

REINSTATEMENT OF *DESMOS SUBBIGLANDULOSUS* (ANNONACEAE) IN BORNEO

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Isna Arofatur Nikmah, Tatik Chikmawati & Rugayah. 2019. Pengembalian Status dan Kedudukan *Desmos subbiglandulosus* (Annonaceae) di Borneo. *Floribunda* 6(3): 98–102. — *Desmos subbiglandulosus* (Miq.) Merr., yang sebelumnya disinonimkan dengan *Desmos dumosus* (Roxb.) Saff., diterima kembali berdasarkan pengamatan spesimen herbarium dan spesimen type *D. subbiglandulosus* dari Borneo yang disimpan di Herbarium Bogoriense. Spesimen-spesimen *D. subbiglandulosus* dan *D. dumosus* banyak memiliki perbedaan morfologi. Semua spesimen *Desmos* dari Borneo yang sebelumnya diidentifikasi sebagai *D. dumosus* diidentifikasi kembali menjadi *D. Subbiglandulosus*.

Kata kunci: *Annonaceae* memanjat, *Desmos dumosus*, Borneo, pemeriksaan penamaan, taksonomi.

Isna Arofatur Nikmah, Tatik Chikmawati & Rugayah. 2019. Reinstatement of *Desmos subbiglandulosus* (Annonaceae) in Borneo. *Floribunda* 6(3): 98–102. — *Desmos subbiglandulosus* (Miq.) Merr., previously placed as a synonym of *Desmos dumosus* (Roxb.) Saff., is reinstated based on the examination of herbarium specimens and type material of *D. subbiglandulosus* from Borneo deposited in Herbarium Bogoriense. The specimens of *D. subbiglandulosus* and *D. dumosus* are morphologically distinct. All the specimens *Desmos* from Borneo previously identified as *D. dumosus* should belong to *D. subbiglandulosus*.

Keywords: Climbing *Annonaceae*, *Desmos dumosus*, Borneo, nomenclatural reassessment, taxonomy.

Desmos Lour. is a woody climber or shrub genus in Annonaceae (Magnoliales), consisting of around 25 species widely distributed throughout Asia and Australia (Sinclair 1955). Since the name *Desmos* was published by Loureiro (1790), this taxon has been studied by many researchers, especially because of its controversial status with its closely related genus, *Dasymaschalon* (Hook. f. & Thomson) Dalla Torre & Harms. The latest molecular phylogenetic investigation by Chatrou *et al.* (2012) showed that *Desmos* belongs to the same clade with *Dasymaschalon* in the Uvariae tribe. However, a subsequent study by Guo *et al.* (2017), with the addition of five genera, showed that *Desmos* is sister clade with *Dasymaschalon*. Consequently, the taxonomical status of *Desmos* as a distinct genus is still unclear.

Previous research on *Desmos* in Western Malesia was studied by Ng (2010) who confirmed *Desmos dumosus* (Roxb.) Saff. Ng (2010) reported that *D. dumosus* was not occurred in Malesia as mentioned by Ridley (1922) and Sinclair (1955) which was followed by Turner (2011, 2012) in

treating the Bornean climbing *Annonaceae*, including *Desmos*. Otherwise, Ng (2010) published a new species which is actually another species (*D. subbiglandulosus*) which type of specimen is from Borneo. In this study, we confirm the misdetermination by Ridley (1922), Sinclair (1955), Turner (2011, 2012), and Ng (2010) and clear up the taxonomic confusion between *D. dumosus*, *D. sinclairii*, and *D. subbiglandulosus* based on the specimens from Borneo. Therefore, we deem it necessary to publish the results of our study of Bornean *Desmos*.

MATERIALS AND METHODS

Bornean specimens of the genus *Desmos* from various herbaria (BO, SAN, SING, and WAN) were examined during this study and used in the preparation of morphological descriptions. Digital records were also studied from the L herbarium. When a specimen has been seen directly, an exclamation mark (!) is given.

