Selbyana 22(2): 135–145. 2001.

New Species and Combinations in the Oncidiinae (Orchidaceae) and a Synopsis of the Cochlioda Clade (Oncidiinae)

Stig Dalström

Research Associate, Marie Selby Botanical Gardens, 811 South Palm Avenue, Sarasota, FL 34236-7726, USA

Abstract. Two new orchid species in the Oncidiinae, *Cochlioda mixtura* from Bolivia and *Odontoglossum ariasii* from Peru, are described and illustrated. Both species belong to what is here referred to as the *Cochlioda* clade, which includes species of the *Odontoglossum astranthum* Linden & Rchb. f. complex and of genera *Cochlioda* Lindl. and *Solenidiopsis* Senghas. A synopsis of the clade with an illustrated key to the species is provided. *Oncidium aurarium* Rchb. f. (syn.: *Odontoglossum trilobum* Schltr.) belongs to the same clade as *Odontoglossum ariasii,* and a nomenclatural change is made. *Symphyglossum sanguineum* (Rchb. f.) Schltr. is transferred to the genus *Odontoglossum* Kunth, based on morphological features supported by DNA sequence analysis.

Key words: *Cochlioda, Odontoglossum, Solenidiopsis, Symphyglossum,* Orchidaceae, Oncidiinae, Bolivia, Colombia, Ecuador, Peru

Introduction

Two new species and two new combinations in the Oncidiinae are presented. The *Cochlioda* clade, currently comprised of members of *Odontoglossum, Oncidium* Sw., *Cochlioda,* and *Solenidiopsis,* is characterized and discussed.

New Species and Combinations

Cochlioda mixtura Dalström & Sönnemark, sp. nov. Type: Bolivia. Cochabamba: Chapare, along road between Cochabamba and Villa Tunari, in wet cloud forest at 2000–2100 m, 7 Mar. 1998, *S. Dalström & J. Sönnemark 2342* (Holotype: SEL). Figure 1.

Species haec *Cochliodae roseae* (Lindl.) Benth. & Hook. f. similis, sed habitu majore, flore colore et labelli lobo antico lato retusoque differt.

Plant epiphytic. ***Pseudobulbs*** 2–3 cm apart on a creeping rhizome, ovate, ancipitous, unifoliate, subtended basally by 3–5 distichous sheaths, the uppermost foliaceous, similar to but shorter than the leaves. ***Leaves*** conduplicate, subpetiolate, narrowly elliptic, acute apiculate, 1.5–2 × 8–18 cm. ***Inflorescences*** 1 or 2, axillary from the uppermost sheaths, laxly 7–10 flowered, arching, ca. 20–30 cm long racemes; bracts scale-like, adpressed 0.8–1.2 cm, floral bracts similar, 0.3–0.8 cm long. ***Pedicel with ovary*** 0.8–2 cm long. ***Flowers*** resupinate, stellate, buds and newly opened flowers peach to pale orange turning rosy red with age; some plants maintaining a clear yellow base of the sepals and petals; dorsal sepal sometimes sub-unguiculate, ovate to elliptic, acute, entire, 0.4–0.6 × 1.3–1.6 cm; lateral sepals obovate, acute, slightly oblique, ca. 0.5 × 1.5 cm; petals sub-unguiculate, ovate, acute, slightly oblique, 0.6–0.8 × 1.5 cm; lip cuneate, trilobate, parallel, and rigidly adnate to the base of the column through a fleshy, longitudinal, ventral keel; lateral lobes spreading, rounded to rhombic, entire to slightly crenate; frontlobe elongate with a basal isthmus, then broadly retuse, 0.8–1.2 × 1.3 cm; callus of a fleshy, low, and shallowly canaliculate, basal, longitudinal keel, extending to the base of the front lobe, ending in four similar, more or less shortly and finely pubescent digitate keels, the central pair slightly longer; column clavate, slightly nodding apically, parallel to the lip, glabrous, ventrally canaliculate, with two broad, almost entire, apical wings and a well developed, irregularly crenate hood; stigma divided by the rostellum into two circular lobes; anther cap rostrate, dorsally lobulate; pollinarium of two sub-globose cleft pollinia on a short, ca. 0.8 mm long, sub-rectangular stipe.

Cochlioda mixtura originally was collected by Miguel Bang (no. *1801*) in Bolivia, without a specific locality. Schlechter (1921, 1922) listed Cuzco: Puno, Peru, and La Paz, Bolivia, for *C. densiflora* (as *C. noezliana*). No typical specimens of *C. densiflora* from Bolivia or southern Peru have been located, however, which suggests that Schlechter cited *M. Bang 1801,* which on some specimens has the information "La Paz" written on the herbarium label. *Cochlioda mixtura* was recollected in Bolivia around 1978 by Janet and Lee Kuhn, but identified as *C. beyrodtiana.* Some plants were then introduced into cultivation through their nursery, J&L Orchids,

