

Two new distribution records of *Dendrobium* (Orchidaceae), with an updated checklist of *Dendrobium* for Laos

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ABSTRACT

Two new records of *Dendrobium*, *D. daklakense*, and *D. metrium*, are reported for the flora of Laos for the first time. Photographs, information on habitat and ecology, vernacular names and additional notes for each species are given based on collections from Dak Cheung Plateau, Sekong Province (*D. daklakense*), and Phou Khao Kouay National Park, Vientiane Province (*D. metrium*). An updated checklist with classification section of *Dendrobium* in Laos is also provided.

KEYWORDS: flora of Laos, new records, section *Dendrobium*, section *Formosae*.

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INTRODUCTION

Dendrobium Sw. (Orchidaceae) is the largest orchid genus in Laos, so far accounting for 115 species (Averyanov *et al.*, 2016a; Gale *et al.*, 2018; Kumar & Gale, 2020; Souvannakhoummane *et al.*, 2022). Many species of this genus in Laos are threatened by large-scale collecting for the illegal trade, which has been going on for decades, as these plants are in high demand in neighbouring countries (Schuiteman *et al.*, 2008; Lovera & Laville, 2009; Gale *et al.*, 2019).

We conducted botanical surveys at six study sites, two in Phou Khao Kouay National Park (Vientiane Province) in central Laos from July to September 2020, and four on the Dak Cheung Plateau of southern Laos from March 2021 to January 2022. A total of 47 orchid species were found and the genus with the greatest number of species (10) was *Dendrobium*. We identified four *Dendrobium* species from Phou Khao Kouay National Park, namely, *D. cumulatum* Lindl., *D. henryi* Schltr., *D. kontumense* Gagnep., *D. trigonopus* Rchb.f. (Fig. 4B, D, E & G), and four species from the Dak

Cheung Plateau, namely, *D. bellatulum* Rolfe., *D. gratiosissimum* Rchb.f., *D. thyrsiflorum* Rchb.f. ex André, and *D. unicum* Seidenf. (Fig. 4A, C, F & H). However, in addition to these named species, there were two *Dendrobium* species that morphologically differed from all other species known from Laos, warranting further detailed observations. After carefully examining our specimens and comparing them against existing taxonomic literature (Svengsuksa & Lamxay, 2005; Schuiteman *et al.*, 2008; Averyanov *et al.*, 2016b; Gale *et al.*, 2018), as well as all relevant herbarium material available at FOF and HNL in Laos, and digital images of type specimens held at BKF, K, LE, P and SING we were able to confirm that both represent new records for the country. The first species belong to section *Formosae* (Benth. & Hook.f.) Hook.f. and was identified as *D. daklakense* Tich, Schuit. & J.J. Verm. This species was previously known only from cultivated plants presumably originating in Dak Lak Province, Vietnam (Tich *et al.*, 2010), in which country it was later found in the wild (Averyanov *et al.*, 2016b). The second species belongs to section *Dendrobium* (Schuiteman *et al.*, 2017) and was identified as *D. metrium* Kraenzl.

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Below we formally report those two records for the flora Laos and provide information on habitat, ecology, vernacular names and other information. In addition, we present an updated checklist covering all 117 taxa of the genus *Dendrobium* Sw. now reported from Laos (Kerr, 1933; Kerr 1969, 1971; Seidenfaden, 1992, 1996; Newman *et al.*, 2007; Schuiteman *et al.*, 2008; Schuiteman, pers. comm.; Schuiteman & Adams, 2011; Averyanov, 2012, 2013; Averyanov *et al.*, 2016a,b; Kumar *et al.*, 2016; Gale *et al.*, 2018; Kumar *et al.*, 2018; Kumar & Gale, 2020; Souvannakhoummane *et al.*, 2022); see Appendix 1.

NEW RECORDS

Dendrobium daklakense Tich, Schuit. & J.J.Verm., OrchideenJournal. 17: 161. 2010. Type: Vietnam (South), Dak Lak Province, flowering in cultivation Nov. 2009, *N.T.Tich 20.11.09* (holotype **VNM**). Figs. 1–2.

Specimen examined.— Laos, Sekong Province: Dak Cheung Plateau, Dak Cheung District, 1,200 m elev., 28 Nov. 2021, *Phonepaseuth et al. P022* (**FOF!** – spirit). Vietnam, Dak Lak, Buon Ma Thuot City market, 3 Dec. 2014, *L.Averyanov & P.T.Nguyen, s.n.*, (**LE** [LE01066154, digital image!]). Kon Tum province, 19 Nov. 2020, *T.B. Vuong, BV 979* (**VNM**).

Distribution.— Laos (Dak Cheung Plateau, Sekong Province) and Vietnam (Kontum and presumably Dak Lak).

Vernacular.— ເຮືອງເງິນດາກຈຶງ (Euang ngern dak cheung, suggested here).

Habitat and Ecology in Laos.— Epiphyte on pine tree (*Pinus kesiya* Royle ex Gordon) in montane pine forest; 1,100–1,200 m elev., occurring with *Dendrobium bellatulum* and *D. unicum*. Figure 4 (A & H). Flowering in November and December.

Note.— This species was previously thought to be endemic to Kontum and presumably Dak Lak Provinces in Vietnam, where it was found in semi-deciduous forest at an elevation of 400 to 800 m; it was assessed as Critically Endangered (CR) in Vietnam (Tich *et al.*, 2010; Averyanov *et al.*, 2016b). Our survey in Dak Cheung Plateau of Dak Cheung District (Sekong Province), southern Laos extends the known distribution and increases our knowledge of the natural habitat of this rare species. From field observations, *Dendrobium daklakense* seems to be

quite rare (five individuals seen) compared to other orchids that grow in the same habitat (*D. bellatulum* and *D. unicum*). This may be to collecting pressure due to the high demand in the orchid trade (including illegal trade occurring across the international borders), and actions towards conserving this attractive species are needed and should be given more attention.

Dendrobium metrium Kraenzl., Pflanzenr. IV, 50 II B 21: 221. 1910; Averyanov, Taiwania 57: 131. 2012; Schuiteman *et al.*, Cam J Nat Hist. 2017: 4. 2017.— *D. modestum* Ridl., J. Bot. 36: 211. 1898, **nom. illeg.**— *Pedilonum metrium* (Kraenzl.) Rauschert, Feddes Repert. 94: 46. 1983.— *Eurycaulis modestus* M.A.Clem., Telopea 10: 287. 2003, **nom. superfl.** Type: Malaysia, Penang, Timur Laut, Penang Hill, 609 m altitude, Mar. 1896, *Ridley 7238* (**SING** [SING0047307, digital image!], **K** [K001085064, digital image!]). Figs. 1 & 3.

— *Dendrobium batakenae* J.J.Sm., Bull. Jard. Bot. Buitenzorg, sér. 3, 5: 90. 1922. Type: Indonesia, Sumatra, Batak area, Siborborong, 1,100 m, *cult.* *W. Groeneveldt* 1972 (holotype **BO**, n.v.).

