallus* taxa (e.g. *A. titanum* or *A. konjac*) but simply in miniature. The tubers of *A. ongsakulii* are also extremely small, but the number of offsets produced annually amongst the highest recorded for the genus (Hetterscheid, 2006), which makes it highly productive vegetatively.

CULTIVATION

Cultivation of this species is fairly straightforward, similar to other *Amorphophallus* species that are widely grown, and presents no particular difficulties for most growers. The main difference compared to other *Amorphophallus* is the tiny size of the tuber (and indeed of the whole plant). This species can be easily grown in small pots on the windowsill (Figure 2), and with several tubers per pot, allowing for dormancy over winter with very-reduced watering and then

FIGURE 1 Map showing the distribution of *Amorphophallus ongsakulii* within SE Asia.

PLATE 1068 *Amorphophallus ongsakulii* DEBORAH LAMBKIN

FIGURE 2 Photograph showing the general habit and diminutive proportions of *Amorphophallus ongsakulii* in cultivation. Photograph: Steven Dodsworth.

restarting growth in Spring. Repotting each year with a fertile, well-draining mix will help growth, along with feeding a suitable liquid fertiliser whilst in vegetative growth.

AVAILABILITY

This species is often available through several specialist Aroid nurseries across western Europe in recent years.

NOMENCLATURE AND DESCRIPTION

Amorphophallus ongsakulii Hett. & A.Galloway, Aroideana 29: 67 (2006). Type: From cultivated material, originally collected in Laos, Khammouane Province, *Galloway AGA-1534-01-T* (Holotype WAG).

Tuber globose, to 2 cm in diameter, annually producing numerous (to ca. 15) fusiform offsets. *Petiole* 7–9 cm long, ca. 2 mm in diameter, smooth, pale yellowish green to dirty greenish brown, with or without darker, thin stripes; *lamina* 13–16 cm in diam., rachises narrowly

winged throughout; main segments highly dissected; *leaflets* very small, 3–11 mm long, 2–4 mm in diam., elliptic to lanceolate, apiculate, margin very finely, slightly irregularly serrate, upper surface dark green with distinct whitish midrib, lower surface paler. *Flowering* shortly after leaf maturation, sometimes flowering up to four times consecutively, with ca. 3–4 weeks separating each flowering. *Peduncle* smooth, 16 cm long, 2 mm in diam., base whitish gradually changing to very pale yellowish-brown; *spathe* elongate ovate, 34 mm long, 14 mm wide, erect, base tubular, loosely convolute, outside greyish-green with parallel dark greyish veins, inside dark purple, strongly verrucose; limb basal half auriculate, upper half pressed against the appendix, apex acute, outside whitish with thin, pale green venation, slightly transparent. *Spadix* sessile, longer than spathe, 42 mm long, slightly curved forward; female part 2 mm long, 3 mm in diameter, flowers slightly distant; male part elongate, slightly conical, 12 mm long, 3 mm in diam. at the base, 2 mm in diameter at the apex, flowers distant, less so in the upper part; appendix shortly

