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Research Article

Diversity of *Zingiber* Mill. (Zingiberaceae) in Peninsular Malaysia Including Short Remarks of an Undescribed Taxon

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ABSTRACT
Zingiber, a notable genus within the Zingiberaceae family, is widely distributed throughout Southeast Asia. It encompasses a total of at least 141 species on a global scale, with 25 native species and 30 known taxa identified specifically in Peninsular Malaysia. Of these known taxa, at least 7 are categorised as threatened, 5 are endemic, and the rest remain unassessed regarding their conservation status. This article provides a comprehensive checklist and taxonomic insights for all native *Zingiber* in Peninsular Malaysia. Remarkably, from the current fieldwork, the discovery of a peculiar *Zingiber* plant from the northern part of Peninsular Malaysia holds the potential to contribute additional records within this genus. Initially, this species resembles *Z. belumense* and *Z. purpureum* in their inflorescence colouration, displaying shades ranging from brownish maroon to dark purple with green bracts, but this newly proposed taxon stands out due to its combination of distinctive traits. An intriguing observation notes the presence of red sap when the leafy shoots were cut and needs further corroboration. This article establishes a provisional taxonomic designation for the newly discovered species, *Zingiber* sp. (Bahangense130). A comprehensive description supported by robust molecular phylogenetic evidence is currently underway, while brief notes and illustrative images of the proposed taxon are provided within this paper.

INTRODUCTION
Ginger has been exploited since ancient times in Chinese medication, Ayurvedic remedies, and even daily spices. It remains popular and recognised for its significance in potential health benefits, besides being a staple ingredient in many cuisines worldwide (Bhatt et al. 2013; Semwal et al. 2015; Dissanayake et al. 2020; Kumari et al. 2020) *Zingiber* Mill. was derived from the Sanskrit word *singabera* (Larsen et al. 1999). Locally known as *halia* in Malaysia and *jahe* in Indonesia, the genus *Zingiber* is prevalent among genera of the family Zingiberaceae, encompassing 141 species primarily in tropical and subtropical Asia. This principal and complex genus is categorised under the order Zingiberales with 53 genera and has more than 1200 species globally (Holttum 1950; Larsen et al. 1999; Kress et al. 2002; POWO 2023).

Peninsular Malaysia is rich and diverse with wild gingers (Holttum 1950). Earlier studies by pioneer researchers have provided decisive information on *Zingiber* in Peninsular Malaysia (Ridley 1924; Holttum 1950; Theilade 1996). In 1950, the genus *Zingiber* was revised by Holttum, who instigated the ambiguity of three complex species: *Z. gracile* Jack, *Z. griffithii* Baker, and *Z. puberulum* Ridl. (Holttum 1950). Forty-eight years later, Theilade raised varieties of *Z. gracile* to species rank: *Z. gracile* var. *aurantiacum* Holttum, *Z. gracile* var. *elatior* Ridl., and *Z. gracile* var. *petiolatum* Holttum, besides acknowledging a new taxon, namely *Z. fraseri* Theilade because of its arcuate leafy shoots (Holttum 1950). The latest study done in 2014 presented 6 new taxa while subsuming *Z. fraseri* Theilade under *Z. griffithii* var. *major* Holtt. and elevating *Z. besar* Lim & Meekiong to species status based on the morphological description (Lim & Meekiong 2014a). Nevertheless, after thoroughly investigating the correlated species, the authors retracted the previous classifications within the same year. *Zingiber fraseri* was then redetermined as *Z. besar* var. *fraseri* (Theilade) C.K.Lim & Meekiong (Lim & Meekiong 2014b). Consequently, *Z. besar* had been accepted as a synonym for *Z. fraseri* as the name was older than *Z. besar* (Govaerts 2016). Three established infraspecific names in the International Plant Names Index (IPNI) are *Z. fraseri* Theilade, *Z. fraseri* var. *major* (Ridl.) Govaerts, and *Z. fraseri* var. *nervifolium* (Meekiong and C.K.Lim) Govaerts.

Currently, 25 species with 30 taxa of *Zingiber* in Peninsular Malaysia have been identified and extensively distributed from southern to northern Peninsular Malaysia (POWO 2023; IPNI 2023). They dispersed at different elevations ranging from lowland and mid-mountain forest to upper montane forest (Holttum 1950; Theilade 1996; Lim & Meekiong 2014a; Lim & Meekiong 2014b). Meanwhile, some of the *Zingiber* species like *Z. longibracteatum* and *Z. chrysostachys* flourish well in the limestone hills in Perlis and Perak. Additionally, 11 species of *Zingiber* in Peninsular Malaysia are said to be overlap with those in Thailand (*Z. raja*, *Z. chrysostachys*, *Z. fraseri* var. *fraseri*, *Z. fraseri* var. *major*, *Z. longibracteatum*, *Z. multibracteatum*, *Z. petiolatum*, *Z. puberulum* var. *puberulum*, *Z. spectabile*, *Z. wrayi* var. *wrayi*, and *Z. wrayi* var. *halabala*) and one species with Myanmar (*Z. gracile*) (POWO 2023). The distribution patterns of the *Zingiber* species are influenced by a combination of ecological conditions, including soil nutrition, climate, and elevation since they share a biogeographical region (Ordonez et al. 2009).

This work offers insight into *Zingiber* in Peninsular Malaysia based on various published sources besides field observations and morphological examinations. Also, a potentially new taxon that resembles *Z. purpureum* Roscoe and *Z. belumense* C.K.Lim & Meekiong is described. Upon thorough examination, the inflorescence shape and the labellum vary. Furthermore, notable characteristics such as red sap were observed when the leafy shoots were cut, eventually making the species distinct among the *Zingiber* of Peninsular Malaysia.

MATERIALS AND METHODS

From September 2022 to September 2023, a series of fieldwork was primarily conducted at type localities of *Zingiber* in Peninsular Malaysia, including Penang, Pahang, Johor, and Perak. Fertile samples, representing plants bearing flowers and/or fruits, were meticulously collected for further analysis and preservation as herbarium specimens. Concurrently, sterile samples were also documented and collected as voucher specimens. Each type locality within forest reserves was constantly revisited following the flowering period of each taxon and precisely marked with

Global Positioning System (GPS) coordinates. However, for the newly proposed taxon, only the general area was stated in the paper (e.g., the mountain range's name), as we were concerned with its conservation status. Additionally, favourable sites for wild gingers, like humid, shady environments near streambanks and swampy areas in lowland forests and hilly slopes, were also observed. Nine specimens were collected from the wild, namely *Z. aurantiacum*, *Z. flaviflorum*, *Z. malaysianum*, *Z. griffithii*, *Z. gracile*, *Z. spectabile*, *Z. multibracteatum*, *Z. raja*, and *Zingiber* sp. (Bahangense130). The plant parts, including vegetative and floral parts, were examined and measured using a measuring tape. The floral parts, like the stigma and the surface of the ovary, were examined using a USB digital microscope (1000×) to observe the details. All collected specimens were identified and described morphologically.

