Studies on Schismatoglottideae (Araceae) of Borneo XXXI: Additional new species of Bucephalandra

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Abstract


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Two new species of Bucephalandra Schott are described and illustrated from Kalimantan Barat, Indonesian Borneo: B. micrantha S. Y. Wong & P. C. Boyce and B. spathulifolia Engl. ex S. Y. Wong & P. C. Boyce, the epithet of the second name adopted from an unpublished Engler name: “Microcasia spathulifolia”. Together these take Bucephalandra to 29 species. Both novelties are illustrated from living plants, and inserted into the most recent identification key to Bucephalandra species.

Additional key words: Indonesia, Kalimantan, rheophytic

Introduction

The most recent account of Bucephalandra Schott accepted 27 species, of which 19 were newly described, and three were transfers from congeneric Microcasia Becc. (Wong & Boyce 2014). Mention was then made that a considerable number of plants in the living collection underpinning the account still remained taxonomically unplaced, and were likely additional novelties; it was also noted that taxonomic interpretation of the abundant herbarium material posed considerable difficulties.

Recently two of these hitherto undetermined living collections have flowered and proven to be additional taxonomic novelties. Their unique defining combinations of characteristics are highlighted here in modifications to the key presented in Wong & Boyce (2014). One of these, described below as Bucephalandra micrantha S. Y. Wong & P. C. Boyce, is remarkable for the diminutive stature of the plant and inflorescence, even in a genus notable for the tininess of some of its constituent species. The other species, proposed here as B. spathulifolia Engl. ex S. Y. Wong & P. C. Boyce, offers an almost unique example of the occurrence of a living plant precisely matching a historical herbarium specimen.

Results and Discussion

Bucephalandra micrantha S. Y. Wong & P. C. Boyce, sp. nov. – Fig. 1. 
Holotype: Indonesian Borneo, Kalimantan Barat, Sintang, Sepauk, Kayu Lapis, village at km 46 on road to

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Fig. 1. *Bucephalandra micrantha* – A: plant in cultivation; B & C: inflorescence at pistillate anthesis, dorsal (B) and ventral (C) views; D: inflorescence at staminate anthesis, lower spathe artificially removed to reveal entire spadix; note the deflexed interstice staminodes and staminate flowers; E: inflorescence at staminate anthesis viewed from above; note the almost fallen spathe limb. – All from Hiroyuki Kishi AR-4080. – Photographs by Peter C. Boyce.
Diagnosis — Bucephalandra micrantha is most similar to B. belindae S. Y. Wong & P. C. Boyce, differing by the little-branched shortly creeping stems rooting profusely (vs stems much-branched and elongated, not rooting along their length), and by a spadix interstice with c. 3 solitary green staminodes (vs interstice with a complete whorl of white staminodes).

