The genus *Amydrium* (*Araceae: Monsteroideae: Monstereae*) with particular reference to Thailand and Indochina

**Nguyen Van Dzu** & Peter C. Boyce

Summary. The genus *Amydrium* (*Araceae*) is recorded for the first time from Vietnam, with two species, *A. hainanense* and *A. sinense*, hitherto known only from China (including Hainan). Neither species was treated in the last revision of *Amydrium* (Nicolson 1968) and their recognition requires alterations to his account. A key to the Asian genera of *Monstereae* and *Anadendreae*, an expanded generic description, keys to fertile, sterile and juvenile plants and a review of the genus is presented. Both newly recorded Vietnamese species are illustrated.

**INTRODUCTION**

*Amydrium* Schott, a genus of terrestrial subscandent herbs and root-climbing lianes occurring from Sumatra to New Guinea and from southern China to Java, was last revised by Nicolson (1968). Nicolson merged *Epipremnopsis* Engl. into the then monospecific *Amydrium*, recognizing four species in all. Since Nicolson’s account two more species have been recognized: *A. sinense* (Engl.) H. Li and *A. hainanense* (C. C. Ting & C. Y. Wu ex H. Li et al.) H. Li. *Amydrium sinense*, based upon Engler’s *Scindapsus sinensis* (Engler 1900), was overlooked by Nicolson. *Amydrium hainanense*, described initially in *Epipremnopsis* (Li et al. 1977), was later transferred to *Amydrium* (Li 1979). Additionally, two species recognized by Nicolson, *A. zippelianum* and *A. magnificum*, have since been shown to be conspecific (Hay 1990; Boyce 1995). *Amydrium* as here defined comprises five species.

*Amydrium* is currently placed in *Monsteroideae* tribe *Monstereae* (sensu Mayo et al. 1997) but has a chequered history of infrafamilial placement. In publishing *Amydrium* (then monospecific: *A. humile* Schott) Schott (1863) stated that it should be placed before *Anadendrum* in subtribe *Monsterinae* (sensu Schott 1860), an assemblage equivalent to a combined *Anadendreae* and *Monstereae sensu Mayo et al. 1997*. However, Engler (1876) placed *Amydrium* (still monospecific) in subfamily *Pothoideae* subtribe *Heteropsinae* (together with neotropical *Heteropsis* Kunth) but later (Engler 1905) moved *Amydrium* to *Monsteroideae* while retaining his newly published *Epipremnopsis* in *Pothoideae* (tribe *Potheae*). Thus *Amydrium* (*sensu Nicolson 1968*) is often considered intermediate between *Pothoideae* and *Monsteroideae*. However, while *Amydrium* is in some respects anomalous in *Monsteroideae* (ripe

---

1 Herbarium, Department of Botany, Institute of Ecology & Biological Resources, NCNST, Nghia Do, Cau Giay, Hanoi, Vietnam. E-mail: mthang@hn.fpt.vn
2 Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, TW9 3AB, U.K. E-mail: p.boyce@rbgkew.org.uk
fruits without abscising stylar region and very sparse trichosclereids), it is decidedly atypical in Pothoideae (swiftly deciduous spathe, presence of trichosclereids, and aperigoniate flowers). More work, ideally involving detailed macromolecular comparison of species of Monsteroideae and Pothoideae, is needed to place Amydrium with more certainty (compare Anadendrum Schott and Heteropsis, which are similarly problematic).

**Identification**

Lianescent aroids are often collected under incorrect names in Asia (see, e.g., Boyce 1998 for further discussion). Part of the problem with accurate identification arises from an apparent lack of readily observable critical characters, a difficulty exacerbated by the tendency of key writers to concentrate on fertile characters which are difficult to observe and interpretatively ambiguous vegetative characters. We have attempted where possible to concentrate on readily observable characters in the keys presented here. In particular, we have employed the feature typical of most monsteroid genera, trichosclereids. All monsteroid genera except Amydrium have abundant trichosclereids (sparse and scattered in Amydrium). These are readily observable by tearing a mature leaf lamina and looking for ‘hairs’ protruding from the damaged edges and are extremely reliable in Asia as a means of assigning a genus to the tribe Monstereae. For a discussion on identifying lianes of the tribe Potheae see Boyce (1998).

