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RESEARCH ARTICLE

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Rhaphidophora lacduongensis (*Araceae*), a new species from Lam Dong, Vietnam

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Key words

Khanh Hoa
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Abstract *Rhaphidophora lacduongensis*, a new species of *Araceae*, is described and illustrated from Lac Duong district of Lam Dong province in Vietnam. *Rhaphidophora lacduongensis* belongs to the entire leaf blade group of the genus *Rhaphidophora* and is close to *R. megaphylla* in having large ovate leaves but differs by its strongly concave stylar region.

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INTRODUCTION

Following Gagnepain (1942), the genus *Rhaphidophora* Hassk. was represented in Indochina by 9 species. With the discovery of *R. megaphylla* in 1998 (Nguyen 1998), the checklist of plant species of Vietnam (Pham 2000, Nguyen 2005), now documents 10 species of *Rhaphidophora*. While carrying out fieldwork in Lac Duong (Lam Dong prov.) and Cam Lam (Khánh Hòa prov.), Vietnam, in 2013, the first author and his group collected some interesting specimens of *Rhaphidophora* that did not match any known species by having a unique feature in a strongly concave stylar region. After a thorough scrutiny of the relevant literature and herbarium specimens, the specimens were determined to represent an unnamed species; described here as *Rhaphidophora lacduongensis* V.D.Nguyen & B.H.Quang.

DESCRIPTION OF THE SPECIES

Rhaphidophora lacduongensis V.D.Nguyen & B.H.Quang, *sp. nov.* — Fig. 1, 2

Rhaphidophora lacduongensis resembles *R. megaphylla* by having a large (18–30 cm wide) entire leaf blade and straight peduncle. *Rhaphidophora lacduongensis* differs from *R. megaphylla* by its much smaller spadix (size c. 9 by c. 1.7 cm), a pistil with the surface of stylar region concave (not pointed), and the leaf blade base rounded, not cordate. — Type: Vietnam, Lam Dong, Lac Duong, Da Chais, nearby the road from Nha Trang to Da Lat, N12°7'45.86˝ E108°42'29.18˝, altitude c. 1700 m, 15 Aug. 2013, *Nguyen Van Du & Bui Van Huong 721* (holotype HN; isotype HN, L).

Etymology. The specific epithet refers to Lac Duong district of Lam Dong province, Vietnam, the type locality.

Climbing secondary hemiepiphyte on medium height trees, juvenile plants creeping on rocks, mature stems cylindrical, reaching to 10 m, branching shoots long, many at upper part. *Juvenile stem* cylindrical, smooth, internodes 2.5–4 cm long, 6–10 mm diam, green, occasionally light grey, rarely with delicate and drying decayed sheath at the nodes; adult stem cylindrical, 1.5 cm diam, internodes 7–20 mm long, with leaf petiole scars obvious, falcate, to 1.2 cm long, sheath scars prominent and encircling stem, brownish. *Leaf blades* entire, abundant in young plants, in adult plants leaves mainly concentrated at shoot tips; petiole slender, 20–30 cm long, canaliculate, margin with sheath up reaching to pulvina, petiolar sheath soon drying black, degrade into delicate bands, deciduous; petiole base strongly pulvinate,1–1.5 cm wide, apex pulvinate, pulvinus 1–2.5 cm long, smooth; leaf blade oblong-ovate to ovate, 18–32 by 5–18 cm, base round, oblique, apex finely acuminate; primary lateral veins in 9–12 pairs, diverging at 40–45° to midrib, prominent; interprimary veins obvious, 1–2 cm distant from each other; smaller veins dull, 3 mm distant; secondary venation reticular. *Inflorescence* solitary on free flowering shoot; peduncle stout, stiff, straight, 9–10 cm long, 1.2 cm diam, dark green; spathe not seen; spadix cylindrical, 8.5–9 cm long, 1.5–1.7 cm diam, apex round to blunt, light yellow. *Stamens* 4; filament flat, subequal to ovary in length, 1 mm wide, anther elliptic, raised above pistil at staminate anthesis period, c. 1 mm; ovary 4 by c. 3 mm, stylar region slightly wider than ovary, hexagonal in plane view, surface deeply concave; stigma punctiform, slightly prominent from stylar region surface; ovules c. 15, attached along axil placenta, 1–1.5 mm long, stipe slender, shorter than ovule.

Vernacular name — Trâm đài lạc dương (in Vietnamese).

Distribution & Habitat — Known only from Lam Dong and Khanh Hoa Province, Vietnam. *Rhaphidophora lacduongensis* climbs on medium height trees of *Lauraceae* in evergreen montane forest at 1500–1700 m altitude.

Phenology — Flowering (possibly) from March to May; fruiting from May to August.

