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# A REVISION OF RHYNCHOGLOSSUM (GESNERIACEAE) IN MALESIA

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**ABSTRACT**
KARTONEGORO, A. 2013. A revision of *Rhynchoglossum* (*Gesneriaceae*) in Malesia. *Reinwardtia* 13(5): 421–432. — The genus *Rhynchoglossum* in Malesia has been revised. Five species are included: *R. borneense*, *R. capsulare*, *R. klugioides*, *R. obliquum* and *R. spumosum*. *Rhynchoglossum obliquum* is a widespread and common species while the other four are endemic to Malesia. Morphological descriptions, nomenclature, distribution, ecological information and notes are provided for all species. An identification key and a list of examined specimens are included.

**Key words**: Endemic, *Epithemateae*, synonym nova, widespread.

**ABSTRAK**
KARTONEGORO, A. 2013. Revisi *Rhynchoglossum* (*Gesneriaceae*) di Malesia. *Reinwardtia* 13(5): 421–432. — Marga *Rhynchoglossum* di Malesia telah direvisi. Lima jenis telah diketahui termasuk: *R. borneense*, *R. capsulare*, *R. klugioides*, *R. obliquum* dan *R. spumosum*. *Rhynchoglossum obliquum* merupakan jenis yang tersebar luas dan umum ditemukan sedangkan empat jenis lainnya endemik untuk wilayah Malesia. Deskripsi morfologi, tatanama, distribusi, informasi ekologi dan catatan ditampilkan untuk semua jenis. Kunci identifikasi dan daftar spesimen yang digunakan juga disertakan.

**Kata kunci**: Endemik, *Epithemateae*, sinonim baru, tersebar.

## INTRODUCTION

The genus *Rhynchoglossum* was established by Blume (1826) with one species, *Rynchoglossum obliquum*. The epithet *Rhynchoglossum* comes from the Greek *Rhynchos* meaning beak and *glossa* meaning tongue. The second part of the name clearly alludes to the broad, tongue-like lower lip of the corolla, the first part perhaps to the narrow corolla tube or to the pointed petal tips (Weber, 2004a). *Rhynchoglossum* species are fleshy herbs with anisophyllous, decussate or alternate leaves with asymmetrical leaf blades and unilateral inflorescence. The genus is of little economic value but several Botanic Gardens and private gardens grow the plant as an ornamental (Skog, 1985). Its preferred habitat is on wet and shady (especially limestone) rocks, in forest or in open vegetation or shady places, usually in the lowlands (Weber, 2004a).

*Rhynchoglossum* is included in the so-called *Epithematoid Gesneriaceae* or in the tribe *Epithemateae* along with *Whytockia* W.W. Sm., *Gyrogyne* W.T. Wang, *Epithema* Blume, *Monophyllaea* R. Br., *Loxonia* Jack, and *Stauranthera* Benth. (Weber, 2004a). Generally these genera share unequal cotyledons, unequal leaf arrangement at one node, an asymmetrical leaf blade and capsular fruits. *Rhynchoglossum* has alternate to nearly distichous leaf arrangement while *Loxonia* and *Stauranthera* have opposite leaves in unequal pairs. Different from other genera in the tribe is *Monophyllea* that bears a single large leaf developed from the macrocotyledon (Weber, 2004a).

Originally *Rhynchoglossum* was distributed in tropical Asia from India, Sri Lanka, China, Taiwan and Indochina to New Guinea (Weber, 2004b) but Burtt (1962) included *Klugia* Schltdl. in synonymy of *Rhynchoglossum* thereby extending its distribution to Central and South America from Mexico to Peru. The inclusion of *Klugia* as a synonym makes the distribution of *Rhynchoglossum* wider and disjunct and raises questions about its history. Burtt (1998) suggested that *Rhynchoglossum* reached America from Asia via Africa from where it has since completely disappeared (or at least where no species are known). Weber (2004a; 2004b) assumed that the genus spread from Asia to America recently, probably via transpacific trips or migrations of early Polynesians. This is also suggested by the current localities that are usually near former population centers of ancient dwellers along the Pacific coast.

Brown (1839) proposed a new genus *Antonia,* an

invalid name, with a single species *A. obliqua* (Wall.) R. Br., a combination based on *Wulfenia obliqua* Wall. (Wallich 1832; Weber 2004a). Later he moved the species into the genus *Loxotis* R. Br. *ex* Benth. and made the combination *L. obliqua* (Wall.) R. Br. (Brown, 1839). This name was taken up by Miquel (1855). Later Clarke (1883) placed *Antonia* and *Loxotis* in synonymy of *Rhynchoglossum*. Recently Burtt (1962) also included *Klugia* (including *Glossanthus* Klein) in synonymy.

A phylogenetic analysis of *Rhynchoglossum* using DNA sequence data has been conducted together with other members of the tribe *Epithemateae* (Mayer *et al.,* 2003). The phylogenetic tree showed that *Rhynchoglossum* was sister to the remaining *Epithemateae*. This separation is in accordance with many and strong morphological differences (*e.g.*, alternate leaf arrangement, strongly asymmetrical leaves, terminal inflorescences in the form of unilateral racemes, enlarged lower lip of corolla). With limited sampling, *R. notonianum* (Wall.) B. L. Burtt (India) plus the neotropical *R. azureum* (Schltdl.) B. L. Burtt was sister to *R. obliquum* Blume (East Asia and Malesia). The separation better reflects the morphological characters than the geography, suggesting that *R. azureum* is indeed a recent introduction to the neotropics rather than an ancient relict. The groups can be roughly classified in two: (1) perennials with large flowers and four stamens (the former genus *Klugia*) and (2) annuals with small flowers and two stamens (Mayer *et al*., 2003).

## MATERIALS AND METHODS

This study is based on the study of 233 herbarium specimens (including spirit collections) of *Rhynchoglossum* from BO and SING. A number of photographs of herbarium specimens from A, BM, E, K, L, NY and US were also studied. The materials were studied for morphological characters using a 10 x 40 binocular microscope and a stereomicroscope. The description of inflorescences and infructescences is based on rehydrated specimens.

## RESULTS

Five species of *Rhynchoglossum* are recorded for Malesia. The five species are *R. borneense* Merr., *R. capsulare* Ohwi *ex* Karton., *R. klugioides* C. B. Clarke, *R. obliquum*, and *R. spumosum* Elmer. No infraspecific taxa are proposed in this revision. Of the five species in the Malesian region four are endemic to the region. *Rhynchoglossum obliquum* is a widespread and very common species distributed throughout Southeast Asia to New Guinea. *Rhynchoglossum klugioides* was previously only known from the Philippines but is now also known from Seram Island, Moluccas. The other three species are more locally endemic. *Rhynchoglossum spumosum* is from Negros and Mindanao islands in the Philippines, *R. capsulare* is endemic to Sulawesi, and *R. borneense* is endemic to eastern Borneo.

### General Morphology of *Rhynchoglossum* in Malesia

#### Habit

*Rhynchoglossum* species are erect and creeping fleshy-succulent herbs 5–150 cm tall, rhizomatous or non-rhizomatous. The roots are adventitious. The only rhizomatous species is *R. spumosum* with a creeping habit and low stems about 5–8 cm tall. The stems are usually terete and wrinkled when dried. They have a variable indument, the hairs being absent or simply puberulous to pubescent. Most species are glabrous and have smooth stems and swollen nodes.

