



Sulettaria meekiongii, A new zingiberaceae species from western Sarawak, Borneo

Ripen J E¹, Teo S P², Meekiong K¹

¹ Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, Kota Samarahan, Sarawak, Malaysia

³ Forest Department Sarawak, Bangunan Baitulmakmur, Medan Raya, Petra Jaya, Kuching, Sarawak, Malaysia

Abstract

Sulettaria meekiongii Ripen & S.P. Teo, a new Zingiberaceae species is described herein. The new species is close to *Sulettaria polycarpa*. The new species can be differentiated by the pure white flower and fruits enclosed by the bract, (vs *S. polycarpa*) flower is white with a yellow band at the median of the labellum and the fruits are exposed. With the discovery of the new species, the number of *Sulettaria* species in Sarawak now has increased to 14 species.

Keywords: species, Sarawak, Borneo, zingiberaceae

Introduction

Mount Sejinjang (or the Bidayuh elders called it Dorod Sejanjang) is located just behind the well-known Mount Singai. Also connected to Mount Serapi but unfortunately just outside the Totally Protected Area – the Kubah National Park. After many years, Mount Sejinjang is still uncovered as to date there is no single record has been published from this area yet. The area vastly covered by the untouched virgin mixed dipterocarp forest, under the care of the Singai's communities, has a great potential for natural ecotourism products, and, as well as for ecological studies.

The understorey vegetation is very rich, particularly with the monocots groups, such as aroids, arrowroots, sedges, palms and gingers. also from the group of gesneriads, begonias, Rubiaceae and Primulaceae, diverse with species and great density on the forest floor. A preliminary survey on gingers (the first author's PhD project) encountered at least 15 genera consisting of 45 species (excluding seven undetermined taxa). *Alpinia*, *Etingera*, *Zingiber* and *Globba* are the rich most genera recorded with seven, six, five and four species respectively.

The gingers are varied in its habits, with commonly are terrestrial, lithophyte, rheophyte and only few are with epiphytic habit. For instance, *Alpinia epiphytica* Meekiong, Ipor & Tawan, is the only member in the genus *Alpinia* with epiphytic habit^[5]. The ginger also diverse in habitat, thriving in shaded forest or alluvial forests, open spaced in secondary forests or along the logging roads, kerangas, riverine and quite a number of species occupied on the limestone areas and as well as adapted to extreme condition on montane forest up to 2000 m and high salinity of mangrove. Thus make the diversity of gingers in Borneo relatively high^[3, 6].

Sulettaria is probably not a well-known genus, as it was just introduced recently based on their molecular and field observation works, to accommodate a group of taxa that shared similarities^[1]. The members of *Sulettaria*, however, are familiar species from the genus *Elettaria* and *Amomum*. Fifteen members of this genus are included previously, as six species from *Amomum* and nine species from the genus *Elettaria*. The genus name reflects its similarity to *Elettaria* and its occurrence in Sundaland and Sulawesi. The genus *Elettaria*, now is restricted to the species that are native to

India and Sri Lanka; including *E. cardamomum*, a widely cultivated species for spice.

The identification process, information related to taxonomy and geographical distribution to confirm species status were obtained from the related literature^[2, 3, 4] and specimen information based on Herbarium of Forest Department Sarawak (SAR), virtual online database plantlist (<http://www.theplantlist.org>) and kew Herbarium (<http://www.kew.org/herbcat>).

1. Inflorescence ascending to erect; spike globose to conical..... 2
Inflorescence creeping along the ground, ±
ubterranean..... *S. rubida*
2. Spike globose (elongating with maturity); bracts firm
textured with a short pungent tip; fruit round with a
short neck.....*S.*
lambirenis Spike conical (even when young); bracts
usually papery without pungent tips; fruits flask-shaped
or round without a
neck..... 3
3. Ligule to 3 cm long; calyx lobes with prominent
subapical spurs; filament present.....4
Ligule 1–2 cm long; calyx lobes not subapically
spurred; anther sessile.....6
4. Flowers yellowish; peduncle bracts 5×3 cm;
.....*S. ligulata*
Flowers white; peduncle bracts ca. 4×1–1.5 cm
..... 5
Flower white with a yellow band at the median of the
labellum; fruits exposed
.....
..... *S. polycarpa*
5. Flower pure white, fruits hidden, enclosed by the bract
..... *S. meekiongii*
6. Leaf tips acute or shortly caudate; flowers ca. 1.5 cm
long; anther connective more or less
truncate.....
..... *S. anomala* Leaf tips long caudate;
flowers 2.5–3 cm long; anther connective deeply
emarginate with a small appendage in the
cleft.....*S. bu*
rttii

Species Descriptions

Sulettaria meekiongii Ripen & S.P. Teo sp. nov.

The new species is similar to *Sulettaria polycarpa* with short stilt-rooted pseudostem and white flowers. The new species however can be differentiated by pure white flowers and fruits enclosed by the bracts, while *S. polycarpa* with white flowers with a yellow band at the median of labellum and fruits are exposed.

