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RESEARCH ARTICLE

New Species of *Peliosanthes* and *Rohdea* (Asparagaceae) from Eastern Indochina

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ABSTRACT: Two new species - *Peliosanthes triandra* and *Rohdea dracaenoides* of Asparagaceae (Convallariaceae s. str.) discovered recently in southern Cambodia and in central Laos are described and illustrated. Both described species are probably local endemics with a restricted distribution. Data for the species reported comprise a standard citation of type specimens, description, name etymology, data on ecology, phenology and distribution, as well as short taxonomic remarks.

KEY WORDS: Indochina, new species, *Peliosanthes triandra,* plant diversity, plant taxonomy, *Rohdea dracaenoides*.

INTRODUCTION

Recent botanical field-surveys in Indochina have been disclosing that the region embraces quite an outstanding plant diversity. We are realizing that our current knowledge about the diversity of Indochinese flora is far from satisfaction. Within that region there still are vast areas which have not been satisfactorily botanized. It is hence not surprising that we find out a number of novelties by exploring those little studied areas. In some genera of the family Asparagaceae Juss. (Convallariaceae Horan., in the narrower sense), like *Aspidistra* Ker Gawl. (Brauchler and Ngoc, 2005; Tillich, 2005, 2014; Tillich, et al., 2007; Tillich and Averyanov, 2008, 2012; Averyanov and Tillich, 2012, 2013; Tillich and Leong-Škorničková, 2013) and *Peliosanthes* Andrews (Tanaka, 1999, 2004a; Shaw, 2009; Averyanov, 2011; Averyanov and Tanaka, 2012, 2013), the number of newly recorded species has rapidly been increasing. Also in such genera as *Ophiopogon* (Tanaka, 2000, 2001) and *Tupistra* (Tanaka, 2010a; Averyanov and Tanaka, 2012) of the same family, new taxa are reported from eastern Indochina. This indicates that Indochina still needs intensive and extensive field surveys in order that we may gain a good knowledge on its true natural wealth.

In our recent surveys on the flora of eastern Indochina, we found two novelties of *Peliosanthes* and *Rohdea* Roth. They are recorded here with a standard citation of the type specimens, taxonomical description, name etymology, data on ecology, phenology and distribution, as well as short taxonomic remarks.

Peliosanthes triandra Aver. et N. Tanaka, ***sp. nov.***
Figs. 1 & 2.

Described from southern Cambodia ("Southern Cambodia, to the N of Sianukwille town, Kaoh Rong Samoloem Khong Island in Siam Gulf. Low hills around point 10°37'246'N 103°18'598''E. Dry evergreen lowland forest at elevations about 78 m a.s.l. 27 November 2012. *T. Maisak, M. Telepova, L. Osinovets, I. Kutuzova, 996*").

Type ("Collected from cultivated specimen. 10 April 2013, *L. Averyanov. T. Maisak et al., 996a*") – LE (holotype).

Terrestrial perennial herb. Rhizome short, plagiotropic, simple or rarely branching, 1.5–3(5) cm long, 4–5 mm in diam., with several, thick, fleshy, straight, light yellowish-brown roots. Apical part of rhizome, erect, very short, 0.5–1 cm tall, covered with loose, pale dull yellowish-brown, scarious to papyraceous, irregularly incised bracts 1–2 cm long. Leaves erect, slightly curved, petiolate; petiole rigid, straight or slightly arching, (10)12–16(20) cm long; leaf blade lanceolate to narrowly elliptic, (10)14–18(20) cm long, (2)2.5–4(5) cm wide, glabrous, coriaceous, semi-glossy and dark green adaxially, dull green abaxially, obtuse to acute, entire along margin; with

