

New combinations in *Dendrobium* (Orchidaceae)

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Abstract

Molecular phylogenetics of Subtribe Dendrobiinae (Orchidaceae – Epidendroideae) have revealed that *Cadetia*, *Diplocaulobium*, *Flickingeria* and *Grastidium* are nested within *Dendrobium* as traditionally circumscribed. We consider that there are compelling reasons, based on evidence and the desirability of nomenclatural stability, to recombine these genera as well as *Euphlebiium* and *Epigeneium* (among others) within *Dendrobium*. New combinations are presented where species do not presently have valid *Dendrobium* names.

Keywords: Dendrobiinae, *Flickingeria*, *Cadetia*, *Diplocaulobium*, *Epigeneium*

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Introduction

Molecular phylogenies of subtribe *Dendrobiinae* based on chloroplast and nuclear markers consistently show that the commonly accepted genera *Cadetia*, *Diplocaulobium*, *Flickingeria* and *Grastidium* are all nested within one of the two main clades of *Dendrobium* (Yukawa *et al.* 1993, 1996, 2000, 2001; Clements 2003, 2006; Burke *et al.* 2008). Recognition of these genera thus renders *Dendrobium* paraphyletic. This implies that either *Dendrobium* should be split up into many, potentially dozens, of smaller genera (as advocated by Clements and Jones 2002; Clements 2006), or that the four satellite genera mentioned above should be included in a more broadly circumscribed genus *Dendrobium*. We consider the first alternative to be undesirable, and support the second alternative for the following main reasons:

1. At present the phylogenies do not show enough resolution. Beyond the division into two strongly supported clades, Asian and Australasian (Clements 2003), there is no obvious way to split up *Dendrobium* into monophyletic groups. Nodes at intermediate levels of the phylogenetic trees are poorly supported, providing no basis for subdivision. Past hybridisation and other genetic events may have contributed to the current situation where DNA analyses alone do not readily lead to a satisfactory classification.
2. Splitting on the basis of relatively small terminal subclades would necessitate the recognition of numerous genera, many being small or even monotypic. It would make generic identification difficult and error prone.
3. Sampling of most *Dendrobium* sections has been low, with some not studied at all, and the relationships suggested in cladograms may change considerably as sampling level increases.
4. Clades within *Dendrobium* that are strongly supported do not always have clear morphological characters or combinations of characters by which they can be recognised. Splitting would almost inevitably create genera that even specialists would find hard to identify.

5. Morphological and molecular phylograms can be widely incongruent e.g. in *Dendrocoryne* (Adams *et al.* 2006; Burke *et al.* 2008), with morphological trees resolving when molecular ones do not. Using molecular results alone in these circumstances is problematic.
6. Splitting would result in a degree of name changes for horticulturally important species that many orchid growers would find unacceptable. Many long used registered hybrid names would become confused and not compatible with future registrations. Name changes would also be inconvenient for ecologists, plant geographers, and other users.

If *Cadetia*, *Diplocaulobium* and *Flickingeria* are (re)included in *Dendrobium*, then such less widely accepted split-off genera as *Australorchis*, *Cannaorchis*, *Cepalobaculum*, *Dockrillia*, *Durabaculum*, *Euphlebiium*, *Grastidium*, *Sayeria*, *Tetrabaculum*, *Tropilis*, *Winika* and others can not be upheld. They too are nested within *Dendrobium s.l.* *Dockrillia*, for example, is nested within the *Dendrocoryne* clade, with species in at least three separate subclades (Burke *et al.* 2008) that would require three genera if splitting was adopted. Further, these subclades do not correlate at all well with the four or more major morphological subtypes occurring in Schlechter's section *Rhizobium*. Therefore we consider it preferable to reinclude *Dockrillia* in *Dendrobium*. The approach resulting in the following new combinations follows Option 1 of Burke *et al.* (2008), except for *Epigeneium*. It is the only genus in the Dendrobiinae that might be recognised next to a broadly circumscribed *Dendrobium*, since it has been found to be the sister group to all the other Dendrobiinae in all molecular analyses. Morphologically, however, *Epigeneium* is not more distinctive than former genera like *Cadetia* or *Flickingeria* that in our opinion should be included in *Dendrobium*. Including *Epigeneium* in *Dendrobium* would not add any obvious new character-states or combinations thereof to the genus. There are species of *Dendrobium* that are very similar to *Epigeneium*, both in vegetative as well as in floral characters, for example the Australian *D. carrii* Rupp & C.T.White. We do not know if these similarities are due to convergent evolution or because *D. carrii* has retained plesiomorphic character states, but