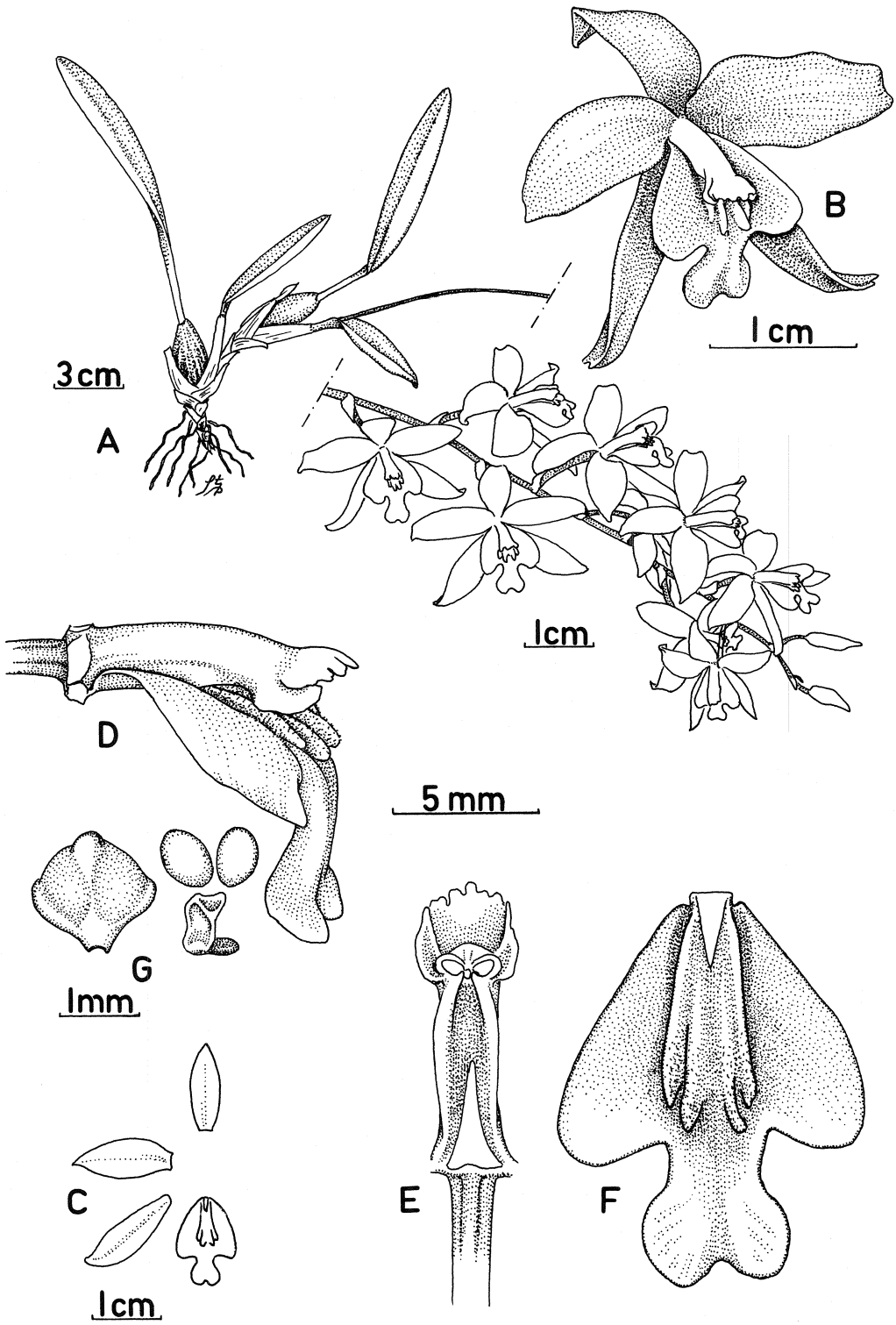

FIGURE 1. *Cochlioda mixtura* Dalström & Sönnemark. **A.** Plant habit. **B.** Flower front view. **C.** Dissected flower. **D.** Column lip lateral view. **E.** Column ventral view. **F.** Lip dorsal view. **G.** Anther cap dorsal view and pollinarium. *S. Dalström & J. Sönnemark 2342.*

and plants may still exist under that name. A subsequent collection of *C. mixtura* by Roberto Vásquez was identified as *C. noezliana,* and illustrated in Icones Plantarum Tropicarum, Fascicle 6, plate 520 (Vásquez & Dodson 1982). Analysis of available type material of *C. beyrodtiana* and *C. noezliana* show that they are synonyms of *C. densiflora. Cochlioda mixtura* is distinguished by a combination of subtle features, which creates a unique profile. The plant is rather large for the genus, with a loose and wobbly habit, unlike a more compact appearance for the other species. *Cochlioda mixtura* has smaller flowers than does *C. densiflora* and *C. vulcanica* but slightly larger ones with a broader lip than *C. rosea,* which it resembles the most. The color of the flower differs in a dull peachy hue as the flower opens, turning rosy red with maturity, in some plants maintaining clear yellow bases of the sepals and petals. The color can grade from one flower to the next on the same inflorescence, and vary from one plant to the next in the same population.

Cochlioda mixtura is an epiphyte in upper elevation wet cloud forest of the Central Andes in Bolivia, at elevations of 1800–2600 m, possibly extending into southern Peru.

Paratypes. Bolivia. La Paz: *M. Bang 1801* (BM, K, M, MO, W). Cochabamba: Chapare, between Cochabamba and Villa Tunari, ca. 2600 m, field collected by Janet and Lee Kuhn, *Orchid Identification Center 3425* (SEL); also Río Roque Mayu, 1880 m, *R. Vásquez 130* (Herb. Vásquezianum).

Etymology. From the Latin *mixtura* (a mixture), in reference to the combination of features from the other species in the genus, which creates a unique and distinct species profile.

Odontoglossum ariasii Dalström, sp. nov. TYPE: Peru. Junín: Cloud forest near Huasahuasi, at ca. 2600 m, field collected by Manuel Arias, 20 Feb. 2001, *S. Dalström 2502* (Holotype: SEL). FIGURE 2.

Species haec *Odontoglosso astranthi* Linden & Rchb. f. et affinitatibus similis, sed columnae lobis lateralibus rhombicis differt.

Plant epiphytic. ***Pseudobulbs*** caespitose, elongate ovate, ancipitous, bifoliate or trifoliate, ca. 2.5 × 10 cm, subtended basally by 6–8 distichous sheaths, the uppermost foliaceous, similar and subequal to the leaves. ***Leaves*** conduplicate, subpetiolate, elliptic to elongate oblanceolate, 1.7–2.5 × 30–45 cm. ***Inflorescences*** axillary, erect to suberect straight panicles with 8–10 spreading, 5–7 flowered, weakly flexuous branches, arising from the axil of the uppermost sheaths, 50–60 cm long; bracts scale-like, adpressed, 1–2 cm long; floral bracts similar 0.3–0.5 cm long. ***Pedicel with ovary*** 1.5–2.3 cm long. ***Flowers*** resupinate, stellate; sepals dull yellow with darker margins and brown spots; petals similar to sepals but whitish basally and with fewer spots; lip yellow basally, then white and turning yellow with age; column white with dark yellow lateral lobes; dorsal sepal elliptic, acute, slightly oblique, entire, 0.8 × 2.0 cm; lateral sepals slightly fused basally then spreading, elliptic, acute, slightly oblique, entire, 0.6–0.7 × 1.8–2.0 cm; petals elliptic, acute to slightly acuminate, slightly oblique, 0.6–0.7 × 1.7–1.9 cm; lip narrowly cuneate, rigidly adnate to the base of the column through a fleshy, longitudinal, pubescent keel, subparallel to the column basally then diverging downwards, trilobate, lateral lobes sub-rhombic, spreading, erose to serrate, sometimes incurved apically, front lobe elongate, acuminate to revolute-apiculate, ca. 1.0 × 2.0 cm; callus of a swollen, pubescent, basal, longitudinal keel with a pair of lateral cirrhate, digitate denticles near the base of the lateral lobes, with an intermediary elongate, furcate, sometimes denticulate keel, extending to the base of the frontlobe; column stout, slightly recurved, canaliculate ventrally and basally with two rhombic lateral lobes, apical wings short and broad, slightly undulate and with a well developed crenate hood; anther cap rostrate, dorsally lobulate; pollinarium of two sub-globose, cleft pollinia on an oblong, ca. 1.5 mm long stipe.

