



A re-evaluation of generic placement of four names of *Phaeomeria* species (Zingiberaceae) east of Wallace's Line

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Key words

Bismarck Archipelago
Etilingera
gingers
Malesia
new combinations
New Guinea
typification

Abstract East of Wallace's Line, four species were placed in the ginger genus *Phaeomeria*: *P. anthokophinos*, *P. moluccana*, *P. novoguineensis*, *P. peekelii*. The generic name is illegitimate and it has often been the case that the long-pedunculate species placed here belong in *Etilingera*. In fact, Smith combined two of these names in *Etilingera* in 1986 but without seeing the types (*E. moluccana* and *E. peekelii*), whereas the other two still remained in *Phaeomeria*. After examining protologues, types and recent collections, it is concluded that all species belong in *Etilingera*. The required two new combinations, *E. anthokophinos* and *E. novoguineensis*, are made here and lectotypes are designated for four names. The type of *E. moluccana* was in fact collected in Java and is synonymous with *E. solaris*. Recent collections at the type localities of *E. peekelii* enabled a complete description of this species including fruits and seeds, and it is illustrated here for the first time, while an epitype is designated for clarity.

Citation: Poulsen AD, Tom D, Tarere D, et al. 2024. A re-evaluation of generic placement of four names of *Phaeomeria* species (Zingiberaceae) east of Wallace's Line. *Blumea* 69 (2): 122–129. <https://doi.org/10.3767/blumea.2024.69.02.02>. Effectively published online: 9 August 2024.

INTRODUCTION

The name *Phaeomeria* Lindl. published by Lindley in 1836 was a nomen nudum, whereas Ridley's recognition of it as a section in *Hornstedtia* Retz. in 1899 was unproblematic. In 1904, Schumann gave it a generic status as *Phaeomeria* (Ridl.) K.Schum. and placed 16 species here. This was, however, illegitimate because *Nicolaia* Horan., published by Horaninow in 1862, was based on the same type. This did not stop subsequent authors, the most recent being Holttum (1950), from using *Phaeomeria* as a generic name for four pedunculate species from Peninsular Malaysia. Holttum was aware that Valetton (1913, 1914, 1921) placed the relevant species in *Nicolaia* but wrongly thought that *Phaeomeria* was the legitimate older name.

In 1986, Burt & Smith reinstated the name *Etilingera* Giseke, which had been ignored since its publication in 1792 (Giseke 1792). Previously, species were distributed in three genera (*Achasma* Griff., *Geanthus* Reinw., *Nicolaia*) and Smith (1986) subsequently combined 58 species from these in *Etilingera*, but she rarely located their types.

Like *Nicolaia*, the name *Phaeomeria* was typically used for gingers having a showy involucre of sterile bracts placed on top of a long peduncle. The best example of this is the torch ginger, *Etilingera elatior* (Jack) R.M.Sm., commonly planted in tropical gardens and botanical garden glasshouses, a well-known condiment in Indonesia and Malaysia, as well as having several other uses (Poulsen 2006). In a molecular-based phylogeny including 23 species of *Etilingera*, however, Pedersen (2004) found that these long-pedunculate species did not form a monophyletic

clade. Thus at present, there seems no molecular support for justifying taxonomic recognition of the long-pedunculate species, e.g., at section level, within *Etilingera*.

Twenty-seven species have at some point in their taxonomic history been placed in *Phaeomeria* (Zingiberaceae Resources Center continuously updated). The majority of these, 22 species, are currently accepted in *Etilingera* (including nine synonyms), and only two are in *Meistera* Giseke, and one in *Amomum* Roxb. Only four of the 27 species supposedly have their type locality east of Wallace's Line: *P. anthokophinos* Gilli, *P. moluccana* K.Schum. (currently *E. moluccana* (K.Schum.) R.M.Sm.), *P. novoguineensis* K.Schum., and *P. peekelii* (Valetton) Loes. (currently *E. peekelii* (Valetton) R.M.Sm.) and of these, *P. anthokophinos* and *P. novoguineensis*, are the last two unplaced species of the genus. With the majority having already been combined in *Etilingera*, it is likely that these also belong here.

The aim of the present paper is to evaluate and typify these four species in order to make the Flora Malesiana Checklist (Newman et al. 2004) more concise and in preparation for a revision of *Etilingera* in New Guinea.

MATERIAL AND METHODS

Detailed studies of the morphology were made examining types of species of all basally flowering genera of *Zingiberaceae* east of Wallace's Line at 29 herbaria that were visited or sent material on loan (A, B, BM, BO, BORH, BRUN, C, CEB, E, FI, G, HBG, K, KEP, L, M, NY, P, PNH, PUH, S, SAN, SAR, SING, SNP, U, W, WAN, Z; herbarium codes according to Thiers continuously updated). Fieldwork was conducted using standard methods, which in the case of *Zingiberaceae* implies conserving flowers and fruits in alcohol (Poulsen 2006, 2007, 2012).

