

The Aroids of the Matang Massif, Sarawak, Malaysian Borneo II:

Kubah National Park

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...Continued from the last issue

Once through, the cutting of the road continues to climb and then branches with the metalled part leading to the restricted rear of the telecommunications tower and an unmade part that leads up onto the plateau below the summit at c. 800 m (c. 2600 ft). The area is primarily heavily podzolized with the dominant aroid being *Alocasia peltata* M.Hotta (Plate 25), a species related to *A. beccarii* but restricted to altitudes above 775 m (2500 ft). It is similar in the heavily textured leaves but is readily discernible by the leaves scattered along the elongated decumbent rhizome.

Rayu Trail & Rapids Trail

The Rayu Trail leaves the Summit Trail at c. 275 m (c. 900 ft) and descends steeply into an open forested valley. The forest for the first part of the trail is rather dry and initially not too promising for aroids although the lianes *Rhaphidophora tenuis* and *Scindapsus longispitatus* are common and there are scattered plants of the truly monumental *S. glaucescens* with the shoot tips a mass of tough chaffy fibres and the backs of the leaves chalky white. Another common species climbing on trees on these dryish slopes is the ubiquitous *Amydrium medium* (Zoll. & Moritz) Nicolson (Plates 26 & 27), a low-climbing species with leaves that while entire in juveniles become split and perforated in adult plants. *Amydrium medium* is unusual among climbing aroids in that it



Figure 28. *Schismatoglottis motleyana* (Schott) Engl., a single clone forming a uniform colony.

flowers low down on the trunk; most aroid lianes do not flower until they are up into the canopy 40 m (130 ft) or more above. As the trail reaches the lower parts of slopes and begins to enter the wetter and shadier ecologies, the aroid diversity starts to increase. Colony-forming *Schismatoglottis* soon make an appearance with *S. motleyana* (Schott) Engl. (Plate 28) and *S. wallichii* Hook.f., both common. These are interesting species in that the individual colonies can become very large and give the impression of great uniformity; an impression that lasts until another discrete colony is encountered that while also morphologically uniform, is markedly different in appearance to the previous colony. Once several such colonies have been observed, it is hard to work out just how many 'species' are involved. Another colonial species encountered in these wetter places is *S. viridissima* A.Hay (Plate 29), with brilliant green, oddly rubbery thin-textured leaves. Remarkable for such a striking species is that it was described as recently as 2000.

The Rayu Trail is the longest single trail at Kubah, extending nearly 9 km (5 ½ miles) from the NE boundary of the park to the



Figure 27. *Amydrium medium* (Zoll. & Moritz) Nicolson produces distinctive white berries.



Figure 25. *Alocasia peltata* M.Hotta is related to *A. beccarii* but differs in several morphologies and in being restricted to much higher altitudes.



Figure 26. *Amydrium medium* (Zoll. & Moritz) Nicolson is unusual among aroid lianes in flowering low on the tree trunk on which it climbs.

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Figure 29. *Schismatoglottis viridissima* A.Hay with the diagnostic brilliant green, rubber leaves.



Figure 30. *Schismatoglottis ciliata* A.Hay, the stiff erect leaves function as litter traps. Note the white-hairy petioles.



Figure 31. *Schismatoglottis longifolia* Ridl. with groups of wiry-stemmed nodding inflorescences quite unlike any other *Schismatoglottis*.

