

New taxa of *Aristolochia* (Aristolochiaceae) from Thailand

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ABSTRACT. Five new species of the genus *Aristolochia* (Aristolochiaceae) from Thailand are described and illustrated. They are *Aristolochia hansenii* Phuph., *A. kongkandae* Phuph., *A. perangustifolia* Phuph., *A. poomae* Phuph. and *A. yalaensis* Phuph.

INTRODUCTION

Since the publication of *Aristolochia* in the Flora of Thailand (Phuphathanaphong 1987) two new species have been added by Hansen & Phuphathanaphong (1999). The new species, *Aristolochia phetchaburiensis*, described by Chuakul & Saralamp (2001) is a synonym of *A. kerrii*. Recently additional material has been collected and among these collections five hitherto undescribed species have been found, two of these from northern, two from peninsular and one from northeastern Thailand.

***Aristolochia hansenii* Phuph. sp. nov.** Haec species nova affinis est *A. pierrei* Lecomte sed caule tenuiore, petiolo longiore, foliis parvioribus utrinque glaberrimis, fructibus parvioribus et seminibus exalatis differt. Typus: Thailand, Northern, Chiang Rai, Mae Fa Luang district, on the way to Ban Hin Taek, 16 September 1998, *Chayamarit* 1120, (holotype **BKF**; isotype **C**). Fig. 1.

Slender climber, stem zigzag, 1–2 mm diam., glabrous, slightly grooved. Leaves without pseudo-stipules; petiole 1.5–4 cm, slender, glabrous; lamina thin, narrowly lanceolate, 5.5–8.5 by 2–3.5 cm, base shallowly cordate, sinus 5–10 mm deep, 8–12 mm wide, margin entire, apex tapering acute, mucronate, glabrous on both surfaces except some minute hairs on nerves near base, densely minute gland dotted on both surfaces, palmately 5-nerved, pinnately 3–4 nerved along midrib, venation inconspicuous above. Inflorescences axillary, racemose, 1.5–5 cm long, 3–5-flowered; bracts lanceolate to ovate-lanceolate, 5–8 by 2–3.5 mm; peduncle 2–3 mm, pedicels 4–6 mm pubescent; ovary elongate, 2–3 by 0.5–1 mm, 6-lobed, densely short hairy; with a stipe of 2–3 mm between ovary and utricle. Perianth dark violet, utricle ovate, 5–7 by 3–4 mm, tube cylindrical, 4–5 by 1 mm, straight; limb 1-lipped, lanceolate, ca. 2.5 by 5 mm, apex acute, glabrous, longitudinally striate. Gynostemium ca. 1.7 by 1.3 mm. Stamens 6, anthers oblong, ca. 0.7 by 0.1 mm. Stigmatic lobes 6, long triangular, ca. 0.6 by 0.3 mm, obtuse; with 6 small lobes between stigmatic lobes and anthers. Fruit globose, 8–10 mm in diam., longitudinally 6-lobed, green, glabrescent. Seeds cordate, not winged, 2.5–3.5 by 2.5–3.5 mm., slightly verrucose on adaxial surface, verrucose on abaxial surface, light brown.

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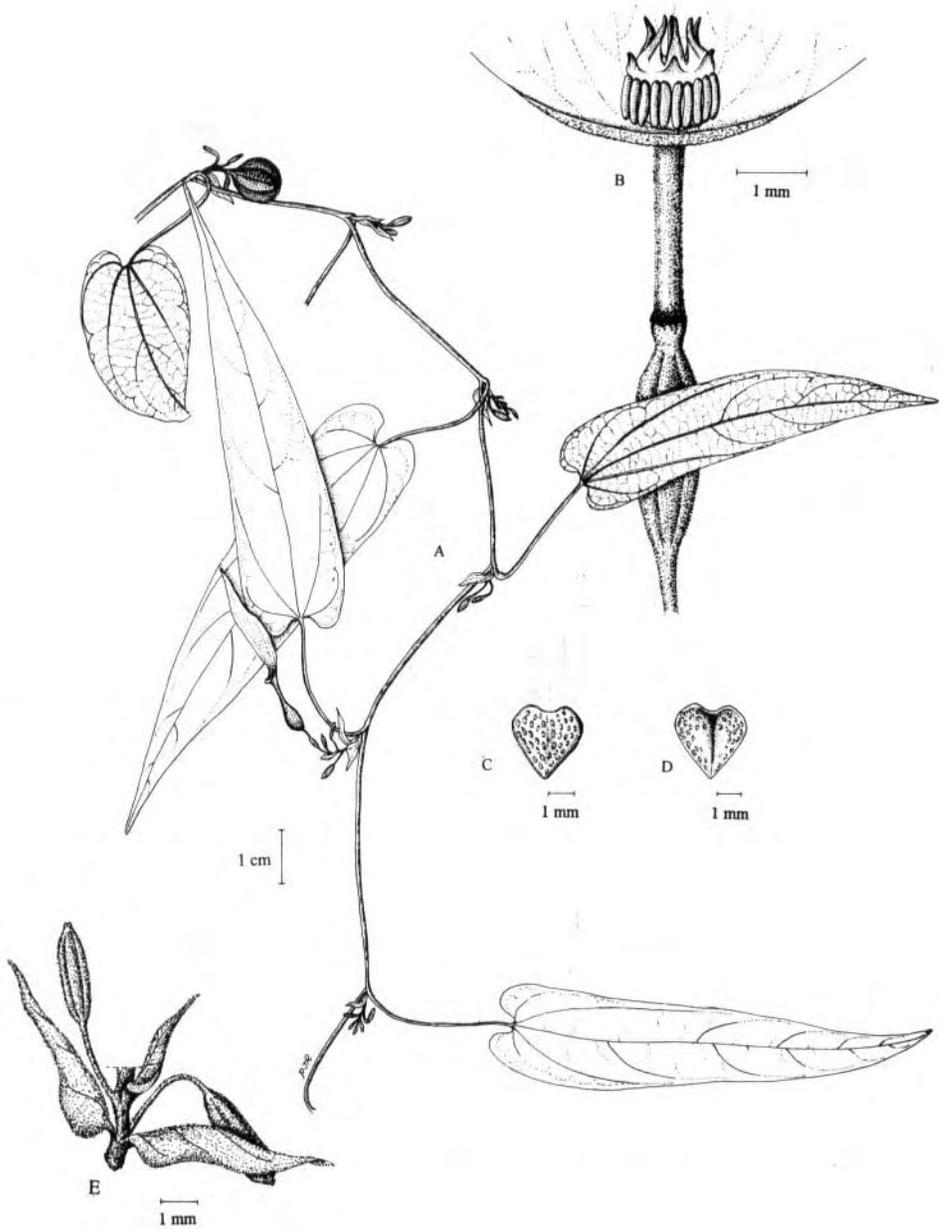


Figure 1. *Aristolochia hansanii* Phuph.: A. flowering and fruiting branch; B. gynostemium; C. abaxial surface of seed; D. adaxial surface of seed; E. bracts and ovaries. Drawn by P. Inthachup.

