

Notes on taxonomy and new taxa of *Aspidistra* (Ruscaceae) in the flora of Laos and Vietnam

Leonid V. Averyanov and H.-J. Tillich

Leonid V. Averyanov (<http://orcid.org/0000-0001-8031-2925>) (av_leonid@mail.ru), Komarov Botanical Inst. of the Russian Academy of Science, St Petersburg, Russia. – H.-J. Tillich, Ludwig-Maximilians-Univ., Inst. of Systematic Botany, Munich, Germany.

One new species of *Aspidistra*, i.e. *A. nutans*, and one new variety, i.e. *A. tillichiana* var. *latifolia*, recently discovered in Vietnam are described and illustrated. In addition, the rank of species is proposed for *A. formosa* widely distributed in northern Vietnam but originally described as a variety of *A. fungilliformis*. *Aspidistra subrotata* is recorded as a new species for the flora of Laos. Data on ecology, phenology, natural variation, distribution and expected conservation status are provided for these plants.

This paper continues the publication of new results of a successive investigation of the species diversity of the genus *Aspidistra* Ker-Gawl. (1822, p. 628) in Laos and Vietnam. *Aspidistra* has a significant center of richness in mainland southeastern Asia (Averyanov and Tillich 2014, 2015, 2016, Lin et al. 2014, 2015, Hu et al. 2014, Meng et al. 2014, Tillich 2014, Vislobokov et al. 2014, 2016, Colin 2015). Herein, one new species of the genus, i.e. *Aspidistra nutans*, and one variety, i.e. *A. tillichiana* var. *latifolia* recently discovered in Vietnam are described and illustrated as taxa new to science. In addition, the rank of species is proposed for *A. formosa* widely distributed in northern Vietnam but originally described as variety of *A. fungilliformis*. *Aspidistra subrotata* is recorded as a new species for the flora of Laos. Data on ecology, phenology, natural variation, and distribution are provided, and expected conservation status are preliminarily assessed for all studied plants.

Material and methods

Plants mentioned in this paper were collected during field work mainly in 2011–2015. Studied herbarium specimens are listed after characterization of each species, and these are presently housed in the herbaria FOF, HN, HNL, LE, M, MO, MW, and in Herbarium of The Center for Plant Conservation (CPC Herbarium) of the Vietnam Union of Science and Technology Associations (Vietnam, Hanoi). *Aspidistra* flowers are always fleshy, and their structures are generally largely distorted in the process of making herbarium specimens. Therefore, observations of flowers were mostly made on living plants in their habitats

and/or in cultivation. Flowers were also preserved in 50–60% ethanol for subsequent studies. Measurements of floral parts for description were made on both living and liquid-preserved material. Fresh flowers or floral parts were found to shrink up to ca 20–30% in size in the drying process of making herbarium specimens. This was taken into account when dried herbarium specimens were identified. In describing quantitative characters, infrequent extreme values (i.e. rarely occurring minimal and maximal values) of a variation range are parenthesized respectively before and after a normal variation range. Detailed analytical photos of plant parts compiled into plates referred to here as ‘digital epitypes’ were made from the living plants prior to preparation of the type herbarium specimens.

Aspidistra formosa (Tillich) Aver. et Tillich comb. nov. (Fig. 1)

Basionym: *Aspidistra fungilliformis* Y. Wan subsp. *formosa* Tillich (2008, p. 40, Fig. 1C, E–G).

Type: Tillich, 5280 (holotype: M). Type prepared from cultivated plant collected in Ninh Binh province of northern Vietnam (“From a plant in cultivation at the Botanical Garden Munich (accession-nr. 97/2367), collected by J. Bogner, March 1997, in Vietnam, Province Ninh Binh, Cuc Phuong”).

Distribution

Vietnam provinces: Cao Bang (Bao Lac district), Nghe An (Ky Son district), Ninh Binh (Cuc Phuong national park) and Thanh Hoa province (Ba Thuoc district). Endemic.



Figure 1. *Aspidistra formosa* comb. nov. Typical specimen. Digital herbarium sheet, L. Averyanov et al. CPC 7654/0241. Photos, correction and design by L. Averyanov.

Habitat, phenology and conservation status

Terrestrial creeping herb with hypo- and epigeous rhizome. Growing in primary and secondary evergreen broad-leaved lowland forest on limestone, at 300–1000 m a.s.l., commonly on steep rocky shady slopes, often along stream valleys. Flowering in September–November. Common, locally abundant, sometime dominant of the herb forest stratum. Estimated IUCN Red List status: ‘Least Concern’ (LC).

