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RESEARCH ARTICLE

Aglaonema manabendrae (Araceae: Areace): a new species from Northeastern India

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ABSTRACT

A new aroid species, *Aglaonema manabendrae* D.K. Roy, N. Odyuo, R. Lytan & A.A. Mao, from Northeastern India is described and illustrated. Taxonomic relationships with closely allied congeners are discussed, and revised keys of Indian *Aglaonema* are provided.

KEYWORDS

Plant diversity, Araceae, Northeastern India, New species, *Aglaonema*.

Introduction

The genus *Aglaonema* (Araceae; Tribe: Areace) was established by H.W. Schott during 1829. It is diversified with 23 species in Southeast Asia from northeastern India across southern China and Indonesia through New Guinea (Nicolson, 1969; Boyce *et al.*, 2012; Truong *et al.*, 2019). In India, *Aglaonema* is so far represented by 5 species namely *A. commutatum* Schott, *A. hookerianum* Schott, *A. nebulosum* N.E. Brown, *A. simplex* Blume and *A. tassai* H. Tag & A. Nangkar (Hooker, 1893; Nicolson, 1969; Karthikeyan *et al.*, 1989; Tag and Nangkar 2018; Singh *et al.*, 2018; Sasikala *et al.*, 2019; Govaerts, 2020).

In course of the study of unidentified plants growing in the Garden of Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya (India), the authors came across a very distinctive specimen of *Aglaonema* Schott. It was overlooked for many decades and its origin could not be ascertained (without collection tag and/or records) as different taxa of plants growing in the garden are introduced from diverse areas of northeastern India. Critical observations on available specimen and consultation with literature (Schott, 1829; Hooker, 1893; Engler, 1898; Nicolson, 1969; Karthikeyan *et al.*, 1989; Hay, 1998; Hara and Hassan 2005; Boyce *et al.*, 2012; Tag and Nangkar, 2018; Singh *et al.*, 2018; Sasikala *et al.*, 2019; Truong *et al.*, 2019) reveal it as a new species morphologically distinct from all its known congeners, which is described and illustrated here.

SYSTEMATIC ACCOUNTS

Aglaonema manabendrae D.K. Roy, N. Odyuo, R. Lytan & A.A. Mao, *sp. nov.* (Fig. 1).

Type: INDIA. 26 June 2020, D.K. Roy 128936 (holotype, ASSAM!; isotype, ASSAM!) prepared from the plant cultivated in Garden of Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya.

Diagnosis: The new species differs from its closely allied congeners, *Aglaonema ovatum* Engler in non-variegated leaf blades, spadix shorter

than spathe by 1.5–2.5 cm or more, staminodia present apically at staminate zone, pistillate flowers contiguous with functional staminate flowers and in obovate fruits and from *A. tassai* in pinkish spathe, spadix 1.5–2.5 cm or shorter than spathe and in staminate zone with several series of staminodia present apically.

Description: Perennial evergreen herb. Stem erect, 5–15 cm tall, 1.5–2 cm in diam., dark green, rarely branching, often rooting at nodes; internodes 0.5–1 cm long. Petiolar sheaths membranous, as long as half of the petiole length, early caducous. Leaves 1–3; petioles 8–23 cm long, ± equal to leaf-blades. Leaf-blades oblong-ovate to broadly ovate or oblong-lanceolate, 12–26 × 4.5–11.5 cm, dark green above, non-variegated, entire along margins; base equal, rounded; apex apiculate, 2–2.5 cm long; venation weakly differentiated into main 8–10 primary lateral veins on either side of midrib. Cataphylls 3, only subtending inflorescence, lanceolate, 3.5–5.5 cm long, 1–1.5 cm wide, apex apiculate. Inflorescence solitary, erect. Peduncle terete, 4–7 cm long, shorter than the subtending petiole. Spathe ovate, boat shaped, erect, 3–4.5 cm long, 1–1.5 cm wide, not differentiated into a tube and blade, convolute in lower 3–5 mm, longer than spadix by 1.5–2.5 cm, pinkish. Stipe absent (adnate to spathe). Spadix sessile, erect, cylindric, 2–3 cm long, 0.5–0.7 cm in diam., included in spathe. Pistillate zone 0.5–0.8 cm long, adnate to spathe; pistils 10–20, green, ovary 1.5–2 mm tall, 2.5–3 mm in diam., unilocular, 1-ovulate, style indistinct, stigma globose, 1.5 mm across, creamy. Staminate zone 0.5–0.7 cm in diam., 1–1.7 cm long including staminodial portion; stamens white or creamy, solitary but tightly compacted, opening in pairs at tops of the four sporangia. Staminodia arranged in 2–3 series apically at staminate zone, green, larger than functional staminate flowers, but resembling pistils. Fruits obovate, 0.5–1 cm long, 1-seeded, green when young. Seed obovate, solitary, almost as large as the fruit.