Matang Wildlife Centre, if followed to the end or, by taking a side trail (the Rapids Trail) passing through a beautiful area of lowland dipterocarp and moist podzolized *kerangas* before ending at a beautiful waterfall on the Sungai Senduk. The *kerangas* areas are notable for large colonies of *Schismatoglottis ciliata* A.Hay (**Plate 30**), with densely white-hairy petioles and eye-lash-fringed leaf margins and stiffly erect leaves that act as litter traps with numerous adventitious roots entering the compost that forms. Another notable aroid in the *kerangas* is the peculiar *S. longifolia* (**Plate 31**), with groups of wiry-stemmed nodding inflorescences quite unlike any other *Schismatoglottis* although vaguely recalling the inflorescences of the related genus, *Piptospatha*. The trail rises above the river, forming a small area of gallery forest and on the steep peat banks above the river are dense clumps of *S. jipomii* P.C.Boyce & S.Y.Wong (**Plates 32 & 33**) with the distinctive glossy green leaves with a prominent midrib. Remarkably for a species that is often so abundant it was only described in 2006. After the long walk to reach the trail junction, the additional 45 minute walk to reach the waterfall might seem an imposition but upon entering the small basin in which the falls are located, all tiredness is forgotten. The area immediately around the splash zone is a carpet of *Schismatoglottis multiflora* and *Homalomena paucinervis*, while the waterfall itself is an unbroken mass of *S. multiflora* and *Aridarum borneense* in the waterflow and *S. mayoana* on the dry surfaces. Further away from the water but still benefiting from the humidity and cooler air, are abundant plants of *Homalomena crassinervis* and *H. insignis*, while on the top of the fall are colonies of a large, cordate-leaved *Schismatoglottis* that approaches *S. calyptrata* (Roxb.) Zoll. &



Figure 32. *Schismatoglottis jipomii* P.C.Boyce & S.Y.Wong forms dense clumps of narrow leathery leaves; a common species along rivers in western Sarawak but only formally named in 2006.

Moritzi.

Waterfall Trail

The Waterfall Trail is the richest of the set trails for seeing aroids and by virtue of much activity by our student projects on pollination biology, also one of the best sampled and understood. The Waterfall Trail begins c. 1 km along the Summit Trail and initially ascends through a short stretch of ridge top *kerangas* accessed by a wooden boardwalk. The first part of the *kerangas* is a small, open and permanently saturated area providing a fascinating patch of plants adapted to the very nutrient-deficient white sands; aside from three terrestrial *Utricularia* (bladderwort) species with dainty wiry stems topped with yellow, white or purple long-spurred flowers, a selection of species from the monocot families Xyridaceae, Burmanniaceae, Cyperaceae, Eriocaulaceae and Centrolepidaceae, provide a good introduction to these diminutive but fascinating 'grass-like' plants. The path descends steeply via wooden steps into valley dipterocarp forest and immediately the aroids begin to become abundant. The trees carry numerous plants of *Scindapsus longistipitatus* and the ground is also clothed with the juvenile phase of this and scattered plants of *S. pictus* Hassk. By peering into the canopy, large fans or rosettes of perching aroids are visible – these are *S. beccarii* Engl. and *S. genuculatus* Engl. (**Plate 34**), unusual among Asian aroids in being true



Figure 33. *Schismatoglottis jipomii* P.C.Boyce & S.Y.Wong, just before male anthesis; the appendix here much predated by *Chrysomelid* beetles.



Figure 34. *Scindapsus geniculatus* Engl., a very old plant on the main branches of a riverside *Tristaniopsis* (Myrtaceae).



Figure 36. *Amorphophallus infundibuliformis* Hett., A.Dearden & A.Vogel, a common and widespread species in deep wet forest.

epiphytes. At first, seemingly the same species, they can be distinguished by differences in the leaf shape and plant habit. *Scindapsus geniculatus* has the leaf blades narrowing to a pointed tip, the upper surfaces matte pale green and the undersurfaces distinctly glaucous, whereas *S. beccarii* has leaf blades with tips that are blunt and with an abrupt apiculate point and the upper surfaces rich glossy green. In habit, the plants differ in that *S. geniculatus* remains a dense fan throughout its life, whereas *S. beccarii* has alternating periods of producing

