

# *Bulbophyllum hashimotoi* (Orchidaceae) – A New Species from New Guinea. With a Taxonomic Review on *Bulbophyllum* section *Macrobulbon*

by

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遊川知久\*・唐澤耕司\*\* : *Bulbophyllum hashimotoi* – ニューギニア産ラン科の  
1 新種の記載, ならびに *Bulbophyllum* section *Macrobulbon* のレビュー

Owing to their overwhelming substance of growth habits and bizarre flowers, members of *Bulbophyllum* Thou. section *Macrobulbon* Schltr. represent an extreme case of the diversity in Orchidaceae. So far, six species are known in this section, namely, *B. macrobulbum* J. J. Sm., *B. fletcherianum* Rolfe, *B. phalaenopsis* J. J. Sm., *B. spiesii* Garay, Hamer et Sigerist, *B. cruentum* Garay, Hamer et Sigerist, and *B. agastor* Garay, Hamer et Sigerist. Their distribution area is bounded within New Guinea. Morphologically, *Bulbophyllum* section *Macrobulbon* is characterized by 1) a wrinkled, globose pseudobulb with a short rhizome, 2) a thick, pendent leaf, and 3) large, fleshy flowers from a very short, multi-flowered inflorescence.

Recently, we have had opportunities to examine flowering plants grown under the name “*Bulbophyllum fletcherianum*”. Detailed investigation clarified that the material is not identical with any other species in this section; we hence recognize it as a new species.

*Bulbophyllum hashimotoi* Yukawa et Karasawa, *sp. nov.* TYPE: New Guinea. Papua New Guinea, without exact location, 1972, *Yokokawa s.n.* Grown at Tsukuba Botanical Garden with accession number 78746 (Holotype: TNS).

*Bulbophyllum fletcherianum sensu* Miller, *Orchids of Papua New Guinea* 50, colourphot.; *sensu* Karasawa, *Orchid Atlas* 4: 286, Fig., Pl. 215 (1986).

Affine *Bulbophyllum fletcherianum* Rolfe, sed bractis transversaliter ovatis, inflorescentia 3–5-flora, floribus fere inapertis, sepalo dorsali cymbiformi et non aristato valde differt.

Plant epiphytic. Rhizome creeping, 1–2.5 cm long; pseudobulbs subglobose, rugose, dark greenish purple, 1-leaved, up to 7.8 cm tall × 7.3 cm wide. Leaf fleshy, pendent, ligulate, unequally acute at apex, conduplicate and sessile at base, glaucous green, dark purple on margins, up to 79 cm long × 13 cm wide. Inflorescence lateral, borne horizontally, completely covered with bracts, 3.5 cm long, 3- to 5-flowered; peduncle 1.5 cm long; fertile bracts transversely ovate-triangular, acute-acuminate, cream, stained with purple, up to 34 mm long × 37 mm wide. Flowers nearly closed, thick, fleshy in texture, rugose-verrucose on all perianth lobes, puberulent on adaxial surface of sepals and both surfaces of

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petals; abaxial surface of sepals and petals dark reddish-purple, densely speckled with small, cream dots; adaxial surface of dorsal sepal and petals velvety claret, paler on margins of the petals; adaxial surface of lateral sepals clarlet; abaxial surface of labellum cream-yellow; adaxial surface of labellum cream-yellow, stained with purple; mentum cream; pedicelate ovary clavate-cylindric, curved, sulcate, cream, ca. 3 cm long. Dorsal sepal overlies lateral sepals, broadly ovate, cymbiform, acuminate, canaliculate, and often cuspidate at apex, up to 56 mm long  $\times$  45 mm wide when flattened. Lateral sepals subpandurately oblong, conglutinate, ridged on adaxial connate margins, deeply canaliculate on abaxial connate margins, with a couple of 3–8 mm, free, acute parts at apex, up to 59 mm long  $\times$  31 + 31 mm wide when flattened; mentum gibbous, 16 mm long. Petals obliquely rhombic-ovate, with thin, undulate margins, acuminate, cuspidate at apex, up to 21 mm long  $\times$  16.5 mm wide. Labellum cordate-triangular, recurved, with upturned margins, longitudinally bicarinate throughout adaxial surface of the disk, longitudinally canaliculate throughout abaxial surface of the disk, subacute, up to 17 mm long  $\times$  11 mm wide. Column stout with broad lateral wings, acute at apex, cream-yellow with clarlet dots, yellow-orange at lateral wings, 6–8 mm high; column foot straight, decurrent into the 5 mm, free, hamate apex where labellum connecting; operculum cucullate, subglobose, papillate, yellowish, speckled with clarlet, 3.5 mm long  $\times$  2.5 mm wide; pollinia 4, 2.8 mm long.

