International Aroid Society, Inc.

the IAS Newsletter

Vol 28 No 2 ● May 2006

A QUARTERLY PUBLICATION FOR MEMBERS OF THE INTERNATIONAL AROID SOCIETY

Table of Contents

Aroids on Karst Limestone in Sarawak: Gunung Selabur

Wong Sin Yeng[1] and Peter C. Boyce[2]

Universiti Malaysia Sarawak and Malesiana Tropicals have an ongoing field program investigating the aroids of the limestone of western Sarawak, the primary field team comprising the authors plus Jeland ak Kisai and Simon Kutuh ak Paru. The 2006 program is focusing on the Pichin area, situated in the southern part of Kuching and Samarahan Divisions adjacent to the border with Kalimantan (Indonesian Borneo). Gunung Selabur forms part of the Serian limestones (**Fig. 1**) dating from late Jurassic and early Cretaceous times. Remarkably there has been little disturbance of these limestones, even at the very base of the cliffs where in other limestone areas the habitat is often damaged due to cultivation activities. The kampong (village) people here take good care of their local forests which could easily be damaged by fire if the impact of disturbance was too great. In addition there are very few quarrying and mining activities.

Figure 1: Gunung Selabur

From our investigations so far, a total of 36 aroid species belonging to 12 genera have been recorded for Gunung Selabur, making this one of the most aroid-rich habitats we have seen to date.

On our first trip, the 14th of March 2006, we entered the trail to the limestone hills, walking through rubber plantations and pepper farms on sandstone. One of the first aroids we encountered was *Alocasia sarawakensis* M.Hotta, at first as a juvenile, growing alongside an as yet unidentified, and probably novel, *Homalomena* sp. Further down the track, Jeland found a mature *A. sarawakensis* in saturated mud in full sun; the typical habitat. In *A. sarawakensis*, the leaf's abaxial surface is hairy with very prominent veins (**Fig. 2**), very different to the putative sister taxon *A. robusta* M.Hotta (also growing in these open, sunny habitats), in which the abaxial surface is glabrous and coated in a chalky white layer and the veins are flush with the surface (**Fig. 3**).

[1]Faculty of Resource Science and Technology, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia. E-mail: sywong@frst.unimas.my
[2]Malesiana Tropicals, Suite 9-04, Tun Jugah Tower, No.18, Jalan Tunku Abdul Rahman, 93100 Kuching, Sarawak, Malaysia. E-mail: botanist@malesiana.com

Figure 2: *Alocasia sarawakensis*

Figure 3*: Alocasia robusta*

Also abundant along these sandstone trails was the juvenile of the climber *Scindapsus longistipitatus* Merr. with its distinctive winged petiole.

There appear to be at least two new species of *Homalomena* in Gunung Selabur, both in section *Cyrtocladon* (recognizable by the spathe strongly constricted between the lower part and the limb. The rarer of the two has a thick-textured leaf. The other, which is abundant on hill slopes and sometimes on the trackside, is very distinct by virtue of extra-floral nectaries on the leaves (**Figs. 4 & 5**). *Homalomena hostifolia* Engl. is also quite common on every trip we made on limestone, although not restricted to this geology.

There were two *Schismatoglottis* species forming large colonies on the sandstones: *S. motleyana* (Schott) Engl. (**Fig. 6**) and *S. wallichii* Hook.*f*. There were also two further solitary *Schismatoglottis*: *S. conoidea* Engl. and a *Schismatoglottis* sp. c.f. *ardenii* A. Hay, but with a wide cordate leaf; *S. ardenii* has narrowly cordate leaves and is endemic to the Rejang Basin. The track margins also harboured *S.* cf. *grabowskii* Engl. with two different variations growing side by side.

Figure 4: *Homalomena* species

Figure 5: *Homalomena* species

We glimpsed *Aglaonema nitidum* (Jack) Kunth in late anthesis and *Aglaonema simplex* (Blume) Blume; even sterile these species are readily separable on leaf lamina characters; *A. nitidum* has wide leaves that are smooth with the primary lateral veins not prominent whereas *A. simplex* has narrower quilted leaves with prominent lateral veins. *Alocasia longiloba* Miq. "longiloba" was also found at these sandstones. It only occurs off limestone areas, being replaced on limestone in the Bau area with *A. longiloba* "lowii" – the latter absent from the Serian limestones.

Eventually we reached kerapas (wet facies of kerangas - tropical heath forest). Kerangas is from the Iban language and strictly refers to soils, usually sandy, or derived from basic igneous or volcanic rocks and thus lacking nutrients, in the lowlands and hills which are unsuitable for growing rice as they are infertile.