Furthermore, all *Zingiber* species in Peninsular Malaysia were compared and identified from resources like the published protologues and studied herbarium specimens at the Forest Research Institute Malaysia (KEP). The conservation status of each *Zingiber* species was based on the IUCN Red List of Threatened Species (IUCN 2023). For herbarium specimens, collected samples were soaked in 70% ethanol, pressed, and dried in the oven at 50–60 °C for a week. They were then deposited in the herbarium of Universiti Tun Hussein Onn Malaysia.

RESULTS AND DISCUSSION

Zingiber of Peninsular Malaysia

Zingiber of Peninsular Malaysia prefers humid, shady environments; for instance, near creeks (*Z. griffithii*), riverbanks (*Z. raja*), and fresh swampy areas (*Z. puberulum*). Some of the *Zingiber* species, like *Z. malaysianum*, *Z. flaviflorum*, and *Z. multibracteatum* prosper in open ground with semi-shady environments. At the same time, *Z. gracile*, *Z. multibracteatum* and *Z. aurantiacum* are often found on hill slopes to steep hill slopes. Common *Zingiber* species such as *Z. spectabile* thrive at the roadsides of Fraser's Hill and along the pavements of the forest reserve in Taka Melor Eco Forest. Based on our observations in the wild, most *Zingiber* species in Peninsular Malaysia grow well in sandy loam soil, some with thick litter, but *Z. puberulum* thrives on rocks and peaty soil.

List of *Zingiber* in Peninsular Malaysia

A total of 25 species and 30 taxa of wild *Zingiber* in Peninsular Malaysia were described from 1950 to 2014 (Holttum 1950; Theilade 1996; Lim 2001; Lim 2003; Leong-Škorničková 2014; Lim & Meekiong 2014a; Lim & Meekiong 2014b). The data on the distribution, elevations, and conservation status of the genus *Zingiber* are tabulated in Table 1. Informative notes on each taxon are provided. A brief description of the probable new species, *Zingiber* sp. (Bahangense130) is also included.

Zingiber aurantiacum (Holttum) Theilade, Gard. Bull. Singapore 48: 232 (1996 publ. 1998)

Lectotype: Burkill & Holttum SFN. 8806. (SING). Peninsular Malaysia, Pahang, Fraser's Hill (Figure 1)

Distribution: Johor, Malacca, Negeri Sembilan, Pahang, Selangor

Description: See Holttum (1950), Theilade (1996), Lim (2003)

Notes: The Latin word *aurantiacum* means orange colour. The colour of the inflorescence bract is a discernible morphological characteristic of *Z. aurantiacum* species. The large plant, lengthy scape, and elongated ovoid inflorescence in orange with a green tinge at the apex of each bract, which matures to a reddish-pink hue, are distinguishing characteristics of

Table 1. Information of *Zingiber* in Peninsular Malaysia.

Species	Distribution	Elevations (m a.s.l)	IUCN Conservation status	Taxonomic Authority
Z. aurantiacum	PM	1,300 m	VU	(Holttum) Theilade
Z. angustifolium	PM	1,800 m	-	C.K.Lim & Meekiong
Z. belumense	PM	280 m	-	C.K.Lim & Meekiong
Z. chrysostachys	PT–PM	200–1,400 m	EN	Ridl.
Z. curtisii	PM–Perak		DD	Holttum
Z. elatius	PM–Penang	Up to 1,150 m	DD	(Ridl.) Theilade
Z. flaviflorum	PM	1,300 m	-	C.K.Lim & Meekiong
Z. fraseri var. *fraseri*	PT–PM	1,300 m	EN	Theilade
Z. *fraseri* var. *major*	PT–PM		-	(Ridl.) Govaerts
Z. fraseri var. *nervifolium*	PM		-	(Meekiong & C.K.Lim) Govaerts
Z. gracile	Myanmar–PM	30–450 m	DD	Jack
Z. griffithii	PM–Borneo	30–50 m	NT	Baker
Z. kelantanense	Unknown	200 m	-	C.K.Lim
Z. kunstleri	PM	150–950 m	LC	King ex Ridl.
Z. limianum	PM		-	Meekiong
Z. longibracteatum	PT–PM		-	Theilade
Z. malaysianum	PM		LC	C.K.Lim
Z. multibracteatum var. *multibracteatum*	PT–PM	1,300 m	NT	Holttum
Z. multibracteatum var. *viride*	PM–Pahang	1,800–2,000 m	-	Holttum
Z. nazrinii	PM		-	C.K.Lim and Meekiong
Z. petiolatum	PT–PM		VU	(Holttum) Theilade
Z. puberulum var. *chryseum*	PM–Johor		-	(Ridl.) Holttum
Z. puberulum var. *puberulum*	PT–PM	350 m	NT	Ridl.
Z. raja	PT–PM	250 m	EN	C.K.Lim & Kharukanant
Z. sabun	PM		-	C.K.Lim
Z. sulphureum	PM–Pahang		EN	Burkill ex Theilade
Z. spectabile	PT–PM	Up to 1,000 m	DD	Griffith
Z. wrayi var. *halabala*	T–PM		-	C.K.Lim
Z. wrayi var. *wrayi*	T–PM		EN	(Prain ex Ridl.) Ridl
Z. zerumbet	Tropical, subtropical Asia		DD	(L.) Roscoe ex. Sm.
Zingiber sp. (Bahangense130)	PM–Penang	114 m	-	Aimi Syazana & Salasiah

PM: Peninsular Malaysia, PT: Peninsular Thailand, T: Thailand, VU: Vulnerable, EN: Endangered, DD: Data Deficient, NT: Near Threatened, LC: Least Concern

this species. The identification of this species is facilitated by the prominent pulvinus, pale maroon-suffused ligule, and sheath. Initially classified alongside *Z. aurantiacum* as a variety of *Z. gracile*, Holttum failed to specify the type locality (Holttum 1950). Theilade subsequently selected the lectotype of *Z. aurantiacum* from Fraser's Hill (Theilade 1996). Based on observation, *Z. aurantiacum* is commonly found in Fraser's Hill. Furthermore, the pungent aromatic odour emitted upon crushing the leaves is a notable characteristic that sets it apart from related species such as *Z. petiolatum*, *Z. gracile*, and *Z. kelantanense*. *Zingiber aurantiacum* is classified as a montane plant due to its exclusive occurrence in higher montane regions. Based on the IUCN Red List of Threatened Species, this species is categorised as Vulnerable (VU) (criterion: B2ab(iii)) and the population trend is decreasing (Table 1).

