



New or insufficiently known Species of *Ophiopogon*, *Peliosanthes* and *Rohdea* (Asparagaceae) for the Flora of Laos and Vietnam

Leonid V. AVERYANOV^{1,*}, Noriyuki TANAKA², Khang Sinh NGUYEN³, Tatiana V. MAISAK¹

1. Komarov Botanical Institute of the Russian Academy of Sciences, Prof. Popov Street 2, 197376, St. Petersburg, Russia.

2. 98-11 Otsuka, Hachioji, Tokyo, Japan; yukinofude@yahoo.co.jp

3. Institute of Ecology and Biological Resources, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet Road, Nghia Do, Cau Giay, Hanoi, Vietnam; nskhang@gmail.com

*Corresponding author's emails: av_leonid@mail.ru or av_leonid@yahoo.com

(Manuscript received 27 September 2019; Accepted 22 December 2019; Online published 10 January 2020)

ABSTRACT: This paper provides descriptions and photographic illustrations for two new species and one new variety; *Ophiopogon brevicaulis* from N. Vietnam, *Rohdea subcaudata* from central Laos, and *O. dracaenoides* var. *pleianthus* from N. Vietnam. Five species are recorded as new to the flora of Vietnam; *O. peliosanthoides*, *O. pingbienensis*, *O. reversus*, *O. xylorrhizus*, and *Peliosanthes pachystachya*, two of which, *O. peliosanthoides* and *O. pingbienensis*, are illustrated. Data on the distribution and illustrations of *O. intermedius* in Vietnam are also provided, as the species there has not yet been sufficiently known.

KEY WORDS: Asparagaceae, Convallariaceae, Endemism, Indochina, New taxa, *Ophiopogon*, *Peliosanthes*, Plant taxonomy, *Rohdea*.

INTRODUCTION

Ophiopogon Ker-Gawl., *Peliosanthes* Andrews, *Rohdea* Roth and other related genera of Asparagaceae (or Convallariaceae) have been taxonomically studied by many botanists (Baker, 1879; Hooker, 1892; Ridley, 1898, 1924; Rodriguez, 1934; Larsen, 1966; Jessop, 1976; Ho, 1993; Tanaka, 1999, 2000a, 2000b, 2000c, 2001a, 2001b, 2003a, 2003b, 2003c, 2004a, 2004b, 2019; Nguyen, T.D., 2005, 2007). Despite these studies, the number of new taxa of these genera has been rapidly increasing recently (Shaw, 2009; Tanaka, 2010a, 2010b, 2010c, 2010d; Averyanov, 2011; Averyanov and Tanaka, 2012, 2013; Averyanov *et al.*, 2013, 2014, 2015a, 2015b, 2016a, 2016b; Vislobokov, 2016; Nguyen K.S. *et al.*, 2017; Odyuo *et al.*, 2017; Roy *et al.*, 2017), implying that our knowledge on these genera is still fairly insufficient. With the purpose to elucidate the diversity of these genera especially in eastern Indochina, we have been conducting both field and laboratory studies. We have had several new findings from our recent collections made from Vietnam and Laos. In this paper we aim to report two new species and one new variety; *Ophiopogon brevicaulis* from N. Vietnam, *Rohdea subcaudata* from central Laos, and *O. dracaenoides* var. *pleianthus* from N. Vietnam, and five species new to the flora of Vietnam; *O. peliosanthoides*, *O. pingbienensis*, *O. reversus*, *O. xylorrhizus*, and *Peliosanthes pachystachya*. This paper also provides data on the distribution and photographs of *O. intermedius* in Vietnam, because this species was not sufficiently known before. Methods adopted in this research followed Averyanov *et al.* (2016a).

TAXONOMIC TREATMENT

Ophiopogon brevicaulis N. Tanaka, Aver. & K.S. Nguyen, *sp. nov.*

Fig. 1.

Diagnosis. This species is most closely related to *O. caulescens* (Blume) Backer, but differs in the shorter stem not stilted by thick ligneous roots, somewhat longer, erect to slightly arching flowering stem, and staminal filaments (almost) free to the base.

Described from northern Vietnam. **Type:** "VIETNAM, Ha Giang Province, Quan Ba District, Bat Dai Son Nature Reserve, Can Ty Commune, Dau Cau Village, around point 23°05'26.3"N 105°01'03.0"E, 1100–1150 m a.s.l., karstic, highly eroded mountains composed of solid marble-like limestone, primary evergreen broad-leaved humid forest on steep rocky slopes near mountain tops, terrestrial herb among rocks in shady place, flowers white with violet tint, not rare, 14 April 2018, L. Averyanov, Nguyen Sinh Khang, Chuong Quang Ngan, T. Maisak, VR 136 (Holotype: LE LE01054450, Isotype: HN, LE LE01048851, LE LE01048856). Analytical plate "d-EXSICCATES OF VIETNAMESE FLORA 0371 / VR 136" (Fig. 1).

Description. **Herb** terrestrial or lithophytic, perennial. **Stem** short, simple, ascending from creeping, many branching rhizome, erect part (0.5)1–2(2.5) cm tall, (5)6–8(10) mm in diam., covered with imbricate leaf sheaths with scarious whitish wings. **Roots** from rhizome and from basal part of stem, rigid, wiry, brown, (1)1.2–1.4(1.6) mm in diameter. **Leaves** many, tufted, spirally and densely arranged, suberect to arching, linear, acute at apex, entire along margins, rather rigid, glabrous, (35)40–55(65)



Fig. 1. *Ophiopogon brevicaulis* N. Tanaka, Aver. & K.S. Nguyen, *sp. nov.* Analytical plate “d-EXSICCATES OF VIETNAMESE FLORA 0371 / VR 136” compiled from photos taken prior to the preparation of the type specimens, VR 136 (LE01048851, LE01048856, LE01054450). Photos by K.S. Nguyen and L. Averyanov, correction and design by L. Averyanov.



cm long, (3.5)4–5(6.5) mm wide, adaxially uniformly dark grass-green, abaxially light green-glaucous, with 4–6(7) narrow parallel white stripes, main longitudinal veins many, indistinct, secondary veins hardly visible. **Flowering stem** (including both peduncle and inflorescence rachis) straight, arching or slightly flexuose, finely ridged, dull greenish to dirty brownish. **Peduncle** (12)15–22(26) cm long, (1.5)2–2.5(3) mm in diameter, ebracteate. **Inflorescence** a lax raceme with distant fascicles of 1–3 pedicellate flowers; rachis (6.5)8–10(12) cm long; the pedicels arising from bracteal axils, usually antrorse, arching, terete, light violet to white, (3)3.5–4.5(5) mm long, (0.6)0.8(1) mm in diameter, much longer than stalky part of floral base, apex slightly broadened and jointed to floral base forming a distinct articulation. **Floral bracts** fascicled, the outermost within a fascicle narrowly triangular, acute or acuminate, light greenish, sometimes with violet tint, (4)6–8(12) mm long, (0.8)1–1.5(2) mm wide; the inner bract laterally subtending each pedicel, very small. **Flowers** drooping or horizontal at anthesis, campanulate, not much broadly opening, odorless, (7.5)8.5–9.5(10.5) mm across, (9)10–11(12) mm long, light violet to almost white. **Perianth** distally 6-parted; basal syntepalous part funnel-form, pale violet to white, (2)2.2–2.4(2.6) mm long, 1.2–1.4 mm in diameter; distal segments subsimilar, narrowly ovate, blunt to rounded at apex, straight, slightly concave, somewhat thick, (6)6.5–7.5(8) mm long, (2.6)2.8–3.2(3.4) mm wide. **Stamens** 6, located at the base of each perianth segment; anthers narrowly triangular, conoid, slightly flattened, subtruncate at base, blunt at apex, introrse, light pale yellow-greenish, (2.6)2.8–3.2(3.4) mm long, (1)1.1–1.2(1.3) mm wide; filaments (almost) free to base, very short, white, fleshy, 0.5–0.6 mm long and wide. **Pistil** 1; ovary inferior, 3-locular, concave at terminal center; ovules (1)2(4) per locule, borne on basal part of central axis of ovary; style purely white, erect, straight or slightly curved apically, narrowly pyramidal to sub-cylindric, (4.8)5–5.2(5.4) mm long; stigma negligibly minute, acute to obtuse. **Seeds** ovoid, glossy, blue to blue-violet.