Type

Borneo, SARAWAK, Kuching Division, Singai, Gunung Sijanjang, mixed dipterocarp forest, alluvial soils, 01°34'16.56"N, 110°12'11.45"E, 989 m above sea level, 9 April 2022, Meekiong, K. & Ripen, J.E., MK4026 (SAR-holo; SBC, Herbarium Universiti Malaysia Sarawak – iso).

Description

Plant clumping, up to 10 pseudostems, 50-70cm tall, with short stilt-rooted up to 7-10cm long, light green color. Rhizome c. 1-1.2cm diam., orange brownish colour; the base of the shoot with 6-8 leafless sheaths, long leaf sheaths about 10 cm, green to dark green wrap around the stem, abaxial slightly silvery and glabrous. Leaves provided of 6–8 pairs, alternate arrangement; leaf blades elongate, 20–30 x 3–5 cm, apex acuminate, acumen about 1–2 cm long. Leaf margin entire, smooth around the entire leaf. Upper surface green to dark green, with prominent veined or corrugated, lower surface light green to green, slightly veined. Petiole 6 mm long; ligule short, c. 4 mm, green with brown edges, apex rounded, darker when dried. Inflorescences arise close to the base of pseudostem, 3-4, erect, conical. rachis 3-5cm long. Bracteoles tubular, boat-shaped, 2 x 3 cm, reddish, floral stalk, 15mm long, glabrous, calyx tubular, 8–10 mm, long, creamy to reddish at the base. Flowers tubiform, c. 4 cm long; 2–3 flowers open at a time with obovate to elliptic labellum and entire, thin, crisp margin. Ovary 5mm long, 1mm diam., glabrous, dorsal lobe oblong, 8–12 x 1.5–2 mm, curved backward, glabrous, apex hooded, lateral lobes 2, oblong, 8–11 x 1.2–2 mm, curved backward, glabrous, apex rounded, pale white. Labellum pale yellow, center yellow. Staminodes absent. Anther 5mm, pale yellow on a short filament 15mm, crested.

Habitat

This species thrives very well on ridges and gentle slopes in mixed dipterocarp forests, and alluvial soils at altitudes 90–120 m above sea level.

Distribution

Currently only recorded from the type locality, Gunung Sejinjang, Kuching, Sarawak.

Etymology

The species epithet name is after Meekiong Kalu, a botanist from Universiti Malaysia Sarawak, who first collected the specimen.

Notes

In the type locality, this new species has sympatric growth with few other gingers species, such as *Alpinia havilandii* K. Schum., *Sulettaria surculosa* (K. Schum.) A.D. Poulsen & Martisen, *Geocharis rubra* Ridl., *Plagiostachys albiflora* Ridl., *Globba brachyanthera* K. Schum., *G. atrosanguinea* Teijsm. & Binn., *Zingiber acuminatum* Val. var. *borneense* R.M. Sm., *Etingera coccinea* (Bl.) Sakai & Nagam. and *Amomum* sp.

Traditional use: The fruits are eaten by animals.

Discussion

Morphologically, based on the inflorescence type, the genus *Sulettaria* can be divided into two informal groups. Group I – all the members that were previously treated under the genus *Amomum*. Most of the species in this group are characterised by erect inflorescence and with short or long stilt-rooted. While, Group II – all the members that were previously placed under the genus *Elettaria*. The key characteristic is long prostrate and creeping inflorescence. Therefore, on the field characteristic, the placement of Group I in the genus *Sulettaria* is still under deliberation although the previous studies [1] shows that this group closely related to *Sulettaria* group.

Corollary

The discovery of the new *Sulettaria* was fortuitous but indicates that there are still novelties to be encountered, at least for Zingiberaceae, within the Kuching Division, Sarawak, notwithstanding pass-encompassing studies. With the finding of this new species, the number of *Sulettaria* in Sarawak has now increased to 14 species.

Acknowledgement

The authors thank the Universiti Malaysia Sarawak (UNIMAS) and Sarawak Biodiversity Centre (SBC) for the facilities used during the project. We thank the Ministry of Energy and Natural Resources for funding part of this project (P23-09900 022 00010 505 20). Thanks also to the local guides of Kampung Bobak, Singai, who helped us during the fieldwork.

