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Aspidistra punctatoides sp. nov. (Ruscaceae) from limestone areas in Guangxi, China

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Aspidistra punctatoides Yan Liu & C. R. Lin (Ruscaceae) is described and illustrated as a new species from limestone areas in southwestern Guangxi, China, near the border with northern Vietnam. It resembles *A. punctata* Lindl. in leaf size, a campanulate perianth densely covered with purple spots, lobes adaxially with two fleshy keels, and the peltate stigma, but differs by the stigma being adaxially truncate and densely papillate, and by the margin being 3- or 4-lobed with lobes emarginate at apex.

The genus *Aspidistra* Ker-Gawler (Ruscaceae), including about 100 species, mainly occurs in China and Vietnam. Over 60 species occur in south and southwest China (Liang and Tamura 2000, Li 2004, Tillich 2008). The floral structure of *Aspidistra*, especially the stigma, is the most important taxonomic character because of its great variation.

In February 2007, during the course of investigating limestone plants in southwestern Guangxi, China, near the border to northern Vietnam, we collected an unusual *Aspidistra* specimen with purple bell-shaped flowers in Daxin County. The plants were brought into cultivation in Guilin Botanical Garden for study. In the following three years, they flowered regularly, making possible a detailed description based on living plant material. Upon careful comparison with all species heretofore known in *Aspidistra* (Lang et al. 1999, Tang and Liu 2003, Bogner and Arnautov 2004, Brauchler and Ngoc 2005, Tillich 2005, Tillich et al. 2007, Hou et al. 2009, Lin et al. 2009), we concluded that our plants comprise an undescribed species.

Aspidistra punctatoides Yan Liu & C. R. Lin sp. nov. (Fig. 1, 2)

Species nova lobis perianthii 8(6), stigmate facie adaxiali truncato, dense papillato, margine 3- vel 4-lobato, lobis apice emarginatis. Aspidistrae punctatae Lindl. affinis, quae lobis perianthii 8, stigmate facie adaxiali leviter elevato, laevi, margine undulate 8-lobato, lobis apice denticulatis differt. Etiam A. luridae Ker-Gawl. affinis, quae lobis perianthii leviter recurvatis, stigmate facie adaxiali leviter elevato, laevi, margine undulate 6–8-lobato, lobis apice integris differt.

Type: China. Guangxi Zhuangzu Autonomous Region, Daxin County, Xialei Township, limestone mountains, 560 m a.s.l., 10 Feb 2007, Yan Liu L1432 (holotype: IBK, isotype: IBK).

Perennial herbs, evergreen, rhizomatous. Rhizome creeping, subterete, 8–10 mm thick, covered with scales, nodes dense. Roots numerous. Vaginal leaves 2–3, purple–red, 3–8 cm long, enveloping the base of the petiole, becoming black–brown when dry. Leaves solitary, 1–3 cm apart; petiole stiffly upright, 11–26 cm long, 2–4 mm thick, adaxially sulcate; leaf blade usually oblong-lanceolate to lanceolate, 15–27 cm long, 4.5–7.5 cm wide, dark green, base broadly cuneate to cuneate, inequilateral, apex acuminate, margin entire. Peduncle decumbent to declining, purple–red, 2–3 cm long, with 4–5 bracts, bracts gradually wider from base to top of peduncle, the two most basal bracts ones of perianth broadly ovate, pale green with purple spots, ca 8 mm long, ca 6 mm wide, obtuse at apex. Flower solitary; perianth campanulate, purple; lobes 8 (occasionally 6), explanate, triangular, 5–6 mm long, 3–4 mm wide at base, adaxially pale yellow–green with numerous small purple spots, and with two prominent keels ca 1 mm high, each keel basally fusing with a keel of the adjoining lobe and forming a protruding lip at the fusion point; tube 5–7 mm long, 10–14 mm in diameter, blackish purple inside. Stamens 8 (6), opposite to lobes, subsessile, inserted in the middle of the perianth tube, anthers oblong, ca 2 mm long and 1 mm wide. Pistil mushroom shaped, ca 8 mm long, ovary inconspicuous, style short, cylindrical, 2–3 mm in diameter, stigma peltate, ca 1 cm in diameter,

