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## A new and remarkable aquatic species of *Schismatoglottis* (Araceae) from the Philippines

### Abstract

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*Schismatoglottis prietoi* P. C. Boyce, Medecilo & S. Y. Wong (Araceae: Schismatoglottideae), the first recorded aquatic species of *Schismatoglottis* Zoll. & Moritz, is described and illustrated from Cebu and Luzon islands in the Philippines.

Additional key words: aroids, Schismatoglottideae, *Schismatoglottis prietoi*, Cebu, Luzon

### Introduction

Three genera of Araceae include rooted-aquatic species: Indo-Malesian *Cryptocoryne* Fisch. ex Wydler, wherein most species are rooted aquatics, related *Lagenandra* Dalzell (India and Bangladesh), and monospecific *Jasurum* G. S. Bunting (Guiana Shield). In *Schismatoglottideae*, whereas there is a high incidence of rheophytism – species adapted to the flood-zone of forest streams, alternately being buffeted by strong spate currents and exposed to dry conditions depending on rainfall (Wong 2013), and very occasionally species capable of persisting underwater for long periods of time (e.g. *Schismatoglottis roseospatha* Bogner), and even flowering in that situation (i.e. *Bucephalandra sordidula* S. Y. Wong & P. C. Boyce; see Wong & Boyce 2014) – to date no species have been found that are fully aquatic in the way that *Cryptocoryne* species are.

*Schismatoglottis* Zoll. & Moritz was last monographed for the Philippines 15 years ago (Hay & Yuzammi 2000), when 10 species were recognized. Since then one additional species has been described (Wong & al.

2010). Late in 2013 the first and third authors were contacted by Engr. Esquerion P. Prieto, of Cebu City, with images of an aroid he had found occurring as very extensive continuous populations, tens of square metres in extent, in a shallow fast-flowing freshwater river in Cebu. The habitat photographs were highly suggestive of a species of *Cryptocoryne*, although images of the flowering plant were instead reminiscent of a diminutive species of stoloniferous *Schismatoglottis*. Plants brought into cultivation grew readily and soon flowered enabling confirmation of placement in the Calyptrata Group (sensu Hay & Yuzammi 2000) of *Schismatoglottis*, where it represents an undescribed species. It gives us great pleasure to describe this remarkable plant for Engr. Prieto.

About one year after the original discovery, Engr. Prieto again contacted the authors with a newly found aroid that matched well what we here describe as *Schismatoglottis prietoi* except in being almost twice as large in all vegetative dimensions and occurring as an amphibious plant rather in the manner of *Cryptocoryne ciliata* (Roxb.) Blume. This second plant has now flowered and conforms in floral details exactly to the typical *S. prietoi*.

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Fig. 1. *Schismatoglottis prietoi* – A: type population habitat; B: closer view of plants at type locality; C: inflorescence at pistillate anthesis (left) and lower persistent spathe of developing infructescence (right), cultivated plant; D: spadix at pistillate anthesis, spathe artificially removed; E: single shoot with associated stolon; F: lower persistent spathe of developing infructescence. – C–F from Esquerion P. Prieto AR-4342. – Photographs: A & B by Esquerion P. Prieto; C–F by Peter C. Boyce.



## Results and Discussion

*Schismatoglottis prietoi* P. C. Boyce, Medecilo & S. Y. Wong, **sp. nov.** – Fig 1.

Holotype: Philippines, Cebu, 25 Oct 2013, *Esquerion P. Prieto* AR-4342 (PNH; isotype: SAR). – Full locality data withheld owing to the risk of potential exploitation of wild populations for commercial purposes.

**Diagnosis** — *Schismatoglottis prietoi* is distinguished from all other described *Schismatoglottis* species by the aquatic-rooted habit. From all species of the *Schismatoglottis* Calyptrata Group it differs by the combination of diminutive rooted-aquatic habit, the translucent tops to the thecae, and by the persistent lower spathe during fruiting with the orifice not constricted.

