Malayan Nature Journal 2012, 64(2), 115 – 120

The Araceae of Malesia IV: Hestia S.Y.Wong & P.C.Boyce

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A review of monospecific Hestia S.Y.Wong & P.C.Boyce is presented.
The morphological adaptations it shows to a fire-prone habitat are highlighted.

INTRODUCTION

Combined molecular and morphological analyses of tribe Schismatoglottideae have begun to revel that certain of the generic concepts proposed by Hay and Yuzammi (2000) and Bogner and Hay (2000) do not reflect the most probable evolutionary history of the extant taxa. Much of recent analyses have focused on the so-called "satellite genera" (e.g., Boyce and Wong 2008, Low et al. 2011, Wong and Boyce 2010b, 2012). However, the largest genus, *Schismatoglottis* has also been the subject of scrutiny, revealing the genus (sensu Hay and Yuzammi 2000) to be polyphyletic (Wong 2009, Wong et al. 2010). Work is now underway to establish the extent of the 'core' *Schismatoglottis*. Towards this end taxa that have been removed from *Schismatoglottis* so far include:

1. Neotropical species, which now comprise the genus *Philonotion* Schott (Wong et al. 2010);
2. A group of species centred on Sumatera and corresponding to the Rupestris Group (sensu Hay and Yuzammi 2000), moved to resurrected *Apoballis* Schott (Wong and Boyce 2010a) and;
3. A singular species, Schismatoglottis longifolia Ridl., removed into a new genus, *Hestia* S.Y.Wong & P.C.Boyce (Wong and Boyce 2010a).

Keywords. Araceae, Hestia, Schismatoglottideae, Malesia, Peninsular Malaysia, Borneo
Manuscript submitted: 2 April 2012
Manuscript accepted: 14 April 2012
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Hestia is a very distinctive genus readily recognised by the clusters of rather numerous nodding inflorescences on relatively very long slender wiry peduncles, and cup-shaped infructescences. The spathe has only a weak constriction present between the lower spathe and upper spathe, the spathe limb barely opens, instead it inflates and gapes just sufficiently to enable pollinators (as yet unknown) access to the spadix.

Post-anthesis the entire non-pistillate portion of the spadix often dries and adheres to the spathe limb with the whole combined unit shedding. Fruiting spathes are campanulate, with the orifice of the lower spathe open during fruiting.

Hestia longifolia has vegetative modules that readily disarticulate from the deep-seated and deep-rooting rhizome. The function of the disarticulation in this podsol-obligated species is not clear, but it is speculated that it may be an adaption to fire resistance in a highly fire-prone habitat. Perhaps enabling the shoot unit to be destroyed in some way prevents damage to the main perennating system.

The modern distribution of *Hestia* (Perak and N Borneo) is strongly suggestive of a relictual distribution, perhaps resulting from the fragmentation of a once extensive range by the re-flooding of the South China Sea and subsequent submersion of the Riau Pocket (see Ahmad Sofiman and Boyce 2010, Baharuddin and Boyce 2010).

HESTIA

Hestia S.Y.Wong & P.C.Boyce, Bot. Stud. (Taipei) 51: 250 (2010).

Type: *Hestia longifolia* (Ridl.) S. Y. Wong & P.C. Boyce

Moderate clump-forming herb. Stem hypogeal, hapaxanthic, usually very deeply buried in the peat layer, and furnished with deeply-penetrating tap-roots, together with well-ramified spreading roots; shoots disarticulating readily from stem. Leaves few per module but modules usually superposed to form dense clumps; petiole D-shaped, with the abaxial angles rounded to acute, sheathing in the lower part; wings of the sheath tapering, fully attached except for distal briefly ligulate portion; blade oblonceolate, the base attenuate to narrowly rounded, the apex shortly acuminate and long-mucronate, the mucro solid; primary veins c. 6-8 per side, flush adaxially, barely prominent abaxially, interprimary veins irregularly present, secondary and tertiary venation inconspicuous and flush with the lamina. Inflorescences sequentially maturing synflorescence; peduncle very slender, wiry, suberect and elongating in fruit), inflorescence nodding from the apex of the peduncle; spathe narrowly cylindrical, long mucronate apically; lower spathe, narrowly ovoid, differentiated from spathe limb by a weak constriction; limb narrowly lanceolate, clasping and very slightly inflating and gaping at anthesis, thence deliquescent-deciduous; spadix equalling limb portion of spathe in length; pistillate flower zone adnate to the spathe; interpistillar staminodes few amongst the ovaries, mainly concentrated into a somewhat interrupted single row along the spathe/spadix adnation and another basally at the insertion of the spadix on the spathe/peduncle; pistils globose, rather distant; stigma button-like, sessile; ovules few on a basal placenta; interstice staminodes, slender-stalked, apically narrowly clavate, a little higher than the pistils; flower zone cylindric; stamens close-packed, some with filaments partially united forming dimerous to trimerous staminate flowers, others solitary; anthers ±dumbbell-shaped from above with the connective forming a slight dome