A single plant has been examined which was field collected by Manuel Arias near Huasahuasi in Peru and displayed at the Quito Orchid Show in February 2001. According to the collector, plants of this species were frequent in the type locality. Although similar to other species in the complex, the richly pubescent basal callus and the rhombic lateral lobes of the column readily distinguish *Odontoglossum ariasii.*

Odontoglossum ariasii is an epiphyte in upper elevation wet cloud forests of the Central Andes in Peru.

Etymology. Named in honor of Manuel Arias, who discovered this species and has substantially contributed to the knowledge of Peruvian orchids.

Odontoglossum aurarium (Rchb. f.) Dalström, comb. nov.—*Oncidium aurarium* Rchb. f., Gard. Chron. 22: 394. 1884. TYPE: Bolivia. *J.M. Bang 4* (Holotype: W!)

Odontoglossum trilobum Schltr., Repert. Spec. Nov. Regni. Veg. Beih. 9: 111. 1921.—*Oncidium trilobum* (Schltr.) Garay & Stacy, Bradea 1: 408. 1974. TYPE: Peru. Junín: Near La Merced,

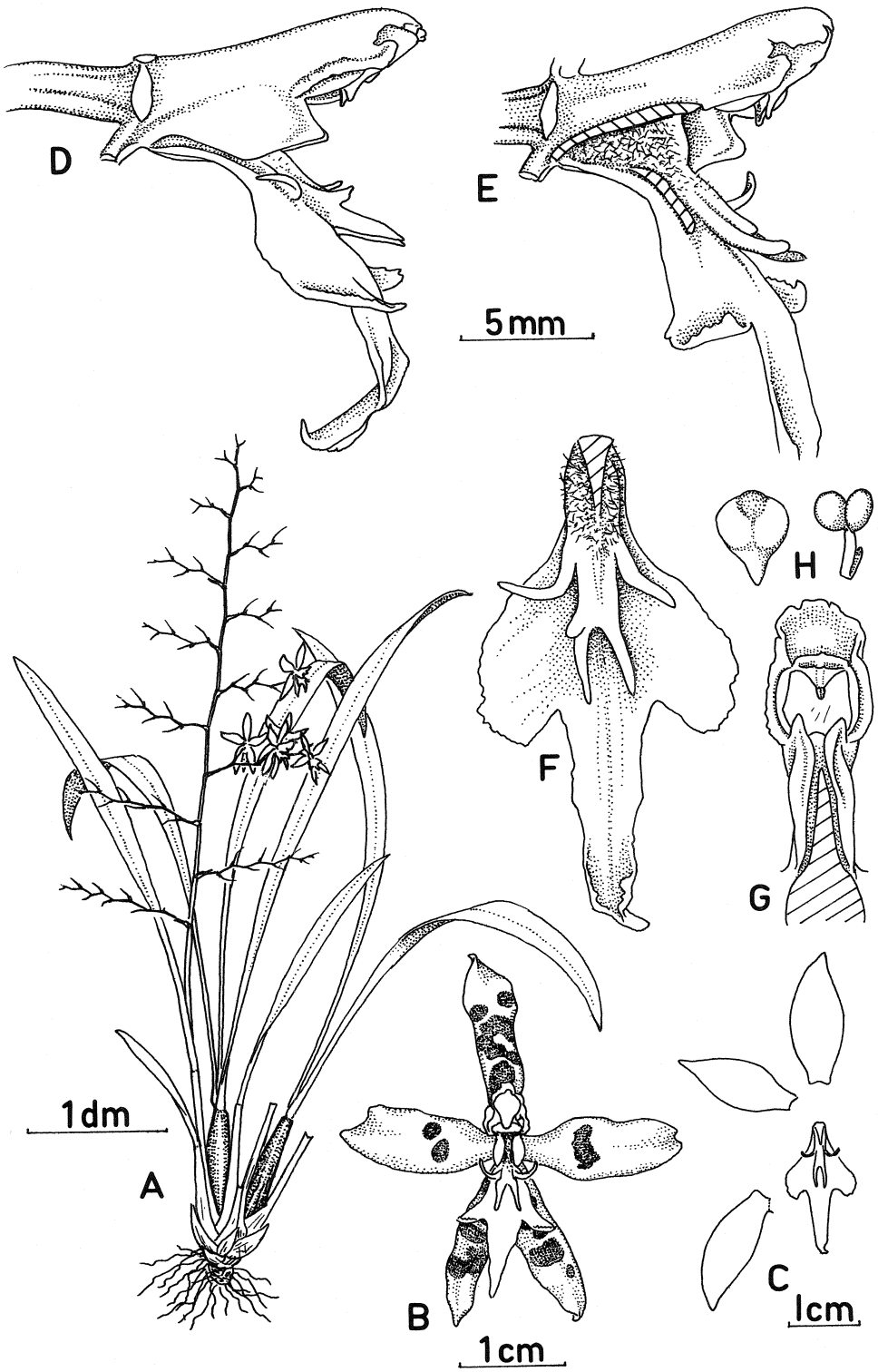

FIGURE 2. *Odontoglossum ariasii* Dalström. **A.** Plant habit. **B.** Flower frontal view. **C.** Dissected flower. **D.** Column and lip lateral view. **E.** Column and lip lateral view, column lobe and part of the callus removed. **F.** Lip, dorsal view. **G.** Column ventral view. **H.** Anther cap dorsal view and pollinarium; *S. Dalström 2502,* SEL.

in the Chanchamayo Valley, *Köhler brothers s.n.* (Holotype: B[?] destroyed).

Odontoglossum mapiriense Mansf., Repert. Spec. Nov. Regni. Veg. 36: 62. 1934. TYPE: Bolivia. Sarampiuni (Mapiri), rain forest at 500 m, *C. Troll 2785* (Holotype: B[?], destroyed).

A widespread and variable but poorly understood complex that may consist of several distinct species or subspecies. This complex is distinguished by the deeply trilobate lip and a fleshy tabula infrastigmatica. No specimens or illustrations seem to exist of *Odontoglossum mapiriense.* The original diagnosis and distribution, however, correspond with the known data of *O. aurarium* and suggest synonymy.

Odontoglossum sanguineum (Rchb. f.) Dalström, comb. nov.—*Mesospinidium sanguineum* Rchb. f., Ann. Bot. Syst. 6: 858. 1864.—*Cochlioda sanguinea* (Rchb. f.) Benth. & Hook. f., Gen. Pl. 3: 560. 1883.—*Symphyglossum sanguineum* (Rchb. f.) Schltr., Orchis 13: 9. 1919. TYPE: Ecuador [?]. *Warszewicz 16* (Holotype: K!).