Etymology. This new species is characterized by the shorter stem when compared with the elongate stem of the closest species, *O. caulescens*, hence the epithet meaning a short stem was given to the species.

Ecology, phenology and conservation status. Terrestrial or lithophytic herb in primary or secondary broad-leaved and coniferous forests on karstic limestone and granite at elevations 1100–2400 m a.s.l., common on steep rocky slopes near mountain tops. Flowers in (March) April–May (June). Locally very common. IUCN Red List status tentatively assessed as LC.

Distribution. N. Vietnam (Ha Giang, Lai Chau and Lao Cai Provinces). Endemic.

Note. *Ophiopogon brevicaulis* is most closely related

to *O. caulescens*, but differs in the shorter stem not supported by thick ligneous stilt roots, somewhat longer, erect to slightly arching flowering stem (vs. scape more strongly bending), and staminal filaments (almost) free to the base (vs. connate to neighboring filaments entirely or in the lower half). Furthermore, *O. caulescens* is distributed in S. Thailand (Malay Peninsula), Malaysia, Indonesia and the Philippines, hence the ranges of the two species are geographically distantly separated. For the taxonomic and phytogeographic details of *O. caulescens* see Tanaka (2000a, 2000c).

Studied specimens (paratypes). **Northern Vietnam**, Ha Giang Province, Meo Vac District, Sung Chang Municipality, vicinities of Lu Lu Phin Village, 23°11'N 105°18'E, secondary open, broad-leaved forest on steep slopes and bluffs of karst remnant limestone ridge at 1300–1350 m elevation, terrestrial herb in shady places, flowers light violet, not rare, 29 April 1999, P.K. Loc, P.H. Hoang, L. Averyanov, CBL 1819 (HN, LE LE01049271, MO). **Northern Vietnam**, Ha Giang Province, Quan Ba District, Bat Dai Son Nature Reserve, Can Ty Commune, Lung Vay Village, around point 23°06'02.6"N 105°03'04.5"E, 1200–1305 m a.s.l., karstic, highly eroded mountains composed of solid marble-like limestone, primary evergreen broad-leaved humid forest on steep rocky slopes near mountain tops, terrestrial and lithophytic herb in rocky place, flowers light violet, common, 15 April 2018, L. Averyanov, Nguyen Sinh Khang, Chuong Quang Ngan, T. Maisak, VR 224 (HN, LE LE01054386). **Northern Vietnam**, Ha Giang Province, Quan Ba District, Bat Dai Son Nature Reserve, Can Ty Commune, Dau Cau Village, around point 23°05'26.3"N 105°01'03.0"E, 1100–1150 m a.s.l., karstic, highly eroded mountains composed of solid marble-like limestone, primary evergreen broad-leaved humid forest on steep rocky slopes near mountain tops, terrestrial herb among rocks in shady place, flowers white with violet tint, not rare, 14 April 2018, L. Averyanov, Nguyen Sinh Khang, Chuong Quang Ngan, T. Maisak, VR 137 (HN, LE LE01054451). **Northern Vietnam**, Ha Giang Province, Quan Ba District, Bat Dai Son Nature Reserve, Can Ty Commune, Lung Vay Village, around point 23°05'46.7"N 105°02'53.1"E, 1100–1280 m a.s.l., karstic, highly eroded mountains composed of solid marble-like limestone, primary evergreen broad-leaved humid forest on steep rocky slopes near mountain tops, terrestrial and lithophytic herb with short rhizome in shady place, flowers light violet, common, 15 April 2018, L. Averyanov, Nguyen Sinh Khang, Chuong Quang Ngan, T. Maisak, VR 196 (HN, LE LE01058140). **Northern Vietnam**, Ha Giang Province, Yen Minh District, Lao Va Chai Municipality, vicinities of Ngan Chai Village, 6 km to W of Yen Minh Town, 23°07'N 105°08'E, primary evergreen wet mossy mixed forest (with domination of *Tsuga chinensis* and *Pinus kwangtungensis*) along tops of karst remnant limestone ridge at elevation 1500–1600 m, terrestrial herb on shady steep slopes, flowers blue-violet, very common, usual co-dominant of herb forest stratum, 1 May 1999, P.K. Loc, P.H. Hoang, L. Averyanov, CBL 1889 (HN, LE LE01049280, MO). **Northern Vietnam**, Lai Chau Province, Tam Duong District, Ho Thau Community, Ho Thau Village, around point 22°24'21"N 103°36'34"E, primary closed evergreen broad-leaved forest on steep mountain slopes and along ridges composed of granite and shale at elevation about 2400 m a.s.l., terrestrial and lithophytic herb on shady very steep rocky slope, fruits blue, locally very common, 4 Dec. 2006, Nguyen Tien Hiep, L. Averyanov, Pham Van The, HAL 10378 (HN, LE LE01049864, MO). **Northern Vietnam**, Lao Cai Province, Than Uyen District, Ho Mit Municipality, 22°06'N 103°52'E, elevation to Mang Han San quartzite peak by SW slope from Ban Thao Village (SSW macroslope of Hoang Lien Son ridge), primary wet evergreen broad-leaved forest on very steep rocky slopes at elevation 1600 m, terrestrial and lithophyte forb on steep slopes and rocky cliffs, flowers white, very common at elevations 1600–2300 m, 21–22 May 1999, N.T. Hiep, P.H. Hoang, L. Averyanov, NTH 2671 (HN, LE LE01049861, MO).