Conservation status — The species occurs on two sites that are less than 40 km distant, giving an extent of occurrence of less than 100 km^2. Both sites are very restricted areas (each less than 10 km^2). In Lac Duong (Lam Dong prov.), the plant grows nearby the road from Khanh Hoa to Da Lat, and would be threatened by any road construction programme. In Hon Ba Nature Reserve (Khanh Hoa prov.), the plant is very rare (fewer than 50 mature individuals observed). It is vulnerable to anthropogenic threats such as forest fire, forest clearance, etc. According to IUCN (2012) criteria, *R. lacduongensis* is provisionally categorized as VU B1,2 D2 (Vulnerable).

Other specimens examined. Vietnam, Khanh Hoa, Cam Lam, Hon Ba Nature Reserve, N12°07'04.00˝ E108°56'46.00˝, altitude c. 1520 m, 10 Aug. 2013, *Nguyen Van Du & Bui Van Huong 550* (HN).

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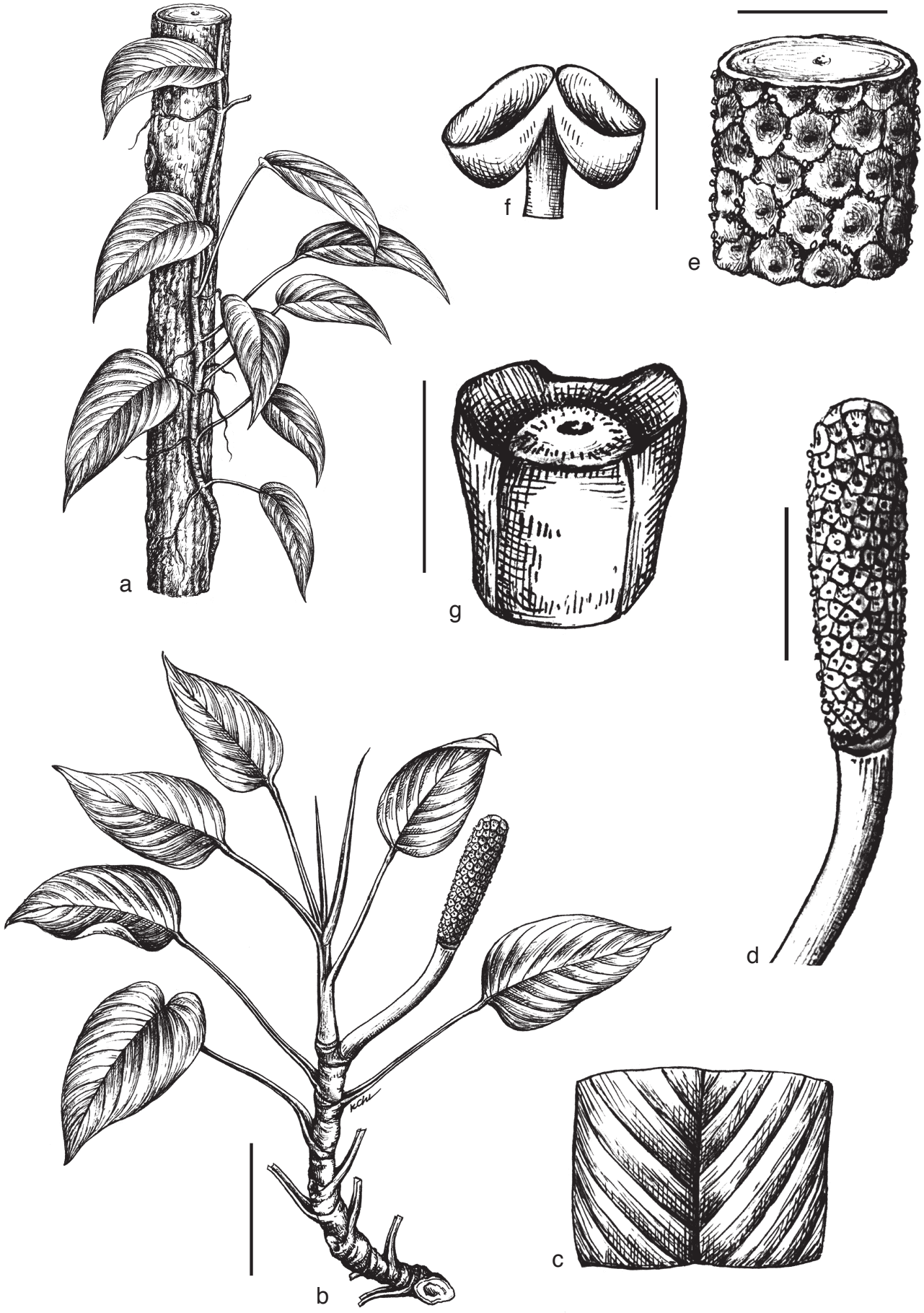

Fig. 1 *Rhaphidophora lacduongensis* V.D.Nguyen & B.H.Quang. a, b. Habit; c. leaf; d, e. inflorescence; f. anther; g. ovary (all: *Nguyen Van Du & Bui Van Huong 721*, HN). — Scale bars: a, b = 10 cm; d = 5 cm; e = 1 cm; f = 1 mm; g = 4 mm. — Drawing by Le Kim Chi.