#### Leaves

The leaves are alternate and ex-stipulate. The leaf blade of all *Rhynchoglossum* species is oblique and asymmetrical between the two sides, the two sides attached at an equal length along the petiole or one side attached higher, up to 2.5 cm higher in *R. borneense*. Leaf shape varies from ovate to oblong. *Rhynchoglossum capsulare* is the only species that has an oblong leaf while those of the other species vary from ovate to elliptic. The leaf bases are unequal with one side being cuneate to acute and the other rounded to cordate. The leaf margins are mostly entire, more rarely serrate. The leaf blade texture is mostly membranous, but subcoriaceous in *R. klugioides*. Most species have a glabrous and smooth leaf surface although some are pubescent or puberulous when juvenile.

#### Inflorescences

The inflorescence in *Rhynchoglossum* is a terminal or axillary raceme. The axillary inflorescences are usually opposite the leaves. The number of flowers in an inflorescence varies from less than 3 in *R. spumosum* to 50 in *R. obliquum*. The flowers in an inflorescence are unilateral due to the reduction of the flowers on the opposite side or are arranged in two rows. The bracts are usually absent in *R. spumosum* or are linear in *R. obliquum*. Sometimes inflorescences have bracts that do not support a flower, known as sterile bracts. Bracteoles are mostly linear and arise from the base of the pedicel

in *R. klugioides* and *R. spumosum*; and from the middle of the pedicel in the other species.

**Flowers**

The flowers are zygomorphic, tubular and vary from less than 1 cm long to more than 3 cm long. The calyx tubes are infundibuliform with a campanulate shape in most species or urceolate in *R. klugioides*. The calyx is adnate in the lower half and sometimes winged along the lines of fusion; white to green. The calyx lobes are triangular and entire, glabrous, 5–merous. The corolla consists of a tube and limb. The tube is glabrous to puberulent. The limb is two–lipped. The adaxial lip is usually smaller with two lobes and the abaxial lip is larger and 3-lobed or undivided, rounded elongate or tongue-like. The petals are usually bluish to dark purple, rarely white. *Rhynchoglossum borneense* and *R. klugioides* have a yellow pilose dot in the throat of the abaxial limb.

*Rhynchoglossum* species in Malesia have 2 or 4 stamens. *Rhynchoglossum obliquum*, *R. klugioides*, *R. capsulare* and *R. spumosum* have 2 stamens. *Rhynchoglossum borneense* has 4 stamens. The stamens are coherent in pairs. The two stamens are adnate to the corolla tube adaxially and in species with four stamens the additional two stamens are adnate abaxially. The anthers are basifixed, the thecae are parallel and dehisce longitudinally. The filaments are usually flat. The ovaries in most *Rhynchoglossum* are ovoid and unilocular. The stigma is capitate or undivided and the style is usually glabrous and persistent in fruit.

**Fruits**

The fruits in all *Rhynchoglossum* species are unilocular capsules. Fruit shape varies from ovoid to elongate with prominent calyx remnants. The calyx remnants half enclose the fruit in *R. capsulare* and fully enclose the fruit in the other species. The fruits dehisce loculicidally to the base in two valves and are not twisted. The seeds are cuneate and without appendages.

## TAXONOMIC TREATMENT

### RHYNCHOGLOSSUM Blume

*Rhynchoglossum* Blume, Bijdr. Fl. Ned. Ind. 14 (1826) 741 ['Rhinchoglossum']; DC., Prodr. 9 (1845) 275; Benth. in Benth. & Hook. f., Gen. Pl. 2 (1876) 1019; C. B. Clarke in A. DC & C. DC., Monogr. Phan. 5 (1883) 161; Boerl., Handl. Fl. Ned. Ind. 2 (1891) 571; Fritsch in Engl. & Prantl, Natürl. Pflanzenfam. 4, 3B (1895) 156; Koord., Exkursionfl. Java 3 (1912) 195; Merr., Enum. Philipp. Pl. 3 (1923) 454; Schltr., Bot. Jahrb. Syst. 58 (1923) 298; Ridl., Fl. Mal. Pen. 2 (1923) 539; B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 24 (1962) 168; Bakh. f. in Backer & Bakh. f., Fl. Java 2 (1965) 525; A. Weber in Kubitzki & J. W. Kadereit, Fam. Gen. Vasc. Pl. 7 (2004) 128. — Type: *Rhynchoglossum obliquum* Blume.

*Antonia* R. Br. in Wall., Pl. As. Rar. 3 (1832) 65, auct. non Pohl. nom. inval. — Type: *Antonia obliqua* (Wall.) R. Br. [= *Rhynchoglossum obliquum* Blume].

*Klugia* Schltdl., Linnaea 8 (1833) 248; DC., Prodr. 9 (1845) 275; Benth. In Benth. & Hook. f., Gen. Pl. 2 (1876) 1019; C. B. Clarke in A. DC & C. DC., Monogr. Phan. 5 (1883) 158; in Hook. f., Fl. Brit. Ind. 4 (1885) 366; Fritsch in Engl. & Prantl, Natürl. Pflanzenfam. 4, 3B (1895) 155. — Type: *Klugia azurea* Schltdl. [= *Rhynchoglossum azureum* (Schltdl.) B. L. Burtt].

*Loxotis* R. Br. *ex* Benth., Scroph. Ind. (1835) 57; R. Br. in Benn., Pl. Jav. Rar. (1838) 102; Miq., Fl. Ned. Ind. 2 (1858) 731. — Type: *Loxotis obliqua* (Wall.) R. Br. *ex* Benth. [=*Rhynchoglossum obliquum* Blume].

*Glossanthus* Klein *ex* Benth., Scroph. Ind. (1835) 57. — Type: *Glossanthus malabaricus* Klein *ex* Benth. [= *Rhynchoglossum azureum* (Schltdl.) B. L. Burtt].

Erect to creeping fleshy-succulent herbs, perennial (outside Malesia) or annual, terrestrial, rhizomatous or not rhizomatous, 5–150 cm tall. *Stem* terete, branched or simple, glabrous or with a sparse indumentum, puberulous to pubescent; young stem usually pubescent. *Leaves* alternate, nearly distichous, exstipulate, petiolate; lamina membranous or subcoriaceous, ovate to lanceolate, oblique, pale green to green; base strongly unequal, cuneate to cordate; apex acute to acuminate; margin entire to serrate; lamina surface glabrous to puberulent; venation penninerved. *Inflorescences* racemose, slender, lax and later appearing scorpioid, terminal and/or axillary, few–to many–flowered cymes; unilateral, in 2–rows; bract present or absent, subtended the flower or free, single if present; bracteole single, linear, arising from the base or the middle of pedicel. *Calyx* 5–merous, *tube* infundibuliform, campanulate or urceolate, actinomorphic, connate at lower half, sometimes winged at line fusion; white, pale green to dark green, semi translucent; calyx lobes triangular to acute, entire, segments equal. *Corolla* zygomorphic, inside glabrous or sparsely yellow dotted with puberulent or medussoid pilose hairs near mouth; white, bluish to dark purple or azure; tube tubular to cylindric, not swollen, slightly longer than limb; limb 2–lipped; adaxial lip 2–lobed, shorter and smaller; abaxial lip 3–lobed, seldom undivided, lobes, equal or subequal, apex rounded, emarginate or elongate to obtuse, longer and larger than adaxial. *Stamens* 2 or 4; filament flat or terete, adnate to corolla tube near middle on abaxial side (if 2 stamens) and adaxial side (other 2 stamens if 4

stamens); anthers basifixed, coherent in pairs, thecae nearly parallel or divaricate, dehiscing longicidally. *Ovary* ovoid, 1–loculed, placentas 2, parietal; stigma 1, terminal, subglobose, undivided. *Fruit* a capsule, stalked, globose or ovoid to elongate, smaller (fully enclosed) or larger (half enclosed) than calyx remnant, dehiscing loculicidally to base; 2–valvate, straight, not twisted. *Seeds* minute, cuneate, unappendaged.