Cochlioda stricta Cogn., Gard. Chron. 22: 410. 1897.—*Symphyglossum strictum* (Cogn.) Schltr., Orchis 13:10. 1919. TYPE: Colombia [possibly Ecuador], *M. de Lairesse s.n.* (Holotype: unknown).

Symphyglossum ecuadorense Dodson & Garay, Ic. Pl. Trop., plate 339. 1980. TYPE: Ecuador. Azuay: Between Asunción and San Fernando on road Cuenca-Pasaje, 1200 m, *C.H. Dodson 342* (Holotype: SEL!).

DNA sequence analysis demonstrates that *Symphyglossum sanguineum* is so intimately related to other *Odontoglossum* species that it becomes impossible to maintain it in a separate genus (Williams et al. 2001). The morphological features also fit well in *Odontoglossum.*

In the herbarium at Kew, a printed clip (as from a published article) is glued on the type specimen of *Odontoglossum sanguineum.* It clearly mentions Lindley as the author of the name "*Anachaste sanguinea,*" with reference to *Warscewicz 16* as the cited specimen. Where this was published is presently unknown, and to my knowledge the name "*Anachaste*" has not been cited since. Should the origin of this enigmatic clip be revealed, showing that the description of *Anachaste sanguinea* is prior to the description of *Mesospinidium sanguineum,* then it will change the authorship of this species. No type material of *Cochlioda stricta* has been located for examination. In the original diagnosis, Cogniaux (1897) distinguishes it from *C. rosea* but fails to compare *C. stricta* with *O. sanguineum.* The origin of the type plant (Colombia, mixed with *O. cirrhosum* Lindl.), and the morphological features correspond exactly with *O. sanguineum,* which justify synonymy. *Symphyglossum ecuadorense* is distinguished from *O. sanguineum* by a longer inflorescence, a recurved apex of the lip and the large, squarish, paired lamellae on the lip. These features are typical for *O. sangineum* as well, which justify a synonymous treatment.

SYNOPSIS OF THE *COCHLIODA* CLADE

The following group of species, here referred to as the *Odontoglossum astranthum* Linden & Rchb. f. complex (Dalström 1984, 1993, 1996, 1999a), share a combination of characteristics (FIGURE 3): *O. ariasii* Dalström, *O. astranthum* Linden & Rchb. f., *O. dracoceps* Dalström, *O. micklowii* Dalström, *O. multistellare* Rchb. f., *O. povedanum* Ortiz, and *O. tenuifolium* Dalström. In addition to typical *Odontoglossum* features, such as thin roots, glossy and ancipitous pseudobulbs, narrow and elongate stipes, etc., the species in the *O. astranthum* complex have lateral column lobes and, in most cases, a well developed column hood. Recent DNA sequence analysis (Dalström 1999b, Williams et al. 2001) demonstrates that this group belongs to the same clade as *Oncidium aurarium* Rchb. f. (FIGURE 3F), the genera *Cochlioda* Lindl. (FIGURES 1, 4), and *Solenidiopsis* Senghas (FIGURE 5). This generic mixture causes a nomenclatural problem, and we may have to create several monotypic genera for species such as *Odontoglossum povedanum* and *Oncidium aurarium* to maintain *Cochlioda* and *Solenidiopsis* as valid names. A less confusing and more user-friendly approach is to treat the entire clade as a separate genus, and the oldest name available is *Cochlioda.* Another possibility is to transfer all species to either *Odontoglossum* or *Oncidium.* Bockemühl (1989) excluded the *Odontoglossum astranthum* complex in her treatment of the genus *Odontoglossum.* Later, Bockemühl and Senghas (1997) created the genus *Collarestuartense* for the species in that complex with a column hood. This particular feature also is found in many other distantly related orchid genera, such as *Trichopilia* Lindl. and *Otoglossum* Garay & Dunsterville, which makes the column hood unsatisfactory for generic distinction. The reason for placing *Odontoglossum ariasii, Oncidium aurarium,* and *Symphyglossum sanguineum* in *Odontoglossum* is to keep the closely related species together and maintain a stable classification, until a more permanent solution, pending further DNA results and subsequent discussions, is presented.