Similar species

Aspidistra formosa differs considerably from the closest species *A. fungilliformis* Y. Wan (1984, p. 165) in distinctly bigger flowers, externally white (not purple) perigone tube, recurved (not horizontal) anthers and flat (not conoid) stigma. It was first recognized as variety of *A. fungilliformis* (Tillich and Averyanov 2008), but it surely deserves specific rank. Leaves of this species in the same locality may be uniformly green or dull yellow spotted. The distribution of this species, originally known only from the type locality, is now known to be fairly wide in the limestone areas of northern Vietnam and probably also in China, Guangxi Prov., since the photos in Li (2004, Fig. 20–21) obviously show *A. formosa* and not *A. fungilliformis*.

Additional specimens examined

North Vietnam, Cao Bang province, Bao Lac district, Dinh Phung municipality, Ban Meo village, secondary broad-leaved evergreen forest on steep stream slope composed by shale stratified limestone at 800–900 m a.s.l., around point 22°44′32.0″N, 105°46′29.1″E, terrestrial creeping herb in shady rocky stream valley, locally common, 24 Nov 2014, L. Averyanov, N. T. Hiep, N. S. Khang, T. Maisak, L. Osinovetz, CPC 7654/11616 (LE). North Vietnam, Nghe An province, Ky Son district, Nam Can municipality, along the road to international Gate Nam Can, open secondary forest, woodlands and open secondary scrub at 750–1000 m a.s.l., around point 19°27′19.4″N, 104°06′25.8″E, terrestrial herb in shady place along small stream in remnants of shady secondary forest, not common, 29 Oct 2013, L. Averyanov, N. T. Hiep, N. S. Khang, L. M. Tuan, CPC 6412/13265 (LE). North Vietnam, Ninh Binh province, Cuc Phuong national park, Tillich, 5280 (M). North Vietnam, Thanh Hoa province, Ba Thuoc district, Co Lung municipality, Eo Dieu village, around point 20°25′34″N, 105°14′41″E, primary evergreen seasonal broad-leaved closed lowland forest on crystalline marble-like highly eroded limestone, very steep rocky slopes and cliffs of south exposition at 450–600 m a.s.l., terrestrial herb in shady places, abundant, dominant of herb forest stratum, 22 Sep 2003, L. Averyanov, D. T. Doan, J. Regalado, N. T. Vinh, HAL 3202 (HN, LE, MO).

***Aspidistra nutans* Aver. & Tillich sp. nov. (Fig. 2)**

Type: 10 Nov 2015, L. Averyanov, CPC 7158a, b/13279 (holotype: LE). Type prepared from cultivated plant collected in northwestern Vietnam (Son La province, Van Ho district, Tan Xuan municipality, Cot Moc village, territory of Xuan Nha natural reserve, eastern slopes of Pha Luong

Mountain, remnants of primary and secondary broad-leaved evergreen humid forest on very steep mountain slopes composed by shale and sandstone at ca 1000 m a.s.l. around point 20°40′33.3″N, 104°39′00.3″E, 15 Nov 2013, L. Averyanov, N. T. Hiep, N. S. Khang, N. D. Thang, L. D. Qui, CPC 7158).

Etymology

The species epithet refers to the nodding flowers placed on the bent down, hook-like peduncle apex.