it would be potentially confusing to include such similar plants in two different genera merely because they reside in sister groups. As another example, *D. (Epigeneium) fargesii* Finet and *D. (Diplocaulobium) cyclobulbon* Schltr. are very similar in habit. The flowers of *Epigeneium* are in no way unique, and could be called typical *Dendrobium* flowers if such a thing as a typical *Dendrobium* flower existed, compare for example *D. (Epigeneium) cymbidioides* (Blume) Lindl. with *D. (Dendrocoryne) finniganense* D.L.Jones or *D. (Epigeneium) nakaharae* Schltr. with *D. (Latouria) convolutum* Rolfe. If sister group status alone would be a sufficient criterion to recognise separate taxa, then, to give just one example, by analogy Apostasioideae should be considered to be a family in its own right, not just a subfamily of the Orchidaceae. Therefore, we prefer to reintegrate *Epigeneium* in *Dendrobium* as well, in which it used to be recognised as the section *Sarcopodium*, for example by Schlechter (1912).

A revised classification of *Dendrobium* at the subgenus and section level is urgently needed. It is fairly clear from the phylogenetic studies performed so far that Schlechter's (1912) widely used system is rather well supported at the section level, but hardly at all at the subgeneric level. For example, his subgenus *Athecebiium* would unite species like *Dendrobium speciosum* Sm. and *D. lindleyi* Steud., which as we now know reside far apart in the two main clades, the Australasian and the Asian one respectively. There are also a number of complicated nomenclatural problems to be solved, depending on the rank and circumscription of the infrageneric groups. We intend to treat these matters, and the broader difficulties concerning *Dendrobium* taxonomy in separate publications.

Conclusions – New Combinations

Fortunately, most of the species of *Cadetia*, *Diplocaulobium*, etc., already have valid names under *Dendrobium*, so that only a limited number of new combinations are required. The following recombinations are for those species that do not presently have a valid name under *Dendrobium*.

(Cadetia)***Dendrobium collinsii* (Lavarack) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Cadetia collinsii* Lavarack, *Austrobaileya* 1: 381 (1981).

Distribution: Australia (Queensland).

***Dendrobium microphyton* L.O.Williams, Bot. Mus. Leaflet 5: 47 (1937).**

Cadetia microphyton (L.O.Williams) Christenson, *Lindleyana* 7: 89 (1992).

Cadetia siewhongii P.O'Byrne, *Malayan Orchid Rev.* 30: 73 (1996), syn. nov.

Distribution: Philippines, Sulawesi.

Note: We have seen a living specimen of *C. siewhongii* (Hortus botanicus Leiden cult. 970708) and compared this with the type material of *D. microphyton*. They are undoubtedly the same species.

***Dendrobium obreniforme* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Cadetia finisterrae* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 1: 436 (1912).

Dendrobium finisterrae (Schltr.) J.J.Sm., *Bull. Jard. Bot. Buitenzorg, sér. 2, 8:* 18 (1912) (*nom. illeg.*).

Not *Dendrobium finisterrae* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 1: 495 (1912).

Distribution: New Guinea.

Note: The specific epithet refers to the shape of the mid-lobe of the lip.

***Dendrobium reconditum* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Cadetia clausa* D.L.Jones & M.A.Clem., *Australian Orchid Res.* 5: 4 (2006).

Not *Dendrobium clausum* Schltr., *Repert. Spec. Nov. Regni Veg. Beih.* 1: 607 (1912).

Distribution: Australia (Moa Island).

Note: The specific epithet refers to the cleistogamous flowers (*reconditum*: 'concealed'.)

[*Cadetia similis* Blume, *Rumphia* 4: 39 (1849).]

Dendrobium simile (Blume) J.J.Sm., *Nova Guinea* 8, 1: 53 (1909) (*nom. illeg.*).

