

# Rediscovery of *Dischidia torricellensis* (Schltr.) P.I.Forst., an unusual epiphytic asclepiad from New Guinea

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## Summary

Forster, P.I. (2000). Rediscovery of *Dischidia torricellensis* (Schltr.) P.I.Forst., an unusual epiphytic asclepiad from New Guinea. *Austrobaileya* 5(4):725–728. An amplified description and illustrations are provided for *Dischidia torricellensis* (Schltr.) P.I.Forst.. The first collection in over 60 years is reported from a new locality in Chimbu Province in Papua New Guinea.

Keywords: *Dischidia torricellensis*, Asclepiadaceae, New Guinea.

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## Introduction

Many of the Asclepiadaceae that occur in Papuasias are poorly known, having been collected only once or not more than a few times. At least 192 species are considered to naturally occur in the region, with some 164 endemic species (Forster 1996). A great number of these have yet to be adequately illustrated and patterns of variation remain to be rigorously documented for nearly every single species. One such poorly known species is *Dischidia torricellensis* (Schltr.) P.I.Forst. last collected in 1939 (Forster 1990).

Much of the early documentation of the asclepiad flora of New Guinea was undertaken by the remarkable Rudolf Schlechter (Nicholas 1992). Many of the plants that he found and later described are still only known from his original collections or have been rarely collected since. Schlechter went to the then German New Guinea to search for sources of rubber or rubber substitutes, but spent much of his time collecting plant specimens, particularly of Orchidaceae, but also of other plants including Asclepiadaceae. In April 1902 Schlechter was in the Torricelli Mountains of northeastern New Guinea (now in Madang Province of Papua New Guinea). His collection numbered 14445 represented an unusual epiphytic subshrub and he subsequently described it as the new genus and species

*Spathidolepis torricellensis* Schltr. (Schlechter 1905). Schlechter considered his new plant to be allied to *Dischidia* but differing in the small coronal lobes and thin, leathery leaves.

In more recent times I came to examine his work and this particular species and made the conclusion that *S. torricellensis* could be adequately accommodated within *Dischidia* R.Br. (Forster 1990). There is considerable variation in *Dischidia* s.l. and while there are recent regional accounts for the Malay Peninsula (Rintz 1980) and Australia (Forster & Liddle 1996), there is no monograph available for the group. Despite this, the basic patterns of morphological variation are reasonably well known. Perhaps having overlooked the transfer of *Spathidolepis* into *Dischidia*, Johns (1995) listed *Spathidolepis* as being one of two endemic genera of Asclepiadaceae present in New Guinea.

*Dischidia torricellensis* is an unusual species within *Dischidia* for a number of reasons. Firstly the leaves are herbaceous (Fig. 1A), whereas most species have fleshy to succulent leaves. Secondly the corolla lobes are distinctive in the way the edges are strongly reflexed (Fig. 1C). Thirdly the pollinaria are not typical for the majority of *Dischidia* species in the + unwinged nature of the caudicles (Fig. 1F); however, at least one other species (*D. superba* Rintz) also has this feature (Rintz 1979).

A recent (1997) excellent collection (including spirit material) of *D. torricellensis* has enabled re-examination of the floral structure (Fig. 1) and prompted the present contribution. Data from this collection have confirmed my previous conclusions as to the generic placement of this species but have enabled a few additional observations to be made. Firstly the staminal corona lobes of *D. torricellensis* are not particularly small (as mentioned by Schlechter 1905), but can be quite well developed and markedly fleshy structures (Fig. 1D,E). They are not similar to the staminal corona lobes found in many species of *Dischidia* that are generally membranous and with incurved upper lobes (e.g. *D. bengalensis* Colebr. or *D. subulata* Warb.). On the other hand they are somewhat similar, albeit fleshier, to those illustrated for *D. parvifolia* Ridl. from Malaysia (Rintz 1980). Many species of *Dischidia* have very poorly developed staminal coronal lobes (e.g. *D. imbricata* (Blume) Steud.), thus demonstrating that there is not only considerable variation in this feature, but that it varies from being virtually non-existent to well developed. Such a gradation is repeated in other asclepiad groups (e.g. *Marsdenia* R.Br. s.l. Forster 1995; or various *Stapeliaceae*) and can be interpreted as being more useful at the specific level rather than generic. Rintz (1980) has quite clearly illustrated that there is a complete gradation from those species where the staminal coronal lobes are poorly developed to those where the lobes are prominent and often incurved, hence Schlechter's justification for recognition of *Spathidolepis* on the basis of the small coronal lobes is unwarranted.