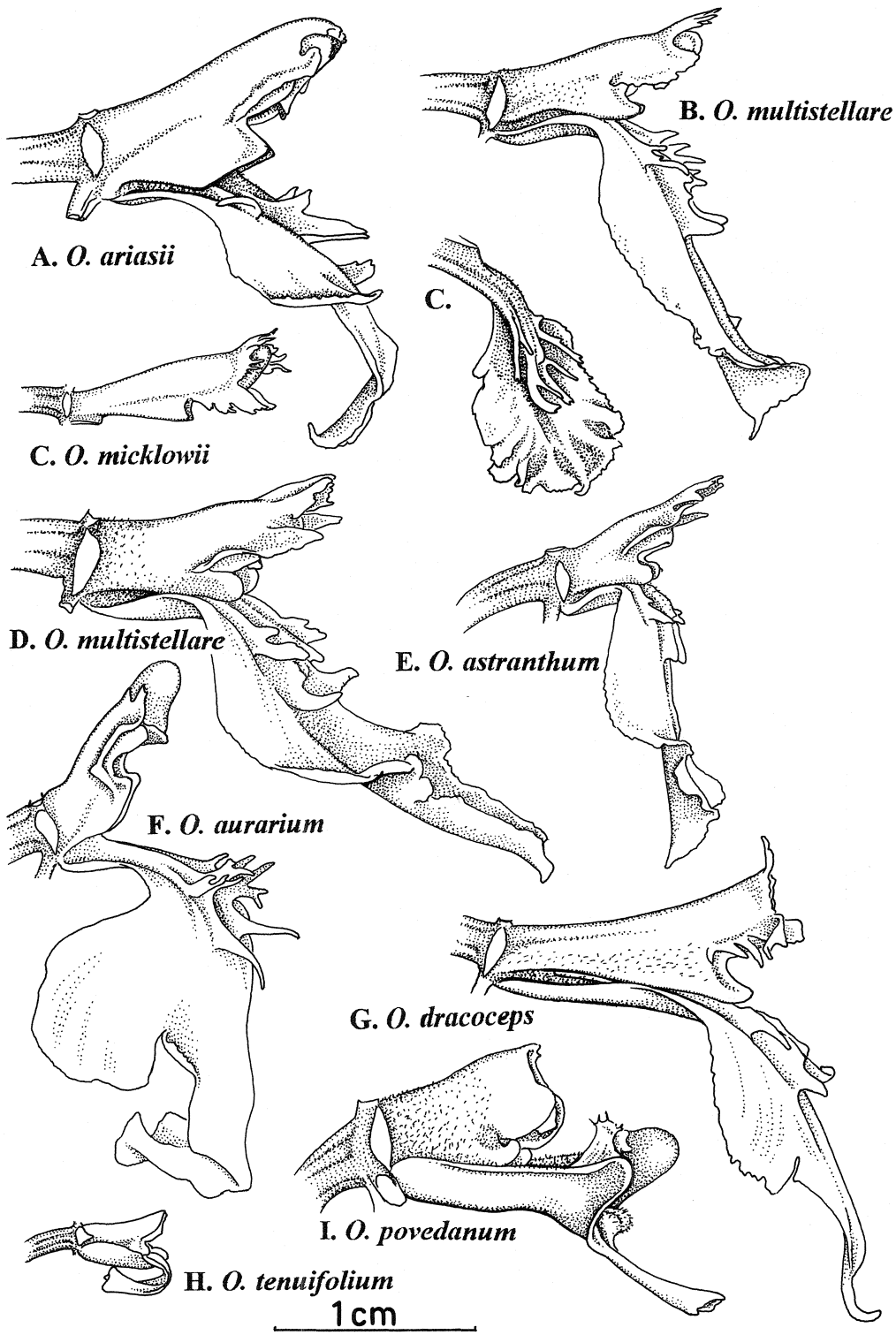

FIGURE 3. **A.** *Odontoglossum ariasii,* column and lip lateral view; *S. Dalström 2502,* SEL. **B.** *Odontoglossum multistellare,* column and lip lateral view, Peru; *S. Dalström 2379,* SEL. **C.** *Odontoglossum micklowii,* left: column lateral view; right: lip sub-lateral view; *Micklow 34,* SEL. **D.** *Odontoglossum multistellare,* column and

Key to the Species

C. = *Cochlioda*. *O.* = *Odontoglossum*.
S. = *Solenidiopsis*.

(Numbers within parentheses refer to FIGURES 1–5)

1a. Stigma divided by the rostellum into two lobes 2
1b. Stigma rounded, undivided 8
2a. Flowers generally resupinate, with a column hood 3
2b. Flowers generally non-resupinate, without a column hood 6
3a. Mature flowers bright orange, rarely yellow, to red with yellow callus on the lip . . . . . *C. densiflora* (4C)
3b. Mature flowers rosy red to red purple with white callus on the lip 4
4a. Flowers with a distinct mentum (a chin), lip ca. 20 mm or longer . . . . . *C. vulcanica* (4E, F)
4b. Flowers without a distinct mentum, lip less than 15 mm long 5
5a. Lip of the flower to 8 mm wide when flattened, and with an evenly broad, elongate frontlobe . . . . . *C. rosea* (4D)
5b. Lip of the flower at least 10 mm wide when flattened, and with a distinct isthmus between the lateral lobes and the broadly retuse frontlobe . . . . . *C. mixtura* (1A–G, 4A)
6a. Flowers resupinate, dark rose-purple . . . . . *C. chasei* (4B)
6b. Flowers non-resupinate, sepals and petals yellow with brown spots or dull greenish, overlaid with olive brown 7
7a. Pseudobulbs generally bifoliate (or trifoliate), flowering on mature vegetative growth; sepals and petals yellow with dark brown bars and spots; lip whitish with a brown spot on the front lobe and yellow spots on the callus . . . . . *S. tigroides* (5A)
7b. Pseudobulbs unifoliate, flowering on immature vegetative growth; sepals and petals greenish, covered with brown on the apical halves; lip yellow with a darker yellow spot in front of the white callus . . . . . *S. peruviana* (5B)
8a. Column with a distinct hood 9
8b. Column without a hood 13
9a. Column with lateral lobes rhombic . . . . . *O. ariasii* (2A–G, 3A)
9b. Column with lateral lobes acute to rounded or blunt-falcate 10
10a. Column clavate, elongate, ca. 12 mm or longer (excluding the hood) . . . . . *O. dracoceps* (3G)
10b. Column ca. 8 mm long or shorter (excluding the hood) 11
11a. Column ca. 5 mm long (excluding the hood); basal claw of the lip 3–4 mm long . . . . . *O. astranthum* (3E)
11b. Column 7–8 mm long (excluding the hood); basal claw of the lip ca. 6 mm long 12
12a. Column slender, clavate, with almost acute lateral lobes and lacerate wings . . . . . *O. micklowii* (3C, column and lip separate)
12b. Column stout, with rounded to blunt falcate lateral lobes and entire to slightly crenate wings . . . . . *O. multistellare* (3B, D)
13a. Column with a tabula infrastigmatica and curved away from the lip . . . . . *O. aurarium* (3F)
13b. Column sub-parallel with the base of the lip; lateral lobes present 14
14a. Plant small, ca. 20 cm high including the inflorescence; column slender; lip callus of two rounded, fleshy keels near the base of the front lobe . . . . . *O. tenuifolium* (3H)
14b. Plant large, 30–40 cm high, with an inflorescence 1m long or more; lip callus of four fleshy keels, the lateral pair erect and bilobed . . . . . *O. povedanum* (3I)

Cochlioda chasei D.E. Benn. & Christenson, Brittonia 46: 26. 1994. TYPE: Peru. Amazonas: Bóngara, reportedly from Río Nieva above 1700 m, 20 Nov. 1987, *M. Arias ex D. Bennett & M. Chase 4080* (Holotype: USM).

Cochlioda chasei is characterized by the dark rose-purple flower without a column hood, thus combining features of *Cochlioda* and *Solenidiopsis*. The original illustration of *C. chasei* (*Pastorelli 280*) shows a column with large lateral wings that may appear as a hood when viewed from the side (FIGURE 4B). The dorsal view of the column, however, clearly shows that no hood is present (Bennett & Christenson 1994).

Cochlioda densiflora Lindl., Fol. Orch. 4 (*Cochlioda*): 1. 1853.—*Mesospinidium densiflorum* (Lindl.) Rchb. f., Gard. Chron. 12: 393. 1872. TYPE: Peru. Amazonas: Chachapoyas, *Mathews s.n.* (Holotype: K-L! Isotype: BM!, W!).

Cochlioda noezliana Rolfe, Lindenia 6: 55, pl. 262. 1891. TYPE: Peru. *J. Nötzli s.n.* (Holotype: specimen unknown, illustration in original publication!), synonymy also fide Schlechter (1924).

