

Studies on Schismatoglottideae (Araceae) of Borneo XXVIII – A New *Bakoa* from Indonesian Borneo

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ABSTRACT

Bakoa sicula S.Y.Wong, is described and illustrated from Cretaceous granites of Kalimantan Barat, Indonesian Borneo. A key to the four described *Bakoa* species is provided.

KEY WORDS

Araceae, *Bakoa*, Schismatoglottideae, Borneo, Kalimantan, granite.

INTRODUCTION

The past five of years molecular investigation of Schismatoglottideae has resulted in several genera being re-circumscribed (e.g., Boyce & Wong, 2008, 2012; Wong & Boyce, 2010), with *Piptospatha* N.E.Br. (*sensu* Bogner & Hay, 2000) one of the most affected (Boyce & Wong, 2012). An outcome of much of the above work has been the recognition of several monospecific or oligospecific genera, which drew criticism from some quarters. It is thus satisfying that subsequent fieldwork has resulted in finding additional novelties that incontrovertibly belong to some of these small genera.

Bakoa (Boyce & Wong, 2008) was erected for a single species originally described in *Hottarum* (Bogner, 1983), and is defined by the combination of ligular petiolar sheathes, the spadix partially (pistillate zone only) to almost entirely dorsally adnate to the spathe limb, staminate flowers mostly sterile with only a narrow zone of fertile flowers exposed by the

spathe opening, thecae lacking a horn- or needle-like structure, basal placentation, and seeds with a blunt micropyle. Since recognition two additional species have been described, one *B. nakamotoi* S.Y.Wong a novelty (Wong & Boyce, 2012), and the other, *B. brevipedunculata* (H.Okada & Y.Mori) S.Y.Wong, transferred to *Bakoa* from *Hottarum* by way of *Piptospatha* (Okada & Y.Mori, 2000; Wong, 2011).

A fourth species is added here based on a collection from the biologically fascinating Cretaceous granites that form the 'Heart of Borneo'.

KEY TO BAKOA

1. Spathe fully persistent until fruit dispersal; dorsal side of spadix adnate to the spathe for at least half the length of the staminate flower zone; only ventral stamens (i.e., those exposed by gaping spathe limb) fertile; stigma button-like, ca. 1/3 diam. of gynoecium; peduncle long-slender, arching 2
- Upper 1/3 of spathe shedding (deliquescing) post-anthesis; spadix adnate to the spathe on the dorsal side until the top of the pistillate flower zone; staminate flower zone fully fertile; stigma disc-like, reaching the edge or even slightly overhanging the edge of the gynoecium; peduncle short, stout, erect
. ***B. brevipedunculata***
2. Spadix adnate to spathe for more than 4/5 of its length; lower part of

- spathe not noticeably constricted, wholly white; leaf blade bright medium green, slightly shiny. Kalimantan Barat 3
- Spadix adnate to spathe for ca. 2/3 of its length; lower part of spathe noticeably constricted, white with conspicuous green veins; leaf blade deep green and very polished. Bako N.P. (NW Sarawak). ***B. lucens***
 - 3. Thecae pores conspicuously annulate; leaf blade linear-elliptic, adaxially with a conspicuous raised marginal vein. Sandstones ***B. nakamotoi***
 - Thecae pores flush with spadix; leaf blade narrowly elliptic, adaxially lacking a conspicuous marginal vein. Granites. ***B. sicula***

Bakoa sicula S.Y.Wong, **sp. nov.** Type: Indonesian Borneo, Kalimantan Barat, Sekadau, Melawi, 115 km south of Nanga Pinoh, 0 58 21.78 S 11 30 54.37 E (coordinates estimated from Google Earth), 22 May 2012, *K.Nakamoto AR-3953* (BO, holo; alcohol preserved). **Figure 1.**

Diagnosis

Bakoa sicula is most similar to *B. nakamotoi* S.Y.Wong but readily differentiated by the flush (not annulate) thecae pores and the broader leaf blades lacking a conspicuously raised marginal vein.

