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A new endemic species of *Schismatoglottis (Araceae)* from the Philippines

Abstract

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A new species of the tribe *Schismatoglottideae, Schismatoglottis ifugaoensis* from the Philippines, is described and illustrated. It is characterised by cordate leaf blades, subsessile stigmas and excavated stamens with elongated, tongue-like connectives of the anthers. A revised key of the Philippine species of the genus *Schismatoglottis* is included.

Additional key words: aroids, *Schismatoglottideae, Schismatoglottis ifugaoensis,* taxonomy

Introduction

Revisions of the *Schismatoglottideae* (Bogner & Hay 2000; Hay 2002; Hay & Herscovitch 2003; Hay & Yuzammi 2000) together with subsequent updates and additions (Bogner & Boyce 2009; Boyce & Wong 2006, 2007, 2008; Wong 2010, 2011; Wong & Boyce 2007a, b, 2008, 2010; Wong & al. 2009; Wong & al. 2010) have established an excellent working platform from which to undertake further research.

Extensive fieldwork and re-examination of herbarium material by the authors has revealed that there remain many taxa that have yet to be formally recognised and in addition that several named species are too broadly circumscribed and on a critical inspection revealed to comprise several to rather many locally endemic species. Such an example, in the genus *Schismatoglottis* Zoll. & Moritzi, came to light during a tour of European herbaria. Critical examination of herbarium specimens in the Botanische Staatssammlung München (M) revealed that several sheets attributed to *S. bogneri* A. Hay represent in fact a similar but morphologically distinct, undescribed species, which is described in the present paper.

Schismatoglottis ifugaoensis S. Y. Wong, Bogner & P. C. Boyce, **sp. nov.**
Holotypus: Philippines, Luzon, Ifugao Province, near Banaue, alt. c. 1500 m, 22.6.1983 (flowering and post-floral inflorescences), *J. Bogner 1630* (M; isotypus: M).

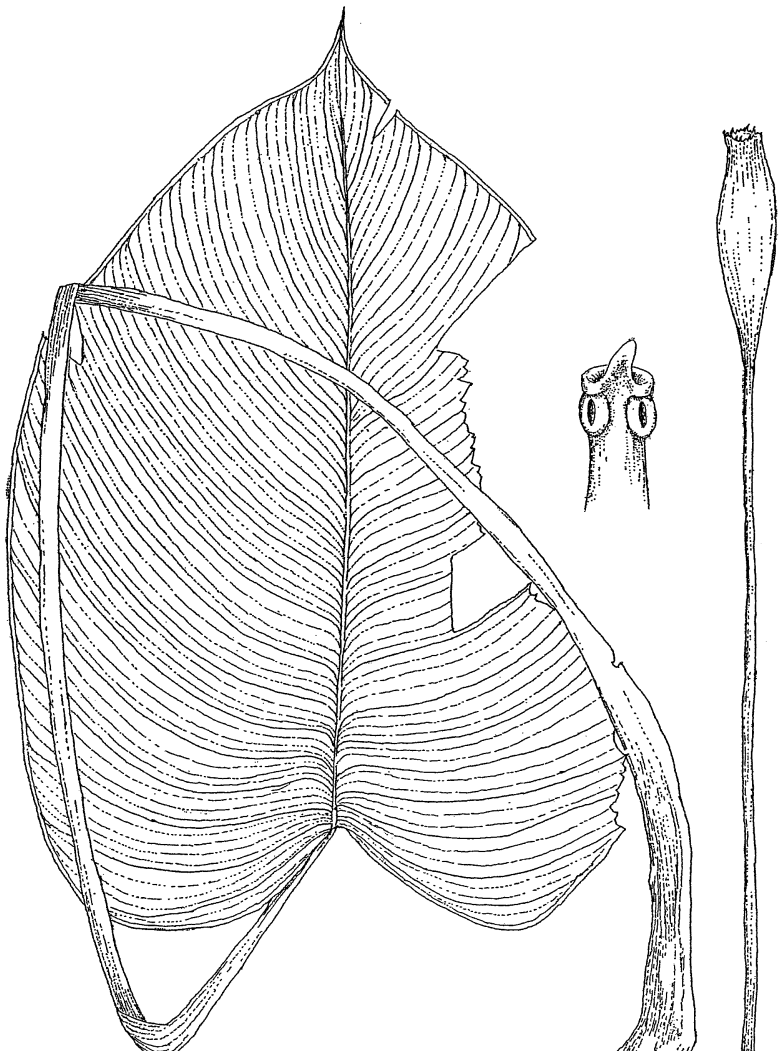
Lamina foliorum ovata, basi cordata, apice cuspidata; ovarium plus minusve globosum vel late ellipsoideum, stigma subsessile, stamina excavata, connectivo distincte linguiformi, thecae lateraliter in apice filamenti positae, apertura rimiformis.

