Aristolochia cochinchinensis (Aristolochiaceae), a new species from southern Vietnam

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Aristolochia cochinchinensis Do (Aristolochiaceae), a new species from southern Vietnam, is described and illustrated. It is characterized by a 6–8 cm long petiole with visible, cylindrical leaf scars, 5–9-flowered cymose inflorescences in clusters of two to four cymes, and a sessile utricle. Information about the distribution, habitat, and phenology as well as a comparison with four morphologically similar species (A. longeraemosa, A. poonae, A. pothieri and A. yalaensis) is provided. Synapomorphic characters such as an abaxially concave perianth and a completely monosymmetric floral limb with a complete fusion of the three sepals into one or two lobes places A. cochin chinensis in subgenus Aristolochia.

Aristolochia is the largest genus in Aristolochiaceae, comprising about 500 species. It is widely distributed throughout the tropics, subtropics and extending to temperate regions as well (González & Stevenson 2002, Hwang et al. 2003, Neinhuis et al. 2005, Wanke et al. 2006, Wagner et al. 2012). The genus is currently subdivided into three monophyletic subgenera: Siphisia, Para aristolochia and Aristolochia. The Old World species of Aristolochia subgenus Aristolochia have been shown to form a monophyletic section Diplolobus (González & Stevenson 2002, Neinhuis et al. 2005, Wanke et al. 2006, Ohi et al. 2006) and may be further subdivided in two subsections based on morphological characters. While unilabiate flowers with a stipe between utricle and ovary characterize subsection Podanthemum, unilabiate or bilabiate flowers without a stipe between utricle and ovary are characteristic of subsection Aristolochia (González & Stevenson 2002).

Currently fourteen Aristolochia species, belonging to the subgenera Siphisia (eight spp.) and Aristolochia (six spp.) are known from Vietnam (Pham 2000, Nguyen 2003, Do et al. 2014). During recent field studies in southern Vietnam aiming at re-investigation of the Aristolochia diversity in connection with preparation of a taxonomic revision of Vietnamese taxa, we collected unusual specimens of Aristolochia, which when

**Aristolochia cochinchnensis** Do, sp. nova
(Figs. 1 and 2)

**Type:** Vietnam. Bình Phước, Bu Gia Map National Park, 12°16’23.69”N, 107°11’18.78”E, 320 m a.s.l., 8 August 2011 T.H. Luu 539 (holotype VNMM!; isotype SGN!). — **Paratype:** Vietnam. Dac Nong, Ta Dung Nature Reserve, on well drained basalt soils along trails in submontane evergreen tropical forest dominated by the Fagaceae, Lauraceae and Myrtaceae, 11°82’107”N, 108°05’449”E, 460 m a.s.l., 26 June 2010 T.H. Luu 511 (SGN, VNMM).

**Etymology:** The specific epithet refers to the former name of southern Vietnam where the species was discovered.

Slender climber with numerous fascicate and cylindrical roots. Stems terete, twisted, slightly furrowed, glabrescent when young, becoming glabrous. Petioles 6–8 cm long, slender, straight, glabrous, leaf scar clearly visible, convex, cylindrical, 1.5–2 × 2–3 mm, remaining
on twigs after leaf abscission, leaf blade triangular-ovate to broadly-ovate or ovate-cordate, 8–15 × 5–10 cm, papery, leaf base cordate to auriculate, sinus 1.5–2 × 1.2–1.5 cm, leaf apex acumi-

Aristolochia cochinchinensis can be distinguished from the two other species of subsection Aristolochia occurring in Vietnam (A. contorta and A. dongnaiensis) by the shape and size of leaves, petioles, inflorescences and limb. It is morphologically similar also to the Thai endemics (Phuphanthaphong 1987, 2006) A. longeracemosa, A. pommae and A. yalaensis, as well as to A. pothieri, which occurs in Thailand and Cambodia. There are however clear differences (see Appendix).

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References


### Appendix. Morphological comparison Aristolochia cochinchinensis with A. longeracemosa, A. poomae, A. pothieri and A. yalaensis.