**Distribution.** About 10 species occurring from India, Sri Lanka, South China, Taiwan, Indochina to Malesia; one species in Southern America (Mexico to Peru).

## KEY TO SPECIES *RHYNCHOGLOSSUM* IN MALESIA

1a. Stamens 4 ..... 1. *R. borneense*
b. Stamens 2 ..... 2
2a. Creeping herb, less than 8 cm tall; rhizomatous ..... 5. *R. spumosum*
b. Erect herb, more than 10 cm tall; not rhizomatous ..... 3
3a. Leaf blade sub-coriaceous; flower more than 2 cm long; calyx tube urceolate .. 3. *R. klugioides*
b. Leaf blade membranous; flowers less than 2 cm long; calyx tube campanulate..... 4
4a. Leaf blade oblong; fruits half enclosed by calyx remnant ..... 2. *R. capsulare*
b. Leaf blade ovate to elliptic; fruits fully enclosed by calyx remnant ..... 4. *R. obliquum*

### 1. RHYNCHOGLOSSUM BORNEENSE Merr. — Fig. 1; Map 1

*Rhynchoglossum borneense* Merr, Univ. Calif. Publ. Bot. 15 (1929) 269; B.L. Burtt, Notes Roy. Bot. Gard. Edinburgh 24 (1962) 168. — Lectotype: Borneo, Elphinstone Province, Tawau. *Elmer 21467* (BO; iso A, L, PNH, SING, designated here).

*Rhynchoglossum medusothrix* B.L. Burtt, Notes Roy. Bot. Gard. Edinburgh 24 (1962) 169. — Type: Borneo, Berouw, Flatland at base of Mt. Ilas Mapulu. *Kostermans 13994* (L; iso A, BM, BO, CANB, E, L, P, SING) - *syn. nov.*

Herb, annual, not rhizomatous, 40–100 cm tall. *Stem* glabrous, up to 5 mm diameter. *Leaves* lamina membranous, ovate to elliptic, oblique, 6.5–20 by 2.5–10 cm; base unequal, one side cuneate to acute, other side rounded to cordate; apex acuminate with a 0.5–1 cm tip; margin entire or minutely scabrous; glabrous on both surfaces, pale green; petiole glabrous, terete, 0.5–3 cm long. *Inflorescences* terminal and axillary, opposite the leaves when axillary, 7–25 cm long when terminal, up to 8 cm long when axillary, with 10–15 flowers; main axis glabrous, 1–1.5 cm long; bracts absent; pedicels glabrous, 0.5–1 cm long; bracteoles linear, in the middle of pedicels, 1–3 mm long. *Flowers* 1.8–3.5 cm long. *Calyx tube* campanulate, white to pale green, semi-translucent, connate *ca*. 4 mm, glabrous, 6–9 mm long and 1–2 mm wide; calyx lobes triangular, entire, glabrous, acuminate, 1–2 mm long. *Corolla* personate, glabrous, smooth, velvety, bluish to blue-lavender, 10–25 mm long, with yellow dot on throat; sometimes throat with medusoid pilose hairs; tube tubular 10–15 mm long; limb 8–10 mm long; adaxial lip 2–lobed, 3–5 mm long; abaxial lip 1–lobed, tongue-like, obtuse, 5–10 mm long. *Stamens* 4, coherent in pairs; 2 shorter, anthers ovoid, glabrous, 0.5–1.5 mm long, filaments flattened, erect, 3 mm long; 2 longer, anthers oblongish, glabrous, 1 mm long, filaments flattened, 2 mm long, twisted. *Ovary* elliptic to ovoid, glabrous, 1–2 mm long; style glabrous, terete, 6 mm long; stigma capitate, swollen 1–2 mm. *Fruit* ovoid, glabrous, fully enclosed by calyx remnant, 3–10 mm long by 3 mm wide; calyx remnant up to 6–8 mm long; stalk glabrous, 0.5–1.4 cm; style remnant 10–15 mm; *Seeds* minute, ellipsoid, testa tessellate, 0.3-0.5 mm long.

**Distribution.** Borneo (Sabah & E Kalimantan).

**Ecological habitat**. Primary forest and coral limestone rocks in moist cracks and on limestone cliffs at 40-300 m.

**Local name**. Jambangan Jaja (Tidong Kalabakan).

**Notes.** *Rhynchoglossum borneense* is endemic to Borneo and is unique among Malesian species in having 4 stamens. Burtt (1962) suggested this species was intermediate between the species formerly placed in *Klugia* (*R. notonianum* (Wall.) B.L. Burtt, *R. gardneri* Theobald & Grupe and *R. azureum* (Schltdl.) B.L. Burtt) and the rest of *Rhynchoglossum* (*s.s.*). When this species was described for the first time by Merrill (1929), he did not note that the number of stamens should have allied it with *Klugia* rather than *Rhynchoglossum*.

**Specimens examined**. Borneo. Sabah, Tawau, Elphinstone Province. *Elmer 21467* (BO, L, SING, Type); Saint Lucia FD. *Kadir A2086* (BO, SING); Kinabatangan District, Tabin Wildlife Reserve. *Poulsen & Banggilon 1672* (E, SING); ibid. *Poulsen & Abdilla 1685* (E, SING); Lahad Datu, Tabin. *Kiew 5122* (SING); Kalimantan. Berau, Mt. Ilas Mapulu. *Kostermans 13994* (L, BO, E, SING, Type of *R. medusothrix* B.L. Burtt). East Kutei, G.

Tepian Lobang on Menubar River *Kostermans 5347* (BO, SING); ibid. *Kostermans 5414* (BO); Sangkulirang, Babi Jolong *Aet 649* (BO); West Kutai, Kombeng. *Endert 5225* (BO, SING); Gunong Mendam, North of Tabang *Murata, Iwatsuki, Kato & Mogea B-2389* (BO); Pujungan District, Kayan Mentarang Reserve. *McDonald & Ismail 3614* (BO).

Fig. 1. *Rhynchoglossum borneense* Merr., *Elmer 21467* from Tawau, Malaysian Borneo (lectotype BO).

Fig. 2. *Rhynchoglossum capsulare* Ohwi *ex* Karton., *Eyma 1572* from Maraowa, Sulawesi (holotype BO).

2. RHYNCHOGLOSSUM CAPSULARE Ohwi *ex* Karton. — Fig. 2; Map 1

*Rhynchoglossum capsulare* Ohwi *ex* Karton., Edinburgh J. Bot. 69 (2012) 358. —Type: Celebes, Resident Menado, OA Poso, Maraowa. *Eyma 1572*. (holo BO!; iso A, K, L).