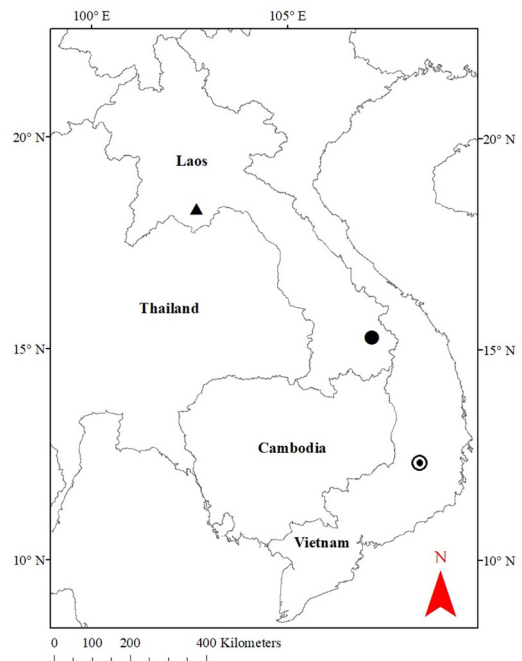


Figure 1. Distribution of *Dendrobium daklakense* Tich, Schuit. & J.J.Verm. in Laos (●), approximate type locality in Vietnam (⊙); *D. metrium* Kraenzl. in Laos (▲).

— *Dendrobium dalleizettii* Gagnep., Bull. Mus. Natl. Hist. Nat., sér. 2, 21: 740. 1950. Type: Vietnam, Tonkin: entre Laokay et Chapa, 28 Apr. 1909, C. d'Alleizette s.n. (P [P00408215, digital image!]).

— *Dendrobium filicaule* Gagnep., Bull. Mus. Natl. Hist. Nat., sér. 2, 21: 741. 1950.— *Anisopetala filicaulis* (Gagnep.) M.A.Clem., Telopea 10: 283. 2003. Type: Vietnam, Annam: sommet du Nui Bach Ma, station d'altitude un peu au sud de Huê, Poilane 27674 (holotype P [P00407691, digital image!]).

— *Dendrobium nhatrangense* Gagnep., Bull. Mus. Natl. Hist. Nat., sér. 2(2): 237. 1930.— *Grastidium nhatrangense* (Gagnep.) Rauschert., Feddes Repert. 94: 451. 1983. Type: Vietnam, Annam: nord de Ninhhoa, prov. De Nhatrang, 1,600 m altitude, 17 May 1923, Poilane 6508 (holotype P [P00408216, digital image!]).

— *Dendrobium sociale* J.J.Sm., Bull. Jard. Bot. Buitenzorg, sér. 2, 3: 6. 1912. Type: Indonesia, Sumatra: Proeba Toea, Hagen s.n. (holotype BO, n.v.).

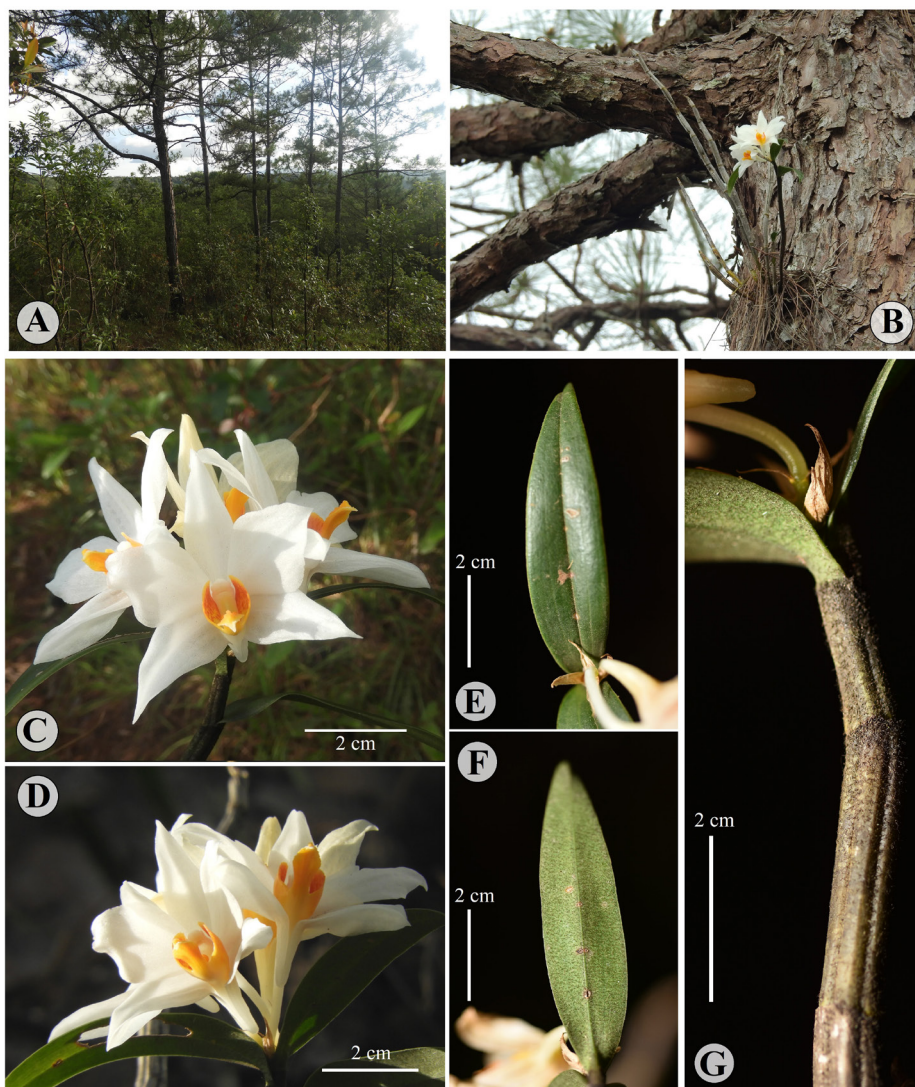


Figure 2. *Dendrobium daklakense* Tich, Schuit. & J.J.Verm.: A. Habitat; B. Habit; C. Inflorescence with flowers (front view); D. Inflorescence with flowers (lateral view); E. Upper surface of leaf; F. Lower surface of leaf. Photos from P. Phonepaseuth et al. P022 (FOF). Photos (A–D) by C. Keovongsy and (E–G) by P. Phonepaseuth.

Specimens examined.— Laos, Phou Khao Khouay National Park, Papaek Village, Thoulakhom District, Vientiane Province, 775 m a.s.l. 25 July 2020, *Souvannakhoumane et al. KS1017 (FOF!)*.

Distribution.—Thailand, Laos (Vientiane Province), Cambodia, Vietnam, Malaysia and Indonesia (Sumatra)(Averyanov, 2012; Schuiteman *et al.*, 2017).

