

Gunung Mulu National Park: A Heaven for Aroiders

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6th August 2006.

Trail to Skywalk, Deer and Lang Caves.

We decided to follow the same trail, but this time straight to the main trail to Deer and Lang Caves. After the seasonally inundated forest, we moved in mixed forest lowland forest on Karst limestone on each side of the pathway.

Amorphophallus julaihii Ipor, Tawan & P.C.Boyce is a common sight here on the limestones, it is astonishing that it was only recently described in 2004. It has a striking purple spathe and the whole inflorescence could reach up to ca 40 cm tall (Fig. 15). Another common species here, *Schismatoglottis muluensis* M. Hotta (Figs. 16 & 17) is interesting in that whereas Hay & Yuzammi (2000) sunk it into *Schismatoglottis calyptrata* (Roxb.) Zoll. & Moritz, based on our field observations, we think that *S. muluensis* warrants recognition as a local endemic in that same way as *S. niahensis* A.Hay, which replaces *S. muluensis* at Niah Caves. Further along we encountered more colonies of *S. colocasioidea* in flower, with its distinctive deep purple to black petioles and two striking stripes on the leaf adaxial surface (Fig. 18)

We made a short detour to the canopy skywalk, encountering more *S. multinervia* occurring in pockets in the limestone together with a further colony of the *Schismatoglottis* with pellucid veins, but here climbing on the limestones and thus the first climbing *Schismatoglottis*! Then we hit the path to the caves. The widespread limestone-specialists, *Pothos insignis* Engl. and *P. ovatifolius* Merr., were abundant here. Also on the limestones we found scattered *Alocasia princeps* W.Bull and a remarkable *Alocasia* near to *Alocasia scabriuscula* N.E.Br. Initially, Peter thought it was *A. scabriuscula* but after few days of field work, when it proved to be widespread on the limestone especially on this trail, with robust growth and yellow petioles, it is most certainly another overlooked locally endemic species. *Bucephalandra motleyana* Schott on the shale bedrock stream before the entrance to the caves was flowering gregariously (Fig. 19).

Deer and Lang Caves are two distinctly different caves situated 150 m. apart in the Southern Hills area of the park. We went into Deer Cave, the largest cave passage in the world, and it was pretty dark but magnificent; simply breathtaking, you have to be there to experience it. When we came out from the cave, saw many tourists waiting for a nature show of two million bats to emerge from the cave at dusk. We decided to call it a day.



Fig. 15 *Amorphophallus julaihii* Ipor, Tawan & P.C. Boyce.



Fig. 16 *Schismatoglottis muluensis* M. Hotta.



Figs. 17 *Schismatoglottis muluensis*.



Fig. 20 *Schismatoglottis monoplocenta* M. Hotta.



Fig. 18 *Schismatoglottis colocasioidea* M. Hotta.



Fig. 19 *Bucephalandra motleyana* Schott.

7th August 2006.

Trail to Paku Waterfall and beyond to Gunung Mulu Summit.

We set a quick pace to the *Baccaurea* tree and after another session of satisfying fruit spitting, we started to do some botanising. It is a very popular tourist path to climb to the summit of Gunung Mulu, and it only takes 4 days and three nights at a walking speed of 10 km per hour (from what I observed) with a 30 kg of load behind you! We walked passed the Paku Waterfall (which was rather disappointing, the waterfall is a small scale waterfall from the limestone; guess it was a short trail therefore an easy trail for tourists). The path has from colonies of *Schismatoglottis motleyana* c.f. with a non-glossy leaf ranging from grey-silver but plain, to large green spotted. It is difficult to decide whether *S. motleyana* is one or few or many species or whether you are observing just another clone with different variation. Much remains to be done before these vigorous colony-forming aroids are taxonomically understood. We also encountered colonies of *Schismatoglottis wallichii* c.f. in a glossy-leaved form and yet more *S. colocasioides*. And then, just when we were beginning to think that Mulu was not particularly rich in *Homalomena*, here were three new species; one with leaves glossy ovate-cordate, another with leaves glossy sagittate to cordate carried on an ascending stem, and a third with pulvinate petioles, all occurring alongside the widespread *Homalomena hostifolia* Engl. Although muddy, in the rainy season the area of these *Homalomena* would be heavily flooded; while

many aroids are plants of wet habitats far fewer species are adapted to regular inundation and the seasonal flooding of this alluvial forest might explain why this particular path is not that rich in aroids. We glimpsed *Alocasia longiloba* Miq. 'longiloba' just as we reached a dry river (shale) and at that point decided to turn back because Jeland said it is still a long way to reach Camp 1, and it is all the way this somewhat aroid-poor seasonally inundated forest. By this point we had walked ca 4 km from the main cave path.

