849. PLATYSTELE OVATILABIA
Orchidaceae

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Summary. *Platystele ovatilabia* (Ames & C. Schweinf.) Garay is illustrated, as the second of two *Platystele* species. The history, taxonomy and phylogenetic relationships of *Platystele* are discussed further.

The genus *Platystele* was first proposed by Rudolf Schlechter in 1910, with the type species *Platystele bulbinella* Schltr. The name is derived from the Greek *platys* meaning broad/wide, and *stele* meaning column, referring to the broad column of the flowers. The genus was recognized almost half a century earlier by A.R. Endres, who noticed a distinct group amongst the Pleurothallids and wrote to Prof. Reichenbach (1869) about it. The note accompanied several illustrations, one of which Endres considered to be 'the smallest of this new genus' – later described by Schlechter as *Platystele minimiflora* (Schltr.) Garay, but he had not illustrated the most common species *P. oxyglossa* (Schltr.) Garay. Despite these efforts Reichenbach seems to have ignored the note and the genus was not described until 41 years later by Schlechter (Luer, 1990). He proposed the genus on the basis that the column was short, entirely footless due to an incomplete square base, and extended/dilated above in the fashion of *Pholidota*, setting it apart from other members of *Pleurothallis* (Schlechter, 1910). The close relationship between *Platystele* and *Pleurothallis* was clearly observed, but Schlechter failed to notice that species previously described in *Pleurothallis* and elsewhere should have been transferred to his new genus. Before 1910 six species of *Platystele* were described in *Pleurothallis*, including *P. microtatantha* (Schltr.) Garay, which Schlechter himself described, and three other species were described in *Stelis* Sw.

In spite of this, not everyone has considered *Platystele* to be a valid genus; indeed Schlechter seemed to have either failed to notice that several species he described as *Pleurothallis* (post-1910) were members of *Platystele* or, more likely, considered the two to be synonymous. Several authors merged it with *Pleurothallis*; Oakes Ames in fact transferred his *Stelis*

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compacta Ames to *Platystele* in 1922 and then again from *Platystele* to *Pleurothallis* in 1930 (!), when he considered the criteria for maintaining *Platystele* to be inconsequential (Luer, 1990). Foldats (1970) wanted to reduce *Platystele* along with *Restrepia* Kunth and *Restrepiella* Garay & Dunst. into *Pleurothallis*; however such a proposal was very unsatisfactory due to the clear morphological distinctions between these three genera and *Pleurothallis*, as well as between one another.

A previous problem was that if *Platystele* is accepted at the genus level then so should several of the subgenera of *Pleurothallis*, but exactly this is happening, as the emergence of molecular evidence confirms the polyphyletic nature of *Pleurothallis* and the monophyly of some of its constituent subgenera (which will therefore become genera). Indeed, molecular evidence now confirms their separation (Pridgeon *et al*., 2001).

Classification of the Pleurothallids has been no easy task, and the dedicated work of Carlyle Luer has been vital, especially the production of his series *Icones Pleurothallidinarum*. Vegetative characters of *Platystele* include ramicauls (secondary stems) shorter than the leaves, a lateral racemose inflorescence that emerges with an annulus a variable distance below the abscission layer; floral characters include successive flowering, a transverse, bilobed, apical stigma and a short flattened column forming a broad hood (Fig. 1.). Crystalline deposits are often found in the flowers, in common with many other pleurothallids.

Vegetatively, *Platystele* is indistinguishable from many other Pleurothallid genera, and florally almost indistinguishable from *Lepanthopsis* (Cogn.) Ames. However, the characteristics of *Lepanthopsis* with ramicauls longer than the leaves, lepanthiform sheath, and a strict simultaneously-flowering raceme immediately set the two genera apart (note also that *Lepanthopsis* was not described until about 20 years later, thus such similarities will not have been noted by Schlechter when he named *Platystele*).

Luer ascribed four species of *Platystele* to subgenus *Teagueia* Luer in 1986, based on comparatively larger flowers with sepaline tails and simultaneous-flowering in a long strict raceme,

Plate 849 *Platystele ovatilabia* SUSAN SEX

Map 1. Distribution of *Platystele ovatilabia* in Central America based on herbarium specimen data.

suggestive of *Lepanthopsis* (they may well have been so classified if it weren't for the absence of lepanthiform sheaths). In 1991 he made *Teagueia* (Luer) Luer a new genus with the addition of two further species. Very recently many more species from the mountains near Baños in Ecuador are being described by Lou Jost and his team (Jost, 2004) at least quadrupling the size of another captivating group of pleurothallids and providing preliminary phylogenetic evidence of its monophyly.