Habitat and Ecology in Laos.— Growing on mossy rocks along streams at elevations of 750–800

m and occasionally as an epiphyte in mixed deciduous forest, and coniferous humid forests on granite and shale. Flowering from May to August.

Vernacular.— ເື່ອງສາຍຫີນ (Euang sai hin, suggested here).

Note.— Usually growing terrestrially on rocky ground among decaying leaf litter and mosses. The 1–3-flowered inflorescences arise from near the apex of leafless canes. New shoots were seen emerging from the distal part of the older stems. Lao collections

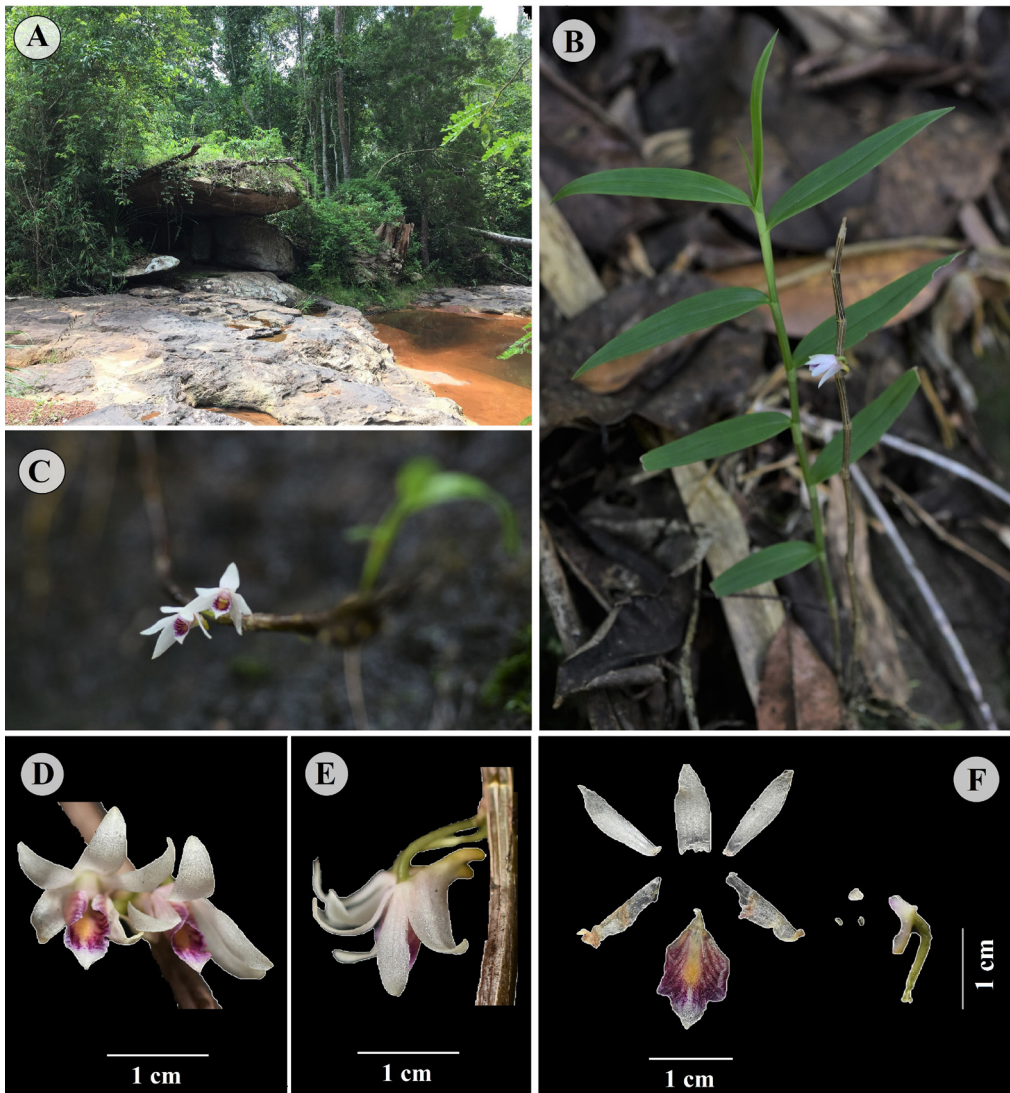


Figure 3. *Dendrobium metrium* Kraenzl.: A. Habitat; B. Habit; C–D. Inflorescence with flowers (front view); E. Inflorescence with flowers (lateral view); F. Floral dissection. Photos from *Souvannakhoumane et al. KS 1017 (FOF)*. Photos by P. Phonepaseuth.

differ from the species reported from Cambodia and Vietnam in flower colour (white in Lao material vs. pink in Cambodian and Vietnam), (Averyanov, 2012; Schuiteman *et al.*, 2017). This species was assessed as Vulnerable (VU) and reported as a rare orchid in Vietnam (Averyanov, 2012). During our field work, only two small populations were found and further surveys in similar habitats are needed to better understand the ecology and distribution of this species.

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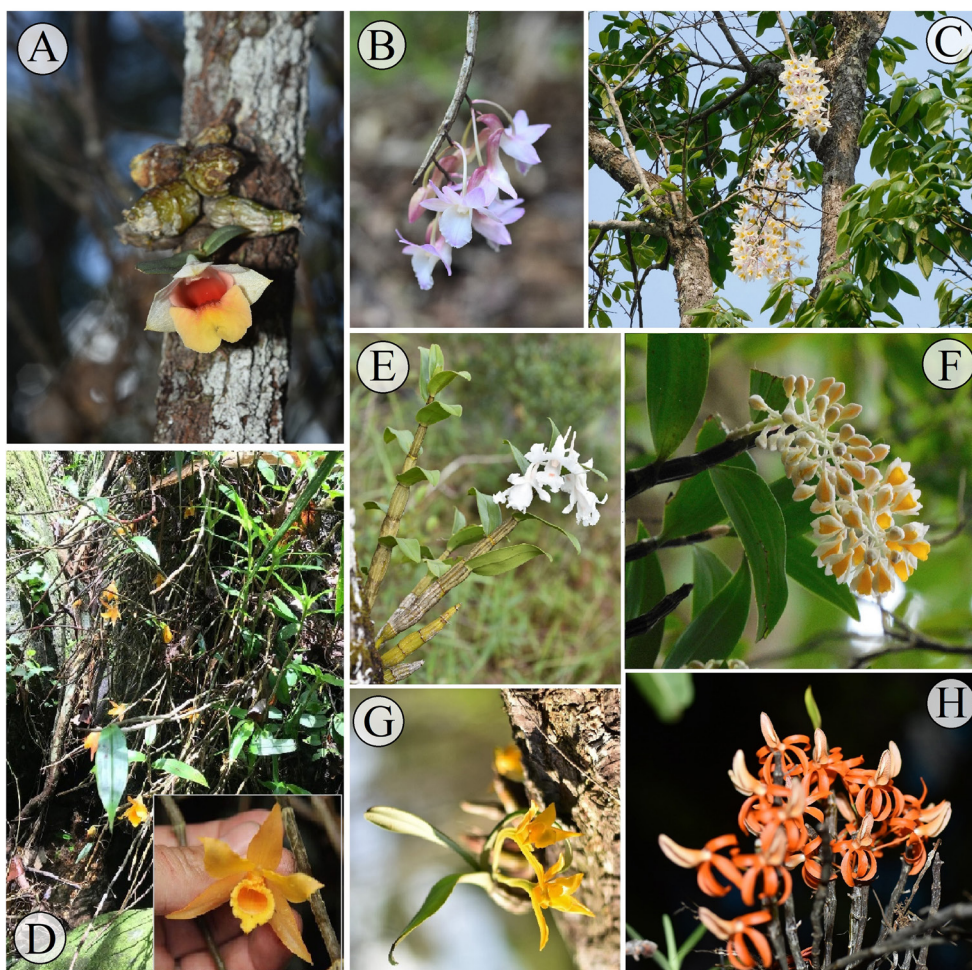