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RESULTING TAXONOMIC TREATMENT

The four species at some point placed in *Phaeomeria* east of Wallace's Line are evaluated below.

1. *Etilingera anthokophinos* (Gilli) A.D.Poulsen, *comb. nov.*

Phaeomeria anthokophinos Gilli, Ann. Naturhist. Mus. Wien, B 84 (1983 '1980') 44. — Type: *A. Gilli 519* (holo W), Papua New Guinea, Western Highlands Province, forest at Par [S5°28' E143°45'], 2200 m, 19 Feb. 1974.

Etymology. The epithet means 'flower basket' and refers to the cylindrical spike with a hollow interior from which the flowers appear.

Description — See Gilli (1983: 44–46 incl. f. 33).

Distribution — Only known from the type locality, but likely occurring in montane forests of the central range of New Guinea (Fig. 1).

Conservation status — Data deficient (IUCN 2019). Awaiting further collections and a full revision of the genus in New Guinea.

Notes — 1. It is a mystery why Gilli (1983) did not place his new species in *Nicolaia* as Burtt & Smith had already made it clear in 1972 that *Phaeomeria* is an illegitimate name. In the original description, Gilli (1983) only mentioned the corolla tube and the 1 cm long corolla lobes. An examination of a soaked flower of the type, revealed that the corolla lobes are in fact 2.2–2.3 cm long enclosing a 1.5 cm long staminal tube, which is a diagnostic for *Etilingera* and thus confirming that this species indeed belongs in this genus and the reason for the combination being made here. Furthermore, Gilli noted that so far only one species of this genus was known from New Guinea. He no doubt referred to *Phaeomeria novoguineensis* (see below), to which he related his new species.

2. Two recent collections also from Papua New Guinea, *Poulsen et al. 2513* and *2514*, are very similar to *Gilli 519*, and were collected at a similar elevation (2150 m) in the central range of New Guinea but about 350 km from the type locality. They were collected a few metres apart, but because one plant had completely glabrous leaves and the other was pubescent beneath, they were given separate numbers. Previous work, e.g., Poulsen (2006), demonstrated that indumentum is rarely a good diagnostic character in *Etilingera*, and the two collections are likely of the same species. *Gilli 519*, however, is sericous-

tomentose. Apart from that it also differs from the two recent collections by the barrel-like spike being smaller, the longer flower (6 cm vs 5 cm), the labellum described as oblong (not 3-lobed), and the anther being exposed (not covered by the dorsal corolla lobe). Without further collections bridging this variation, caution should be made identifying the recent collections as *E. anthokophinos*. Gilli emphasised the conspicuous 3-lobed stigma in the one flower examined. He did not illustrate this but is clearly observed in the dry state, in which stigmas often appear quite different from fresh or pickled material (*Poulsen et al. 2513* and *2514* have rounded-pentagonal stigmas). New material nearer to the type locality at Par is desirable.

2. *Etilingera novoguineensis* (K.Schum.) A.D.Poulsen, *comb. nov.*

Phaeomeria novoguineensis K.Schum. in Engl., Pflanzenr. IV, 46 (1904) 265. — *Nicolaia novoguineensis* (K.Schum.) Valeton (1913) 936. — Lectotype (designated here): *A. Zippelius 224b* (lecto L [L 0193242]), Indonesia, [West Papua, Kaimana Regency, Triton Bay, S3°53' E134°04', 1828, see note 2 below].

Etymology. The specific epithet refers to New Guinea.

Description — See Schumann (1904), repeated but abbreviated by Valeton (1913).

Distribution — Only known from the type locality at Triton Bay (Fig. 1).

Conservation status — Data deficient (IUCN 2019). Awaiting new collections from West Papua.

Notes — 1. Schumann (1904) stated that his new species is similar to *Phaeomeria chrysocalyx* K.Schum. and *P. grandiligulata* K.Schum. Both are currently placed in *Etilingera* and have long peduncles of the '*Phaeomeria*' type, it is natural to assume that *Etilingera novoguineensis* also has a long peduncle but the description only says that there is a peduncle but nothing about its length. *Zippelius 224b* at the Leiden herbarium (L 0193242) only includes half a spike, not a peduncle (BioPortal continuously updated) but perhaps Schumann observed a long peduncle on a duplicate at Berlin, which is now lost. The type material at Leiden includes a large leaf and a split spike that indeed looks like a typical *Etilingera*, but it has not yet been possible to match it with a recent and more complete collection including pickled flowers.



Fig. 1 Location of the type localities of *Etilingera novoguineensis* (Triton Bay), *E. anthokophinos* (Par), and *E. peekelii* (Bitagalip and Namatanai). — From Google Earth Prov. 16 July 2021.