Herb, annuals, not rhizomatous, 19–40 cm tall. *Stem* glabrous 2–5 mm diameter. *Leaves* lamina membranous, oblong 3.5–11 cm long by 1.5–3 cm wide; base unequal, one side rounded, other side cuneate; apex acuminate, tip 0.5 cm long; margin entire; glabrous on adaxial, puberulous on abaxial, pale green; petiole glabrous, terete, 0.5–2 cm long. *Inflorescences* terminal and axillary, terminal up to 9 cm long, axillary up to 8 cm long, up to 11–flowered; main axes terete, glabrous; peduncles 2–5 cm long; bracts absent; pedicels puberulous, 0.5–1 mm long; bracteoles linear, glabrous, *ca*. 0.5 mm long, in the middle of pedicels. *Flowers* 10–14 mm long. *Calyx tube* campanulate, glabrous to puberulous, 3–5 mm long by 1–2 mm wide, connate at lower half base 1.5–3 mm long; calyx lobes triangular, acute, 1.5–2 mm long. *Corolla* glabrous, 1–1.8 cm long, whitish blue to dark violet; tube tubular, 8 mm long; limb 8–10 mm long; adaxial 2–lobed, 2–4 mm long, abaxial lip slightly 3–lobed, tongue-like, rounded, 8–10 mm long. *Stamens* 2, coherent in a pair, glabrous; anthers ovoid, 2–thecae parallel, opening by longitudinal slits, basifixed, 0.5 mm diameter, filaments terete, 2–4 mm long. *Ovary* oblong, glabrous, 1–3 mm long; style terete, glabrous, 1–1.2 cm long; stigma capitate, swollen 1 mm. *Fruit* capsule–like, elongate, 4–10 mm long by 2–3 mm wide, glabrous; stalk puberulous, 2–3 mm long, half enclosed by calyx remnant; calyx remnant 3–7 mm long; style remnant up to 5–6 mm long. *Seeds*

minute, ellipsoid, testa tessellate, 0.3–0.4 mm long.

**Distribution.** Sulawesi.

**Ecological habitat**. In open areas in mountain forest at 1200-1400 m.

**Notes.** *Rhynchoglossum capsulare* is the only species of the genus in Malesia that has a fruit which is not fully enclosed within the calyx remnant. It is similar to *R. obliquum* in habit and the shape of the flowers but differs in the shape of the leaves, oblong in *R. capsulare* and ovate-elliptic in *R. obliquum*. The species is endemic to central Sulawesi island.

**Specimens examined.** Sulawesi. Porema *Kjellberg 2663* (BO); East of Poso District, Maraowa. *Eyma 1572* (BO, Type).

3. RHYNCHOGLOSSUM KLUGIOIDES C. B. Clarke — Fig. 3; Map 1

*Rhynchoglossum klugioides* C.B. Clarke in A. DC & C. DC., Monogr. Phan. 5 (1883) 163; Merr., Enum. Philipp. Pl. 3 (1923) 454; Elmer, Leafl. Philipp. Bot. 3 (1910) 948; B.L. Burtt, Notes Roy. Bot. Gard. Edinburgh 24 (1962) 169. — Lectotype: Philippines, Luzon, Province of Tayabas. *Cuming 824* (K; iso BM, K, designated by Burtt, 1962).

Herb, annuals, non rhizomatous, *ca*. 35 cm tall. *Stem* glabrous to glabrescent, 3–4 mm diameter; branching nodes not swollen. *Leaves* lamina subcoriaceous, dark green and dark brown when dry, ovate to elliptic, 10–16 cm long by 5.5–10 cm wide; base unequal, one side cordate, other side cuneate to subrounded; apex acute, tip 1 cm long; margin entire, serrate in young leaf; reticulate; glabrous or subvelvety on adaxial, glabrescent to puberulous on abaxial; young leaf brown pubescent; petiole terete, glabrous, 1.5–4 cm long. *Inflorescences* axillar, up to 40 cm long, sometimes pendulous, up to 20 flowers, arising opposite the leaf; main axes terete, glabrous; peduncles 3–5 cm long; bracts minute or linear, glabrous 4 mm long; pedicels terete, glabrous, 7 mm long; bracteoles linear, glabrous, single, 1–5 mm long, at the base or middle of pedicel. *Flower* 2–2.5 cm long. *Calyx tube* urceolate, glabrous, pale green to white, 10–12 mm long by 4–5 mm wide, connate at lower half base 4-6 mm long; calyx lobes hastate, acute, 4–8 mm long, margin entire, glabrous. *Corolla* white to dark blue or whitish blue, glabrous, 2–2.5 cm long by 0.5-1 cm wide; tube tubular 1.4–1.7 cm long; limb 1-1.5 cm long; adaxial emarginate or 2-lobed, 5 mm long by 4–5 mm wide; abaxial lip 1–3–lobed, tongue–like or lobate, rounded, with whitish blotch, 10–15 mm long and 7–10 mm wide. *Stamens* 2, coherent in a pair; filaments flat, 5–8 mm long; anthers ovoid, glabrous, 2 thecae parallel, 0.5–1 mm diameter. *Ovary* ovoid to oblong, glabrous, 1 mm long by 1 mm wide; style glabrous, 20 mm long, terete; stigma capitate, swollen 0.5 mm diameter. *Fruit* ovoid, glabrous, fully enclosed by elongate calyx remnant, 2–valvate, 5 mm long by 3 mm wide; stalk 8–10 mm long, glabrous; style remnant about 10–15 mm long; calyx remnant up to 1 cm long and 0.5 cm wide. *Seeds* minute, cuneate, ellipsoid, testa tessellate, 0.4–0.5 mm long.

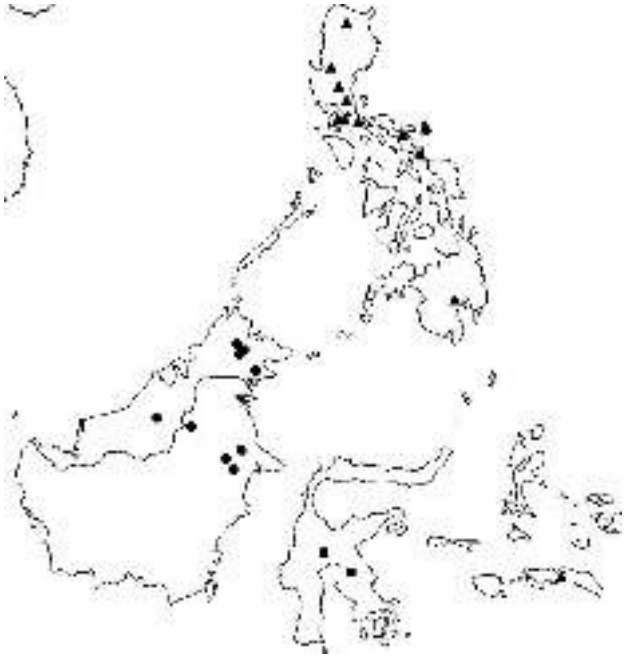
**Distribution.** Philippines (Luzon, Catanduanes, Mindoro, Samar, Biliran, Leyte, Mindanao. *Fide* Merrill (1923)), Moluccas (Ceram).

**Local Name.** Cabeddaya (Bagobo), Pampangod (Philippine).

**Ecological habitat.** Moist humus covered soil of dense forest and damp forested ravines at 500–2000 m.

**Notes.** *Rhynchoglossum klugioides* was previously only known from the Philippines. It is now known in Ceram Island, Moluccas. The species has large flowers with a broader corolla limb than the other species of *Rhynchoglossum* and an urceolate calyx tube and 2 fertile stamens. Also, it has a subcoriaceous leaf blade and an elongate fruit shape. It is rather similar to *R. notonianum* from India which,

Fig. 3. *Rhynchoglossum klugioides* C.B.Clarke, *Cuming 824* from Tayabas, Luzon (lectotype K).