Figure 1. *Zingiber aurantiacum*. (a) The inflorescence of *Z. aurantiacum* during the flowering period. (b) The inflorescence of *Z. aurantiacum* turns pink when it is fruiting. (c) The leaf sheath of *Z. aurantiacum* can be differentiated by the purple spots at the ligule and the sheath. (d–e) The habitat of *Z. aurantiacum* in Fraser's Hill.

Zingiber angustifolium C.K.Lim & Meekiong, Folia Malaysiana 15: 32 (2014)

Holotype: C.K. Lim L12417. (UKMB). Peninsular Malaysia, Negeri Sembilan, Gunung Berembun, 7th June 2014

Distribution: Johor, Malacca, Negeri Sembilan, Pahang, Selangor

Description: See Lim and Meekiong (2014a)
Notes: The terminology pertains to the unique, slender, and linear leaflets. The species' characteristic is comparable to that of other *Zingiber* species, including *Z. raja* and *Z. petiolatum*, in terms of their tall size distinguished by their unscented foliage and unicostate leaves. Moreover, the inflorescence resembles that of *Z. raja*; however, the flower distinguishes itself through its white coloration—in contrast to *Z. raja*, which possesses purple speckles along the labellum. Thus far, *Z. angustifolium* has been observed inhabiting verdant forests close to mountain peaks, where it grows sympatrically with wild ginger species such as *Alpinia scabra* and *Meistera ochrea* (Lim & Meekiong 2014a).

Zingiber belumense C.K.Lim & Meekiong, Folia Malaysiana 15: 26 (2014)
Holotype: C.K. Lim L12590. (UKMB). Peninsular Malaysia, Perak, Belum ("Titiwangsa Highpoint")
Distribution: Perak, Belum ("Titiwangsa Highpoint")
Description: See Lim and Meekiong (2014a)
Notes: The name signifies the type locality, Belum Forest Reserve, where this species is exclusively found. Therefore, *Z. belumense* is regarded as both unique and susceptible. This tiny ginger is distinguished by its slender fusiform inflorescence, comprising light cream flowers and brilliant green bracts that mature to dark brown or red. Observations revealed that this species exhibited more robust, 3 m-tall plants with arcuate leafy shoots. Notably, this species inhabits the slopes of bamboo forests and is sympatric with *Alpinia* species and *Z. multibracteatum* (type: Fraser's Hill, hilly slope), which are uncommonly observed in gingers. In addition, it is worth noting that the Titiwangsa Highpoint serves as the type locality for both *Iguanura belumensis* C.K.Lim and *Geostachys belumensis* C.K.Lim (Lim & Meekiong 2014a).

Zingiber chrysostachys Ridl., J. Straits Branch Roy. Asiat. Soc. 32: 129 (1899)
Lectotype: Ridley 19960. (SING). Peninsular Malaysia, Perak, Gerik
Distribution: Kedah, Perak
Description: See Holttum (1950), Theilade (1996)
Notes: Vegetatively, *Z. chrysostachys* is closely related to *Z. curtisii*. On the contrary, the inflorescence resembles the cultivated species *Z. ottensii* and *Z. spectabile* due to its inflexed bracts and red speckles on its labellum. However, in contrast to closely related species, *Z. chrysostachys* is a remarkably tiny plant and is the only small species with inflexed bract characteristics. The yellow inflorescence of *Z. chrysostachys* features in complete contrast to its purple peduncle. In terms of identification, the diagnostic characters are beneficial. This species thrives at mid-elevations in secondary and dry bamboo forests on limestone slopes in Perak and Kedah. *Z. chrysostachys* leaves, known as *lampoyang* or *lempui*, are historically used by Malay traditional healers to treat fever (Holttum 1950; Theilade 1996). Despite that, this Endangered (EN) species (criterion: B2ab (iii)) population is decreasing. The species is threatened by logging and harvesting as the young inflorescence is consumed as food (Table 1) (Ragsasilp et al. 2022; IUCN 2023).

Zingiber curtisii Holttum, Gard. Bull. Singapore 13: 54 (1950)
Lectotype: Ridley 19960. (SING). Peninsular Malaysia, Perak, Gerik
Distribution: Kedah, Perak
Description: See Holttum (1950), Theilade (1996)

Notes: The sterile plant of this species resembles that of *Z. chrysostachys* in appearance. However, the inflorescence grows longer and slenderer. The inflorescence bract is notably conspicuous due to its pale yellow-green colouration and a minor inflexion at its apex. In addition, the labellum and sidelobes of *Z. curtisii* are intricately patterned in a deep purple hue. In contrast, the anthers exhibit a profound purple hue (Holttum 1950; Theilade 1996). *Zingiber curtisii* population is stable and categorised as Data Deficient (DD) (Table 1).

Zingiber elatius (Ridl.) Theilade, Gard. Bull. Singapore 48: 227 (1998)
Lectotype: Ridley 9340. (K) [barcode K000255246], Peninsular Malaysia, Penang
Distribution: Johor, Penang, Perak, Selangor
Description: See Holttum (1950), Theilade (1996)
Notes: Initially, the species name *Z. elatius* was published as *Z. gracile* var. *elatior* or *Z. elatior*, both of which contained an erroneous grammatical Latin termination. Following the International Code of Nomenclature for Plants, Fungi, and Algae (ICN), the name was subsequently changed to *Z. elatius* (Leong-Škorničková 2014). Theilade (1996) stated that the specimen collection was deposited at SING; however, a comprehensive manual search of the Zingiberaceae collection and the Zingiberaceae type collection at SING yielded no trace of this specimen ever being included in the collection. A specimen that matched Ridley's initial description was discovered at the Kew Herbarium; it had been collected in Penang and possessed comparable morphological characteristics. The new lectotype is, therefore, designated by the barcode [K000255246] (Lim & Meekiong 2014a). *Zingiber elatius* is distinguished by its linear leaves and orange to red bracts slender fusiform inflorescence. According to the IUCN, *Z. elatius* is Data Deficient (DD) and the population trend is unknown (Table 1).

Zingiber flaviflorum C.K.Lim & Meekiong, Folia Malaysiana 15: 37 (2014)
Holotype: C.K. Lim L12539 (UKMB). Peninsular Malaysia, Pahang, Fraser's Hill (Figure 2)
Distribution: Common along the trail in Fraser's Hill
Description: See Lim and Meekiong (2014a)
Notes: *Flaviflorum* means yellow in Latin. The epithet denotes the flowers' pale yellow to light cream hue. The leaves emit a potent aroma and fragrance upon being crushed. In contrast to *Z. gracile*, this species is distinguished by its broader inflorescence, which features a yellow to light yellow flower and glossy green foliage. The inflorescence emerges from the base and the bract changes colour from green to pale pinkish as it ages to vibrant pink. Currently, documentation of *Z. flaviflorum* is limited to Fraser's Hill, suggesting the potential necessity for comprehensive monitoring and protection.