*Dischidia torricellensis* also is unusual within the genus in not being an obvious climber or twiner. In the previous description (Forster 1990) it was stated that the species was a 'liana', presumably based on the "small root climber" label data of Brass 12915. The collection of Takeuchi 11736 dispels this notion. This species seems to have a habit akin to that found in some species of the closely allied genus *Hoya* R.Br. where a small number

of species have either pendent non-twining stems, or erect, non-twining stems as opposed to the majority that are twiners (Forster et al. 1998) or in the allied *Micholitzia* N.E.Br. from south-east Asia (Goyder & Kent 1994).

The arrangement of the hairs in the corolla tube of *D. torricellensis* fits the pattern of Group C (corolla throat only pubescent) of Rintz (1980). Whether or not Rintz's groups based on the arrangement of hairs on the corolla are natural remains to be seen. Certainly in terms of foliage and pollinaria, *D. torricellensis* does not closely resemble the Malayan species of Rintz's Group C and its position within the genus must be viewed as being isolated. These hairs are antrorse near the corolla mouth but retrorse just above the staminal column. In *D. torricellensis*, these hairs effectively block access to the staminal column and nectar source at the base. This arrangement tends to indicate that a specialised pollination syndrome is involved and that *D. torricellensis* is similar to the majority of *Dischidia* species in this respect. Pauw (1998) has recently speculated that this type of asclepiad flower (a closed tube with access restricted by hairs) is adapted to bird pollination, based on this syndrome being observed in the morphologically similar flowers of *Microloma* species from southern Africa. To date there are no available observations on the pollinators of any species of *Dischidia*. Similar sized, but open mouth campanulate flowers in *Marsdenia cymulosa* Benth. are visited and possibly pollinated by small chloropid flies (Forster 1992) and perhaps similar sized insects, rather than birds pollinate flowers of *Dischidia*.

***Dischidia torricellensis*** (Schltr.) P.I.Forst., *Austrobaileya* 3: 288 (1990). *Spathidolepis torricellensis* Schltr., in K.Schum. & Lauterb., *Nachträge Fl. Schutzgeb. Südsee* 356 (1905). **Type:** Papua New Guinea [Kaiser-Wilhelmsland]. MADANG PROVINCE: Torricelli-Gebirges, April 1902, R.Schlechter 14445 (lecto: K (photo at BRI!); isolecto: BO!), fide Forster (1994: 515).

Epiphytic subshrub, branches up to 50 cm long and with white latex; indumentum on foliage comprising simple, uniseriate trichomes. Stems cylindrical, up to 3 mm diameter, with antrorse indumentum; internodes up to 90 cm long. Leaves petiolate, herbaceous, lanceolate-elliptic, 3–9 cm long, 1–3.2 cm wide; apex caudate to cuspidate, obtuse at tip; base cuneate; lateral venation comprising 16 to 18 veins per side of the midrib, largely indistinct, interlateral venation reticulate and largely indistinct; upper surface medium green, midrib sunken, glabrous; lower surface glaucescent, midrib raised, glabrous or with scattered, antrorse indumentum on margins and midrib; colleters 2 at lamina base. Inflorescence persistent, an umbelliform raceme up to 8 mm long; bracts triangular, 0.5–1 mm long, 0.5–1 mm wide, with sparse indumentum; peduncle up to 10 mm long and 2 mm diameter. Flowers urceolate, (3) 4–5.5 mm long, (2) 4–5 mm diameter at base and (2.5) 3–4.5 mm diameter at mouth; pedicels 2–4 mm long, 0.5–1 mm diameter, with sparse to dense indumentum; sepals oblong to obtuse-ovate, 0.7–2 mm long, 0.9–1 mm wide, ciliate and with 1 or 2 glands at base of each sinus. Corolla fleshy, green when immature, white at anthesis; tube (2) 3.5–4 mm long, (2) 4–5 mm diameter, externally glabrous or minutely papillose, internally glabrous or with a few isolated hairs; lobes erect, triangular-ovate, fused for two-thirds of length, each strongly jointed in middle and with margins strongly reflexed, 1.8–2 mm long, 2–2.2 mm wide, externally glabrous, internally with dense hairs to 1 mm long blocking entrance to tube. Staminal corona (1) 2–2.5 mm long, (2) 3–3.5 mm diameter, attached at bottom of staminal column and comprising 5 separate lobes; each lobe spathulate-obovate and recurved or winged towards base on either side, the entire lobe (0.75) 2–2.5 mm long, (0.75) 1.5–1.7 mm wide, the wings (0.3) 0.4–0.6 mm wide. Staminal column 1.5–2 mm long, 1–2 mm diameter; anther appendages oblong-obtuse, 0.5–0.8 mm long, 0.2–0.3 mm wide; fissure between anther wings 0.6–0.8 mm long. Style-head oblong-conical, 0.7–0.8 mm long; ovaries 1–1.5 mm long, glabrous. Pollinaria c. 0.6 mm long and 0.4 mm wide; pollinia held erect, oblong, 0.35–0.4 mm long, 0.1–0.2 mm wide, yellow; corpusculum

oblong, 0.2–0.3 mm long, 0.1–0.2 mm wide; caudicles somewhat winged near pollinia, 0.15–0.18 mm long, c. 0.1 mm wide. Follicles fusiform (immature), 110–120 mm long, c. 2 mm diameter, glabrous. Fig. 1.