Figure 4. Some of the more frequent *Dendrobium* spp. found in botanical surveys.: A. *Dendrobium bellatulum* Rolfe.; B. *D. cumulatum* Lindl.; C. *D. gratiosissimum* Rchb.f.; D. *D. henryi* Schltr.; E. *D. kontumense* Gagnep. F. *D. thyrsoflorum* Rchb.f. ex André.; G. *D. trigonopus* Rchb.f.; H. *D. unicum* Seidenf. Photos (A, B, D, E, G & H) by P. Phonpeaseuth, and (C & F) by C. Keovongsy.

Appendix 1. Checklist of *Dendrobium* species in Laos

The sectional classification follows Schuiteman & Adams (2014), but with sect. *Herbacea* reinstated. Species names shown with an asterisk (*) are new records presented in this article, and previous records are indicated by superscript numbers following each species' name: 1. Kerr (1933); 2. Kerr (1969); 3. Kerr (1971); 4. Seidenfaden (1996); 5. Newman *et al.* (2007); 6. Schuiteman *et al.* (2008); 7. Schuiteman & Adams (2011); 8. Averyanov (2012); 9. Averyanov (2013); 10. Averyanov *et al.* (2016a); 11. Averyanov *et al.* (2016b); 12. Kumar *et al.* (2016); 13. Gale *et al.* (2018); 14. Kumar *et al.* (2018); 15. Kumar & Gale (2020); 16. Souvannakhommane *et al.* (2022); 17. Found in fields surveys; 18. The record of *D. ciliatilabellum* Seidenf. is based on a photograph by P. Bonnet taken in Laos (Schuiteman, pers. comm., to be published in Orchid Digest 87(4), 2023). Note on synonyms of prior literatures are showed below accepted names. Specimen citations are provided with information on collection numbers and herbarium codes collected from Laos (where applicable). Otherwise, publication with year and page is provided.

Table 1. Checklist of *Dendrobium* species in Laos.

Section	Species	Specimen citations
<i>Aporum</i> (18)	<i>Dendrobium acinaciforme</i> Roxb. ^{2,13}	<i>A.D.Kerr</i> 0075, 0076 (not found); Gale <i>et al.</i> (2018: 194)
	<i>D. aloifolium</i> (Blume) Rchb.f. ^{5,6,13}	<i>Sigaldi</i> 303 (P); Gale <i>et al.</i> (2018: 194)
	<i>D. anceps</i> Sw. ^{5,13}	Gale <i>et al.</i> (2018: 194)
	<i>D. crumenatum</i> Sw. ^{2,5,6}	<i>A.D.Kerr</i> 2000 (not found); <i>P. Bonnet</i> PB539 (NUOL).
	<i>D. curviflorum</i> Rolfe ^{6,13}	Gale <i>et al.</i> (2018: 194)
	<i>D. exile</i> Schltr. ^{5,6,13}	Gale <i>et al.</i> (2018: 107)
	<i>D. indivisum</i> (Blume) Miq. ^{2,5,6,13}	<i>A.D.Kerr</i> 0067 (not found); <i>P. Bonnet</i> PB538 (NUOL); Gale <i>et al.</i> (2018: 110)
	<i>D. indivisum</i> var. <i>lampangense</i> Rolfe ^{2,5,13}	<i>A.D.Kerr</i> 0068 (not found); Gale <i>et al.</i> (2018: 194)
	<i>D. keithii</i> Ridl. ¹³	Gale <i>et al.</i> (2018: 194)
	<i>D. kentrophyllum</i> Hook.f. ^{2,13}	<i>A.D.Kerr</i> 0975, 2063 (not found); Gale <i>et al.</i> (2018: 194)
	<i>D. lagarum</i> Seidenf. ^{5,6,10,13}	<i>E. Konstantinov</i> , K-238 (LE); Gale <i>et al.</i> (2018: 194)
	<i>D. leonis</i> (Lindl.) Rchb.f. ^{2,5,6,13}	<i>A.D. Kerr</i> 2354 (not found); <i>C. Thorel</i> 2364 (P [P00407911, digital image!]); Gale <i>et al.</i> (2018: 194)
	<i>D. mannii</i> Ridl. ^{2,5,6,13}	<i>A.D. Kerr</i> 0303 (not found); Gale <i>et al.</i> (2018: 111)
	<i>D. nathanielis</i> Rchb.f. ^{3,5,6,9,13}	<i>A.D.Kerr</i> 2803 (not found); <i>C. Thorel</i> 3061 (P [P00408024, digital image!]); <i>L. Averyanov et al. LA-VN 114</i> (CPC, LE, HNL, NUOL); Gale <i>et al.</i> (2018: 195)
	<i>D. pachyphyllum</i> (Kuntze) Bakh.f. ^{13,15}	Gale <i>et al.</i> , <i>HNL-KFBG 1174</i> (HNL).
	<i>D. parciflorum</i> Rchb.f. ex Lindl. ^{5,6,10,13}	<i>N.T. Hiep et al. LA-VN 991</i> (HNL, FOF, LE).
	<i>D. porphyrophyllum</i> Guillaumin ^{5,6}	Newman <i>et al.</i> (2007: 265)
	(syn. <i>D. indivisum</i> (Blume) Miq. var. <i>indivisum</i>)	
	<i>D. spatella</i> Rchb.f. ^{5,6,10,13}	<i>M.F. Newman LAO 1514</i> (NUOL); <i>S. Bounphanmy et al. LA-VN 38</i> (CPC); <i>Souladeth et al. L3153</i> (FOF [FOF0006484!])
<i>Conostalix</i> (1)	<i>D. pachyglossum</i> Parish & Rchb.f. ^{2,5,6,13}	<i>A.D. Kerr</i> 0807 (not found); <i>M.F. Newman LAO 1081</i> (NUOL); <i>P. Bonnet</i> PB535 (NUOL)
<i>Crinifera</i> (7)	<i>D. albopurpureum</i> (Seidenf.) Schuit. & Peter B.Adams ^{6,7,12,13}	<i>A.D. Kerr</i> 872 (K , spirit); <i>P. Bonnet</i> PB530 (NUOL); Kumar <i>et al. HNL-KFBG 0208</i> (HNL)
	<i>D. angustifolium</i> (Blume) Lindl. ¹³	Gale <i>et al.</i> (2018: 194)
	<i>D. hesperis</i> (Seidenf.) Schuit. & Peter B.Adams ^{7,13,15}	Gale & Phaxaysombath <i>HNL-KFBG 0577</i> (HNL).

