

***Aglaonema costatum* f. *concolor* Nicolson (ARACEAE): A NEW RECORD
FOR THE FLORA OF VIETNAM**

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ABSTRACT

Aglaonema costatum f. *concolor* is reported as a new record for the flora of Vietnam. The taxon was recently found in Phong Nha - Ke Bang National Park, Quang Binh Province. It is illustrated with detailed photographs of key morphological characters taken from the field. A key to all known taxa of *Aglaonema* in Vietnam is given.

Keywords: Araceae, *Aglaonema costatum* f. *concolor*, new record, Vietnam.

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INTRODUCTION

The genus *Aglaonema* Schott (Araceae) has about 23 species belonging to two sections (*Chamaecaulon* and *Aglaonema*) with distributions from the subtropical eastern Himalaya throughout tropical and subtropical Asia as far east as New Guinea (Nicolson, 1969; Boyce et al., 2012). Sect. *Chamaecaulon* is characterized by creeping rhizomatous stem and includes three species: *A. brevispathum* (Engl.) Engl., *A. costatum* N.E.Br. (type of the section) and *A. chermisiriwattanae* D.Sookchaloem. The last species is distinguishable from the other two

by the absence of cataphyll/prophyll subtending petiole. Meanwhile, the first two species look alike and *A. brevispathum* differs from *A. costatum* in having marcescent cataphyll/prophyll subtending petiole, petiole usually equaling or exceeding the leaf blade and usually obtuse to subrounded leaf base (vs. immediately deliquescent cataphyll/prophyll subtending petiole, petiole usually shorter than leaf blade and usually subcordate to rounded leaf base). According to Nicolson (1969), *A. costatum* includes 4 forms that can be distinguishable by the following key:

- 1A. Leaf-blade with a white midrib.....2
 - 2A. Leaf-blade with irregularly scattered spots.....f. *costatum*
 - 2B. Leaf-blade without spots.....f. *immaculatum*
- 1B. Leaf-blade with a green midrib.....3
 - 3A. Leaf-blade heavily and irregularly blotched.....f. *virescens*
 - 3B. Leaf-blade not variegated.....f. *concolor*

This formal concept was accepted in different botanical studies in Indochina, e.g. Newman et al. (2007), Nguyen & Vu (2009), Van (2017) and Nguyen (2017). Recently, in their treatment of Thai Araceae, Boyce et al. (2012) merged the four forms in *A. costatum* but no justification was mentioned; this approach seems to be followed in Korea National Arboretum (2016), Roskov et al. (2018) and WCSP (2019). Until the phylogenetic relationship among the forms is studied, the formal delimitation by Nicolson (1969) appears to be judgeable and it is followed in this paper.

In Vietnam, *A. costatum* has been reported with form *immaculatum* from Kon Tum and Gia Lai Provinces and the autonomous form *costatum* from Quang Tri and Dak Lak Provinces (Nguyen & Vu 2009; Nguyen, 2017; Van, 2017). The species was listed in Pham-Hoang (1991 & 2000) as a cultivated plant but its description and illustration obviously match the form *immaculatum*.

Our recent field trip in Phong Nha-Ke Bang National Park, Quang Binh Province encountered a flowering and fruiting population of *A. costatum* with plain green leaves that perfectly match the type specimen and Nicolson's description of form *concolor*, which has been found in Laos, Malaysia and Thailand (Newman et al., 2007; Nicolson 1969). As result, form *concolor* is reported here as a new record for the flora of Vietnam.

MATERIALS AND METHODS

Samples of the newly recorded form were collected from Phong Nha-Ke Bang National Park, Quang Binh Province, Vietnam, on 9 January 2018, at approximate coordinates 17°24'16"N, 106°13'13"E and 710 m elevation. The vouchered specimens (Luu Hong Truong, Truong Quang Cuong, Bui Ngoc Thanh & Le Canh Nam *Luu 1178*) are deposited at SGN.

