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STUDIES IN THE GESNERIACEAE OF THE OLD WORLD: L*
Notes on Hexatheca

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ABSTRACT. The range of *Hexatheca* is extended from W Kalimantan and Sarawak to Sabah, where it has now been found in three separate localities. The plants in Sabah are *H. fulva* C.B. Cl., *H. fulva* subsp. *beamanii* subsp. nov. and *H. dolichopoda* sp. nov. A key to the species of *Hexatheca* is provided.

When C. B. Clarke (1883: 193) established the genus *Hexatheca,* he took the name from the curious arrangement of the androecium, which has the anthers of the two lower stamens bithecous while those of the upper pair are monothecous; thus the androecium as a whole has six thecae. For many years the genus remained monotypic and it seemed as though these peculiarities might belong to a single anomalous species. However, *Hexatheca* is now a genus of three species and one subspecies, its range has been considerably extended and the distinctive androecium remains a constant character.

The history of *Hexatheca* reflects our gradually expanding knowledge of Bornean genera. Clarke's syntypes of *H. fulva* ranged from G. Sakarang (Sarawak, Second Div.) south through the First Division to the Landuk area of Kalimantan immediately to the south of Sarawak. For just over 40 years there was no extension of this range; then, in 1925, Hans Winkler discovered a second species on Bukit Tilung, near the upper reaches of the Kapuas river in west-central Kalimantan. This species was described as *H. johannis-winkleri* (Kraenzlin, 1927:93; but *H. minor* Kraenzlin, described at the same time belongs not to *Hexatheca* but to *Staurogyne* in Acanthaceae). Another forty years saw the next small addition to the known range of *Hexatheca* when *H. fulva* was found in 1967 in the Hose Mountains in central Sarawak, (*Burtt & Martin* 4791, 4861), and two years later *H. johannis-winkleri* was found again (*Anderson & Paie* S. 28292) on the headwaters of Batang Balleh near the Indonesian border (Burtt, 1971: 46). In 1978 the range of *H. fulva* was again extended by its discovery on Pantu Ridge in the Gunung Mulu National Park (*R. Kiew* 396).

The extension of the generic range to Sabah dates from 1984 when Professor J. H. Beaman collected it on Bukit Lugas in the Crocker Range just south of Kinabalu: this collection is described below as *H. fulva* subsp. *beamanii.* In 1985–87 several botanists visiting the Danum Valley research centre collected a very distinct new species, *H. dolichopoda* (see below). Most recently true *H. fulva* has been found on Gunung Trus Madi (*J. J. Wood* 865). Clearly further discoveries must be expected in Sabah.

Hexatheca fulva holds a distinctive place amongst Bornean Gesneriaceae in that it is one of the very few species that may be found on either sandstone or limestone. At first, because it was best known on the limestone hills inland from Kuching, it seemed to be a calcicole that would also grow on the sandstone of nearby Gunung Matang. Now, however, it begins to look as though *Hexatheca*

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is basically a genus of sandstone habitats and has become a calcicole only in this one limestone area. It is notably absent from the limestone around the Niah Caves (Gunung Subis) and the one record in the Gunung Mulu National Park is not on the extensive limestone formations found there. None of the other records for the genus is on limestone.

It was noted previously (Burtt, 1971: 46) that *Hexatheca fulva* grown in a pot in the greenhouse had an erect habit with well-developed internodes, in contrast to plants in the wild, which had the stem growing horizontally from a rock-face and bearing a fan of close-set leaves at the tip. It can now be added that erect-growing plants with spaced leaves have been seen in the wild, at the foot of limestone cliffs at Bidi in the Bau district of Sarawak.

Key to the Species of Hexatheca

1a. Petiole longer than the lamina ..... *H. dolichopoda*

1b. Petiole shorter than the lamina 2

2a. Lamina at most twice as long as broad, rather abruptly narrowed into slender petiole..... *H. johannis-winkleri*

2b. Lamina usually at least three times as long as broad (unless plants small and leaves less than 10cm long), gradually narrowed into ill-defined winged petiolar region ..... *H. fulva*

Hexatheca dolichopoda B. L. Burtt, **species nova** ab aliis habitu magis herbaceo, petiolis gracilibus lamina longioribus, laminis tenuioribus ovatis vel late ellipticis acuminatis, basi inaequilaterali abrupte angustata, pedunculis usque ad 18cm longis folia aequantibus.