Description

Terrestrial perennial herb with underground or semi-epigeous simple or few branching, plagiotropic rhizome. Rhizome thick, stout, (4)5–8(12) cm long, (0.8)1.0–1.5(1.7) cm in diameter, densely covered by cataphyll bases. Leafy shoot at apex of rhizome, erect, very short, simple, 0.5–1.0 cm tall, enveloped by cataphylls. Cataphylls narrowly tubular, when flattened triangular, oblong or linear-lanceolate, (1.5)2.0–16.0(18.0) cm long, (4)8–15(20) mm wide, obtuse, erect and straight, when young dark violet to almost black, herbaceous or coriaceous, later light brownish to dull purple-brown, papyraceous, eventually disintegrated into long, dull light brown fibrous remains. Leaf on individual shoot 1(2), erect, (0.6)0.9–1.2(1.5) m tall, long petiolate. Petiole stiff, straight erect, dark dull green, (45)50–70(90) cm long, (2.5)3.0–8.0(9.0) mm in diameter, adaxially shallowly channeled. Leaf blade leathery, oblique to arching, narrowly elliptic, slightly pleated, tapering at base, shortly attenuate into an acute apex, (25)30–45(50) cm long, (4.5)5.0–7.5(8.0) cm wide, straight along margin, uniformly grass-green on both sides, with prominent median and secondary veins. Flowers 1–3(5), solitary, arising from apical part of rhizome at the base of the leafy shoot, pedunculate, odorless, (2.0)2.2–3.0(3.2) cm across, campanulate, often opening underground or semi-underground, forming an underground or semi-underground cavity by spreading perigone lobes of opening flower. Peduncle ascending to erect, hook-like curved near apex, facing flower down, dark dirty purplish-brown, in apical part sparsely speckled with dull greenish-white, (0.8)1.0–3.5(4.5) cm long, (1.5)2.0–3.0(4.0) mm in diameter, with (3)4–5(6) distant sterile bracts; bracts broadly triangular to broadly ovate, concave, thin, dull greenish finely densely speckled with dirty purple-brownish, papyraceous, obtuse, (4)5–10(12) mm long, (3.5)4.0–10.0(12.0) mm wide (being flattened), the two distal bracts close to each other and to flower base, often splitting at apex. Perigone campanulate, with rather spreading lobes, dull purplish-brown on both sides, fleshy, rather smooth, (1.2)1.3–1.5(1.6) mm long, (2.0)2.2–3.0(3.2) mm wide, with 8 free lobes. Perigone lobes subequal, fleshy, rather smooth, triangular narrowly ovate, almost flat, straight and spreading, (7)8–11(12) mm long, (3.8)4.0–5.5(6.0) mm wide, blunt or roundish at apex. Stamens 8, subsessile, inserted at base of tube close to ovary; anthers ovoid to bean-shaped, (1.6)1.8–2.0(2.2) mm long, (0.9)1.0–1.1(1.2) mm wide, facing into the cavity formed by the base of the perianth tube and the adaxial surface of the stigma; pollen sacs introrse; pollen light yellow. Pistil pure white; style fleshy, cylindrical, slightly broadening towards base and apex, (2.8)3.0–3.5(4.0) mm tall, 2.0–2.2 mm in



Figure 2. *Aspidistra nutans* sp. nov. Digital epitype, L. Averyanov, CPC 7158a, b/0244. Photos, correction and design by L. Averyanov.

diameter; stigma fleshy, hemispheric, (4.5)5.0–7.0(7.5) mm tall, (10)11–12(14) mm in diameter, circular in outline, densely adpressed to the perianth tube, straight along margin, but slightly notched at verge opposite sepal bases, glabrous and glossy. Ovary inconspicuous, indistinct, greenish. Fruits unknown.

Distribution

Vietnam province: Son La (Van Ho district, Pha Luong Mountains). Endemic.

Habitat, phenology and conservation status

Terrestrial herb with underground plagiotropic rhizome. Growing in primary and secondary submontane broad-leaved evergreen forests on shale and sandstone, commonly on shady very steep slopes, 900–1100 m a.s.l. Flowers in cultivation in September–November. Not common. Estimated IUCN Red List status: ‘Data Deficient’ (DD).

Similar species

Flowers of this species has certain resemblance with those of *A. subrotata* Y. Wan & C. C. Huang. (1987, p. 223), but differs distinctly by the hook-like bent peduncle, nodding flowers with flat (not shallowly grooved) perianth lobes and by the large, long petiolate leaves to 1.5 m long. In contrast to *A. subrotata* having erect exposed flowers placed on or above ground (Fig. 4–5), *A. nutans* has flowers often in underground or semi-underground position with its opening faced down (Fig. 3). When flower opens, its spreading tepals form a miniature cavity in soil or litter, roofed from above by the perigone tube. Obviously, such a floral morphology results in suitable conditions for pollination by tiny soil invertebrates. Most probably *A. nutans* is a local endemic with very limited distribution in northwestern Vietnam, whereas the closest species *A. subrotata* has a large range in southern China, northern Thailand, northern Vietnam and Laos.

***Aspidistra subrotata* Y. Wan & C. C. Huang (1987, p. 223) (Fig. 3–4)**

Type: C. C. Huang and Y. Wan 12263 (holotype: GXMG, isotype: GXSP). Described from southern China (“China: Guangxi Prov.”).

Synonyms: *A. subrotata* subsp. *crassinervis* Tillich (2005, p. 322) – *A. subrotata* var. *crassinervis* (Tillich) Phonsena (2010, p. 53) – *A. subrotata* var. *angustifolia* Phonsena and De Wilde (2010, p. 53, Fig. 4F).