The keys presented below should go some way towards easing the identification of the smaller-inflorescenced lianescent aroids to genus in Asia. However, while it has proved relatively easy to key these out by this method, species with large inflorescences have proved very intractable and here we have had to resort to critical floral characters in order to produce a reliable key for those taxa. As we gain a better insight into unvarying (or at least unambiguous) vegetative and macrofloral characters we hope to be able to produce more user-friendly keys for these larger flowered taxa.

All morphological terms employed follow Stearn (1992).

**Key to the genera of Anadendrae and Monstereae in Thailand and Indochina**

1. Inflorescence small; spathe usually less than 9 cm long just prior to opening  
   Inflorescence moderate to large; spathe usually more than 9 cm long just prior to opening  
   2

2. Spathe in bud slender, with a long, slender peduncle, conspicuously long-beaked (beak to $\frac{1}{3}$ length of entire spathe), spathe opening with inside white, greenish white or purple and conspicuously glossy-waxy. Flowers with a membranous perigon of fused tepals (perigoniate). Fruits separate berries, dark red when ripe. Trichosclereids absent  
   Anadendrum

Spathe in bud stout, short to long-pedunculate, not conspicuously long-beaked, or if beak present then less than $\frac{1}{6}$ length of entire spathe, opening with inside yellow, greenish or white, only moderately waxy. Flowers aperigoniate.
Fruits not a berry, styrax region mostly abscising to reveal ovary cavity, if fruits
berry-like and styrax region not abscising then fruits ripening white or orange.

Trichosclereids present (but sparse in Amydrium) ........................................ 3

3. Trichosclereids abundant (many ‘hairs’ apparent when a mature leaf lamina is
torn). Petiole broadly canaliculate; leaf sheath margins broad, spreading,
persistent, extending to apical geniculum; leaf lamina thinly coriaceous, often
variegated silvery grey. Ripe fruits with styrax region abscising ................ Scindapsus

Trichosclereids sparse (very few ‘hairs’ apparent when a mature leaf lamina is
torn). Petiole narrowly canaliculate or terete; petiole sheath margins narrow,
erect or slightly inrolled, soon drying and degrading into weak fibres, then
falling to leave an obscure scar, sheath either ligulate with free ligules
extending beyond apical geniculum or sheath at most extending only to half
way along petiole, if the latter then remainder of petiole terete except for two
prominent adaxial keels extending to apical geniculum; leaf lamina variously-
textured. Ripe fruits with styrax region not abscising ......................... Amydrium

4. Trichosclereids sparse (very few ‘hairs’ apparent when a mature leaf lamina is
torn). Higher order venation reticulate. Ovary 1-locular, placenta 1, intrusive-
parietal, ovules 2. Ripe fruits with styrax region not abscising ........ Amydrium

Trichosclereids abundant (many ‘hairs’ apparent when a mature leaf lamina is
torn). Higher order venation striate or reticulate. Ovary never as above
combination. Ripe fruits with styrax region abscising ............................ 5

5. Ovule solitary, placenta basal. Fruit with a solitary seed .................. Scindapsus

Ovules 4 – 6 or more, placenta intrusive-parietal. Fruit with more than one
seed .................................................................................................................. 6

6. Ovules 8 or more, superposed on 2 (rarely 3) intrusive parietal placentas. Seeds
many, ellipsoid, straight, 1.3 – 3.2 x 0.6 – 1.0 mm; testa brittle, smooth ........

................................................................. Rhaphidophora

Ovules 4 (– 6) at base of a single intrusive parietal placenta. Seeds few, curved, 3
7 mm x 1.5 – 4.0 mm; testa bony and ornamented .................... Epipremnum

DC., Monogr. Phan. 2: 250 (1879); Engl. & K. Krause in Engl., Pflanzenr. 37 (IV.
23B): 118 (1908); Ridl., Fl. Malay. Penins. 5: 118 – 119 (1925); Nicolson, Blumea 16
18 (1981); M. L. Sai in B. Zhu et al., Fl. Guizhou. 6: 549 – 550, Fig. 162 (1987); P. C.
Kao in P. C. Kao & Z. M. Tan, Fl. Sichuan. 9: 380 – 382, Pl. 120 1 – 3 (1989); A. Hay,
Coode et al., A checklist of the flowering plants and gymnosperms of Brunei
13, pl. 113 A (1997); P. C. Boyce & Resslar (1999) http://www.vwc.edu/wwwpages
/presslar/greenhouse/amyridium/genus_am.htm. Type species: A. humile Schott.