Thailand. — NORTHERN: Chiang Rai [Mae Fa Luang, on the way to Ban Hin Taek, 16 September 1998, *Chayamarit* 1120 (**BKF, C**)].

Distribution.— Endemic, only known from the type locality.

Ecology.— Edge of evergreen forest, creeping on the ground.

Vernacular.— Krachao chiangrai (กระเช้าเชียงราช).

Note.— This new species is closely related to *Aristolochia pierrei* Lecomte but differs in having a thinner stem, a longer petiole, smaller leaves and in being glabrous on both leaf surfaces; also the fruit is smaller and the seeds are without a wing. (Table 1). The specific epithet is given in honour of the late Dr. Bertel Hansen, my advisor when I revised the family Aristolochiaceae at the Botanical Museum, University of Copenhagen.

Aristolochia kongkandae Phuph. **sp. nov.** Haec species nova affinis est *A. pierrei* Lecomte sed caule tenuiore et brevior, petiolo longiore, foliis parvioribus ovato-lanceolatis (nec lanceolatis vel late lanceolatis), glabris (nec pubescentis), apice mucronatis (nec acutis vel acuminatis), fructibus parvioribus globosis, et seminibus trigonaliter obovatis exalatis basaliter (nec ubique) verrucosis differt. Typus: Thailand, Peninsula, Surat Thani, Khlong Phanom NP, 21 February 2001, *Chayamarit et al.* 2607 (holotype **BKF**; isotypi **C, E**). Fig. 2.

Slender climber, stem glabrous 1–1.5 mm diam., slightly grooved. Leaves without pseudo-stipules; petiole 3–7 cm, slender, glabrous; lamina ovate to ovate-lanceolate, 5–7.5 by 3–4 cm, base deeply cordate, ± auriculate, sinus 6–13 by 3–20 mm, margin entire, apex acute to acuminate, mucronate; glabrous on both surfaces, palmately 5–7 nerved, pinnately 2–3-nerved along midrib, veinlet finely reticulate, inconspicuous on both surfaces. Inflorescences axillary, racemose 1.5–4 cm long, 2–5-flowered, bracts and bracteoles lanceolate, 1–1.5 by 0.3–0.5 mm, glabrous, peduncle ca. 5 mm, pedicels 5–7 mm, glabrous. Ovary elongate, ca. 4 by 0.8 mm, slightly 6-ridged, glabrous, with a stipe of 0.5–1.5 mm between ovary and utricle. Perianth reddish green, utricle short cylindrical to globose, ca. 5 by 3 mm., base truncate, apex contracted, tube slender cylindrical, curved upwards, ca. 10 by 1.5 mm; limb 1-lipped, oblong ca. 1.5 by 0.5 cm, apex acute, glabrous. Gynostemium ca. 1.5 by 1 mm. Stamens 6, anther oblong to elliptic ca. 0.5 by 0.2 mm. Stigmatic lobes 6, ovate, obtuse. Fruit globose, 5–7 mm diam., longitudinally 6-lobed, glabrous, greenish. Seed triangular-obcordate, not winged, ca. 2.5 by 2.1 mm, verrucose on both surfaces.

Thailand.— PENINSULAR: Surat Thani: Khlong Phanom, 21 February 2001, *Chayamarit et al.* 2607 (**BKF, C, E**). Specimens studied other than type. [Khlong Phanom, 12 March 2002, *Suddee et al.* 1292 (**BKF**); Khlong Phanom, 11 April 2003, *Middleton et al.* 2143 (**A, BKF**); Khlong Phanom, 17 February 2005, *Williams & Pooma* 1558 (**A, BKF**); Khlong Phanom, 24 April 2005, *Pooma et al.* 5200 (**BKF**)].

Distribution.— Endemic, confined to Peninsular Thailand.

Ecology.— In evergreen forest, hanging down on limestone cliff.

Vernacular.— Krachao klong phanom (กระเช้าคลองพนม).

Note.— This new species is closely related to *Aristolochia pierrei* Lecomte but differs in having thinner and shorter stems, smaller leaves with longer petioles, a glabrous lamina which is ovate to lanceolate-ovate and with an acute to acuminate and mucronate