Description

Small spreading to almost pendulous rheophytic herbs to c. 25 cm. **Stem** highly condensed, with thin stiff roots 1–1.5 mm diam. adhering very strongly to rocks. **Leaves** many together; **petiole** 2–6 cm long, ca. 0.2–0.3 cm diam., rounded abaxially and flattened adaxially with weakly raised margins, sheathing only at the extreme base, the wings extended into a narrowly triangular, soon marcescent, ligular portion ca. 4 cm long and drying dark brown; **blade** narrowly elliptic, stiffly coriaceous, 9–25 cm long × 1.5–2 cm wide,

moderately shiny medium green adaxially, abaxially slightly paler, the base cuneate, the apex narrowly acute, tubular-apiculate for ca. 1.5 mm; midrib adaxially prominent with 5–7 very fine primary lateral veins on each side, these hardly differentiated in thickness from the secondary venation and diverging at ca. 30° from the midrib; secondary veins adaxially more or less obscure when dry but slightly conspicuous in living material, abaxially fine and rather faint; tertiary venation forming an flush tessellate reticulum abaxially. **Inflorescences** several together; **peduncle** 7–10 cm long, arching-erect, white. **Spathe** downturned, with the opening ventral, ca. 4.5 cm long, very slender, oblanceolate, not constricted, white; **spathe limb** apiculate for ca. 0.3 cm, apicule very pale green. **Spadix** ca. 4 cm long, adnate to the spathe for 4/5 of its length from the base; **pistillate zone** completely adnate to the spathe on the dorsal side, ca. 6 mm long, 2.5 mm diam.; **pistillate flowers** few, somewhat lax; **ovary** depressed-angular-globose, ca. 1.5 mm diam., 1 mm tall, bright green; **stigma** sessile, narrower than the ovary, ca. 0.5 mm diam., button-like, papillate, greyish; **sterile interstice** robust, 4–5 mm long, equalling width of lower staminate zone, ca. 3 mm diam., dorsally adnate to the spathe, composed of large truncate mostly irregularly polygonal staminodes 0.8–1 mm diam.; staminate zone subcylindric-ellipsoid, adnate to the spathe on the dorsal side except for the distal-most portion, to ca. 2.5 cm long, terminal portion narrowly acute and sterile; **stamens** crowded, truncate, dumbbell-shaped from above, 0.9–1.2 mm across; thecae each opening through a flush pore. **Fruiting spathe** not seen.

Distribution—Known only from the Type locality.

Ecology—Rheophytic on Cretaceous granites (the same formation to which the Schwaner Mountains belongs).

Etymology—From Latin *sicula*, a little dagger, in allusion to the shape of the leaf blades.