Zingiber fraseri var. *fraseri* Theilade, Gard. Bull. Singapore 48: 214 (1996 publ. 1998)
Holotype: Theilade 12 (AAU). Peninsular Malaysia, Pahang, Fraser's Hill
Distribution: Common along the trail in Fraser's Hill
Description: See Theilade (1996)
Notes: Lim and Meekiong (2014a) subsume *Z. fraseri* under *Z. griffithii* var. *major* and upgraded to a new name as *Z. besar* C.K. Lim & Meekiong. Following a comprehensive analysis of this species, Lim and Meekiong (2014b) reinstated the nomenclature *Z. fraseri* to designate a specific vari-

ety of *Z. besar* known as *Z. besar* var. *fraseri*. Later, Govaerts (2016) rectified this superfluous designation. The utilised variety name predates *Z. besar*; therefore, the correct names should be recombined under *Z. fraseri*. The International Plant Names Index (IPNI) lists three accepted infraspecific names: *Z. fraseri*, *Z. fraseri* var. *major*, and *Z. fraseri* var. *nervifolium*. The bract of the inflorescence is bright red (Theilade 1996), but no flowers were present at the time of collection. Although this species is related to *Z. griffithii*, its ovoid inflorescence and tapering pointed apex distinguish it. *Zingiber fraseri* has common characteristics of the genus *Zingiber* in Peninsular Malaysia, which possesses arcuate leafy shoots. Based on our research findings (the survey was carried out during the same month that Theilade conducted collection activities), the pointed apex inflorescence of *Z.* aff. *fraseri* suggests a possible close relationship with *Z. flaviflorum*. Additionally, the bract pigmentation resembles that of aged *Z. flaviflorum*. Nonetheless, a comprehensive investigation, including molecular analysis, is required. This species is native to Peninsular Malaysia. *Zingiber fraseri* has been assessed as an Endangered (EN) species (criteria: B1ab (iii) + 2ab (iii)), and the population trend for this species is decreasing (Table 1).

Figure 2. *Zingiber flaviflorum*. (a–d) Stages of blooming inflorescence starting at the end of May until the end of July. (e) Procumbent and erect habit of *Z. flaviflorum*. (f) Close-up of *Z. flaviflorum* flower. (g) Tall leafy stems of *Z. flaviflorum* in Fraser's Hill on open ground.

Zingiber fraseri var. *major* (Ridl.) Govaerts, Taiwania 61: 270 (2016)
Holotype: Ridley. (SING). Peninsular Malaysia, Pahang, River Tahan
Distribution: Peninsular Thailand to Peninsular Malaysia
Description: See Holttum (1950)
Notes: This variety has been collected in Pahang with a less hairy character, a short scape, and a short ovoid inflorescence with a rounded apex.

Zingiber fraseri var. *nervifolium* (Meekiong & C.K.Lim) Govaerts, Taiwania 61: 270 (2016)
Holotype: C.K. Lim L12903. (UKMB). Peninsular Malaysia, Pahang, Janda Baik
Distribution: Bukit Tinggi
Description: See Lim and Meekiong (2014b)
Notes: The epithet denotes the characteristics of the veined leaves. This species is predominantly observed in open areas and have been spotted in Terengganu, indicating a broader distribution. Furthermore, a distinguishing characteristic of *Z. fraseri* var. *nervifolium* over *Z. besar* is the lack of aroma (Lim & Meekiong 2014b). So far, these species have yet to be collected since the first encounter.

Zingiber gracile Jack, Malayan Misc. 1(1): 1 (1820)
Holotype: Curtis 075425. (SING). Peninsular Malaysia, Penang (Figure 3)
Distribution: Peninsular Malaysia and Myanmar
Description: See Holttum (1950) and Theilade (1996)
Notes: Based on the expansive investigation, *Z. gracile* has a distinct thin, scarious ligule, lanceolate leaves, a short spike, and a scape. Known as a small plant, *Z. gracile* can grow up to 3 m like other taller *Zingiber* species in Peninsular Malaysia, such as *Z. spectabile*. There are ambiguous specimens in the herbaria since many samples clustered under *Z. gracile* do not have those ligule characteristics. Additionally, there is another specimen awaiting examination that we believe is grouped within the *Z. gracile* complex, as it has a long and thin ligule. However, more specimens need to be collected to refine the classifications. The conservation status of *Z. gracile* is Data Deficient (DD) and its population trend is unknown (Table 1).

Zingiber griffithii Baker, J.D.Hooker, Fl. Brit. India 6: 246 (1892)
Holotype: Griffith 5731. (K) Peninsular Malaysia, Melaka (Figure 3)
Distribution: Peninsular Malaysia, Borneo
Description: See Holttum (1950) and Theilade (1996)
Notes: *Zingiber griffithii* thrives well in shady environments near small streams in humid conditions. Comparatively, the leaves of this species are broader and feature finely raised veins, in contrast to related species such as *Z. gracile* and *Z. puberulum*. Furthermore, compared to *Z. puberulum* and *Z. gracile*, the inflorescence bract of *Z. griffithii* is pink and considerably less robust (not tightly imbricated bract, pulpy). This characteristic distinguishes *Z. griffithii* among the *Zingiber* species found in Peninsular Malaysia. As stated in the herbarium specimen, the roots of *Z. griffithii* are used to quicken delayed childbirth. *Zingiber griffithii* is Near Threatened (NT) (criterion: B2b (iii)) and the population trend is decreasing (Table 1). Thus, it is crucial to protect and conserve the species.

Zingiber kelantanense C.K.Lim
Holotype: C.K. Lim L6206. (KEP). Peninsular Malaysia, Kelantan
Distribution: Peninsular Thailand, Peninsular Malaysia (Kelantan)

Description: See Lim (2003)
Notes: In 2003, C.K. Lim published a description of *Zingiber kelantanense* in which he enumerated all four closely related *Zingiber* taxa from Malaysia and Thailand. Despite a thorough manual examination of every *Zingiber* specimen in Peninsular Malaysia, the holotype L6206 for *Z. kelantanense* in KEP remains unlocated. Fresh living specimens need to be collected and further corroborated. This species resembles *Z. aurantiacum* and *Z. petiolatum*; however, in addition to its longer petiole and ligule, it possesses a lamina with conspicuous veins. At present, *Z. kelantanense* is exclusively observed in its type locality, Kelantan. Additionally, this species lacks a pungent odour (Lim 2003).