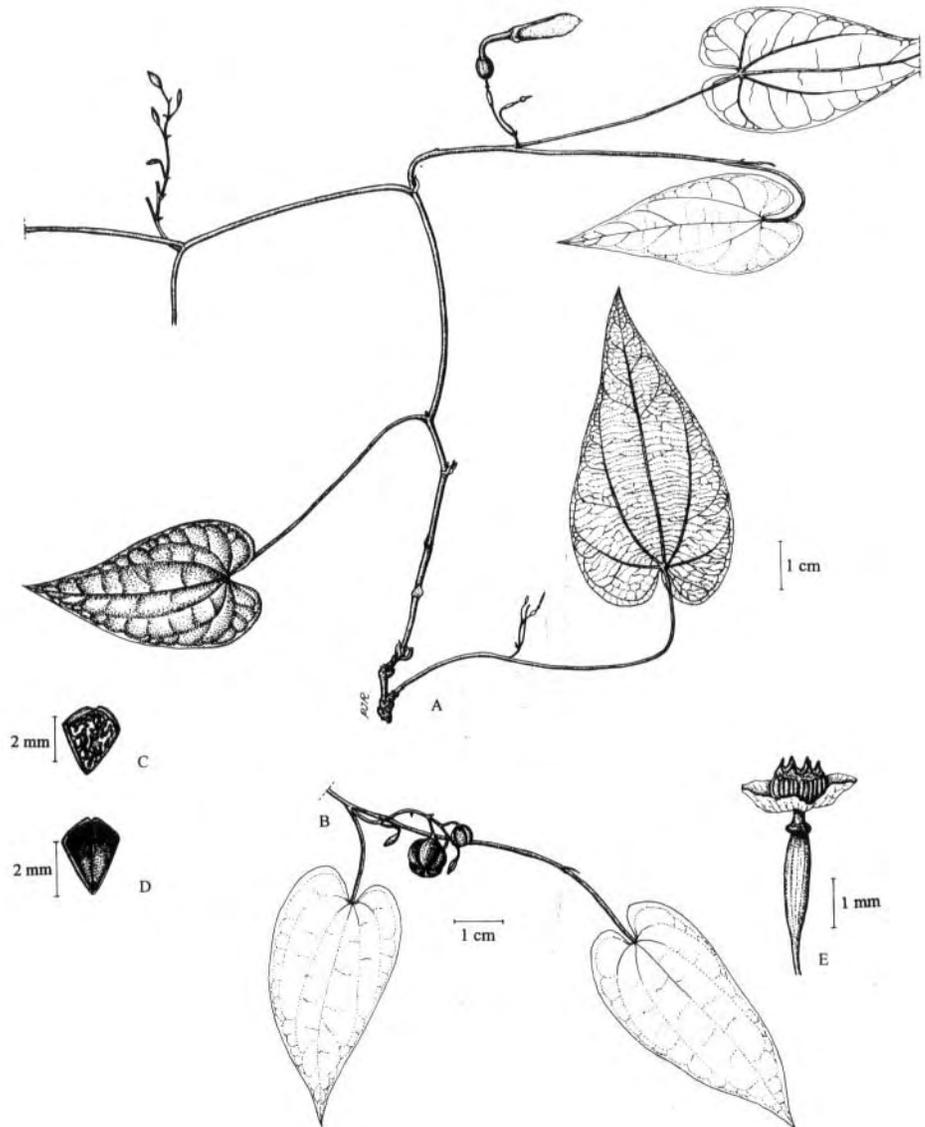


Figure 2. *Aristolochia kongkandae* Phuph.: A. flowering branch; B. fruiting branch; C. abaxial surface of seed; D. adaxial surface of seed; E. gynostemium. Drawn by P. Inthachup.

apex (the lamina is hairy, lanceolate to broadly lanceolate, and the apex is acute or tapering acute in *A. pierrei*). The fruits are smaller and spherical. The seeds are triangular-obovate, not winged, and verrucose on the lower surface (they are verrucose on both surfaces in *A. pierrei*) (Tab. 1). The species is named in honour of Dr. Kongkanda Chayamarit, Director, Office of the Forest Herbarium, who encouraged and provided facilities for my work.

Aristolochia perangustifolia Phuph. **sp. nov.** Haec species nova affinis est *A. pierrei* Lecomte sed foliis angustioribus basaliter distincte cordatis rotundate auriculatis differt, limbis perianthii linearo-lanceolatis (nec oblongis) instructa, cum annulo sinuato inter lobos stigmatis et antheras qui deest in *A. pierrei*. Typus: Thailand, North-eastern, Khon Kaen, Pha Nok Khao, near Phukradung, 29 October 1984, *Murata et al* T-51751 (holotype **BKF**; isotype **KYO**). Fig. 3.

Slender climber, 1–1.5 mm diam., stem glabrous, slightly grooved. Leaves without pseudo stipules; petiole 1.5–2 cm, slender, glabrous; lamina thin, narrowly lanceolate, 5.5–8.5 by 1.3–1.8 cm, base deeply cordate, auriculate, auricle rounded, the sinus 7–12 mm deep, 5–7 mm wide, margin entire, apex tapering acute or acuminate, mucronate, glabrous on upper surface, pubescent and densely minute gland-dotted on lower surface, palmately nerves 3–5; veins inconspicuous above, loosely reticulate visible below. Inflorescences axillary, racemose, 5.5–8 cm long, 1–6-flowered, bracts lanceolate to linear-lanceolate, 6–8 by 1–1.5 mm, gland-dotted, longitudinally veined, peduncle 5–6 mm, pedicels 6–12 mm, puberulous; ovary elongate, 3–4 by 0.5–1 mm, 6-ridged, glabrous, without stipe between ovary and utricle. Perianth reticulate, outside glabrous, utricle globose, ca. 4 mm diam., tube slightly bent upwards, 6–8 by 2–3 mm, limb 1-lipped, linear-lanceolate, 20–25 by 2–3 mm, tapering at apex, on adaxial surface of lip and throat pubescent. Gynostemium ca 1.5 by 1.3 mm. Stamens 6, anther oblong, ca 0.7 by 0.05 mm. Stigmatic lobes 6, oblong or oblong lanceolate, 0.4–0.5 by 0.1–0.2 mm, with 6 wavy lobes between stigmatic lobes and anthers. Fruit not seen.

Thailand.— NORTHEASTERN: Khon Kaen [Pha Nok Khao, near Phukradueng, 29 October 1984, *Murata et al* T-51751 (**BKF**, **KYO**)].

Distribution.— Endemic, only known from the type locality.

Ecology.— Edge of mixed deciduous forest in limestone areas, altitude 280–450 m (altitude data from the label on *Murata et al*. T-51751).

Vernacular.— Krachao bai khaeb (กระเช้าใบแคบ).

Note.— This new species is closely related to *A. pierrei* Lecomte but differs in having narrower leaves with a deeply cordate base and rounded auricles. The perianth limb is linear-lanceolate, while it is oblong in *A. pierrei*. There is a wavy annular ring between the stigmatic lobes and anthers in which is absent in *A. pierrei* (Table 1).

Aristolochia poomae Phuph. **sp. nov.** Haec species nova affinis est *A. chlamydophyllae* C.Y. Wu sed foliis parvioribus, petiolis brevioribus, utriculis oblongo-ovatis (nec globosis), laminis foliorum linearo-lanceolatis (nec ovato-lanceolatis), et lobis stigmatis brevioribus latoribusque differt. Typus: Thailand, Northern, Chiang Mai, Maesa Botanical Garden (**QSBG**), Maerim, alt. 700 m, 17 August 1989, *Pooma* 268 (holotype **BKF**). Fig. 4.