2. Valeton (1913) stated that his complete description was based on Schumann's (1904) and even if he shortened it (e.g., omitting potentially diagnostic information on the anther crest), he provided the locality as 'Triton-Bai', whereas Schumann just stated that Zippelius' collection was from the 'Dutch part without specific locality'. The collector of the type, the German horticulturist, Alexander Zippelius (1797–1828), only joined one expedition to New Guinea (Van Steenis-Kruseman 1950), namely the attempt in 1828 to secure the Dutch interests against the British in SW New Guinea by sending two ships, one of which was the corvette *Triton*, which gave name to a bay on the SW coast of Tanah Papua (c. S3°53' E134°04') where a fort was established and maintained for a few years. Zippelius collected at several localities around Triton Bay in June–August 1828 and even if his labels do not state the locality, Valeton must have had sufficient knowledge of the activities of Zippelius to be confident that *E. novoguineensis* was collected at Triton Bay. Van Steenis-Kruseman (1950) referred to the locality as Uru-Languru Bay, which was impossible to find on any map.

3. *Etilingera peekelii* (Valeton) R.M.Sm. — Fig. 2–4

Etilingera peekelii (Valeton) R.M.Sm. (1986) 248. — *Nicolaia peekelii* Valeton (1914) 54. — *Phaeomeria peekelii* (Valeton) Loes. (1930) 594. — Lectotype (designated here): *G. Peekel* 715 (lecto BO acc. nos. BO0083461, BO0083462), Papua New Guinea, Bismarck Archipelago, Neu Mecklenburg [New Ireland], Namatanai [S3°40' E152°26'], 16 Nov. 1910. Epitype (designated here): *A.D. Poulsen, Thomas Magun, Darius Tom, Hendry Tabu* (landowner), *Marshall Osal, Francis Bakmas, Masulinus Sabo & Junior Alois* 3310 (epi LAE; isoepi BO, E, L, SING), Papua New Guinea, Bismarck Archipelago, New Ireland, Namatanai District, above Komalu village, Conginowala (name of a hill), former sacred forest, primary forest patch, understorey dominated by collected species, S3°31'1.8" E152°13'24.9", 225 m elev., flowering and bearing immature fruits 1 Oct. 2023.

Etymology. Valeton (1914) named this species in honour of the German missionary, Gerhard Peekel (1876–1949), who collected this species and many other plants reported in his manuscript entitled 'Flora of Bismarck Archipelago' (Peekel 1984, translated by Henty). He lived a remarkable life in New Ireland and barely survived being held imprisoned by the Japanese until the end of the Second World War.

Terrestrial herb in loose clump. *Rhizome* to 4 cm diam, sericeous; scales to 6 by 6 cm, sericeous at base, margin ciliate.