RESULT AND DISCUSSION

In 1865, Miquel described *Unona subbiglandulosa* as a new species based on the specimen type from Martapoera, Borneo with Korthals as specimen collector. Miquel (1865) explained that *U. subbiglandulosa* has a pale leaf abaxially, having glands on both sides of their leaf base, apex slightly obtuse or obtuse, glabrous adaxially, pubescent indumentum on the venation, flower leaf-opposed or sub-leaf-opposed, 1 bract, petals lanceolate, stipe pubescent, 1 to 5 articulated seeds in each fruit and there is constriction between the seeds. All these characters, especially the presence of a pair of glands at the base of leaves and fruit consisting more than one seed that constricted between the seeds, indicates that this species is a member of *Desmos*. Merrill (1915) revised some species of *Unona* found in the Philippines and transferred them to *Desmos*. One of them is *D. subbiglandulosus* which was previously named *U. subbiglandulosa* (Merrill 1915).

Ridley (1922) and Sinclair (1955) both recorded the occurrence of *D. dumosus* in the Malay Peninsula. Sinclair (1955) also treated *D. subbiglandulosus* (Miq.) Merr. and *Oxymitra monilifera* as a synonym of *D. dumosus* (Roxb.) Saff. Meanwhile, the type specimen of *D. dumosus* is from Sylhet, Bangladesh, and has large flowers. In his description, Sinclair (1955) provides broader delimitation on this species. Sinclair (1955) stated that *D. dumosus* is a species that has high morphological variation. In his publications, Sinclair (1955) also stated that the variety previously described by Craib as *D. dumosus* var. *glabrior* from Thailand could be an intermediate form between *D. dumosus* and *D. chinensis*.

Turner (2011, 2012), in his treatment of Bornean climbing *Annonaceae*, followed Sinclair who considered *D. subbiglandulosus* to be a synonym of *D. dumosus*. In contrast Ng (2010), in her revision of *Desmos* from Thailand, Peninsular Malaysia, and Sumatra, critically examined all specimens of *Desmos* with very dense indument on their leaves and concluded that the specimen examined by Sinclair (1955) belonged to a species different from *D. dumosus*. She then proposed it as a new species in her thesis as *D. sinclairii* KW Ng. She found that *D. dumosus* did not occur in the Malay Peninsula or Sumatra, then Ng (2010) separated these two species. The type specimen

proposed by KW Ng (2010) is *Burkill and Haniff 17061* from Peninsular Malaysia. The type of specimen used by Ng (2010) is incomplete specimen, so to clarify *D. subbiglandulosus*, the author uses one of the specimens examined of Ng (2010), *HMB1812* (Fig. 1).

In this study based on the morphological observations on *Desmos* in Borneo, we concluded that *D. dumosus* identified by previous researchers and *D. sinclairii* have similar diagnostic features to *D. subbiglandulosus* and distinctly different with *D. dumosus* s.str, especially on the leaf indumentum abaxially, tertiary venation, petiole indumentum, flower position, pedicel bract, sepal shape, outer petal shape, connectivum shape, monocarp shape, monocarp apex, and diameter of stipe (Table 1). Unfortunately, Ng did not examine *Desmos* specimens from Borneo and she treated *D. subbiglandulosus* as a synonym of *D. dumosus* in her thesis. Therefore *D. sinclairii* described by Ng (2010) as a new species in her thesis should be treated as a synonym of *D. subbiglandulosus* (Miq.) Merr. Based on our observation on 22 *Desmos* specimens from Borneo, we agree with Ng (2010) to separate *D. dumosus* sensu Sinclair into two taxa and resurrect *D. subbiglandulosus* (Miq.) Merr. With this resurrection, there is a significant change in the distribution of *D. dumosus* and *D. subbiglandulosus* species. All specimens of *Desmos* in Borneo previously placed in *D. dumosus* are re-identified as *D. subbiglandulosus*.