Habitat, phenology and conservation status

Terrestrial herb with underground plagiotropic rhizome. Growing in primary and secondary lowland and submontane broad-leaved evergreen forests on any kind of soil, commonly on shady slopes, (150)200–1000(1200) m a.s.l. Flowers in cultivation in October–December. Locally very common, occasionally dominant in the herbaceous forest stratum. Estimated IUCN Red List status: ‘Least Concern’ (LC).

Distribution

China province: Guangxi (Dongxing Xian, Napo Xian). Thailand province: Loei (Phu Ruea and Phu Luang districts). Laos province: Kham Mouan (Bounlapha district). Vietnam provinces: Ha Noi (Ba Vi national park), Hoa Binh (Lac Son district), Ninh Binh (Nho Quan district, Cuc Phuong national park), Phu Tho (Thanh Son district, Xuan Son national park), Son La (Van Ho district), Thai Nguyen (Tam Dao national park), Thanh Hoa (Thuong Xuan district), Vinh Phuc (Tam Dao district, Tam Dao national park).

Additional specimens examined

Laos, Kham Mouan province, Bounlapha district, Thong Sam village, Hinnam No protected area, Pu Pha Song Mountain composed by sandstone, around point 17°35′13.2″N, 105°47′49.8″E, primary evergreen broad-leaved and mixed forest on west macroslope, terrestrial herb on shady slopes at 600–1000 m a.s.l., very common, 9 Mar 2013, L. Averyanov, N. T. Hiep, V. Lamxay, N. S. Khang, P. V. The, S. Lorphengsy, LA-VN 287 (FOF, HNL, LE). North Thailand, Loei province, Phu Ruea district, Phu Luang wildlife sanctuary, shady moist forest, 17°16′47.0″N, 101°31′00.5″E, 18 Feb 2013, Vislobokov N. A., Kuzmicheva E. A. (MW); 17°18′22.2″N, 101°30′54.7″E, 18 Feb 2013, Vislobokov N. A., Kuzmicheva E. A. (MW); 17°16′52.0″N, 101°31′25.4″E, 22 Feb 2013, Vislobokov N. A., Kuzmicheva E. A. (MW). North Thailand, Loei province, Phu Ruea district, Phu Ruea national park, shady moist forest, 17°30′03.8″N, 101°19′56.5″E, 16 Feb 2013, Vislobokov N. A., Kuzmicheva E. A. (MW); 17°30′12.1″N, 101°19′56.8″E, 17 Feb 2013, Vislobokov N. A., Kuzmicheva E. A. (MW). North Vietnam, Ha Noi municipality, 50 km west from Ha Noi City, Ba Vi national park, 1012 m a.s.l., 21°04′052″N, 105°21′610″E, 21 Oct 2013, Vislobokov N. A., 13056 (MW); Ba Vi national park, 973 m a.s.l., 21°04′136″N, 105°21′734″E, 27 Oct 2013, Vislobokov N. A., 13067 (MW), 13072 (MW); Ba Vi national park, 1011 m a.s.l., 29 Oct 2013, 21°04′056″N, 105°21′614″E, Vislobokov N. A., 13073 (MW). North 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 with solid crystalline highly eroded limestone at ca 500–700 m a.s.l., terrestrial herb in shady place, not rare, 25 Mar 2011, L. Averyanov, T. Maisak, L. Osinovetz et al., CPC 1566c, d (LE). North Vietnam, Ninh Binh province, Nho Quan district, Cuc Phuong national park, 532 m a.s.l. 20°21′409″N, 105°35′578″E, 5 Nov 2013, Vislobokov N. A., 14059 (MW); 563 m a.s.l. 20°21′468″N, 105°35′790″E, 8 Nov 2013, Vislobokov N. A., 14069 (MW). North Vietnam, Ninh Binh province, Nho Quan district, Cuc Phuong national park, around point 20°15′03.6″N, 105°41′58.7″E, at ca 165 m a.s.l., scattered in closed evergreen broad-leaved lowland secondary forests at the base of limestone, common, 9 Dec 2014, N. S. Khang, NSK 761 (LE – photo). North Vietnam, Phu Tho province, Thanh Son district, Xuan Son national park, 435 m a.s.l., 21°08′233″N, 104°57′131″E, 1 Nov 2013, Vislobokov N. A., 13077 (MW), 13079 (MW); 593 m a.s.l., 21°08′236″N, 104°57′239″E, 3 Nov 2013, Vislobokov N. A., 13097 (MW); 488 m a.s.l.