Cochlioda miniata L. Lind., Lindenia, 12: 71,

←

lip lateral view, Bolivia; *S. Dalström 2009,* SEL. **E.** *Odontoglossum astranthum,* column and lip lateral view; *S. Dalström* 1454, SEL. **F.** *Odontoglossum aurarium,* column and lip lateral view; *S. Dalström 988,* SEL. **G.** *Odontoglossum dracoceps,* column and lip lateral view; *Orchid Identification Center 2744,* SEL. **H.** *Odontoglossum tenuifolium,* column and lip lateral view; *S. Dalström 2019.* **I.** *Odontoglossum povedanum,* column and lip lateral view; *R. Escobar s.n.*, SEL.

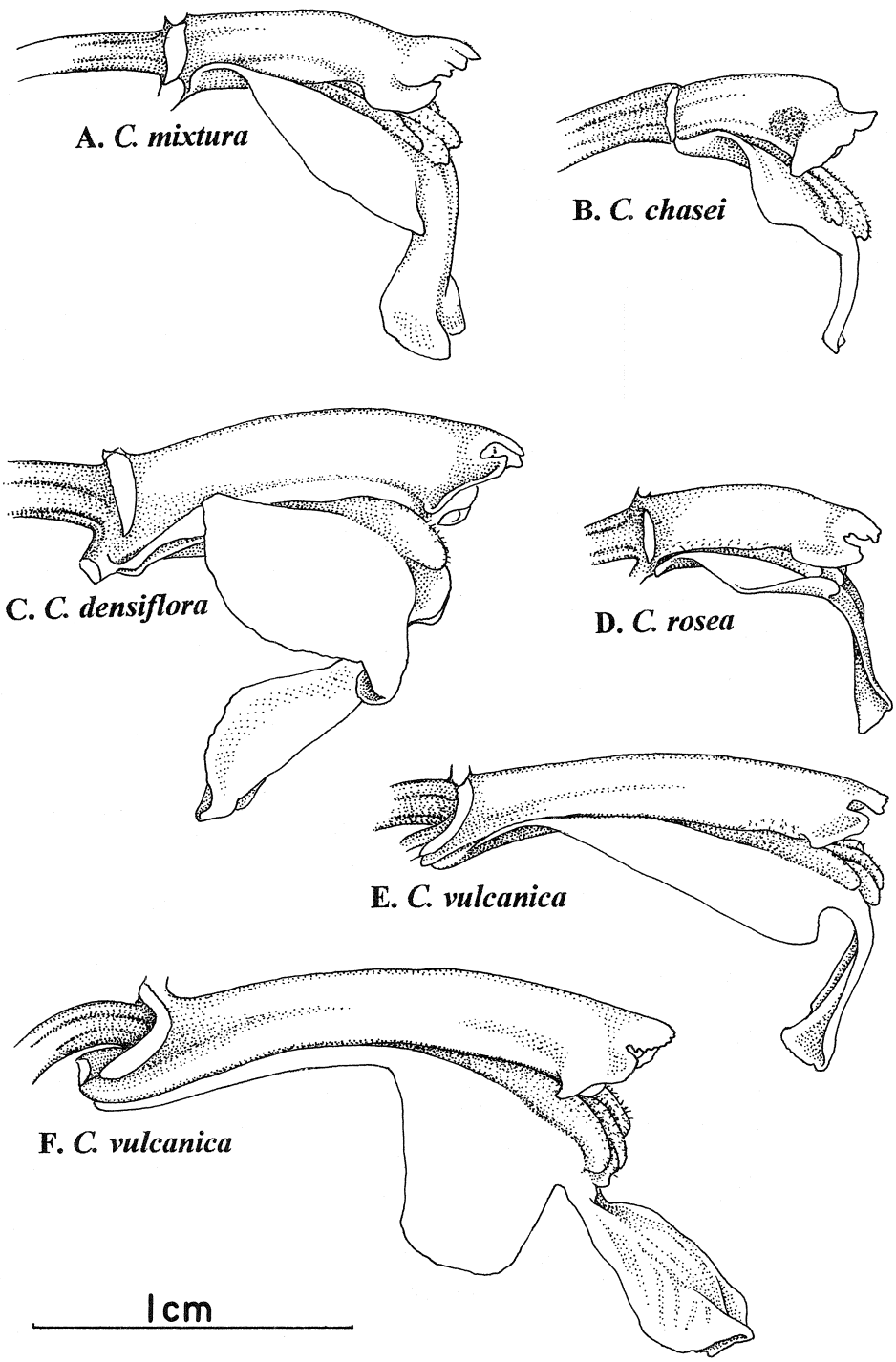

FIGURE 4. **A.** *Cochlioda mixtura,* lip column lateral view; *S. Dalström & J. Sönnemark 2342,* SEL. **B.** *Cochlioda chasei,* lip column lateral view; *M. Arias ex D. Bennett & M. Chase 4080,* USM. **C.** *Cochlioda densiflora,* column lip lateral view; *Orchid Identification Center 9111,* SEL. **D.** *Cochlioda rosea,* column lip lateral view; *S. Dalström 190,* SEL. **E.** *Cochlioda vulcanica,* lip column lateral view; *S. Dalström 1682,* Ecuador, SEL. **F.** *Cochlioda vulcanica,* lip column lateral view; *S. Dalström 2506,* Peru, SEL.

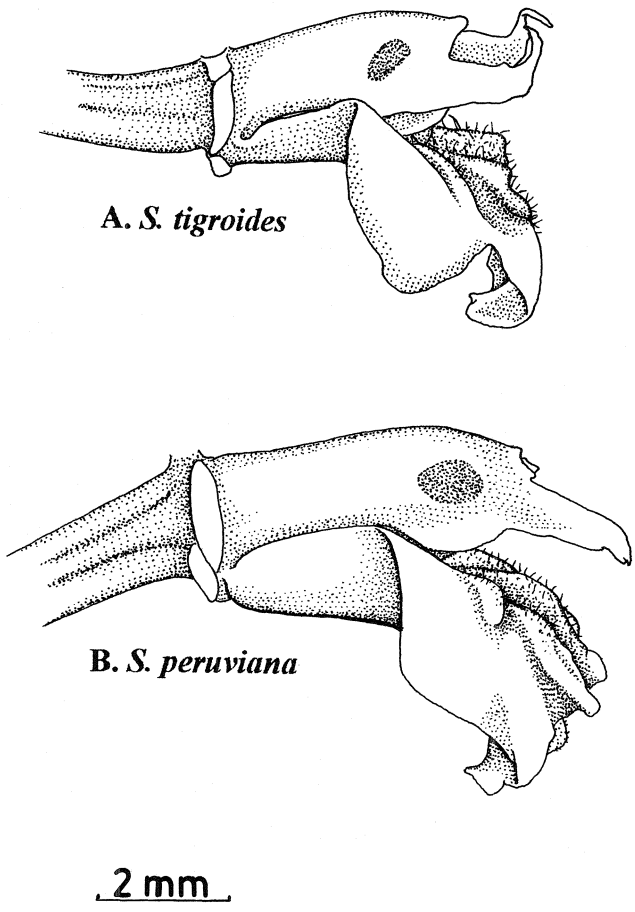

FIGURE 5. **A.** *Solenidiopsis tigroides* (C. Schweinf.) Senghas. Lip column lateral view; *S. Dalström 2483,* SEL. **B.** *Solenidiopsis peruviana* (Schltr.) D.E. Benn. & Christenson, lip column lateral view; *S. Dalström 2484,* SEL.

pl. 562. 1896. TYPE: Peru[?], *L. Linden s.n.* (Holotype: specimen unknown, illustration in original publication!).