Section	Species	Specimen citations
	<i>D. macraei</i> Lindl. ^{5,12,13}	<i>Kumar et al. HNL-KFBG 0162 (HNL)</i>
	<i>D. phuketense</i> Schuit. & Peter B.Adams ^{7,13,14}	<i>Fischer et al. HNL-KFBG 0208 (HNL).</i>
	<i>D. plicatile</i> Lindl. ¹³	<i>Gale et al. (2018: 195)</i>
	<i>D. ritaeum</i> King & Pantl. ^{6,7,13}	<i>D. Barthélémey et al. PB406 (NUOL); Gale et al. (2018: 195)</i>
<i>Dendrobium</i> (46)	<i>D. aduncum</i> Lindl. ^{5,6,12,13} (syn. <i>D. faulhaberianum</i> Schltr.)	<i>Kumar et al. HNL-KFBG 0281 (HNL)</i>
	<i>D. anosmum</i> Lindl. ^{5,6,13}	<i>B. Svengsuksa OL 8 (NUOL); Gale et al. (2018: 194); P. Phonepaseuth (cult. PP0101)</i>
	<i>D. aphyllum</i> (Roxb.) C.E.C.Fisch. ^{2,5,6,12,13}	<i>A.D.Kerr 0843 (K); M.F. Newman LAO 1034 (E); Kumar et al. HNL-KFBG 0001, 0012, 0056, 0276 (HNL); Gale et al. (2018: 101); P. Phonepaseuth (cult. PP0100)</i>
	<i>D. brymerianum</i> Rchb.f. ^{3,5,6,13}	<i>A.D.Kerr 2477 (not found); C.J. Spire 406 (P); C.J. Spire 486 (P); P. Bonnet et al. PB564 (NUOL); Gale et al. (2018: 194)</i>
	<i>D. chrysanthum</i> Lindl. ^{1,5,6,10,13}	<i>A.F.G. Kerr s.n. (K [K000596465, digital image!]), A.F.G. Kerr 0968 (P [P00386261, digital image!]); Gale et al. (2018: 194)</i>
	<i>D. chryseum</i> Rolfe ^{1,5,6,10,13} (syn. <i>D. denneanum</i> Kerr (Kerr, 1933:229)	<i>A.F.G. Kerr 0965 (P [P00386291, digital image!]); J.E. Vidal 1701 (P [P00386292, digital image!]); N.T. Hiep et al. LA-VN 1030 (HNL, FOF, LE).</i>
	<i>D. chrysotoxum</i> Lindl. ^{1,2,5,10,13}	<i>A.F.G. Kerr 0957 (K [K000596555, digital image!]); A.D.Kerr 0104, 1600 (not found); M.F. Newman LAO 112, 1295 (E); M.F. Newman LAO 1035, 1059, 1064 (NUOL); N.T. Hiep et al. 985, 1092, 1295 (HNL, FOF, LE); Gale et al. (2018: 194); P. Phonepaseuth (cult. PP0103)</i>
	<i>D. ciliatilabellum</i> Seidenf. ¹⁸	<i>P. Bonnet (Digital image!)</i>
	<i>D. crepidatum</i> Lindl. & Paxton ^{1,3,5,6,9,11,13}	<i>A.F.G.Kerr 0952 (K [K000596506, digital image!]); A.D.Kerr 2864 (not found); M.F. Newman LAO 1048, 1096, 1512 (NUOL); P. Bonnet et al. PB33 (NUOL); N.T. Hiep et al. LA-VN 481 (CPC, HNL, NUOL); N.T. Hiep et al. LA-VN 1406 (HNL, FOF, LE); Fischer et al. HNL-KFBG 0238 (HNL); Gale et al. HNL-KFBG 0638 (HNL).</i>
	<i>D. crystallinum</i> Rchb.f. ^{1,5,6,13}	<i>A.F.G. Kerr 0962 (K [K000596405, digital image!], (P [P00386191, P00386192, digital image!]); C.J. Spire 478 (P [P00386194, digital image!]); P.P.M. Tixier 23 (P); Gale et al. (2018: 194)</i>
	<i>D. devonianum</i> Paxton ^{2,5,6,13}	<i>A.D.Kerr 0837 (not found); M.F. Newman LAO 1056 (NUOL); P. Bonnet et al. PB260 (NUOL); Gale et al. (2018: 194)</i>
	<i>D. dixanthum</i> Rchb.f. ^{2,5,6,10,13}	<i>A.D. Kerr 1998 (not found); N.T. Hiep et al. LA-VN 1415 (HNL, FOF, LE); Gale et al. (2018: 194)</i>
	<i>D. falconeri</i> Hook. ^{10,13}	<i>N.T. Hiep et al. LA-VN 927 (HNL, FOF, LE); Gale et al. (2018: 194)</i>