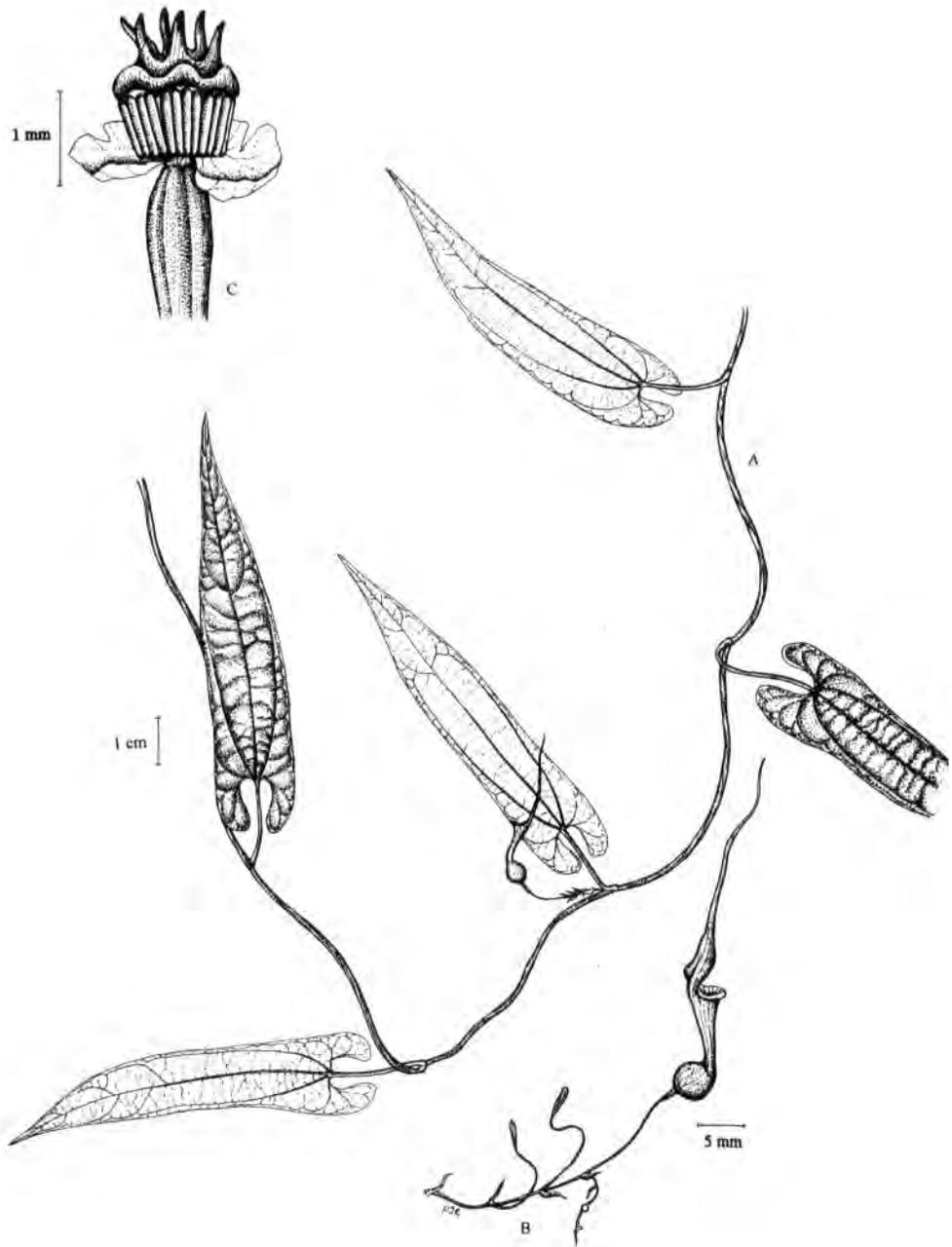


Figure 3. *Aristolochia perangustifolia* Phuph.: A. flowering branch; B. inflorescence; C. gynostemium.
Drawn by P. Inthachup.

Slender climber, stem glabrous, slightly grooved, 1–1.5 mm diam.. Leaves without pseudostipules; petiole 2–3 cm, slender, glabrous; lamina thin, ovate to lanceolate-ovate, 5.5–9 by 2.5–3.8 cm, base deeply cordate, auriculate, auricles rounded, the sinus 8–15 mm deep, 5–7 mm wide, margin entire, apex acuminate, mucronate, glabrous on upper surface, pubescent and densely minute gland-dotted on lower surface, palmately 5–7-nerved; veins inconspicuous above, loosely reticulate and slightly elevated below. Inflorescences axillary, racemose, 2–5 cm long, 1–4-flowered, bracts ovate-lanceolate, 5–8 by 2–3 mm, pubescent. Peduncle up to 12 mm, pedicels ca. 5 mm; pubescent; ovary elongate, ca. 2 by 0.5 mm, 6-ridged, densely short hairy, without stipe between ovary and utricle. Perianth purplish-cream, glabrous, gland-dotted; utricle oblong-ovate, 5–6 by 3–4 mm, 6-lobed, tube bent upwards, 4–8 by 1 mm, limb 1-lipped, linear-lanceolate, 12–16 by 1.5–3 mm, tapering at apex, straight, base of lip and throat inside dark purple, pubescent. Gynostemium ca. 1 by 1.4 mm. Stamens 6, anthers oblong, ca. 0.5 by 0.13 mm. Stigmatic lobes 6, ca. 0.3 by 0.7 mm, short, obtuse to nearly truncate. Young fruit ovate-oblong, ca. 17 by 8 mm, longitudinally 6-lobed.

Thailand.—NORTHERN: Chiang Mai [Maesa Botanical Garden (**QSBG**), Maerim, alt. 700 m, 17 August 1989, *Pooma* 268 (**BKF**)].

Distribution.—Endemic, only known from the type locality.

Ecology.—Edges of dry evergreen forest, altitude 700 m.

Vernacular.—Krachao nok krasa (กระเช้านกกกระสา).