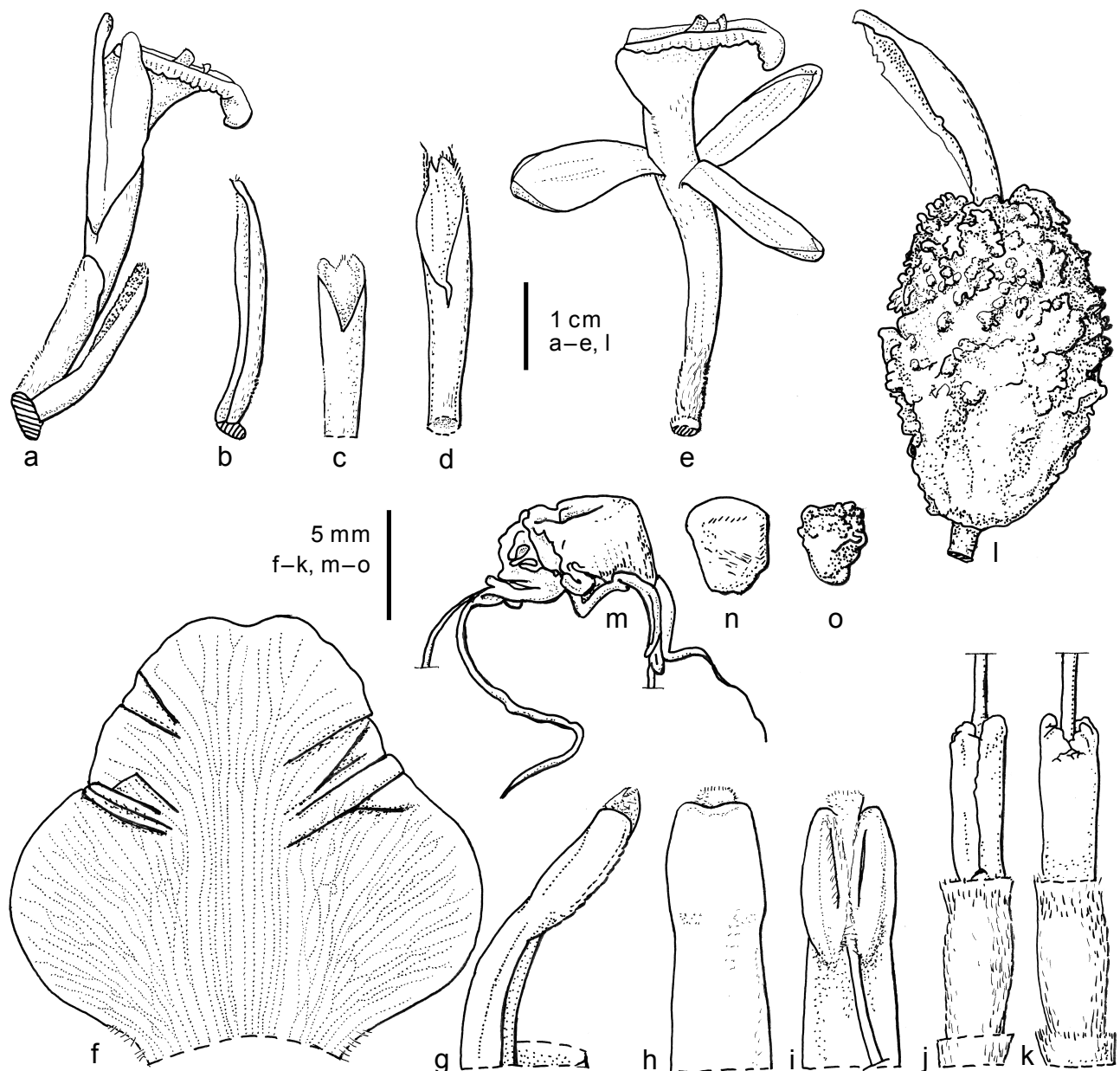


Fig. 2 *Etilingera peekelii* (Valeton) R.M.Sm. a. Flower with fertile bract; b. fertile bract; c. bracteole; d. calyx; e. flower, calyx removed; f. labellum, flattened (ventral view); g. stamen (lateral view); h. stamen (dorsal view); i. stamen (ventral view); j. ovary (dorsal view); k. ovary (ventral view); l. fruit, persistent bract and bracteole removed; m. seed with aril; n. seed, aril removed; o. seed, outer integuments removed (all: *Poulsen et al.* 3310, pickled material). — Drawing by Axel Dalberg Poulsen.