8th August 2006.

Trail from Clear Water Cave, Wind Cave and Moonmilk Cave.

We decided to have a longboat ride along the Sungai (river) Melinau to the Clear Water Cave and walk back from there. Along the river, you could see *Phymatarum borneense* occupying every mud bank available. It was not a good morning for the first author, with a bad tummy (too much laksa), a bumpy boat ride under the heavy rain all proving a bit too much. Once you reach the trail to Clear Water Cave there are excellent boardwalks suspended on the limestone, enabling you to walk around the limestone cliff. *Homalomena humilis* (Jack) Hook.f. is normally common on limestone but for the first time we saw it here. We walked up the stairs to Clear Water Cave, it was the most elegant cave the first author has been in (though hasn't been to many); it has the atmosphere of a 200 year-old church (according to Peter – cool and extraordinarily peaceful). Then, we decided to begin our walk back to the headquarter, Jeland spotted another new *Schismatoglottis* with thick leaves, green or sometimes mid band mid grey on the limestones; as yet we have been unable to name this. *Alocasia princeps* are plentiful at the start of limestone trail, as too, *Amorphophallus julaiihii* everywhere and in flowering and fruiting season the drier, more exposed areas. The hill forests on limestone here have a wet and a dry facies: *A. julaiihii*, *A. princeps* and *Amorphophallus costatus* Hett. are more common on dry facies). It is not an easy trail as there is something like 800 steps up and down with a long flat path in between. The trail leads through Moonmilk Cave and later on, follows flat cement path all the way back to the Headquarters. The forest is transition from hill limestone forest to descending lowland riverine forest on alluvium in association with limestones in between. *Schismatoglottis monoplacenta* M. Hotta which we initially thought was a *Monophyllea*

(Gesneriaceae) when we spied it during the earlier boat ride, was hanging down from the limestones cliffs (Fig. 20). It is in the group of *Schismatoglottis multiflora* Rid., notable for the free ligular petiolar sheath. Also present on these same cliffs, in deep shade, is yet another new *Schismatoglottis*, this one with thin leaves and an acuminate leaf apex and further colonies were viewed, consisting of *Rhaphidophora lobbii*, *R. latevaginata*, *R. elliptifolia*, *R. foraminifera* and *R. beccarii*. Once again it was clear that while in southern and western Sarawak, it is common to see *R. beccarii* as rheophytic on mud banks; here in the northeast, *Phymatarum borneense* rules.



Fig. 21 *Amorphophallus rugosus* or *A. costatus* with Jeland and Mael.

Other *Schismatoglottis* in the general vicinity included *S. wallichii* c.f. with a distinctive mid-green median band on the leaf blade, *S. multinervia*, the *Schismatoglottis* with pellucid veins, *S. muluensis* and a wholly green form of *S. motleyana*. The riverine forest and the various limestone outcrops played host to numerous *Amorphophallus rugosus* or *A. costatus* (none in flower to enable us to verify with certainty), here shown with Jeland and Mael standing beside for scale (Fig. 21), along with *Scindapsus treubii*, *S. crassipes* and *Scindapsus longistipitatus* Merr., *Pothos insignis*, *P. ovatifolius*, plenty of *Aglaonema nitidum* in flower and fruit and some but fewer *A. simplex* and yet another *Anadendrum* and a possible new *Homalomena* with glossy sagittate leaves. Towards the Headquarters, the forest transitioned to riverine forest on

periodically inundated alluvium and the aroids again became fewer.

9th August 2006.

Trail to Long Lansat, Sungai Licat.

We took another longboat ride to the downstream of Sungai Melinau, to the main river, the Sungai Tutoh, and later turned into Sungai Licat along the southwest flank of the park. Just as we thought we were getting to grips with the lowland Araceae flora of Mulu, today opened another whole new world of the richness and diversity that Mulu has for Araceae. The river is shallow and more-or-less level with, in the dry season, ankle to knee-deep water with shale valleys on both sides. We saw the first *Amydrium medium* (Zoll. & Moritz) in Mulu swiftly followed by discovery of *Hapaline celatrix* P.C. Boyce, described in 1996 from Brunei (Figs. 22 & 23) and representing the first ever record for Sarawak and furthermore a new species record for Malaysia. Additionally the new discovery expands the information concerning species variability, not least variation in leaf shape and leaf markings. Small seedlings of *A. angulatus* were scattered around besides *H. celatrix*. Further up the river we encountered *Alocasia longiloba* 'watsoniana', *A. sarawakensis*, *Rhaphidophora beccarii*, *R. latevaginata*, *Scindapsus latifolius*, *S. crassipes*, *S. longistipitatus* and *S. coriaceus* Engl., *Aglaonema nitidum* and *Pothos scandens*, yet another *Anadendrum* and *Lasia spinosa* along with yet more new *Homalomena* spp.: one with slender growth and almost square base leaves, another with extraordinary striate petioles, the species seen earlier with a



Fig. 22 *Hapaline celatrix* P.C.Boyce.



