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Studies on Homalomeneae (Araceae) of Borneo IV: *Homalomena* specimens in the Herbarium Beccarianum-Malesia (FI-B) of the Museo di Storia Naturale - Sezione Botanica "F. Parlatore" dell'Università di Firenze

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Ricerche sulle Homalomeneae (Araceae) del Borneo IV: I materiali di Homalomena nell' Herbarium Beccarianum-Malesia (FI-B) del Museo di Storia Naturale, Sezione Botanica "Filippo Parlatore" dell'Università di Firenze – I materiali del genere *Homalomena* presenti nell' Herbarium Beccarianum-Malesia del Museo di Storia Naturale dell'Università di Firenze sono stati esaminati e identificati. La collezione consiste in 33 fogli, ed un disegno a tratto, di cui 16 con i relativi disegni appartengono a sette specie originarie del Borneo. Sono stati individuati undici campioni tipo, dei quali dieci di essi riferibili a cinque nomi (*Homalomena beccariana* Engl., *H. ovata* Engl., *H. punctulata* Engl., *H. pygmaea* var. *latifolia* Engl., and *H. subcordata* Engl.) pertinenti al Borneo.

Key words. *Araceae*, *Homalomena*, Beccari, Borneo, Sarawak, Type specimens.

As a botanist Odoardo Beccari (1843-1920) is best remembered for his work on palms (Arecaceae), a group in which he specialised throughout most of his adult life. However, though his prodigious collecting activities, notably in tropical Asia, Beccari made significant contributions to numerous other plant families, in particular the aroids (Araceae), for which family he is famous for introducing to Europe the Titan Arum (*Amorphophallus titanum* (Becc.) Becc.) from Sumatera in 1878. The imagination-capturing nature of this indisputably remarkable plant has, somewhat regrettably, overshadowed Beccari's aroid work in Sarawak, when through general collecting from 1865-1868 he made the first significant gatherings of the extraordinarily rich aroid flora of N.W. Borneo at a time when virtually every aroid he touched was new to science.

The bulk of Beccari's aroid material was worked up by Engler, primarily in the *Bullettino della Reale Società Toscana di Orticultura* (Engler, 1879a), the *Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie* (Engler, 1881), and in Beccari's *Malesia* (Engler, 1883), with additional taxa and notes appearing in *Monographiae Phanerogamarum* (Engler, 1879b), and *Das Pflanzenreich* (Engler, 1912). Beccari

himself wrote up several aroid species (Beccari, 1878a, b, c, 1879, 1882, 1885, 1889), while Arcangeli covered the introduction and first flowering in Europe of *Amorphophallus titanum* (Arcangeli, 1879a, b). Later research, predominantly based on Beccari's New Guinea collections revealed novel *Cyrtosperma* Griff. species (Hay, 1988), while a remarkably high percentage of the Bornean *Cryptocoryne* Fisch. ex Wydler are based on Beccari types (see Jacobsen, 1985). However, there remain a number of Sunda genera that have yet to be adequately worked up; of these *Homalomena* Schott is the most speciose.

Homalomena in Borneo

The authors' current research into the Araceae of Borneo is concentrating on three major groups: the Schismatoglottid alliance (tribes Schismatoglottideae + *Cryptocoryne*); *Alocasia* Schott, and *Homalomena.* Of these, *Homalomena* remains the most poorly understood with probably well in excess of 300 species distributed primarily in the old world tropics with the majority of species and greatest diversity centred on perhumid South East Asia where there are three centres of diversity: Sumatera, Borneo, and New Guinea.

Since the now long out-of-date full revision of Engler (1912) there have been fragmentary floristic accounts by Ridley (1905), Alderwerelt (1922a, b), and Furtado (1935, 1939), an uncritical species listing for Malesia focusing primarily on Sumatera (Hotta, 1985), a revision for New Guinea and the Bismark archipelago (Hay, 1999), and various *ad hoc* new taxa (Hotta, 1986, 1993), Boyce (1994), Hay & Herscovitch (2002), Sulaiman & Boyce (2005), Boyce & Wong (2008), and Boyce, Wong & Fasihuddin (in press), but no attempt to undertake a full revision of *Homalomena*. The lack of a reliable taxonomy poses considerable problems for field workers since *Homalomena* is one of the most speciose and taxonomically intractable aroid genera in the Asian tropics.