Map 1. Distribution of *Rhynchoglossum borneense* Merr.(●), *R. capsulare* Ohwi ex Karton. (■), *R. klugioides* C. B. Clarke (▲), and *R. spumosum* Elmer (o).

however, has 4 stamens.

**Specimen examined.** Moluccas**.** Ceram. Hatumete-Pas. *Kornassi 622* (BO); ibid. *Eyma 2382* (BO). Philippines**.** Luzon. Camarines Sur. *Edano BS76399* (BO); Mount Maquiling. *Servinas BS16888* (BO); Baguio. *Elmer 8822* (BO); Mt. Alzapan. *Ramos & Edano BS45715* (BO); Mt. Masingit. *Ramos & Edano BS37560* (BO); Irosin (Mt. Bulusan). *Elmer 15369* (BO); ibid. *Elmer 14615* (BO); Los Baños (Mt. Maquiling). *Elmer 17941* (BO); Tayabas. *Cuming 824* (BM, K, Lectotype); Catanduanes. *Ramos BS30209* (BO). Mindanao. Todaya (Mt. Apo). *Elmer 11570* (BO).

## 4. RHYNCHOGLOSSUM OBLIQUUM Blume — Fig. 4; Map 2

*Rhynchoglossum obliquum* Blume, Bijdr. Fl. Ned. Ind. 14 (1826) 741; C. B.Clarke in A. DC & C. DC., Monogr. Phan. 5 (1883) 161; Elmer, Leafl. Philipp. Bot. 2 (1908) 564; Koord., Exkursion fl. Java 3 (1912) 195; Merr., Enum. Philipp. Pl. 3 (1923) 454; Ridl., Fl. Mal. Pen. 2 (1923) 539; B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 24 (1962) 170; Bakh. f. in Backer & Bakh. f., Fl. Java 2 (1965) 525. — *Rhynchoglossum blumei* DC., Prodr. 9 (1845) 274. — Lectotype: Java. *Blume 52* (L *909.127-80*, designated here).

*Wulfenia obliqua* Wall., Tent. Fl. Nepal (1826) t.35. — *Loxotis obliqua* (Wall.) Benth., Scroph. Ind. (1835) 57; R. Br. in Benn., Pl. Jav. Rar. (1838) 102, t.24; Miq., Fl. Ned. Ind. 2 (1858) 731, t.35. — *Rhynchoglossum obliquum* (Wall.) DC. auct. non Blume, Prodr. 9 (1845) 275. — *Rhynchoglossum obliquum* Blume var. *parviflorum* C. B. Clarke, in A. DC. & C. DC., Monogr. Phan. 5 (1883) 162 — Type: Nepal. *Wallich 407* (BM; iso E!).

*Loxotis intermedia* Benth., Scroph. Ind. (1835) 57. — *Rhynchoglossum obliquum* (Wall.) DC. var. *intermedium* (Benth.) DC., Prodr. 9 (1845) 275. — Type: Nepal. *Wallich 408* (BM).

*Rhynchoglossum rheedei* DC., Prodr. 9 (1845) 274. — Type: *Rheede Hort. Mal., 9, t.80.*

*Rhynchoglossum zeylanicum* Hook., Bot. Mag. (1845) t.4198. — Type: Ceylon. *Gardner s.n.* (BM).

*Rhynchoglossum hologlossum* Hayata, Icon. Pl. Formos. 5 (1915) 131. — *Rhynchoglossum obliquum* Blume var. *hologlossum* (Hayata) W. T. Wang, Bull. Bot. Res., Harbin 4 (1984) 31. — Type: Formosa, Rinkiho. viii.1911. *Inaba s.n.* (TI).

*Rhynchoglossum papuae* Schltr., Bot. Jahrb. 58 (1923) 299; B.L. Burtt, Notes Roy. Bot. Gard. Edinburgh 24 (1962) 171. — Lectotype: New Guinea, Kaiser Wilhelmsland, bei der Kaulo-Ettappe. *Schlechter 17524* (BO, designated here) - *syn. nov.*

Herb, annual, not rhizomatous, about 5–150 cm tall. *Stem* with swollen nodes to 4 mm diameter, internodes terete, 1.5–3 mm diameter, wrinkled or angular when dried, glabrous to puberulous; young stem pubescent. *Leaves* lamina membranous, pale green, ovate to elliptic, 2.5–14 cm long by 1.5–9 cm wide, base unequal, one side rounded to cordate, other side attenuate to cuneate; apex acuminate, tip 0.5–1 cm long; margin entire or nearly serrate; tertiary venation reticulate, midrib puberulous; glabrous or sparsely hairy on adaxial with gland dots, glabrous on abaxial; young leaf brown pubescent; petiole terete, sparsely puberulous to glabrescent, 5–30 mm long. *Inflorescences* terminal up to 40 cm long and axillary up to 8 cm long, sometimes pendulous, up to 50 flowers; axillary inflorescences arising opposite leaf; main axes terete, puberulous; peduncles 1–4 cm long; bracts linear or minute, puberulous, 2–10 mm long, single; pedicels terete, densely puberulous 1–3 mm long; bracteoles linear, glabrous to puberulous, single, 3–10 mm long, in the middle of pedicel. *Flowers* 8–12 mm long. *Calyx tube* campanulate, glabrous to glabrescent, pale green to white, 3–5.5 mm long by 1.5–3 mm wide, connate at lower half base 1.5–4 mm long; calyx lobes triangular, acute or acuminate, 5-merous, 1–2 mm long, white to transparent, margin entire to nearly serrate, puberulous. *Corolla* glabrous, white, blue to dark purple or whitish blue, yellow pubescent dot at throat, 0.8–1.6 cm long by 0.4 cm wide, nerve reticulate; tube tubular or cylindric 8–10 mm long; limb 6 mm long, adaxial lip emarginate or 2–lobed, 1–3 mm long; abaxial lip undivided, tongue -like or lobate, rounded to nearly trilobed, 3-6 mm long. *Stamens* 2; filaments terete or flat, 1–5 mm

long; anthers ovoid to oblong, glabrous, 2 thecae parallel, 0.5–1 mm diameter, basifixed. *Ovary* ovoid to oblong, glabrous, 1.5–3 mm long by 1 mm wide; style glabrous, 5–10 mm long, terete; stigma capitate, swollen 1 mm diameter. *Fruit* ovoid, glabrous, fully enclosed by calyx remnant, 2–valvate, 3–5 mm long by 2–3 mm wide; calyx remnant 5–8 mm long; stalk 1–1.5 cm long, glabrous to puberulous; style remnant about 5–8 mm long. *Seeds* minute, 0.5 mm long, cuneate, ellipsoid, testa tessellate, without appendaged.

**Distribution.** India to South China, throughout Malesia to New Guinea.

**Local name.** Simar hae-hae (Batak), Raongapae (Celebes), Katoi Toimbi (Buton), Anggrek rendeu (Sunda), Kejian (Java), Pulungan (Java), Kuping macan (Java), Penceng (Java), Weci-weci (Java), Handulumog (Negros).