Figure 3. *Aspidistra subrotata*. Typical specimen from Vietnam. Digital herbarium sheet, L. Averyanov, CPC 1566c, d/0243. Photos, correction and design by L. Averyanov.



Figure 4. *Aspidistra subrotata*. Typical specimen from Laos. L. Averyanov et al., LA-VN 287. Photos, correction and design by L. Averyanov.

21°06'633"N, 104°57'832"E, 9 Nov 2013, Vislobokov N. A., 13118 (MW). North Vietnam, Son La province, Van Ho district, Chieng Xuan municipality, Co Hong village, Xuan Nha natural reserve, Pha Luong Mountain, remnants of primary and secondary broad-leaved evergreen forest on very steep mountain slopes composed by brown sandstone at 700–1000 m a.s.l. around point 20°42'14.2"N, 104°43'53.9"E, locally very common, 12 Nov 2013, L. Averyanov, N. T. Hiep, N. S. Khang, N. D. Thang, L. D. Qui, CPC 6963 (CPC Herbarium, LE). North Vietnam, Son La province, Van Ho district, Tan Xuan municipality, Cot Moc village, Xuan Nha natural reserve, eastern slopes of

Pha Luong Mountain, remnants of primary and secondary broad-leaved evergreen humid forest on very steep mountain slopes composed by shale and sandstone at 700–800 m a.s.l., around point 20°40'33.3"N, 104°39'00.3"E, terrestrial herb on shady steep slope, locally common, 15 Nov 2013, L. Averyanov, N. T. Hiep, N. S. Khang, N. D. Thang, L. D. Qui, CPC 7161 (CPC Herbarium, LE). North Vietnam, Thai Nguyen province, Tam Dao national park, Tillich, 4459 (M). North Vietnam, Thanh Hoa province, Thuong Xuan district, Bat Mot municipality, Vin village, Xuan Lien natural reserve, primary broad-leaved evergreen wet forest on shale at elevation 1000–1200 m a.s.l. around point 19°58'18.2"N, 104°59'24.0"E, not common, 2 Nov 2013, L. Averyanov, N. T. Hiep, N. S. Khang, CPC 6560 (CPC Herbarium, LE). North Vietnam, Phuc province, Tam Dao district, Tam Dao national park, about 6 km northwest from Tam Dao City, 1136 m a.s.l., 21°29'473"N, 105°37'812"E, 17 Nov 2013, Vislobokov N. A., 14086 (MW); about 6 km northwest from Tam Dao City, 1049 m a.s.l., 21°28'913"N, 105°37'622"E, 19 Nov 2013, Vislobokov N. A., 14100 (MW); about 6 km northwest from Tam Dao City, 1177 m a.s.l., 21°29'859"N, 105°37'824"E, 19 Nov 2013, Vislobokov N. A., 14101 (MW).

Notes

This species is probably the most common among all its congeners in northern Vietnam. It may be found in any kind of environment, on different soils or rocks, from lowlands at almost sea level to the middle mountain belt up to 1200 m a.s.l. Often it appears as an important co-dominant or lone dominant of the forest herbaceous understory in many known localities. In Vietnam the species is extremely variable, particularly in size of flowers and leaves, shape of the leaf blade, form and coloration of the stigma (Fig. 4). Additionally, leaves in Vietnamese populations may be uniformly green or yellow speckled or spotted. Such variation is often observed in the same locality and same population. Observations in Vietnam do not support the segregation of infraspecific taxa such as *A. subrotata* var. *crassinervis* and var. *angustifolia* on the base of the leaf blade shape and character of its venation. The record of *A. subrotata* reported here for Laos (Averyanov et al., LA-VN 287 Fig. 5) is a new for Laotian flora.

Aspidistra tillichiana O. Colin (2015, p. 243) var. *latifolia* Aver. & Tillich var. nov. (Fig. 5)

Type: 25 Oct 2015, L. Averyanov, CPC 6841a/13270 (holotype: LE). Type prepared from cultivated plant collected in northern Vietnam ("Thanh Hoa province, Thuong Xuan district, Van Xuan municipality, Quan village, Xuan Lien natural reserve, secondary broad-leaved evergreen forest on sandstone hills at elevation 300–500 m a.s.l. around point 19°51'27.0"N, 105°12'46.0"E, not common, sterile, 7 Nov 2013, L. Averyanov, N. T. Hiep, N. S. Khang, N. D. Thang, L. D. Qui, CPC 6841a").

Etymology

The varietal epithet refers to broad leaves.