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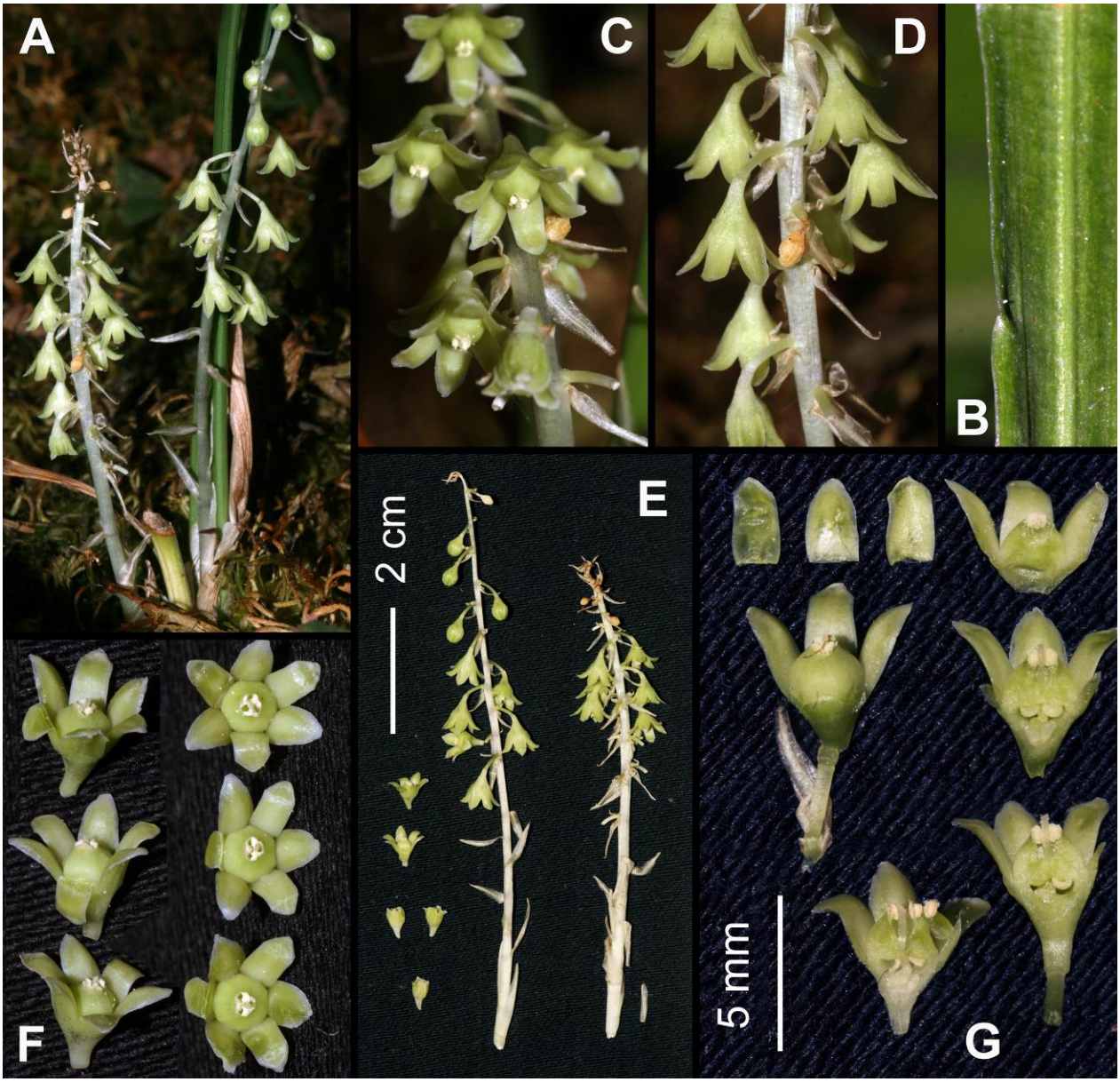


Fig. 1. *Peliosanthes triandra* Aver. et N. Tanaka. A: Basal part of flowering plant. B: Leaf margin. C & D: Portion of inflorescence. E: Inflorescences and flowers laid flat. F: Flowers, side views and views from above. G: Tepals, flower with frontal tepals removed and flowers sagittally sectioned (all photos from the type – "*L.Averyanov,` T. Maisak et al., 996a*" by L. Averyanov).