Not *Dendrobium simile* Schltr., in K.Schum. & Lauterb., *Nachtr. Fl. Deutsch. Schutzgeb. Südsee* 175 (1905).

Not *Dendrobium simile* Schltr., *Repert. Spec. Nov. Regni Veg.* 3: 80 (1906) (*nom. illeg.*).

Distribution: New Guinea.

Note: Blume's description is insufficiently detailed. Unless type material is found, this species, which is related to *D. umbellatum* (Gaudich.) Rchb.f., will probably remain obscure. For that reason we refrain from proposing a new epithet under *Dendrobium* for this taxon.

***Dendrobium vanuatuense* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Cadetia quadrangularis* P.J.Cribb & B.A.Lewis, *Orchid Rev.* 97: 251 (1989).

Not *Dendrobium quadrangulare* Parish & Rchb.f., *Flora* 69: 553 (1886).

Distribution: Vanuatu.

Note: The specific epithet refers to the area of origin of this species.

(*Diplocaulobium*)***Dendrobium ancipitum* (P.O'Byrne & J.J.Verm.) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium ancipitum* P.O'Byrne & J.J.Verm., *Malesian Orchid J.* 3: 44 (2009).

Distribution: Sulawesi.

***Dendrobium anisobulbon* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Dendrobium filiforme* J.J.Sm., *Icon. Bogor.* 2: 73 (1903) (*nom. illeg.*).

Diplocaulobium anisobulbon P.O'Byrne & J.J.Verm., *Malesian Orchid J.* 3: 46 (2009) (*nom. superfl.*).

Diplocaulobium filiforme Kraenzl., in Engl., *Pflanzenr.* IV. 50. II. B. 21: 341 (1910).

Not *Dendrobium filiforme* Wight, *Icon. Pl. Ind. Or.* 5: 5 (1852).

Distribution: Sulawesi.

Note: By article 58.1 of the International Code of Botanical Nomenclature (McNeill et al. 2006) the combination *Diplocaulobium filiforme*, based on the illegitimate name *Dendrobium filiforme* J.J.Sm., is legitimate if treated as a new name. This makes the new name *Diplocaulobium anisobulbon* proposed for *Diplocaulobium filiforme* superfluous, hence illegitimate. However, the epithet *anisobulbon* is still available in *Dendrobium*, therefore the combination

Dendrobium anisobulbon is legitimate if treated as a new name, as we did here.

***Dendrobium begaudii* (Cavestro) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium begaudii* Cavestro, *Orchidophile* 145: 9 (2001).

Distribution: New Caledonia.

***Dendrobium crenatilobum* (P.O'Byrne & J.J.Verm.) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium crenatilobum* P.O'Byrne & J.J.Verm., *Malesian Orchid J.* 3: 49 (2009).

Distribution: Sulawesi.

***Dendrobium erythrosema* (P.O'Byrne & J.J.Verm.) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium erythrosema* P.O'Byrne & J.J.Verm., *Malesian Orchid J.* 3: 51 (2009).

Distribution: Sulawesi.

***Dendrobium magnilabre* (P.J.Cribb & B.A.Lewis) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium magnilabre* P.J.Cribb & B.A.Lewis, *Lindleyana* 6: 31 (1991).

Distribution: Solomon Islands.

***Dendrobium pangunaense* (Ormerod) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium pangunaense* Ormerod, *Orchadian* 16: 275 (2009).

Distribution: Solomon Islands (Bougainville).

***Dendrobium pohnpeiense* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Diplocaulobium carolinense* A.D.Hawkes, *Pacific Sci.* 6: 7 (1952).

Not *Dendrobium carolinense* Schltr., *Bot. Jahrb. Syst.* 56: 472 (1921).

Distribution: Carolines (Pohnpei).

Note: The specific epithet refers to the island of origin of this species.

***Dendrobium solomonense* (Carr) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium solomonense* Carr, *Bull. Misc. Inform. Kew* 380 (1934).

Distribution: Solomon Islands.

***Dendrobium stenophytoides* (P.O'Byrne & J.J.Verm.) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium stenophytoides* P.O'Byrne & J.J.Verm., *Malesian Orchid J.* 3: 60 (2009).

Distribution: Sulawesi.