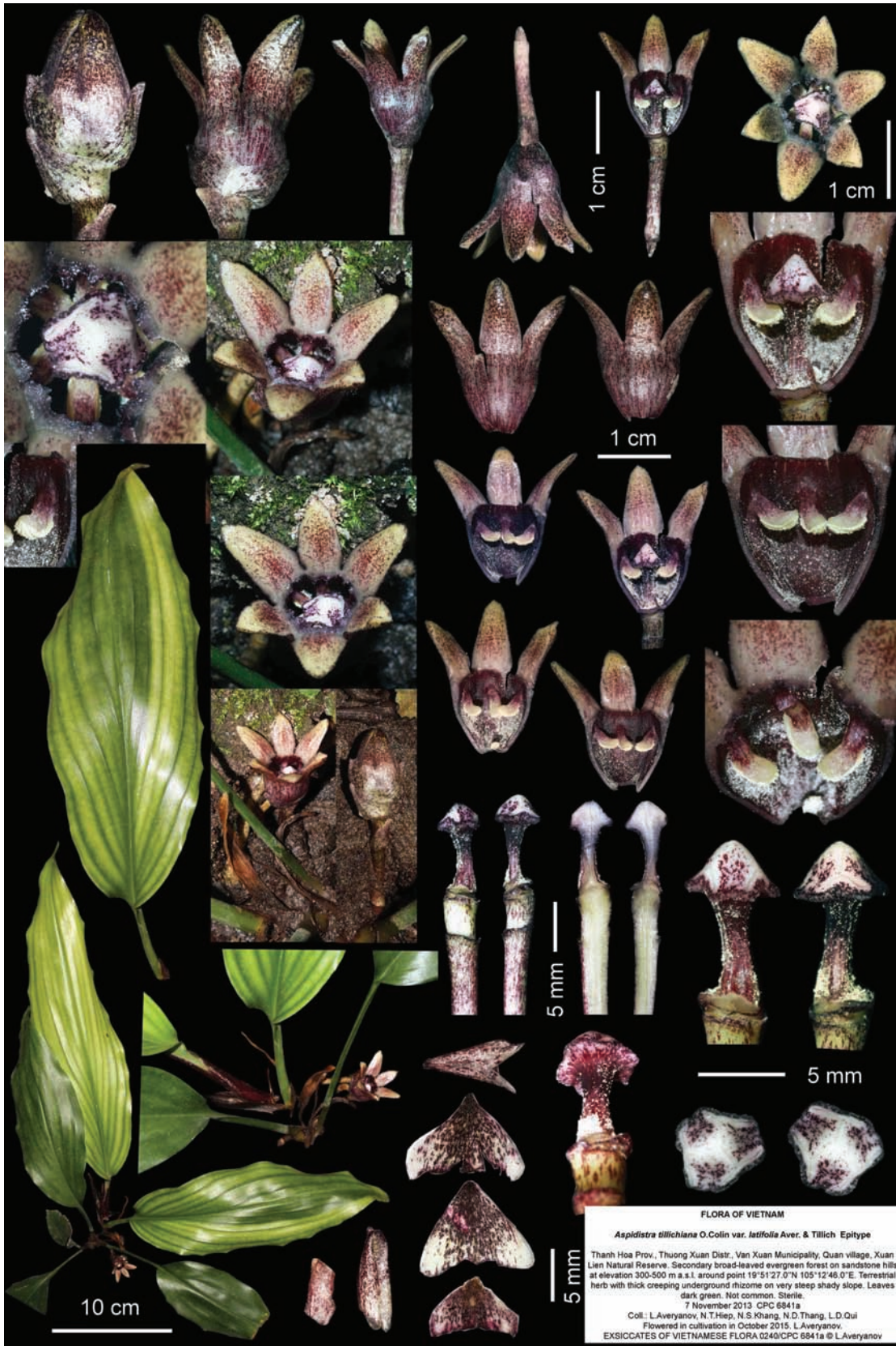


Figure 5. *Aspidistra tillichiana* var. *latifolia* var. nov. Digital epitype, L. Averyanov, CPC 6841a/0240. Photos, correction and design by L. Averyanov.