**Specimens examined:** **West Papua.** Jayapura: 6 km SW of Bernhard Camp, Idenburg River [3° 28'S, 139° 08'E], Feb 1939, *Brass* 12915 (BRI; A n.v.); Rouffaer River [not localised], Sep 1926, *Docters van Leeuwen* 10275 (BO, L). **Papua New Guinea.** CHIMBU PROVINCE: Crater Mountain Wildlife Management area, east of Haia Village, 6°43'S, 145° 00'E, Mar 1997, *Takeuchi* 11736 (BRI; LAE n.v.).

**Typification:** Schlechter's original collection of this plant would have been deposited at B although he did not specify this (Schlechter 1905, 1913). This particular specimen is not extant having been destroyed in the firebombing of B in World War II. A duplicate of his number 14445 present at K was selected as lectotype and a further duplicate at BO as an isoelectotype for the name (Forster 1994). Further duplicates of this number have not been located in the herbaria A, CANB, L, MEL, NSW, SING, WRCL where some New Guinean Schlechter material is extant.

**Distribution:** *Dischidia torricellensis* has now been recorded from four places. Three of these collections predate 1940. One of these is obscure and the type locality is very broadly defined. The Takeuchi collection confirms the continued existence of this species in the wild after an interval of 60 years and extends the range considerably eastwards. It is not inconceivable that this species has a broad distribution in suitable habitats between 700 and 1200 m over much of upland New Guinea.

**Habitat:** This plant has been collected from midmontane rainforest at altitudes between 700 and 1200 m. It occurs as an epiphyte on branches.

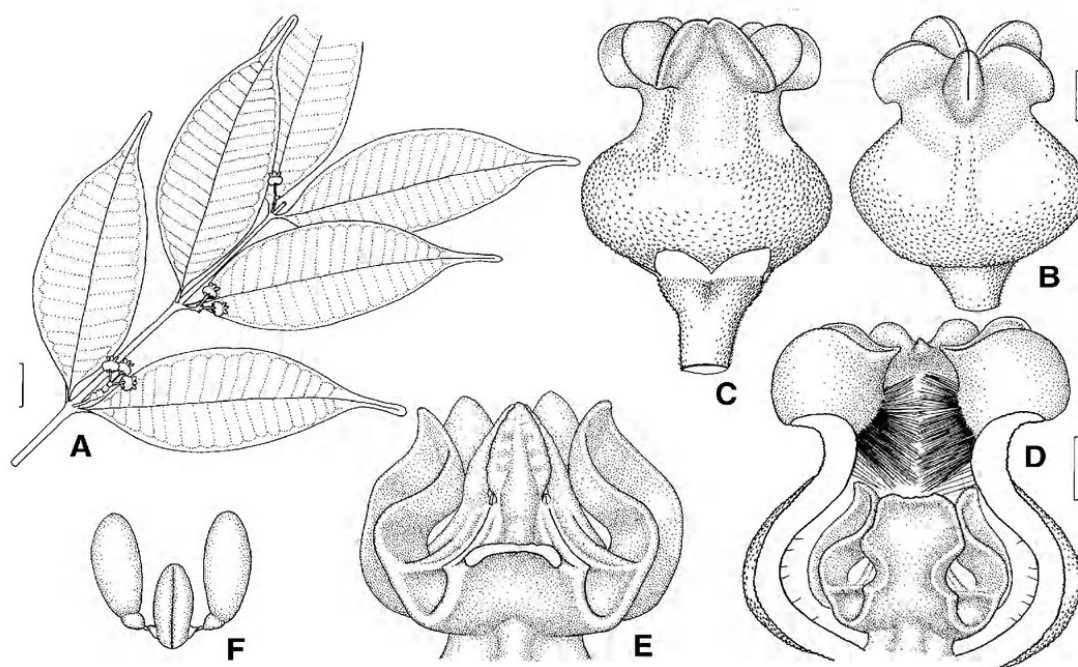
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**Fig. 1.** *Dischidia torricellensis*. A, flowering branch. B, bud. C, side view of flower. D, side view of dissected flower. E, side view of staminal column and staminal corona with one corona-lobe removed. F, pollinarium. Scale bars: A, 10 mm; B, C, 1 mm (at B); D, 1 mm; E, 0.5 mm (at B); F, 0.25 mm (at D). All from Takeuchi 11736 (BRI). Del. P.V.Bruyns.



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