Platystele is then left as a morphologically distinct and easily recognisable genus that is likely to be a monophyletic. Until very recently there was minimal molecular evidence with the only published analysis including only three out of 110 species and for two of these only a single gene was sequenced (Pridgeon *et al*., 2001). However, a very recent phylogenetic study of Pleurothallids provides much stronger evidence, including multiple samples for at least 21 species (Karremans, 2016; Karremans *et al*., 2016). Pollen morphology for *Platystele* is similar to that of *Lepanthopsis* – pollen consists of two pollinia but is

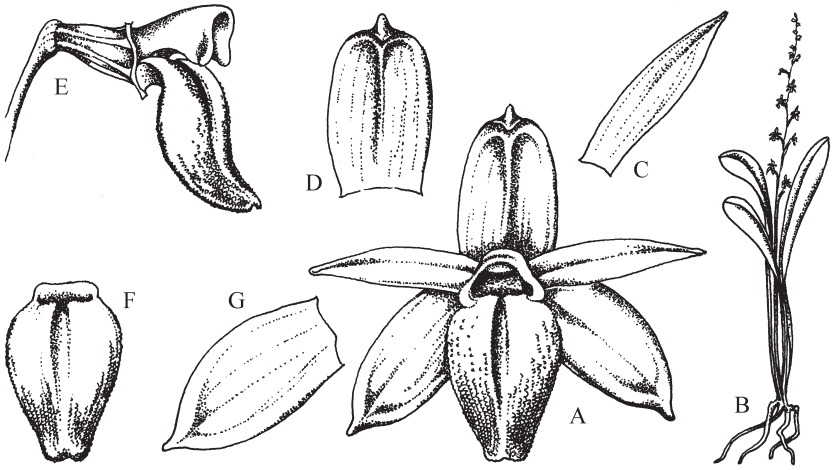

Fig. 1. **Platystele ovatilabia.** A, flower, front view, ×20; B, plant habit, ×1; C, lateral petal, ×20; D, dorsal sepal, inner face, ×20; E, column, lip and ovary, with other segments removed, ×20; F, lip, ×20; G, lateral sepal, ×20**.** Drawn by Susan Sex from plants cultivated at Glasnevin.

smaller in size, and is conserved within the genus – suggesting monophyly (Stenzel, 2000). Palynology is useful but places *Platystele* sister to *Lepanthopsis* and *Stelis*, which is likely to be incorrect. Due to much convergent evolution of flowers, genera thought to be closely related due to floral characteristics (e.g. *Platystele* and *Lepanthopsis*) are being shown to be quite separate and surprising pairings may result (e.g. *Platystele* is strongly supported as sister to *Scaphosepalum* Pfitzer, which differs greatly in floral anatomy). Features of the secondary stem and other microscopic features have proved useful for classification and further molecular data will undoubtedly help to unravel evolutionary relationships (Stern *et al.*, 1985; Neyland *et al.*, 1995).

Platystele ovatilabia (Ames & C. Schweinf.) Garay, Orquideología 9: 120, 1974.

Pleurothallis ovatilabia Ames & C.Schweinf., Sched. Orchid. 10: 33 (1930). Type: Costa Rica, Prov. of Cartago: vicinity of Pejivalle, alt. ca. 900 m, *P. Standley & J. Valerio 47213a* (Holotype AMES).

Description. *Plant* small, epiphytic, caespitose; roots slender. Ramicauls erect, slender, 4–10 mm long, enclosed by 2–3 thin, tubular sheaths.

Leaf erect, coriaceous, 2–4.5 cm long including a petiole 0.5–1 cm long, the blade narrowly elliptical-obovate, subacute to obtuse, 3–6 mm wide, narrowly cuneate below into the indistinct petiole. *Inflorescence* an erect, subdense, secund, successively many-flowered raceme up to 3 cm long borne by a peduncle 2.5–3 cm long, producing 4 or 5 flowers simultaneously, emerging laterally from the ramicaul; floral bracts thin, 1 mm long; pedicels 1.5–2 mm long; ovary 0.5 mm long; *sepals* translucent pale yellow, glabrous, the dorsal sepal ovate, obtuse, subcarinate, 1–1.5 mm long, 0.7–1 mm wide, the lateral sepals ovate, oblique, 1–1.5 mm long, 0.8–1 mm wide, free to near the base; *petals* translucent pale yellow, elliptical, acute, glabrous, 1–1.5 mm long, 0.3–0.5 mm wide; *lip* dark yellow, thick, cellular-papillose, ovate, 1.2–1.5 mm long, 0.8–1 mm wide, the apex round, the base thickened on the end, fixed to the column-foot; *column* cucullate, 0.5 mm long, 0.5 mm broad, the stigma bilobed, the foot rudimentary.

Distribution. Found infrequently throughout Central America, from southern Mexico into Costa Rica and Panama (Map 1.).

Habitat. Cloud forest, typically from 900 to 1500 m.

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