Phenology: Flowering in May–June and fruiting starts in July.

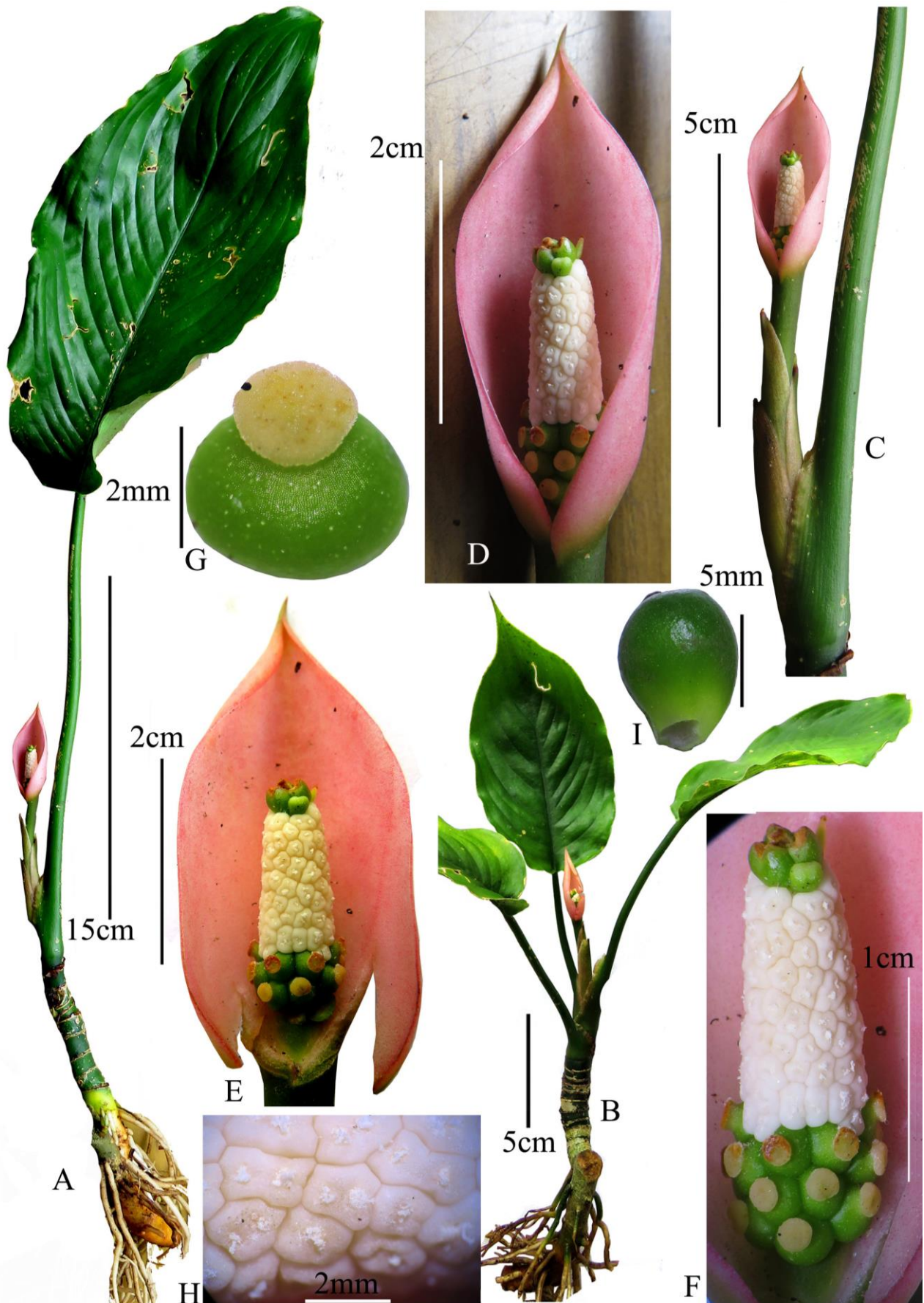


Figure 1. *Aglaonema manabendrae* D.K. Roy, N. Odyuo, R. Lytan & A.A. Mao: A & B. Habit. C. Inflorescence, with lower half of subtending petiole. D & E. Spathe, containing spadix. F. Spadix, showing pistillate flowers (basal green part), staminate flowers (mid white part) and Staminodia (apical green part), G. A pistil. H. Staminate flowers, showing pollen grains. I. A fruit.