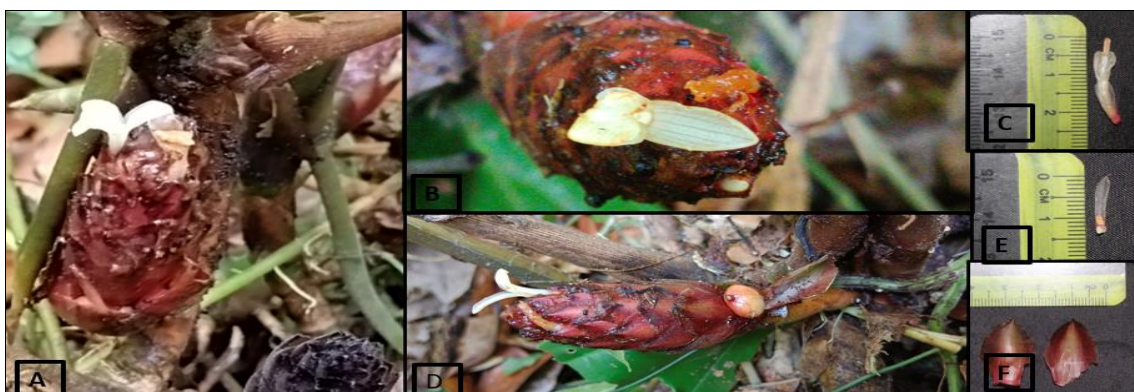


Fig 1: *Sulettaria meekiongii* Ripen & S.P. Teo. A. Inflorescence with flowers. B. Close up flower C. Close up of labellum and stamen D. Plant with unmaturing fruit. E. Ovary with calyx

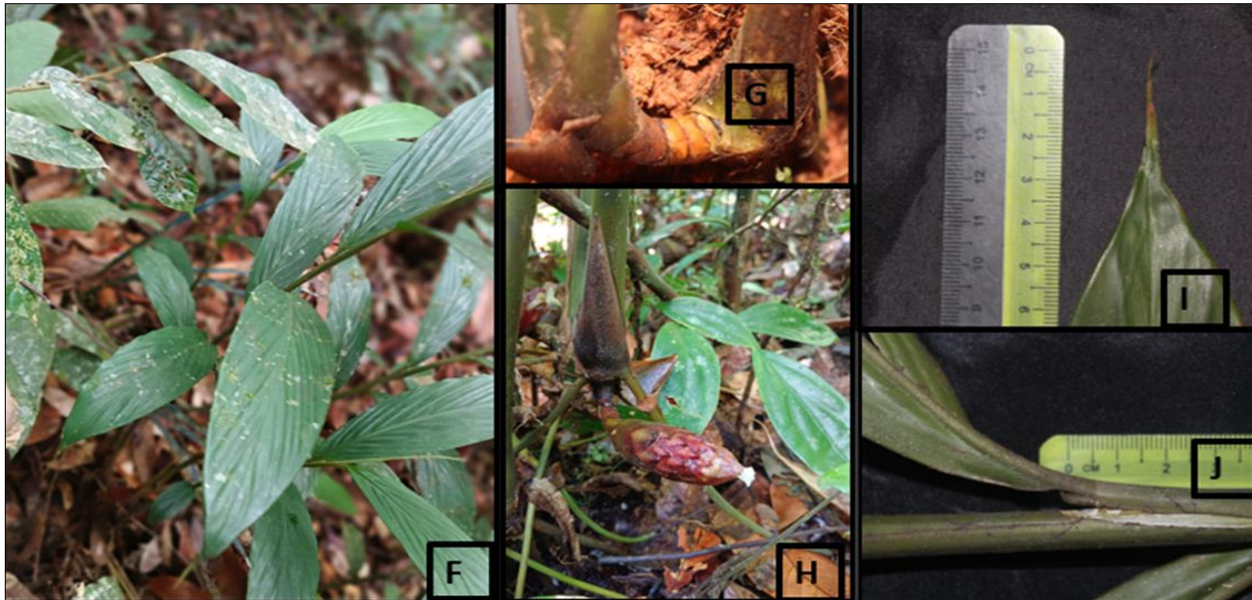


Fig 2: *Sulettaria meekiongii* Ripen & S.P. Teo. F. Whole plant. G. Rhizome. H. short stilt-rooted I. Ligule short. J. Apex acuminate

References

1. Poulsen AD, Mathisen BH, Newman MF, Ardiyani M, Lofthus O, Bjora C. *Sulettaria*: A new Ginger Genus Disjunct from *Elettaria cardamomum*. *Taxon*, 2018;67:725-738.
2. Lamb A, Gobilik J, Ardiyani M, Poulsen AD. A Guide to Gingers of Borneo. *Natural History Publications* (Borneo), Kota Kinabalu, Sabah, 2013.
3. Poulsen AD. Gingers of Sarawak. *Natural History Publications*, Kota Kinabalu, 2006.
4. Smith RM. *Alpinia* (Zingiberaceae): a proposed new infrageneric classification. *Edinburgh Journal of Botany*, 1990;47:1-75.
5. Meekiong K, Ipor IB, Tawan CS, Ibrahim H, Norhati MR, Lim CK *et al.* Few new ginger species (Zingiberaceae) from the eastern part of Lanjak Entimau Wildlife Sanctuary, Sarawak, Borneo. *Folia malaysiana*, 2011;12(1): 9-26.
6. Meekiong K, Teo SP. Zingiberaceae of Borneo. *Walinga, Kuching, Sarawak*, 2022.
7. Newman M, Lluillier A, Poulsen AD. Checklist of the Zingiberaceae of Malesia, *Blumea*, Suppl. 2004, 16.