Note.—This new species is named in honour of Dr. Rachun Pooma who collected the plant when he was a chief of Maesa Botanical Garden, (now QSBG: Queen Sirikit Botanic Garden). It is closely related to *A. chlamydophylla* C.Y.Wu but differs in having smaller leaves and a shorter petiole. The utricle is oblong-ovate, while in *A. chlamydophylla* it is globose; the limb is linear-lanceolate while in *A. chlamydophylla* it is ovate-lanceolate; and the stigmatic lobes are shorter and wider than in *A. chlamydophylla* (Table 2).

Aristolochia yalaensis Phuph. **sp. nov.** Haec species nova affinis est *A. minutiflorae* Ridl. ex Gamble sed inflorescentiis racemosis 1–4 in quaque axila et utriculis sine corpore glanduloso differt. Typus: Thailand, Peninsula, Yala, Bannang-sta, alt. 180–200 m. 17 July 2004, *Pooma et al.* 4321 (holotype **BKF**; isotypes **K, L**). Fig. 5.

Climber, ca. 1.2 m, young stem pubescent, glabrescent, slightly grooved, 1–2 mm diam.. Leaves without pseudostipules; petiole 4–6 cm, glabrous, lamina ovate-cordate, 7–12 by 4.5–8 cm, base deeply cordate, auriculate, with a basal sinus 1–2 cm deep and 1.3–3 cm wide, auricles rounded, margin entire, apex acuminate, with or without a minute mucro, glabrous above, pubescent below but surface clearly showing palmately 5–7-nerved. Inflorescences racemose, 1–4 in axil of foliage leaves and also on leafless stem, up to 4.5 cm long, rachis 2.5–3.5 cm, 3–5-flowered, each flower opposed by a sessile lanceolate bracteole, 3.5–5 by 1.5–2 mm, apex acuminate, basal nerves 3–5, pubescent on both surfaces, pedicel ca. 5 mm, pubescent, ovary ca. 3 by 0.5 mm, 6-lobed, pubescent, pale green, without stipe between ovary and utricle. Perianth 2 cm long, pale green, puberulous, bent between utricle and tube, utricle ovoid to globose, ca. 3 by 3 mm, tube ca. 4 by 1.5 mm, throat purple with 4 longitudinal lines, limb around the throat with a long tapering lip on the upper part,



Figure 4. *Aristolochia poomae* Phuph.: A. flowering branch; B. inflorescence; C. gynostemium. Drawn by P. Inthachup.

ca. 10 by 3 mm, apex obtuse, densely pubescent inside. Gynostemium ca. 0.8 by 2 mm. Stamens 6, anther oblong, ca. 0.7 by 0.5 mm. Stigmatic lobes 6, triangular, ca. 0.5 by 0.5 mm, acute. Fruit only known in young state, ca. 7.5 by 5 mm.

Thailand.—PENINSULAR: Yala [Bannang-sta, alt. 180–200 m. 17 July 2004, *Pooma et al* 4321 (**BKF, K, L**)].

Distribution.—Endemic, only known from the type locality.

Ecology.—In evergreen forest, on limestone, altitude 180–200 m.

Note.—This new species is closely related to *A. minutiflora* Ridl. ex Gamble but the inflorescences are racemose, 1–4 in axil, and the utricle is without glandular bodies. (Table 3).

REVISED KEY TO ARISTOLOCHIA IN THE FLORA OF THAILAND (1987)

(vegetative characters)

- | | |
|---|-------------------------------|
| 1. Stem zigzag, petiole less than 0.5 cm long | |
| 2. Leaves sessile or subsessile, apex rounded | 1. A. arenicola |
| 2. Leaves petiolate, apex acute or obtuse | |
| 3. Blade lanceolate or ovate, much longer than wide, more than 6 cm long | 2. A. harmandiana |
| 3. Blade broadly ovate, base cordate, as long as wide, less than 1.5 cm long | 3. A. helix |
| 1. Stem not zigzag, petiole more than 1 cm long | |
| 4. Leaves lobed | |
| 5. Leaves deeply 3-lobed, middle lobe acuminate, lateral lobes sickle-shaped, obtuse | 4. A. curtisii |
| 5. Leaves with lobes not exceeding half the length of blade | 5. A. pothieri |
| 4. Leaves entire | |
| 6. Leaves palmately 3–5-nerved | |
| 7. Leaves as long as broad or slightly longer than broad | |
| 8. Pseudo-stipules large, leaf-like; flowers solitary | |
| 9. Leaves rounded or kidney-shaped | 6. A. ringens |
| 9. Leaves triangular | 7. A. elegans |
| 8. Pseudo-stipules absent; flowers not solitary | |
| 10. Inflorescence contracted, flowers many (15–20) | 5. A. pothieri |
| 10. Inflorescence elongated, flowers few (5–8) | 14. A. longeracemosa |
| 7. Leaves longer than broad | |
| 11. Leaves glabrous on both sides or at most pubescent on nerves | |
| 12. Leaves narrowly lanceolate, 5.5–8.5 by 2–3.5 cm, base shallowly cordate, not auriculate | 15. A. hansenii |
| 12. Leaves ovate to ovate-lanceolate, base deeply cordate, ± auriculate | |
| 13. Leaves small, 5–7.5 by 3–4 cm | 16. A. kongkandae |
| 13. Leaves large, 9.5–16.5 by 5.8–7.6 cm | 8. A. tagala |
| 11. Leaves puberulous beneath | |
| 14. Leaves more than 3 times longer than wide, narrowly oblong-lanceolate, apex acute or tapering acute | |
| 15. Leaf base shallowly cordate, not auriculate, finely pubescent towards the margin on upper surface | 9. A. pierrei |
| 15. Leaf base deeply cordate, auriculate, margin glabrous | 17. A. perangustifolia |
| 14. Leaves less than 3 times longer than wide, triangular-ovate to ovate lanceolate | |
| 16. Leaves base truncate, shallowly cordate to cordate, apex acute | 10. A. kerrii |
| 16. Leaves base deeply cordate, auriculate, apex acuminate | |
| 17. Petiole less than 3 cm long, leaves 5.5–9 by 2.5–3.8 cm | 18. A. poomae |
| 17. Petiole more than 4 cm long, leaves 7–12 by 4.5–8 cm | 19. A. yalaensis |
| 6. Leaves pinnately nerved | |
| 18. Petiole short, 1–2 cm | 16. A. versicolor |