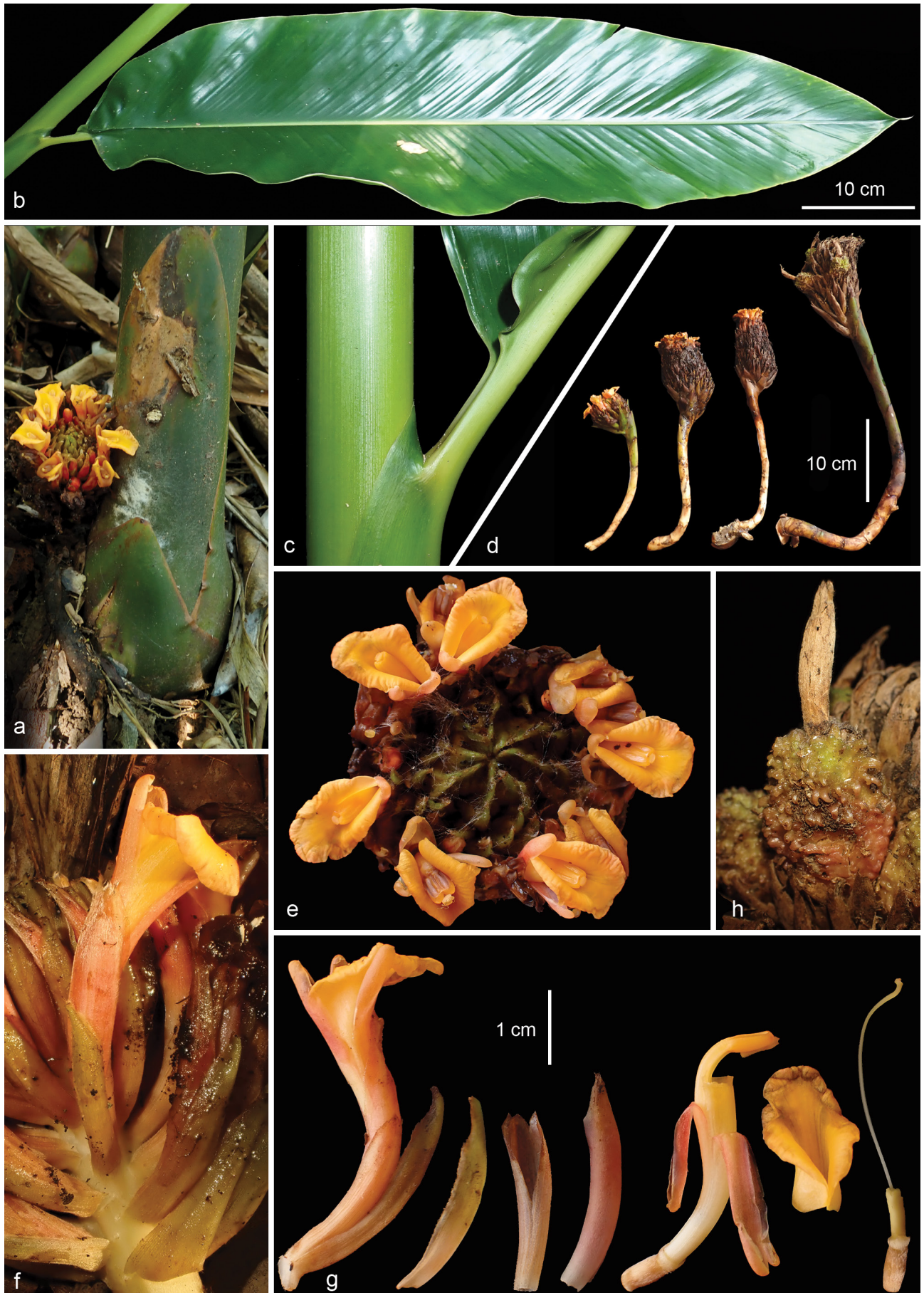


Fig. 3 *Etlingera peekelii* (Valeton) R.M.Sm at Namatanai District, New Ireland. a. Flowering shoot at base of leafy shoot; b. leaf; c. pseudostem with ligule, petiole and base of lamina; d. inflorescences (3) and infructescence; e. inflorescence, seen from above; f. flower, single in head; g. flower and dissection (fertile bract, bracteole, calyx, corolla, labellum, gynoecium; h. fruit, young (all: *Poulsen et al.* 3310). — Photographs by Axel Dalberg Poulsen.



Fig. 4 *Etilingera peekelii* (Valeton) R.M.Sm. from Kar Kar Island. a. Inflorescences, one with a single fruit; b. inflorescence, all fruits emptied of seeds by a chewing animal; c. fruits, one open showing yellow aril surrounding seeds (a, c: Poulsen *et al.* 2703; b from same locality, not collected). — Photographs by Axel Dalberg Poulsen.

Leafy shoots to 5–8.5 m long, 10–40 cm apart; base to 11 cm diam, green to brownish green; sheath smooth, shiny, olive-green when fresh, striate when dry, scarcely pilose or tomentose in patches, margin orange-brown; ligule to 2 cm long, entire, mid-green, pilose to villose, margin \pm tufted; petiole to 1.5–3 cm long, canaliculate, glabrous, yellowish green; lamina oblong, to 80–120 by 15–30 cm, very slightly plicate, mid- to dark green above, pale green beneath, glabrous; base oblique, obtuse to rounded; apex to 2 cm mucronate; margin ciliate. Flowering shoot to 20–40 cm long, radical; peduncle

ascending to erect, 0–25 cm above ground, slender or stout (1–2 cm diam), 15–30 cm long, sericeous to velvety; peduncular bracts to 9 by 2 cm, elliptic, subterranean scales cream to orange, darker towards apex, exposed scales pale green to pale brown, densely tomentose especially at base, apex pointed, shortly mucronate, ciliate; spike ovoid to narrowly ovoid, to 5–18 cm long; receptacle elongating and with age 4–16 cm long, with up to 150 flowers, 1–8 open at a time, flowers extending vertically 1.6–2.5 cm above bracts; spike only including bracts 5–18 by 5–7 cm; sterile bracts absent;