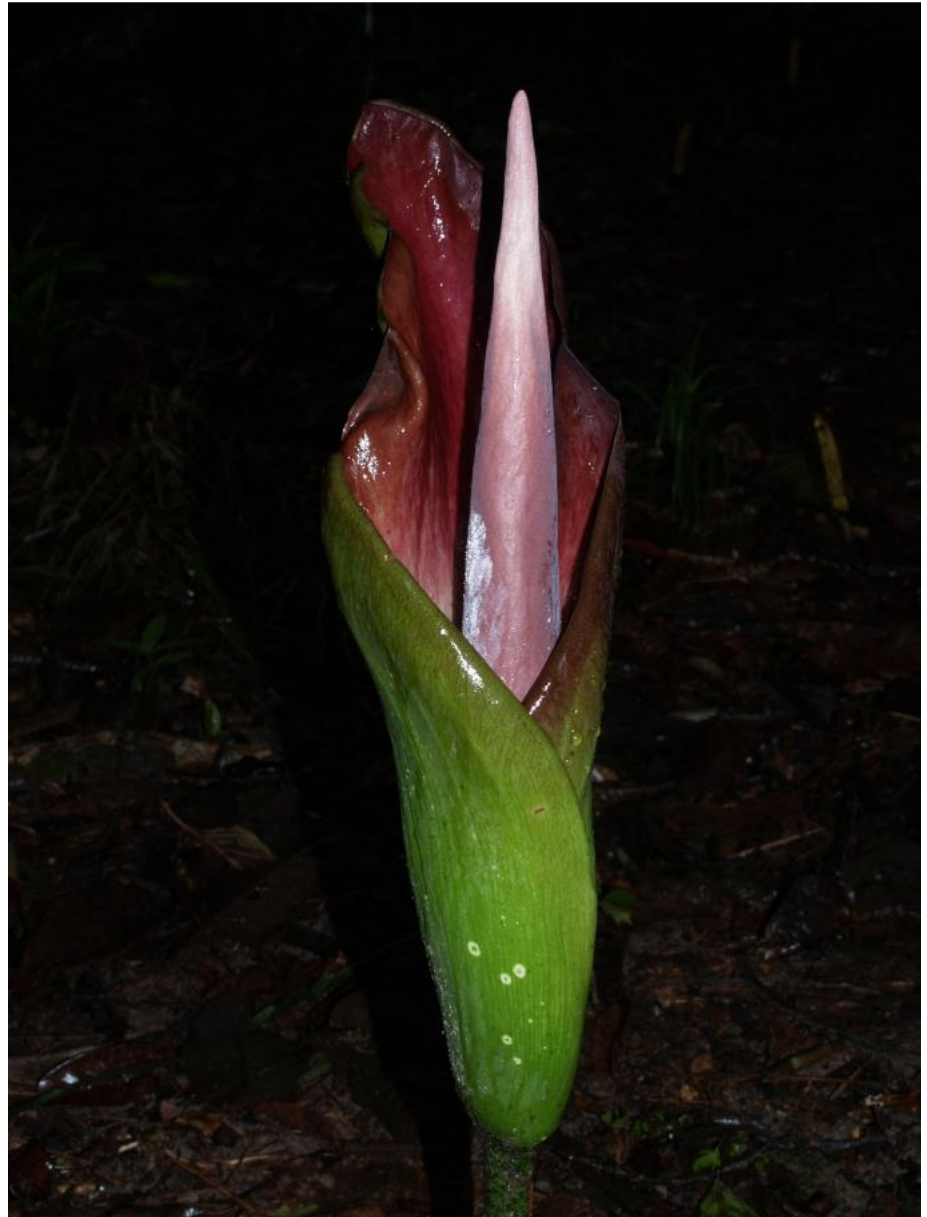


Figure 35. *Amorphophallus hewittii* Alderw., c.f., inflorescence c. 1.5 m tall.

a short, stout climbing shoot and before reverting to fans of leaves. Both species are based on Beccari collections originating from Matang; *S. geniculatus* is endemic to Matang and the surrounding areas whereas as currently defined *S. beccarii* occurs in West Malaysia and Sumatera, as well as west Borneo.