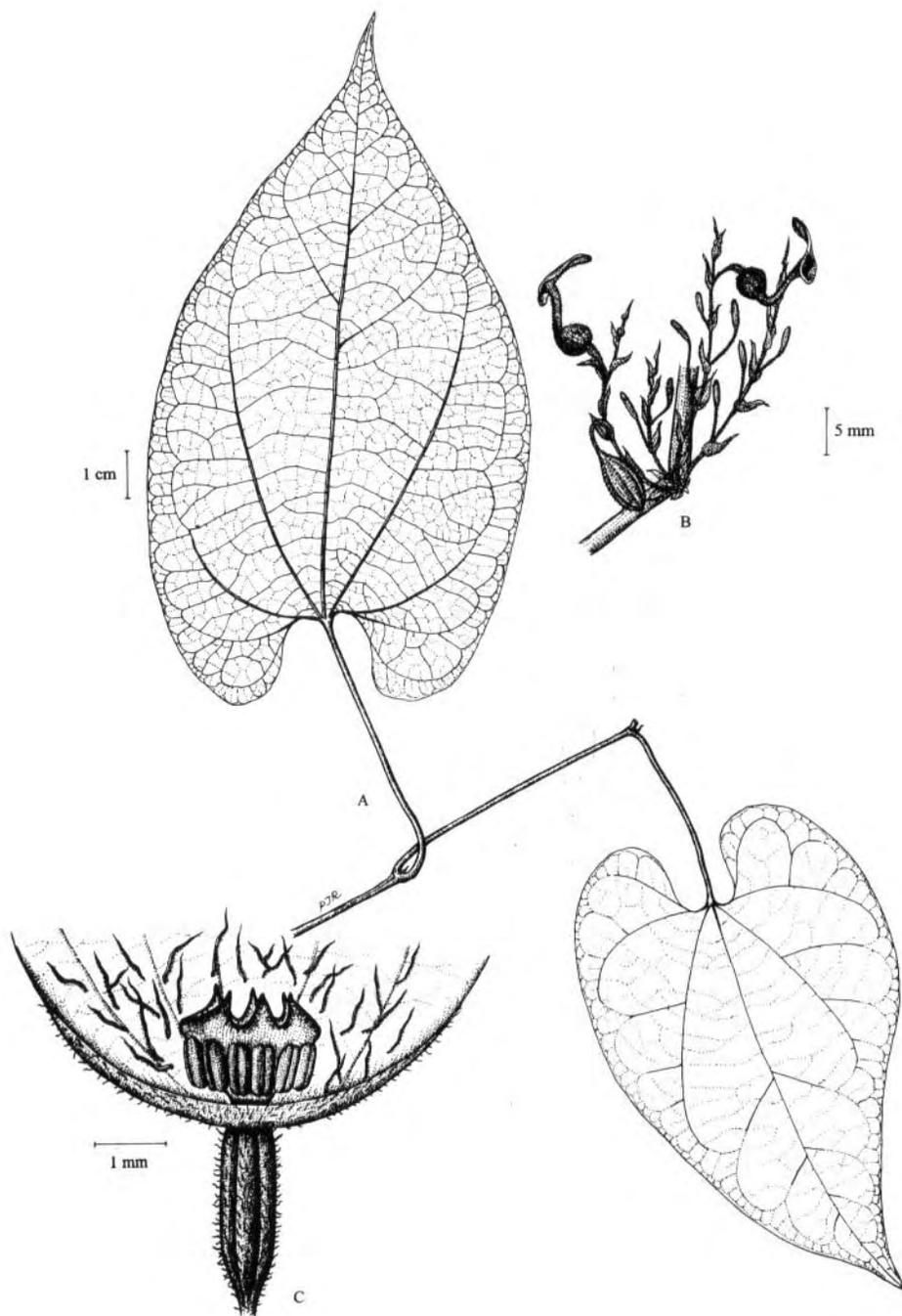


Figure 5. *Aristolochia yalaensis* Phuph.: A. flowering branch; B. inflorescences; C. gynostemium. Drawn by P. Inthachup.

18. Petiole long, 8–10 cm
 19. Base of leaves obtuse or cuneate, apex obtuse
 19. Base of leaves cordate, apex acuminate
17. *A. grandis*
 18. *A. baenzigeri*

KEY TO THE SPECIES
 (flower and fruit characters)

1. Flowers solitary
 2. Flowers bent, more than 7 cm long; pedicels 6.5–8.5 cm
 3. Perianth 2-lipped; utricle more than 4 cm long
 3. Perianth limb orbicular; utricle less than 3 cm long
6. *A. ringens*
 7. *A. elegans*
2. Flowers straight, less than 5 cm long; pedicels 0.4–1.5 cm
 4. Perianth more than 2.5 cm long, outside densely hairy
 4. Perianth less than 2 cm long, outside glabrous
1. *A. arenicola*
 3. *A. helix*
1. Flowers in racemes or panicles
 5. Flowers in panicles; seeds winged
 6. Panicles lax; seeds (incl. the wing) as long as broad or slightly broader than long, seed proper conspicuously heart-shaped
 6. Panicles dense at the base; seeds (incl. the wing) longer than broad, seed proper nearly orbicular
8. *A. tagala*
 5. *A. pothieri*
5. Flowers in racemes
 7. Bracts amplexicaul; seeds not winged, verrucose on both sides
 7. Bracts not amplexicaul
4. *A. curtisii*
8. Limb around the throat
 9. Pedicel more than 3 cm; perianth outside white with brown veins, inside yellow, limb red; stigmatic lobes 6
 9. Pedicel less than 3 cm; perianth outside pilose, inside glabrous; stigmatic lobes 3
 10. Leaves widest above middle, without basal sinus; flowers borne on trailing stems above ground
 10. Leaves widest below middle, with conspicuous basal sinus; flowers borne close to the ground
11. *A. versicolor*
 13. *A. baenzigeri*
8. Limb 1-lipped
 11. Perianth and fruits velutinous outside; pedicel 0.6–0.75 cm; seeds not winged
 11. Perianth and fruits pubescent to glabrous outside
2. *A. harmandiana*
12. Perianth glabrous outside
 13. Stipe between ovary and utricle absent
 14. Gynostemium with wavy annular ring between stigmatic lobes and anthers; lip tapering to a long tail
 14. Gynostemium without annular ring between stigmatic lobes and anthers
17. *A. perangustifolia*
 14. *A. longeracemosa*
 15. Fruit more than 5 cm long; raceme not fascicled
 15. Fruit less than 2.5 cm long; raceme fascicled
10. *A. kerrii*
13. Stipe between ovary and utricle present
 16. Fruit small, globose, 5–7 mm diam.; seed not winged
 16. Fruit big, ovoid, 2–2.5 by 1.8–2 cm; seed winged
16. *A. kongkandae*
 9. *A. pierrei*
12. Perianth pubescent or laxly hairy outside
 17. Stipe between ovary and utricle present
 18. Limb hairy on adaxial surface; fruit ovoid up to 5.5 cm long; seed winged
 18. Limb glabrous on adaxial surface; fruit globose, 8–10 mm diam; seed not winged
8. *A. tagala*
 15. *A. hansenii*
17. Stipe between ovary and utricle absent
 19. Lip long, up to 16 mm; utricle oblong to ovate-oblong 5–6 by 3–4 mm; stigmatic lobes short, about 0.3 by 0.7 mm, apex obtuse to truncate
 19. Lip short, about 10 mm; utricle ovoid to globose, about 3 mm diam; stigmatic lobes longer, 0.5–0.7 by 0.5 mm, apex acute
18. *A. poomae*
 19. *A. yalaensis*