(5)7–9 distinct longitudinal veins and numerous subperpendicular secondary veinlets. Inflorescence hysteranthous, a lax raceme with many spirally arranged flowers; peduncle erect to ascending, white or white with very light violet tint, straight, 3–4(6) cm long, 1.5–2 mm in diam.; sterile bracts on peduncle (4)5–6(7), distant, herbaceous, cuneate, acuminate, pure white, or with light violet tint, (5)7–12(15) mm long, 1.5–2(2.5) mm wide at base; rachis straight, slender, white, 3–6(8) cm long. Floral bracts 2 at the base of each pedicel, scarious, white to light yellowish, cuneate, gradually tapering into acuminate apex; outer bract 2–6(7) mm long, (0.6)1–1.5 mm wide; inner bract strongly reduced, much shorter, (0.5)1–1.5 mm long. Pedicels white to light greenish, cylindric, down curved, (1.5)2–3 mm long, 0.3 mm in diam. Flowers solitary in bracteal axil, nutant, campanulate, half-spreading, 6-lobed distally, uniformly light green to yellowish-green, odorless, 5–6(7) mm across and 4–5 mm long; basal part of flower obconic, externally

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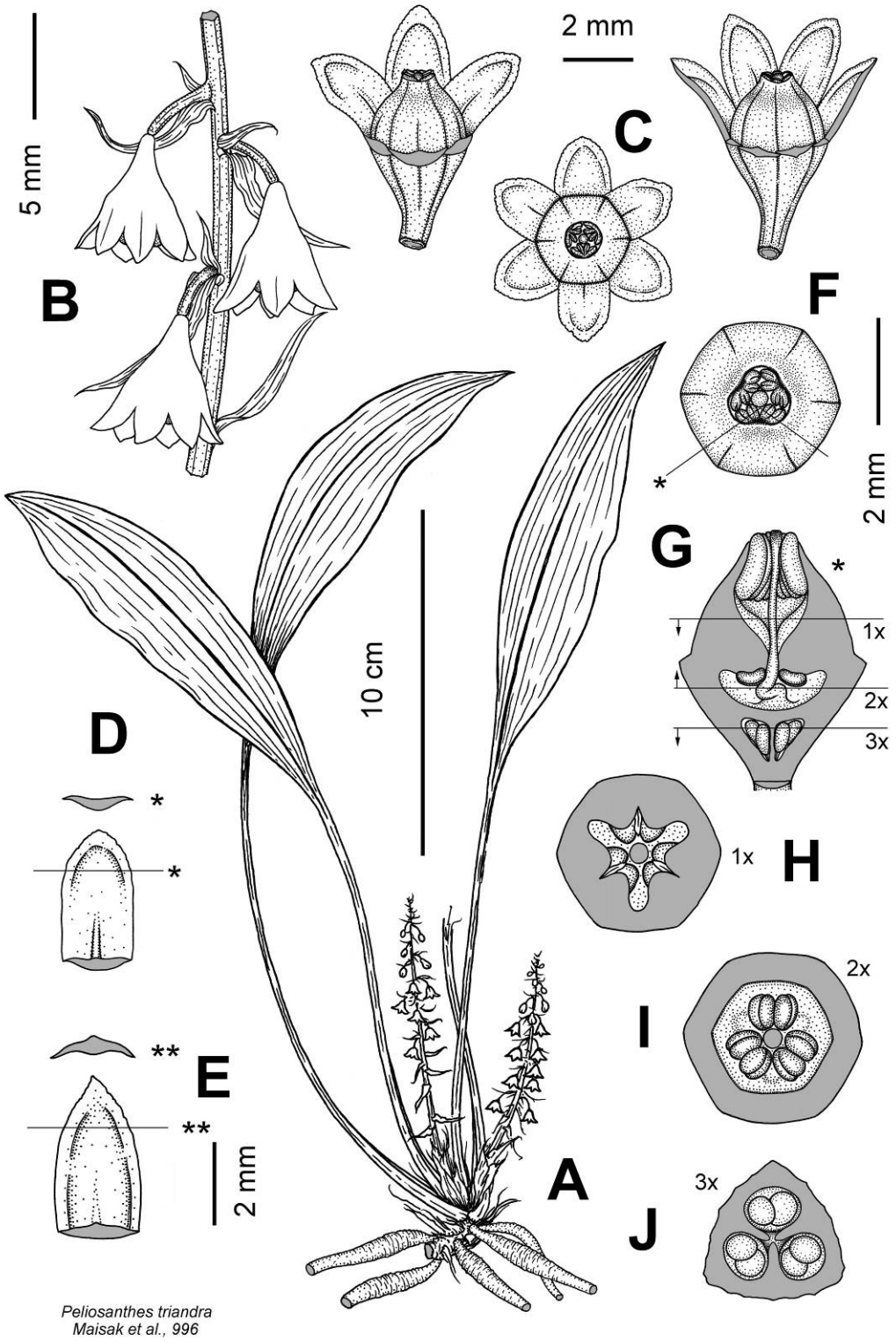