Fig. 23 *Hapaline celatrix*.

pulvinate petiole, another with hastate glossy leaves, a remarkable lithophytic species with deltoid leaves and another species near to *H. hostifolia* with semi-matte adaxial leaf surface. And surprisingly, *Homalomena humilis* (Jack) Hook.f. which is supposed to be limited to limestones was found here as well in fruit.

The Sungai Licat valley proved to be very rich in *Schismatoglottis* species and also very diverse; aside from the widespread *Schismatoglottis crinitissima* A.Hay with its petioles and leaves bristly-hairy on both surfaces, we found a single plant of *S. colocasioidea*, a fine clump of *S. ahmadii* A.Hay (a rheophyte in the *S. calyptrata* group occurring from Sabah until central Sarawak), and a green form of *S. motleyana*. In addition, the valley is home to a considerable number of novelties including one restricted to vertical shale cliffs, another with thick grey leaves, that is also present at the Clear Water Cave limestones, one closely related to yet another species from Bukit Satiam, striking shark-skin leaf texture but completely different venation, another with a remarkably long-decurrent leaf base and a recurrence of the species from our second day notable for bluish green leaf surfaces that are viviparous abaxially. Because of the very rocky river banks there is no *P. borneense* here; it is replaced by the other representatives of the satellite genera of tribe *Schismatoglottideae* including *Aridarum caulescens* M. Hotta, *Piptospatha burbridgei* (N.E. Br.) M. Hotta (the species that replaces *P. grabowskii* (Engl.) Engl. in northeastern

Sarawak, Sabah and Brunei, and *Bucephalandra motleyana*.

10th August 2006.

Trail to and beyond Clearwater Cave.

We set a quick pace to Clear Water Cave and then decided to proceed beyond the Clear Water Cave system on the much smaller trail used by professional cavers that skirts the edge of the formation, winding through a spectacular area of enormous fallen limestone boulders, many larger than a small house, emerging through seasonally inundated forest thus providing a wealth of drier habitats in an otherwise very wet tract of forest. However, due to the almost inaccessible terrain the path is impassable after more or less one km. However, despite the somewhat uneventful day, we glimpsed *Scindapsus glaucescens* (Engl. & K. Krause) Alderw., *Amorphophallus angulatus*, *Alocasia reginae*, *A. sarawakensis* and *A. longiloba* 'longiloba', encountered again the *Schismatoglottis* with pellucid veins, a *Schismatoglottis* in *nervosa* complex and another near to *S. patentinervia* (with decurrent base and almost 90° venation) on the muddy banks along with a *Homalomena* with slender acuminate leaf bases while the limestone was home to *Schismatoglottis monoplacenta* and a *Schismatoglottis* thick leaves, mid-grey band. Perhaps the most interesting was a large colony of *Cryptocoryne yuji* Bastmeijer growing in very shallow water in limestone rubble and sand and flowering gregariously and a new record for the park.

11th August 2006.

A short trail to the Nightwalk and a return trip to Dear Cave trail.

An easy day spent mopping up small local areas began with a short trip to the Nightwalk trail near the Headquarters, an area of freshwater swamp forest with drier islands and emergent limestone. Among the discoveries was yet another *Anadendrum*, our fourth, notable for very slender petioles and *Alocasia minuscula* A.Hay, the latter another new record for Mulu. Later we made a brief return trip to Dear Cave as Peter needed to re-take some pictures of *B. motleyana* which were lost while transferring the pictures to the computer several days prior. On the way, Jeland spotted true *Schismatoglottis patentinervia* Engl. Once we reached the cave we descended into the small river and almost immediately found *Schismatoglottis ahmadii* (Figs. 24 & 25) distinctive by the cirrhate leaf tips, on a large fallen dead trunk in the knee deep stream near

the hut for bat watching. We returned early to finalize the draft checklist for the Araceae of Mulu and also to record a species-per-trails list with images to pass to Brian and Sue for their use in the future.



Fig. 24 *Schismatoglottis ahmadii*.



Fig. 25 *Schismatoglottis ahmadii*, note the cirrhate leaf tip.

12th August 2006.

The end of a successful field trip and a travelling day back to Kuching but we will be back to Mulu to continue our work, aiming for subsequent trips to hike and camp at the more remote limestone areas, to gain altitude to investigate the montane aroid flora and also get onto the Setap formations along the Brunei border.

References

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