ETYMOLOGY: We have named it in honour of Tamotsu Hashimoto, Director of Tsukuba Botanical Garden, whose contributions to orchidology have done much to increase our knowledge of the orchid flora of Asia and Andes.

In general, *Bulbophyllum hashimotoi* bears some resemblance to *B. fletcherianum*, but the former has the following distinctive characters: 1) a transversely ovate bract, 2) a fewer number of flowers, 3) a dorsal sepal that completely overlies the lateral sepals, and 4) a wider, non-aristate dorsal sepal. In particular, a closed appearance of the flower caused by the wide, cymbiform dorsal sepal separates the new species from the rest of the members of this section readily. Its peculiar flower shape recalls the genus *Zootrophion* Luer, while this Neotropical orchid genus in tribe Epidendreae does not have any direct affinity with *Bulbophyllum*. Figures 1 and 2 are supplied to help in its identification and separation from closely related taxa.

#### Review of *Bulbophyllum* section *Macrobulbon*

As mentioned earlier, six other species of *Bulbophyllum* sect. *Macrobulbon* are known. We now summarize taxonomic information of these taxa and provide an artificial key to them and the newly described *B. hashimotoi* as well.

#### *Bulbophyllum* section *Macrobulbon* Schltr.

Fedde, Rep. Beih. 1: 700 & 760 (1913). Type species: *Bulbophyllum macrobulbum* J. J. Sm.

#### *Bulbophyllum macrobulbum* J. J. Sm.

Bull. Dépt. Agr. Ind. Néerl. 36: 4 (1910). – J. J. Sm., Nova Guinea 8: 579, T. 98B (1911); Schltr., Fedde, Rep. Beih. 1: 760 (1913); Rolfe, Bot. Mag. 146: T. 8842 (1920); Schltr., Fedde, Rep. Beih. 21: T. 252, Fig. 959 (1923); J. J. Sm., Nova Guinea 14: 478 (1929); van Bodegom, Einge Orchideeën van West Nieuw Guinea: 147 in English translation 1985 (1973).

*Bulbophyllum balfourianum* Rolfe Orchid Rev. **23**: 256 (1915). – Gard. Chron., ser. 3, **58**: 56, Fig. 18 (1915).

Distribution. New Guinea: Irian Jaya, southern region (Lorentz Expedition 1909, *Rachmat*, living plant in cultivation at Hort. Bog. under n. 63R, 83R, 109R, type); Irian Jaya, near Jayapura (fide van Bodegom); Papua New Guinea, near the Djamu Gorge ca. 400 m (*Schlechter 16817*); Papua New Guinea, Toliba ca. 300 m (*Schlechter 18970*).

As mentioned by Rolfe (1920) and Smith (1929), descriptions and illustrations of *B. balfourianum* completely agree with *B. macrobulbum*.

It is worthwhile to mention that well-grown plants exhibit much larger leaves than those in the original description. For example, van Bodegom (1973) noted that the dimension of leaves reaches 90 cm long × 10 cm wide, though the number of flowers per inflorescence does not increase noticeably.