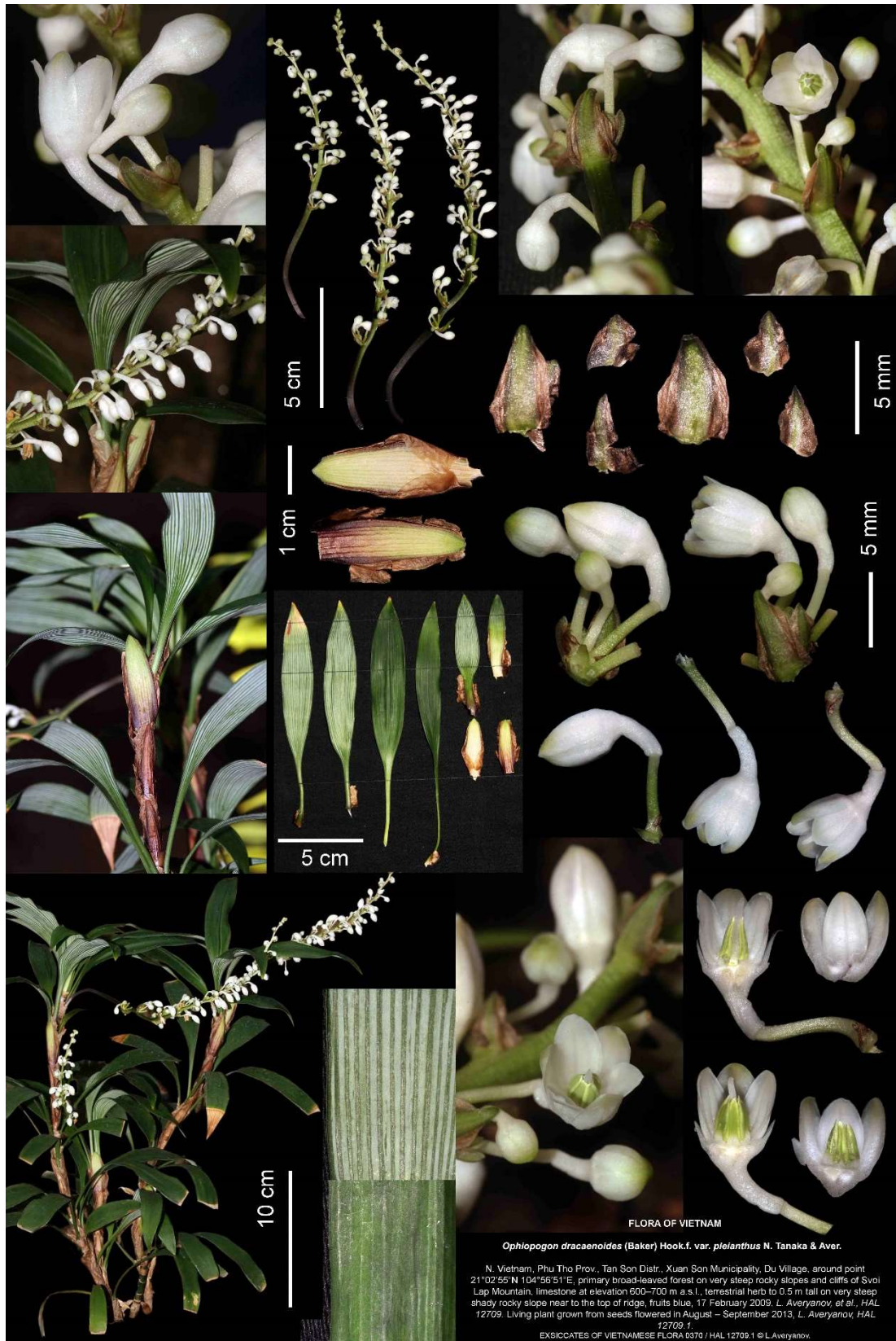


Fig. 2. *Ophiopogon dracaenoides* (Baker) Hook. f. var. *pleianthus* N. Tanaka & Aver., var. *nov.* Analytical plate “d-EXSICCATES OF VIETNAMESE FLORA 0370 / HAL 12709.1” compiled from photos taken prior to the preparation of the type specimen, HAL 12709 (LE LE01049347). Photos, correction and design by L. Averyanov.



Ophiopogon dracaenoides (Baker) Hook.f. var. *pleianthus* N. Tanaka & Aver., var. nov.

Fig. 2.

Diagnosis. Differs from the type variety (var. *dracaenoides*) in having more flowers in fascicles of 3–6 (vs. 1–3), forming a denser inflorescence.

Described from northern Vietnam. **Type:** “VIETNAM, Phu Tho Province, Tan Son District, Xuan Son Municipality, Du Village, herbarium specimen prepared from a living plant grown from seeds and flowered under cultivation in August – September 2013, *L. Averyanov*, HAL 12709.1, flowers white, anthers green” (Holotype: LE LE01049347). Analytical plate “d-EXSICCATES OF VIETNAMESE FLORA 0370 / HAL 12709.1” (Fig. 2).

Etymology. The varietal epithet refers to the many flowers borne on the plant.

Ecology, phenology and conservation status. Terrestrial herb in primary or secondary broad-leaved evergreen forests on karstic limestone at elevations 600–700 m a.s.l., common on steep shady slopes near mountain tops. Flowers in August – September (in cultivation), fruits in January – February. Locally common. IUCN Red List status tentatively assessed as LC.

Distribution. N. Vietnam (Phu Tho Province). Endemic.

Notes. This new variety is from a limestone area in the central part of northern Vietnam. On the other hand, the type variety has been recorded from S. China (Guangxi, Guizhou, Yunnan), NE. India, N. Thailand, Laos and N. Vietnam (Tanaka, 2000a; Nguyen T.D., 2007).

Studied specimen (paratype). Northern Vietnam, Phu Tho Province, Tan Son District, Xuan Son Municipality, Du Village, around point 21°02'55"N 104°56'51"E, primary broad-leaved forest on very steep rocky slopes and cliffs of Svoi Lap remnant mountain composed of highly eroded solid marble-like limestone at elevation 600–700 m a.s.l., terrestrial herb to 0.5 m tall on very steep shady rocky slope near to the top of ridge, fruits blue, common, 17 February 2009, *L. Averyanov*, *P.K. Loc*, *N.T. Vinh*, *L.T. Son*, HAL 12709 (HN, LE LE01049348).

Ophiopogon intermedius D. Don, 1825, Prodr. Fl. Nepal.: 48, Fig. 269; Chen, Tamura, 2000, Fl. China 24: 260; Tanaka (2000b, 2001b).

Described from Nepal (“Hab. In Nepalia. Wallich”). **Type:** not located.

Fig. 3.

Ecology, phenology and conservation status. Terrestrial herb in primary or secondary broad-leaved and coniferous evergreen humid forests on shale, granite, sandstone and karstic limestone at elevations 800–2500 m a.s.l., common in shady places near and along mountain tops. Flowers in May – June (in cultivation), fruits in March, November. Locally common. IUCN Red List status tentatively assessed as LC.

Distribution. Nepal, Bhutan, NE. India, Sri Lanka, S.

China, Taiwan, Bangladesh, Myanmar, Thailand, Vietnam (Ha Giang, Kon Tum, Son La, Thanh Hoa provinces).

Notes. The species is widespread and highly variable, and its morphological traits, distribution, and variation in Vietnam have not yet been satisfactorily known. In this paper, new localities in Vietnam are recorded and photographs in color of this species are provided (Fig. 3). Taxonomic details including the morphological traits, variation and nomenclature of this species were provided by Tanaka (2000b, 2001b).

Studied specimens. Northern Vietnam, Ha Giang Province, Quan Ba District, April 2013, N.S. Khang, s.n. (LE LE01058016 – photo). Northern Vietnam, Son La Province, Moc Chau District, Chieng Son Commune, Pha Luong Village, Pha Luong Mountain, primary cloud evergreen broad-leaved forest on flat Pha Luong summit composed of eroded red-brown sandstone at elevation 1750–1850 m a.s.l. around point 20°40'23.0N 104°37'52.0E, lithophytic herb with creeping old pseudobulbous sympodial shoots on large shady boulders and cliffs, fruits blue, not common, 23 September 2016, *L. Averyanov*, *N.T. Hiep*, *N.S. Khang*, *C.Q. Ngan*, *T.V. Maisak*, *N.T. Son*, CPC 7996 (LE LE01058017 – photo). Northern Vietnam, Son La Province, Van Ho District, Van Ho Commune, Hua Tat Village, around point 20°46'21.7N 104°47'47.5E, remnants of primary evergreen broad-leaved and mixed forest (with *Pinus wangii*) on very steep rocky slopes and on mountain tops composed of highly eroded karstic light gray marble-like limestone at elevation 1300–1350 m a.s.l., clustering lithophytic herb, 2 October 2016, *L. Averyanov*, *N.T. Hiep*, *N.S. Khang*, *C.Q. Ngan*, *T.V. Maisak*, *N.T. Son*, CPC 8236/1 (LE LE01058018 – photo). Northern Vietnam, Thanh Hoa province, Thuong Xuan district, Bat Mot Municipality, Duc village, Xuan Lien Natural Reserve, primary broad-leaved evergreen forest along narrow ridge composed of shale at elevation 850–1150 m a.s.l. around point 20°01'50.4"N 104°57'21.0"E, terrestrial herb in shady places along ridge edge, common, 4 November 2013, *L. Averyanov*, *N.T. Hiep*, *N.S. Khang*, *N.D. Thang*, *L.V. Tien*, CPC 6743, plant grown from seeds flowered 30 May 2018, flowers white, with light violet spots inside, *L. Averyanov* (LE LE01048621), analytical plate “d-EXSICCATES OF VIETNAMESE FLORA 0339 / CPC 6743” (Fig. 3). Southern Vietnam, Kon Tum province, northern slopes of Ngoc Linh Mountains, cloud evergreen primary forest at elevation 2400–2450 m a.s.l. with abundance of Bryophytes, herb, fruits deep blue, common, 6 March 1995, *L. Averyanov*, *N.T. Ban*, *N. Q. Binh*, *A. Budantzev*, *L. Budantzev*, *N.T. Hiep*, *D.D. Huyen*, *P.K. Loc*, *N.X. Tam*, *G. Yakovlev*, VH 538 (LE LE01049336).

