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Systematic, phylogenetic and pollination studies of *Specklinia* (Orchidaceae)

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Cover Page



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Chapter 5

Specklinia lugduno-batavae (Orchidaceae: Pleurothallidinae), a new species in the *S. digitalis* group

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Specklinia lugduno-batavae from the Caribbean lowlands of Nicaragua and Costa Rica is formally described and illustrated. The new species belongs to the *Specklinia digitalis* group and can be recognised by the creeping habit, purple spotted abaxial surface of the leaf and the almost immaculate whitish-cream flowers, which are produced in succession on a very short, flexuous inflorescence. The name honours Leiden University and the Hortus botanicus Leiden. The novelty is compared with its closest relatives, *Specklinia digitalis*, *S. pisinna* and *S. succulenta*.

Keywords: Costa Rica, Nicaragua, *Specklinia digitalis*, *S. lugduno-batavae*, *S. pisinna*, *S. succulenta*

Introduction

Traditionally included in *Pleurothallis* R.Br. (Luer 1986), the genus *Specklinia* Lindl. was re-established by Pridgeon & Chase (2001), and has ever since then, with some exceptions (Luer 2006), received general acceptance by the orchid community (Pridgeon 2005; Pupulin *et al.* 2012, Chapter 1; Bogarín *et al.* 2013b, Chapter 4; Karremans *et al.* 2013a). Species in the genus are recognised by the tiny habit with ramicauls shorter than the leaf, obtuse petals, a ligulate lip, prominent column wings and naked pollinia that lack caudicles (Karremans 2014, Chapter 7).

About 100 species are recognised in the genus (Chapter 6). It is distributed from Mexico, through Central America, southwards into Bolivia and Brazil, and the Antilles. *Specklinia grobyi* (Bateman ex Lindl.) F.Barros is perhaps the best known, most widely distributed and most variable species within the genus. Many of its morphological or geographical “variants” have been named, however the difficulty of clearly delimiting those entities has led authors to prefer a broad circumscription of *S. grobyi*. It is thus best referred to as the *S. grobyi* species complex (Luer 2006).

Within the ‘grobyi’ complex there are nonetheless several morphologically discrete, well-recognisable and accepted species. *Specklinia digitalis* (Luer) Pridgeon & M.W.Chase and *S. pisinna* (Luer) Solano & Soto Arenas from northern Central America are good examples. Both are easily distinguished from their close relatives by the tiny habit (plants under 3 cm tall), with suborbicular leaves, spotted with purple abaxially, the relatively elongate, racemose, multi-flowered inflorescence with a single flower open at a time, the conspicuous thickening of the apex of the dorsal sepal, and the ligulate, unlobed, mostly inornate lip, which is shallowly depressed in the middle. A third species with these general morphological features was described recently from the French Guyana as *Specklinia succulenta* Bellone & Archila. Here we formally describe a fourth species within the *S. digitalis* group, within the ‘grobyi’ complex, from Nicaragua and Costa Rica.

Taxonomic treatment

13. *Specklinia lugduno-batavae* Karremans, Bogarín & Gravend., *Blumea* 59(3): 180. 2015.

The species is similar to Specklinia pisinna but can be distinguished by the prostrate habit (vs. erect habit), shorter leaves (up to 8 vs. 11 mm long), the flexuous inflorescence with up to 6 flowers (vs. straight and containing up to 3 flowers), the creamy-white flowers (vs. heavily suffused and striped with purple), and the shorter lip (up to 1.6 vs. 2.3 mm). Specklinia digitalis is also similar but the new species can be distinguished by the shorter leaves (4-8 vs. 12-15 mm), the shorter inflorescence (up to 1.5 cm vs. up to 15 cm), the shorter sepals (3-4 vs. 5 mm long), the ligulate to narrowly elliptic petals (vs. obovate) and the shorter lip (1.5-1.6 vs. 2 mm long).

Type:—COSTA RICA. Heredia, Sarapiquí, Horquetas, unpaved road to Rara Avis, ca. km 6, 10°20'40.2"N 83°59'30.3"W, 200 m, 9 April 2009, *F. Pupulin, B. Arias, D. Bogarín & C. Ossenbach* 7709 (holotype JBL-spirit; D5055; Fig. 51 & 52).