Cochlioda floryi Rolfe, Orchid Rev. 19: 144. 1911. TYPE: Peru. *H. A. Tracy s.n.* (Holotype: specimen unknown, illustration in original publication!).

Cochlioda beyrodtiana Schltr., Orchis 13: 5. 1919. TYPE: Peru. *O. Beyrodt s.n.* (Holotype: B, destroyed, photo at F, SEL!).

A variable species, which has led to several descriptions. *Cochlioda densiflora* is distinguished by the brightly orange to red flowers with a yellow callus. The synonyms are either identical to the type of *C. densiflora* or fall within the range of natural variation for that species.

Cochlioda mixtura Dalström & Sönnemark, Selbyana 22(2). **XX.** 2001. TYPE: Bolivia. Cochabamba: Chapare, along road between Cochabamba and Villa Tunari, in wet cloud forest at 2000–2100 m, 7 Mar. 1998, *S. Dalström & J. Sönnemark 2342* (Holotype: SEL!).

Cochlioda mixtura is characterized by the slightly distant pseudobulbs and the reddish flowers with a lip that has a distinct isthmus below the broadly retuse front lobe.

Cochlioda rosea (Lindl.) Benth. & Hook. f., J. Linn. Soc. 18: 327. 1881.—*Odontoglossum roseum* Lindl., Benth. Pl. Hartweg. 151. 1844.—*Mesospinidium roseum* (Lindl.) Rchb. f., Gard. Chron. 12: 392. 1872. TYPE: Ecuador. Loja: Quebradas de Las Juntas, *T. Hartweg 57* (Holotype: K-L!).

Cochlioda rosea is distinguished by the bright red-purple flowers with an elongate, truncate to acute front lobe of the lip.

Cochlioda vulcanica (Rchb. f.) Benth. & Hook. f., J. Linn. Soc. 18: 327. 1881.—*Mesospin-*

idium vulcanicum Rchb. f., Gard. Chron. 12: 393. 1872. TYPE: Ecuador. Tungurahua: *R. Spruce 6243* (Holotype: W!, Isotype: K-L!, K!).

Cochlioda vulcanica is distinguished by the bright rose-purple flowers and the elongate column with a distinct mentum.

Odontoglossum ariasii Dalström, Selbyana 22(2): 137. 2001. TYPE: Peru. Junín: Cloud forest near Huasahuasi, at ca. 2600 m, field collected by M. Arias, Feb. 20, 2001, *S. Dalström 2502* (Holotype: SEL!).

Odontoglossum ariasii is distinguished by the rhombic, deep yellow column lobes.

Odontoglossum astranthum Linden & Rchb. f., Gard, Chron.: 404. 1867.—*Collarestuartense astranthum* (Linden & Rchb. f.) Senghas & Bockem., Orchideen 4(2): 74. 1997. TYPE: Ecuador. Loja: *Wallis 358* (Holotype: W!).

Odontoglossum loxense F.C. Lehm. & Kraenzl., Bot. Jahrb. Syst. 26: 492. 1899; non *Cyrtochilum loxense* (Lindl.) Kraenzl., 1917. TYPE: Ecuador. Loja: Forests of Las Juntas, 2000–2500 m, *F.C. Lehmann 8077* (Holotype: K!, Isotype: US!).

Odontoglossum astranthum is distinguished by the short and stubby column, tightly adpressed against the short basal claw of the lip.

Odontoglossum aurarium (Rchb. f.) Dalström, Selbyana 22(1): 137, 139. 2001.—*Oncidium aurarium* Rchb. f., Gard. Chron. 22: 394. 1884. TYPE: Bolivia. *J.M. Bang 4* (Holotype: W!)

Odontoglossum trilobum Schltr., Repert. Spec. Nov. Regni. Veg. Beih. 9: 111. 1921.—*Oncidium trilobum* (Schltr.) Garay & Stacy, Bradea 1: 408. 1974. TYPE: Peru. Junín: Near La Merced, in the Chanchamayo Valley, *Köhler brothers s.n.* (Holotype: B[?] destroyed).

Odontoglossum mapiriense Mansf., Repert. Spec. Nov. Regni. Veg. 36: 62. 1934. TYPE: Bolivia. Sarampiuni (Mapiri), rainforest at 500 m, *C. Troll 2785* (Holotype: B[?], destroyed).

A widespread and variable but poorly understood complex that may consist of several distinct species or subspecies. This complex is distinguished by the deeply trilobate lip and a fleshy tabula infrastigmatica. No specimens or illustrations seem to exist of *Odontoglossum mapiriense.* The original diagnosis and distribution, however, correspond with the known data of *O. aurarium* and suggest synonymy.

Odontoglossum micklowii Dalström, Lindleyana 8(1): 15. 1993.—*Collarestuartense micklowii* (Dalström) Senghas & Bockem., Orchideen 4(2): 72. 1997. TYPE: Bolivia. Cochabamba: Chapare, 60 km SW of Villa Tunari, 2000 m, *F. Micklow 34* (Holotype: SEL!).

Odontoglossum micklowii is distinguished by the slender column with acute lateral lobes and large lacerate wings, and the round and undulate lamina of the lip.

Odontoglossum multistellare Rchb. f., Linnaea 41:25. 1877.—*Collarestuartense multistellare* (Rchb. f.) Sengh. & Bockem., Orchideen 4(2): 74. 1997. TYPE: Peru. Chinchao, *Pearce s.n.* (Holotype: W!).

Odontoglossum digitatum C. Schweinf., Amer. Orch. Soc. Bull. 14: 208. 1945.—*Collarestuartense digitatum* (C. Schweinf.) Sengh. & Bockem., Orchideen 4(2): 74. 1997. TYPE: Peru. Cuzco: Paucartambo, Pillahuata, 3200 m, *Vargas 3040* (Holotype: AMES, photograph!).