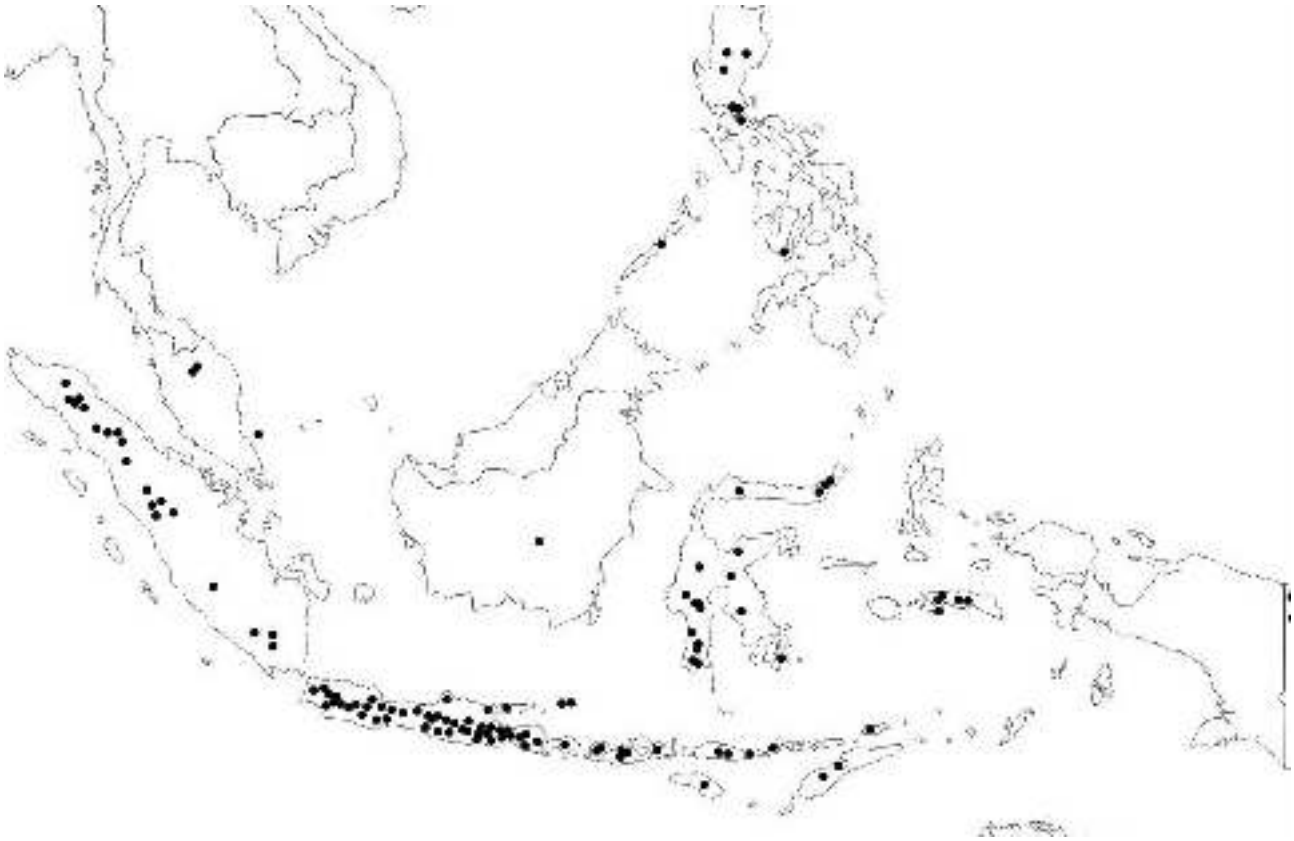
**Ecological habitat.** Edge of road, open area near small stream, lowland secondary forest, creeping on rocks, limestone massif with primary forest, remnant forest at 20-1400 m.

**Notes**. *Rhynchoglossum obliquum* is the most common and widespread species in the genus. In Malesia it is found in all regions from the Malay Peninsula to New Guinea, including Philippines but rather less so in Borneo. The species is the type for the genus. It has long and crowded inflorescences and smaller flowers (only 8–12 mm long) than the other species. It most resembles *R. capsulare* but is differs in leaf and fruit. *Rhynchoglossum obliquum* has an ovate to elliptic lamina and the fruit is fully enclosed while *R. capsulare* has an oblong to lanceolate lamina and a half enclosed fruit. The colour of the corolla tube varies from pure white to dark blue or purple. *Rhynchoglossum papuae* from New Guinea is placed under synonymy due to the similarity in all characters to the type of *R. obliquum*, extending the distribution of the species to New Guinea.

**Specimens examined.** Malay Peninsula. Kelantan, Kuala Betis. *Kiew 5259* (SING); Kelantan, Dabong. *Kiew 5265* (SING); Pulau Tioman. *Kiew 5207* (SING). Sumatra**.** Mt. Leuser. *Sumadijaya 335* (BO); ibid. *De Wilde & De Wilde-Duyfjes 18043* (BO); ibid *De Wilde & De Wilde-Duyfjes 19239* (BO); ibid. *De Wilde & De Wilde-Duyfjes 12254* (BO); ibid. *De Wilde & De Wilde-Duyfjes 12609* (BO); ibid. *De Wilde & De Wilde-Duyfjes 19848* (BO); ibid. *Iwatsuki, Murata, Dransfield & Saerudin S582* (BO); Gayoluas. *Pringgoatmodjo 107* (BO); Deli. *Lorzing 14980* (BO); Simalungun. *Keers 58* (BO); Sibolangit. *Md. Nur SN7437* (BO, SING); ibid. *Lorzing 3865* (BO); ibid. *Lorzing 3865* (BO); ibid. *Alston 14451* (BO); Anai Valley. *Kleinhoonte 595* (BO); Padang, Panti-Culadak *Bünnemeijer 25* (BO); Mt. Singgalang. *Teijsmann 1175HB* (BO); Pajingahan. *Ruttner 67* (BO): Mukomuko, Maninjau Lake. *Hotta & Okada 1682* (BO); Batang Palupuh. *Hotta 25029* (BO); Panti Nature Reserve. *Van Borssum-Walkees 1762* (BO); Antokan river near Pari Panjang. *Alston 13763* (BO); Sugi Waras. *De Voogd 1137* (BO); Ranau Lake, Mt. Pakiwang. *Van Steenis 3491* (BO); Kepahiang. *Kasik 97* (BO); Mt. Rante Berenong. *Iboet 170* (BO). Java**.** Tagogapu. *Lorzing 1104* (BO); Mt. Burangrang. *Backer 14132* (BO); Cibeber, Cidadap. *Backer 22462* (BO); ibid. *Bakhuizen 1790* (BO); ibid. *Bakhuizen 2957* (BO); ibid. *Bakhuizen 2158* (BO); ibid. *Bakhuizen 1760* (BO); Mt. Malabar. *Backer 26239* (BO); Kiara Payung. *Backer 23706* (BO); Pelabuan Ratu. *Koorders 34320β* (BO); Jampang Kulon. *Van Balgooy 5149* (BO); Dago waterfall. *Van Steenis 1700* (BO); Lembang. *Backer12914* (BO); Mt. Guntur. *Danser 6701* (BO); Telaga Remis, Mandiranceng. *Vermeulen 12* (BO); Ciampea. *Hallier s.n.* (BO); ibid. *Hallier s.n.* (BO); ibid. *Burck & De Monchy s.n.* (BO); ibid. *Backer 22097* (BO); G. Hanjarung. *Backer 6064* (BO); Mt. Salak. *Lam 252γ* (BO); Mount Karang. *Boedijn 1296* (BO); ibid. *Holstvoogd 420* (BO); *Blume 52* (L, Lectotype). Ungaran-Garung. *Docters van Leeuwen-Reijnvaan s.n.* (BO); Mt. Telomoyo. *Koorders 28056β* (BO); ibid. *Koorders 35821β* (BO); Kedung Jati. *Koorders 27214β* (BO); Salatiga. *Docters van Leeuwen s.n.* (BO); Selokaton. *Loogen 5* (BO); Mt. Sindoro. *Lorzing 107* (BO); Kemadang and Jepitu. *Backer 2758* (BO); Wonosari. *Backer 2697* (BO); Kaliurang. *Brinkman 403* (BO); Doro to Petung Kriono. *Backer 15764* (BO); ibid. *Backer 15922* (BO); Josorejo. *Backer 16112* (BO); Tegal. *Beumee 5148* (BO); ibid. *De Monchy 3* (BO); Pasir Salam near Majenang. *Backer 18799* (BO); Mt. Muriah. *Kern 8506* (BO); Baderan near Sumber Malang. *Backer 13379* (BO); Tegalombo-Slahung. *Backer 3402* (BO); Mt. Wilis. *Lorzing 911* (BO); Ngebel. *Rant s.n.* (BO); ibid. *Koorders 29880β* (BO); ibid. *Koorders 23227β* (BO); Medoro Kandangan. *Koorders 29245β* (BO); Berbek, Sawahan. *Grutterink 3198* (BO); ibid. *Beumee A20* (BO); *Zollinger s.n.* (BO); Mt. Kelud. *Clason-Laarman 165* (BO); ibid. *Docters van Leeuwen 413* (BO); Mt. Semeru. *Backer 3578* (BO); ibid. *Backer 3588* (BO); Ranu Bedali near Klakah. *Van Slooten 2388* (BO); Mt. Arjuno. *Bremekamp s.n.* (BO); Umbulan. *Backer s.n.* (BO)*;* Mt. Jayanti. *Koorders 34316β*