Table 1 Characters distinguishing *Aristolochia hansenii*, *A. kongkandae* and *A. perangustifolia* from *A. pierrei*

Characters	<i>A. pierrei</i>	<i>A. hansenii</i>	<i>A. kongkandae</i>	<i>A. perangustifolia</i>
stem	not zigzag, 2-3 mm ø	zigzag, 1-2 mm ø	not zigzag, 1-1.5 mm ø	not zigzag, 1-1.5 mm ø
petiole	0.9-1.5(-3.5) cm, puberulous	1.5-4 cm, glabrescent	3-7 cm, glabrous	1.5-2 cm, glabrous
lamina	lanceolate to broadly lanceolate, 8.5-13.8(-16) by 2.8-4.6(-6) cm, glabrescent above, puberulous beneath	lanceolate, 5.5-8.5 by 2-3.5 cm, glabrous	ovate to ovate-lanceolate, 5-7.5 by 3-4 cm, glabrous	narrowly lanceolate, 5.5-8.5 by 1.3-1.8 cm, glabrous above, pubescent beneath
lamina base	cordate, not auriculate, sinus 0.5-2 cm deep, 0.8-3 cm wide	cordate, mostly not auriculate, some slightly auriculate, sinus 0.5-1 cm deep, 0.8-1.2 cm wide	cordate, auriculate, sinus 0.6-1.3 cm deep, 0.3-2 cm wide	base deeply cordate, auriculate, sinus ca. 1.2 cm deep, 0.5-0.7 cm wide
inflorescences	racemose, 3.5-7 cm long, axis 0.5-1.5 cm, tomentose, 6-14-flowered	racemose, 1.5-5 cm long, axis ca. 5 mm, puberulous, 3-5-flowered	racemose, 1.5-8 cm long, axis up to 6 cm, 4-10-flowered	racemose, 5.5-8 cm long, axis ca. 5 cm, 1-6-flowered
pedicel	4-10 mm, pubescent	4-6 mm, pubescent	5-7 mm, glabrous	6-12 mm, puberulous
ovary	3.7-4.5 by 0.5-1 mm, densely short hairy	2-3 by 0.5-1 mm, densely short hairy	ca. 4 by 0.8 mm, glabrous	3-4 by 0.5-1 mm, glabrous
stipe between ovary and utricle	2-4 mm	2-3 mm	0.5-1.5 mm	without stipe
perianth	2-3.5 cm long	3.5-3.8 cm long, dark violet	ca. 2.6 cm long, reddish green	ca. 3.5 cm long, reticulate, glabrous
utricle	ovoid to globose, 3.5-4.5 by 3-4 mm	ovoid, 5-7 by 3-4 mm	short cylindrical to globose, 3-5 by 3 mm	globose, ca. 4 mm ø
perianth tube	5-8.5 by 1 mm	4-5 by 1 mm	ca. 10 by 1.5 mm	6-8 by 2-3 mm
perianth limb	1-lipped, oblong, 10-15 by 4.5-5.5 mm, apex obtuse, abaxial surface maroon, adaxial surface dark maroon	1-lipped, lanceolate, ca. 2.5 by 5 mm, apex acute, dark purple	1-lipped, oblong, ca. 15 by 5 mm, acute, pinkish on both surfaces	1-lipped, linear-lanceolate, 20-25 by 2-3 mm, apex tapering, adaxial surface pubescent
fruit-stalk	3.2-4.5 cm	0.5-0.8 cm	0.5-1 cm	-
fruits	ovoid, 2-2.5 by 1.8-2 cm, glabrescent	globose, 0.8-1 cm ø, glabrescent	globose, 0.5-0.7 cm ø, glabrous	Unknown
seeds	broadly cordate or triangular, 4.7-5.1 by 5.5-6 mm, verrucose on both surfaces, winged	cordate, 2.5-3.5 by 2.5-3.5 mm, adaxial surface less verrucose, not winged	triangular-cordate, ca. 2.5 by 1 mm, verrucose on both surfaces, not winged	Unknown

Table 2 Characters distinguishing *Aristolochia poomae* from *A. chlammydophylla*

Characters	<i>A. chlammydophylla</i>	<i>A. poomae</i>
petiole	6–10 cm, robust, base tumensitulus	2–3 cm, slender, glabrous
lamina	ovate or ovate-oblong, 8–16 by 5–11 cm, base cordate, auriculate, glabrous above, densely puberulous beneath apex acuminate, mucronate, glabrous	ovate to ovate-lanceolate, 5.5–9 by 2.5–3.8 cm, base deeply cordate, auriculate, above, pubescent and densely gland-dotted beneath
utricle	globose, ca. 2–3 mm \emptyset	oblong-ovate, 5–6 by 3–4 mm
perianth limb	1-lipped, ovate-lanceolate ca. 15 mm long apex acute, dark purple	1-lipped, linear-lanceolate, 12–16 mm long, apex tapering, purplish green
stigmatic lobe	6-lobed, lobe ovoid, ca. 0.6 by 0.4 mm	6-lobed, lobe broader than long, apex blunt to nearly truncate, ca. 0.3 by 0.7 mm