Robust mesophytic herb. *Stem* short, incompletely known (length unknown), c. 1.8 cm in diam. *Petiole* 58–65 cm long and 0.8–1.5 cm in diam. (with sheath), 0.4 cm in diam. (without sheath), terete and canaliculate in the upper part, sheath 18–26 cm long, fully attached and ta-

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pering, persistent. *Leaf blade* cordate, 30–32 × 18–20 cm, green, apex cuspidate and then apiculate for 4 mm, base cordate and posterior lobes 4–5 cm long and 8.5–10 cm wide; *midrib* conspicuous, 4–5 mm thick at base and becoming narrower towards apex, with 16–21 abaxially prominent parallel-pinnate *primary lateral veins* on each side of the midrib, diverging 30–60°, the most basal veins arising more or less together on both sides of the midrib and arching into posterior lobes; *secondary veins* arising from the midrib and in the basal part and lobes from the primary venation, *tertiary venation* inconspicuous. *Inflorescences* more than one together (exact number unclear). *Flowers* unisexual and naked. *Peduncle* 18–22 cm long and 0.3–0.4 cm in diam., erect, after the anthesis somewhat nodding. *Spathe* constricted, c. 7 cm long, lower part 2–2.5 cm long and c. 0.5 cm in diam., convolute, green, limb 4–5 cm long and c. 1 cm in diam., lanceolate and somewhat inflated at anthesis, white, caducous, apex acuminate-tipped for 1 mm. *Spadix* sessile, 5.5–6 cm long; *female zone* subcylindric-spindle-shaped, c. 2 cm long and 0.4 cm in diam., adnate to the spathe in the lower third; *sterile interstice* (between female and male zone) ill-defined, consisting of 2–3 irregular, closely packed spiral rows of staminodes, these 2–2.5 mm long and 0.3–0.4 mm in diam., flat-topped and light brown coloured upon drying; *male zone* cylindric, 2.5–3 cm long and 0.6–0.7 cm in diam.; *appendix* short, conic, 5–6 mm long, consisting of staminodes, these flat-topped, irregularly polygonal, c. 0.6 mm in diam., light brown upon drying. *Female flower*s (gynoecia) ± globular, crowded, c. 0.7 mm tall and 0.6–0.7 mm in diam., ovary light coloured upon drying; stigma subsessile or style very short (c. 0.25 mm), stigma discoid, 0.20–0.25 mm in diam., dark coloured upon drying, somewhat sunken in the centre. *Male flowers* uni-staminate and crowded; stamen 2.5–2.8 mm tall, apical part dark brown upon drying, apically excavated and connective elongated in a tongue-like (conoid) extension of 0.4–0.5 mm length, excavation with a distinct rim, filament c. 2 mm long and c. 0.8 mm wider on the long side (in cross-section somewhat subrectangular with wider and narrower sides), light coloured upon drying; thecae in apical lateral position, light coloured upon drying, ellipsoid, 0.4 mm long and 0.30–0.35 mm wide, opening by a slit; *pollen* grains globular, inaperturate, c. 30 µm in diam., exine ± psilate (smooth). *Fruiting spathe* narrowly urceolate, 4–5 cm long and 1–1.4 cm in diam.



1. *Schismatoglottis ifugaoensis* – a: whole leaf; b: postfloral inflorescence (upper part of spathe and spadix already shed); c: stamen. – All from the holotype *Bogner 1630* (M); drawing by Kerstin Schuster.

Distribution and ecology. — The species is so far only known from the type collection, which comes from Ifugao Province on Luzon. It was collected at an altitude of c. 1500 m in forest fragments, along a small stream but occurring as terrestrial mesophyte in clay-like soil, not as a rheophyte.