Fig. 2. *Peliosanthes triandra* Aver. et N. Tanaka. A: Flowering plant. B: Portion of inflorescence. C: Flowers, side views (with frontal tepals removed), and view from above. D: Sepal and its transversal section in apical part. E: Petal and its transversal section in apical part. F: Staminiferous corona, view from above. G: Longitudinal section of corona and ovary (along asterisked line on fig. F). H: Cross section of corona (along line 1x on fig. G), view from above. I: Cross section of corona (along line 2x on fig. G), view from below. J: Cross section of ovary (along line 3x on fig. G), view from above (all drawn from the type – "*L. Averyanov, T. Maisak et al., 996a*" by L. Averyanov and T. Maisak).

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slightly ribbed, 2–2.5 mm long and wide. Perianth segments 6, subsimilar, ovate to oblong-ovate, obtuse or blunt, slightly recurved distally or nearly straight, thin along margins, fleshy, 3–3.5 mm long, 1.5–2 mm wide. Corona antheriferous, uniformly light green, broadly ovoid, indistinctly hexagonal, fleshy, 1.5 mm tall, 2 mm across, apex with 3 very indistinct broad lobes; apical opening subcircular or indistinctly subtriangular, 1 mm across; inside with very fleshy circular cushion dividing internal space into 2 chambers; upper chamber with opening above and lower chamber almost completely closed. Anthers 6, introrse, dull light yellow; three anthers of inner whorl (opposite to petals) bean-shaped or deltoid-ovoid, 1–1.2 mm long, about 1 mm wide, fertile, sessile on inner apical margin of corona, visible from outside; three anthers of outer whorl (opposite to sepals) bean-like, distinctly reduced, abortive, not dehiscent, about 0.5–0.8 mm long and wide, placed on short ribbon-like filament on adaxial surface of the circular cushion, facing down to lower coronal chamber. Ovary inferior, 3-locular (distal part of locules sometime fused into 1), each locule with 2(3) oblong-ovoid ovules on basal placenta; style cylindric, basal part helicoid, distally straight, stalk-like, 2.2 mm long, 0.2 mm in diam., ending into narrow entire stigma.

Etymology: the specific epithet refers to the three (out of six) anthers inserted and appearing at the orifice of the staminal corona.

Ecology: secondary broad-leaved evergreen scrub and forest on hills near seashore at elevations 50–100 m a.s.l. Not common. Flowers in cultivation in April.

Distribution: southern Cambodia (Sihanoukville Province, islands of Siam Gulf). Endemic to lowland areas of southern Cambodia.

Notes: *Peliosanthes triandra* has a very unique feature as to a staminal corona and anthers borne on it. The three out of six anthers are completely buried or concealed within the interior space under the corona. The initial tendency to bury or conceal some anthers in the interior under a corona is found in *P. weberi* s. lat. (including *P. thailandica* K. Larsen and *Neolourya pierrei* L. Rodr.; see Larsen, 1966 and Tanaka, 2004b). The feature found in *P. triandra* is hence regarded as an advanced, specialized character state derived from such an initial state in *P. weberi*. In other words, the two species are closely related, although distinctively differentiated from each other.

Rohdea dracaenoides Aver. et N. Tanaka, ***sp. nov.***

Figs. 3 & 4.

Described from central Laos ("Vientiane Prov., Kasi Distr., Namken village, Phachao Mt., around point 19°18'45.5"N 102°22'31.4"E. Primary broad-leaved evergreen forest on very steep rocky slopes of remnant mountain composed of highly eroded solid crystalline limestone at elevations 1500–1750 m").

Type: ("24 March 2013, *L. Averyanov, N.S .Khang, S. Lorphengsy, LA-VN 785*") – LE (holotype), Herbarium of the Center for Plant Conservation, NHOL, NUOL (isotypes).