Herba; caulis lignosus c.3mm diam. ad c.15cm altus, partibus junioribus furfuraceo-pilosis glabrescentibus. *Folia* plerumque (semper?) tria in unoquoque nodo verticillata; petioli maturi 7–12cm longi, primum dense demum tenuius brunneo-pilosi; lamina late elliptica, 7–12.5 × 3.2–7cm, apice acuminata, basi inaequilateraliter cuneata vel subrotundata, supra breviter pilosa subtus dense appresse pilosa in venis rubro-brunnea inter venas pallida marginibus crebre serratis, nervis lateralibus utrinsecus c.10. *Inflorescentiae* solitariae ex axillis foliorum; pedunculi 12–18cm longi, breviter pilosi; bracteae primariae lineares, c.1cm longae, distanter dentatae; pedicelli graciles ad 1.5cm longi; flores cymosi. *Calyx* ad basin in segmenta 5.4 × 0.75mm pilosis divisus. *Corolla* alba, fauce lutea, extra breviter et tenuiter pilosa; tubus 4mm longus; lobi antici 9 × 7mm, postici 5 × 6mm, omnes rotundati. *Filamenta* 1.5mm supra corollae basin orientia; antica 2.5mm longa, demum spiralia, antheris bithecis 1mm longis; postica !.5mm longa, demum spiralia, antheris monothecis 0.75mm longis. *Discus* nullus. *Ovarium* conicum 2mm longum, pilosum; stylus 2mm longus, etiam pilosus, in stigma 0.75mm diam. expansus. *Fructus* cylindricus, c.2cm longus, 2mm diam., pilis compactis densius pubescens et glandulis luteis a pilis suboccultis praeditus.

Type. Sabah, Lahad Datu district, Ulu Segama, Danum Valley, near Plot 1 west trail, on boulder in stream bed in light shade, 150m, 9 iii 1987, *Argent & Jong* 261987 (E).

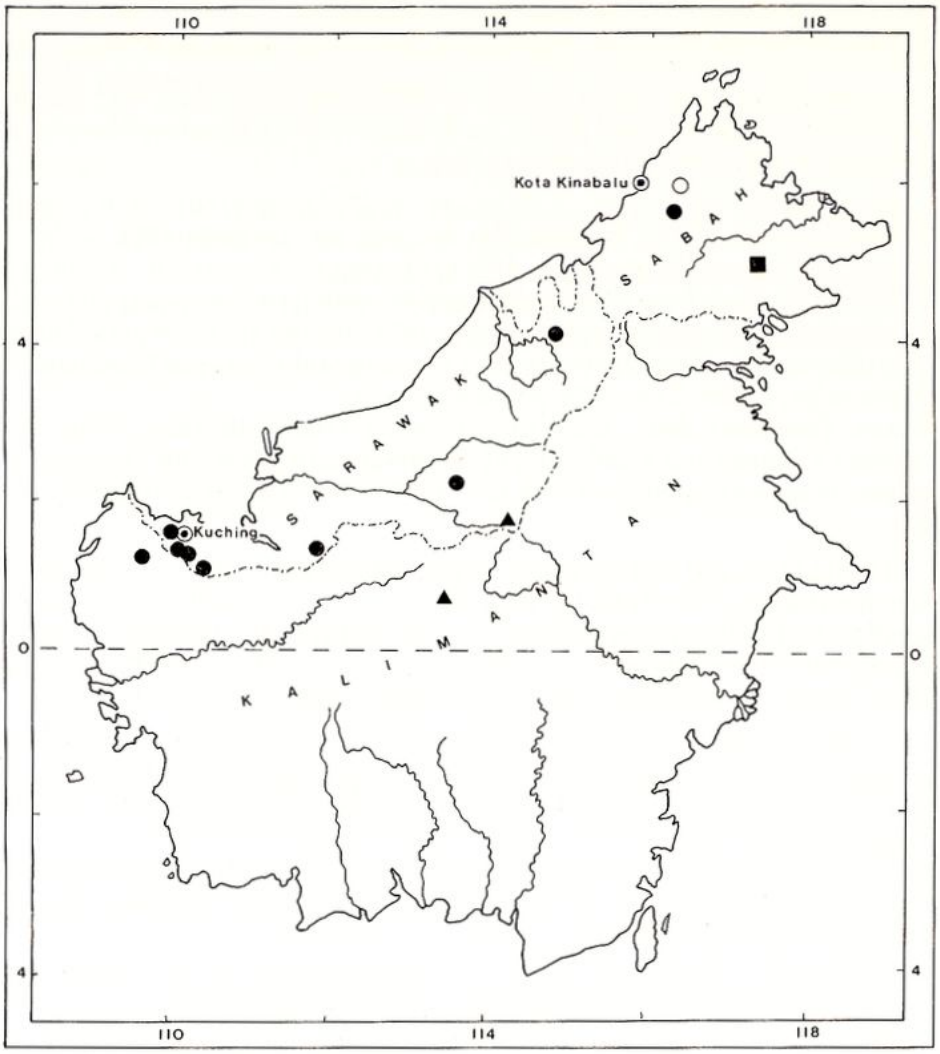

FIG. 1. Map of Borneo to show distribution of species of *Hexatheca*. ● *H. fulva*. ○ *H. fulva* subsp. *beamanii*. ▲ *H. johannis-winkleri*. ■ *H. dolichopoda*.