Delimitation. — *Schismatoglottis ifugaoensis* is distinguished from *S. bogneri* A. Hay being a generally much larger plant (up to 90 cm tall), with longer petioles (58–65 cm long), larger leaf blades (30–32 × 18–20 cm long) with a distinct cordate base and a cuspidate apex, much longer peduncles (18–22 cm long), a longer spathe (7 cm long) and a longer spadix (5.5–6 cm long). Plants of *S. bogneri* are consistently smaller (c. 30 cm tall), with shorter petioles (12–15 cm long), lanceolate to elliptic leaf blades with an obtuse base and an acuminate apex, shorter peduncles (5–7 cm long), a somewhat shorter spathe (5 cm long) and a shorter spadix (c. 3.5 cm long).

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Fig. 2. *Schismatoglottis ifugaoensis* – holotype *Bogner 1630* at M; a: pollen grain. – Photograph by F. Höck; SEM micrograph (a; scale bar = 10 µm) by M. Hesse & S. Ulrich.

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Fig. 3. *Schismatoglottis bogneri* – holotype *Bogner 1629* at M; a: inflorescence enlarged. – Photographs by F. Höck.

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Both species have very similar flowers, especially male flowers, sharing the excavated stamens and anthers with an elongated, tongue-like connective. Their female flowers share globular ovaries with discoid stigmas much narrower than the diameter of the ovaries, but while the stigmas are clearly sessile in *S. bogneri* they are best called subsessile in *S. ifugaoensis.* Furthermore the interstice of *S. bogneri* is longer with 5 spiral rows of staminodes versus 2–3 spiral rows in *S. ifugaoensis,* but the appendix is quite similar in both species. The reason why A. Hay considered the collections of the new species as conspecific with *S. bogneri* apparently lies in the very similar flowers, especially the excavated stamens with elongated, tongue-like connectives. Moreover, the collections of both species came from the same locality and were collected at the same day under different numbers: *S. bogneri* as *Bogner 1629* (holotypus M, Fig. 3) and *S. ifugaoensis* as *Bogner 1630,* but *S. bogneri* is also known from another locality, on Mindoro. Both species must be closely related because of their unique stamen structure.

Key to the *Schismatoglottis* species of the Philippines

1. Tertiary venation forming a distinct tesselate pattern on the abaxial side of the leaf blade; plants mostly small; leaf blades with dark green (sometimes variegated) upper and subglaucous lower surface . . . 2
– Tertiary venation tesselation inconspicuous on both surfaces of the leaf blade; plants of different size; leaf blades with lower surface paler than the upper one, but not markedly contrasting 3
2. Plants minute, c. 12 cm tall, lithophytic; stem creeping; Mindanao . . . . . *S. mindanaoana*
– Plants small, c. 20 cm tall, terrestrial; stem condensed; Luzon, Panay, Catanduanes . . . . . *S. pusilla*
3. Male zone of spadix enclosed for at least the lower third of its length within the lower spathe chamber 4
– Male zone of spadix (almost entirely) exserted from the lower spathe chamber 5
4. Robust plants with petiole to c. 60 cm long; spadix c. 9 cm long, appendix cylindric; Samar . . *S. edanoi*
– Plants smaller with petiole c. 18 cm long; spadix c. 5 cm long, appendix conic ; Samar. . *S. samarensis*
5. Stamens excavated, anthers with elongated, tongue-like connective 6
– Anthers without extended connectives or merely slightly raised (never tongue-like) or stamens only excavated without tongue-like connective 7
6. Plants with petioles to c. 60 cm long; leaf blade cordate, c. 30 × 20 cm; peduncle c. 20 cm long; Luzon (Ifugao Povince) . . . . . *S. ifugaoensis*
– Plants with petioles to c. 15 cm long; leaf blade lanceolate to elliptic, c. 16–17 × 4 cm; peduncles 5–7 cm long; Luzon, Mindoro . . . . . *S. bogneri*
7. Plants usually colony-forming by stolons, shoots hapaxanthic; widespread . . . . . *S. calyptrata*
– Plants clump-forming, not stoloniferous, shoots pleionanthic 8
8. Plants rheophytic; leaves mostly narrowly lanceolate; widespread . . . . . *S. luzonensis*
– Plants not rheophytic; leaves narrowly elliptic to broadly ovate-sagittate 9
9. Male zone of spadix narrowly obconic, appendix narrowly conic; leaves oblong-lanceolate; Sagapan, Mindanao . . . . . *S. warburgiana*
– Male zone of spadix obconic, appendix bluntly conic to hemispheric; leaves elliptic to broadly ovate . 10
10. Base of leaves distinctly cordate; widespread . . . . . *S. plurivenia*
– Base of leaves acute to truncate, sometimes faintly cordate; Luzon . . . . . *S.merrillii*

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