***Dendrobium subintegrum* (P.J.Cribb & B.A.Lewis) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium subintegrum* P.J.Cribb & B.A.Lewis, *Lindleyana* 6: 33 (1991).

Distribution: Solomon Is.

***Dendrobium textile* J.J.Sm. var. *haematostictum* (P.O'Byrne & J.J.Verm.) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Diplocaulobium textile* (J.J.Sm.) P.F.Hunt & Summerh. var. *haematostictum* P.O'Byrne & J.J.Verm., *Malesian Orchid J.* 3: 66 (2009).

Distribution: Sulawesi.

(*Epigeneium*)

***Dendrobium acutilingue* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Dendrobium acuminatum* Rolfe ex Ames, *Orchidaceae* 1: 86 (1905) (*nom. illeg.*).

Epigeneium acuminatum Summerh., *Kew Bull.* 260 (1957).

Katherinea acuminata A.D.Hawkes, *Lloydia* 19: 94 (1956).

Sarcopodium acuminatum Rolfe, *Orchid Rev.* 18: 239 (1910).

Not *Dendrobium acuminatum* Kunth, *Nov. Gen. Sp.* 1: 357 (1816).

Distribution: Philippines.

Note: The specific epithet refers to the pointed mid-lobe of the lip (*acutilingue*: 'sharp-tongued.')

***Dendrobium arjunoense* (J.J.Wood & J.B.Comber) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Epigeneium arjunoense* J.J.Wood & J.B.Comber, *Orchid Rev.* 104: 286 (1996).

Distribution: Java.

***Dendrobium brunneum* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Epigeneium chapaense* Gagnep., *Bull. Mus. Hist. Nat.* (Paris), sér. 2, 4: 596 (1932).

Sarcopodium chapaense (Gagnep.) Tang & F.T.Wang, *Acta Phytotax. Sin.* 1: 83 (1951).

Not *Dendrobium chapaense* Aver., *Rheede* 16: 3 (2006).

Distribution: Vietnam, ?China.

Note: The specific epithet refers to the brown flowers.

***Dendrobium forrestii* (Ormerod) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Epigeneium forrestii* Ormerod, *Taiwania* 52: 307 (2007).

Distribution: China (Yunnan).

***Dendrobium gaoligongense* (Hong Yu & S.G.Zhang) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Epigeneium gaoligongense* Hong Yu & S.G.Zhang, *Novon* 15: 495 (2005).

Distribution: China (Yunnan).

***Dendrobium mariae* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Epigeneium clemensiae* Gagnep., *Bull. Mus. Hist. Nat.* (Paris) sér. 2, 4: 595 (1932).

Epigeneium delacourii Gagnep., *Bull. Mus. Hist. Nat.* (Paris), sér. 2, 4: 595 (1932).

Not *Dendrobium clemensiae* Ames, *Philipp. J. Sci.*, C, 7: 16 (1912).

Not *Dendrobium delacourii* Guillaumin, *Bull. Mus. Hist. Nat.* (Paris) 30: 522 (1924).

Distribution: China, Laos, Vietnam.

Note: The specific epithet honours the intrepid Mary Strong Clemens, discoverer of this species.

***Dendrobium mimicum* (Ormerod) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Epigeneium mimicum* Ormerod, *Taiwania* 48, 3: 139 (2003).

Distribution: Thailand, China (Guangxi).

***Dendrobium treutleri* (Hook.f.) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Coelogyne treutleri* Hook.f., *Fl. Brit. Ind.* 5: 837 (1890).

Epigeneium treutleri (Hook.f.) Ormerod, *Oasis* 1: 3 (2000).

Pleione treutleri (Hook.f.) Kuntze, *Rev. Gen. Pl.*: 680 (1891).

Epigeneium yunnanense Tang & Z.H.Tsi, *Acta Phytotax. Sin.* 22: 484 (1984).

Distribution: India (Sikkim), Bhutan, Burma, China (Yunnan).

***Dendrobium tsangianum* (Ormerod) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Epigeneium tsangianum* Ormerod, *Taiwania* 49, 2: 97 (2004).

Distribution: China (Guangxi).

(*Euphlebiium*)

***Dendrobium decoratum* (M.A.Clem. & Cootes) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Euphlebiium decoratum* M.A.Clem & Cootes, *Orchideenj.* 16: 26 (2009).