fertile bracts to 5 by 0.4–1 cm, narrowly ovate, ± boat-shaped, 1–2 cm shorter than apex of flower, orange-brown, tomentose to velvety, margin ciliate; *pedicel* 1–1.5 mm long, below bracteole; *bracteole* 1.5–2(–2.8) cm long, orange-brown to pale red, 4–7 mm shorter than bract, with one long fissure 0.9–1.5 cm and one short 0.1–0.5 cm, golden pubescent to tomentose, apex 2-lobed, lobes sometimes split at apex. *Flower* 4–4.5 cm long; pale orange; *calyx* 2.8–3 cm long, reaching base of anther and 11–13 mm short of apex of dorsal corolla lobe, pale red, fissured 1.5–1.7 cm (rarely a second of 0.5 cm long), shiny orange-brown sericeous, apex 3-pointed, close together, tufted-ciliate, ± mucronate; *floral tube* 1.8–2.2 cm long, pale yellowish, puberulous outside, glabrous inside; *corolla lobes* pale red, ± puberulous; dorsal lobe 16–20 by 7–9 mm, obovate, erect, extending above lateral lobes of the labellum, apex rounded, cucullate; *lateral lobes* 17–19 by 4.5–6 mm, narrowly obovate, apex rounded, cucullate, attached ± straight to the tube, inserted c. 2 mm below dorsal lobe; *staminal tube* c. 6 mm long, scattered pilose, pale yellow; *labellum* broadly ovate (when flattened), c. 18 by 22 mm, angled c. 120 degrees to the floral tube, pale orange, with few hairs at base beneath, lateral lobes erect for c. 8 mm, central lobe broadly ovate, entire, bend downwards (abaxially) c. 120 degrees (to the basal part), extending c. 6 mm beyond anther, margin wavy, inrolled; *stamen* 10–11 mm long, pale orange-yellow; *filament* 4–5 by 3.2–4.5 mm, broadest at base, slightly tomentose; *anther* 6–8 by c. 4 mm, elliptic, not spurred, glabrous, angled c. 120 degrees, *anther crest* very shallowly bilobed to truncate; *thecae* dehiscent in upper part for 4–5 mm from c. 2 mm above base to c. 1 mm below apex, villous; *ovary* 7–9 by 3–4 mm, orange-brown-sericeous; epigynous gland 7–8.5 mm long, cylindrical, apex irregularly lobed, apex white, split to base adaxially, irregularly split c. 3 mm on opposite side; *style* 3.8–4 cm long, ± pilose; *stigma* 1.5–2.2 mm wide, pale orange, rounded pentagonal, ciliate laterally, *ostiole* transverse, narrowly elliptic, 1.5–2 mm long, facing forwards (to upwards). *Infructescence* c. 18 by 13 cm, sometimes branching laterally from base of peduncle, peduncle erect, fruiting head elongate, receptacle to 3 cm wide at base, with ± persistent bracts, with 1–46 many fruits per head; *pedicel* to 0.2–0.4 cm long, *fruit* ellipsoid to obovoid, lower half somewhat flattened-angular, 3.5–5 by 2.2–3 cm, apex rounded, irregularly verrucose in upper half, green to pale red when young, bright orange when mature, ± hirsute, bract, bracteole and calyx persistent; *seeds* c. 4 by 3–5 mm (outer integuments and aril removed); *aril* filiforme, fibrous, pale orange, sweet, waxy.

Distribution — This species is endemic to the Bismarck Archipelago: New Ireland (Fig. 1), East New Britain, Kar Kar Island, Siassi Island (observation only).

Ecology & Habitat — Occurring in lowland forests to 550 m elevation.

Vernacular names — Agubo (*Poulsen et al.* 3310; Barok language, New Ireland); buleu-but, balavuga, balavunga (Kuanua language restricted to East New Britain; first two by Peekel (1984), latter vouchered by *Poulsen et al.* 3303); dakal (Waskia language, Kar Kar Island, name for the fruit only, vouchered by *Poulsen et al.* 2702); hahut / kahut? (Pala, language restricted to New Ireland; Peekel 1984); kadal (Kar Kar (*Ridsdale NGF* 33946, name may be a corruption of dakal); mas (Kowai, Siassi Island, *Poulsen et al.* 2702).

Local uses — Ceremonial and medicinal values; leaves used for mumu (wrapping food in ground oven); stem used as pig growth enhancer; fruits are eaten as substitute for betel nut (*Areca catechu* L.).

Conservation status — Vulnerable under criteria B2ab(ii,iii) (*Poulsen* 2020). Since this global assessment was published, more collections have been made or were found in herbaria,

which increases the Extent of Occurrence (EOO) from 43 643 km² to 79 395 km² and doubles the Area of Occupancy (AOO) to 32 km². Thus the criteria should rather be Near Threatened (NT) than Vulnerable, which is good news from a conservation point of view. The lowland forests of the islands in the Bismarck Archipelago are continuously considered for logging. It is noteworthy that the two collections made in 2023 were both made in so-called 'former sacred forest' within secondary vegetation. Thus the cultural significance of this species, likely contributes to its survival.

Other specimens examined. PAPUA NEW GUINEA, Madang Province, Kar Kar Island: A.N. Millar NGF 37746 (BRI, CAN, L, LAE, SING), Mam village, track above, S4°50' E146°0', 1800 ft [335 m], regrowth on track above village, flowering and fruiting 16 July 1968; A.D. Poulsen, Thomas Magun, Tony & Mikael Sabub, Andrew Wataya 2702 (AAU, E, LAE, SING), Kaeng village, Yalek River, forested slope of river gorge near gardens, S4°35'14" E145°55'15", 115 m, flowering and fruiting 8 Apr. 2008; C.E. Ridsdale NGF 33946 (BRI, CAN, LAE), S4°40' E145°57', 1800 ft [550 m], ridge forest, flowering 11 Jan. 1968. East New Britain, A.D. Poulsen, Thomas Magun, Donald Tarere, Martin Tabu, Emil Ramavit et al. 3303 (E, LAE), Tanaka, 12 km E of Kokopo, former sacred site next to the Greater Heights Sanctuary, New Covenant Ministries International, open vegetation with a few big trees, understorey dominated by the collected species, S4°20'54.8" E152°10'7.5", 400 m elev., flowering 22 Sept. 2023.