(BO); Prigen. *Rant s.n.* (BO); Gondang Legi. *Backer 30535* (BO); Pujon. *Rant s.n.* (BO); Ringgit near Curah Udang. *Clason-Laarman 10* (BO); Mt. Abang near Kepuh. *Backer 8283* (BO); Tawang Rejeni. *Backer & Posthumus s.n.* (BO); Lawang. *Mousset 60* (BO); Tengger. *Ramuer Lako 92* (BO); Nongkojajar. *Docters van Leeuwen-Reijnvaan 4615* (BO); Yang Plateau. *Van Steenis 11077* (BO); ibid. *Backer 12106* (BO); Mt. Ijen. *Backer 30701* (BO); ibid. *Koorders 15416β* (BO); ibid. *Ottolander 285* (BO); ibid. *Koorders 28555β* (BO); G. Kemiri Songo near Mumbul. *Backer 30622* (BO); Puger. *Buwalda 7226* (BO); Blitar. *Leg.ign. s.n.* (BO); Mt. Lawu. *Jacobson s.n.* (BO); ibid. *Backer 6731* (BO); Sarangan. *Schrooter & Coert s.n.* (BO); Suci near Gresik. *Rant s.n.* (BO); ibid. *Bremekamp s.n.* (BO); ibid. *Dorgelo s.n.* (BO); Mt. Welirang. *Dorgelo 3081* (BO); Madura, Kwanyar. *Backer 19231* (BO); Kangean islands, Batu Putih. *Backer 28562* (BO); Kangean islands, terrain Pandeman. *Backer 30002* (BO). Lesser Sunda Islands. Bali. Git-Git. *Van Steenis 7786* (BO); Lombok. Mt. Rinjani. *Elbert 712* (BO); ibid. *Rensch 138* (BO); ibid. *Elbert 485* (BO); ibid. *Tokuoka, Murakami, Kanaya, Utami &*

Fig. 4. *Rhynchoglossum obliquum* Blume, *Blume 52* from Java (lectotype L).



Map 2. Distribution of *Rhynchoglossum obliquum* Blume (●).

*Wiriadinata T-0302* (BO); Sumbawa, Mt. Tana Tumpang, Batulante. *Hoover, Hunter, Wiriadinata, Girmansyah & Ruskandi 263* (BO); ibid. *Hoover, Hunter, Wiriadinata, Girmansyah & Ruskandi 291* (BO); Batu Dulang-Punik village. *Hoover, Hunter, Wiriadinata, Girmansyah & Ruskandi 214* (BO); Semangkat. *Rensch 543* (BO); ibid. *Wiriadinata, Hoover, Hunter & Girmansyah HW11371* (BO); Mt. Batulanteh. *Kostermans 18180* (BO); Soemba. Kaora. *Iboet 338* (BO); Timor. Nasimetan. *Bloembergen 3462* (BO); ibid. *Bloembergen 3495* (BO); Wetar. Hugeldes Tihusees. *Elbert 4593* (BO); Flores. Mt. Ndeki. *Kostermans & Wirawan 286* (BO); Rawa Mese. *Rensch 1211* (BO); Larantuka, Ile Mandiri. *Afriastini 1532* (BO); Ruteng. *Schmutz 1452* (BO). BORNEO. Batu Babi and Limowi. *Hubert Winkler 2811* (BO); Meratus Mts. *de Vogel 1714* (BO). Sulawesi. Bantimurung. *Van Steenis 10428* (BO); ibid. *Rant 42* (BO); Mt. Wawonseru. *Hennipman 6080* (BO); Pasui-Rante Lemo, Enrekang. *Eyma 419* (BO); ibid. *Kjellberg 1410* (BO); ibid. *Kartonegoro & Santoso 542* (BO); Malili. *Kjellberg 2522* (BO); Bontorihu. *Noerkas 284* (BO); NE of Makassar. *Meijer 10951* (BO); ibid. *Meijer 9139* (BO); Malino. *Bünnemeijer 10891* (BO); ibid. *Bünnemeijer 10854* (BO); Bonte Lerong near Lombasang. *Bünnemeijer 11776* (BO); ibid. *Bünnemeijer 10995* (BO); ibid. *Bünnemeijer11310* (BO); Pangkajene. *Teijsmann 12858 HB* (BO); Maros. *Monod de Froideville 267* (BO); Lemo-Lemo. *Rijkebüsch 20* (BO); East Luwuk. *Eyma 3904* (BO); Gorontalo. between Pinogu and Tulabolu. *Mendum, Atkins, Newman, Hendrian & Sofyan 112* (BO); Mt. Watuwila. *Kartonegoro 238* (BO); Buton, Bau-Bau. *Widjaja 561* (BO); Tomohon. *Alston 15773* (BO); Tounan, near Rumoong atas. *Alston 16483* (BO); Tondano. *Kruijff 13* (BO). Moluccas. Ambon. *Robinson 1729* (BO); Benteng. *Rant 545* (BO); G. Nona, *Boerlage 122* (BO); *Leg.ign s.n.*; Seram. Japutih-Pileana. *Eyma 1803* (BO); Wai Botti. *Rutten 420* (BO); Manusela. *Rutten 2185* (BO); Gah. *Kornassi 963* (BO); Seti and Konussi. *Rutten 405* (BO). NEW GUINEA. Papua New Guinea, Morobe District Rawlinson Range. *Van Royen NGF16114* (BO); Camp Bulolo. *Streimann & Kairo NGF26010* (BO); Kaiser Wilhelmsland. *Hellwig 271* (BO, Syntype of *R. papuae* Schltr.); Raulo-Etoppe. *Schlechter 17524* (BO, Lectotype of *R. papuae* Schltr.). PHILIPPINES. Luzon. Rizal. *Ahern's collector FB3310* (BO); ibid. *Ahern's collector FB3369* (BO); Mt.Angilog. *Lopez BS42030* (BO); Mt. Umingan. *Ramos & Edano BS26266* (BO); San Andales. *Edano BS48790* (BO); Montalban. *Merrill 6236* (BO); Negros. Dumaguete (Cuernos Mts.). *Elmer 9664* (BO); Palawan. *Mendum et.al. 25372*