Zingiber kunstleri King ex Ridl., J. Straits Branch Roy. Asiat. Soc. 32: 127 (1899)
Holotype: Ridley 11449. (SING). Peninsular Malaysia, Perak, Taiping
Distribution: Peninsular Malaysia (Pahang, Perak, Terengganu)
Description: See Holttum (1950) and Theilade (1996)
Notes: It has been suggested that *Z. kunstleri* and *Z. wrayi* are closely related due to their deflexed inflorescence bracts. On the other hand, *Z. kunstleri* has lanceolate to linear leaves and a significantly larger inflorescence than *Z. wrayi*. Slashed rhizomes exhibit a distinctive purplish-lilac hue. This attribute could serve as a diagnostic feature for species identification. Holttum (1950) stated that *Z. kunstleri* labellum is a distinct shade of reddish brown, setting it apart from other *Zingiber* species found in Peninsular Malaysia. Ridley's description of *Z. kunstleri* was predicated upon Kunstler's field notes and drawings. The labellum, however, almost certainly requires correction. Most herbarium specimens have identical labellum as *Z. wrayi*: a yellow patch with a purple spot. Nevertheless, only two specimens exhibited the purple rhizome characteristic of *Z. kunstleri*; no flower description was provided. Therefore, a substantial amount of fieldwork focusing on its type locality is crucial and currently being conducted with thorough examinations on morphology and phylogenetic analysis to resolve the uncertainties of this species. *Zingiber kunstleri* is considered Least Concern (LC) and the population trend is stable (Table 1).

Zingiber limianum Meekiong, Folia Malaysiana 15: 20 (2014)
Holotype: C.K.Lim L12460. (UKMB). Peninsular Malaysia, Pahang, Bukit Tinggi
Distribution: So far, the species can only be found at the type locality. This species may be considered endemic to Bukit Tinggi.
Description: See Lim and Meekiong (2014b)
Notes: The epithet honours Datuk Seri Lim Chong Keat, whose pioneering efforts in biodiversity conservation established the population. *Zingiber limianum* is classified as a rare and endangered species due to its restricted distribution in the type locality, necessitating extensive monitoring and preservation. This species is distinguished by its ovate, dark-green, leathery adaxial leaves, which are maroon in colouration. The inflorescence bracts of this species are pink, yellow, and dark brown, and its flowers are bright yellow. Although they are comparable in appearance, *Z. limianum* and *Z. malaysianum* are easily differentiated due to their distinct leaf and inflorescence characteristics.

Zingiber longibracteatum Theilade, Nordic J. Bot. 19: 408 (1999)
Holotype: Maxwell 75-878. (AAU). Thailand, Peninsular region, Trang province

Distribution: Thailand and Peninsular Malaysia
Description: See Theilade (1999) and Lim (2001)
Notes: Its purple labellum and upright leafy shoots resemble those of the Thai *Zingiber* species *Z. newmanii*. However, it is distinguished by its longer bracts and bracteoles, longer crimson ligules, larger leaves ornamented with silky hairs beneath, and shorter inflorescence featuring the same colouration. This species is unique by not having the overlapping inflorescence bract for the genus *Zingiber* but being stipitate. The conservation status of *Z. longibracteatum* is Vulnerable (VU) (criterion: B2ab (iii)) while the population trend is decreasing (Table 1).

Figure 3. *Zingiber gracile* and *Z. griffithii*. (a–b) Leafy stems of *Z. gracile* besides the distinctive thin, scarious ligule. (c) Clump of *Z. griffithii* with adaxial raised veins. (d–f) Pink pulpy inflorescence of *Z. griffithii* near small streams.

Zingiber malaysianum C.K.Lim, Folia Malaysiana 3: 27 (2002)
Holotype: C.K.Lim L2843. (KEP). Peninsular Malaysia, Johor, Labis (Figure 4)
Distribution: Peninsular Malaysia (Johor)
Description: See Lim (2002)
Notes: Peninsular Malaysia is home to the rare *Z. malaysianum*, which has distinctively pale green rachis and reddish brown or liver-coloured foli-

age. However, due to its characteristics, it can be easily overlooked in shady forests. The inflorescence resembles that of *Z. citrinum* Ridl. (a *Z. griffithii* complex often seen in the Johor region) and is frequently yellow before turning pink. The inflorescence bract varies consistently between yellow, pink, and red. As per our observations, a limited population was identified within the restricted region of Labis Forest Reserve. Due to the recent deluge, certain *Z. malaysianum* plants were rendered nonviable in Bekok, Johor. Additionally, *S. klossii* var. *glomerata* and other *Zingiber* sp. are sympatric with *Z. malaysianum*; they are found in sandy loam with leaf litter. The IUCN classifies this species as Least Concern (LC) due to its stable population trend (Table 1).

Zingiber multibracteatum var. *multibracteatum* Holttum, Gard. Bull. Singapore 13: 57 (1950)

Holotype: Corner. SFN 33174. (SING). Peninsular Malaysia, Pahang, Fraser's Hill (Figure 4)

Distribution: Peninsular Malaysia (Kelantan, Pahang, Perak)

Description: See Holttum (1950) and Theilade (1996)

Notes: According to our observations, *Z. multibracteatum* is frequently observed on steep slopes in open ground. The species' height could be up to 3 m tall, and it is considered a large montane plant for the genus *Zingiber*. Vegetatively, *Z. multibracteatum* looks similar to *Z. puberulum* by its brownish velutinus leaf sheath but differs by its inflorescence besides labellum, which is closely similar to *Z. spectabile*. *Zingiber multibracteatum* is differentiated by its broad ovoid and dark maroon inflorescence, distinct velutinus petiole and ligule, and large flowers featuring labella speckled with purple cream. The fruit of *Z. multibracteatum* is in capsule and ovoid shape with three locules. Interestingly, the seeds are pink and can be seen from the outer part of the fruit. The conservation status of *Z. multibracteatum* is Near Threatened (NT), but the population trend is unknown (Table 1).

Figure 4. *Zingiber malaysianum* and *Z. multibracteatum* var. *multibracteatum*. (a–b) Unique raised veins leaves and reddish brown foliage *of Z. malaysianum*. (c–d) Inflorescence of *Z. multibracteatum* during fruiting. (e) Habitat of *Z. multibracteatum* in an open ground. (f) Notable brown velutinus leaf sheath of *Z. multibracteatum*.

