

Short Notes

A preliminary survey of Araceae of Batu Timbang, Imbak Canyon Conservation Area (ICCA), Sabah, Malaysia Borneo.

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Abstract

During a scientific expedition to Batu Timbang, Imbak Canyon Conservation Area (ICCA), Sandakan, Sabah between 17 and 20 August 2017, 14 species in seven genera of Araceae were collected. The genera are *Pothos* (*Pothos* [Allopothos] sp.); *Rhaphidophora* (*R. korthalsii*, *R. sylvestris*, *R. latevaginata*); *Scindapus* (*S. pictus*, *S. longistipitatus*, *S. kinabaluensis*, and *Scindapsus* sp. nov.); *Schismatoglottis* (*S. wongii*); *Aglaonema* sp.; *Ooia* sp. and *Alocasia* (*A. robusta*, *A. sarawakensis*, and *A. wongii*).

Keywords: Aroids, Imbak Canyon Conservation Area ICCA, Malaysian Borneo.

Introduction

The Araceae, comprising seven subfamilies, 144 genera and about 4,000 described species, is a subcosmopolitan family in distribution but most abundant and diverse in the ever wet or humid tropics (Boyce & Croat, 2011; Cusimano et al., 2011). The family is defined by having minute sessile flowers on spadix and covered by a spathe. The spadix may bear either unisexual or bisexual flowers. Most of the climbers have bisexual type flowers while others have unisexual flowers. Ecologically, aroids can be found in streams, ponds and canals, terrestrial habitats, tidal mud, swamps and wasteland, forest floor, climbers, epiphytes and rheophytes (Mashhor et al., 2012).

The aroids of Borneo currently stand at 575 species, of which 433 are formally described (Wong, 2016). Most Bornean terrestrial aroids show marked local endemism, often to a very high degree, and are frequently associated with geological obligation. Fieldtrips in Sabah have resulted in numerous undeterminable species of aroids which on subsequent flowering in cultivation have proved to be taxonomic novelties (Kartini et al., 2017).

Received 06 May 2019

Reviewed 21 June 2019

Accepted 02 October 2019

Published 15 October 2019

Method

A preliminary survey of the aroids of Batu Timbang, ICCA was conducted between 17 to 20 August 2017. Several habitats including forested areas and riverside ecosystems were visited, specifically the Rafflesia Trail, Lanap Trail and Lanap riverbank adjacent to the base camp.

All aroids found were recorded. As so often is the case, many were encountered only as sterile plants. Although with experience assignment of sterile plants to genus is not overly difficult, identification to species, especially in an area never before studied, is often impossible since in many instances the species encountered will be undescribed taxonomic novelties. On such occasions, living specimens are collected and maintained at the Nursery, Faculty of Sustainable Agriculture, Universiti Malaysia Sabah, Sandakan campus awaiting flowering for further identification. Identifications are based on Boyce (2004), Boyce et al. (2001), Hay (1998), Wong (2016), and Wong & Boyce (2016).

Results

Three subfamilies and seven genera comprising 14 species were found in the sites surveyed: Rafflesia Trail, Lanap Train and Lanap riverbank (Table 1).

Discussion

The initial survey of Batu Timbang revealed a distinctly meager aroid flora comprised largely of rather widespread species associated with disturbed habitats. Of the three *Alocasia* encountered, *Alocasia robusta* is a fast-growing

Table 1. Aroids species in Batu Timbang, ICCA

| Subfamily | Genus and Species | Rafflesia Trail | Lanap Trail | Lanap riverbank |
|---------------|--|-----------------|-------------|-----------------|
| Pothoideae | <i>Pothos</i> sp. [Allopothos] | + | + | - |
| Monsteroideae | <i>Rhaphidophora foraminifera</i> (Engl.) | - | - | + |
| | Engl | + | + | - |
| | <i>Rhaphidophora korthalsii</i> Schott | + | + | - |
| | <i>Rhaphidophora latevaginata</i> M. Hotta | + | + | - |
| | <i>Scindapsus pictus</i> Hassk. | + | + | - |
| | <i>Scindapsus longistipitatus</i> Merr. | + | + | - |
| | <i>Scindapsus</i> sp. 1 | + | + | - |
| | <i>Scindapsus</i> sp. 2 | + | + | - |
| Aroideae | <i>Aglaonema</i> sp. | + | + | - |
| | <i>Alocasia sarawakensis</i> M. Hotta | + | - | + |
| | <i>Alocasia robusta</i> M. Hotta | - | - | + |
| | <i>Alocasia wongii</i> A. Hay | + | + | + |
| | <i>Ooia</i> sp. | - | - | + |
| | <i>Schismatoglottis wongii</i> A. Hay | - | - | + |

but short-lived species frequenting forest gap-phases while *Alocasia sarawakensis* (Plate 1) is a semi-colonial (via rhizome bulbils) species adapted to open swampy sites where it often becomes almost weedy, for example at Danum Valley. Among the climbers, *Rhaphidophora korthalsii* is one of the most widespread species of the genus, occurring from the Andaman Islands to the tropical islands of the western Pacific. *Rhaphidophora foraminifera* is a large plant and a *Rhaphidophora* in the Hongkongensis clade. *Rhaphidophora latevaginata* (Plate 2) is locally common for North East Peninsular Malaysia (Sofiman & Boyce, 2010) and throughout northern and central Borneo. *Scindapsus*, was represented by four species, of which three are widespread and often associated with disturbed forest: *S. pictus* (Plate 3) occurs throughout the Sunda and the Philippines and into Sulawesi; *S. longistipitatus* is widespread in Sabah and East Kalimantan and extends out to the Philippines. The third of the widespread species (*Scindapsus* sp. nov. 1) (Plate 4) occurs throughout northern Borneo and as far South as the Kapuaus valley in the North West and Tarakan in the North East of Kalimantan, but has yet to be formally described.