Lithophytic perennial herb. Rhizomatous stem yellowish-gray, 5–20 cm long, terete, creeping and ascending (erect or suberect in young plants), unbranching, thick and fleshy, 3–4 cm in diam., apical part crowded with several distichous leaves; older part naked, with numerous narrow annular leaf scars and several rigid, woody wiry stilt roots. Leaves (2)4–7(8) with few or several, partially disintegrated, old leaf remnants, sub-distichous, equitant, oblanceolate to broadly oblanceolate, (40)50–70(80) cm long, (2.5)3–5(6) cm wide, gradually tapering to thick, petiole-like, canaliculate basal part, acute to shortly attenuate at apex, arcuate to pendulous, with distinct midvein, fleshy, leathery, uniformly green. Peduncle axillary in apical part of rhizomatous stem, naked, erect, straight or slightly flexuose, rigid, subterete, irregularly angled or lunate in cross section, 5–7(8) cm long, 3–5(6) mm in diam. Inflorescence a terminal, spadix-like dense spike with many flowers, simple, (1.5)2–4(6) cm long, 1–1.5 cm in diam., with several sterile bracts apically. Floral bracts green, ovate-triangular, with entire margin, concave at the base, acute or acuminate at the apex, 0.8–1.2 cm long, 3–5 mm wide, twice longer than flowers. Flowers sessile. Perianth campanulate, slightly oblique-zygomorphic, very fleshy, green, later turning to light dull yellow-orange, 5–7 mm long, 5–6 mm across, proximal ca. 2/3 of the length tubular; distal part 6-lobed, not spreading; the segments incurved or geniculately inflexed, thick, distal inflexed part triangular, apex acute, three upper segments bearing whitish small beak-like appendage curved downward. Stamens 6; anthers ellipsoid or bean-shaped, 1.2–1.4 mm long, light dull yellowish-gray, subsessile, inserted at perianth tube slightly higher than stigma, dorsifixed on very short fleshy filaments less than 0.3 mm long, without any appendages. Ovary subobovoid, in cross section suborbicular or irregularly angled, 3–3.5 mm tall, 2 mm wide, light green, verruculose in distal part, with 1 locule of 3 chambers; each chamber containing 4 globular ovules on basal placenta; style shortly cylindrical, 0.5 mm long; stigma 3-sected, densely papillose, each lobe lanceolate, curved downward.

Etymology: the specific epithet refers to a resemblance to the habit of juvenile plants of *Dracaena cambodiana* co-occurring with the new species.

Ecology: primary broad-leaved evergreen forest and scrub on highly eroded marble-like crystalline lime-