Zingiber multibracteatum var. *viride* Holttum, Gard. Bull. Singapore 13: 58 (1950)
Holotype: Holttum 19967. (SING). Peninsular Malaysia, Cameron Highlands, Tanah Rata
Distribution: Peninsular Malaysia (Pahang)
Description: See Holttum (1950) and Theilade (1996)
Notes: *Z. multibracteatum* var. *viride* shares the majority of morphological attributes with *Z. multibracteatum* var. *multibracteatum*, which is found in Fraser's Hill, except for a few features, including broader leaves and cylindrical inflorescence. Concurrently, the inflorescence bract is light green and subtly broad, starkly contrasting with that of *Z. multibracteatum* var. *multibracteatum*. Both of these species flourish in the elevated montane forest environment.

Zingiber nazrinii C.K.Lim & Meekiong, Folia Malaysiana 15: 31 (2014)
Holotype: C.K.Lim L12483. (UKMB). Peninsular Malaysia, Perak, Bubu Forest Reserve
Distribution: Peninsular Malaysia, Perak
Description: See Lim and Meekiong (2014a)
Notes: *Zingiber nazrinii*'s incurved and pouchy bracts are comparable to the more substantial and elongated montane plant *Z. multibracteatum*. However, this particular species is distinguished by its white or creamy flower, unlike *Z. spectabile* and *Z. multibracteatum*, which have yellow-purple patches on their labellum. In addition, this diminutive ginger has broad, ovate leaves that are conspicuously veined, and shoots and leaf sheaths that are frequently hairy. Its inflorescence ranges from green to pink, and its cuspidate bracts are convex. This species from Perak thrives in moist environments near small streams and frequently shares its habitat with *Globba leucantha* and *Iguanura wallichiana* var. *major*. *Zingiber nazrinii* is not classified as a rare species due to its distribution in various regions of Perak, including Sg. Kejar and Royal Belum (Lim & Meekiong 2014a).

Zingiber petiolatum (Holttum) Theilade, Gard. Bull. Singapore, 13:63 (1950)
Holotype: Corner. SFN 31570. (SING). Peninsular Malaysia, Kedah
Distribution: Peninsular Thailand to Peninsular Malaysia
Description: See Holttum (1950) and Theilade (1996)
Notes: Certain distinguishing features set *Z. petiolatum* apart from *Z. aurantiacum*, including its classification as a higher montane plant for the latter. Our observations indicate that the leaf sheath of *Z. aurantiacum* is frequently purplish. In contrast, the foliage is glossier but has reduced rigidity compared to *Z. petiolatum*. In addition, *Z. aurantiacum* possesses a potent fragrance, whereas *Z. petiolatum* lacks any discernible aroma (Lim 2003). The name *petiolatum* may be misconstrued since numerous herbarium specimens are subsessile, even though the epithet refers to the species' longer petioles. Numerous samples with long petioles and ligules are classified under other taxa. *Zingiber petiolatum* is Vulnerable (VU) (criteria: B1ab(iii) +2ab(iii)), and the population trend is decreasing (Table 1).

Zingiber puberulum var. *chryseum* (Ridl.) Holttum, Gard. Bull. Singapore, 13:63, (1950)
Holotype: Ridley. 1330. (SING). Singapore, Stagmount
Distribution: Peninsular Malaysia (Pahang) and Singapore
Description: See Holttum (1950) and Theilade (1996)

Notes: Since its initial assemblage in 1908, *Z. puberulum* var. *chryseum* has remained undiscovered. It is said that its type locality in Singapore has been destroyed and burned for development one year after collection. This particular variety can be distinguished by the yellow colouration of the inflorescence bract, as opposed to the pink colour observed in *Z. puberulum* var. *puberulum*. The inflorescence, shape, and leaf dimensions are all comparable to those of *Z. puberulum*, except for the pale yellow inflorescence bract and the glabrous plant. Nevertheless, despite these two characteristics showing assurance, it is worth noting that the genus *Zingiber* in Peninsular Malaysia exhibits a colour variation (from yellow to pink as it ages). Moreover, ambiguity may result from establishing the variety without providing a comprehensive description, which should include essential features such as the labellum, dorsal corolla lobe, lateral corolla lobe, and even the vegetative parts. Consequently, further extensive investigation is required for this particular species.

Zingiber puberulum var. *puberulum* Holttum, J. Straits Branch Roy. Asiat. Soc. 32: 130 (1899)
Holotype: Ridley. SN. 1894. (K). Singapore, Bukit Timah
Distribution: Peninsular Thailand, Peninsular Malaysia (Penang, Perak, Terengganu, Pahang, Selangor, Johor)
Description: See Holttum (1950) and Theilade (1996)
Notes: Ridley recognises *Z. puberulum* within the Bukit Timah Forest Reserve. Although this species is closely related to *Z. griffithii* and *Z. petiolatum*, its larger leaves, smaller inflorescence, velutinus leaf sheath, and ligules distinguish it. In contrast, *Z. puberulum* var. *puberulum* has a diverse indumentum, and the ligule and leaf sheath are always hairy. Besides *Z. puberulum*, *Z. multibracteatum* also has the velutinus characteristic on the leafy sheath. However, *Z. puberulum* is often mistakenly identified since it has a prevalent characteristic of *Zingiber* in Peninsular Malaysia: a pink inflorescence. Therefore, all crucial parts need to be considered when examining the specimens. The conservation status of *Z. puberulum* is Near Threatened (NT) (criterion: B2b (iii)) with decreasing population trend (Table 1).

Zingiber raja C.K.Lim & B.Kharukanant, Folia Malaysiana 4: 69 (2003)
Holotype: C.K.Lim L6371. (KEP). Peninsular Malaysia, Perak, Belum Forest Reserve (Figure 5)
Distribution: Peninsular Thailand to Peninsular Malaysia
Description: See Lim (2003)
Notes: The epithet *raja* (king) is derived from the inflorescence, which is conspicuously erect and typically more prominent than the more common *Zingiber*. It is, therefore, referred to as the King of *Zingibers*. Furthermore, the designation of Upper Belum as an integral element of Royal Belum by Sultan Perak renders the name doubly appropriate (Lim & Meekiong 2014a). *Zingiber raja* is distinguished by its inflorescence being both more extensive and taller with orange-pinkish inflorescence bract; additionally, the flower is exquisitely designed with purple-yellow patches. Currently, *Z. raja* is confined to restricted regions in Malaysia, including Belum and Temenggor. This species flourishes in moist environments, amid streams, and on rocks. It is Endangered (EN) (criterion: B1ab (iii) + 2ab(iii)) and the population trend is decreasing (Table 1).