Epipremnopsis Engl. in Engl, Pflanzenr. 37 (IV. 23B): 1 – 3 (1908); Merr., Enum
Philipp. Pl. 1: 177 – 178 (1922); Ridl., Fl. Malay. Penins. 5: 120 (1925); H. Li et al.,

Small to medium-sized, occasionally very large, root-climbing lianes (*sensu* Schimper 1903) or creeping to scandent herbs, most species producing long flagelliform foraging shoots lacking foliage leaves; trichosclereids sparsely present in vegetative parts (only petiole and sheath *fide* Seubert 1997), more abundant in style (*fide* Carvell 1989). *Leaves*: foliage leaves often remote from one another, interspersed with few to rather many cataphyll-bearing nodes; petiole geniculate apically and basally, sheath very short (barely exceeding basal geniculum) to usually less than half as long as petiole, occasionally reaching apical geniculum, rarely ligulate and exceeding it; lamina ovate-cordate to lanceolate or pandurate-trilobed or pinnatifid to pinnatisect, sometimes with round to oval perforations; primary lateral veins pinnate, running into marginal vein, higher order venation reticulate. *Inflorescence* 1 – several in each floral sympodium, terminal on shoot but often displaced by sympodial branching and then, in fruit, appearing lateral on stem; peduncle erect, subequal or half as long as petiole; spathe conchiform to ovate or canoe-shaped, apiculate, often thick-textured, sometimes reflexed at anthesis and then deciduous; spadix sessile to long-stipitate, sometimes very short. *Flowers* bisexual, aperigoniate. *Stamens* 4 – 6, free; filaments short, broadly linear; anthers equalling or shorter than filaments, thecae ovoid, extrorse, dehiscing by a longitudinal slit. *Pollen* (Grayum 1984, 1992) fully zonate, hamburger-shaped, medium-sized (mean 39 µm, range 38 – 41 µm); exine either densely and minutely punctate in one half and virtually psilate in the other, or uniformly foveolate-fossulate, apertural exine psilate or obscurely verrucate. *Gynoecium* obpyramidal or obconoid, tetragonal; ovary 1-locular; ovules 2; funicle anatropous, short; placenta situated near the base of a deeply intrusive septum; stylar region broader than ovary, slightly prominent centrally below stigma, otherwise ± truncate; stigma small, hemispheric to longitudinally elongate. *Infructescence* comprised of numerous medium to large berries; fruits subglobose, truncate to domed at apex, clearly separate, white (*A. medium*, *A. humile*) or indistinctly separate, orange-red (*A. zippelianum*, *A. sinense*) when ripe; stylar region not abscising (*q.v.* *Epipremnum*, Boyce 1998). *Seed* subglobose to heart-shaped; testa smooth, glossy; embryo curved and partly green; endosperm present (*fide* Seubert 1993). *Chromosomes* 2n = 60.

**Distribution.** 5 spp., in tropical and subtropical East Asia: Brunei, P. R. China (Guandong, Guangxi, Guizhou, Hainan, Hubei, Hunan, Sichuan, Yunnan), Indonesia (Irian Jaya, Java, Kalimantan, Maluku, Sulawesi, Sumatra), Malaysia (Peninsula, Sabah, Sarawak), Myanmar, Papua New Guinea, Philippines, Singapore, Thailand, Vietnam.