Not all the morphological characters previously used by Ng (2010) can be used to differentiate *D. subbiglandulosus* and *D. dumosus*. Ng (2010) stated that *D. subbiglandulosus* has a less densely indument than *D. dumosus* but some specimens of *D. subbiglandulosus* in Borneo have the same indument density as *D. dumosus*, such as *PBU342*. The shape of the leaves is also used as a character to distinguish *D. subbiglandulosus* and *D. dumosus* by Ng (2010). Morphological examination of *D. subbiglandulosus* showed that the leaf shapes of these two species have similarities. The shape of the seeds also cannot be used to differentiate these two species because *D. subbiglandulosus* is a species that has a wide geographical distribution and has variations in the shape of the seeds, i.e. globose (mostly) and ellipsoid.

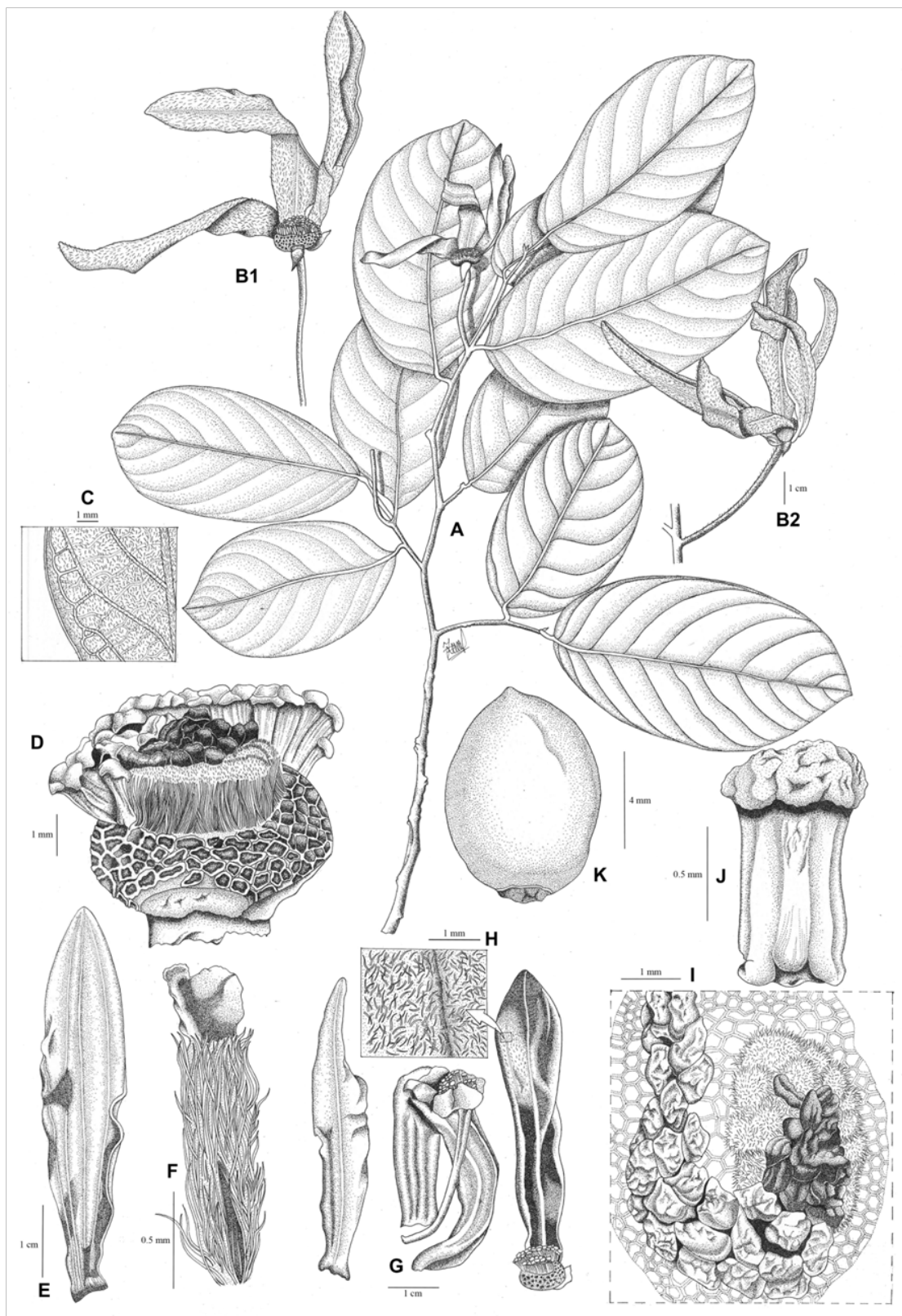


Figure 1. Morphology of *D. subbiglandulosus* (Miq.) Merr. A. Flowering branches; B1. Outer and inner petals arrangement with ovate sepals; B2. Sub-leaf-opposed flower; C: Eucamptodromous venation; D. Flat torus; E. Lanceolate-elliptic outer petals; F. Very densely indumentum on ovary; G. Lanceolate inner petal; H. Very densely hairy indumentum on outer petals abaxially; I. Slightly prominent connectivum; J. Stamen and connectivum glabrous; K. Seed globose. [Based on: *HMB 1812* (BO!)]. Drawing by Zakaria Al Anshori.

Table 1. Morphological comparison between *D. subbiglandulosus* and *D. dumosus*

No.	Characters	<i>D. subbiglandulosus</i>	<i>D. dumosus</i>
1	Leaf indumentum abaxially	Erect and short, most of the trichomes are dark brown and undulated with some are black, longer and strongly erect	Slightly erect and long, most of the trichomes are light brown or golden yellow without any longer black trichomes