The problems presented by a lack of reliable taxonomy are compounded by the poor state of preservation of many of the historical types. The cryptic nature of most of the systematically significant morphologies, notably the presence, absence and disposition of sterile flowers, the generally large and complex vegetative structures that do not lend themselves readily to traditional herbarium vouchering methodologies, and the fleeting anthetic period, also mean that even well-prepared herbarium specimens are frequently taxonomically useless because inflorescences were prepared post-anthesis by which time many significant structures have deliquesced, or been subject to pre-preservation damage by the most frequent inflorescence visitors, chrysomelid and dynastid beetles, and post-preservation destruction by herbarium beetles. Nonetheless, study of the existing historical collections, notably the types, is an essential prerequisite to undertaking a taxonomic and systematic study of the genus.

Homalomena in the Herbarium Beccarianum-Malesia (FI-B)

Among the top set of Beccari's Araceae collection housed in the Herbarium Beccarianum-Malesia (FI-B) of the Museo di Storia Naturale dell'Università di Firenze are 33 sheets and one line drawing of *Homalomena*, of which 16 sheets and the line drawing, representing seven species, two novel, originate from Borneo. Nine type specimens, of which eight, representing five names, are Bornean, and one Sumateran, are present. The collections are remarkable for the excellent state of preservation of the fertile structures, such that identification to species poses no problems and, combined with the historical importance of the collection provides an exceptionally useful set of identification material.

Bornean Homalomena Types in the Herbarium Beccarianum-Malesia (FI-B)

Homalomena beccariana Engl., Bull. R. Soc. Tosc. Ortic. 4: 296 (1879)
Collection: *Beccari P.B. 260*
Locality: Sarawak, Kuching, July 1865
Status: Holotype
Taxonomic Status: Synonym
Accepted name = *Homalomena rostrata* Griff., Not. Pl. Asiat. 3: 154 (1851) ['*roshalum*' sphalm.]. **Type:** Malaysia, Malacca: *Griffith KD* 5989 (K, holo!)
Heterotypic Synonyms:
Cyrtocladon sanguinolentum Griff., Not. Pl. Asiat. 3: 147 (1851); *Chamaecladon sanguinolentum* (Griff.) Schott, Prodr. Syst. Aroid.: 316 (1860). **Type:** Malaysia, Malacca, *Griffith KD* 5990 (K, holo!)
Homalomena sagittifolia Jungh. ex Schott, Prodr. Syst.

Aroid.: 311 (1860). **Type:** Indonesia, Java (*Junghuhn s.n.* W†)

Homalomena miqueliana Schott, Ann. Mus. Bot. Lugduno-Batavi 1: 126 (1863). **Type:** Indonesia: Borneo, Kalimantan, *Korthals s.n.* (L, holo! sh. 898.89-56)

Homalomena propinqua Schott, Ann. Mus. Bot. Lugduno-Batavi 1: 280 (1864). **Lectotype:** Indonesia, Kalimantan, Kalimantan Selatan, Mt. Gintang: *Korthals s.n.* (L, lecto!, designated by Wong *et al.*, in press).

Homalomena paludosa Hook.f., Fl. Brit. India 6: 531 (1893). **Lectotype:** Malaysia, Perak, Larut, *Kunstler (Dr King's Collector) 3082* (K, lecto!, designated by Wong et al., in press).

Homalomena ridleyana Engl., Bot. Jahrb. Syst. 37: 123 (1905). **Type:** Malaysia, Borneo Sarawak, Kuching, *Bartlett & Haviland 3134* (SING, holo!)

Homalomena teysmannii Engl., Pflanzenr., 55 (IV, 23Da): 68 (1912). **Type:** Indonesia Sumatera, Bangka Island, *Teijsmann 3227* (B, holo!; BO, iso)

Homalomena triangularis Alderw., Bull. Jard. Bot. Buitenzorg, III, 4: 181 (1922). **Type:** Indonesia, Sumatera, Deli, *Lörzing 4071*, 27 July 1915 (BO, holo)

Homalomena sagittifolia var. *sumatrana* Alderw., Bull. Jard. Bot. Buitenzorg, III, 4: 192 (1922). **Lectotype:** Indonesia, Sumatera, Ophir, Taloe, 10 April 1917*Bünnemeijer 129,* (BO, lecto!, designated by Wong et al., in press).