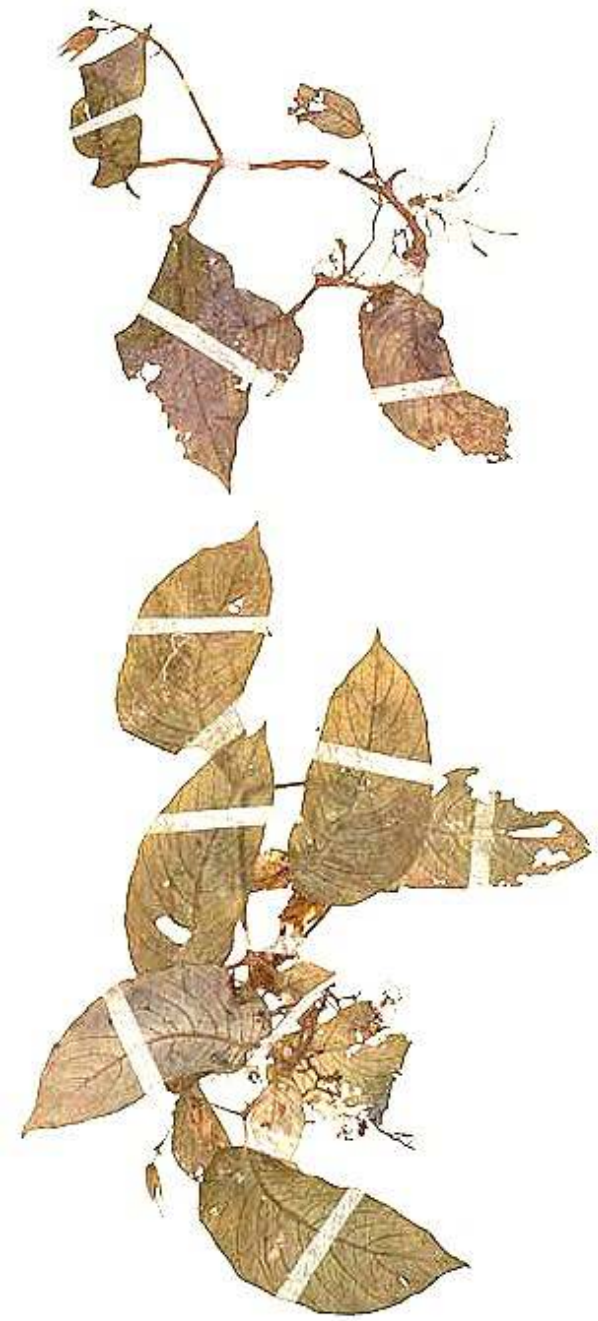


Fig. 5. *Rhynchoglossum spumosum* Elmer, *Elmer 9929* from Cuernos Mts., Negros (lectotype BO).

(BO); Philippine Islands. *Loher 6678* (BO).

5. RHYNCHOGLOSSUM SPUMOSUM Elmer — Fig. 5; Map 1

*Rhynchoglossum spumosum* Elmer, Leafl. Philipp. Bot. 2 (1908) 564; Merr., Enum. Philipp. Pl. 3 (1923) 455; B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 24 (1962) 171. — Lectotype: Philippine Islands, Negros, Province of Negros Oriental, Dumaguete (Cuernos Mts.). *Elmer 9929* (BO; iso A, E, L, NY, PNH, US, designated here).

*Rhynchoglosum merrilliae* Kraenzl., Philipp. Journ. Sc., Bot. 8 (1913) 168; Merr., Enum. Philipp. Pl. 3 (1923) 454; B. L. Burtt, Notes Roy. Bot. Gard. Edinburgh 24 (1962) 169. — Lectotype: Philippine Islands, Mindanao, Distr. Zamboanga, Sax River. *Merrill 8187* (B†; lecto K, designated here) - *syn. nov.*

Creeping herb, flaccid, annuals, rhizomatous, 5–8 cm tall. *Stem* 2 mm diameter, smooth, glabrescent to puberulous, nodes rather swollen. *Leaves* lamina membranous, ovate to elliptic, flat, 2.5–5 cm long by 1–2 cm wide; base unequal, one side rounded, other side cuneate; apex acute, tip 0.5 cm; margin entire; tertiary venation reticulate, secondary veins 9 to 11 pairs, midrib distinct, puberulous; glabrescent or velvety on adaxial, glabrescent to puberulous on abaxial; petiole terete, glabrescent, 0.5–1.5 cm long. *Inflorescences* axillary, in axil of leaf or opposite to leaf, up to 4–flowered, 3–4 cm long; main axes terete, glabrescent; peduncles 2 cm long; bracts absent; pedicels slender, glabrescent, 3–7 mm long; bracteoles linear, glabrescent, 6 mm long, at base of pedicel. *Flower* 1–1.5 cm long. *Calyx tube* campanulate, 6–7 mm long by 2–3 mm wide, glabrous, connate at lower half base 2–3 mm long; calyx lobes triangular, acuminate, entire, glabrous 5 mm long. *Corolla* delicate, glabrous, whitish toward base, blue at the apex, 10 mm long; tube tubular 5–7 mm long, limb 3 mm long; adaxial lip 2–lobed, 1 mm long; abaxial lip obscurely 3–lobed, lateral pair smaller, terminal tongue-like, obtuse or acute, with an orange-red blotch between its base and top of lateral membranous folds (*Fide* Elmer), 3 mm long. *Stamens* 2; filament flattened, 1 mm long, curved; anthers divaricate, glabrous, 2 thecae parallel, 0.7 mm long and 1.25 mm diameter. *Ovary* oblong, glabrous, 2 mm long; style glabrous 6 mm long, terete, curved oppositely to the filaments; stigma capitate, swollen 1 mm diameter. *Fruit* ellipsoid, glabrous, fully enclosed by calyx remnant, 2–valvate, 5 mm long by 2.5 mm wide; calyx remnant 5–6 mm long; stalk 1 cm long, glabrous; style remnant 5–7 mm long. *Seeds* minute, cuneate, ellipsoid, ending in a very short stipitate base, unappendaged, 0.5 mm long.

**Distribution.** Philippine (Mindanao, Negros)

**Ecological habitat.** On damp cliffs, especially in the spray of waterfalls, and on rocks in damp shaded ravines at 1000 m.

**Notes.** *Rhynchoglossum spumosum* is the only species that has a creeping habit and rhizomatous roots. It is similar to *R. klugioides* in having 2 stamens and bracteoles that arise from the base of flowers. This

species is known only from the Phillipines. Merrill (1923) said it is found on Luzon and Panay Islands. *Rhynchoglossum merrilliae*, which was previously known from Mindanao, is now placed in synonymy because it is very similar to *R. spumosum* in the small leaf blades, few flowers in the inflorescence, and the two fertile stamens.

**Specimens examined.** Philippines. Negros. Dumaguete (Cuernos Mts.). *Elmer 9929* (BO, E, L, NY, US, Type ); Mindanao, Distr. Zamboanga, Sax River. *Merrill 8187* (K, Type of *R. merrilliae* Kraenzl.).

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