Section	Species	Specimen citations
	<i>D. fimbriatum</i> Hook. ^{5,6,10,13}	<i>E. Poilane</i> 20763 (P); <i>C.J. Spire</i> 476 (P [P00407788, P00407789, digital image!]); <i>P. Bonnet et al.</i> PB63, PB255, PB358 (NUOL); <i>D. Barthélémy et al.</i> PB88 (NUOL); <i>N.T. Hiep et al.</i> LA-VN 942 (LE – photo), <i>N.T. Hiep et al.</i> LA-VN 1150, 1153 (HNL, FOF, LE); <i>Gale et al.</i> (2018: 194)
	<i>D. findleyanum</i> Parish & Rchb.f. ^{2,5,6,9,10,13}	<i>A.D. Kerr</i> 2887 (not found); <i>P. Bonnet et al.</i> PB349, PB382 (NUOL); <i>L. Averyanov et al.</i> LA-VN 792 (CPC, HNL, NUOL); <i>N.T. Hiep et al.</i> LA-VN 958, 1416, 1253 (HNL, FOF, LE); <i>Gale et al.</i> (2018: 108)
	<i>D. friedricksianum</i> Rchb.f. ^{6,13}	<i>Gale et al.</i> (2018: 194)
	<i>D. fuscifaucium</i> Souvann. & Kumar ¹⁶	<i>Souvannakhoummane</i> KS1400 (HNL [HNL0009890!]).
	<i>D. gibsonii</i> Paxton ^{6,13}	<i>P. Bonnet et al.</i> PB377 (NUOL); <i>Gale et al.</i> (2018: 194)
	<i>D. gratosissimum</i> Rchb.f. ^{5,6,9,10,12,13,17}	<i>M.F. Newman</i> LAO 110 (E); <i>M.F. Newman</i> LAO 1068 (NUOL); <i>P. Bonnet et al.</i> PB228, PB288 (NUOL); <i>S. Bounphanmy et al.</i> , LA-VN 21b (CPC, LE); <i>L. Averyanov et al.</i> LA-VN 772 (CPC, LE, HNL, NUOL); <i>N.T. Hiep et al.</i> LA-VN 1075, 1097, 1250 (HNL, FOF, LE); <i>Kumar et al.</i> HNL-KFBG 0187 (HNL); <i>Gale et al.</i> (2018: 109); <i>C. Keovongsy</i> (Fig. 4C)
	<i>D. harveyanum</i> Rchb.f. ^{5,6,13}	<i>M.F. Newman</i> LAO 1094 (NUOL); <i>Gale et al.</i> (2018: 194)
	<i>D. henryi</i> Schltr. ^{5,6,13,17}	<i>D. Barthélémy et al.</i> PB429 (NUOL); <i>Gale et al.</i> (2018: 194); <i>P. Phonepaseuth</i> (Fig. 4D)
	<i>D. hercoglossum</i> Rchb.f. ^{2,5,6,13}	<i>A.D. Kerr</i> 2138; <i>Gale et al.</i> (2018: 194)
	<i>D. heterocarpum</i> Wall. ex Lindl. ^{5,6,13}	<i>Gale et al.</i> (2018: 194)
	<i>D. lamyaiiae</i> Seidenf. ^{4,5,6,13}	<i>G. Sukhakul</i> GT9771, GT9777 (C); <i>Gale et al.</i> (2018: 194)
	<i>D. linawianum</i> Rchb.f. ¹³	<i>Gale et al.</i> (2018: 194)
	<i>D. linguella</i> Rchb.f. ^{5,12,13,15}	<i>Kumar et al.</i> HNL-KFBG 0232, 0234, 0278 (HNL); <i>Fischer et al.</i> HNL-KFBG 0281 (HNL).
	<i>D. lituiflorum</i> Lindl. ^{2,5,6,13}	<i>A.D. Kerr</i> 1305 (not found); <i>E. Poilane</i> 20767 (P [P00407948, digital image!]); <i>P. Bonnet & T. Keokene</i> PB197 (NUOL); <i>Gale et al.</i> (2018: 194)
	<i>D. loddigesii</i> Rolfe ^{1,5,6,10,13}	<i>A.F.G. Kerr</i> 0970 (K [K000596422, digital image!]); <i>N.T. Hiep et al.</i> LA-VN 955, 1249, 1317 (HNL, FOF, LE); <i>Gale et al.</i> (2018: 194)
	<i>D. macrostachyum</i> Lindl. ^{6,13}	<i>Gale et al.</i> (2018: 194)
	* <i>D. metrium</i> Kraenzl. ¹⁷	<i>Souvannakhoummane et al.</i> KS 1017 (FOF).
	<i>D. moschatum</i> (Banks) Sw. ^{5,6,12,13}	<i>Kumar et al.</i> HNL-KFBG 0040, 0041; <i>Fischer et al.</i> 0236 (HNL)
	<i>D. nobile</i> Lindl. ^{1,2,5,6,10,13}	<i>A.F.G. Kerr</i> 0966 (K [K000596526, digital image!]); <i>A.D. Kerr</i> 0479 (not found); <i>C.J. Spire</i> 1116 (P [P00408045, digital image!]); <i>E. Poilane</i> 13811 (P [P00408046, digital image!]); <i>C. Thorel</i> (P [P00408042, P00408043, P00408044, digital image!]); <i>P. Bonnet et al.</i> PB256, PB289 (NUOL); <i>N.T. Hiep et al.</i> , LA-VN 1000, 1035 (HNL, FOF, LE)
	<i>D. ochreatum</i> Lindl. ¹³	<i>Gale et al.</i> (2018: 194)

Section	Species	Specimen citations
	<i>D. parishii</i> Rchb.f. ^{3,5,6,13}	<i>A.D. Kerr</i> 2868, 2878 (not found); <i>P.P.M. Tixier</i> (P); <i>C. Thorel</i> (P [P00408101, digital image!]); <i>H.d. Orléans</i> (P [P00408102, digital image!]); <i>E. Poilane</i> 20769 (P [P00408103, digital image!]); <i>P. Phonepaseuth</i> (cult. PP0102)
	<i>D. pendulum</i> Roxb. ^{1,5,6,13}	<i>A.F.G. Kerr</i> 0964 (K [K000596418, digital image!]); <i>E. Poilane</i> 25888 (P [P00408111, digital image!]); <i>P.P.M. Tixier</i> 7 (P).
	<i>D. polyanthum</i> Lindl. ^{2,5,6,13}	<i>A.D. Kerr</i> 0641 (not found); <i>M.F. Newman</i> LAO 1519 (NUOL); <i>P. Phonepaseuth</i> (cult. PP0105)
	<i>D. pulchellum</i> Roxb. ex Lindl. ^{2,5,6,10,13}	<i>A.D. Kerr</i> 0670 (not found); <i>A. Doré</i> (P); <i>H.d. Orléans</i> (P); <i>J.B.L. Pierre</i> (P); <i>Pottier</i> 714A (P [P00408159, digital image!]); <i>C.J. Spire</i> 1486 (P).
	<i>D. ruckeri</i> Lindl. ^{6,13} (syn. <i>D. chittimae</i> Seidenf)	<i>Gale et al.</i> (2018: 195)
	<i>D. senile</i> Parish ex Rchb.f. ^{1,2,5,6,10,12,13}	<i>A.F.G. Kerr</i> 0960 (K); <i>A.D. Kerr</i> 2225 (C); <i>L. Averyanov & T. Maisak</i> , AL158a (LE – photo); <i>E. Konstantinov, T. Vongsas</i> , K-400 (LE [LE01068475, Digital image!]); <i>Kumar et al.</i> HNL-KFBG 0186 (HNL); <i>Gale et al.</i> (2018: 118)
	<i>D. signatum</i> Rchb.f. ^{5,6,9,13}	<i>M.F. Newman</i> LAO 270 (E); <i>M.F. Newman</i> LAO 990 (NUOL); <i>S. Bounphanmy et al.</i> LA-VN 21d (CPC, LE); <i>Gale et al.</i> (2018: 119)
	<i>D. stuposum</i> Lindl. ^{6,13}	<i>P. Bonnet</i> PB548 (NUOL); <i>Gale et al.</i> (2018: 195)
	<i>D. tortile</i> Lindl. ^{5,6,13}	<i>Gale et al.</i> (2018: 195)
	<i>D. transparens</i> Lindl. ^{6,12,13}	<i>P. Bonnet et al.</i> PB298 (NUOL); <i>Kumar et al.</i> HNL-KFBG 0165 (HNL)
	<i>D. trantuanii</i> Perner & X.N.Dang ^{10,13}	<i>N.T. Hiep et al.</i> LA-VN 1402 (HNL, FOF, LE [LE01067722, LE01067739, LE01074680, digital image!]).
	<i>D. unicum</i> Seidenf. ^{6,13,17}	<i>Gale et al.</i> (2018: 195); <i>P. Phonepaseuth</i> (Fig. 4H)
	<i>D. wardianum</i> R. Warner ^{6,9,13}	<i>L. Averyanov et al.</i> LA-VN 705 (CPC, LE, HNL, NUOL); <i>Gale et al.</i> (2018: 195)
<i>Densiflora</i> (5)	<i>D. densiflorum</i> Wall. ex Lindl. ^{5,6,13}	<i>E. Poilane</i> 26037 (P [P00408249, digital image!]), <i>E. Poilane</i> 26140 (P); <i>Gale et al.</i> (2018: 194)
	<i>D. farmeri</i> Paxton ^{5,6,12,13} (syn. <i>D. palpebrae</i> Lindl. ^{2,13})	<i>M.F. Newman</i> LAO 114, 115, 116, 347, 741 (E); <i>M.F. Newman</i> LAO 1499 (NUOL); <i>Kumar et al.</i> HNL-KFBG 0088 (HNL)
	<i>D. sulcatum</i> Lindl. ^{5,6,13}	<i>Gale et al.</i> (2018: 195)
	<i>D. thyrsiflorum</i> Rchb.f. ex André ^{3,5,6,13,17}	<i>A.D. Kerr</i> 2799 (not found); <i>M.F. Newman</i> LAO 1069 (NUOL); <i>E. Poilane</i> 26037A (P); <i>E. Poilane</i> 26140A (P); <i>P. Bonnet & A. Schuiteman</i> PB341 (NUOL); <i>P. Bonnet et al.</i> PB240, PB290, PB311, PB370 (NUOL); <i>Gale et al.</i> (2018: 195); <i>C. Keovongsy</i> (Fig. 4F)
	<i>D. thyrsiflorum</i> var. <i>minutiflorum</i> Aver. ^{8,13}	<i>L. Averyanov & P.V. The CPC</i> 2428 (LE , [LE01067705, digital image!])