Zingiber sabun C.K.Lim, Folia Malaysiana 15: 25 (2014)
Holotype: C.K.Lim L12575. Peninsular Malaysia, Kedah, Bukit Palong
Distribution: Peninsular Malaysia (Perak)

Description: See Lim and Meekiong (2014a)
Notes: The epithet is the Malay word for soap since it emits a distinctive and recognisable scent. *Zingiber sabun* can be distinguished by the undulated or wrinkled leaves besides the colouration of the labellum, tinged with purple dots. It is further separated from other species by its distinctive property: the soap smell when the leaves are crushed. Additionally, the inflorescence's spike-like fusiform shape differs significantly from the other *Zingiber* found in Peninsular Malaysia.

Zingiber sulphureum Burkill ex Theilade, Bot. Mag. 12: 75 (1995)
Holotype: Haniff & Nur. SNF 8016. (K). Peninsular Malaysia, Pahang, Gunung Tahan
Distribution: Peninsular Malaysia (Gunung Senyum, Fraser's Hill)
Description: See Holttum (1950) and Theilade (1996)
Notes: Burkill used the epithet *sulphureum* to refer to the herbarium specimen, SNF 8016. This small ginger plant has ovate leaves similar to *Z. griffithii*, a tiny flower with sulphur-yellow bracts and a short calyx. It can be found at elevations between 50 and 1200 m a.s.l. in lowland forests and limestone hills. *Zingiber sulphureum* has been classified as Endangered (EN) with decreasing population trend (criterion: B1ab(iii) + 2 ab(iii)) (Table 1).

Zingiber spectabile Griffith., Not. Pl. Asiat. 3: 413 (1851)
Holotype: Griffith. 5762. (K). Peninsular Malaysia, Melaka (Figure 5)
Distribution: Peninsular Thailand and Peninsular Malaysia
Description: See Holttum (1950) and Theilade (1996)
Notes: The most widespread species of the genus *Zingiber* is *Zingiber spectabile*. It can be discovered in disturbed areas along pavements, roadsides, and trails up to 1,000 m a.s.l. Although this species may have a similar appearance to *Z. ottensii*, its distinctive features include an orange inflorescence with incurved bracts that form open pouches and a dark purple labellum speckled with yellow. At present, this is the largest Malayan *Zingiber* species. *Meistera ochrea* is found within the same area as *Z. spectabile* along the pavements to the Taka Melor waterfall. Based on the observation, the flowers of *Z. spectabile* open at 11 a.m. Locally known as *tepus tanah* or *bihip* in Indonesia, the pounded leaves of this handsome species can be used topically to treat burns. Besides, the water from the inflorescence can be dropped into infected eyes (Sharifi-Rad et al. 2017). *Zingiber spectabile* is classified as Data Deficient (DD) and the population trend is unknown (Table 1).

Zingiber wrayi var. *halabala* C.K.Lim, Folia Malaysiana 2: 50 (2001)
Holotype: Md. Nur 18569. (SING). Peninsular Malaysia, Pahang, Pulau Tioman
Distribution: Peninsular Thailand to Peninsular Malaysia (Perak, Kelantan, Terengganu, Pahang)
Description: See Lim (2003)
Notes: The holotype was chosen to commemorate one of Mohd Nur's initial specimens from Pulau Tioman's southernmost known position. The inside of the rhizome is creamy white and tastes sweet. The species' leaves and leafy stems have a strong anise scent. Compared to *Z. kunstleri*, both types of *Z. wrayi* exhibit procumbent and diminutive inflorescences. Uniquely, the inflorescence bract's colour varies, frequently being a dark coral red with decurved apices. Some plants also have inflexed bracts, but the ones in Halabala Forest Reserve have deflexed bracts (Lim 2003).

Figure 5. *Zingiber raja* and *Zingiber spectabile*. (a) The striking inflorescence and flower of *Z. raja*. (b) The habitat of *Z. raja* in Royal Belum. (c) Flower of *Z. spectabile* (sideview). (d) The inflorescence of *Z. spectabile* found at Taka Melor Eco Forest. € Close-up *Z. spectabile* flower, purple labellum with yellow speckles, arching stigma with cilia. (f) Arcuate leaf sheath of *Z. spectabile*.

Zingiber wrayi var. *wrayi* Prain ex Ridley, J. Straits Branch Roy. Asiat. Soc. 41: 31 (1904)
Holotype: Wray. 3735. (SING). Peninsular Malaysia, Perak, Upper Perak
Distribution: Peninsular Thailand to Peninsular Malaysia (Perak–Piah Forest Reserve)
Description: See Holttum (1950) and Theilade (1996)
Notes: The species can easily be identified because of the deflexed bracts and large leaves. Compared to *Z. kunstleri*, *Z. wrayi* is more petite, and its leaves are broader. This variety is reported to lack an anise aroma. Compared to *Z. wrayi* var. *halabala*, which has a sweet taste, and distinctly anise-scented leaves and stems, the rhizome of the species is scentless. In Thailand, the bract is more frequently curled outwards; in Malaysia, the bracts are inflexed with a pointy or sharp tip. The conservation status of *Z. wrayi* is Endangered (EN) with a decreasing population trend (Table 1).

Zingiber zerumbet (L.) Roscoe ex Sm., Exot. Bot. 2: 105 (1806)
Holotype: BRI-AQ0118904. (BRI)
Distribution: Cultivated in India, China, and throughout Southeast Asia
Description: See Holttum (1950) and Theilade (1996)

Notes: *Zingiber zerumbet* is widely cultivated in Peninsular Malaysia. It is closely related to *Z. ottensii*, but the bracts are green and the labellum is lemon yellow without any speckles. Traditionally, ripe noni (*Morinda citrifolia* L.) fruit and powdered *Z. zerumbet* rhizomes have been used to treat severe sprains. Water infused with powdered and filtered rhizome material is drunk to treat stomach ache, and the cooked and softened rhizome has been used to treat toothaches or cavities by pushing it into the hollow and leaving it there for however long as necessary (Sharifi-Rad et al. 2017). *Zingiber zerumbet* is categorised as Data Deficient (DD) and the population is still unknown (Table 1).

The undescribed taxon from Teluk Bahang, Penang

During the fieldwork at the type locality of *Z. gracile*, the first author encountered a new taxon blooming well along the trails on the slope in Teluk Bahang. At first glance, this unique taxon looked similar to *Z. purpureum* and *Z. belumense* However, a new taxon was proposed after a thorough examination based on the vegetative and reproductive parts of living specimens. Additionally, after consulting the collector (C.K. Lim, pers. comm.), it was clear that the new taxon differs from the related species. The examination was also based on high-quality digital images of herbarium specimens from AAU, K, and RBGE database.

Interestingly, many individuals of this taxon were observed in Penang Hill as well. The description and comparison with related species are presented in Table 2. A detailed description and complete information about this species will be accessible in the upcoming publication.