Epiphytic, caespitose, prostrate to sub-erect herb to 1 cm tall, excluding the inflorescence. Roots fibrous, flexuous, glabrous. Stem abbreviated, terete-cylindric, to 1-2 mm long, monophyllous, completely concealed by papyraceous, sheaths. Leaves coriaceous, sub-orbicular to broadly elliptic, 4-8 by 3-6 mm, densely spotted with purple abaxially. Inflorescence borne laterally from the apex of the stem, without an annulus, an erect, flexuous, distichous, successively flowered raceme, with 1-2 flowers open at once, producing up to 6 flowers per inflorescence, up to 15-20 mm long; peduncle cylindric, to 15 mm long. Floral bracts infundibuliform, broadly ovate, acute, 1 mm long. Pedicel cylindric, glabrous, persistent, 2 mm long including the subclavate ovary. Flowers whitish cream, immaculate to slightly brownish stained along the sepal veins. Sepals fleshy, glabrous; dorsal sepal elliptic, 3-veined, acute, 4.0 by 2.1-2.3 mm; lateral sepals completely fused into an elliptic synsepal, 4-veined, 4.0-4.5 by 3 mm. Petals ligulate to narrowly elliptic, obtuse, 2.1-2.2 by 0.9-1.0 mm, 1-veined. Lip ligulate, longitudinally slightly arched-convex in natural position, thinly articulate with the column foot by a hyaline claw, obtuse, longitudinally depressed in the middle, 1.5-1.6 by 0.7-0.8 mm. Column slightly arched, terete-slender at the base, 1.6-1.8 mm long without the foot, provided with low, broad membranous wings at the apex; column foot inconspicuous. Anther cap deeply cucullate, ovate, 2-celled. Pollinia 2, obovate-complanate, minutely hooked at the base, lacking caudicles. The description is based on *Pupulin* 7709, *Pupulin* 7710 and *Bogarín* 6761.

Etymology:—The name honours the Academia Lugduno Batava, nowadays Leiden University, and its Hortus Academicus Lugduno-Batavus, the current Hortus botanicus Leiden.

Other material examined:—Costa Rica, Heredia, Sarapiquí. OET, La Selva, Surá trail, 350 m, *R. Aguilar* 8729 (LSCR), 16 Apr. 2004; CES trail, *O. Vargas* 1264 (LSCR), 13 Jun. 2005. Unpaved road to Rara Avis, ca. km 6, 10°20'40.2"N 83°59'30.3"W, 200 m, *F. Pupulin, B. Arias, D. Bogarín & C. Ossenbach* 7707 (JBL-spirit; D3465), 9 April 2009; *F. Pupulin et al.* 7708 (JBL-spirit; D3752), 9 April 2009; *F. Pupulin et al.* 7710 (JBL-spirit; D3126), 9 April 2009; *D. Bogarín, B. Arias, C. Ossenbach & F. Pupulin* 6761 (JBL-spirit; D2921; Fig. 2b), 9 April 2009.

Other photographic material examined:—Nicaragua, Refugio de Vida Silvestre Los Guatusos, photographed by Fabricio Díaz Santos [photographic voucher, 108 in 'Orquídeas del Río San Juan' Díaz Santos (2010)]. Nicaragua, Guatusos Reserve, photographed by Dick Culbert (digital voucher, www.dixpix.ca/meso_america/Flora/orchids/052_platystele.html).

Distribution & Ecology:—The species is known only from the tropical wet forest of the Caribbean lowlands occurring in Nicaragua and Costa Rica at elevations between 200-350 m.