<table>
<thead>
<tr>
<th>Characters</th>
<th>A. cochinchinensis</th>
<th>A. longeracemosa&lt;sup&gt;1&lt;/sup&gt;</th>
<th>A. poomae&lt;sup&gt;2&lt;/sup&gt;</th>
<th>A. pothieri&lt;sup&gt;3&lt;/sup&gt;</th>
<th>A. yalaensis&lt;sup&gt;4&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petioles</td>
<td>6–8 cm long, with a visible leaf scar</td>
<td>6–11 cm long, without a leaf scar</td>
<td>2–3 cm long, without a leaf scar</td>
<td>3–5 cm long, without a leaf scar</td>
<td>4–6 cm long, without a leaf scar</td>
</tr>
<tr>
<td>Leaf blade</td>
<td>entire, triangular-ovate to broadly ovate, 8–15 × 5–10 cm</td>
<td>entire, ovate-cordate, 11–14 × 10.5–13 cm</td>
<td>entire, ovate to lanceolate-ovate, 5.5–6 × 2.5–3.8 cm</td>
<td>three-lobed or rarely entire, broadly ovate, 8–15 × 5–10 cm</td>
<td>entire, ovate-cordate, 7–12 × 5–8 cm</td>
</tr>
<tr>
<td>Leaf base</td>
<td>deeply cordate, sinus</td>
<td>deeply cordate, sinus</td>
<td>deeply cordate, sinus</td>
<td>deeply cordate, sinus</td>
<td>deeply cordate, sinus</td>
</tr>
<tr>
<td>Veins</td>
<td>palmately 7-nerved</td>
<td>palmately 7–9-nerved</td>
<td>palmately 7–9-nerved</td>
<td>palmately 3-nerved</td>
<td>palmately 5–7-nerved</td>
</tr>
<tr>
<td>Inflorescences</td>
<td>5–9-flowered, in clusters of 2–4 cymes, on young branches and older stem</td>
<td>6–7-flowered, 1–2 cymes, on young branches</td>
<td>1–4-flowered solitary cyme, on young branches</td>
<td>densely-flowered panicle-cyme, on young branches</td>
<td>3–4-flowered, in clusters of 1–4 cymes, on young branches and older stem</td>
</tr>
<tr>
<td>Inflorescence axis</td>
<td>2–5 cm long triangular-ovate, 6–8 × 3–4 mm, sessile, conspicuous</td>
<td>2.0–3.5 cm long ovate, 6 × 4 mm, sessile, conspicuous</td>
<td>2.0–6.0 cm long ovate-lanceolate, 5–8 × 2–3 mm, sessile, conspicuous</td>
<td>6 cm long lanceolate, 1.0 × 0.5 mm, stipe, deciduous</td>
<td>3.5–5 × 1.5–2 mm, sessile, conspicuous</td>
</tr>
<tr>
<td>Bracteoles</td>
<td>ca. 0.4–0.5 cm long</td>
<td>ca. 0.3 cm long</td>
<td>ca. 0.5 cm long</td>
<td>0.6–0.7 cm long</td>
<td>ca. 0.5 cm long</td>
</tr>
<tr>
<td>Perianth</td>
<td>curved, creamy-whitish</td>
<td>slightly curved, dark purple</td>
<td>curved, creamy-purple</td>
<td>straight, purplish-reddish</td>
<td>curved, pale green</td>
</tr>
<tr>
<td>Stipe</td>
<td>absent</td>
<td>absent</td>
<td>absent</td>
<td>present spherical or ovoid, 3.5–7.5 × 3.3–4 mm in diam.</td>
<td>absent</td>
</tr>
<tr>
<td>Utricle</td>
<td>spherical, 3 × 4 mm diam.</td>
<td>globose to ovoid, 6 × 6 mm in diam.</td>
<td>oblong-ovate, 5–6 × 3–4 mm in diam.</td>
<td>cylindrical, 0.4–0.8 × 0.1–0.2 cm</td>
<td>ovoid or globose, 3 × 3 mm in diam.</td>
</tr>
<tr>
<td>Tube</td>
<td>cylindrical, 0.6–0.7 × 0.2–0.3 cm</td>
<td>cylindrical, 0.6 × 0.15 cm</td>
<td>cylindrical, 0.4–0.8 × 0.1–0.2 cm</td>
<td>cylindrical, 0.8–1.6 × 0.2–0.3 cm</td>
<td>cylindrical, ca. 0.4 × 0.2 cm</td>
</tr>
<tr>
<td>Limb</td>
<td>linear-lanceolate, 1.2–1.5 × 0.2 cm, twisted at apex</td>
<td>sagittate, 1.0–1.2 × 0.4–1.2 cm, retuse at apex</td>
<td>linear-lanceolate, 1.2–1.6 × 0.2–0.3 cm, straight</td>
<td>spathulate, 1.3–1.8 × 0.5–0.7 cm, straight</td>
<td>oblong, ca. 1.0 × 0.3 cm, straight</td>
</tr>
<tr>
<td>Gynostemium</td>
<td>6-lobed, conical apices</td>
<td>6-lobed, obtuse apices</td>
<td>6-lobed, truncate apices</td>
<td>6-lobed, conical apices</td>
<td>6-lobed, triangular apices</td>
</tr>
<tr>
<td>Fruits</td>
<td>ovate-oblone in young state</td>
<td>oblong-oblone in young state</td>
<td>ovate-oblone in young state</td>
<td>ovoid with pedicel 6 cm</td>
<td>unknown</td>
</tr>
</tbody>
</table>

<sup>1</sup> Based on the original species description, type specimen (Bänziger 667, C) and the line drawing in Hansen and Phuphanaphong (1999).<br/><sup>2</sup> Based on the original species description, type specimen (Poorna 268, BKF), line drawing (fig. 4) and field photo (fig. 7C) in Phuphanaphong (2006).<br/><sup>3</sup> Based on the original description (Lecomte 1910), type specimen (Harmand 3166, P) as well as the recent species description and line drawing (fig. 11) in Phuphanaphong (1987).<br/><sup>4</sup> Based on the original species description, the type specimen (Poorna et al. 4321, BKF, K, L), line drawing (fig. 5) and field photo (fig. 7A and B) in Phuphanaphong (2006).