This species shares many characters with *B. agastor*, but the former has much larger plants and flowers. Moreover, the lateral sepals are connate except for their apical parts in the former.

As best as we know, *B. macrobulbum* is not found in any contemporary living collections.

#### ***Bulbophyllum fletcherianum* Rolfe**

Orchid Rev. **22**: 164 (1914). – Gard. Chron., ser. 3, **55**: 320, Fig. 142 (1914); Cooper, Orchid Rev. **36**: 150 (1928); van Bodegom, *Einge Orchideeën van West Nieuw Guinea*: 147 in English translation 1985 (1973); Howcroft, Proc. 8th Australian Orchid Conference 107 (1983).

*Cirrhopetalum fletcherianum* (Rolfe) Rolfe Bot. Mag. **141**: T. 8600 (1915).

*Bulbophyllum spiesii* Garay, Hamer et Siegerist Amer. Orchid Soc. Bull. **59**: 812, colour phot. (1990); **syn. nov.** – Awards of Okinawa International Orchid Show **10**: 3, colour phot. (1996).

Distribution. New Guinea: precise locality unknown (type); Irian Jaya, Jayapura area (fide van Bodegom); Papua New Guinea, near Bololo (*Spies s. n.*, type of *B. spiesii*); Papua New Guinea, Garaina (fide Howcroft); Papua New Guinea, Bulolo/Wau (fide Howcroft).

This species is well characterized by a many-flowered inflorescence, a smooth surface of sepals, and long lateral sepals up to 10 cm.

Garay *et al.* (1990) described *B. spiesii* with special emphasis on the following diagnostic characters from *B. fletcherianum*: 1) a smaller flower, 2) differently proportioned, aristate floral segments, and 3) a densely, many-flowered inflorescence.

We investigated a living plant kindly presented by N. H. S. Howcroft, Bulolo, Papua New Guinea. As mentioned above, the holotype of *B. spiesii* was also collected in Bololo [sic]. In general, the plant coincides with *B. spiesii*. However, the dorsal and lateral sepals are 6.5 cm and 9 cm in length. They reach the dimensions in the original description of *B. fletcherianum*. Besides the elongation of apical parts of sepals varies even among flowers of a single inflorescence. On the other hand, an anonymous author (Orchid Rev. **30**: 81 (1922)) recorded that the number of flowers of *B. fletcherianum* in the collection of the Rev. J. C. B. Fletcher increased from 7 to 25. Without a doubt, his plant is a type element of *B. fletcherianum*. Contrary to the view of Garay *et al.* (1990), the number of flowers of *B. fletcherianum* is similar to that of *B. spiesii*. Consequently, the three distinguishing characters between

