

**IX. AN AROID COLLECTING TRIP TO SARAWAK
AND A KEY TO THE GENERA OF ARACEAE IN SARAWAK**

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The main aim of the trip was to find an enigmatic aroid that was first collected as a sterile plant by the Australian plant enthusiast Dr. A. Dearden in 1990. The true identity of this *Nephtytis*-like plant, as we called it in the meantime, remained unclear and we thought that it was probably a new genus. It was collected in flower shortly (6 February 1994) before our trip by Dr. A. Hay of the Royal Botanic Gardens, Sydney. We also collected this aroid in the rain forest and in relictual regrowth near Bintulu. It grows as scattered individuals on the forest floor. Living plants brought back to Germany and England have grown very slowly, although one plant has flowered in the Botanischer Garten München. A thorough study of this aroid, including fruiting material, pollen morphology and chromosome count has shown it to be a new species of *Nephtytis*, a genus hitherto known only from the rain forest areas of tropical Africa. This is the first record of the genus *Nephtytis* in Asia. A similar disjunction of distribution occurs in the genera *Amorphophallus*, *Arisaema*, *Remusatia*, *Rhaphidophora*, *Sauromatum*, and *Pothos* (the last one in Madagascar and the Comores, not on the African mainland). However these occur in the Indian subcontinent as well. *Nephtytis* does not. The new Asian species has been described as *Nephtytis bintuluensis* by Hay, Bogner & Boyce (1994).

Another interesting observation made during our trip was that *Pedicellarum paiei* M. Hotta (the only aroid with pedicellate flowers) has four growth stages: a monopodial juvenile 'shingle plant' with nearly sessile ovate to round leaves appressed to the trunk of the climbing support, a monopodial sterile semi-mature stage with differently shaped, petiolate leaves, a fertile sympodial stage with the inflorescences carried on numerous abbreviated side branches and a flagellate stage, with long whip-like growths bearing scale-like leaves, arising from the sympodial flowering stage. The flagellate shoots reach a length of several metres and continue to grow until they reach the ground or another tree at which point they produce roots and resume the second growth pattern described above.

We also searched for *Heteroaridarum borneense* M. Hotta at the type locality but without success. This monotypic genus has been collected only once.

An interesting *Amorphophallus*, *A. pendulus* Bogner & Mayo, notable for the very long, pendulous spadix appendix reaching the ground, was found to be widespread, although only occurring as scattered plants.

The commonest aroids in Borneo are those of the tribe *Schismatoglottideae* (e.g. *Bucephalandra*, *Phymatarum*, *Piptospatha*, and *Schismatoglottis*). Many species of this tribe are rheophytes, growing on rocks in or along streams. An interesting new species of *Homalomena*, in which the leaves are strictly distichously arranged with the plant thus resembling a fan, was collected at several localities (*H. disticha*, *spec. nov. ined.*)

Several interesting climbing aroids were seen and collected. Most notable was the discovery of *Pothos insignis* Engl. in flower and fruit at the Fairy Caves near Bau.

This short note can only briefly cover a few of the interesting aroids seen during the trip. The aroid flora of Sarawak is very rich and many species await formal recognition and description. It is very important for the study of aroids that living plants, either in nature or in cultivation, are examined. It is not sufficient to rely on herbarium specimens alone. It is useful to have pickled material, especially of inflorescences, along with the herbarium specimens. Besides aroids other plant groups were collected, mostly for colleagues who are specialists in particular families. Of particular note was the collection, soon after the recent publication of a revision of the genus *Mapania* (*Cyperaceae*) by Dr. D. Simpson, of a *Mapania* that appears to be undescribed. The plant was found very near to the main road from Kuching to Matang and serves to illustrate that there are clearly many more discoveries to be made in Sarawak.

We thank the Forest Department in Kuching, for their splendid assistance during our stay. Without the aid of a jeep, driver and field assistants and the expert guidance of Haji Othman Ismawi our visit would have been far less successful.

KEY TO THE GENERA OF ARACEAE IN SARAWAK
(Including the most commonly naturalized genera)

1. Plants terrestrial or aquatic or rheophytic (i.e. growing on rocks along streams) 2
— Plants free floating. Leaves in a rosette, hairy *Pistia*
2. Plants terrestrial, either forest herbs, climbers, rheophytes or swamp plants. . . . 3
— Plants aquatic (*C. ciliata* in brackish water). Spathe margins connate, flowers contained in a 'kettle', spathe limb conspicuously coloured *Cryptocoryne*
3. Plants climbing (rarely creeping). Flowers hermaphroditic 4
— Plants forest herbs, swamp plants or rheophytes. Flowers hermaphroditic or unisexual 10
4. Flowers with perigon 5
— Flowers without perigon 7
5. Flowers sessile 6
— Flowers pedicellate *Pedicellarum*
6. Spathe shedding at anthesis, perigon not conspicuous (tepals shorter than ovary) *Anadendrum*
— Spathe persistent, perigon conspicuous *Pothos*
7. Primary lateral veins of leaf blade parallel, higher order veins parallel or reticulate 8
— All veins of leaf blade reticulate *Amydrium*
8. Leaf blade usually entire. Ovules one to few. Seeds curved 9
— Leaf blade entire or with holes and/or splitting. Ovules many. Seeds straight. (*R. beccarii* creeping on rocks by stream) *Rbaphidophora*
9. Ovules few on a subbasal placenta. — Leaves split in *E. pinnatum* . *Epipremnum*
— Ovule one on a basal placenta *Scindapsus*
10. Plants with at least prickly petioles. Flowers hermaphroditic with a perigon . . . 11
— Plants never prickly. Flowers unisexual, lacking perigon 13