**Description** — Colonial stoloniferous aquatic or amphibious herb 2–8(–17) cm tall. *Stem* condensed, hapaxanthic, stoloniferous and colonial, tightly clump-forming, c. 2 mm in diam. *Leaves* 4–8 together; *petiole* 3–5(–9) cm long, glabrous, D-shaped in cross-section, weakly dorsally channelled, sheathing in lower  $\frac{1}{3}$ – $\frac{1}{2}$ ; wings of sheath fully attached, tapering to subparallel (except at base), extending as slender undulate-warty keels along dorsal edges of petiole; *blade* ovate to narrowly to broadly oblong-ovate to  $\pm$  narrowly elliptic, 3–4(–7.5) cm long  $\times$  1–2 cm wide, mid-green adaxially, paler abaxially, base cuneate, tip acute and acuminate for c. 1.5 mm; *midrib* slightly prominent distally abaxially, slightly sunken adaxially; *primary lateral veins* 3–5 on each side, alternating with lesser interprimaries and diverging at 30–60°; *secondary venation* arising mostly from midrib, some from primary veins; *tertiary venation* forming tessellate reticulum, particularly noticeable abaxially. *Inflorescence* solitary, malodorous at pistillate anthesis, evocative of decomposing dairy products; *peduncle* 1–2 cm long, first subtending cataphyll sometimes with much-reduced petiole and blade. *Spathe* c. 2 cm long, rather stout; *lower spathe* c. 1 cm long, pale green, cylindric, base rather strongly oblique, with longer side ventral to insertion, differentiated from limb by two weak constrictions, one coinciding with sterile interstice, other c.  $\frac{1}{2}$  way along staminate flower zone; *limb* oblong-lanceolate, acute, c. 1 cm long, opening only very slightly, caducous, white-tipped with orange-green apicule. *Spadix* c. 1.2 cm long, distinctly shorter than spathe, ellipsoid; *pistillate zone* c. 3 mm long, adnate to spathe in lower  $\frac{1}{3}$ , obconoid in free part, c. 1 mm wide; *pistils* subglobose, 0.3–0.5 mm in diam., very pale greenish white; *stigma* elevated, slightly obliquely discoid, papillate, greenish, c. 0.25 mm in diam.; *interpistillar staminodes* absent; *sterile interstice* very short, naked, mostly obscured by enlarged lowermost flowers of staminate flower zone, staminate and pistillate fertile zones clearly demarcated by their differential widths; *staminate zone* oblong to very slightly obconoid, c. 5  $\times$  3.5 mm, c.  $\frac{3}{5}$  held within lower spathe chamber, cream; *staminate flowers* crowded, lowermost

noticeably enlarged, each with 3 or 4 stamens, truncate with slightly sunken connective clearly separating pairs of thecae; *thecae* domed, semi-translucent, 0.3–0.5 mm across opening by large terminal slit; *appendix* cream to yellow to pink, slightly narrower than top of staminate zone, c. 3 mm long, narrowly conoid, tip obtuse to bluntly acute; *appendix staminodes* columnar to narrowly conoid, lowermost ones transitioning with uppermost staminate flowers, terminal ones noticeably elongated to almost columnar, 0.3–0.8 mm in diam. *Infructescence* with persistent spathe remaining green, scarcely urceolate, 1.5–6 cm long. *Fruits* not observed.

**Distribution** — *Schismatoglottis prietoi* is to date known from only two localities, approximately 300 km distant, on Cebu island in the south, and to the north on Luzon island.

**Ecology** — *Schismatoglottis prietoi* is a colonial stoloniferous aquatic or amphibious herb with the aquatic morph forming very extensive areas (many tens of square metres) in shallow fast-flowing freshwater rivers in lowland humid forest. At the type locality on Cebu, *S. prietoi* occurs as an aquatic; at the locality on Luzon, it occurs amphibiously (but not rheophytically) along the edges of the river.

**Eponymy** — Named for the discoverer of both known populations, Esquerion P. Prieto.

**Discussion** — Notwithstanding the unique ecology, and diminutive size, *Schismatoglottis prietoi* uncontroversially falls into the *Schismatoglottis* Calyptrata Group (Hay & Yuzammi 2000) by its hapaxanthic shoots, fully attached, persistent leaf sheath, and caducous spathe limb.

The Philippines harbour a further diminutive species of the Calyptrata Group, mesophytic *Schismatoglottis pusilla* Engl., which differs by its cordate-sagittate grey-banded leaf blades and smooth polygonal appendix staminodes. In addition, the very small Philippines species, *S. mindanaoana* Engl., differs from *S. prietoi* by its pleionanthic stems and its leaf blade with conspicuous tessellate-reticulate higher order veins.

**Additional specimen seen** — PHILIPPINES: LUZON: Albay, Bicol Peninsula, 21 Apr 2015, *Esquerion P. Prieto* AR-5199 (PNH, SAR).

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