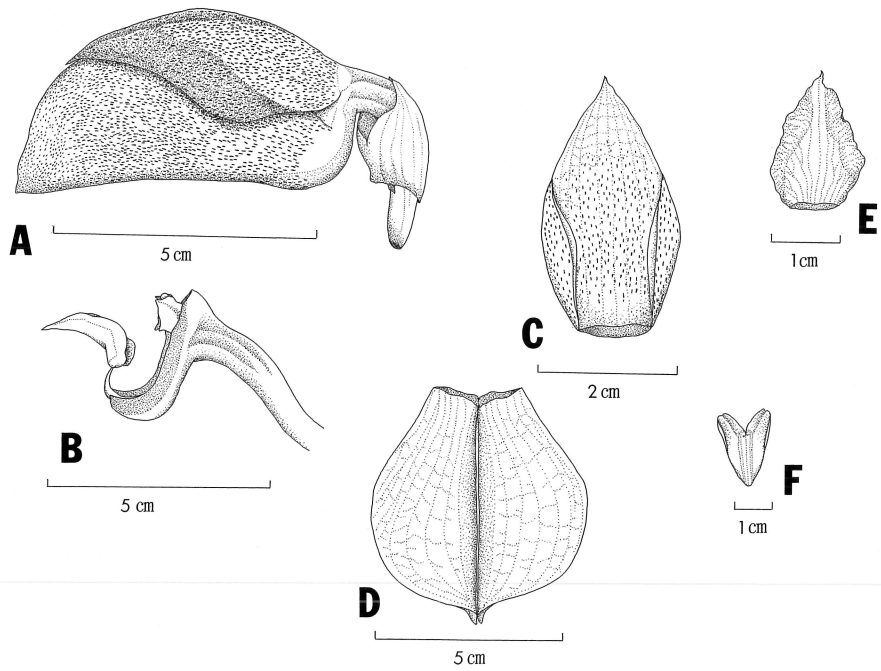


Fig. 1. *Bulbophyllum hashimotoi* Yukawa et Karasawa. A. Flower, side view; B. Labellum and column; C. Dorsal sepal; D. Lateral sepals, flattened; E. Petal; F. Labellum. Drawn from Yokokawa *s.n.*



Fig. 2. *Bulbophyllum hashimotoi* Yukawa et Karasawa in cultivation,  $\times$  ca. 0.35.



Fig. 3. *Bulbophyllum fletcherianum* Rolfe in cultivation,  $\times$  ca. 0.25.  
Photographed from the plant presented by N. H. S. Howcroft.



Fig. 4. *Bulbophyllum phalaenopsis* J. J. Sm. in cultivation,  $\times$  ca. 0.4.  
Photographed from the plant grown under an unpublished name  
*Bulbophyllum giganteum* hort.

*B. fletcherianum* and *B. spiesii* are not recognizable.

Although Garaÿ *et al.* (1990) did not mention the degree of conglutination in lateral sepals, the lateral sepals of the type of *B. fletcherianum* are conglutinate from the basal to middle parts and those of *B. spiesii* are free only at the apical parts. Our material shows the variation of conglutination among flowers of a single inflorescence, while the free parts do not extend to the middle of lateral sepals. It is likely that the variation of this character does not justify the separation of these two taxa.

Lim (1985) reported that the somatic chromosome number of this species is 38, the most prevailing number in the genus.

In contrast to a free flowering nature of *B. hashimotoi*, *B. fletcherianum* is reluctant to bloom at least in cultivation. Experiences in Japan show that intervals of flowering are about once in 2 years or so. In U.K. an anonymous author (Orchid Rev. 50: 128 (1942)) reported that a specimen at last flowered after unsuccessful 15 years. See Fig. 3.

***Bulbophyllum phalaenopsis* J. J. Sm.**

Bull. Jard. Bot. Buitenzorg sér. 3, 14: 165 (1937). – J. J. Sm., Orchidee (Bandoeng) 7: 57, Fig. (1938); van Bodegom, Einge Orchideeën van West Nieuw Guinea: 148 in English translation 1985 (1973).

*Bulbophyllum fletcherianum sensu* Laycock, Malayan Orchid Rev. 1 (1931).

*Bulbophyllum giganteum* hort. Amer. Orchid Soc. Awards Quarterly 2: 16 (1971); Ossian, Amer. Orchid Soc. Bull. 52: 930, colour phot. (1983); Karasawa, Orchid Atlas 4: 286, Pl. 216 (1986).

Distribution. New Guinea: precise locality unknown (type); Irian Jaya, 3 miles inland from Jayapura (fide Laycock); Irian Jaya, Siriwo River (fide van Bodegom).

From the remaining species of this section it is at once distinguishable by the hairy lateral sepals. Except for this feature, *B. phalaenopsis* is nearly identical with *B. fletcherianum*. Incidentally, this species is usually grown under an unpublished name *Bulbophyllum giganteum* hort. See Fig. 4.

***Bulbophyllum cruentum* Garay, Hamer et Siegerist**

Orchidee (Hamburg) 43: 139 (1992).