Description

Terrestrial perennial herb with hypogeous, simple or few branching, plagiotropic creeping rhizome. Rhizome thick, stout, (3)5–8(12) cm long, (3.5)4.0–6.0(7.0) cm in diameter, loosely covered by imbricate, dirty purple-brown or dark brown bracts, later disintegrated into dark dirty brownish to almost black fibrous remains, bearing erect, distant leaves and few thick, distant, underground roots. Leafy shoot at apex of rhizome, oblique ascending, very short, simple, few mm tall, loosely enveloped by imbricate, conduplicate to subtubular, narrowly triangular, acuminate, rather straight cataphylls to (2.0)3.0–5.0(6.5) cm long, (4)5–10(12) mm wide. Leaves on individual shoot (1)2–3(4), each (15)20–30(35) cm long, petiolate. Petiole stiff, rigid, straight, dark green, (2.5)3.0–5.5(7.0) cm long, (2.5)3.0–4.0 mm in diameter, adaxially shallowly channeled. Leaf blade rather coriaceous, flat or obscurely longitudinally pleated, slightly arching, elliptic, shortly attenuate at apex, (12)15–24(30) cm long, (4.5)5.0–7.0(8.0) cm wide, normally slightly irregularly wavy along margin, uniformly grass-green on both sides, with prominent median vein and few distinct arching secondary veins. Flowers 1–3(4) on individual shoot, solitary, arising from the apical part of the rhizome, shortly pedunculate, odorless, (1.6)1.8–2.2(2.4) cm long and wide (across), not opening widely. Peduncle arising obliquely or almost horizontally, rather straight, white, sparsely speckled with purple, (1.6)1.8–2.2(2.4) cm long, (2.2)2.5–3.0(3.2) mm in diameter, with (3)4–5(6) sterile imbricate bracts; bracts broadly triangular, concave, thin, white with dense purple speckles at middle, scarious, later papyraceous, blunt to obtuse, (4)5–7(8) mm long, (6.5)8–10(12) mm wide (being flattened); two or three distal bracts close to each other and to flower base. Perigone tube campanulate, fleshy, outside dull-yellowish, densely speckled with many small purple marks, inside uniformly dark purple-brown, smooth and glossy, (0.8)0.9–1.1(1.2) cm long and wide, with 6 free lobes at apex. Perigone lobes subequal, thick, fleshy, flat, on both sides smooth, glossy, dull pale yellowish, sparsely speckled with small purple marks, triangular ovate to ovate, straight, erect or slightly recurved, (8)9–10(11) mm long, (4.0)4.5–5.5(6.0) mm wide, obtuse; base of lobes adaxially with irregularly denticulate, erect, dark purple appendages 1 mm long forming annular corona. Stamens 6, with short, fleshy, dull purple, horizontal or slightly down-directed filaments (0.9)1.0–1.1(1.2) mm long, inserted a little below the middle of the tube; anthers white, ovoid, (1.8)2.0–2.1(2.2) mm long, (0.8)1.0–1.1(1.2) mm wide, placed horizontally, facing bottom of tube; pollen sacs introrse, downward opening; pollen white. Pistil mushroom shaped, dark dirty purple; style, cylindrical, slightly broadening towards the base and apex, (4.6)4.8–5.2(5.4) mm tall, (0.8)1.0–1.8(2.0) mm in diameter; stigma smooth, fleshy, white (below purple), speckled with sparse purple marks, broadly pyramidal, (2.0)2.2–2.4(2.6) tall, (4.0)4.2–5.0(5.2) mm in diameter, obscurely triangular in outline, with indistinct, shallowly retuse lobes. Ovary inconspicuous, very indistinct, white, speckled with dirty purple. Fruits unknown.

Distribution

Vietnam province: Thanh Hoa (Thuong Xuan district, Xuan Lien natural reserve). Endemic.

Habitat, phenology and conservation status

Terrestrial creeping herb growing in lowland broad-leaved evergreen forests on sandstone at 300–500 m a.s.l., commonly on very steep shady slopes. Flowers in cultivation in October–November. Occasional. Estimated IUCN Red List status: ‘Data Deficient’ (DD).

Similar species

This new variety differs considerably from the type specimen of *A. tillichiana* O. Colin (2015, p. 243) var. *tillichiana* found in Vinh Phuc province of northern Vietnam in Tam Dao Range at 1100 m a.s.l., e.g. by distinctly petiolate leaves spaced along the rhizome (instead of the linear leaves of the type variety), by broad, elliptic leaf blade, flower coloration scheme and by a little longer flowers. It is the first example of a species encompassing two varieties with tufted lineate vs spaced petiolate leaves. This indicates that the group of species with tufted lineate leaves does not necessarily represent a monophyletic entity. The new variety was found as a rather common understory herb in lowland forest on sandstone hills in Xuan Lien natural reserve (Thanh Hoa province) at about 160 km to southsouthwest of the type variety locality.