Section	Species	Specimen citations
<i>Distichophyllae</i> (5)	<i>D. deltatatum</i> Seidenf. ^{5,6,13}	Gale <i>et al.</i> (2018: 194)
	<i>D. ellipsophyllum</i> Tang & F.T.Wang ^{5,6,13}	<i>E. Poilane 12185A</i> (P); <i>C.J. Spire 483</i> (P); <i>M.F. Newman LAO 101</i> (E); <i>P. Bonnet et al. PB9, PB573</i> (NUOL); Gale <i>et al.</i> (2018: 106)
	<i>D. oligophyllum</i> Simond ex Gagnep. ^{5,6,9,13}	<i>N.T. Hiep et al. LA-VN 383</i> (CPC, LE, HNL, NUOL); Gale <i>et al.</i> (2018: 195)
	<i>D. revolutum</i> Lindl. ^{2,13}	<i>A.D. Kerr 0882</i> (not found); Gale <i>et al.</i> (2018: 195)
	<i>D. trinervium</i> Ridl. ^{2,5,13}	<i>A.D. Kerr 0330</i> (not found); Gale <i>et al.</i> (2018: 195)
<i>Formosae</i> (13)	<i>D. bellatulum</i> Rolfe ^{2,5,6,11,13,17}	<i>A.D. Kerr 1645</i> (C); <i>A.D. Kerr 2578</i> (K, spirit); <i>P. Phonepaseuth</i> (Fig. 4A)
	<i>D. cariniferum</i> Rchb.f. ^{5,6,13}	<i>M.F. Newman LAO 1066, 1093</i> (NUOL); <i>E. Poilane 25892</i> (P [P00386226, Digital image!]); <i>J.E. Vidal 5585</i> (P); <i>P. Bonnet et al. PB227, PB295, PB313</i> (NUOL); Gale <i>et al.</i> (2018: 194)
	<i>D. christyanum</i> Rchb.f. ^{5,6,10,13}	<i>N.T. Hiep et al. LA-VN 922</i> (HNL, FOF, LE); <i>Souladeth et al. L2840</i> (FOF [FOF0006171!])
	* <i>D. daklakense</i> Tich, Schuit. & J.J.Verm ¹⁷	<i>Phonepaseuth et al. P022</i> (FOF)
	<i>D. draconis</i> Rchb.f. ^{2,6,11,13}	<i>A.D. Kerr 0695, 698, 705</i> (C); <i>Harmand 1404</i> (P [P00407630, P00407631, digital image!]); <i>E. Poilane 11489</i> (P [P00407635, digital image!]), <i>E. Poilane 11528</i> (P [P00407634, digital image!]); Gale <i>et al.</i> (2018: 104–105)
	<i>D. formosum</i> Roxb. ex Lindl. ^{13,15}	<i>Kumar & Phothisath HNL-KFBG 0797</i> (HNL).
	<i>D. infundibulum</i> Lindl. ^{3,5,6,13}	<i>A.D. Kerr 2760</i> (C); <i>J. Delacour</i> (P); Gale <i>et al.</i> (2018: 194)
	<i>D. kontumense</i> Gagnep. ^{5,9,13,17} (syn. <i>D. schildhaueri</i> Ormerod & H.A.Pedersen Newman <i>et al.</i> , 2007:265; <i>D. virgineum</i> Rchb.f., Newman <i>et al.</i> , 2007:266; <i>D. virgineum</i> Rchb.f., Gale <i>et al.</i> , 2018: 124)	<i>M.F. Newman LAO 106</i> (E); <i>M.F. Newman LAO 1521</i> (NUOL); <i>S. Bounphanmy et al., LA-VN 21a</i> (CPC, LE); <i>P. Phonepaseuth</i> (Fig. 4E)
	<i>D. multilineatum</i> Kerr ^{1,5,6,9,13}	<i>A.F.G. Kerr 0972</i> (K [K000596875, Digital image!]), (P [P00408019, digital image!]); <i>L. Averyanov et al. LA-VN 256</i> (CPC, LE, HNL, NUOL).
	<i>D. scabrilingue</i> Lindl. ^{2,5,6,13}	<i>A.D. Kerr 1770</i> (C); <i>A.D. Kerr 2771</i> (C); Gale <i>et al.</i> (2018: 195)
	<i>D. schrautii</i> Schildh. ^{6,13}	Gale <i>et al.</i> (2018: 195)
	<i>D. wattii</i> (Hook.f.) Rchb.f. ^{5,13,14}	Gale <i>et al.</i> (2018: 195)
	<i>D. williamsonii</i> Day & Rchb.f. ^{10,13}	<i>L. Averyanov & P.V. The, CPC 2429</i> (LE [LE01089006, digital image!]); <i>N.T. Hiep et al. LA-VN 1227, 1290a</i> (HNL, FOF, LE [LE01067760, digital image!]); Gale <i>et al.</i> (2018: 195)
<i>Grastidium</i> (1)	<i>D. salaccense</i> (Blume) Lindl. ^{2,5,6,10,12,13}	<i>A.D. Kerr 2058</i> (not found); <i>C.J. Spire 158</i> (P [P00408175, digital image!]); <i>P. Bonnet et al. PB25</i> (NUOL); <i>N.T. Hiep et al., LA-VN 1294</i> (HNL, FOF, LE); <i>Fischer et al. HNL-KFBG 0267</i> (HNL)
<i>Herbacea</i> (1)	<i>D. parcum</i> Rchb.f. ^{5,6,9,13}	<i>S. Bounphanmy et al. LA-VN 20</i> (CPC), <i>L. Averyanov et al. LA-VN 222</i> (CPC, HNL, NUOL); Gale <i>et al.</i> (2018: 195)