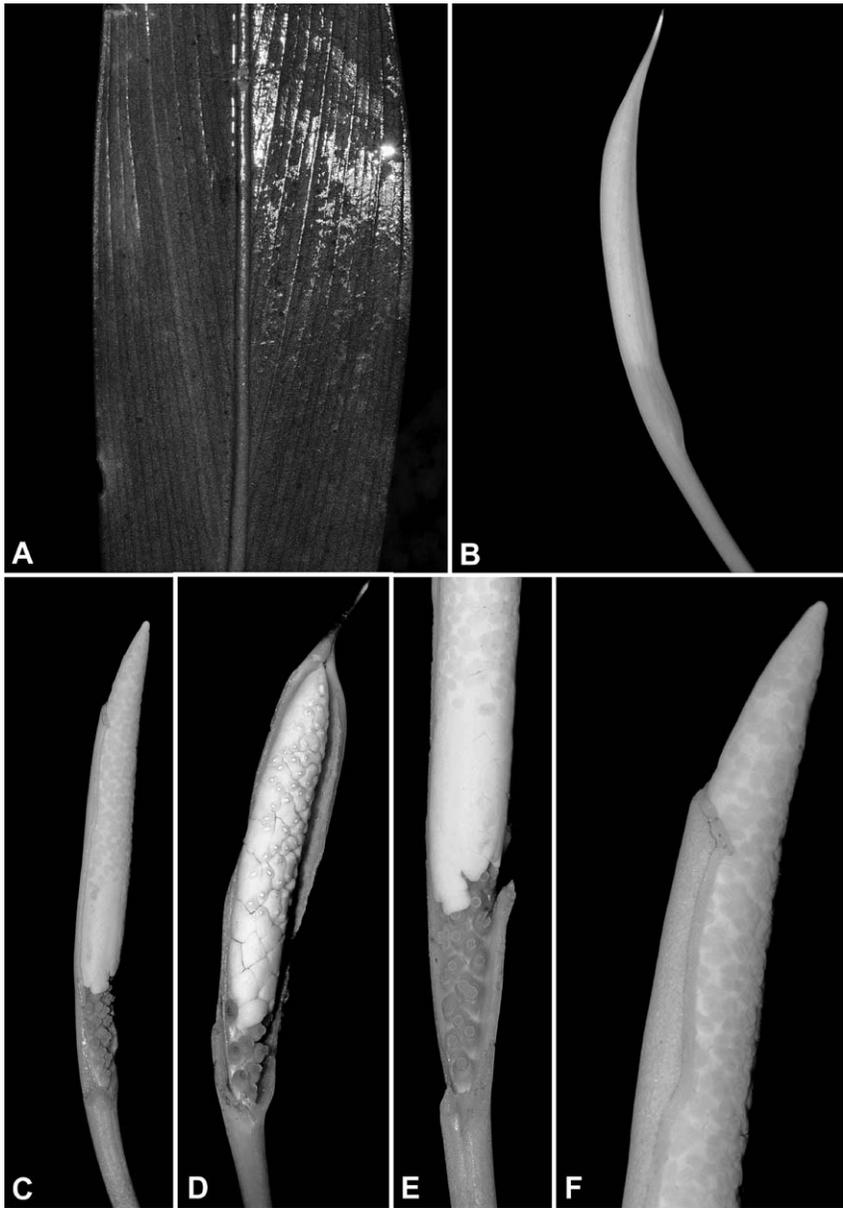


Fig. 1. **A–C, E & F** *Bakoa sicula* S.Y.Wong. **D.** *Bakoa nakamotoi* S.Y.Wong. **A.** Detail of leaf blade. Note the absence of prominent marginal veins. **B.** Inflorescence at onset of pistillate anthesis. **C.** Inflorescence at pistillate anthesis with nearside part of spathe artificially removed to reveal spadix. Note the stamens with flush pores. **D.** Inflorescence at pistillate anthesis with nearside part of spathe artificially removed to reveal spadix. Note the stamens with annulate pores. **E.** Detail of the pistillate flower zone (spathe artificially removed). **F.** Detail of the staminate flower zone, spathe has been artificially removed to reveal the extent of spadix/spathe adnation. **A–C, E & F** from *K.Nakamoto AR-3953*. **D** from *K.Nakamoto AR-3663*. Images © P.C.Boyce.