2	Tertiary venation	Distinctly percurrent	Obscurely percurrent
3	Petiole indumentum	Erect and short, most of the trichomes are dark brown and undulated with some are black trichomes	Sub-erect and long, most of the trichomes are light brown or golden yellow without any black trichomes
4	Flower position	Sub-leaf-opposed and sometimes supra-axillary	Leaf-opposed
5	Pedicel bract	1	1, rarely 2
6	Sepal shape	Ovate	Broadly ovate
7	Outer petal shape	Lanceolate-elliptic	Obovate
8	Connectivum shape	Rounded and slightly prominent	Truncate
9	Monocarp shape	Globose	Ellipsoid
10	Monocarp apex	Apiculate	Obtuse
11	Diameter of stipe	Ca. 1 mm or less	Ca. 1–1.2 mm

TAXONOMIC TREATMENT

Desmos subbiglandulosus (Miq.) Merr., *Philipp. J. Sci.* 10: 235 (1915). — *Unona subbiglandulosa* Miq., *Ann. Mus. Bot. Lugduno-Batav.* 2: 11 (1865). Type: Borneo: Martapoera, date unknown, *P. W. Korthals s.n.* (holotype: L!-image seen [L 0182002]).

Oxymitra monifera Merr., *Univ. Calif. Publ. Bot.* 15: 73 (1929). — *Dasymaschalon moniliferum* (Merr.) P.T. Li, *Acta Phytotax. Sin.* 14: 104 (1976). Type: Borneo: Tawao: Elphinstone Province: British North Borneo, *A.D.E. Elmer #20525* (holotype: BM!-image seen [BM000815201]; Isotype: BO!).

[*Desmos sinclairii* KW Ng, in Systematics of *Desmos* (*Annonaceae*) in Thailand, Peninsular Malaysia and Sumatra, unpublished name, M.Phil. Thesis, The University of Hongkong: 74 (2010).]

Desmos dumosus auct. non (Roxb.) Saff., Sinclair, *Gard. Bull., Singapore* 14: 268 (1955).

Scandent shrub or climber 15 m in high, 3 cm in diameter. Twigs densely hairy, young twigs very densely hairy, lenticellate (dark brown). Leaf laminas subcoriaceous, oblong or obovate (most-