Of slightly more interest was the central and eastern Sabah endemics *Alocasia wongii* and *Schismatoglottis wongii* (Plate 5), and an *Aglaonema* which did not appear to concur well with the three species of the genus currently recorded for Borneo (*A. nebulosum* N.E.Br., a species restricted to kerangas, *A. nitidum* (Jack) Kunth, and *A. simplex* (Blume) Blume. Unfortunately, owing to an oversight no images exist of this plant.

Three aroids encountered were deemed of special interest. A *Pothos* (Plate 6) in the Allopothos clade, a *Scindapsus* (*Scindapsus* sp. nov. 2 in Table 1) (Plate 7) and an *Ooia* (Plate 8). Unfortunately, all except the *Scindapsus* were encountered sterile. The *Ooia* is unquestionably undescribed (Wong & Boyce 2016), and furthermore the second species for Sabah - the other being *O. kinabaluensis* (Bogner) S. Y. Wong & P. C. Boyce.

The *Pothos* is very likely *P. miarabilis* Merr., and would represent the second ever collection for the species.

Scindapsus sp. 2 is a member of the taxonomically difficult Coriaceus complex and closely similar to the montane-kerangas *Scindapsus kinabaluensis* (Furtado) Kartini & P. C. (Kartini et. al., 2015), but differs in the spathe shape.

Conclusions

Batu Timbang proved to be disappointing as a site for Araceae, but given the limited duration of the visit it is highly probable that more awaits discovery. In

particular, a concerted effort should be made to find the *Pothos* in flower, likewise the *Ooia*, and a search made for adult plants of the *Aglaonema*.

Acknowledgements

We are grateful to Universiti Malaysia Sabah (UMS) for providing grant No. GKP00010-ST-2016. We also thank Peter Boyce (LMU) and Wong Sin Yeng (UNIMAS) for species confirmation and the organisers of Batu Timbang, ICCA scientific expedition 2017 on their hard work in making the expedition a success.

References

- Boyce PC. 2004. The Aroids of Borneo. *Folia Malaysiana* 5(3 & 4): 123-170.
- Boyce PC, Croat TB. 2011 onwards. The Überlist of Araceae, totals for published and estimated number of species in aroid genera. <http://www.aroid.org/genera/180211uberlist.pdf>. — accessed 8 May 2019.
- Boyce PC, Baharuddin S, Jain L. 2001. Araceae of the Crocker Range National Park I Sabah: A preliminary survey, checklist and generic key. In: Ghazally I & Lamri A. (eds), *A Scientific Journey Through Borneo, Crocker Range National Park Sabah*, Vol. 1. Natural Ecosystem and Species Components, pp. 55-64.
- Cusimano N, Bogner J, Mayo SJ, Boyce PC, Wong SY, Hesse M, Hettterscheid WL, Keating RC, French JC. 2011. Relationships within the Araceae: Comparison of Morphological Patterns with Molecular Phylogenies. *American Journal of Botany* 98(4): 1-15.
- Hay A. 1998. The Genus *Alocasia* (Araceae-Colocasiaeae) in West Malesia and Sulawesi. *Gardens' Bulletin Singapore* 50(2): 221-334.
- Kartini Saibeh, Siva Rohgini B, Boyce PC. 2015. Studies on Monstereae (Araceae) of Borneo II: Furtado's *Rhaphidophora kinabulensis* elucidated and transferred to *Scindapsus*. *Willdenowia* 45(3): 409-413.
- Kartini Saibeh, Boyce PC, Wong SY. 2017. Studies on Schismatoglottideae (Araceae) of Borneo LV: *Schismatoglottis saafiei* and *Schismatoglottis zainuddinii* spp. nov. from Tawau Hills, Sabah. *Nordic Journal of Botany* 35(6): 719-723.
- Mashhor M, Boyce PC, Sofiman O. 2012. The Araceae of Peninsular Malaysia. Penerbit Universiti Sains Malaysia. 146pp.
- Sofiman O, Boyce PC. 2010. Studies on Monstereae (Araceae) of Peninsular Malaysia II: *Rhaphidophora latevaginata*, newly recorded for West Malaysia. *Gardens' Bulletin Singapore* 62(1): 1-8.
- Wong S Y. 2016. *Keladi Hutan Borneo*. Dewan Bahasa dan Pustaka. 246pp
- Wong SY, Boyce PC. 2016. Studies on Schismatoglottideae (Araceae) of Borneo LI: *Ooia* revised, including a reconsideration of *Ooia grabowskii*. *Journal of Japanese Botany* 91, supplement: 138-167.

List of Plates



Plate 2-*Rhaphidophora latevaginata* M. Hotta



Plate 3-*Scindapsus pictus* Hassk.



Plate 4-*Scindapsus* sp. 1



Plate 7-*Scindapsus* sp. 2



Plate 8. *Ooia* sp.