between the thecae; thecae opening through apical slit-like pores; pollen dusty; appendix tapering-cylindric to very narrowly ovoid, composed of very close-packed columnar flat-topped staminodes. Fruiting spathe narrowly campanulate, nodding, long-persistent, at fruit maturity deliquescing starting from the margin backwards towards the peduncle and splitting longitudinally, with fruits falling whole and dispersed by foraging ants. Fruit ovoid-globose to somewhat compressed, ripening green, stigmatic remains dark brown. Seeds ellipsoid, strongly longitudinally ribbed, medium brown.

Hestia longifoia (Ridl.) S.Y.Wong & P.C.Boyce, *Bot. Stud.* (Taipei) 51: 252 (2010).
Fig. 1 & 2.

Homotypic synonym: Schismatoglottis longifolia Ridl. J. Bot. 40: 37 (1902) & *Materials Fl. Mal. Pen.* 3: 34 (1907) & *J. Straits Branch Roy. Asiat. Soc.* 57: 113 (1910) & *Fl. Mal. Pen.* 5: 114 (1925); Engler in H.G.A.Engler, *Pflanzenr.* 55(IV.23Da): 89, Fig. 58 (1912); Hay, *Sandakania* 7: 26, fig.2G. (1996); Hay & Yuzammi, *Telopea* 9(1): 125-127 (2000).

Type: Malaysia, Perak, Bukit Larut, *H.H.Kunstler ('Dr King's Collector') 1967*
(K, lecto; selected by Hay (1996).

Distribution

Disjunct in Peninsular Malaysia (Perak) & N. Borneo from scattered through much of Sarawak east to E. Brunei (Temburong). Yet to be recorded from Sabah and Kalimantan.

Ecology

On elevated podsols in lowland perhumid to lowland hill kerangas, occasionally in regrowth along margins of tracks (as at Bukit Larut); occasionally on raised podzols in swampy areas (e.g., near Matang, Kuching), or near streams (Sarawak: Limbang), to c. 250 m alt.

Etymology

Latin, longus (long) + folius (a leaf); hence, long-leaved.

While the leaf blade is usually dull pale green, Sarawak plants are known to occur with the leaf blade conspicuously silver banded along the midrib (Fig. 2E).