Homalomena ensiformis Alderw., Bull. Jard. Bot. Buitenzorg, III, 4: 335 (1922). **Type:** Indonesia, Kalimantan, *Hallier f. 1465* (BO, holo; L, iso!)

Homalomena miqueliana var. *truella* Alderw., Bull. Jard. Bot. Buitenzorg, III, 4: 336 (1922). **Type:** Indonesia, Sumatera, Riau Archipelago, Ampoelai, Pulau Bintang, 14 June 1919, *Bünnemeijer 6200* (BO, holo;L, iso!)

Homalomena sagittifolia var. *angustifolia* Furtado, Gard. Bull. Straits Settlem. 10: 228 (1939). **Lectotype:** Malaysia, Johor, Mt Austin, *Ridley 12018* (SING, lecto!; K, isolecto!, designated by Wong et al., in press).

Note: *Homalomena rostrata* is one of two described obligate helophytic *Homalomena* in Sunda, the other being *H. expedita* A.Hay & Hersc. *Homalomena rostrata* is highly polymorphic in terms of leaf lamina shape, and overall plant size, even within a single population, and has attracted a considerable synonymy as a result. A full account of the helophytic *Homalomena* of Sunda including the lectotypifications cited above, is in press (Wong et al., in press)

Homalomena ovata Engl., Bull. R. Soc. Tosc. Ortic. 4: 296 (1879)
Collection: *Beccari P.B. 1780*
Locality: Sarawak, Kuching, Matang, June 1866
Status: Holotype
Taxonomic Status: *nom. illeg.*
Accepted name = *Homalomena borneensis* Ridl., J. Straits Branch Roy. Asiat. Soc. 44: 173 (1905). **Type:** *Ridley s.n.*, Sarawak, Kuching, Matang, July1893 (SING, holo!).
Note: The *Homalomena borneensis* complex comprises probably 30 species, the greater majority yet to be formally described. The complex is defined by the leaf lamina with little or no basal lobe development, and the lower part of the spathe exceeding the spathe limb in length.

Homalomena punctulata Engl., Bull. R. Soc. Tosc. Ortic. 4: 296 (1879)
Collection: *Beccari P.B. 1534* (in Engler, 1879, cited erroneously as # 2534)
Locality: Sarawak, Kuching, Matang, April 1866
Status: Holotype
Taxonomic Status: Accepted name
Heterotypic Synonyms:
Homalomena crassinervia Ridl., J. Straits Branch Roy. Asiat. Soc. 44: 176 (1905). **Type:** *Ridley s.n.*, Sarawak, Kuching, Matang, July1893 (SING, holo!).

Homalomena geniculata M.Hotta, Acta Phytotax. Geobot. 22: 155 (1967).
Type: *Hotta 15779*, Malaysia, Sarawak, Bintulu Division, vicinity of Minah camp, Feb. 26 1964 (KYO, holo!).
Note: The tightly distichous leaf arrangement, petioles prominently pulvinate at junction of the lamina, and solitary inflorescence render *H. punctulata* immediately recognizable. Had Ridley and Hotta seen the type of *H. punctulata* there is little doubt that the current synonyms would not have been published.

Homalomena pygmaea var. **latifolia** Engl., Pflanzenr. 55 (IV, 23Da): 36 (1912)
Collection 1: *Beccari P.B. 1870* (sub: *Chamaecladon pygmaeum* (Hassk.) γ *latifolium* Engl.)
Locality: Sarawak, Kuching, Matang, June 1866
Status: Syntype
Collection 2: *Beccari P.B. 524* (sub: *Chamaecladon pygmaeum* (Hassk.) γ *latifolium* Engl.)
Locality: Sarawak, Sri Aman, Bunting, September 1865
Status: Syntype
Taxonomic Status: Synonym
Homotypic Synonyms: *Homalomena pumila* var. *latifolia* (Engl.) Ridl., J. Straits Branch Roy. Asiat. Soc. 44: 177 (1905)
Provisional current name = *Homalomena pygmaea* (Hassk.) Engl., Bot. Jahrb. Syst. 25: 18 (1898). **Type:** *Hasskarl s.n.* Indonesia, Kalimantan, (L, holo!)
Homotypic Synonym: *Aglaonema pygmaeum* Hassk., Tijdschr. Natuurl. Gesch. Physiol. 9: 161 (1842).
Note: The taxonomy of the *H. pygmaea* complex is chaotic, beset with a cumbersome and unworkable hierarchy of subordinate taxa in the two most widely applied names (*H. pygmaea* and *H. humilis* (Jack) Hook.f), coupled to a very weak

understanding of species' boundaries since much of the taxonomy is based on inadequate specimens that do not allow understanding of the plants' natural variability. The *humilis* complex requires an exhaustive study throughout its range.