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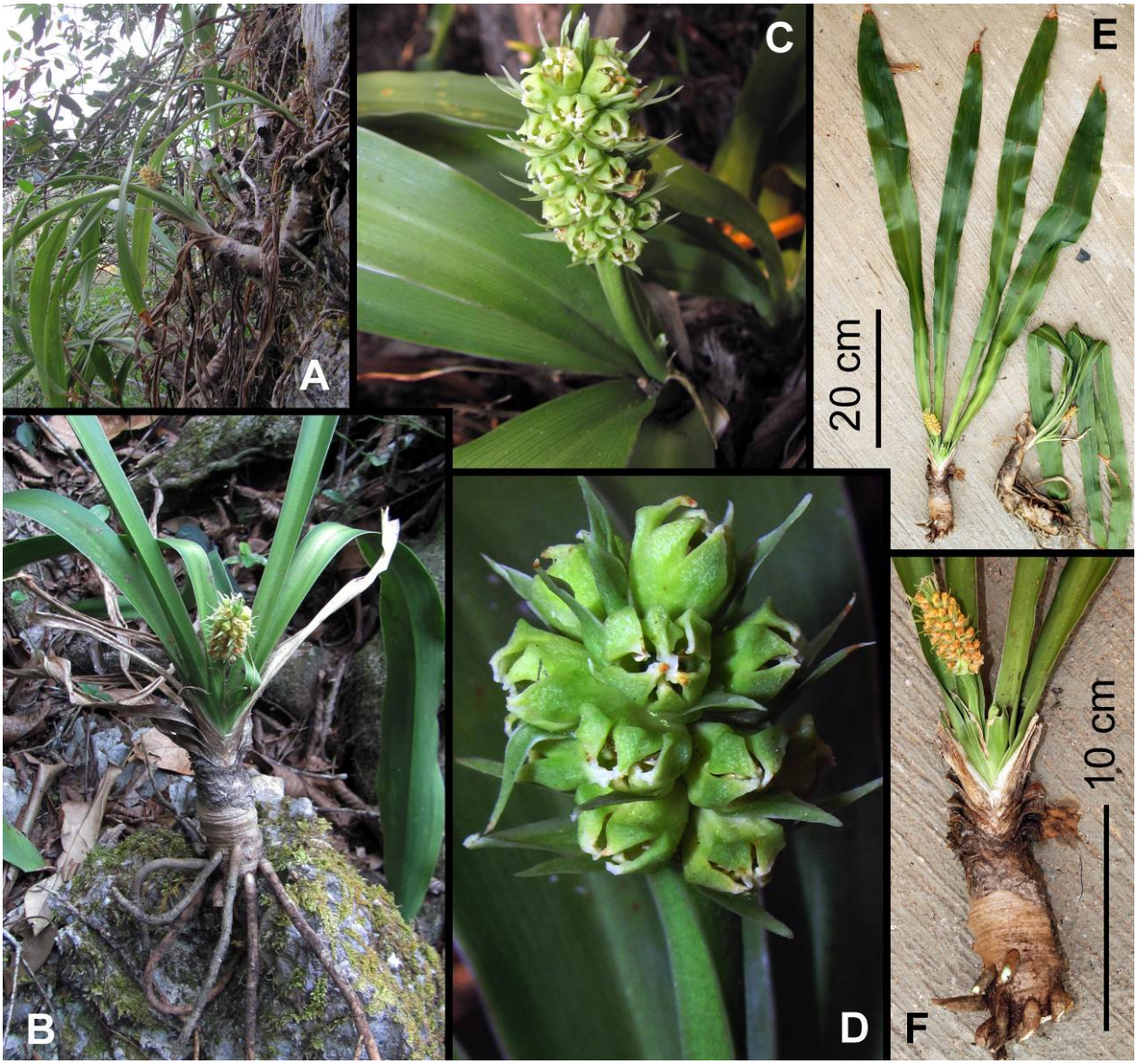


Fig. 3. ***Rohdea dracaenoides*** **Aver. et N. Tanaka. A & B: Flowering plants in native habitat. C & D: Inflorescences of plants in nature. E: Flowering plants laid flat. F: Basal part of flowering plant with frontal leaves removed (all photos from the type specimens – "*L. Averyanov, N.S. Khang, S. Lorphengsy, LA-VN 785*" by N.S. Khang and L. Averyanov).**

stone at elevations of 1500–1700 m a.s.l. Obligate lithophyte on mossy rocky outcrops or on shady vertical cliffs near mountain tops. Flowers in March. Locally common. IUCN conservation status - VU.

Distribution: central Laos (Vientiane Province, Kasi District, Phachao Mountain). Local endemic.

Notes: the new species is most closely allied to *Rohdea longipedunculata* (F.T. Wang et S.Yun Liang) N. Tanaka (Tanaka, 2003, 2010b). For example, they share strongly or geniculately inflexed perianth segments (especially upper ones) of which the distal (inflexed) part is triangularly acute and the margins are thick and truncate. It differs, however, from the latter especially in the lithophytic habit with a largely exposed rhizome (rhizomatous stem) stilted with woody wiry roots, much shorter peduncle, floral bracts markedly exceeding flowers, whitish caudate or beak-like apex of some perianth segments, shorter staminal filaments, sub-obovoid, distally verruculose ovary, and shorter, narrowed style.