Figure 6*: Schismatoglottis motleyana*

In botanical parlance 'Kerangas' refers to tropical heath forest on white sands, often podzolized, with open, low canopy. Such areas are frequently rich in orchids, *Nepenthes*, etc., but generally poor in aroids.

Figure 7: *Cyrtosperma ferox*

In the swampy kerapas we noticed stands of sago palm (*Metroxylon sagu* Rottb.) and discarded bark and trunk left after the sago

starch has been extracted. In this same area Jeland spotted *Cyrtosperma ferox* N.E.Br. (**Fig. 7**) and *Lasia spinosa* (L.) Thwaites, occurring in freshwater swamp forest in full sun. Interestingly, both of these aroids are considered as among the least specialized of all living aroids, except for monospecific *Podolasia*, and are mostly plants of helophytic habitats. The growth form of these curious aroids, with the leaf emerging in a very underdeveloped state and the petiole extending very quickly, remarkably mimics the habit of tropical Nymphaeaceae (the water lilies) and it may be that in both instances we are looking at a retained adaptation to inundated habitats – the small leaf offering little resistance to flowing water and the petiole extending quickly to place the leaf in the open air. Along the sandy and muddy stream banks, *Rhaphidophora beccarii* Engl. was present in split and entire leaf forms.

***Figure 8**: Schismatoglottis asperata*

At the transition to the limestone, Peter collected *Schismatoglottis asperata* Engl., in a quite beautiful and distinctive form with silver leaf markings (**Fig. 8**). Then, *Homalomena insignis* N.E.Br., a species common on, but not restricted to, limestone with distinctive oblong leaves and a long petiole. *Homalomena humilis* (Jack) Hook.*f*., a limestone-restricted species in *Chamaecladon*, was also present. Then another as yet unnamed *Homalomena* with parallel-sided cigar-like spathe and very glossy deep green leaves. Gosh, someone needs to do something on this genus which has over 90 spp. and only 26 names in Borneo!

This was followed by Jeland (again!) spotting *Schismatoglottis bauensis* A. Hay & C.C. Lee (**Fig. 9**). With its long-petioled shiny bright green leaves, very distinctive interprimary veins and the new growth pink in colour, until this trip it was only known to occur on the Bau limestones. Thus another new record for the Pichin area. Next we encountered *Schismatoglottis nervosa* Ridl., (**Figs. 10 & 11**) also hitherto considered to be endemic to limestone areas of Bau, occurring along run-off areas where water percolates through the limestone. It is probable that these large areas of this species are due to seeds washed from the limestone hill to the cliff base. Another common aroid climber, *Amydrium medium* (Zoll. & Moritzi) Nicolson, was also found here, with its distinctive unequally split and perforated leaves.

***Figure 9**: Schismatoglottis bauensis*

Just before we decided to call it a day (Jeland was very eager to fill his empty stomach), we made a quick check on what lay ahead on the bottom of the limestone area for our next trip. Peter spotted a fertile plant of a new *Anadendrum* he's in the process of describing and was able to collect what will be the type specimen. And next to it, he rediscovered *Schismatoglottis convolvula* P.C. Boyce (**Fig. 12**), the ninth species of *Schismatoglottis* at Gunung Selabur! The whole area was covered with this extraordinary creeping and climbing aroid. And this is the first time I saw Peter, jumping and swearing(!) over the rediscovery of a small aroid! The excitement being that apart from a rediscovery, *S. convolvula* appears to be extinct at its type locality: Bukit Manok, Padawan limestone. After taking numerous pictures, we decided to return again the following week to allow more time for us to reach the top of the limestone.

***Figure 10**: Schismatoglottis nervosa*

***Figure 11**: Schismatoglottis nervosa*

***Figure 12**: Schismatoglottis convolvula*

22 March 2006. The group set a fast pace to the area where we found *Schismatoglottis convolvula* and where we tried to scout for its inflorescence, but it seems that it consisted of one big clone, this which was not at that time in flower. On our previous trip, Peter had collected living material and with luck, it will eventually flower at the nursery.