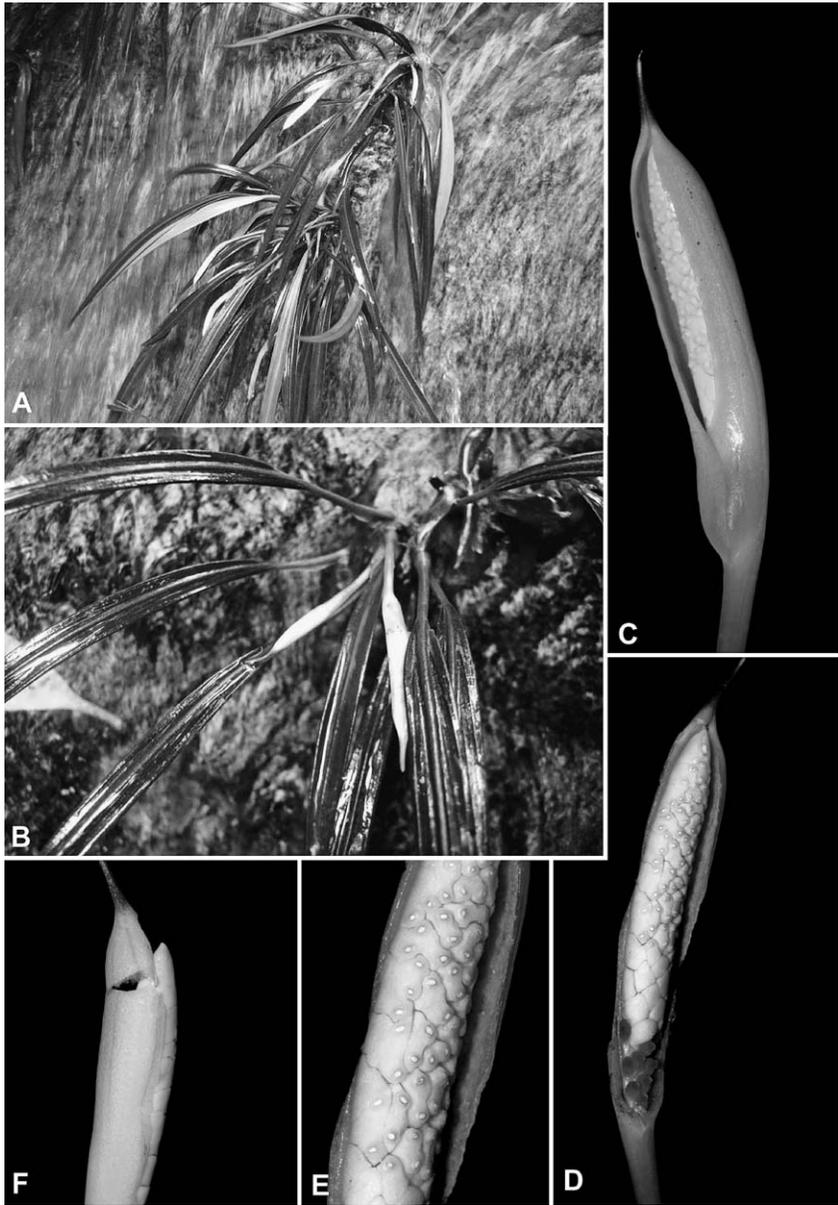


Fig. 2. *Bakoa nakamotoi* S.Y.Wong. **A & B.** Flowering plants in habitat. Note the pendent habit and leaf blade with a prominent marginal vein. **C.** Inflorescence at pistillate anthesis. **D.** Inflorescence at pistillate anthesis with nearside part of spathe artificially removed to reveal spadix. Note the stamens with annulate pores, and the lax pistils. **E.** Detail of the staminate flowers. Note the annulate pore. **F.** Spathe artificially broken to show the extent of spadix adnation to the spathe. **A & B** © K. Nakamoto, used with permission. **C–E** from *K.Nakamoto AR-3663* © P.C.Boyce.

Notes—*Bakoa sicula* is evidently closely similar to *B. nakamotoi* (**Figure 2**), but readily distinguished from the broader leaf blades lacking a pronounced raised marginal vein, and by the anthers opening via a flat, not annulated, thecae pore. Their localities are little more than 100 km apart, but differ geologically. *Bakoa sicula* occurs on the Cretaceous granites that form the Schwaner mountain Range, whereas *B. nakamotoi* is restricted to Oligocene sandstones of the Kapuas River valley.

LITERATURE CITED

- Bogner, J. 1983. A new *Hottarum* (Araceae) species from Borneo. *Pl. Syst. Evol.* 142: 49–55.
- Bogner, J. & A. Hay. 2000. Schismatoglottideae (Araceae) in Malesia 2: *Aridarum*, *Bucephalandra*, *Phymatarum* and *Piptospatha*. *Telopea* 9(1): 179–222.
- Boyce, P. C. & S. Y. Wong. 2008. Studies on Schismatoglottideae (Araceae) of Borneo VII: *Schottarum* and *Bakoa*, two new genera from Sarawak, Malaysian Borneo. *Bot. Stud. (Taipei)* 49: 393–404.
- Boyce, P. C. & S. Y. Wong. 2012. The Araceae of Indomalaya I: *Piptospatha* N.E.Br. *Aroideana* 35: 3–23.
- Okada, H. & Y. Mori. 2000. Three new species of Schismatoglottideae, Araceae, from Borneo. *Acta Phytotaxonomica et Geobotanica* 51: 1–9.
- Wong, S. Y. 2011. Studies on Schismatoglottideae (Araceae) of Borneo XV: a Second Species of *Bakoa* from Indonesian Borneo. *Acta Phytotax. Geobot.* 61(3): 127–129.
- Wong, S. Y. & P. C. Boyce. 2010. Studies on Schismatoglottideae (Araceae) of Borneo XI: *Ooia*, a new genus, and a new generic delimitation for *Piptospatha*. *Bot. Stud. (Taipei)* 51: 543–552.
- Wong, S. Y. & P. C. Boyce. 2012. The Araceae of Malesia III – *Bakoa* P.C.Boyce & S.Y.Wong. *Malayan Nat. J.* 64(2): 105–114.