Distribution

Location not known, described from cultivated plant in the Garden of Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya (India).

Etymology

The specific epithet is in honour of Prof. Manabendra Dutta Choudhury, Department of Life Science and Bio-informatics, Assam University, Silchar, mentor of the first author (DKR).

Additional specimen examined

India. 31 July 2020, *D.K. Roy 128937* (paratype, ASSAM!) prepared from a plant cultivated in Garden of Botanical Survey of India, Eastern Regional Centre, Shillong, Meghalaya.

Taxonomic relationships

Superficially *Aglaonema manabendrae* D.K. Roy, N. Odyuo, R. Lytan & A.A. Mao is close to *A. ovatum* in several series of staminodia distinguishable from the functional staminate flowers in size and colour present at staminate zone and to *A. tassai* in narrow, 0.5–1 cm long, non-ellipsoidal fruits. But it differs from *A. ovatum* in non-variegated (vs. variegated with scattered blotches) leaf blades, spadix shorter than spathe by 1.5–2.5 cm or more (vs. equaling or exceeding the spathe), staminodia present apically (vs. basally) at staminate zone, pistillate flowers contiguous (vs. separated by staminodia) with functional staminate flowers and in obovate, 0.5–1 cm long (vs. ellipsoidal, 1–2 cm long) fruits. The new species differs from *A. tassai* in pinkish (vs. light yellow or white to green) spathe, spadix 1.5–2.5 cm or more (vs. 1.2 cm) shorter than spathe and in staminate zone with several series of staminodia (vs. without staminodia). A comparison of morphological characters between *Aglaonema manabendrae*, *A. tassai* and *A. ovatum* is given in Table 1.

Key to the species of *Aglaonema* in India

- 1a. Staminate zone apically with several series of staminodia, these fairly distinguishable from the functional staminate flowers in size and colour *A. manabendrae*
- 1b. Staminate zone without staminodia or if present only in a single series basally and indistinguishable from functional staminate flowers except for their lack of pores 2
- 2a. Spadix sessile, the stipe and major part of pistillate portion of spadix adnate to spathe 3
- 2b. Spadix stipitate, the stipe free from spathe for 0.2 cm or more 4
- 3a. Fruits ovoid, 0.4–0.6 cm long; peduncle 5–5.8 cm long *A. tassai*
- 3b. Fruits ellipsoidal, 1.7–3 cm long; peduncle 5–21 cm long *A. hookerianum*
- 4a. Spadix clavate; spathe globose *A. nebulosum*
- 4b. Spadix cylindric; spathe elongate 5
- 5a. Stem erect, 15–300 cm tall; leaf blade not variegated; spadix equaling or slightly exceeding spathe *A. simplex*
- 5b. Stem becoming decumbent in older, 20–150 cm tall; leaf blade variegated; spadix shorter than spathe by 1 cm or more... *A. commutatum*

Table 1. Comparison of morphological characters between *Aglaonema manabendrae*, *A. tassai* and *A. ovatum*.

Characters	<i>A. manabendrae</i>	<i>A. tassai</i>	<i>A. ovatum</i>
Petiole	8–23 cm long, upper portion not flattened	13–18 cm long, upper portion not flattened	5–18 cm long, upper portion not flattened
Leaf blade	oblong-ovate to broadly ovate or oblong-lanceolate, 12–26 × 4.5–11.5 cm, non-variegated	Elliptic to ovate-oblong, 22–31 × 13–15 cm; non-variegated	ovate to lanceolate, rarely elliptic, 10–26 × 3–10.5 cm; variegated with scattered blotches
Peduncle	1, 4–7 cm long	1–3, 5–5.8 cm long	1–2, 3.5–10 cm long
Spathe	3–4.5 cm long, pinkish	4–5 cm long, light yellow or white to green	3.5–4.7 cm long
Spadix	2–3 cm long, shorter than spathe by 1.5–2.5 cm or more	3.1 cm long, shorter than spathe by 1.2 cm	3.0–4.3 cm long, equaling or exceeding the spathe
Pistillate zone	0.5–0.8 cm long, adnate to spathe	1 cm long, not adnate to spathe	0.4–1.6 cm long, adnate to spathe
Staminate zone	1–1.7 cm long	2.1 cm long	2.8–3.5 cm long
Staminodia	Present apically at staminate zone	Absent	Present basally at staminate zone, separating the pistillate and staminate flowers
Fruits	Obovate, 0.5–1 cm long	Ovoid, 0.4–0.6 cm long	Ellipsoidal, 1–2 cm long

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