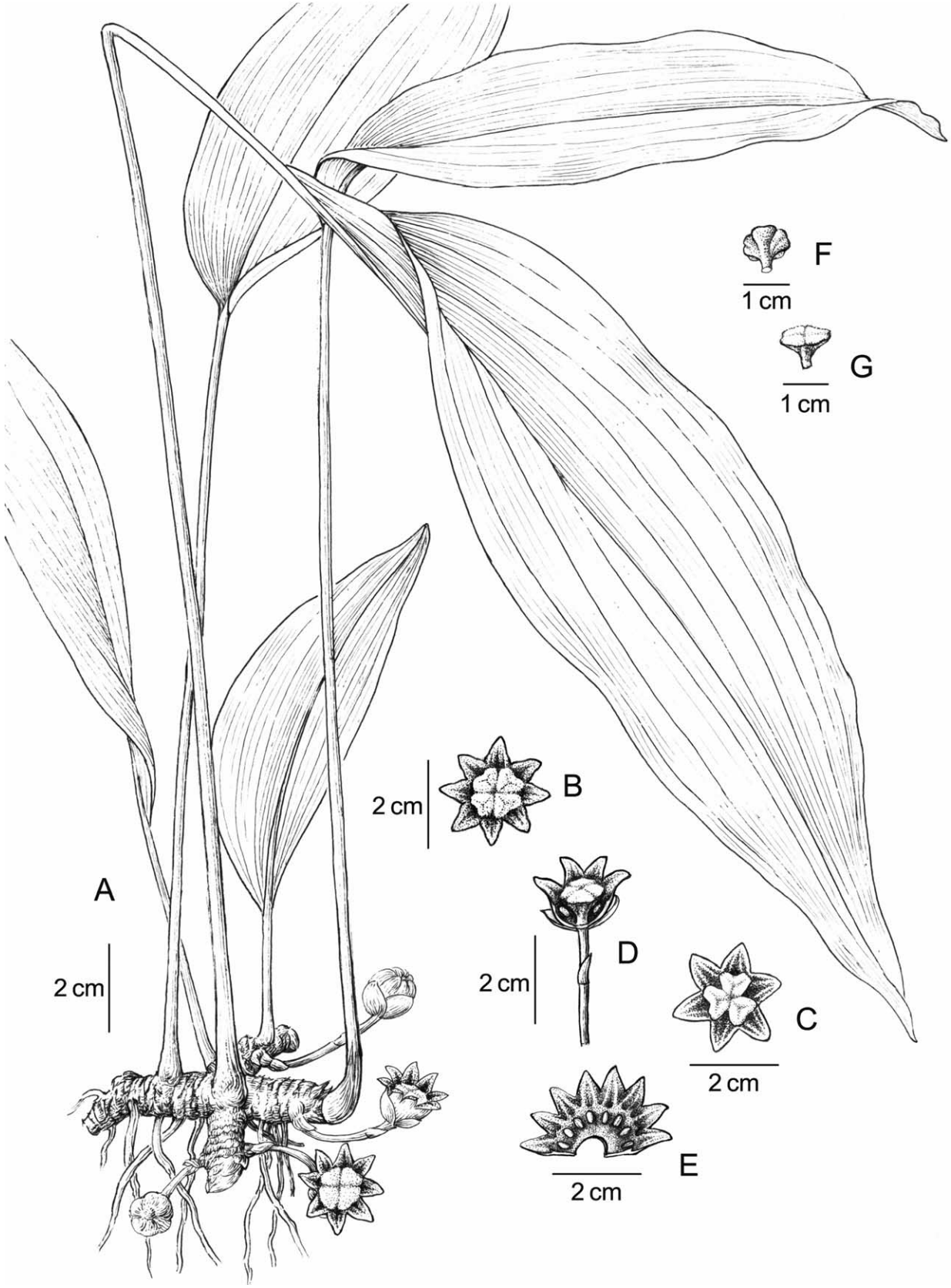

Figure 1. *Aspidistra punctatoides* Yan Liu & C. R. Lin sp. nov. (A) flowering plant, (B) apical view of flower with 8 lobes, (C) apical view of flower with 6 lobes, (D) flower with half of perianth removed showing stamens and pistil, (E) perianth opened showing stamens, (F) stigma abaxial view, (G) stigma adaxial view. Drawn by W. H. Lin from Yan Liu L1432.