Distribution. New Guinea: precise locality unknown (*Levy 2507A*, type); Irian Jaya, Balim River, 1600 m (*Brass 11649*).

This species is readily separated from the rest of the members of this section by the free lateral sepals and the uniformly deep maroon flower colour.

***Bulbophyllum agastor* Garay, Hamer et Siegerist**

Lindleyana 11: 224 (1996). – Siegerist, Orchids 66: 577, Fig. (1997).

Distribution. New Guinea: Papua New Guinea, Southern Highland Province, Mendi, 5200 ft. (*Bandish s. n.*, type).

This recently described species shows a close affinity with *B. macrobulbum*, but the former is

much smaller in all its parts. Furthermore, basal parts of lateral sepals are free in the former and conglutinate in the latter. Albeit its similar size, *B. agastor* is easily separated from *B. cruentum* by the mostly conglutinate lateral sepals, the marbled flower colour, and the glabrous ridges of the labellum.

#### Key to species in *Bulbophyllum* section *Macrobulbon*

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|---|-------------------------|
| 1. Abaxial surface of lateral sepals muricate   | <b>B. phalaenopsis</b>  |
| 1'. Abaxial surface of lateral sepals rugose or smooth  |                         |
| 2. Number of flowers per inflorescence up to 45, lateral sepals 90–100 mm long, distinctly longer than dorsal sepal   | <b>B. fletcherianum</b> |
| 2'. Number of flowers per inflorescence up to 8, lateral sepals shorter than 60 mm, similar to dorsal sepal in length |                         |
| 3. Lateral sepals free  | <b>B. cruentum</b>      |
| 3'. Lateral sepals conglutinate for most parts  |                         |
| 4. Petals less than 1/2 length of sepals, leaves ca. 80 cm long   | <b>B. hashimotoi</b>    |
| 4'. Petals more than 2/3 length of sepals, leaves ca. 20 cm long  |                         |
| 5. Lateral sepals conglutinate except for apex, dorsal sepal ca. 40 mm long   | <b>B. macrobulbum</b>   |
| 5'. Lateral sepals free at base, dorsal sepal ca. 25 mm long  | <b>B. agastor</b>       |

#### Acknowledgements

The authors would like to thank Ms. Fusako Endo for preparing the illustration, Mr. Neville H. S. Howcroft for providing plant material, and Mr. Hiroyuki Gauda, Mr. Takeshi Yokokawa, Mr. Naosuke Matsuzaki and Mr. Kazuhiro Suzuki for giving useful information. This research was supported by Fujiwara Natural History Foundation.

#### Summary

A new species of *Bulbophyllum* section *Macrobulbon* from New Guinea is hereby described. *Bulbophyllum hashimotoi* is easily separated from any other species in this section by a nearly closed appearance of the flower. A taxonomic review of *Bulbophyllum* section *Macrobulbon* is also provided.

#### 摘 要

従来“*Bulbophyllum fletcherianum*”として栽培されてきたニューギニア産の植物を検討したところ、くちばし状に合わさった萼片を特徴とする未記載分類群であることが判明した。筑波実験植物園の計画、建設、運営に尽くされ、またアジアと南アメリカのラン科植物の分類学的研究に寄与された橋本保氏を記念し、*Bulbophyllum hashimotoi* Yukawa et Karasawa と命名した。

本種が属す section *Macrobulbon* Schltr. には、現在まで他に 6 種、*B. macrobulbum* J. J. Sm., *B. fletcherianum* Rolfe, *B. phalaenopsis* J. J. Sm., *B. spiesii* Garay, Hamer et Sigerist, *B. cruentum* Garay, Hamer et Sigerist, *B. agastor* Garay, Hamer et Sigerist が知られている。これらの種について再検討した結果、*B. spiesii* は *B. fletcherianum* の異名として扱うのが適当であることが明らか

になった。

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