**Keys to the species of Amygdrium:**

**Key to herbarium material**

1. Leaf lamina of flowering shoots entire ........................................ 2
   Leaf lamina of flowering shoots pinnatifid, pinnatifide, pinnatisect or, if entire, then with perforations .......................... 3
2. Base of leaf lamina cordate; flowering shoots not adherent-climbing (i.e., no clasping roots visible along stem) (Peninsular Malaysia; Sumatra) - 2. A. humile
Base of leaf lamina cuneate to shortly decurrent; flowering shoots root-climbing (i.e., clasping roots visible along stem (P. R. China, N Vietnam) - 4. A. sinense

3. Leaf lamina of flowering shoots pinnatifid to pinnatisect, if pinnatifid then sometimes perforated - 4
Leaf lamina of flowering shoots entire, moderately to greatly perforated (P. R. China (incl. Hainan), N Vietnam) - 1. A. hainanense

4. Leaf lamina of flowering shoots pinnatifid to pinnatifid, pinnatifid, pinnatisect, sometimes perforated - 4
Leaf lamina of flowering shoots pinnatifid to pinnatisect, never perforated (Philippines, Sulawesi, Maluku, New Guinea) - 5. A. zippelianum

FIELD KEY TO FERTILE SPECIMENS

1. Plants always flowering on root-climbing shoots - 2
Plants mostly flowering on non-climbing shoots, if flowering shoots climbing then never adherent (Peninsular Malaysia; Sumatra) - 2. A. humile

2. Leaf lamina of flowering shoots entire, perforated or not - 3
Leaf lamina of flowering shoots pinnatifid, pinnatifid, pinnatisect, sometimes perforated - 4

3. Leaf lamina moderately to greatly perforated (P. R. China (incl. Hainan), N Vietnam) - 1. A. hainanense
Leaf lamina never perforated (P. R. China, N Vietnam) - 4. A. sinense

4. Leaf lamina perforated, segments spreading, lamina seldom exceeding 50 cm in length; plants lacking net-like fibres on the apices of flowering shoots; ripe infructescences white (Myanmar, Thailand, Cambodia, Vietnam?, Peninsular Malaysia, Singapore, Sumatra, Java, Borneo, Philippines, Maluku) - 3. A. medium
Leaf lamina not perforated, segments usually drooping, lamina often exceeding 75 cm in length; plants with copious net-like fibres on the apices of flowering shoots; ripe infructescences dark orange-red (Philippines, Sulawesi, Maluku, New Guinea) - 5. A. zippelianum

FIELD KEY TO STERILE AND JUVENILE SPECIMENS

1. Plants without adherent climbing stems - 2
Plants with adherent climbing stems - 8

2. Leaves entire, with or without perforations - 3
Leaves variously divided, with or without perforations - 7

3. Leaf base cordate - 4
Leaf base rounded to cuneate (P. R. China, N Vietnam) - 4. A. sinense

4. Leaf lamina thinly coriaceous - 5
Leaf lamina thickly coriaceous (Peninsular Malaysia; Sumatra) - 2. A. humile
5. Petiolar sheath extending almost to apical geniculum. Leaf lamina lanceolate, often with perforations. Stems smooth (P. R. China (incl. Hainan), N Vietnam) ........................................ 1. A. hainanense

   Petiolar sheath short, often not exceeding basal geniculum, never extending more than half way along petiole. Leaf lamina various. Stems various .............................. 6


   Leaf lamina broadly ovate to oblong-lanceolate, occasionally with a few perforations. Stems smooth (Myanmar, Thailand, Cambodia, Vietnam?, Peninsular Malaysia, Singapore, Sumatra, Java, Borneo, Philippines, Maluku) ........................................ 3. A. medium

7. Leaf pinnatifid to pinnatisect, almost always perforated (Myanmar, Thailand, Cambodia, Vietnam?, Peninsular Malaysia, Singapore, Sumatra, Java, Borneo, Philippines, Maluku) ........................................ 3. A. medium

   Leaf pinnatipartite to pinnatisect, never perforated (Philippines, Sulawesi, Maluku, New Guinea) ........................................ 5. A. zippelianum

8. Apices of adherent stems with copious net-like fibres; leaf lamina various, often exceeding 75 cm in length; (Philippines, Sulawesi, Maluku, New Guinea) ........................................ 5. A. zippelianum

   Apices of adherent stems without net-like fibres, although cataphylls sometimes degrading into weak, free fibres or if net-like fibres present then lamina segments drooping; leaf lamina, usually not exceeding 50 cm, if longer then with net-like fibres and usually drooping segments ................................. 9