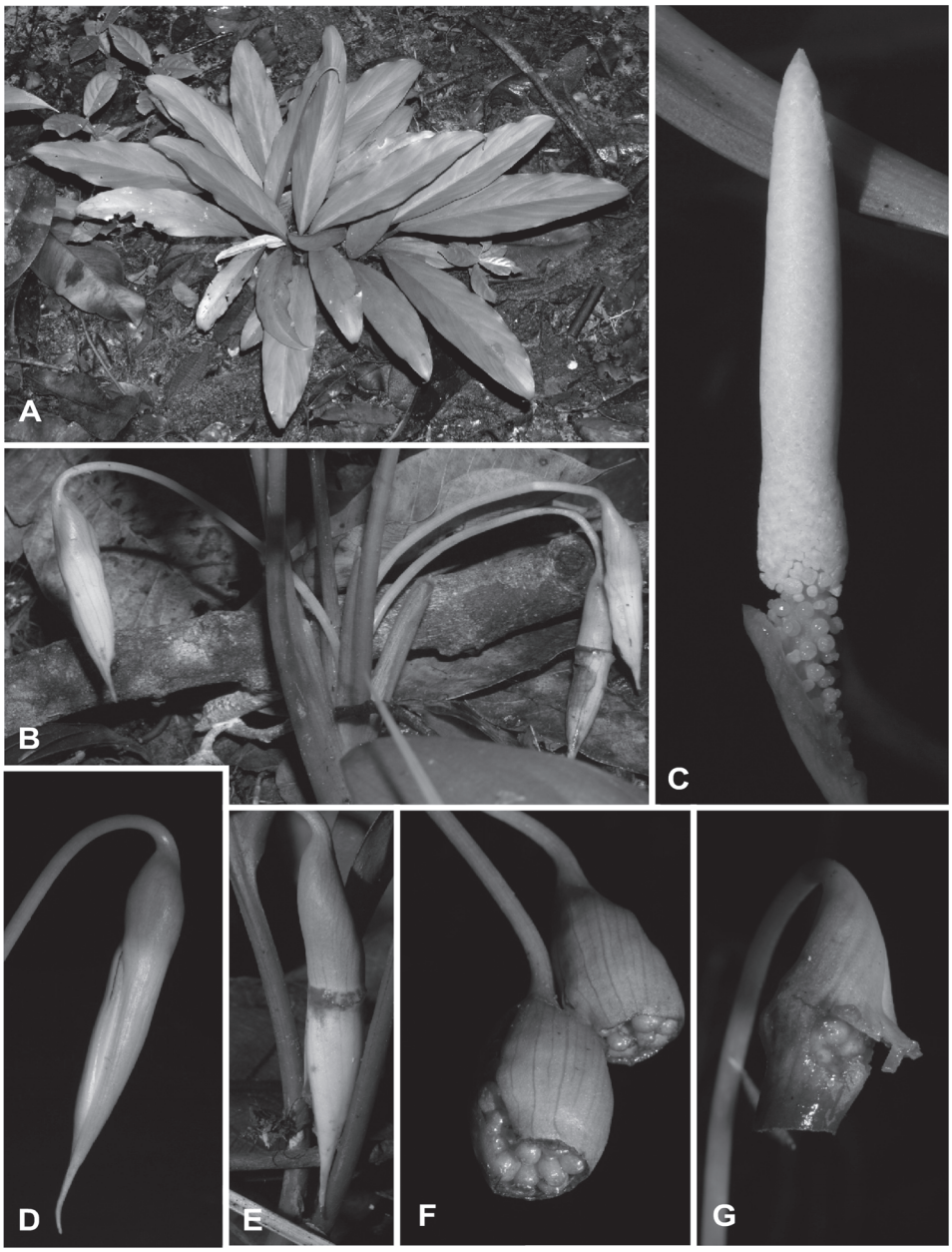

Figure 1. *Hestia S.Y.Wong* & P.C.Boyce.
A. Plant in habitat on podsol. B. Nodding inflorescences, the inflorescence to the left at female anthesis; upper right at male anthesis, lower right post-anthesis with spathe beginning to degrade prior to being shed. C. Spathe slightly gaping at female anthesis. D. Spadix with the spathe removed artificially to reveal the female and male flower zones. E. Inflorescence post-anthesis with spathe limb rotting at junction of lower spathe, later to be shed together with spent part of spadix. F. Infructescences with the distinctive narrowly campanulate lower spathe. G. Ripe infructescence, the persistent lower spathe here beginning to degrade prior to releasing the fruits.
A from P.C.Boyce & S.Y.Wong AR-2133; B & C from P.C.Boyce & S.Y.Wong AR-233; D-G from P.C.Boyce & S.Y.Wong AR-2192. Images © P.C.Boyce.