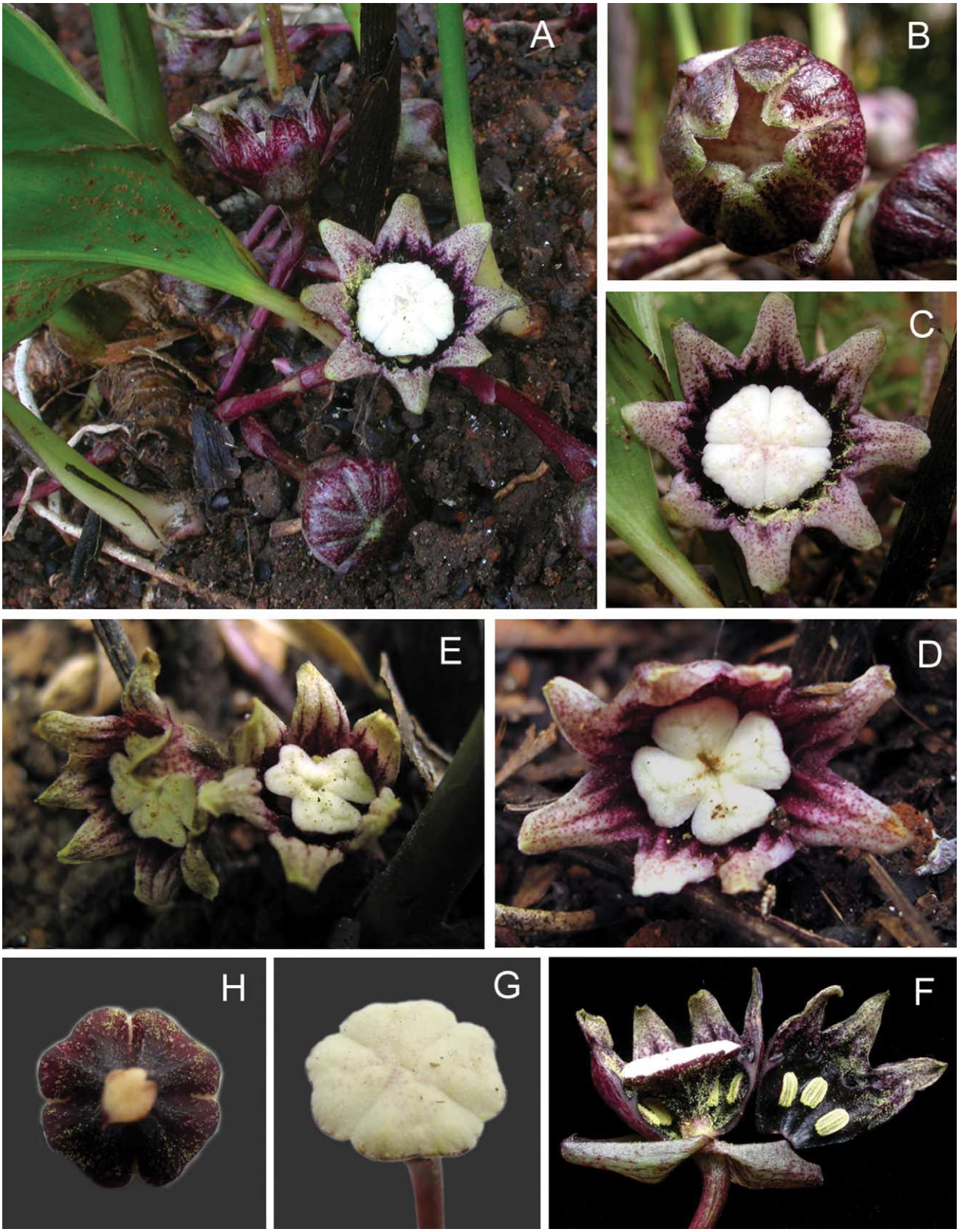

Figure 2. *Aspidistra punctatoides* Yan Liu & C. R. Lin sp. nov. (A) habit, (B) buds, (C), (D) flowers, showing the morphological variation during different developmental stages, (E) flower 8-merous, occasionally 6-merous, (F) flower dissected, showing stamens and pistil, (G) stigma adaxial view, (H) stigma abaxial view.