Distribution: Philippines.

***Dendrobium rhodochilum* (Ferrerias & Cootes) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Euphlebiium rhodochilum* Ferrerias & Cootes, *Orchideenj.* 17: 54 (2010).

Distribution: Philippines.

(*Flickingeria*)

***Dendrobium abhaycharanii* (Phukan & A.A.Mao) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Flickingeria abhaycharanii* Phukan & A.A.Mao, *Orchid Rev.* 113: 22 (2005).

Distribution: India (Assam).

***Dendrobium albobpurpleum* (Seidenf.) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Flickingeria albobpurplea* Seidenf., *Dansk Bot. Ark.* 34, 1: 48 (1980).

Distribution: Thailand, China (Yunnan), Laos, Vietnam.

***Dendrobium blaoense* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Flickingeria vietnamensis* Seidenf., *Opera Bot.* 114: 205 (1992).

Not *Dendrobium vietnamense* Aver., *J. Orchideenfreund* 12: 355 (2004).

Distribution: Vietnam.

Note: The specific epithet refers to the type locality.

***Dendrobium calocephalum* (Z.H.Tsi & S.C.Chen) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Flickingeria calocephala* Z.H.Tsi & S.C.Chen, *Acta Phytotax. Sin.* 33: 203 (1995).

Distribution: China (Yunnan).

Dendrobium chiengmaiense* Schuit. & P.B.Adams, *nom. nov.

Basionym: *Flickingeria parishii* Seidenf., *Dansk Bot. Ark.* 34, 1: 29 (1980).

Not *Dendrobium parishii* Rchb.f., *Bot. Zeitung* (Berlin) 21: 236 (1863).

Distribution: Burma, Thailand.

Note: The specific epithet refers to the area of origin of this species, the region around Chiang Mai in Thailand.

***Dendrobium comatum* (Blume) Lindl., *Gen. Sp. Orchid. Pl.*: 76 (1830).**

Dendrobium comatum (Blume) Lindl. var. *papuanum* J.J.Sm., *Nova Guinea* 8, 3: 551 (1911).

Dendrobium criniferum Lindl., *Edwards's Bot. Reg.*: Misc. (1844) 41.

Dendrobium scopa Lindl., *Edwards's Bot. Reg. Misc.* 55 (1842).

Dendrobium thysanochilum Schltr., in K.Schum. & Lauterb., *Nachtr. Fl. Deutsch. Schutzgeb. Südsee* 152 (1905).

Flickingeria clementsii D.L.Jones, *Orchadian* 14 (8: Scientific Suppl.) ix (2004), *syn. nov.*

Distribution: Taiwan, Peninsular Malaysia, Sumatra, Java, Borneo, Sulawesi, Moluccas, ?Lesser Sunda Islands, Philippines, New Guinea, Australia (Queensland), Solomon Islands, Vanuatu, New Caledonia, Fiji, Samoa.

Note: We do not see significant differences between Australian specimens of *D. comatum* (described as *F. clementsii*) and those found elsewhere.

Dendrobium compressibulum* Schuit. & P.B.Adams, *nom. nov.

Basionym: *Flickingeria compressa* Seidenf., *Dansk Bot. Ark.* 34, 1: 31 (1980).

Not *Dendrobium compressum* Lindl., *Edwards's Bot. Reg. Misc.* 63 (1842).

Distribution: Thailand.

Note: The specific epithet refers to the laterally flattened pseudobulbs.

Dendrobium concolor* (Z.H.Tsi & S.C.Chen) Schuit. & P.B.Adams, *comb. nov.

Basionym: *Flickingeria concolor* Z.H.Tsi & S.C.Chen, *Acta Phytotax. Sin.* 33: 204 (1995).

Distribution: China (Yunnan).

Dendrobium hesperis* (Seidenf.) Schuit. & P.B.Adams, *comb. nov.

Basionym: *Flickingeria hesperis* Seidenf., *Nordic J. Bot.* 2: 16 (1982).

Distribution: India.

Dendrobium junctilobum* (Fessel & Lueckel) Schuit. & P.B.Adams, *comb. nov.

Basionym: *Flickingeria junctiloba* Fessel & Lueckel, *Orchidee* 49: 254 (1998).