Acknowledgements – The authors cordially thank the Director of the Center for Plant Conservation, Hanoi (Vietnam Union of Science and Technology Associations), Nguyen Tien Hiep and Nguyen Sinh Khang for organization and joint field work, which were partly supported by investigation programs of USA National Geographic Society “Exploration of primary woods along constructed highway Hanoi–Ho Chi Minh for their sustainable conservation in limits of Ha Tinh and Nghe An provinces of central Vietnam”, 9129-12, “Flora of relict karstic formation of NE. Laos (Houaphan and Kiangkhoang Provinces)”, 9584-14 and Russian Foundation for Basic Research “Plant taxonomy, geography and biology in local floras of eastern Indochina”, 15-04-00419A. Laboratory work were provided in the framework of institutional research project of the Komarov Botanical Institute of the Russian Academy of Sciences. We are highly indebted to Nikolai Vislobokov for access to his excellent herbarium collections housed presently at the Herbarium of Moscow University (MW).

References

- Averyanov, L. V. and Tillich, H.-J. 2014. *Aspidistra albopurpurea*, *A. khangii*, *A. lubae* and *A. stellata* spp. nov. (Asparagaceae, Convallariaceae s.s.) from Indochina. – Nord. J. Bot. 32: 752–760.
- Averyanov, L. V. and Tillich, H.-J. 2015. *Aspidistra laotica*, *A. multiflora*, *A. oviflora* and *A. semiaperta* spp. nov. (Asparagaceae, Convallariaceae s.s.) from eastern Indochina. – Nord. J. Bot. 33: 366–376.
- Averyanov, L. V. and Tillich, H.-J. 2016. *Aspidistra anomala*, *A. elegans* and *A. sinensis* spp. nov. (Asparagaceae, Convallariaceae s.s.) from China, Laos and Vietnam. – Nord. J. Bot. 34: 141–147.
- Colin, O. 2015. *Aspidistra tillichiana* (Asparagaceae), a new species from northern Vietnam. – Phytotaxa 212: 243–245.

- Hu, R.-C. et al. 2014. *Aspidistra stenophylla* (Asparagaceae), a new species from Guangxi, China. – *Phytotaxa* 170: 53–56.
- Ker-Gawler, J. B. 1822. *Aspidistra lurida*. – *Bot. Reg.* 8: t. 628.
- Li, G. Z. (ed.) 2004. The genus *Aspidistra*. – Guangxi Sci. Technol. Publ. House.
- Lin, C. R. et al. 2014. *Aspidistra lingyemensis* sp. nov. (Asparagaceae) from limestone areas in Guangxi, China. – *Nord. J. Bot.* 32: 60–63.
- Lin, C. R. et al. 2015. *Aspidistra longgangensis* sp. nov. (Asparagaceae) from limestone areas in Guangxi, China. – *Nord. J. Bot.* 33: 377–380.
- Meng, T. et al. 2014. *Aspidistra tenuifolia* (Asparagaceae), a new species from China. – *Phytotaxa* 161: 289–293.
- Phonsena, P. and De Wilde, W. J. J. O. 2010. The genus *Aspidistra* Ker Gawl. (Asparagaceae/Ruscaceae) in Thailand. – *Thai For. Bull. Bot.* 38: 48–58.
- Tillich, H.-J. 2005. A key for *Aspidistra*, including fifteen new species from Vietnam. – *Feddes Repert.* 116: 313–338.
- Tillich, H.-J. 2014. The genus *Aspidistra* Ker-Gawl. (Asparagaceae) in Vietnam. – *Taiwania* 59: 1–8.
- Tillich, H.-J. and Averyanov, L. V. 2008. Two new species and one new subspecies of *Aspidistra* Ker-Gawl. (Ruscaceae) from Vietnam. – *Feddes Repert.* 119: 37–41.
- Vislobokov, N. A. et al. 2014. *Aspidistra paucitepala* (Asparagaceae), a new species with occurrence of the lowest tepal number in flowers of Asparagales. – *Phytotaxa* 161: 270–282.
- Vislobokov, N. A. et al. 2016. *Aspidistra cylindrica* (Asparagaceae), a new species from southern Vietnam. – *Syst. Bot.* 41: 160165.
- Wan, Y. 1984. New species of Liliaceae from Guangxi. – *Bull. Bot. Res. North-East For. Inst. Harb.* 4: 165–171.
- Wan, Y. and Huang, C.-C. 1987. New species of the genus *Aspidistra* from Guangxi. – *Guihaia* 7: 217–224.