Table 1. Morphological comparison between *Aspidistra punctatoides* sp. nov., *A. punctata* and *A. lurida*.

	A. punctatoides	*A. punctata*	*A. lurida*
Leaf			
Blade (cm)	15–27×4.5–7.5	25–30×6–7	12–25×3.5–6.0
Petiole (cm)	11–26	7.5–18.0	15–25
Perianth			
Abaxial color	purple	pale green and speckled with purplish brown	purple
Tube			
Size (mm)	5–7 mm long, ¢10–14	12 mm long, ¢13	5–8 mm long, ¢10–15
Adaxial Color	blackish purple	white	Purple
Lobes			
Number	8 (occasionally 6)	8	6 or 8
Form	explanate	explanate	slightly recurved
Adaxial Color	pale yellow–green with small purple spots	dark purple	purple
Length (mm)	5–6, subequal to tube	7, shorter than tube	5, slightly shorter than tube
Stamens	in middle of perianth tube	in middle of perianth tube	at base of perianth tube
Stigma			
Size (mm)	¢10	¢9	¢7–8
Color	white adaxially, blackish purple abaxially	white	white and with pale purple spots at margin
Adaxial surface	truncate, densely papillate	slightly convex, glabrous	convex, glabrous
Margin	4(3)-lobed, lobes emarginate at apex	undulate 8-lobed, lobes denticulate at apex	undulate 6- or 8-lobed, lobes entire at apex
Flowering	Dec–Feb	Mar	Nov
Distribution	Guangxi (Daxin)	Guangdong, Hong-Kong	Guangdong, Guizhou, Guangxi (Liuzhou), Hong-Kong

upper surface white, flat and densely papillate, with 3–4 inconspicuous radial, bifurcate lines in center, 3–4-lobed at margin, lobes emarginate at apex, abaxially blackish purple. Flowering occurs from Dec–Feb.

Distribution, ecology and etymology

Aspidistra punctatoides is currently known only from Daxin County in southwestern Guangxi, China. It grows on shaded rocky limestone slopes in valleys at an altitude of 500–600 m a.s.l. The specific epithet '*punctatoides*' is derived from the new species being similar to *A. punctata* Lindl. in the shape, size and purple punctation of the flowers.

Similar species

Aspidistra punctatoides (Fig. 1, 2) is similar to *A. punctata* in leaf size, the campanulate perianth densely covered with purple spots, lobes adaxially with two fleshy keels, and the peltate stigma, but differs by the stigma adaxially truncate and densely papillate, and with the margin 3- or 4-lobed with lobes emarginate at apex. In *A. punctata* the stigma is adaxially slightly convex and glabrous, with the margin undulate 8-lobed, and the lobes denticulate at apex. *Aspidistra punctatoides* is also similar to *A. lurida* Ker-Gawl. in some aspects. However, the latter species differs in its perianth lobes usually recurved, stamens inserted at base of the perianth tube, stigma adaxially convex and glabrous. A detailed comparison of the three species is presented in Table 1.

Based on field observation of the new species, 8-merous flowers are dominant, but occasionally 6-merous flowers are found (Fig. 2E). During different developmental stages of flowering, the characters of the flower, especially the shape of stigma are changingslightly. At early anthesis, the flowers are fresh, succulent, with perianth lobes explanate and the shape of stigma looks like a round because the four stigma lobes are pressed tightly together (Fig. 2A, 2C). At late anthesis, with greater water loss, the perianth is withered and slightly recurved, the color of perianth changes to yellow-brown and the four stigma lobes clearly separates (Fig. 2D–E).

Additional specimen examined (paratype)

China. Guangxi Zhuangzu Autonomous Region, Guilin City, Yanshan Township, introduced by Yan Liu from the type locality, cultivated, 24 Jan 2010, C. R. Lin 036 (IBK).

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