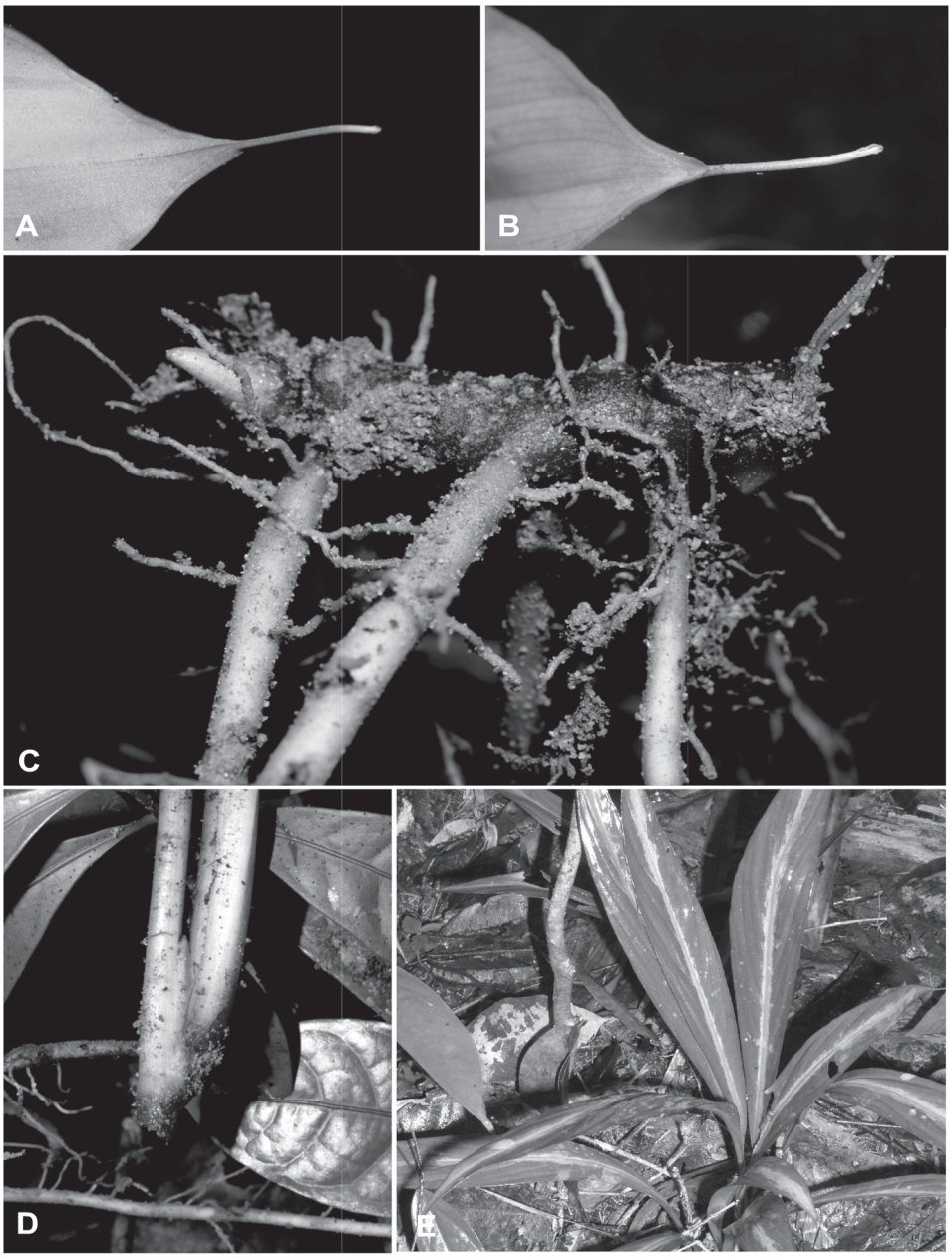

Figure 2. *Hestia S.Y.Wong* & P.C.Boyce.
A & B. Leaf blade tip showing abaxial (A) and adaxial (B) view of the long, solid mucro. C. excavated portion of a rhizome to show the dimorphic roots. The bases of the tap-roots are clearly seen. The bud (on the left) was revealed by disarticulation of the leafy shoot shown in D. D. Basal portion of a disarticulated shoot. E. Plant with silver banded leaves. To date such plants are only known from Sarawak.
A-D from P.C.Boyce & S.Y.Wong AR-2133; E from P.C.Boyce & S.Y.Wong AR-960. Images © P.C.Boyce.

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