Ophiopogon peliosanthoides F.T. Wang & Tang, 1978, Fl. Reipubl. Popul. Sin. 15: 252, Fig. 293, 3, 4; Chen, Tamura, 2000, Fl. China 24: 258.

Described from southern China. **Type:** “China: Kweichow: An-lung, May. 12, 1960, *J.S. Chang* & *Y.T. Chang 2373*” (Holotype: PE; PE00036187).

Fig. 4.

Ecology, phenology and conservation status. Terrestrial or lithophytic herb in primary or secondary broad-leaved and coniferous evergreen humid forests on karstic limestone at elevations 600–1500 m a.s.l., common in shady rocky places near mountain tops. Flowers in April – May, fruits in January. Locally very common. IUCN Red List status tentatively assessed as LC.

Distribution. S. China (Yunnan, Guizhou, Guangxi), N. Vietnam (Cao Bang, Ha Giang provinces).



Fig. 3. *Ophiopogon intermedius* D. Don. Analytical plate “d-EXSICCATES OF VIETNAMESE FLORA 0339 / CPC 6743” compiled from photos taken prior to the preparation of herbarium specimen, CPC 6743 (LE LE01048621). Photos, correction and design by L. Averyanov and T. Maisak.

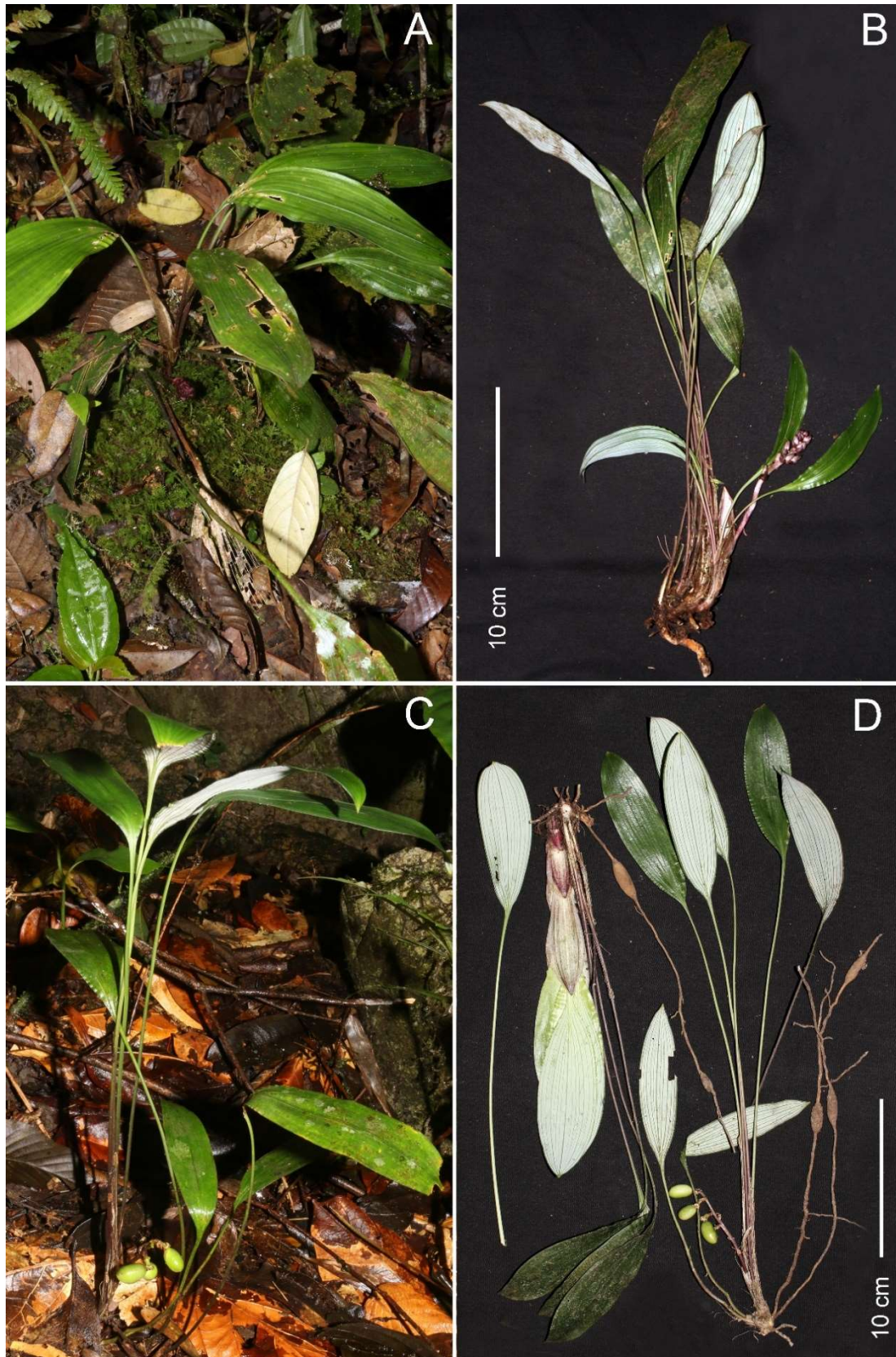


Fig. 4. *Ophiopogon peliosanthoides* F.T. Wang & Tang. **A, B** – plant with flower buds (VR 842, LE LE01049767). **C, D** – plants bearing fruits (VR 1227, LE LE01050364). Photos by K.S. Nguyen and L. Averyanov, correction and design by L. Averyanov.



Notes. The name of *Ophiopogon peliosanthoides* appears in Ho (1993: 585, Fig. 8737b; 2000: 471, Fig. 9584) with an erroneous citation of author names, “W. & Arn” [‘Wang & Tang’], but the plant shown there is from Ngoc Linh in central Vietnam and hence unlikely to be this species. The plant there is supposedly *O. tristylatus* Aver., N. Tanaka & Luu. The present paper therefore appears to be the first to record *O. peliosanthoides* from Vietnam. This species is characterized by the long-petiolate leaf blades that are glaucous-white abaxially and have lateral parallel veins sub-pinnately running from the base, and by the roots with fusiform or oblong tubercles (Fig. 4). It occurs in the limestone areas of northern Vietnam. In this paper, collection data from five localities in Vietnam and photographs in color of this species are provided.

