



# The Gingers of Sarawak I - The Giants

## By Peter Boyce, Contributor

Sarawak, the largest state in the Malaysian Federation, is situated in the north and north west of the island of Borneo, with Kalimantan (Indonesian Borneo) to the south and the independent Sultanate of Brunei to the East. Sarawak lies wholly within the equatorial wet tropics and this, combined with a highly dissected and mountainous terrain and an extraordinarily diverse geology provides an enormous range of habitats into which numerous herbaceous terrestrial monocotyledons – notably Araceae, the aroids, and Zingiberaceae, the gingers, have speciated to a breathtaking degree to the extent that it can be stated that the state is the centre of diversity for both families in the Asian tropics and is arguably the richest and most diverse area for the gingers globally.

There is currently no single up to date revision for the Zingiberaceae of Borneo although various generic and local accounts have provided an excellent framework from which several botanists are now beginning to piece together what will be an account for the whole of the Malaysian region – essentially an account of the gingers of Malaysia, Indonesia, the Philippines and Papua New Guinea.

At present there are 18 indigenous genera of Zingiberaceae recorded for Sarawak with two others (*Curcuma* & *Kaempferia*) occurring probably as the result of ancient introduction as food or medicinal plants. Although there is yet no precise figure for the number of ginger species in the state it is clear from field observations that it is exceptionally rich in species (I have observed 16 species in one area of forest) and that a significant number of these species still await a formal name.

This short series of articles is not in any way intended to provide a formal nor exhaustive account of the gingers of Sarawak, rather to give a small taste of the genera and some of the most spectacular and beautiful species. For convenience sake I have divided the account to deal first with the very largest species, next the large to medium-sized and lastly the miniatures.

Broadly speaking the giant species are accounted for by two genera, *Etilingera* and *Plagiostachys* although by no means are all of the species of these genera are huge. Additionally there are a handful of very large-growing species in the genera *Hornstedtia* and *Zingiber*.

*Etilingera* is a genus of slender to enormously robust, medium-sized to gigantic herbs that are distinctive for their 'walking' culms – the individual leafy shoots arising from the rhizome are often some considerable distance (occasionally several metres) apart. The inflorescence in *Etilingera* either opens near or at ground level – giving rise to the popular name 'earth ginger' – with the resulting fruits partially buried (Plate 1a), or the



Plate 1a. Partially buried fruits of *Etilingera coccinea*.

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### Dates to Remember

- HSPR Meeting, 10:00 am, Sunday, March 12, 2006. Farm of Paul and Beverly Yoshiooka, Hwy. 348, Km. 8.7, Rosario, PR.

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inflorescences are carried on erect leafless shoots up to 2 m tall and produce fruits in a large cudgel-shaped head (Plate 1b). In the past the species with the ground-level inflorescences and partially buried infructescences were placed in the genus *Achasma* with those with the aerial inflorescences were in *Nicolaia* or *Phaeomeria*; all these genera are today are treated as part of a broadly defined *Etilingera*.



Plate 1b. Cudgel-shaped inflorescence of *Etilingera elatior*.

*Etilingera* is an important genus in Sarawak with species often dominant in lowland forest and several utilized as flavouring aromatics. Perhaps the best known is *E. elatior* (Plate 1c) which aside being a popular cut flower and landscaping ornamental has the un-

opened inflorescences used as a flavouring (kantan) in the wonderful Sarawak laksa (noodles in a spicy coconut gravy with shrimp & chicken). Another species, *E. coccinea* (Plate 1d) has leaves and shoots with a strong coriander (cilantro) aroma and taste and is used in much the same way by the in-



Plate 1c (left). Inflorescence of *Etilingera elatior*; Plate 1d (right). Inflorescence of *Etilingera coccinea*.

igenous Bidayuh people of western Sarawak who call it tipu. Interestingly there is a vegetatively similar species, *E. triorgyalis* (Plate 2a) in which the crushed leaves smell and taste strongly of kerosene; not a plant to confuse for culinary purposes!