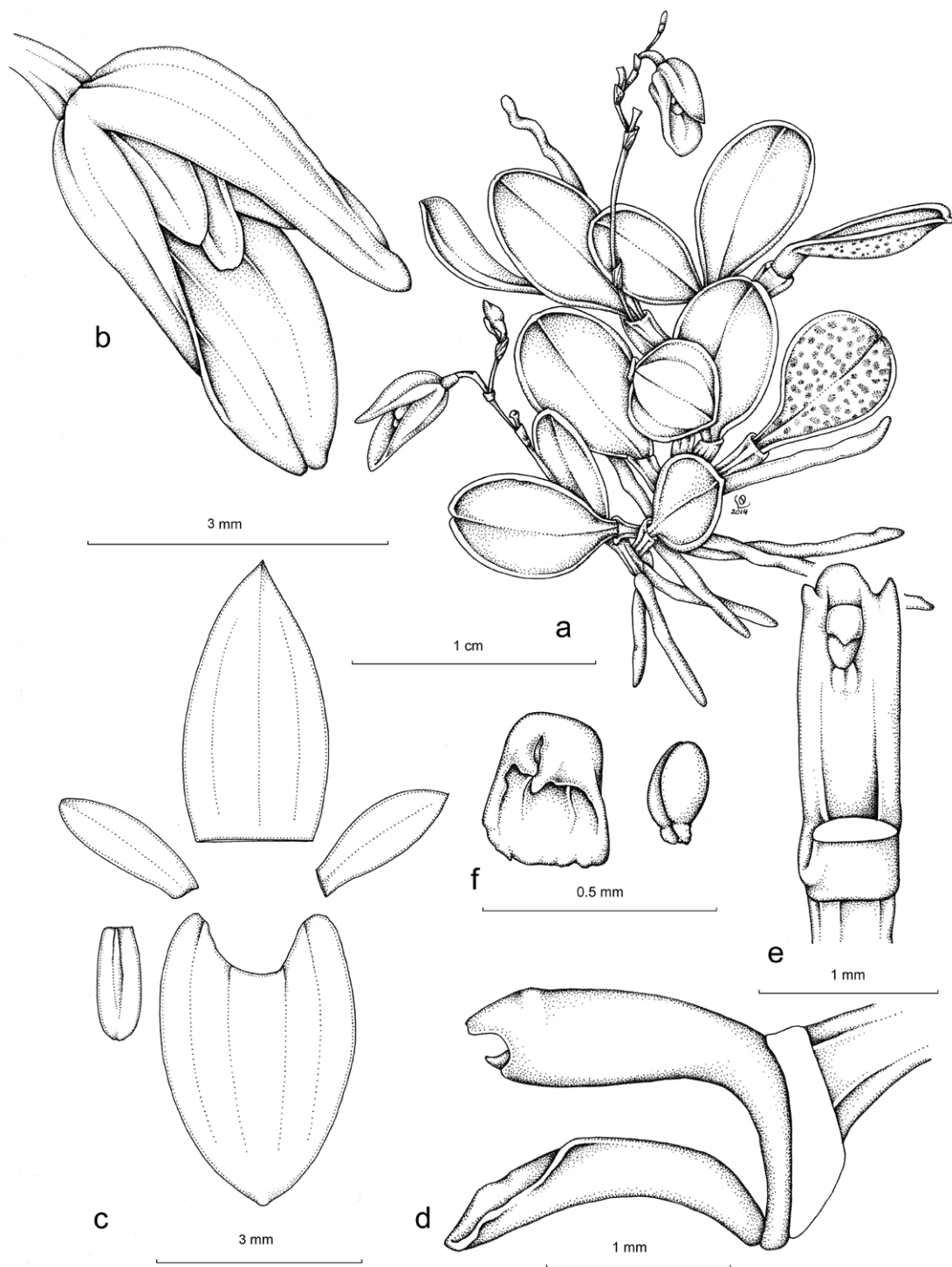


FIGURE 51. *Specklinia lugduno-batavae* Karremans, Bogarin & Gravendeel. a. Habit. b. Flower. c. Dissected perianth; d. Column and lip, lateral view; e. Column, ventral view; f. Anther cap and pollinia (*Pupulin* 7709, JBL-spirit). Drawn by D. Bogarin and inked by L. Oses.



FIGURE 52. *Specklinia lugduno-batavae* Karremans, Bogarín & Gravendeel. a. Closeup on a flower (*Pupulin* 7709, JBL-spirit); B. Showing the habit (*Bogarín* 6761, JBL-spirit) — Photographs by A.P. Karremans (A) and D. Bogarín (B).



FIGURE 53. The close relatives of *Specklinia lugduno-batavae* Karremans, Bogarín & Gravendeel. a. & b. *Specklinia digitalis* (Luer) Pridgeon & M.W.Chase (*Karremans* 5737, L-spirit); c. & d. *Specklinia pisinna* (Luer) Solano & Soto Arenas (*Karremans* 4797, L-spirit); e. & f. *Specklinia succulenta* Bellone & Archila (*Bellone* 680, LY) — Photographs by W. Driessen (A - D) and G. Chiron (E - F), reproduced with their kind permission.