11. Spathe not twisted, expanding almost completely. — Leaf blades entire 12
 — Spathe very long and twisted, margins inrolled and the spathe expanding only for a short distance basally *Lasia*
12. Spathe interior whitish. Seeds few. Testa warty *Cyrtosperma*
 — Spathe interior red-brown. Seeds solitary. Testa smooth *Podolasia*
13. Leaf blade venation parallel 14
 — Leaf blade venation reticulate 23
14. Spathe persistent and not withering 15
 — Upper part of spathe shedding at or soon after anthesis (except in *Schismatoglottis homalomenoidea*), lower part persistent 17
15. Female flowers always lacking a staminode. Fruits conspicuous, not enclosed by a marcescent spathe 16
 — Female flowers usually with a staminode. Fruits inconspicuous and enclosed in spathe. — Plants smelling strongly when cut *Homalomena*
16. Plants of the fresh water tidal zone. Female flowers in a single whorl. Fruits green when ripe *Aglaodorum*
 — Forest herbs. Female flowers in several spirally arranged rows. Fruits bright red or orange when ripe *Aglaonema*
17. Male flower thecae apically truncate 18
 — Male flower thecae apically horned — Rheophytes 20
18. Spathe not constricted, lower part funnel-shaped. — Rheophytes 19
 — Spathe usually constricted (at least slightly in the middle), lower part ellipsoid or oblong. — Forest herbs or rheophytes *Schismatoglottis*
19. Placentation basal *Hottarum*
 — Placentation parietal *Piptospatha*
20. Spathe not constricted. Stamens not tuberculate apically 21
 — Spathe constricted. Stamens tuberculate apically *Phymatarum*
21. Cylindrical staminodes between male and female flowers 22
 — Scale-like staminodes between male and female flowers *Bucephalandra*
22. All thecae horned, stamens deeply or slightly excavated, thecae opposite or on one side. Placentation basal *Aridarum*
 — Male flowers consisting of three stamens, the two outer ones with horned thecae, the central one smaller and apically truncate. Placentation basal and apical, apical placenta apparently with sterile ovules *Heteroaridarum*
23. Plants tuberous or with short, erect or creeping (*Nephythitis*) stems 24
 — Climbing plants. — Leaf blades entire, tripartite or pedate (cultivated and naturalized) *Syngonium*
24. Spadix with a terminal appendix 25
 — Spadix without a terminal appendix 30
25. Plants large (to 2 m or more). Spadix completely free. Female flowers many. — Ovary with one to many ovules 26
 — Plants small (up to 10 cm). Female part of spadix adnate to the spathe (*H. appendiculata*). Female flowers few. — Ovary with a single ovule *Hapaline*

26. Leaf or leaves always together with inflorescence(s). Leaf blade entire or, if compound, tripartite to pedate 27
 — Leaf and inflorescence always produced at different times. Leaf blade divided into three main parts, these with further divisions (= dracontoid leaf type) *Amorphoballus*
27. Leaf blade with interprimary veins between primary lateral veins 28
 — Leaf blade without interprimary veins 29
28. Forest herbs (*A. macrorrhizos* cultivated and occasionally naturalized). Leaf blade coriaceous. Placentation basal *Alocasia*
 — Growing in wet places (e. g. ditches, etc.). Cultivated and naturalized (*C. esculenta*). Leaf blade membranaceous. Placentation parietal *Colocasia*
29. Leaf blade tripartite to pedate. Male and female flower zones contiguous or with scattered sterile flowers between the zones. — Spathe variously coloured *Arisaema*
 — Leaf blade entire (sagittate-hastate in Sarawak species). Filamentous sterile flowers densely present between the distant male and female flower zones. — Inflorescence brownish purple, bad-smelling *Typhonium*
30. Stems erect or tuberous. Spathe constricted and upper part drying soon after anthesis, lower part persistent. Fruits whitish when ripe, with several to many small seeds 31
 — Stem a creeping rhizome. Spathe not constricted, persistent. Fruits orange when ripe, with a single, large seed *Nephtytis*
31. Small herbs (to 50 cm). Leaf blade ovate-peltate and variously coloured (cultivated and often naturalized: *C. bicolor*) *Caladium*
 — Large herb to 2 m. Leaf blade sagittate, plain green (cultivated and naturalized crop plant: *X. sagittifolium*) *Xanthosoma*

REFERENCES

- Hay, A., J. Bogner & P. C. Boyce. 1995. *Nephtytis* Schott (Araceae) in Borneo: a new species and new generic record for Malesia. *Novon* 4: 365–368.