SABAH, Lahad Datu district, Ulu Segama, Danum valley, 1 iii 1985, *Argent et al.* SAN 108289 (K); ibidem, 25 xi 1985, *Parris* 32/85 (K); ibidem, 19 ii 1986, *Andrews* 727 (K); ibidem, 9 vi 1986, *Campbell et al.* SAN 111895 (E).

All the above collections came from the vertical face of a boulder (a chert boulder *fide* Parris) in a stream: it was always the same boulder! Miss Campbell tells me that the species was seen nowhere else.

Hexatheca dolichopoda is a well-marked species characterized by its long petioles and peduncles and ovate or broadly elliptic leaf-blades: however the floral differences from the other species are slight. From the available material it seems to be a more herbaceous plant than *H. fulva*. The stems, though woody, are only about 3mm diam.: in *H. fulva* they are often twice as thick and may be conspicuously marked with raised leaf-scars in the upper part. Inside the corolla there are patches of brownish raised cells between the anticous filaments

and between the anticous and posticous ones. However the whole of the inner surface of the corolla merits more careful study from living material.

Hexatheca fulva C. B. Clarke in A. & C. DC., Mon. Phan. 5(1): 193, tab. 22 (1883); Burtt in Notes RBG Edinb. 31: 46 fig 3.4 (1971); Beaufort-Murphy in Selbyana 6: 349, 350, tab. 10, H, 1 (1983).

subsp. **fulva**
Lectotype (chosen here): Sarawak, Mt Matang, *Beccari* 26400 (FI).
KALIMANTAN. Landuk, *Teysmann* 11213 (FI, n.v.).
SARAWAK. Records from First, Second and Seventh (previously part of Third) Divisions have already been given (Burtt, 1971: 46) and are not repeated here: they are mapped on Fig. 1. Fourth Div., Gunung Mulu National Park, base of Pantu ridge, 1000ft, 23 iv 1978, *R. Kiew* 396 (E).
SABAH. Tambunan distr., foothills of Gunung Trus Madi, ridge along trail between Toboban and Kidukarok, upper dipterocarp forest with Tristania on ridges, on mossy dripping wet rock face, 1300m, 14 vi 1988, *J. J. Wood* 865 (E, K.)

It should be noted that since my previous article (Burtt, 1971) an additional specimen has been seen from the Hose Mts (*Chai* S. 37263) and this represents small plants just like my own collections from that area. It is possible that these plants will deserve taxonomic recognition if they prove characteristic of the Hose Mts to the exclusion of the normal long-leafed form of the plant.

subsp. **beamanii** B. L. Burtt, **subsp. nov.** a subsp. *fulva* pedunculis longioribus (c.10cm longis, nec 2–4(–6)cm), laminae parte petiolari valde alata ad 5mm lata, foliis et pedunculis et pedicellis et calycis lobis longius et laxius villosis differt.
Type. Sabah, Ranau distr., Crocker Range, Bukit Lugas, Kampong Himbaan 8.5km SE of Tenompok, 5° 57'N 116° 34'E, 1250–1300m, 7 vii 1984, *Beaman* 10530 (holo. E, iso. MSC).

This collection was at first taken to be a distinct new species, with looser indumentum and longer peduncles than in *H. fulva*. However, since then good *H. fulva* has been collected on Gunung Trus Madi, little more than 20 miles to the south of Bukit Lugas; this material has peduncles up to 6cm long, whereas 5cm is rare in Sarawak (2–4cm being normal). Thus it seems wise to be cautious, especially as the material available to me is not good enough to permit critical floral comparison.

Hexatheca johannis-winkleri Kraenzl. in Mitt. Inst. Allg. Bot. Hamburg 7: 93 (1927); Burtt in Notes RBG Edinb. 31: 47, fig. 4 (1971).
Lectotype (chosen here): Kalimantan, Bukit Tilung, 900m, 9 ii 1925, *Winkler* 1507 (HBG, photo E; isolecto. E).
SARAWAK. Seventh Div., Kapit distr., Ulu Sungei Sedampa, extreme headwaters of Batang Balleh, 1° 34'N 114° 30'E, sandstone outcrops, 450m, 2 vii 1969, *Anderson & Paie* S 28292 (E, SAR).

Kraenzlin also cited *Winkler* 1486 collected in the same place on the previous day to the specimen chosen above as lectotype. In its better defined petioles and relatively broader leaves *H. johannis-winkleri* forms a link between *H. fulva* and *H. dolichopoda*.

Excluded Species

Hexatheca minor Kraenzlin in Mitt. Inst. Bot. Hamburg, 7: 93 (1927) is a species of *Staurogyne* (Acanthaceae).

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