Notes — 1. Peekel's collection labelled '715' likely represents more than one gathering. This is indicated first of all by the Valeton (1914) listing 'Namatani' and 'Bitagalip at Vuna Pope' for this collection number. These localities are on either side of Saint George's Chanel separating New Britain and New Ireland (Fig. 1). Secondly, Peekel (1984) gave local names (listed above) in two languages: Pala which is spoken exclusively on New Ireland, and Kuanua spoken only in East New Britain. Peekel came to the Bismarck Archipelago in 1904 (Van Steenis-Kruseman 1950) and was first based at East New Britain and later resided in New Ireland and likely collected ethnobotanical information and samples of this species on both islands. Peekel being German naturally sent his collections to Berlin (indicated by the labels printed with 'Ex Museo botanico Berolinensi'). As no collections seems to have survived in the Berlin herbarium after the Second World War, we will not know from which island these were collected. In 2023, we went back to explore the vicinity of both places and confirm that *E. peekelii* indeed still occurs here.

2. It is perhaps surprising that Valeton is an author of a species with the type deposited at Berlin, but Schumann, who was the authority of gingers based at Berlin, had passed away in 1904 before Peekel's collection was made. Therefore, Valeton described it and it is not surprising that duplicates of the type were found in BO because Valeton was based at Bogor from 1892–1919 (Van Steenis-Kruseman 1950).

3. The collection labelled '*Peekel 715*' found at BO consists of two sheets (acc. nos. BO0083461, BO0083462), each with a huge, folded leaf and appearing to be of the same gathering as each has a label stating the locality, Namatanai. The first has the locality (Namatanai) and collection date (16 Nov. 1910) written in ink, whereas the second has the (same) locality and date of accession (26 July 2011) printed. The leaves had unfortunately been cut to exclude the diagnostically important ligule. The peduncle of the flowering shoot mounted on the second sheet was also cut making it impossible to measure the total length but would probably be within range of *Etlingera peekelii* (Fig. 3d). One would assume that Valeton was confident that this species has a long peduncle since he placed it in *Nicolaia*. These ambiguities are overcome by designating an epitype here (*Poulsen et al.* 3310), a collection that also documents the warty fruits and seeds with an unusual waxy, filiforme and stringy pale orange aril as well as pickled material on which the ink plate was based (Fig. 2). The fruits are not dehiscent and

during fieldwork on Kar Kar Island a whole infructescence was observed where all fruits had been gnawed open by a rodent or marsupial and seeds removed (Fig. 4b).

4. Whereas Peekel (1984) intended to combine *Phaeomeria peekelii* under the 'comprehensive name', *Amomum*, Smith (1986) placed it in *Etilingera*. She had not seen the type but it was sufficient evidence for her that Valeton's description (1914) clearly distinguished between the corolla tube and the 'tubus interior', which must be the staminal tube, the key diagnostic character of the genus. Our recent collections perfectly match the type and protologue and the presence of a six mm long staminal tube (Fig. 2e, 3g) confirms the placement of this species in *Etilingera*.

5. The description above, based on three recent collections with spirit material, is largely in accordance with those by Valeton (1914) and Peekel (1984: 107), but they did not include any fruit characters and the new material also allows inclusion of other details such as the anther dehiscence. The collection from Kar Kar Island, Poulsen *et al.* 2702, which is about 700 km from the type locality at Namatanai, differs only in minor details such as the sheaths having more indumentum, the longer bracteole and the anther crest being truncate instead of very shallowly bilobed.

4. *Etilingera solaris* (Blume) R.M.Sm.

Etilingera solaris (Blume) R.M.Sm. (1986) 249. — *Elettaria solaris* Blume (1827) 52. — *Alpinia solaris* (Blume) D.Dietr. (1839) 12. — *Nicolaia solaris* (Blume) Horan. (1862) 32. — *Cardamomum solare* (Blume) Kuntze (1891) 687. — *Amomum solare* (Blume) K.Schum. (1899) 308. — *Phaeomeria solaris* (Blume) K.Schum. (1904) 264. — Lectotype (designated here): C.L. Blume s.n. [1822] (lecto L [L 0193312]), [Indonesia, West Java,] Mt Gede. *Phaeomeria moluccana* K.Schum. (1904) 266, *syn. nov.* — *Etilingera moluccana* (K.Schum.) R.M.Sm. (1986) 248. — Lectotype (designated here): W.H. de Vriese & J.E. Teijsmann s.n. [1859] (lecto L [L 0193317]), [Indonesia, Java].