Description — Herbs very diminutive, c. 1 cm tall, obligate rheophytic, occurring as extensive dense mats with roots strongly adhering to substrate. Stem slender, c. 1 mm in diam., erect and much-branched from base. Leaves forming dense carpets of rosettes; petiole c. 8 mm long × c. 0.5 mm in diam., adaxially canaliculate, pale green with copious minute reddish speckles, sheathing at extreme base, wings extended into a narrowly ligular portion c. 5 mm long; blade very narrowly oblong-linear, c. 16 mm long × c. 2 mm wide, blades semi glossy medium green adaxially, reddish tinged abaxially, base cuneate, margins strongly undulate-crispulate, apex rounded and apiculate for c. 0.2 mm; midrib abaxially somewhat prominent; primary lateral veins 1 or 2, running almost parallel to margins and merging with blade tip; secondary venation adaxially forming an obscure reticulum; all other venation invisible. Inflorescence solitary; peduncle exceeding petioles, c. 1.5 cm long, longitudinally sulcate, pinkish red. Spathe broadly ovate, not constricted, c. 8 mm long; lower spathe funnel-form, green, fading to white at spathe-limb junction, persistent; limb inflating and gaping distally to form a rather wide opening at pistillate anthesis, caducous during staminate anthesis, white with sub-microscopic pinkish speckles, dorsal median vein pinkish red, tip blunt, greenish red. Spadix c. 5 mm long; pistillate zone sessile, c. 1 mm long × c. 2 mm in diam., with 2 spirals of pistils; pistils compressed globose, c. 0.75 mm in diam., bright green; stigma sessile, slightly impressed discoid-umbonate, c. ¾ diameter of ovary, moist but not obviously papillate at anthesis; pistillodes absent; interstice with 2 or 3 isolated scale-like staminodes, these c. 1 mm long and wide, somewhat thickened, initially erect (pistillate anthesis), during staminate anthesis reflexing until perpendicular to spadix axis, green during and post-anthesis; staminate zone c. 1.2 mm long × c. 2 mm in diam., consisting of 2 rows of flowers; staminate flowers each consisting of a single stamen; stamen c. 0.6 mm across, waxy white; filament short; connective strap-like; thecae inserted ventrally on connective, individually ellipsoid, c. 0.4 mm long × c. 0.2 mm wide, smooth, waxy white; thecae horns c. ¼ length of associated theca, setaceous; appendix conoid-globose, c. 2.25 mm long × 1.5–2 mm in diam., glossy waxy white; appendix staminodes few, comparatively large, c. 1.5 mm in diam., rhomboidal, tops smooth, very slightly impressed centrally. Fruiting spathe broadly funnel-form, somewhat obliquely inserted on peduncle, c. 4 mm in diam., medium green with slight pinkish red speckles, with green shield-shaped persistent staminodes, spent distal part of spadix shed; fruits and seeds not seen.

Distribution — Bucephalandra micrantha is known only from the type locality.

Ecology — Bucephalandra micrantha occurs on shaded granitic rocks in swift-flowing streams under moist lowland forest at c. 100 m above sea level.

Etymology — The epithet is combined from the Greek adjective, mikros (small), latinized to micros, and the Greek noun, anthos (flower), treated as a Latin adjective, anthus (flowered); hence small-flowered.

Remarks — Bucephalandra micrantha is one of a group of species with very narrowly oblong leaf blades with undulate-crispulate margins. The other described species are B. belindae and B. catharinae. P. C. Boyce & al. It is not yet clear if they constitute a natural assemblage, although differences in the spadix appendix staminodes suggest that they do not.

Bucephalandra spathulifolia Engl. ex S. Y. Wong & P. C. Boyce, sp. nov. — Fig. 2 & 3. Holotype: “Borneo. Exp. Nieuwenhuis, 1898–1899”, Soengai Boeleng [?Sungai Boeloengan = Sungai Kajan, see Nieuwenhuis 1900: 262], 28 Oct 1898, Amdjah 127 (BO 1563010!). — See note below under Distribution.

Diagnosis — Bucephalandra spathulifolia is immediately distinguished from all other species in the genus by the spathulate leaves and globose brain-like spadix appendix.