Where the trail provides access to forested earth banks, *Amorphophallus* make an appearance. Currently there are four species recorded for Kubah: *A. angulatus* Hett. & A.Vogel, *A. hewittii* Alderw. c.f. (**Plate 35**), *A. infundibuliformis* Hett., A.Dearden & A.Vogel (**Plate 36**) and *A. pendulus* Bogner & Mayo (**Plate 37**). None is endemic although *A. pendulus* appears to be restricted to NW Sarawak where it favours deep leaf litter over

sandstone-derived soils. Presently the identity of the largest species (c.f. *hewittii*) is conjectural since this group is currently in need of rigorous study to determine how many taxa are involved; certainly the plants on the Matang sandstones are not identical to plants on the limestones of Kuap, the type locality of *A. hewittii*. Once the Waterfall Trail reaches the valley bottom it continues either along the valley or on boardwalks along the edges of steep gallery forest. In the areas between and among the rocks, numerous *Schismatoglottis* appear, including *S. motleyana*, *S. wallichii*, *S. viridissima* and *S. nervosa* Ridl. In slightly more open areas, *Aglaonema nitidum* (Jack) Kunth (**Plate 38**) is common and less often, *A. simplex* (Blume) Blume (**Plate 39**). These two shrubby aroids are often confused, although



Figure 37. *Amorphophallus pendulus* Bogner & Mayo described more than 20 years ago and yet still unrivaled as one of the most extraordinary species. Endemic to dry dipterocarp forest in west Sarawak.

several characters readily separate them, including the leaves (oblong and thick-textured with veins not at all prominent: *A. nitidum* vs. elliptic and thin-textured with veins deeply impressed: *A. simplex*) and the inflorescence (spathe persisting and eventually turning pale green and eventually pushed off by developing fruits: *nitidum* vs. spathe caducous (shedding fresh) early in



Figure 40. *Alocasia robusta* M.Hotta, the largest *Alocasia* species yet described. Leaves can reach more up to 6 m (nearly 20 ft) long including the petioles and nearly 3 m (more than 9 ft) wide across the lamina.



Figure 38. *Aglaonema nitidum* (Hack) Kunth with the spathe persistent.

anthesis: *simplex*). About the mid-point the trail crosses a series of small forest streams with the rocks covered with *Homalomena paucinervia* and a few scattered plants of *Piptospatha grabowskii* and *Schismatoglottis multiflora* and then passes through a more open, deep but narrow valley dominated by large stands of *Alocasia robusta* M.Hotta (**Plate 40**). Further along a suspended boardwalk passes through an area of swamp forest dominated by very spiny palms of the genera *Salacca* and *Elaeodora* and fringed with *Alocasia sarawkensis* M.Hotta, with its very distinctive raised veins on the back of the leaf lamina (**Plate 41**). From this point the trail gradually climbs over a series of rocky, alluvium-covered ledges and then follows a stepped boardwalk along a granite and sandstone cliff above the Sungai Rayu; the cliff has numerous plants of *Homalomena insignis*, *H. borneensis* (or perhaps *H. hostiifolia*) and scattered *H. crassinervia*, *Schismatoglottis wallichii* and *S. nervosa*.



Figure 42. *Rhapsidophora beccarii* Engl., a common rheophytic species allied to *R. korthalsii*.



Figure 39. *Aglaonema simplex* (Blume) Blume at the onset of male anthesis with the spathe already partially shed.



Figure 41. *Alocasia sarawkensis* M.Hotta, another large species easily distinguished by the prominently raised abaxial veins. Note, too, the waxy glands at the axis of the primary lateral veins to the midrib.

From the end of the boardwalk extends a smooth granite platform over which the river falls in a series of waterfalls and pools leading upstream to a steep sandstone waterfall dominated by huge stands of *S. multiflora* and *Piptospatha grabowskii* interspersed with *Aridrum borneense* in the waterflow and, on the cliffs away from flooding, curtains of *S. mayoana*. Other notable plants along the bases of the rocky banks are *Alocasia scabriuscula* and the rheophytic *Rhapsidophora beccarii* Engl. (**Plate 42**), with leaves at first narrow and entire and later wider and deeply and broadly divided along with small areas of *Homalomena paucinervia*.