Etymology. The epithet refers to the sun-like inflorescence.

Description — See Poulsen (2007).

Distribution — Java and Sumatra.

Habitat & Ecology — In montane forests at 800–1820 m elevation.

Conservation status. — Vulnerable under criteria B2ab(iii) (Olander 2019).

Vernacular names — Hondje warak, honje laka, honje ngo-ser (Java; Poulsen 2007).

Notes — 1. Schumann (1904) mentioned that the exact collection locality of *Etilingera moluccana* is lacking but that the collectors were 'Vriese and Teysmann'. According to Van Steenis-Kruseman (1950), de Vriese and Teijsmann only collected together in the second half of 1859 in Java and Madura. From December 1859 to June 1860 they conducted a circuit trip to the Moluccas starting from Surabaya in East Java. Despite having databased more than 5000 collections of *Etilingera* from numerous herbaria, only two have the desired pair of collectors. In the Leiden Herbarium these have preprinted labels stating 'Guil. Henr. de Vriese et J. E. Teijsmann, Herb. Itineris In Insulas Moluccana, 1859–60': barcodes L 0193269 and L 0193317. The first has been identified as *Amomum coccineum* (Blume) K.Schum. (currently *Etilingera coccinea* (Blume) S.Sakai & Nagam.), an identification completely agreeable due to the broad dorsal corolla lobe and long labellum. Somebody has much later added '?Java' with a ballpen on the label (BioPortal, continuously updated). This species occurs in Sundaland and the Philippines but is not known to occur in Wallacea or further east (Poulsen 2007, Poulsen & Docot 2018). The second sheet consists of material of another species of *Etilingera* with conspicuously ligulate leaves and a globose spike on a

long peduncle and has been identified correctly as *E. solaris*, which is a montane species in Java and Sumatra (Poulsen 2007). It seems, therefore, likely that these collections made in Java were mistakenly mounted with labels printed for the specimens collected during the Moluccan trip. Of the two collections, the one with the long peduncle matches the description by Schumann (1904) who was misled to choose the epithet '*moluccana*' because of the preprinted label (text cited above). It is not surprising that Schumann first placed the species in *Phaeomeria* as he also placed *P. solaris* in this genus in the same publication.

2. Poulsen (2007) simply stated that the type of *Etilingera solaris* is at Leiden. The sheet designated here as lectotype only contains fertile parts, however, very characteristic for this species. '*Elettaria*' in ink on one of the slips is likely in Blume's hand and the origin of Java and the local name, hunje warak, matches that in the protologue (Blume 1827). Blume also described the vegetative characters ('foliis breviter petiolatis oblongis'), and therefore must have looked at other sheets.

CONCLUSION AND RECOMMENDATIONS

The evaluation of the four species east of Wallace's Line at some point placed in the genus *Phaeomeria* revealed that they should all be placed in *Etilingera* but one name is a synonym of a species not relevant to the region. In preparation of a full revision of the genus *Etilingera* in New Guinea and adjacent islands it is meanwhile some progress that the mystery of the identity of *E. moluccana* has been resolved.

The increased fieldwork in the New Guinea focusing on gingers will no doubt result in an increase in number of species of *Etilingera* known in the country but fundamental to deciding which species have been named, it is important to find out as much as possible of existing species not least those currently placed in other genera. Future fieldwork should continue targeting type localities of poorly known species such as coastal vegetation at Triton Bay, West Papua, and the montane forest in central New Guinea, including Western Highlands in Papua New Guinea.

After 10 expeditions in New Guinea since 2001, only one of the four species dealt with in the current paper has convincingly been recollected (*E. peekelii*). More expeditions in Tanah Papua and more collections generally will hopefully lead to a better understanding of the variation within and between species of *Etilingera*.

Acknowledgements We would like to thank the keepers of several herbaria giving permission to study or receive loans of their collections, the National Research Institute, Forest Research Institute, Lae, provincial government and staff of the Provincial Forest Managers, especially Michael Gamung, Kavieng and Peter Ramute, Keravat, councillor Martin Tabu at Bitagalip, local guides and porters for valuable help during fieldwork. The National Research Institute processed the research permit and visa and the Forest Research Institute issued the export permit for duplicates. Funding for fieldwork was provided by The Material World Foundation, the Dansk Ekspeditionsfond, TK Foundation, 'Det Asiatiske Kompagnis Almennyttige Fond', 'Torben og Alice Frimodts Fond' and Carlsbergfondet. The Davis Expedition Fund, University of Edinburgh, Scotland, contributed to the time to write up this paper. Axel Dalberg Poulsen is supported by the players of the People's Postcode Lottery. The Royal Botanic Garden Edinburgh (RBGE) is supported by the Scottish Government's Rural and Environmental Science and Analytical Services Division.

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