While most of the giant ginger species are spectacular in leaf it is seldom that the leaves *per se* are notably strikingly coloured. One exception is *Etilingera brevilabrum* (Plate 2b & 2c) with its broad oblong leaves liberally spotted deep maroon and carried on waxy-white (pruinose) culms. *Etilingera brevilabrum* is frequently encountered on clay stream banks and I have observed it dominating several hundred metres of streamside in Kapit Division in central Sarawak.



Plate 2a. Inflorescence of *Etilingera triorgyalis*.



Plate 2b (left). Strikingly coloured foliage of *Etilingera brevilabrum*; Plate 2c (right). Flower of *E. brevilabrum*.

The majority of *Etilingera* in Sarawak have flowers in shades of pink or red although exceptions include *E. brachychila* which can appear in orange (Plate 2d) and a particularly striking chrome yellow (Plate 2e) each with a contrasting staminode.



Plate 2d (left). Orange flowers of *Etilingera brachychila*; Plate 2e (right). Chrome yellow flowered form of *E. brachychila*.

Most gingers produce their inflorescences either from the tips of leafy shoots (as in, e.g., *Alpinia*) or from the base of these shoots either close by (as in *Zingiber*) or at some distance away (e.g., *Etilingera*). However, *Plagiostachys* is immediately recognizable in that its inflorescences rupture through the leafy culms and appear up to 1 m up the aerial shoots (Plate 3a). Most *Plagiostachys* are medium-sized to rather large herbs with densely clustering culms. One remarkable exception is the gargantuan *P. crocydocalyx* which with culms up to 5 m tall and individual leaves exceeding 1 m long also outstrips all other species in producing an inflorescence up to 1 m long. Another remarkable feature of many *Plagiostachys* species is that frequently the bracts clothing the inflorescences deliquesce (literally melt) into slimy goo and from this the individual flowers emerge (Plate 3b). It is thought that this slime-covered inflorescence axis might be a means to



Plate 3a. Aerial infructescence of *Plagiostachys glandulosa*.

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prevent the flowers being robbed of pollen or nectar by insects that are not the pollinators. Interestingly, several other species of gingers go in for apparently similar methods of protecting the flowers with, e.g., *Zingiber spectabile* from West Malaysia having mucilage-filled cups from which the flowers emerge (Plate 3c) or *Hornstedtia reticulata* (Plates 3d, 5d) with a water-filled cup with the flowers emerging like small beaks.



Plate 3b (left). Flower emerging from slimy inflorescence of *Plagiostachys crocydocalyx*; Plate 3c (center). Flowers emerging from mucilage-filled cups of *Zingiber spectabile*; Plate 3d (right). Flowers emerging from water-filled cup in *Hornstedtia reticulata*.

*Zingiber* will be covered mainly in the next article but two species, *Z. pachysiphon* and *Z. incomptum*, need to be included here since both are large to very large-growing. *Zingiber pachysiphon* (Plate 4a) is a species of shales in the Rejang valley river system of central Sarawak. The distinctive culms have inflated blistered ligules making *Z. pachysiphon* instantly recognizable even as juvenile plants (Plate 4b);



Plate 4a (left). Inflorescences of *Zingiber pachysiphon*; Plate 4b (right). Inflated ligules of *Z. pachysiphon*.

*Zingiber kelabitanum* (Plate 4c) is similar but has the leafy culms distinctly velvety hairy (Plate 4d). In flower *Z. pachysiphon* is unmistakable with the white and deep violet bracted inflorescences appearing in considerable numbers at the base of the plant. The young inflorescences are sold as a flavoursome (if somewhat slimy!) vegetable in Kapit.



Plate 4c. *Zingiber kelabitanum*.

*Zingiber incomptum* (Plate 5a) belongs to a group of species with

the flower bearing portion of the inflorescence ascending at the tip of the trailing peduncle and the individual bracts recurving and often strikingly parti-coloured, deep red to scarlet outside and white inside. Most of these species are medium-sized but *Z. incomptum* can reach up to 3 m tall although the culms are rather slender.