Studied specimens. **Northern Vietnam**, Cao Bang Province, Tra Linh District, evergreen forest on slopes of remnant limestone mountains near Thang Heng lake in environs of Thang Hen and Lung Tao Villages at elevation 600–700 m, herb with leaves up to 0.4 m lg., fruits blue, common, 04.01.1996, *L. Averyanov, N.T. Ban, A. Budantzev, L. Budantzev, N.T. Hiep, D.D. Huyen, P.K. Loc, G. Yakovlev VH 2457* (LE LE01049883). **Northern Vietnam**, Ha Giang Province, Quan Ba District, Bat Dai Son Nature Reserve, Can Ty Commune, Lung Vay Village, around point 23°05'46.7"N 105°02'53.1"E, 1100–1280 m a.s.l., karstic, highly eroded mountains composed of solid marble-like limestone, primary evergreen broad-leaved humid forest on steep rocky slopes near mountain tops, terrestrial and lithophytic herb with short rhizome in shady place, occasional, 15 April 2018, *L. Averyanov, Nguyen Sinh Khang, Chuong Quang Ngan, T. Maisak, VR 195* (LE LE01054474). **Northern Vietnam**, Ha Giang Province, Quan Ba District, Tung Vai Commune, Thang Village, around point 23°03'41.5"N 104°50'41.6"E, steep rocky slopes near mountain top composed of eroded stratified highly eroded limestone at elevation 1200–1400 m a.s.l., primary evergreen broad-leaved very humid forest, terrestrial herb on rocky slope, not rare, 22 April 2018, *L. Averyanov, Nguyen Sinh Khang, Nguyen Tien Hiep, Nguyen Quang Hieu, Chuong Quang Ngan, T. Maisak, VR 653* (LE LE01049687), VR 669 (LE LE01049614). **Northern Vietnam**, Ha Giang Province, Quan Ba District, Tung Vai Commune, Thang Village, around point 23°03'04.2"N 104°51'09.7"E, steep rocky slopes near mountain top composed of eroded stratified highly eroded limestone at elevation 1200–1450 m a.s.l., primary evergreen broad-leaved very humid forest, terrestrial herb in rocky place, flowers buds light violet, very common, 24 April 2018, *L. Averyanov, Nguyen Sinh Khang, Nguyen Tien Hiep, Nguyen Quang Hieu, Chuong Quang Ngan, T. Maisak, VR 842* (LE LE01049767). **Northern Vietnam**, Ha Giang Province, Quan Ba District, Cao Ma Po Commune, Va Thang Village, around point 23°05'52.6"N 104°51'26.4"E, steep alluvial slopes and flattened mountain summits based on limestone at elevation 1400–1480 m a.s.l., primary evergreen broad-leaved very humid forest, terrestrial herb in shady place, not common, 22 October 2018, *L. Averyanov, Nguyen Sinh Khang, T. Maisak, Truong Duc Thieu, VR 1227* (LE LE01050364).

Ophiopogon pingbienensis F.T. Wang & L.K. Dai, 1978, Fl. Reipubl. Popularis Sin. 15: 251, Fig. 291, 3, 4; Chen, Tamura, 2000, Fl. China 24: 259.

Described from southern China. **Type:** China: Yunnan: Ping-bien. *P.Y. Mao 4134* May 5, 1954 (Holotype: PE; PE00036186).

Fig. 5.

Ecology, phenology and conservation status. Terrestrial or lithophytic herb in primary or secondary

broad-leaved and coniferous evergreen humid forests on karstic limestone at elevations 900–1400 m a.s.l., common in shady rocky places near mountain tops or along small rocky streams. Flowers in May – June, fruits in November. Locally very common. IUCN Red List status tentatively assessed as LC.

Distribution. S. China (Yunnan), N. Vietnam (Cao Bang, Ha Giang, Lai Chau provinces).

Notes. This species has been known only from southern Yunnan, hence this is the first record of it for Vietnam. It is characterized by the leaf blades that are indistinctly striped or mottled with dull obscure spots (sometimes entirely obscure) on the adaxial surface and impressively glaucous-white with many narrow parallel green stripes of veins on the abaxial surface. Flowers in Fig. 5 are past their peak.

Studied specimens. **Northern Vietnam**, Cao Bang Province, Thong Nong District, Yen Son Municipality, Nhieu Lung Village, around point 22°46'07.9"N, 105°53'59.4"E, primary fractionally logged coniferous forest with *Pseudotsuga sinensis* along highly eroded rocky limestone ridge at elevation 1150–1250 m a.s.l., terrestrial and lithophytic rosulate herb on shady very steep slope and on cliff shelves, leaves very dark green to almost black, locally common, 8 October 2013, *L. Averyanov, N.T. Hiep, L.M. Tuan, N.S. Khang, T. Maisak, L. Osinovets, CPC 5473* (LE LE01049862). **Northern Vietnam**, Ha Giang Province, Bac Me District, Phiang Luong Municipality, around Phiang Luong Village, primary broad-leaved humid evergreen forest on very steep slopes and along rocky ridge composed of solid crystalline highly eroded limestone at elevation 1100–1150 m a.s.l. around point 22°38'07.1"N 105°19'22.1"E, terrestrial and lithophytic rosulate herb on very steep rocky slope near and along ridge edge, fruits glossy blue, common, 13 November 2014, *L. Averyanov, N.T. Hiep, N.S. Khang, T. Maisak, L. Osinovets, CPC 7419*, flowered in cultivation in 25 May 2018, flowers dull pale violet, *L. Averyanov, CPC 7419 / TM 1082 / 13395* (LE LE01048627), analytical plate “d-EXSICCATES OF VIETNAMESE FLORA 0340 / CPC 7419” (Fig. 5). **Northern Vietnam**, Ha Giang Province, Bac Me District, Phiang Luong Municipality, around Phiang Day Village, degraded primary broad-leaved humid evergreen forest along rocky canyon of small stream at the base of mountains composed of solid crystalline highly eroded limestone at elevation 900–1000 m a.s.l. around point 22°38'43.8"N 105°19'19.8"E, terrestrial and lithophytic rosulate herb along stream rocks near water, fruits glossy blue, locally abundant, 14 November 2014, *L. Averyanov, N.T. Hiep, N.S. Khang, T. Maisak, L. Osinovets, CPC 7469*, flowered in cultivation in 25 May 2018, flowers dull pale violet, *L. Averyanov, CPC 7469 / 14427* (LE LE01048622). **Northern Vietnam**, Ha Giang Province, Quan Ba District, Bat Dai Son Nature Reserve, Thanh Van Commune, Tan Village, Thong (Conifer) Mountain, around point 23°07'40.3"N 104°57'11.2"E, at elevation 1000–1195 m a.s.l., karstic, highly eroded mountains composed of solid marble-like limestone, primary evergreen broad-leaved and coniferous (with *Pseudotsuga sinensis*) humid forest on steep rocky slopes near mountain tops, terrestrial and lithophytic fern on steep rocky slope, flowers light lilac, not common, 19 April 2018, *L. Averyanov, Nguyen Sinh Khang, Chuong Quang Ngan, T. Maisak, VR 500* (LE LE01061420). **Northern Vietnam**, Ha Giang Province, Quan Ba district, Tung Vai Commune, Lung Kho Village, around point 23°02'55.0"N 104°56'01.4"E, steep rocky slopes near hill top composed of stratified highly eroded limestone at elevation 900–980 m a.s.l., remnants of primary evergreen broad-leaved very humid forest, terrestrial herb on shady rocky slope, not common, 18 October 2018, *L. Averyanov, Nguyen Sinh Khang, T. Maisak, Truong Duc Thieu, VR 999* (LE LE01054182). **Northern Vietnam**, Lai Chau Province, Tam Duong District, Ho Thau Commune, Ho Thau Village, 22°24'04.5"N 103°36'32.7"E, elevation 2050 m a.s.l., cascade stream on slope of Mu Hum Mountain, 05–10 June 2017, *N.L. Orlov, L.K. Ioganssen, s.n.* (LE LE01049109).



Fig. 5. *Ophiopogon pingbienensis* F.T. Wang & L.K. Dai. Analytical plate “d-EXSICCATES OF VIETNAMESE FLORA 0340 / CPC 7419” compiled from photos taken prior to the preparation of herbarium specimen, CPC 7419 (LE LE01048627). Photos, correction and design by L. Averyanov and T. Maisak.



Ophiopogon reversus C.C. Huang, 1977, Fl. Hainan. 4: 534; Chen, Tamura, 2000, Fl. China 24: 260; Tanaka, 2001a.

Described from Hainan. **Type:** China. Hainan Island: Linshui, 22 Aug. 1932, C.L. Tso & N.K. Chun 43625 (Holotype: IBSC 44875, Isotypes: PE PE00036192–3).

Ecology, phenology and conservation status. Lithophytic or terrestrial herb in degraded dry shady forests and scrub on karstic limestone at elevations 50–200 m a.s.l., common among rocks and in crevices of vertical cliffs. Flowers in July – August, fruits in December – January. Locally very common. IUCN Red List status tentatively assessed as LC.

Distribution. S. China (Guangxi, Hong Kong, Hainan), SW. Japan, Taiwan, N. Vietnam (Hai Phong, Cat Ba Island).