Distribution: Philippines.

Dendrobium nazaretii* (P.O'Byrne & J.J.Verm.) Schuit. & P.B.Adams, *comb. nov.

Basionym: *Flickingeria nazaretii* P.O'Byrne & J.J.Verm., *Malayan Orchid Rev.* 37: 92 (2003).

Distribution: Sulawesi.

Dendrobium omissum* Schuit. & P.B.Adams, *nom. nov.

Flickingeria praetermissa W.Suarez & Cootes, *Philipp. Orchid Rev.* 15(2): 19 (2007).

Not *Dendrobium praetermissum* Seidenf., *Contrib. Orchid Fl. Thailand* XIII 34 (1997).

Distribution: Philippines.

Note: The specific epithet (*omissum*: 'disregarded') conveys the same meaning as that of the basionym *praetermissa*: 'overlooked'.

Dendrobium phuketense* Schuit. & P.B.Adams, *nom. nov.

Basionym: *Flickingeria insularis* Seidenf., *Dansk Bot. Ark.* 34, 1: 31 (1980).

Not *Dendrobium insulare* Steud., *Nomencl. Bot.*, ed. 2, 2: 489 (1841).

Distribution: Thailand.

Note: The specific epithet refers to the type locality.

Dendrobium shihfuanum* (T.P.Lin & Kuo Huang) Schuit. & P.B.Adams, *comb. nov.

Basionym: *Flickingeria shihfuana* T.P.Lin & Kuo Huang, *Taiwania* 50: 292 (2005).

Distribution: Taiwan.

***Dendrobium tetralobatum* (P.O'Byrne & J.J.Verm.) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Flickingeria tetralobata* P.O'Byrne & J.J.Verm., *Malayan Orchid Rev.* 39: 80 (2005).

Distribution: Sulawesi.

***Dendrobium tricristatum* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Flickingeria tricarinata* Z.H.Tsi & S.C.Chen, *Acta Phytotax. Sin.* 33: 201 (1995).

Not *Dendrobium tricarinatum* Schuit. & de Vogel, *Malesian Orchid J.* 4: 104 (2009) (*nom. superfl.* = *D. humilicolle* Schltr., *Bot. Jahrb. Syst.* 58: 98 (1923).)

Distribution: China (Yunnan).

Note: The specific epithet refers to the three keels on the lip.

***Dendrobium trifurcatum* (Carr) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Desmotrichum trifurcatum* Carr, *J. Malayan Branch Roy. Asiat. Soc.* 11: 85 (1933).

Ephemerantha trifurcata (Carr) P.F.Hunt & Summerh., *Taxon* 10: 106 (1961).

Flickingeria trifurcata (Carr) A.D.Hawkes, *Orchid Weekly* 2: 459 (1961).

Distribution: Sumatra.

***Dendrobium tsii* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Flickingeria bicolor* Z.H.Tsi & S.C.Chen, *Acta Phytotax. Sin.* 33: 204 (1995).

Not *Dendrobium bicolor* (Ruiz & Pav.) Pers., *Syn. Pl.* 2: 524 (1807).

Not *Dendrobium bicolor* Lindl., *Gen. Sp. Orchid.* Pl. 90 (1830) (*nom. illeg.*)

Distribution: China (Yunnan).

Note: The specific epithet honours Zhan Huo Tsi, co-describer of this species.

***Dendrobium unibulbe* (Seidenf.) Schuit. & P.B.Adams, comb. nov.**

Basionym: *Flickingeria unibulbis* Seidenf., *Dansk Bot. Ark.* 34, 1: 54 (1980).

Distribution: Thailand, Vietnam.

Note: This is very similar to *D. bancanum* J.J.Sm., but appears to differ in the creeping, not erect rhizome.

(*Grastidium*)***Dendrobium chloranthum* Schuit. & P.B.Adams, nom. nov.**

Basionym: *Grastidium chlorinum* M.A.Clem. & Cootes, *Orchideenj.* 16: 24 (2009).

Not *Dendrobium chlorinum* Ridl., *Trans. Linn. Soc. London Bot.* 9: 172 (1916).

Distribution: Philippines.

Note: The specific epithet refers to the green flowers.

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