Homalomena subcordata Engl. Bot. Jahrb. Syst. 1: 183 (1881)
Type: *Beccari P.B. 1278* and *308* "*nello spirito*" (carpological coll.)
Locality: Sarawak, Kuching, October 1865.
Status: Holotype.
Taxonomic Status: Accepted name.
Note: A very distinctive species with the erect semi-leafless stems to ca. 75 cm topped with tufts of glossy green leaves that smell powerfully of pineapple when crushed. Seemingly endemic to SW Sarawak and NW Kalimantan Barat.

Non type collections

Herbarium Beccari Identification: *Homalomena aromatica* (Roxb.) Schott
Collection 1: *Beccari P.B. 740*
Locality: Sarawak, Kuching, October 1865
Collection 2: *Beccari P.B. 2013*
Locality: Sarawak, Kuching, January1866
Identification: *Homalomena expedita* A.Hay & Hersc., Gard. Bull. Singapore 54: 174 (2002).
Type: Sarawak, Kuching, Lundu, near bridge on Kuching Road, Cult. RBG Sydney Acc. No. 940562, *C.Herscovitch s.n.* (NSW, holo; SAR, iso!)
Note: A distinctive colonial helophyte with two known populations in Sarawak, the extensive type location, and a much smaller population on the Batu Kawa – Bau road, Kuching. It is likely that the Beccari collections are from this latter site or, more probably, from a now extinct population.

Herbarium Beccari Identification: *Chamaecladon obliquatum* Schott
Collection no.: *Beccari P.B. 1154*
Locality: Sarawak, Kuching, November 1865.
Identification: *Homalomena griffithii* (Schott) Hook.f., Fl. Brit. India 6: 534 (1893).
Syntypes: Malaysia: Malacca, Ayur Punus, *Griffith KD 5963* (K!); Malaysia, Sabah, Labuan, *Motley s.n.* (K!)
Note: *Homalomena griffithii* is one of the few species that occurs both in Peninsular and East Malaysia. Leaf shape is highly variable, and many names have been applied to this species complex. However, until a thorough revision is undertaken these later names are treated as insufficiently known and are thus not included here.

Herbarium Beccari Identification: *Chamaecladon sp.*
Collection no.: *Beccari P.B. 3805*
Locality: Sarawak, Kapit, Belaga, November 1865
Identification: *Homalomena insignis* N.E.Br., Ill. Hort. 32: 93, t.560 (1885). **Type:** Ill. Hort. 32: 93, t.560
Note: A distinctive and horticulturally attractive compact plant, especially in the red leaved forms in which the large glistening white spathes form a striking contrast. *Homalomena insignis* is widespread and often locally abundant in Sarawak.

Herbarium Beccari Identification: *Homalomena aromatica* var. *cordata* (Schott) Engl.
Collection no.: *Beccari P.B. 1783*
Locality: Sarawak, Kuching, Matang, May 1865.
Identification: sp.

Herbarium Beccari Identification: *Homalomena aromatica* var. *cordata* (Schott) Engl.
Collection no.: *Beccari P.B. 1340* and *599 "nello spirito"* (carpological coll.)
Locality: Sarawak, Kuching.
Identification: sp.

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Summary: *Homalomena* specimens in the Herbarium Beccarianum-Malesia (FI-B) of the Museo di Storia Naturale dell'Università di Firenze have been examined, and determined. The collection comprises 33 sheets, and one line drawing, of which 16 sheets and the line drawing, representing seven species, originate from Borneo. Eleven type specimens, are represented. Ten types, representing five names (*Homalomena beccariana* Engl., *H. ovata* Engl., *H. punctulata* Engl., *H. pygmaea* var. *latifolia* Engl., and *H. subcordata* Engl.) are pertinent to Borneo.