Notes. This species is newly recorded for Vietnam. The discovery of this species on Cat Ba Island in Hai Phong suggests the presence of a strong floristic connection between this island and Hainan and the southern part of Guangxi. For the detailed description and notes on this species outside Vietnam, see Tanaka (2001a).

Studied specimens. Northern Vietnam, Hai Phong City Area, Cat Hai District, Cat Ba Island, in crevices of limestone cliff, common, 18.12.1986, L. Averyanov et al., LX-VN 3212 (LE LE01049338). Northern Vietnam, Hai Phong City Area, Cat Hai District, Cat Ba Island, Trung Trang Village, herb in shady forest, at elevation about 150 m, 21.12.1986, L. Averyanov et al., LX-VN 3276 (LE LE01049941). Northern Vietnam, Hai Phong City Area, Cat Hai District, Cat Ba Island, between Trung Trang and Dong Co Villages, on wet rocks, 29.12.1987, L. Averyanov et al., LX-VN 3589 (LE LE01049857). Northern Vietnam, Hai Phong City Area, Cat Hai District, Cat Ba Island, Trung Trang Village, herb in shady forest, at elevation about 150 m, 21.12.1986, L. Averyanov et al., LX-VN 3276 (LE LE01049937). Northern Vietnam, Hai Phong City Area, Cat Hai District, Cat Ba Island, Trung Trang Village, along temporary stream, 27.12.1987, L. Averyanov et al., LA-VN 3515 (LE LE01049932).

Ophiopogon xylorrhizus F.T. Wang & L.K. Dai, 1978, Fl. Reipubl. Popularis Sin. 15: 252, Fig. 293, 1, 2; Chen, Tamura, 2000, Fl. China 24: 259.

Described from southern China (Yunnan). **Type:** Китайско советская совместная Экспедиция в Пров. Юньнань [Chinese Soviet Joint Expedition to Yunnan Province] 8168; 27 Apr. 1957” (Holotype: PE PE01432733, Isotype: LE).

Ecology, phenology and conservation status. Terrestrial herb in primary or secondary broad-leaved evergreen humid forests on karstic limestone at elevations 1100–1400 m a.s.l., common in mossy rocky places near mountain tops. Flowers in March – April. Not common. IUCN Red List status tentatively assessed as DD.

Distribution. S. China (Yunnan), NW. Vietnam (Dien Bien Province).

Notes. The plant found in Vietnam has somewhat longer pedicels than *O. xylorrhizus* from Yunnan, but otherwise it looks very similar to the species. It is unique in having woody stilt-like roots. This is the first record of this species for Vietnam.

Studied specimen. Northwestern Vietnam, Dien Bien Province, Muong Cha District, Hua Ngai Municipality, Ha La Chu Village, around point 21°53'46"N 103°10'17"E, highly degraded primary evergreen broad-leaved humid forest on very steep slopes of remnant mountains composed of solid limestone at elevation 1100–1400 m a.s.l., terrestrial herb between shady mossy rocks, flowers white, not common, 7 April 2011, L. Averyanov, P.K. Loc, N.Q. Hieu, N.T. Vinh, CPC 1924 (LE LE01049943).

Peliosanthes pachystachya W.H. Chen & Y.M. Shui, 2003, Acta Phytotax. Sin. 41, 5: 489, Fig. 1.

Described from S. China (Yunnan). **Type:** China. Yunnan: Lüchun, Qimaba, Mayuqiao bridge, riverside, 2001–01–08, flowers purple, Lüchun Group of Yurman Forestry School 2025 (Holotype: KUN, Isotype: YFS).

Ecology, phenology and conservation status. Terrestrial herb in primary or secondary broad-leaved evergreen humid forests on karstic limestone at elevations 500–700 m a.s.l., common in shady places. Flowers in March – April. Common. IUCN Red List status tentatively assessed as LC.

Distribution. S. China (Yunnan), NW. Vietnam (Hoa Binh Province).

Note. *Peliosanthes pachystachya* is most closely related to *P. sinica* F.T. Wang & Tang described from southeastern Yunnan. The plant from Vietnam (LE LE01049879) was collected near the border with Laos. This is the first record of this species for Vietnam.

Studied specimen. Northern Vietnam, Hoa Binh Province, Lac Son District, Tu Do Municipality, Mon Village, around point 20°25'29"N 105°19'36"E, primary broad-leaved forest on steep rocky slopes of remnant mountain composed of solid crystalline highly eroded limestone at elevation 500–700 m a.s.l., terrestrial herb to 0.5 m tall in shady place, flowers dull brownish-green, common, 25 March 2011, N.Q. Hieu, L. Averyanov, N.T. Hiep, P.K. Loc, P.V. The, N.T. Vinh, T.B. Ngan, N. Tap, D.D. Dao, V.T. Ha, CPC 1557 (LE LE01049879).

Rohdea subcaudata Aver., N. Tanaka & K.S. Nguyen, sp. nov.

Fig. 6.

Diagnosis. Differs from closely related *R. henryi* N. Tanaka by the elongate, suberect or oblique aerial stem, leaves sharply acuminate or subcaudate at the apex, perianth tube prominently ribbed internally, and hexagonal, slightly trisulcate ovary.

Described from central Laos. **Type:** “LAOS, Xiangkhouang Province, Peak District, Khoang Village, herbarium specimen prepared from a cultivated plant on 5 January 2019, L. Averyanov, LA-VN 938.I” (Holotype: LE LE01048168). Analytical plate “d-EXSICCATES OF VIETNAMESE FLORA 0333 / LA-VN 938.I” (Fig. 6).

Etymology. The specific epithet refers to the subcaudate leaf apex.

Description. Herb perennial, lithophytic. Stem suberect or oblique, terete, unbranching, to 0.5 m long, (1.5)2.0–2.5(3.0) cm in diameter, fleshy, pale yellowish-brown, apical part densely covered with foliar bases. **Roots** wiry, rigid, semi-woody. **Cataphylls** (0)1–3(4) at