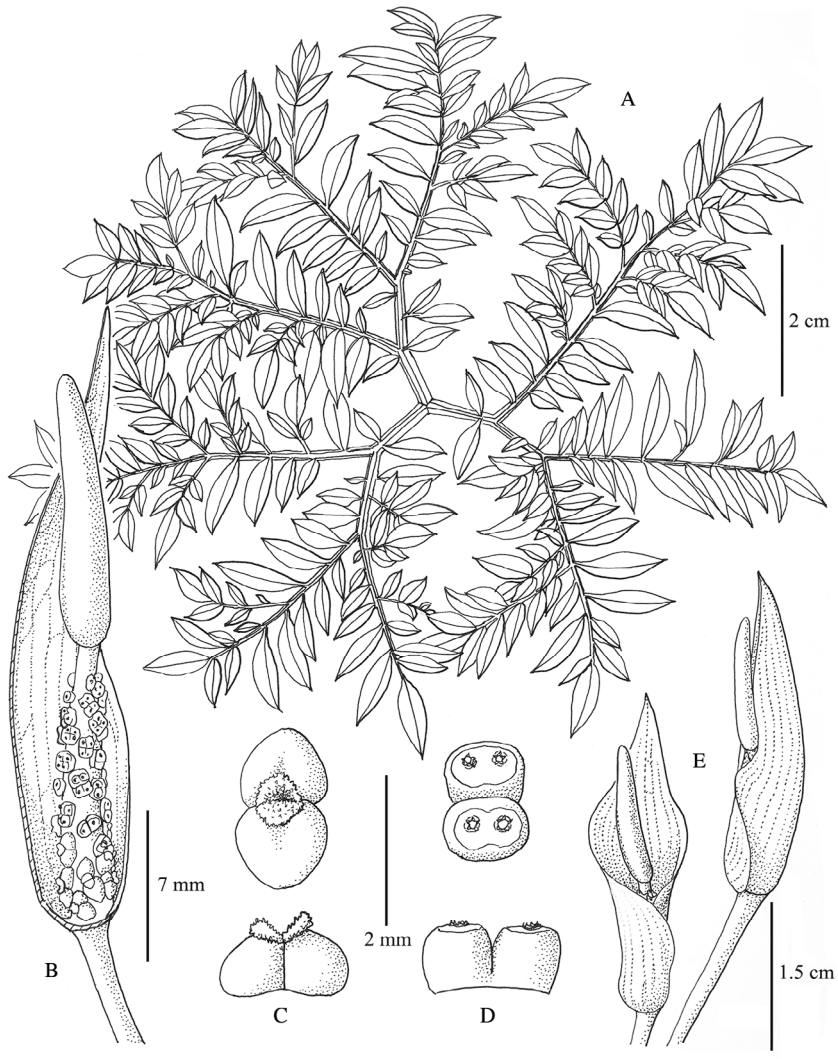

FIGURE 3 A, leaf, from above; B, spathe section; C, male flowers; D, female flowers; E, spathe and spadix, front and side views. Scale bars: A = 2 cm; B = 7 mm; C and D = 2 mm; E = 1.5 cm. Drawn by Deborah Lambkin.

stipitate (stipe 1 mm long, purple), 27 mm long, 2 mm in diam. at the base, 1 mm in diam. at the apex, narrowly elongate conical, base narrowed to the stipe, apex obtuse, surface smooth, pale yellowish-brown. *Ovaries* depressed, two-lobed, ca. 2 × 1 mm in diameter, 0.8 mm high, base white, upper half pale purplish, bilocular, locules separated by two strong lateral constrictions of the ovary wall; *style* conical, 0.2 mm long, 0.4 mm in diam. at the base, pale green; stigma depressed, 0.8 mm in diameter, 0.3 mm high, very shallowly bilobed, minutely echinate, pale green. *Male flowers* consisting of 2–3 stamens; stamens irregularly angulate in shape, truncate, 0.3–0.5 mm in diam., 0.2–0.3 mm high; *filaments* ca. 0.1 mm long, fused, whitish; anthers 0.1–0.4 mm high, reddish purple; pores apical, orbicular. Fruiting part more or less globose, berries crowded; *berries* ovate, truncate, ca. 6 mm in diam., ca. 4 mm long, deeply bilobed, contracted between the seed-containing locules, surface rugulose, pale green with whitish punctation, area around the style remnant dark greyish green, 2-seeded; *seeds* globose or subglobose, 2–3 mm in diameter, greyish to dirty greenish. (Figure 3).

Distribution

Amorphophallus ongsakulii is only known from the type locality, in Khammouane Province, Laos.

Habitat

Tall, rocky karst area. Found along the roadside in heavy shade in soil pockets on boulders.

Etymology

This species was named after Annop Ongsakul (Thailand), who was the first to collect material of this species. The Laos name is ต้นตุ๊ (Lamxay et al., 2021).

REFERENCES

Claudel, C. (2021) The many elusive pollinators in the genus *Amorphophallus*. *Arthropod-Plant Interactions*, 15, 833–944.

Claudel, C., Buerki, S., Chatrou, L.W., Antonelli, A., Alvarez, N. & Hetterscheid, W. (2017) Large-scale phylogenetic analysis of *Amorphophallus* (Araceae) derived from nuclear and plastid sequences reveals new subgeneric delimitation. *Botanical Journal of the Linnean Society*, 184, 32–45.

Hetterscheid, W. & Claudel, C. (2012) A new miniature *Amorphophallus* (Araceae) from eastern Thailand. *Aroideana*, 35, 47–50.

Hetterscheid, W.L.A. (2006) Notes on the genus *Amorphophallus* (Araceae) 15. *New Species from SE Asia. Aroideana*, 29, 53–79.

Lamxay, V., Lanorsavanh, S., Chanthavong, K., Souvannakhoummane, K. & Bounphammy, S. (2021) *A checklist of the vascular plants of Lao PDR version 1.0*. Vientiane: Faculty of Natural Science, National University of Laos.

POWO. (2023) Plants of the World Online. Facilitated by the Royal Botanic Gardens, Kew. Published on the Internet. http://www.plantsoftheworldonline.org/

How to cite this article: Dodsworth, S., Phillips, C. & Lambkin, D. (2023) 1068. *Amorphophallus ongsakulii* Hett. & A.Galloway. *Curtis's Botanical Magazine*, 40(3), 275–281. Available from: https://doi.org/10.1111/curt.12525