Zingiber sp. (Bahangense130) Aimi Syazana & Salasiah

Holotype: Aimi Syazana, AS0130 (UTHM). Peninsular Malaysia, Penang, Teluk Bahang, 2nd August 2023 (Figure 6)

Distribution: Penang Hill

Description: Perennial rhizomatous herb, 2.8–3.0 m tall. Leaf sheaths long trailing arching downward, pseudostem green, pubescent; ligule bifid and short, acute apices, sparsely pubescent at the edge of the apices, green; petiole prominent pulvinus, 0.5 cm to short; laminae elliptic, 19.5–43 cm × 3.5–9.5 cm, attenuate at base, aristate to caudate at apex, adaxially shiny green, abaxially shiny pale green, and compactly pubescent at midrib. Inflorescence decumbent, scape subterranean in the ground, creamish white with tinged brownish pink at the edge of the margin, glabrous; spike ovoid with pointed apex, 15.0–16.0 cm long, bract, 6.0 cm, ovate, brownish maroon-dark purple with green, apex acute, pink margin with prominent line, densely pubescent; floral tube 6.0 cm long, bracteole 2.9 cm long, oblong, apex obtuse; calyx 2.8 cm long, ovate, bifid, apex acute, translucent white; dorsal corolla lobe 2.5 cm long, oblong to ovate, apex acuminate, yellowish cream semi-translucent; lateral corolla lobe 2.5 cm long, oblong to obovate with deeply bifid, apex acuminate, yellowish cream semi-translucent; labellum yellowish cream semi-translucent, apices bluntly undulate deflexed. Fruit unknown.

Notes: This species, found in Penang, bears a strong resemblance to *Z. belumense* and Z. *purpureum* in terms of its brownish maroon to dark purple coloration with green bracts. However, it is distinguished through several characteristics (Figure 7). Notably, it can be readily discriminated by the strong aromatic odour, elliptic leaves, subterranean ovoid shaped inflorescence with pointed apex in brownish maroon-dark purple with green that often has pink margin, yellowish cream labellum with lateral staminodes. Moreover, the unique characteristic of red sap observed in the pseudostems of this newly proposed taxon warrants meticulous in-

vestigation to determine its consistency across various environmental conditions, despite its uniform occurrence within the plant clump from the same locality.

Additionally, more than 10 individuals of this taxon were observed in Penang Hill, and it thrives particularly well in sandy soil, although its potential uses remain unknown at this time. To reflect its discovery location, we provisionally named this taxon as *Zingiber bahangense*. Nevertheless, a comprehensive taxonomic description is currently in progress, along with the acquisition of molecular phylogenetic evidence.

Figure 6. *Zingiber* sp. (Bahangense130) Aimi Syazana & Salasiah. (a) The inflorescence of proposed new taxon. (b) Long trailing leafy shoots. (c) Decumbent inflorescence. (d) Red sap from the cut pseudostem.

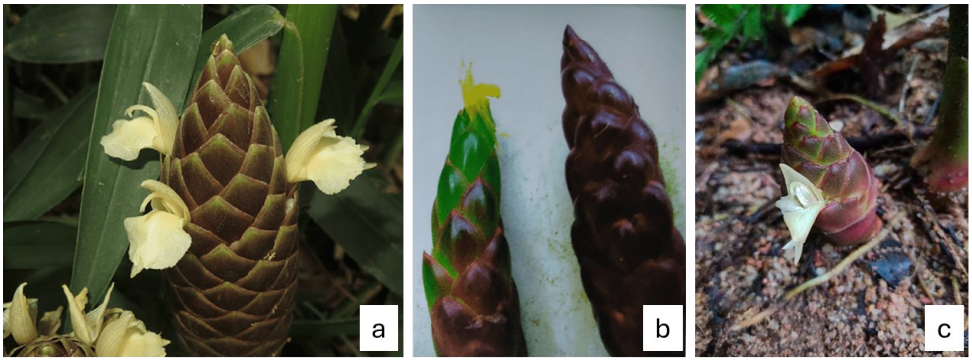

Figure 7. The closely related species to the undescribed taxon. (a) Inflorescence of *Z. purpureum* (Adopted from Bai et al. 2019). (b) The presence of coloration for *Z. belumense* inflorescence (Adopted from Lim & Meekiong 2014a). (c) A new undescribed taxon, *Zingiber* sp. (Bahangense130).

Table 2. Comparison of morphological characteristics on related *Zingiber* species: *Zingiber* sp. (Bahangense130), *Z. purpureum*, and *Z. belumense*.

	***Zingiber* sp.** (Bahangense130)	***Z. purpureum***	***Z. belumense***
Type	Teluk Bahang, Penang	India and Myanmar	Belum, Perak
Leaves	Long trailing arching downward, elliptic	Erect, linear, or narrowly lanceolate	Arcuate leaf arching downward, ovate
Inflorescence	Erect, decumbent. Scape 7–8 cm long, subterranean in the ground. Spike ovoid with pointed apex in brownish maroon-dark purple with green, pink margin, 15.0–16.0 cm long	Erect. Scape 20–30 cm long. Spike fusiform or cylindric ovate in dark red to maroon, purplish or almost brown bracts with greenish margins, 10–16 cm long	Decumbent and erect. Scape 12–30 cm long. Spike fusiform in bright green turning dark purple to red, 10–18 cm ´ 3–4.5 cm long
Labellum	Yellowish cream semi-translucent, apices bluntly undulate, deflexed	6 cm long. Pale yellow, midlobe broadly rounded, apex bilobed	2.5–2.7 cm long. Margin slightly wrinkled, apex deeply bilobed, tips acute
Scent	Strongly aromatic	Strongly aromatic	-
Other notable characteristics	Red sap is observed from the cut leaf sheath	Rhizome in lemon yellow colour	-

CONCLUSION

This paper presents the current taxonomic work for *Zingiber* in Peninsular Malaysia and some insights related to the *Zingiber* species. In addition to the current total of 25 *Zingiber* species and 30 taxa in the region, the first documentation of *Zingiber* sp. (Bahangense130) portrays the significant highlight of the potential 26th species of the genus. In this work, we present an account of its vegetative and floral characteristics, introduce a temporary taxon designation, and suggest a binomial name to secure priority for the authors who initially discovered this distinctive ginger. It is important to note that this article marks the beginning of our exploration, and extensive research on genus *Zingiber* of Peninsular Malaysia, including the new *Zingiber* sp. (Bahangense130), is actively underway.

AUTHOR CONTRIBUTION

All authors contributed to the research, including the collection, data analysis, and manuscript preparation.

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CONFLICT OF INTEREST

No conflict of interest.

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