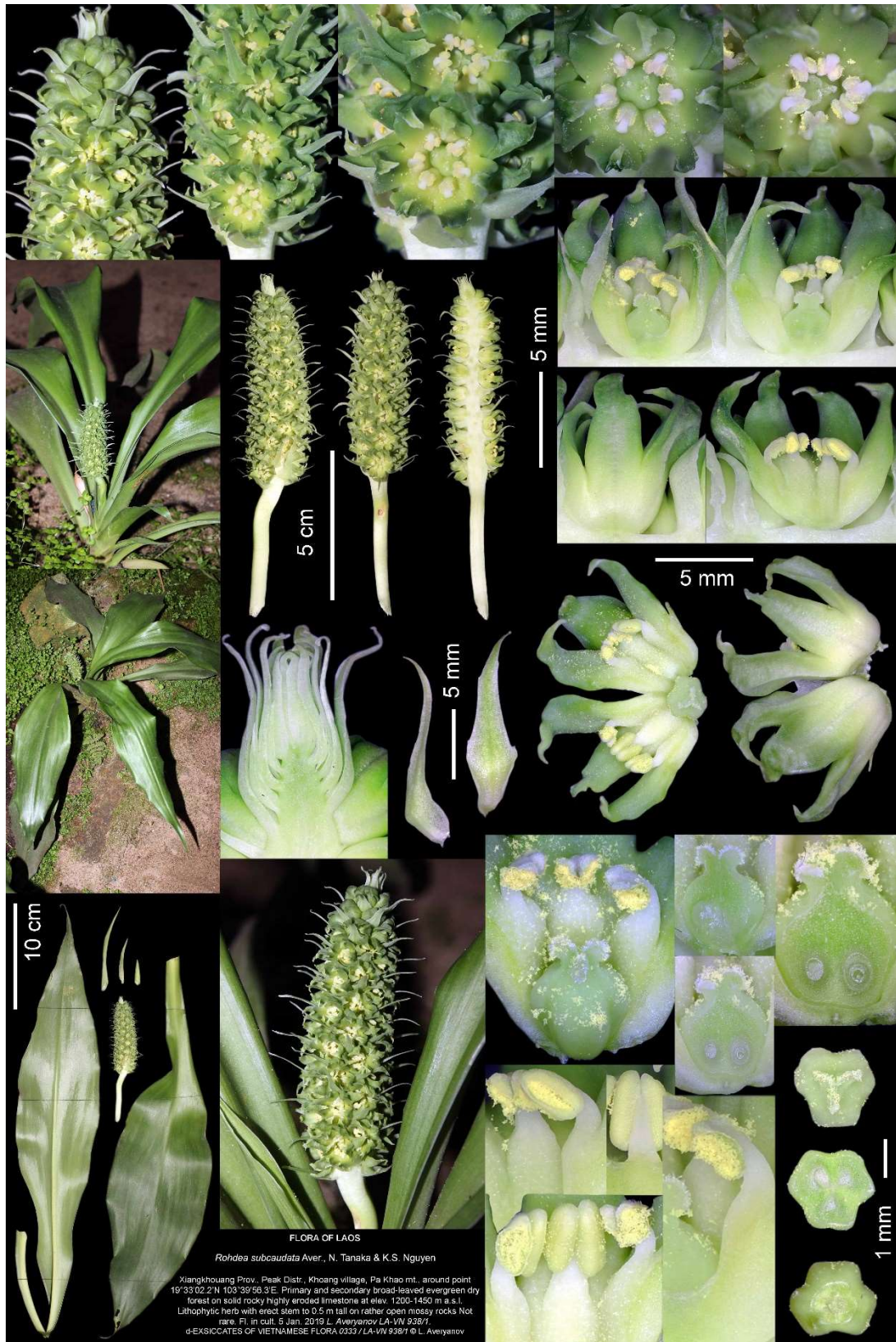


Fig. 6. *Rohdea subcaudata* Aver., N. Tanaka & K.S. Nguyen, *sp. nov.* Analytical plate “d-EXSICCATES OF LAOTIAN FLORA 0333 / LA-VN 938.1” compiled from photos taken prior to the preparation of the type specimen, LA-VN 938.1 (LE LE01048168). Photos, correction and design by L. Averyanov and T. Maisak.



base of annual tuft of foliage leaves, equitant, narrowly triangular, acuminate, (4)6–12(20) cm long, 1.0–1.5 cm wide, abruptly widened at base to 5 cm wide. **Leaves** (5)6–7(8), sub-distichous, equitant, oblique to recurved, narrowly oblong elliptic or narrowly elliptic, (30)35–60(70) cm long, (6)8–10(12) cm wide, gradually tapering to thick, conduplicate petiole-like basal part, acuminate to sub-caudate at apex, entire, somewhat undulate, leathery, uniformly glossy grassy green, midvein prominently keeled abaxially. **Peduncle** axillary in apical part of stem, light green to almost white, at base surrounded with 3–4, narrowly triangular, acuminate sheath leaves (2)3–8(10) cm long, (0.5)0.8–1.5(2) cm wide, naked, erect, straight to slightly flexuose, subterete, shorter than inflorescence, (3)4.5–5.5(6) cm long, (4.5)5–5.5(6) mm in diameter, irregularly angled in cross section, rigid. **Inflorescence** a terminal, cylindric, densely many-flowered, spadix-like spike (6)7–8(9) cm long, (1.8)2(2.2) cm in diameter, apical part cristate with dense tuft of numerous sterile bracts; rachis fleshy, longitudinally angled, with shallow floral pits. **Floral bracts** (1)2 per flower; bracts located below flower, narrowly deltoid, proximally concave, cymbiform or bail-shaped, margins with (1)2(3) obscure denticles, apex acuminate, (1)1.4–1.6(2) cm long, (2.6)3–4(4.4) mm wide, exerted beyond flowers, bracteole (when present) borne lateral to flower, twice smaller. **Flowers** sessile on shallow pits of rachis, (8)9–10(11) mm across, with light specific scent. **Perianth** broadly campanulate, almost actinomorphic, distally 6-parted, uniformly grassy green, glabrous; proximal syntepalous part broadly obconic or hemispheric; basal tube internally with 6 whitish longitudinal ribs as decurrent portions of filaments; distal segments narrowly ovate-triangular, (6.5)7–8(8.5) mm long (free part 4–5 mm long), (2.4)2.6–2.8(3) mm wide, entire, laterally slightly revolute, apical part prominently incurved, often irregularly flexuose, (sub)acute. **Stamens** 6; filaments (free part) arising from the base of perianth segment, incurved, connivent, slightly compressed, dilated below, (0.5)0.6–0.8(0.9) mm long, 0.5–0.6 mm in diameter at middle, fleshy, white to light greenish, decurrent to inner side of perianth tube; anthers dorsifixed, 2-locular, introrse, ovoid, (1.2)1.4–1.5(1.6) mm long, overhanging stigma. **Pistil** 1, light green; ovary superior, hexagonal in cross section, slightly 3-sulcate longitudinally, (1.8)2(2.2) mm in diameter, 3-locular, each locule containing 1 ovoid ovule; stigma subsessile, trisected, 1.0–1.2 mm across, segments oblong, recurved, finely papillose.

Ecology, phenology and conservation status.

Primary or secondary broad-leaved evergreen dry forest on karstic limestone at elevation 1200–1450 m a.s.l., common on open mossy rocks. Not rare. Flowers in cultivation in December – January. Estimated IUCN status – DD.

Distribution. Central Laos (Xiangkhouang Province). Endemic to limestone areas in central part of Laos.

Notes. *Rohdea subcaudata* here described is close to *R. henryi* (= *R. chinensis* (Baker) N. Tanaka) known from China and Taiwan (Tanaka, 2010b, 2019), but differs in the elongate, suberect or oblique aerial (vs. comparatively short, repent) stem, leaves sharply acuminate or subcaudate at the apex, perianth tube longitudinally ribbed (vs. not ribbed) as decurrent portions of staminal filaments, and hexagonal, (slightly) trisulcate (vs. roundish, unlobed) ovary. As for the perianth tube of *R. henryi*, the internal wall structure below stamens is variable, but no form with such distinct longitudinal ribs has been known. The new species is also readily distinguishable from *R. siamensis* (Yamashita & M.N. Tamura) Yamashita & M.N. Tamura recorded from Thailand and Laos (Tanaka, 2010b) by the wider, narrowly elliptic leaves, shorter, narrowly triangular (vs. subulate), medially somewhat greenish (vs. white) fertile bracts, inner structure of the perianth tube, and shape of a pistil.

Studied specimen (paratype). **Central Laos**, Xiangkhouang Province, Peak District, Khoang Village, Pa Khao Mountain, around point 19°33'02.2"N 103°39'56.3"E, primary or secondary broad-leaved evergreen dry forest on solid rocky highly eroded limestone at elevation 1200–1450 m a.s.l., lithophytic herb with erect stem to 0.5 m tall on rather open mossy rocks, not rare, 3 April 2015, N.T. Hiep, L. Averyanov, N.S. Khang, N.Q. Hieu, T. Maisak, Pheng Phengsintham, LA-VN 938 (HNU).

ACKNOWLEDGMENTS

This research work was financially supported in part by the Vietnam Academy of Science and Technology, QTRU01.07/18-19, and by the Russian Foundation for Basic Research, 18-54-54005 Viet_a, for the joint project “Assessment of the plant diversity in Bat Dai Son Mountains, Ha Giang province”. It was also carried out with financial aid within the framework of institutional research project of the Komarov Botanical Institute of the Russian Academy of Sciences for the title “Study of the flora of Indochina” (AAAA-A18-118031290070-6). We cordially thank Nguyen Tien Hiep, Chuong Quang Ngan, and Nguyen Quang Hieu for their kind assistance in collecting materials in the field, and D. Slastunov for his kind technical assistance for scanning herbarium specimens and processing images.