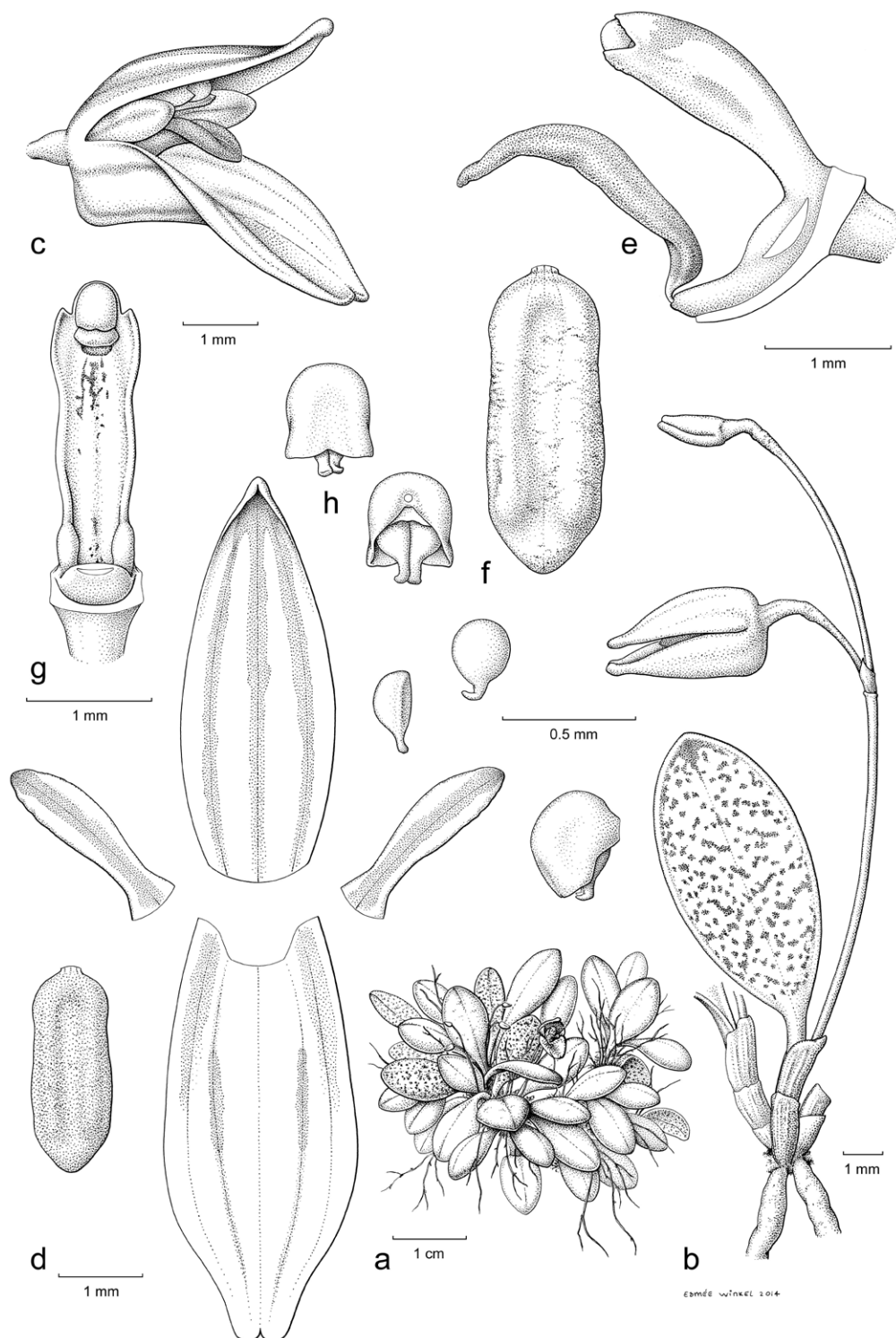


FIGURE 54. *Specklinia pisinna* (Luer) Solano & Soto Arenas. a. Habit. b. A leaf and inflorescence. c. Flower. d. Dissected perianth. e. Column and lip, lateral view; f. lip; g. Column, ventral view; h. Anther cap and pollinia (Karremans 4749, L-spirit). Drawn by E. Winkel.

Note:—The short plant up to 1 cm tall, the suborbicular leaf with purple spots on the abaxial surface, the flexuous, successive racemose inflorescence with a single flower open at a time, the conspicuous thickening of the apex of the dorsal sepal, and the ligulate, unlobed, mostly inornate lip, which is shallowly depressed longitudinally in the middle places *S. lugduno-batavae* in the *S. digitalis* species group (Fig. 53). The few tiny flowers and short inflorescence are similar to that of *S. pisinna* (Fig. 54), a species known to occur in Mexico, Guatemala and Honduras. However, the new species can be distinguished by the prostrate habit (vs. erect habit), with shorter leaves, up to 8 mm long (vs. 11 mm), the flexuous inflorescence containing up to 6 flowers (vs. straight, containing up to 3 flowers), the creamy-white flowers (vs. heavily suffused and striped with purple) and the shorter lip (up to 1.6 vs. 2.3 mm). From the Mexican endemic *S. digitalis*, it can be distinguished by the smaller prostrate habit with shorter leaves, 4-8 mm long (vs. 12-15 mm) and shorter inflorescence (up to 2 vs 15 cm long) the ligulate to narrowly elliptic petals (vs. obovate). *Specklinia succulenta* from French Guyana is also similar, but the new species can be distinguished by the prostrate habit (vs. erect), the short inflorescence (up to 2 vs. 10 cm long), the whitish cream flowers (vs. greenish-yellow) and the immaculate lip (vs. a lip with two purple stripes).



FIGURE 55. *Hortus Academicus Lugduno-Batavus* as depicted in the *Index Plantarum Horti Lugduno Batavi* (Boerhaave 1710). The chapel in the background is still part of the Hortus botanicus in Leiden today.