Table 3 Characters distinguishing *Aristolochia yalaensis* from *A. minutiflora*

Characters	<i>A. minutiflora</i>	<i>A. yalaensis</i>
stem, branch	stem 3–10 mm \emptyset	stem 1–2 mm \emptyset
lamina	lanceolate or ovate (5.5–)12–14 by (2.5–)5.5–7 cm, base cordate, auricles rounded, glabrous above, loosely puberulous beneath	ovate-cordate, 7–12 by 4.5–8 cm, base deeply cordate, auricles rounded, glabrous above, pubescent beneath
sinus	0.7–2 cm deep, 1.2–2 cm wide	1–2 cm deep, 1.3–3 cm wide
inflorescences	spiciform, 1 in axil, up to 3.5 cm, puberulous or glabrous	racemose, 1–4 in axil, up to 4.5 cm, puberulous
pedicel and ovary	9–12 mm long, sparsely minutely hairy	ca. 8 mm long, pubescent
utricle	broad ovoid or subglobose, 3–6 by 2.5–6 mm, not stiped, sparsely hairy inside, with 2 ellipsoid, glandular bodies	ovoid to globose ca. 3 by 3 mm, not stiped, without glandular body
perianth limb	1-lipped, narrow lanceolate to linear 11–12 by 2–3 mm, apex acute to obtuse	limb around the throat with 1-lipped long tapering on the upper part ca. 10 by 3 mm, apex obtuse
stigmatic lobe	obscurely 6-lobed, with a distinct annular ring	6-lobed, without annular ring

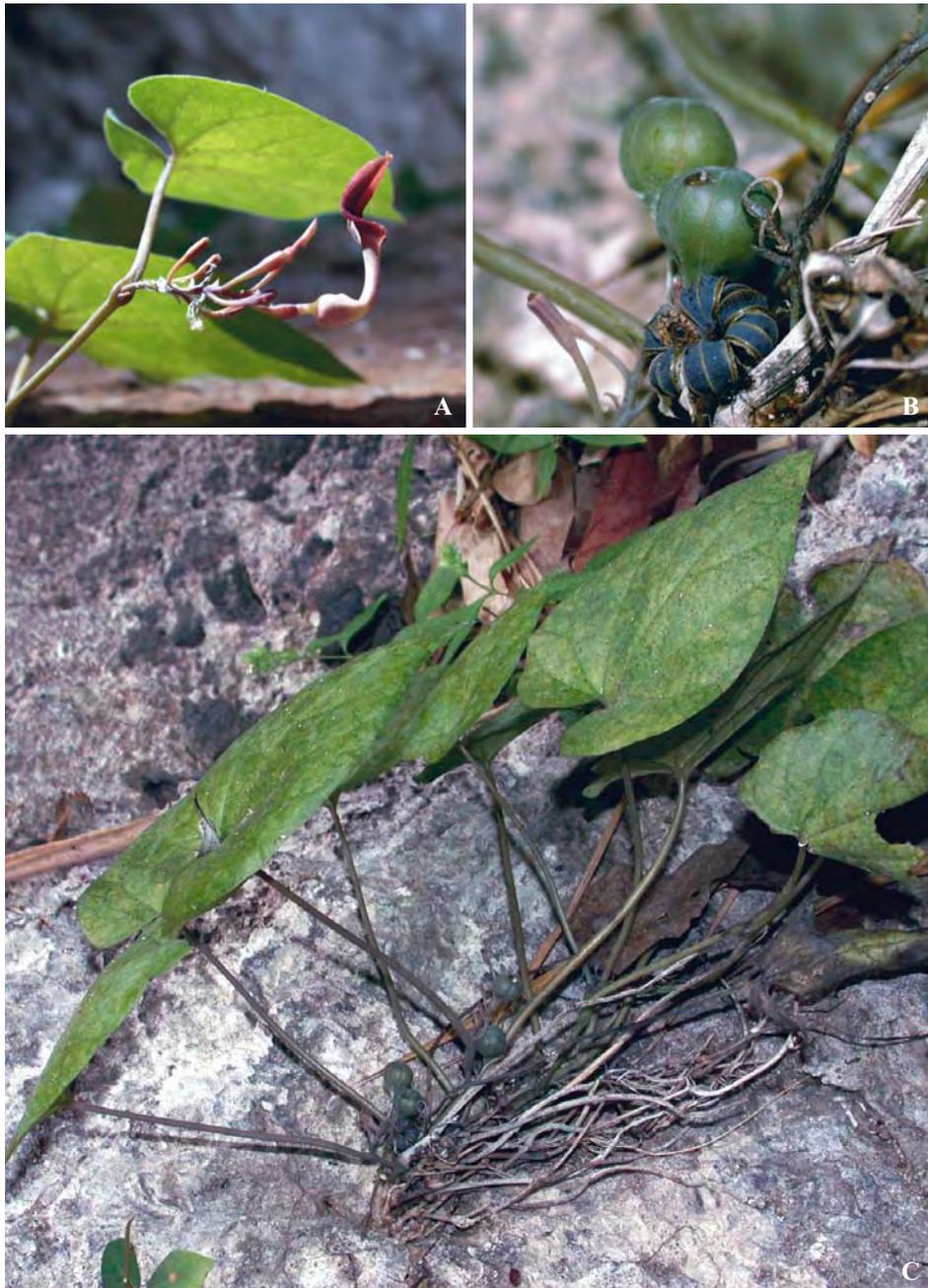


Figure 6. *Aristolochia kongkandae* Phuph.: A. flowers; B. fruit; C. habit. Photographed by R. Pooma.



Figure 7. A.-B. *Aristolochia yalaensis* Phuph.; C. *Aristolochia poomae* Phuph. Photographed by R. Pooma.

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