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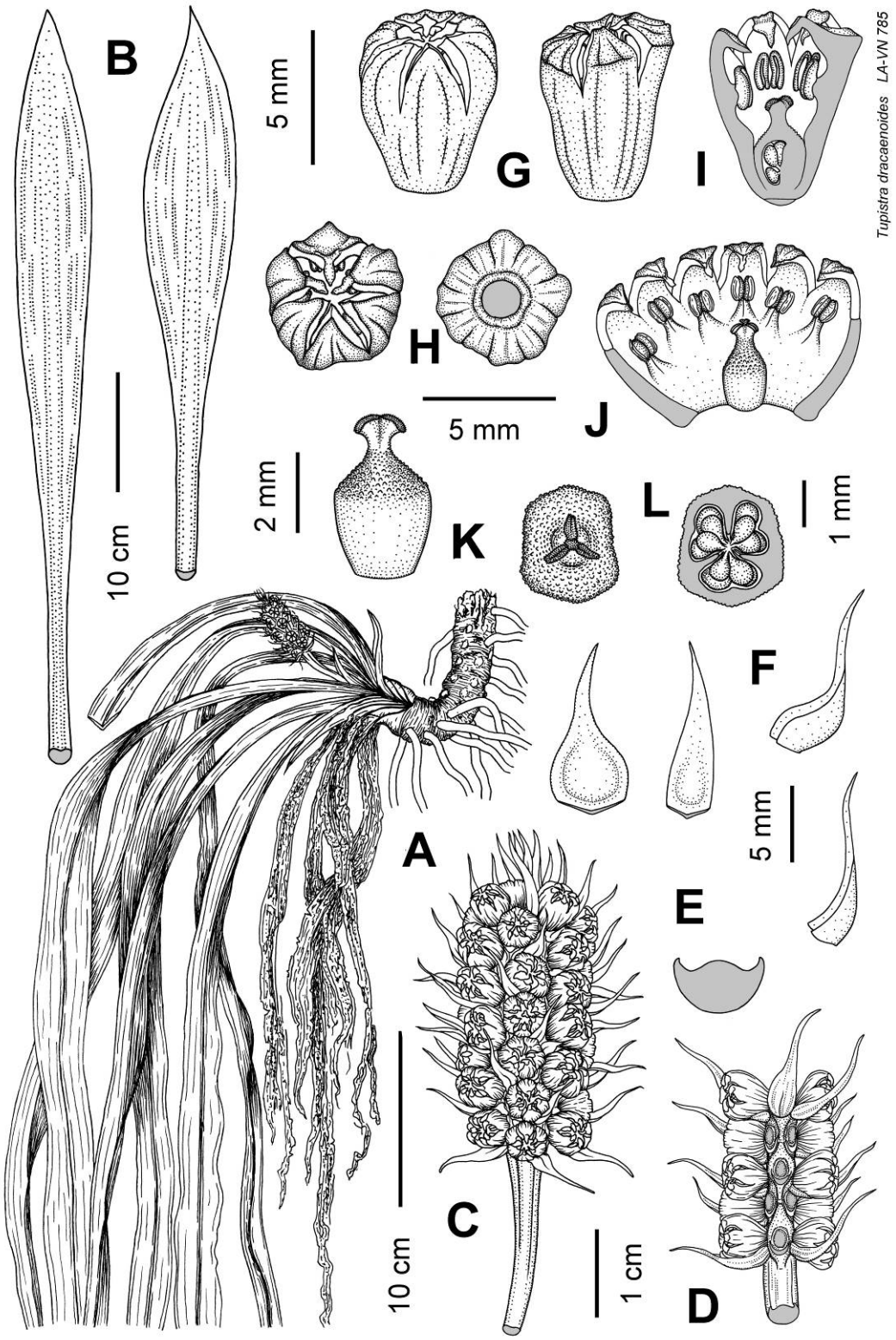


Fig. 4. ***Rohdea dracaenoides*** **Aver. et N. Tanaka. A: Flowering plant. B: Leaves. C: Inflorescence. D: Inflorescence with frontal flowers removed. E: Cross section of peduncle. F: Floral bracts. G: Flowers, frontal and side views. H: Flower, views from above and from below. I: Flower, side view, sagittal section. J: Flower tube cut and laid open. K: Ovary, side view. L: Ovary, view from above and its cross section (all drawn from the type – "*** *L. Averyanov, N.S .Khang, S. Lorphengsy, LA-VN 785* **" by L. Averyanov and T. Maisak).**

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中南半島西部發現之球子草屬與萬年青屬（天門冬科）新種

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摘要：本文發現天門冬科兩新種，分別是*Peliosanthes triandra*和*Rohdea dracaenoides*，採集地點在柬埔寨南部和寮國中部，兩者都很有可能是分布範圍侷限的特有種。本文提供模式標本、分類描述、命名詞源、生態習性、物候學及地理分布等資訊以供辨認。

關鍵詞：中南半島、新種、*Peliosanthes triandra*、植物多樣性、植物分類學、*Rohdea dracaenoides*。

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