***Figure 13**: Alocasia reversa*

It is seldom that the tops of limestone hills are easily accessible since the rocks are both very steep and very slippery and this, combined with the very sharp edges to the boulders make a climb hazardous; indeed this was the first author's experience of being able to climb to the summit of a limestone hill. However, progress along Selabur's limestone slopes was relatively easy as there was a clear trail and plentiful handholds available from the rich natural vegetation occurring along the path. It seems magical that despite the small volume of thin soil intermixed with the rocks, and thus very limited capacity to hold water, it is still an area of such high aroid diversity. Approaching the top of Selabur, the presence of a cave is quite obvious by the increased intense smell of swiftlet and bat guano, and sure enough we were passed by some men returning from an edible bird-nest collecting in the summit caves. Ascending to the limestone summit, along the way we found *Alocasia reversa* N.E.Br., (**Fig. 13**) with its remarkable 'reversed' markings; *A. reversa* is restricted to limestone areas of Serian and Padawan and has been of horticultural interest since Victorian times, when the original collectors often purposely misled about the origin of horticultural novelties in order to monopolize their commercial potential; for example it was said that *A. reversa* was from the Philippines! Then, my first *Amorphophallus* in flower, *A. eburneus* Bogner (**Figs. 14 & 15**), a Serian/Padawan endemic; replaced by *Amorphophallus brachyphyllus* Hett. in Bau, and no wonder it is called a 'sexy' plant. It is beautiful as long as you don't smell the rotting fish/shrimp odour of the spadix! Also in the same area of cliff bases was a new *Scindapsus*, unique by the presence of stilt root and pleated leaves.

***Figure 14**: Amorphophallus eberneus*

***Figure 15**: Amorphophallus eberneus*

At the summit cliff bases, both in sun and in deep shade, *Schismatoglottis nervosa* flourished, colonizing the whole area in its vigorous growth form; this may explain why there was *S. nervosa* at the bottom part of the limestone from seeds washed down during storms.

***Figure 16**: Rhaphidophora tenuis*

***Figure 17**: Rhaphidophora tenuis*

Of particular interest on the summit on rocky outcrops and cliffs was *Rhaphidophora tenuis* Engl. (**Figs. 16 & 17**), usually associated with limestone, mixed with *Rhaphidophora korthalsii* Schott, a plant more often on rocks

other than limestone (**Figs. 18 & 19**). Also present were *Rhaphidophora elliptica* Ridl., *Rhaphidophora foraminifera* (Engl.) Engl., *Rhaphidophora latevaginata* M. Hotta, together with the limestone-restricted *Pothos insignis* Engl. and *Pothos ovatifolius* Merr. The juvenile forms of *R. korthalsii, R. latevaginata* (**Fig. 20**) and *ovatifolius* are very similar shingling climbers although *P. ovatifolius* has three distinctive veins arising from the leaf base (**Fig. 21**).

***Figure 18**: Rhaphidophora korthalsii*

***Figure 19**: Rhaphidophora korthalsii*

A particularly dominant component of the limestone hill fauna was indicated by empty shells of land snails scattered all over the summit. These are organisms with high calcium requirements and acidity-intolerance and often with high local endemism. At the very end of the trail, a magnificent tall block of vertical limestone cliffs rises above a breathtaking cave with the mist piercing through the sunlight and providing a splendid end to our journey. Simon and our guide Gamin explained that a few years before a collector of edible bird-nests had fallen from the roof of the cave (some 25 m up) and died; apparently he was stealing nests. At the cave entrance we saw five crosses, one the grave of another person killed while collecting; people visiting there for bird-nests have to ask at the crosses for permission from the spirit of the cave upon entering it. While we made a quick round trip on to see what was present on the top, Jeland while relaxing could still spot *Rhapidophora korthalsii* in late flower and young fruit. That guy, no aroid can escape his eye sight! Remarkably the wind originating from the cave was damp and cool in the heat of the hill top.

***Figure 20**: Rhaphidophora latevaginata*

It may seem astonishing that there can be found so many species in just one relatively small and isolated limestone area, but the same situation has been found to occur in most of the other limestone areas in Sarawak. The minimum tally for any one area so far is 20 aroid species in 11 genera. Our ongoing studies indicate that there are still a considerable number of aroids yet to be formally described even in the relatively easily accessible areas of Kuching. The implication of high biodiversity and endemism on limestone hills are obvious. It is urgently needed that the scenic and biodiversity values of limestone hills acquire more appreciation and strict protection. After Gunung Selabur, we expect to have that kind of field trip on every trip we make after that. Sigh...so much work to do!

***Figure 21**: Pothos ovatifolius*

Visit the IAS Members Only Web Page

IAS members may enjoy a visit to the members' area on the IAS website http://www.aroid.org/ The website may now be accessed by a login provided with each issue of the newsletter. This quarter's login info is listed at the top of each page.

The members area contains distilled wisdom from Aroid-L, electronic publications, scans from Aroideae Maximilianae, an online membership directory and newsletter back issues, including this issue with full color pictures