Section	Species	Specimen citations
<i>Pedilonum</i> (2)	<i>D. cumulatum</i> Lindl. ^{5,6,13,17}	<i>A.D. Kerr 0983 (K)</i> ; <i>M.F. Newman LAO 1272 (E)</i> ; <i>P. Phonepaseuth</i> (Fig. 4B)
	<i>D. secundum</i> (Blume) Lindl. ^{2,5,6,9,13}	<i>A.D. Kerr 0089</i> (not found); <i>F.J. Harmand 1091 (P)</i> ; <i>P.P.M. Tixier (P)</i> ; <i>C.J. Spire 1489 (P [P00408200, digital image!])</i> ; <i>L. Averyanov et al. LA-VN 132 (CPC, HNL, NUOL)</i> ; <i>Gale et al.</i> (2018: 117)
<i>Sarcopodium</i> (4)	<i>D. amplum</i> Lindl. ^{6,10,13}	<i>P. Bonnet et al. PB374 (NUOL)</i> ; <i>N.T. Hiep et al. LA-VN 986 (HNL, FOF, LE [LE01067807, Digital image!])</i> ; <i>Gale et al.</i> (2018: 100)
	<i>D. brunneum</i> Schuit. & Peter B.Adams ^{7,13}	<i>Gale et al.</i> (2018: 194)
	<i>D. fuscescens</i> Griff. ¹³	<i>Gale et al.</i> (2018: 194)
	<i>D. mariae</i> Schuit. & Peter B.Adams ^{6,7,13}	<i>Gale et al.</i> (2018: 195)
<i>Stachyobium</i> (9)	<i>D. compactum</i> Rolfe ^{5,6,13}	<i>M.F. Newman LAO 1503 (NUOL)</i> ; <i>P. Bonnet et al. PB281 (NUOL)</i> ; <i>Gale et al.</i> (2018: 194)
	<i>D. delacourii</i> Guillaumin ^{2,5,6,9,13}	<i>A.D. Kerr 0081, 0083</i> (not found); <i>P.P.M. Tixier 3 (P)</i> ; <i>L. Averyanov et al., LA-VN 130 (CPC, HNL, NUOL)</i> ; <i>Gale et al.</i> (2018: 102-103)
	<i>D. eriiflorum</i> Griff. ^{10,13}	<i>E. Konstantinov & T. Vongsa, K-391 (LE [LE 01066257, digital image!])</i> ; <i>Gale et al.</i> (2018: 194)
	<i>D. langbianense</i> Gagnep. ^{5,6,13}	<i>P. Bonnet & A. Schuiteman PB144 (NUOL)</i> ; <i>Gale et al.</i> (2018: 194)
	<i>D. minusculum</i> Aver. ^{10,13}	<i>N.T. Hiep et al. LA-VN 925 (LE [LE 01066529, digital image!], HNL, FOF)</i>
	<i>D. monticola</i> P.F. Hunt & Summerh. ^{5,6,9,13}	<i>S. Bounphanmy et al. LA-VN 39 (CPC)</i> ; <i>Gale et al.</i> (2018: 112–113)
	<i>D. porphyrochilum</i> Lindl. ^{6,10,13}	<i>P. Bonnet PB520 (NUOL)</i> ; <i>N.T. Hiep et al. LA-VN 921 / TM 1229 (HNL, FOF, LE)</i> ; <i>Gale et al.</i> (2018: 195)
	<i>D. strongylantherum</i> Rchb.f. ^{5,6,13}	<i>P. Bonnet & A. Schuiteman PB162 (NUOL)</i> ; <i>Gale et al.</i> (2018: 122)
	<i>D. venustum</i> Teijsm. & Binn. ^{5,6,13}	<i>M. Massie (P)</i> ; <i>J-B. Counillon (P)</i> ; <i>C.J. Spire 90 (P)</i> ; <i>P.P.M. Tixier 1b (P)</i> ; <i>Gale et al.</i> (2018: 123); <i>P. Phonepaseuth</i> (cult. PP0106)
Unplaced species (5)	<i>D. braianense</i> Gagnep. ^{5,6,13}	<i>Gale et al.</i> (2018: 194)
	<i>D. capillipes</i> Rchb.f. ^{5,6,13}	<i>P.P.M. Tixier (P)</i> ; <i>Gale et al.</i> (2018: 194)
	<i>D. jenkinsii</i> Wall. ex Lindl. ^{5,6,10,13}	<i>M. Marseille (P [P00407898, digital image!])</i> ; <i>P. Bonnet et al. PB279 (NUOL)</i> ; <i>N.T. Hiep et al. LA-VN 904, 1055, 1104, 1251 (HNL, FOF, LE)</i> ; <i>Gale et al.</i> (2018: 194); <i>P. Phonepaseuth</i> (cult. PP0108)
	<i>D. lindleyi</i> Steud. ^{5,6,13}	<i>Pottier 713A (P [P00407925, digital image!])</i> ; <i>M.F. Newman LAO 1044, 1077 (NUOL)</i> ; <i>Gale et al.</i> (2018: 194); <i>P. Phonepaseuth</i> (cult. PP0107)
	<i>D. trigonopus</i> Rchb.f. ^{2,5,6,10,13,17}	<i>A.D. Kerr 2479</i> (not found); <i>N.T. Hiep et al. LA-VN 1095 (HNL, FOF, LE [LE01067710, digital image!])</i> ; <i>Gale et al.</i> (2018: 195); <i>P. Phonepaseuth</i> (Fig. 4G)

Note: This checklist not includes *D. lamellatum* (Blume) Lindl. (*Gale et al.*, 2018: 195). Since none of specimen found and collected in Laos and this species is native to Indonesia (Java).

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