Description — Herbs tufted, small, c. 4 cm tall, obligate rheophytic, occurring as small clumps with roots strongly adhering to substrate. Stem slender, c. 2 mm in diam., erect and much-branched from base. Leaves ascending; petiole c. 6 mm long × c. 0.5 mm in diam., slightly longitudinally ridged, adaxially deeply canaliculate, reddish brown, sheathing at extreme base, wings extended into a reddish brown narrowly ligular portion to c. 1.5 cm long; blade oblong-spathulate, c. 3.5 mm long × c. 5 mm wide, distal margins slightly undulate, blades semi-matte dark green adaxially, paler reddish olive-tinged abaxially, base bluntly cuneate, apex rounded and apiculate for c. 0.2 mm; midrib abaxially somewhat prominent, dark reddish, weakly ridged; primary lateral veins 2 or 3, merging with blade tip; secondary venation adaxially forming a very obscure reticulum; all other venation invisible. Inflorescence solitary; peduncle exceeding petioles, c. 2 cm long × c. 1.2 mm wide, longitudinally sulcate, dark red. Spathe broadly elliptic-ovate with dorsally somewhat incurving limb, ventrally weakly gibbose, not constricted, c. 2 cm long...
Fig. 2. *Bucephalandra spatulifolia* – A: plant in cultivation; B & C: inflorescence at pistillate anthesis, dorsal (B) and lateral (C) views; D: inflorescence at staminate anthesis, spathe artificially removed to reveal entire spadix; note the globose brain-like appendix. – All from J. Setiawan Sutanto AR-4227. – Photographs by Peter C. Boyce.
Fig. 3. Bucephalandra spathulifolia, holotype specimen (BO 1563010). – Photograph by Peter C. Boyce.
long; lower spathe funnel-form, green, fading to white at spathe-limb junction, persistent; limb inflating and gap- ing distally to form a wide opening at pistillate anthesis, caducous during staminate anthesis, white, dorsal median vein speckled pinkish red, tip blunt, red. Spadix c. 9 mm long; pistillate zone sessile, c. 2.25 mm long × c. 1.5 mm in diam., with c. 3 spirals of pistils; pistils compressed globose, c. 0.75 mm in diam., bright green; stigma sessile, slightly impressed discoid, c. ½ diameter of ovary, moist and papillate at anthesis; pistillodes absent; interstipe with 2 rows of scale-like staminodes, these c. 1 mm long and wide, almost circular, thickened, initially erect (pistillate anthesis), during staminate anthesis reflexing until perpendicular to spadix axis, greenish white during anthesis, later turning green post-anthesis; staminate zone c. 2 mm long × c. 2.5 mm in diam., consisting of 3 rows of flowers; staminate flowers each consisting of a single stamen; stamen c. 0.6 mm across, white with at least some of thecae stained reddish pink; filament short; connective strap-like; thecae inserted ventrally on connective, individually ellipsoid, c. 0.4 mm long × c. 0.2 mm wide, separated by a deep suture, smooth, waxy white, occasionally stained reddish pink; thecae horns c. ½ length of associated theca, basally quite stout, remainder saccate; appendix globose, c. 3 mm long × c. 3 mm in diam., glossy waxy medium yellow; appendix staminodes hardly individually differentiated, together forming a brain-like mass. Fruiting spathe broadly funnel-form, c. 6 mm in diam., pale green, with green shield-shaped persistent staminodes; fruits and seeds not seen.

Distribution — Bucephalandra spathulifolia is known from two localities c. 500 km apart separated by the Muller Range. Amdjah 127 was made under the aegis of the Nieuwenhuis expedition (Nieuwenhuis 1898 – 1899 central Borneo expedition). Amdjah 127 was collected in the Ulu (headwaters) of Amdjah 127 was made under the aegis of the Nieuwenhuis expedition (Nieuwenhuis 1898 – 1899 central Borneo expedition), with a presumably field-written tag attached to one of the 10 mounted plants stating “Soengai Boeleng” with the date “28 Oct 98”. From this it is possible to conclude that Amdjah 127 was collected in the Ulu (headwaters) of the Mahakam River, where the Nieuwenhuis expedition was based from shortly after 16 September 1898 until 13 April 1899. However, no such locality name appears in Nieuwenhuis’s account of the expedition (Nieuwenhuis 1900), although the index to this work provides two similarly spelled possibilities for approximately the correct date of the Ahdjah collection. One is Boeloeng, one of the Dutch Administrative zelfbesturen (self-governing) Native States, and which includes much of modern Kalimantan Timur to its border with present day Kalimantan Barat, including the headwaters of the Mahakam River between the Muller and Iran Ranges. The other is Boeloeng (appearing in the index as Nanga Boeloeng and Telang Boeloeng), and which equates to an area of the NE part of the Muller Range.

Ecology — At both known localities Bucephalandra spathulifolia occurs on Cretaceous sediments under per-
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