Plate 4d. Velvety hairy culms of *Zingiber kelabitanum*.



Plate 5a. *Zingiber incomptum*.

To round off our tale of giants there are two striking *Hornstedtia*. First, *H. pininga* var. *borneense*, a species while not gigantic in stature is noteworthy because the large rhizome is carried on stout stilt roots up to 2 m tall, the whole plant held high above surrounding low scrub and

seeming to be walking through the forest (Plate 5b). The white-frosted inflorescences arise in clusters close to the rhizome (Plate 5c). Another notable species is *H. reticulata* (Plate 5d) with a more conventional ground-level rhizome but with tall, stout culms to 2.5 m tall. The culm and petiole sheaths have a distinctive netted appearance and stripped from the plant and dried are used locally in Sarawak to weave mats (kasah) on which rice is laid out to dry before it is processed to remove the husk.



Plate 5b (left). *Hornstedtia pininga* var. *borneense*; Plate 5c (center). Inflorescence of *H. pininga* var. *borneense*; Plate 5d (right). *Hornstedtia reticulata*.

### Genera of Zingiberaceae in Sarawak.

(\*) denotes the genus is probably non-indigenous.

1) <i>Alpinia</i>	6) <i>Curcuma</i> (*)	11) <i>Geostachys</i>	16) <i>Kaempferia</i> (*)
2) <i>Amomum</i>	7) <i>Elettaria</i>	12) <i>Globba</i>	17) <i>Plagiostachys</i>
3) <i>Boesenbergia</i>	8) <i>Elettariopsis</i>	13) <i>Haplochorema</i>	18) <i>Scaphochlamys</i>
4) <i>Burbridgea</i>	9) <i>Etingera</i>	14) <i>Hedychium</i>	19) <i>Tamijia</i>
5) <i>Camptandra</i>	10) <i>Geocharis</i>	15) <i>Hornstedtia</i>	20) <i>Zingiber</i>

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## About the Author

A plant fanatic since he was old enough to sow a seed, after 8 years in commercial woody plant horticulture, 15 years at Kew Gardens specializing in tropical Asian botany and 2 years as a freelance consultant and nurseryman in France, Peter Boyce now lives in Malaysia where he combines his passions of botany, horticulture and tropical Asia managing a project which sustainably produces for sale plants of Malaysian species threatened by illegal commercial exploitation.

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## President's Corner

We all wish to express our sincerest gratitude to Nancy and Sergio Tejedor for hosting our December meeting and fiesta at their beautiful farm in Jayuya. It was a great meeting where we all expressed our gratefulness to Kelly and Susan Brooks and Judy Nelson for their dedicated work in collecting, growing, and sharing their heliconias and gingers with all of us and for being primarily responsible for bringing the beauty of these magnificent flowers into all of our lives. They were presented a plaque from the members of HSPR saying: “AS LONG AS HELICONIAS BLOOM IN PUERTO RICO, YOU ALL WILL BE REMEMBERED WITH LOVE.”

Our next meeting will be held on March 12, 2006 at the home of Paul and Beverly Yoshioka. At that time our speaker will be our treasurer, Yolanda Reyes, who will present to us some of her ideas and proposals that she has considered as possible future projects for our society.

Many of our members, who are on our current directory, are delinquent in paying their dues, some for a very long time. However, they have continued to receive our HSPR Newsletter. We used to mail out about 60 newsletters per quarter, but now we are mailing out more than 100 per quarter. This is a costly and time-consuming activity for our newsletter committee members. Therefore we have decided to take the following action concerning membership dues and receipt of our newsletter: Starting in March, 2006, HSPR will mail a notice with the newsletter for members with overdue membership payments. Members who do not pay their dues by the next scheduled meeting time will be dropped from the newsletter mailing list and will receive no further newsletters until they again pay their dues. We deeply appreciate your compliance with these notices. It will help our society greatly.

Best regards, always, Ray Jerome