Specimens were sampled and processed using conventional methods guided by the Royal Botanic Gardens, Kew (Bridson &

Forman, 1999). Detailed photographs and description of taxonomically important characters of the newly recorded form were taken of fresh materials in the field using a digital camera. Taxonomic identification was done using morphological vegetative and reproductive characters following the aforementioned literature, especially Nicolson (1969).

RESULTS AND DISCUSSION

Key to the known taxa of *Aglaonema* in Vietnam

Based on Nguyen (2017), Nicolson (1969), Van (2017) and the authors' field observations, the known Vietnamese taxa of *Aglaonema* can be distinguished by the following key:

- 1A. Stem repent, frequently branching; petiole sheath less than 1 cm long; cataphylls subtending the petioles.....Section *Chamaecaulon*
 - 2A. Cataphyll subtending petiole/peduncle usually drying-persistent; leaf base usually obtuse to subrounded.....*A. brevispathum*
 - 2B. Cataphyll subtending petiole/peduncle usually immediately deliquescent; leaf base subcordate to rounded
 - 3A. Leaf blade with a green midrib.....*A. costatum* f. *concolor*
 - 3B. Leaf blade with a white midrib
 - 4A. Leaf blade with scattered spots.....*A. costatum* f. *costatum*
 - 4B. Leaf blade without spots.....*A. costatum* f. *immaculatum*
- 1B. Stem erect, rarely decumbent, rarely branching; petiole sheath usually more than 1 cm long; cataphylls rarely among the petioles.....Section *Aglaonema*
 - 5A. Spadix sessile, female zone adnate to spathe
 - 6A. Female and female zone separated by staminate flowers.....*A. ovatum*
 - 6B. Not above.....*A. modestum*
 - 5B. Spadix stipitate, female zone free from spathe
 - 7A. Plant up to 40 cm high; venation undifferentiated; peduncle as long as or longer than petiole.....*A. cochinchinense*
 - 7B. Plant up to 1.2 m high; venation differentiated; peduncle much shorter than petiole.....*A. simplex*

Description of the newly recorded taxon

Aglaonema costatum f. *concolor* Nicolson, 1969. *Smithsonian Contr. Bot.* 1: 24 (Fig.1).

Herb evergreen, 15–30 cm high, solitary to clump-forming. Stem repent and branching, 1–1.2 cm in diameter; internodes 1–2 cm long; cataphylls subtending petiole and immediately deliquescent. Leaves several together; petioles 12–20 cm long, ca. 4 mm in diameter at base, ca. 8 mm near leaf blade, dark green, petiolar sheath short, about 1/10 times as long as the petiole length, 1.2–2 cm long, dark brown; leaf blade ovate, 12–16 cm

long, 3–6 cm wide, coriaceous, base unequal, subcordate to rounded, apex acute to abruptly acuminate, apiculate, dark green on both sides and not variegated; midrib impressed adaxially and prominent abaxially, plain dark green, lateral veins diverging from the midrib and toward margin. Inflorescence solitary; peduncle 8–12 cm, ca. 4 mm in diameter, green; cataphylls 2, subtending peduncle, 2.5–3 cm long, with acute apex, immediately deliquescent; spathe shorter than spadix, ca. 3.5 cm long, ovate, apiculate, spreading at staminate anthesis, pale green on both sides at young, yellow-green at anthesis; spadix

exceeding spathe, ellipsoidal-cylindrical, ca. 5 cm long, ca. 1 cm in diameter, stipitate, stipe ca. 1 cm long, ca. 3 mm in diameter, pale green; female zone very short with 1–2 whorls of flowers, ca. 0.5 cm long, ca. 1 cm wide; ovaries bottle-shaped, translucent white, ca. 2 mm in diameter, 1-locular, ovule 1; stigma born on a 1 mm long style, yellow,

subrounded, concave at center, ca. 2 mm in diameter; male zone ca. 3 mm long, ca. 1 mm wide, white, subcylindrical, thecae oblong, dehiscing by apical pore. Fruits ellipsoid, 8 mm long, 5 mm in diameter, 1-seeded, green when young, yellow when ripe; seeds oblanceolate, 4–5 mm long, 2.5 mm in diameter.