Odontoglossum multistellare is a variable, yet poorly understood species due to a lack of wild collected material. It is distinguished by the stubby, hooded and lobed column, tightly adpressed against the basal claw of the lip, very similar to *O. astranthum* but larger in all parts. *Odontoglossum multistellare* may be a complex of more or less distinct geographical subspecies, or just a large form of *O. astranthum.* In lack of evidence, however, a conservative approach is employed here. *Odontoglossum digitatum* has previously been treated as a distinct species (Dalström 1993). Later examinations of wild collected specimens, however, suggest that *O. digitatum* is merely a form of the variable *O. multistellare.*

Odontoglossum povedanum Ortiz, Orquideologia 20(3): 321. 1997. TYPE: Colombia. Santander: Suaita, Vado Real, ca. 2000 m, field collected by E. Poveda Dec. 1995, flowered in cult. May 1996, *P. Ortiz 1070* (Holotype: HUJ).

Odontoglossum povedanum is characterized by the large flowers with a short and stubby column, and the peculiar erect, pubescent keels on the lip.

Odontoglossum tenuifolium Dalström, Lindleyana 11(2): 114. 1996. TYPE: Bolivia. Cochabamba: Chapare, between Cochabamba and Villa Tunari, 1950 m, *S. Dalström & J. Sönnemark 2019* (Holotype: SEL!).

Odontoglossum tenuifolium is characterized by the small size of the plant, and flowers with lateral column lobes but without a hood.

Solenidiopsis peruviana (Schltr.) D.E. Benn. & Christenson, Brittonia 46: 44. 1994.—*Solenidium peruvianum* Schltr., Feddes Repert. Beih. 9: 113. 1921 (illustration in Mansf., Repert. Spec. Nov. Regni Veg. Beih. 57: t. 129, nr. 507. 1929). TYPE: Peru. Loreto: near Moyobamba, *Filomeno s.n.* (Holotype: B, destroyed, Lectotype: Tabula 129, 507!).

Solenidiopsis flavobrunnea Senghas, Orchidee (Hamburg) 40(6): 205. 1989. TYPE: Peru. Piura: near Huancabamba, ca. 2600 m, *B. Wurstle s.n.* BGH Nr. 0-18778 (Holotype: HEID).

Solenidiopsis peruviana is characterized by flowering on immature vegetative growth and non-resupinate flowers with dull olive brown sepals and petals.

Solenidiopsis tigroides (C. Schweinf.) Senghas. Orchidee (Hamburg) 37(6): 274. 1986.—*Odontoglossum tigroides* C. Schweinf., Amer. Orchid Soc. Bull. 14: 22, Fig. 167. 1945. TYPE: Peru. Huánuco: Yanano, ca. 2000 m, May 1923, *Macbride 3840* (Holotype: AMES; Isotype AMES!).

Solenidiopsis rhombicalla D.E. Benn. & Christenson, Brittonia, 46 (1):44. 1994. TYPE: Peru. Amazonas, Bongara, km 358 along road from Olmos to Jumbilla, 1450 m, July 1965, *D. E. Bennett et al. 2066* (Holotype: AMES; Isotype: AMES!).

Solenidiopsis tigroides is characterized by flowering on mature vegetative growth, and non-resupinate yellow flowers that are spotted with brown.

EXCLUDED TAXA

Cochlioda brasiliensis Rolfe = **Binotia brasiliensis** (Rolfe) Rolfe

Cochlioda sanguinea = **Odontoglossum sanguineum** (Rchb. f.) Dalström

Cochlioda stricta Cogn. = **Odontoglossum sanguineum** (Rchb. f.) Dalström

Cochlioda weberbaueriana Kränzl. = **Cyrtochilum rhodoneurum** (Kraenzl.) Dalström

ACKNOWLEDGMENTS

I thank Manuel Arias for providing the type plant as well as information about the habitat. I thank Andrés Maduro, Juan Felipe Posada, and Harry Zelenko for letting me make the type specimen despite their having purchased the same plant, independently. I thank Carl Luer for help with the Latin diagnosis and the staff at Marie Selby Botanical Gardens for contributing suggestions and help with the manuscript.

LITERATURE CITED

Bennett, D.E. Jr. and E.A. Christenson. 1994. New species and new combinations in Peruvian Orchidaceae. Brittonia 46(1) 24–53.

Bockemühl, L. 1989. *Odontoglossum,* a Monograph and Iconograph. Brücke-Verlag Kurt Schmersow, D-3200 Hildesheim, Germany.

Bockemühl, L. and K. Senghas 1997. Der Stuarkragen, eine neue Gattung aus der Verwandtschaft von *Odontoglossum.* Orchideen 4: 72–75.

Cogniaux, A. 1897. New or noteworthy plants, *Cochlioda stricta.* Gard. Chron. 22: 410.

Dalström, S. 1984. What is an *Odontoglossum*? Pp. 150–152 *in* K.W. Tan, ed. Proceedings of the Eleventh World Orchid Conference. Miami, Florida.

———. 1993. A new species of *Odontoglossum* (Orchidaceae: Oncidiinae) from Bolivia. Lindleyana 8(1): 15–19.

———. 1996. A new, small-flowered species of *Odontoglossum* (Orchidaceae: Oncidiinae) of the *O. astranthum* complex from Bolivia. Lindleyana 11(2): 114–117.

———. 1999a. A new Bolivian species of Odontoglossum (Orchidaceae: Oncidiinae) in the *astranthum* complex. Lindleyana 14(2): 87–91.

———. 1999b. The Genus *Solenidiopsis* Senghas (Orchidaceae: Oncidiinae), a discussion and revision. Selbyana 20(1): 1–9.

Schlechter, R. 1921. Die Orchideenfloren der südamerikanischen Kordillerenstaaten 4, Peru. Spec. Nov. Regni. Veg. Beih. 9: 1–182.

———. 1922. Die Orchideenfloren der südamerikanischen Kordillerenstaaten 5, Bolivia. Spec. Nov. Regni. Veg. Beih. 10: 1–80.

———. 1924. Some misunderstood, but otherwise well-known orchids. Orchid Rev. 32: 355–356.

Vasquez, R. and C.H. Dodson. 1982. Orchids of Bolivia, Icones Plantarum Tropicarum, Fascicle 6. Selby Botanical Gardens Press, Sarasota, Florida.

Williams, N.H., M.W. Chase, T. Fulcher and W.M. Whitten. 2001. Molecular systematics of the Oncidiinae based on evidence from four DNA sequence regions: expanded circumscriptions of *Cyrtochilum, Erycina, Otoglossum,* and *Trichocentrum* and a new genus (Orchidaceae). Lindleyana 16(2): 113–139.