ly), 3.8–22.2 × 3.5–8.1 cm, apex acuminate or acute or obtuse (mostly), base rounded with a pair of glands, adaxial surfaces glabrous, abaxial subglabrous to densely hairy; midrib faint and tomentose adaxially, midrib very prominent and tomentose abaxially; secondary venation 8–13 very prominent abaxially, faint adaxially; tertiary venation distinctly percurrent; petiole 5.2–7.7 mm long, 1–2.4 mm diameter, tomentose. Flower sub-leaf-opposed; pedicels 20–42 mm long, 1 mm diameter, very densely hairy; pedicel bract 1, lanceolate, submedian; sepals 3, ovate, 5–8 mm long, reflexed, very densely hairy; petals yellowish green; outer petals 3, lanceolate-elliptic, 35–50 × 6–15 mm, reflexed, almost glabrous; inner petals 3, narrowly lanceolate, 30–44 × 6–15 mm, reflexed, very densely hairy; stamens many, c. 1 mm long, connectivum rounded-slightly prominent, glabrous; carpels many, ovary very densely hairy, stigma 0.3–0.5 mm long, clavate, glabrous. Fruits moniliform; fruiting pedicel 22–22.5 × 1.3–1.6 mm diameter, subglabrous to very densely hairy; no calyx persisted; monocarp 3 cm long by 5.5–6 mm wide, 1–5 seed per monocarp, surface hairy, rounded with constriction between seeds, apex apiculate, base rounded, glabrous surface; stipe 7–

17 × 1–1.2 mm, glabrous to very densely hairy; seeds globose, 6–9 × 5–6 mm wide, smooth.

Distribution. Peninsular Malaysia and Borneo. In Borneo collected from Brunei, Sabah, Sarawak, Kalimantan (West, Central and East).

Habitat and ecology. Primary forest, secondary forest, riverine forest, peat swamp forest; mixed *Dipterocarp*, *Myrtaceae*, *Euphorbiaceae*, *Myristicaceae* on red clay or greyish soil; elevation 25–600 m.

Phenology. Flowering specimens collected on April. Fruiting specimens collected on March, April, May and June.

Specimens examined: **Borneo:** BRUNEI DARUSSALAM Belait Labi, Valley of sungei Rampayoh, alluvial forest, valley bottom, 25 m, s. dat., *JD 7320* (SAN!). SARAWAK: Tatau, Ulu Merirai, gua Naga, 11 July 2005, *Julia S, Rantai J and Army K S 95749* (SING!). SABAH: Tawao, Elphinstone Province, British North Borneo, *A.D.E. Elmer20525*(BO!, BM). District Kalabakan, gunung Rara forest reserve, growth at the side of a hill, 13 March 1982, *Fedilis Krispinus SAN 91913* (SAN!, SING!, L). District Lahad Datu, Mile 12, main road Silam area, Kalumpang, secondary forest, 17 October 1961, *Muin Chai SAN 26678* (SAN!, SING!, L). WEST KALIMANTAN: Sintang, Bukit Baka National Park, ridge and environs above Batu Bertanam, mixed *Dipterocarp* forest, associates include *Shorea*, *Myrtaceae*, *Euphorbiaceae*, *Myristicaceae*, red clay soil, 350 m, 7 November 1993, *AC 612* (BO!, SING!, L). CENTRAL KALIMANTAN: Bukit Rawis, Natural Tourism Park Tangkling, peat swamp forest, 23 May 2006, *IE 0149* (BO!). Base camp P.B.U and environs, riverine forest, 6 June 1990, *Kade Sidyasa PBU342* (BO!, L). EAST KALIMANTAN: Inhutani Area Batu Ampar, Bukit Bangkirai, jalan Shorea, logged over forest, (E 01 01.907'S 116 49.597'), 148 m, 30 April 1996, *PK1457* (BO!, SAN!, WAN!, L). KPC Area Bengalon, Kuari, secondary forest along logging road (117 37.109' E; 00 50.802' N), 134 m, 20 April 1996, *Arifin Zainal and Arbainsyah AA1822* (BO!). SOUTH KALIMANTAN: Martapoera, date unknown, *P. W. Korthals s.n.* (L). **Peninsular Malaysia:** PAHANG: 8 miles of Kuala Lipis, 17 November 1924, *I. H. Burkill & M. Haniff 17061* (BO!). SINGAPORE: Nature Reserve by McRitcie Reservoir, 24 April 1959, *HMB 1812* (BO!, L). **India:** Assam: Silhet, *F. De Silva (Wall. Cat 6429a)* (K).

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