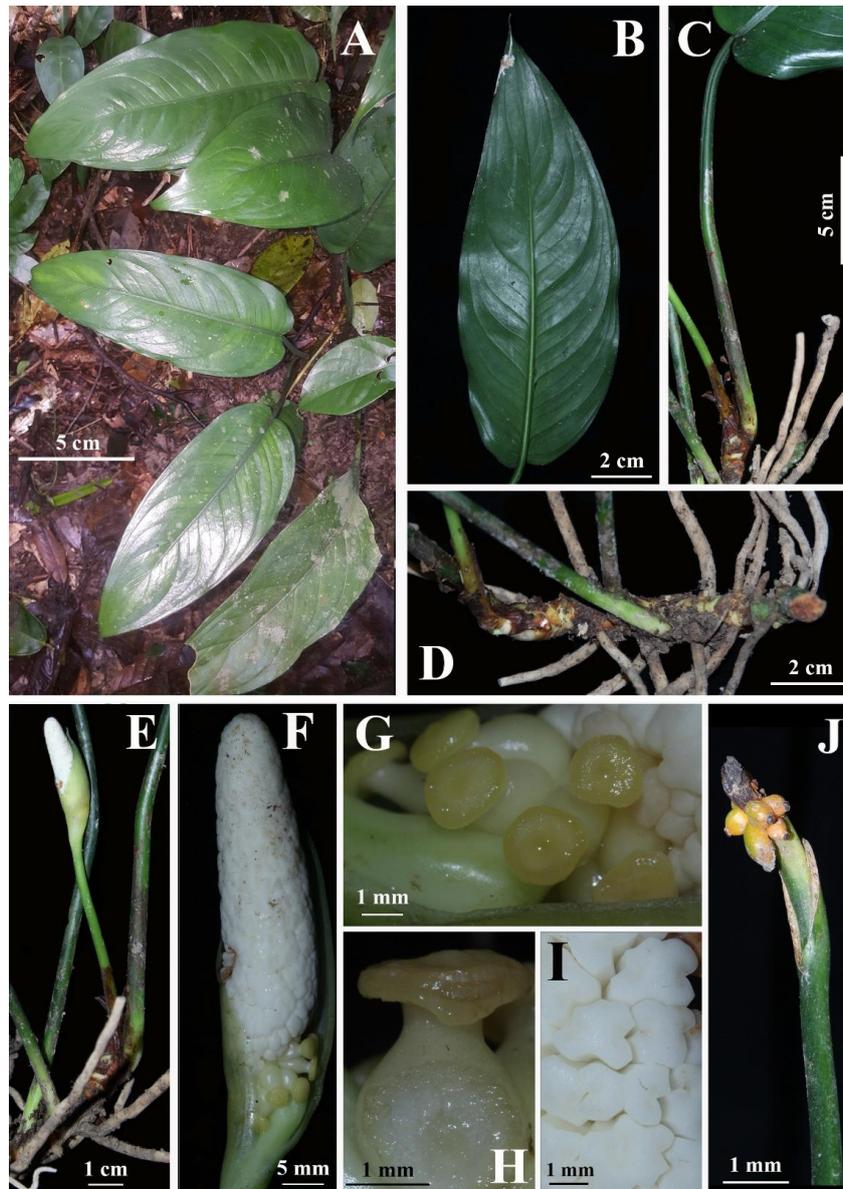


Figure 1. *Aglaonema costatum* f. *concolor*. A. Habit and leaf blade (above side). B. Leaf blade (under side). C. Petiole. D. Stem. E. Inflorescence. F. Spadix. G. Female flowers. H. Longitudinal section of ovary. I. Synandria. J. Infructescence

Typus: Malaya, Kedah, P. Langkawi, Selat Panchor, 21 November 1934, *Henderson s.n.* (SING).

Ecology: *Aglaonema costatum* f. *concolor* is found in evergreen forest on fertile soils on limestone bedrock. Flowers and mature fruits were found in January and thus flowering may appear several months before.

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