LITERATURE CITED

- Averyanov, L.V. 2011. *Peliosanthes yunnanensis* and *Trichosma yanshanensis*. New additions to the flora of Vietnam. *Taiwania* **56**(2): 143–148.
- Averyanov, L.V. and N. Tanaka. 2012. New species of *Peliosanthes* and *Tupistra* (Asparagaceae) from eastern Indochina. *Taiwania* **57**(2): 153–167.
- Averyanov, L.V. and N. Tanaka. 2013. New species of *Peliosanthes* (Asparagaceae) from Vietnam. *Turczaninowia* **16**: 5–7.
- Averyanov, L.V., N. Tanaka and H.T. Luu. 2013. New species of *Ophiopogon* and *Peliosanthes* (Asparagaceae) from Cambodia and Vietnam. *Taiwania* **58**(4): 233–241.



- Averyanov, L.V., N. Tanaka and K.S. Nguyen.** 2014. New species of *Peliosanthes* and *Rohdea* (Asparagaceae) from eastern Indochina. *Taiwania* **59(1)**: 18–25.
- Averyanov, L.V., N. Tanaka, K.S. Nguyen, H.T. Nguyen and E.L. Konstantinov.** 2015a. New species of *Ophiopogon*, *Peliosanthes* and *Tupistra* (Asparagaceae) in the flora of Laos and Vietnam. *Adansonia*, ser. **3**, **37(1)**: 25–45.
- Averyanov, L.V., N. Tanaka, K.S. Nguyen and E.L. Konstantinov.** 2015b. A new species and two new records of *Ophiopogon* and *Peliosanthes* (Asparagaceae) in the flora of Laos. *Taiwania* **60(2)**: 86–90.
- Averyanov, L.V., N. Tanaka, K.S. Nguyen, B.V. Truong, D.T. Nghiem and H.T. Nguyen.** 2016a. New species of *Ophiopogon*, *Peliosanthes* and *Tupistra* (Asparagaceae s.l.) in the flora of Vietnam. *Nord. J. Bot.* **34(1)**: 23–37.
- Averyanov, L.V., N. Tanaka, K.S. Nguyen and H.T. Nguyen.** 2016b. New species of *Ophiopogon* and *Peliosanthes* (Asparagaceae) from Laos and Vietnam. *Taiwania* **61(3)**: 201–217.
- Baker, J. G.** 1879. A synopsis of Colchicaceae and the aberrant tribes of Liliaceae. *J. Linn. Soc. Bot.* **17(103)**: 405–510.
- Ho, P.H.** 1993. An Illustrated Flora of Vietnam. Vol. 3(1). Mekong Printing, Santa Ana, USA. 603 pp.
- Ho, P.H.** 2000. An Illustrated Flora of Vietnam. Vol. 3. Nha Xuat Ban Tre, Ho Chi Minh, Vietnam. 1020 pp.
- Hooker, J.D.** 1892. Flora of British India. Vol. 6. L. Reeve & Co. London, England. 792 pp.
- Jessop, J.P.** 1976. A revision of *Peliosanthes* (Liliaceae). *Blumea* **23**: 141–159.
- Larsen, K.** 1966. Two new Liliaceae from the Khao Yai national park. *Bot. Not.* **119**: 196–200.
- Nguyen, K.S., L.V. Averyanov, N. Tanaka, E.L. Konstantinov, T.V. Maisak and H.T. Nguyen.** 2017. New taxa of *Peliosanthes* and *Tupistra* (Asparagaceae) in the flora of Laos and Vietnam and supplemental data for *T. patula*. *Phytotaxa* **312(2)**: 199–212.
- Nguyen, T.D.** 2005. 229. Liliaceae sensu lato – HỌ LOA KÈN. P. 432–458. In *Đanh Lục Các Loài Thực Vật Việt Nam [Checklist of Plant Species of Vietnam]*. Tập 3. Ngành Mộc Lan – Magnoliophyta (Ngành Hat Kin - Angiospermae) Các Họ Tu 181 (Santalaceae) Den 265 (Typhaceae). Agriculture Publ. House, Ha Noi, Vietnam. 1248 pp.
- Nguyen, T.D.** 2007. Flora of Vietnam. Vol. 8. Science and Technics Publishing House, Ha Noi, Vietnam. 511 pp.
- Odyuo, N., D.K. Roy and L.V. Averyanov.** 2017. *Rohdea extrorsandra* (Asparagaceae), a new species from northeastern India. *Phytotaxa* **309(3)**: 283–287.
- Ridley, H.N.** 1898. The *Peliosanthes* of the Malay Peninsula. *J. Straits Branch R. Asiatic Soc.* Singapore **31**: 91–98.
- Ridley, H.N.** 1924. The flora of the Malay Peninsula. Vol. 4. L. Reeve & Co.
- Rodriguez, M.L.** 1934. Hemodoracées nouvelles d'Indochine. *Bull. Mus. Natl Hist. Nat.* **2**: 95–97.
- Roy, D.K., N. Odyuo and L.V. Averyanov.** 2017. *Tupistra ashioi* (Asparagaceae), a new species from northeastern India. *Phytotaxa* **305(1)**: 52–56.
- Shaw, J.M.H.** 2009. A new *Peliosanthes* in cultivation. *Plantsman* **8**: 248–249.
- Tanaka, N.** 1999. Taxonomic notes on *Peliosanthes* (Convallariaceae) I. *Acta Phytotax. Geobot.* **50**: 147–155.
- Tanaka, N.** 2000a. Taxonomic notes on *Ophiopogon* of South Asia V. *J. Jpn. Bot.* **75**: 69–79.
- Tanaka, N.** 2000b. Taxonomic notes on *Ophiopogon* of South Asia VII. *J. Jpn. Bot.* **75**: 191–212.
- Tanaka, N.** 2000c. Taxonomic notes on *Ophiopogon* of South Asia IX. *J. Jpn. Bot.* **75**: 360–367.
- Tanaka, N.** 2001a. Taxonomic notes on *Ophiopogon* of East Asia II. *J. Jpn. Bot.* **76**: 151–165.
- Tanaka, N.** 2001b. Taxonomic notes on *Ophiopogon* of East Asia III. *J. Jpn. Bot.* **76**: 205–218.
- Tanaka, N.** 2003a. A new species of *Tupistra* (Convallariaceae) from Sumatra. *Blumea* **48(3)**: 503–506.
- Tanaka, N.** 2003b. New combinations in *Rohdea* (Convallariaceae). *Novon* **13(3)**: 329–333.
- Tanaka, N.** 2003c. Inclusion of *Tricalistra* and *Gonioscypha muricata* in *Tupistra* (Convallariaceae). *Novon* **13(3)**: 334–336.
- Tanaka, N.** 2004a. A new species of *Peliosanthes* (Convallariaceae) from Vietnam and China. *Kew Bull.* **59(1)**: 157–159.
- Tanaka, N.** 2004b. Inclusion of *Neolourya* in *Peliosanthes* (Convallariaceae). *Novon* **14(3)**: 360–364.
- Tanaka, N.** 2010a. A taxonomic revision of the genus *Tupistra* (Asparagaceae). *Makinoa New Ser.* **9**: 55–93.
- Tanaka, N.** 2010b. A taxonomic revision of the genus *Rohdea* (Asparagaceae). *Makinoa New Ser.* **9**: 1–54.
- Tanaka, N.** 2010c. A new species of *Tupistra* (Asparagaceae) from Laos. *J. Jpn. Bot.* **85**: 69–73.
- Tanaka, N.** 2010d. Five new species of *Tupistra* (Asparagaceae) from the Malay Peninsula. *Acta Phytotax. Geobot.* **61**: 27–40.
- Tanaka, N.** 2019. *Rohdea henryi*, the replacement name for *R. chinensis*, and a new combination for its variety (Asparagaceae). *Phytotaxa* **400(1)**: 48–50.
- Vislobokov, N.A.** 2016. *Peliosanthes separata* (Asparagaceae), a new species from Laos with rare structure of androecium. *Phytotaxa* **275(2)**: 186–188.