Fig. 2 *Rhaphidophora lacduongensis* V.D.Nguyen & B.H.Quang. a. Young plant; b. adult plant; c. shoot with inflorescence; d. stem with leaf scars; e. leaf blade; f. inflorescence; g. spadix surface showed ovary surface and anthers; h, i. cross section of ovary. — Photos by Nguyen Van Du.

DISCUSSION

In the entire leaf blade group of *Rhaphidophora*, *R. lacduongensis* is most similar to *R. megaphylla*, reported from South West China, north of Laos and Vietnam (Li & Boyce 2010, Boyce & Nguyen 2012), and to *R. peepla* distributed in Nepal, Myanmar, N Thailand, Vietnam, Lao PDR and SW China (Nguyen 2005, Boyce & Nguyen 2012), by having ovate leaves, inflorescences with straight peduncles. *Rhaphidophora lacduongensis* differs from *R. megaphylla* by having flowering shoots more slender than the non-flowering shoots (non-flowering shoots more slender in *R. megaphylla*: Boyce & Nguyen 2012), a solitary spadix on free flowering shoots (up to four inflorescences together on a clinging flowering shoot in *R. megaphylla*), much smaller leaf blades with the base rounded and oblique. *Rhaphidophora lacduongensis* differs from *R. peepla* by its cylindrical, not sulcate sided, stems, branching shoots long (up to 50 cm or more), stigma not laterally constricted into an '8' shape and by the leaf blades with obvious lateral veins. *Rhaphidophora lacduongensis* differs from all other species by its much concaved stylar region.

KEY TO THE SPECIES OF THE ENTIRE LEAF BLADE GROUP OF RHAPHIDOPHORA IN INDOCHINA

1. Leaf blade often 18–30 cm wide, oblong-ovate to ovate 2
1. Leaf blade often less than 15 cm wide (except *R. hookeri*), lanceolate, elliptic to oblong elliptic 3
2. Leaf blade base cordate, symmetrical, spadix 12–14 cm long, pistil without concave stylar region . . *R. megaphylla*
2. Leaf blade base round, oblique, spadix c. 8 cm long, pistil with concave stylar region . . . . . *R. lacduongensis*
3. Petiole equal to or longer than leaf blade; leaf blade base round 4
3. Petiole much shorter than leaf blade; leaf blade base obtuse or acute 5
4. Inflorescences pendulous from tips of free shoots; young shoots tomentose; leaf blade elliptic, lateral veins parallel, much prominent, abaxially pubescent . . . . . *R. hookeri*
4. Inflorescences erect from tips of free shoots; young shoots glabrous; leaf blade oblong-ovate to lanceolate, lateral veins not prominent, abaxially glabrous . . . . . *R. peepla*
5. Stem angled and winged; median leaves on fertile shoots with blade shorter than 15 cm . . . . . *R. sulcata*
5. Stem not angled and winged; median leaves on fertile shoots with blade longer than 15 cm 6
6. Lateral veins diverging at 65–70° from midrib 7
6. Lateral veins diverging at less than 50° from midrib 8
7. Stylar region wider than ovary, hexagonal in cross section; anthers dehiscent by slits at base . . . . . *R. bonii*
7. Stylar region smaller than ovary, quadrilateral cross section; anthers dehiscent by long slits on its surface . . . . . *R. tonkinensis*
8. Placenta compressed and wide occupying almost the entire ovary; ovules attached elongate axil surface; anther dehiscent by long slits on surface. . . . . *R. hongkongensis*
8. Placenta slender; ovules attached a base only; anthers dehiscent by short slits at base . . . . . *R. chevalieri*

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REFERENCES

Boyce PC, Nguyen VD. 2012. Rhaphidophora. Acoraceae & Araceae. Flora of Thailand 7, 2: 267–283. Bangkok.

Gagnepain F. 1942. Aracées. In: Lecomte H, Flore Général de l'Indo-Chine 6, 9: 1075–1196. Paris.

IUCN. 2012. IUCN Red list categories and criteria: Version 3.1, ed. 2. IUCN, Gland & Cambridge.

Li H, Boyce PC. 2010. Rhaphidophora. Flora of China 23: 10–14. Beijing.

Nguyen VD. 1998. A new record of genus Rhaphidophora Hassk. (Araceae) for Flora of Vietnam. VNU Journal of Science 14, 3: 49–50.

Nguyen VD. 2005. Araceae Juss. In: Ban NT (ed), Checklist of plant species of Vietnam: 891–893. Agriculture Publishing House, Hanoi.

Pham HH. 2000. Cay co Viet Nam (An illustrated Flora of Vietnam) 3: 342–344. Tre Publishing House. Hochiminh City.