9. Leaf lamina entire, much perforated (P. R. China (incl. Hainan), N Vietnam) ........................................ 1. A. hainanense

   Leaf lamina not as above ........................................ 10

10. Leaf lamina entire, never perforated (P. R. China, N Vietnam) ........................................ 4. A. sinense

   Leaf lamina pinnatifid, pinnatifid to pinnatisect, perforated or not ......................................... 11

11. Leaf lamina pinnatisect or pinnatifid, never perforated, segments usually drooping, lamina often exceeding 75 cm in length; plants with copious net-like fibres at the apices of adherent shoots; (Philippines, Sulawesi, Maluku, New Guinea) ........................................ 5. A. zippelianum

   Leaf lamina pinnatifid or pinnatifid, almost always perforated, segments spreading, lamina seldom exceeding 50 cm in length; plants lacking net-like fibres at the apices of adherent shoots; (Myanmar, Thailand, Cambodia, Vietnam?, Peninsular Malaysia, Singapore, Sumatra, Java, Borneo, Philippines, Maluku) ........................................ 3. A. medium

Conspectus of species


Large root-climbing liane to 5 m. Stem stout, on climbing shoots up to 1.5 cm diam.; internodes 2–3 cm long, epidermis smooth. Foliage leaves clustered, only interspersed with cataphyll-bearing nodes on juvenile, terrestrial stems; petiole moderately robust; apical geniculum prominent, 20–30 cm on climbing shoots, on juvenile branches 4–5 cm; sheath narrow, reaching base of leaf lamina, early caducous, falling to leave a prominent scar, base amplexicaul; leaf lamina ovate-lanceolate to falcate-lanceolate, entire, chartaceous, mid-green when fresh, drying dark brown to almost black, 25–45 × 8.5–17.3 cm on climbing shoots, 13–17 × 5–6.5 cm on juvenile branches, usually with large and small, ovate or oblong, 4–6 × 1.5–4 cm perforations, these sometimes reaching margin and midrib; apex abruptly acuminate; base oblique-rounded to oblique sagittato-cordate; posterior lobes frequently of unequal size; primary lateral veins numerous, prominent abaxially, ascending and arched. Inflorescence solitary; peduncle terete, stout, 8–10 × c. 0.4 cm diam., epidermis smooth, mid-green; spathe shortly cymbiform, 8–5 × 8–9 cm, apex rostrate, yellowish red; spadix stipitate; stipe 3–10 mm; fertile portion of spadix cylindric, 4.3–6 × 1.3–1.5 cm diam., apex obtuse, base subtruncate; Flowers: stamens 6; ovary hexagonal, cylindric; stylar region truncate, 3 × c. 2.5 mm; stigma sessile, longitudinally oblong. Figs 1, 2.

**Distribution.** China (Guangdong, Guangxi, Hainan, Hunan and Yunnan, fide Li 1979); N Vietnam (Ha Tay).

**Geographically representative selection of collections studied.**

**China.** Yunnan: 28 Sept. 1980 (fl.), 134 (KUN).


**Ecology.** Dense wet hill to montane forest, on precipitous slopes or beside water, climbing on trees or creeping over rocks; 300–1600 m.

A species of remarkable appearance with mature leaf laminae often so profoundly perforate as to resemble a fragile net of tissue. Amydrium hainanense is widespread but somewhat erratic in distribution, which may explain why it was described only quite recently. Its discovery in Vietnam is not unexpected, although it is perhaps surprising that it has remained undetected for so long on a relatively well collected mountain. However, on Ba Vi it appears to be restricted to one locality in very wet dense forest on precipitous slopes.

There is nothing with which to confuse this species in Indochina; even in the juvenile stage the leaves are unmistakable. Cultivated specimens might conceivably be mistaken for the horticulturally popular highly perforate-leaf forms of Monstera adansonii Schott var. laniata (Schott) Madison (syn. *M. friedrichsthalii* Schott) but can be distinguished by the prominently raised reticulate leaf venation.

Fig. 1. Amydrium hainanense. A pre-adult shoot $\times \frac{1}{4}$; B lamina (abaxial view) $\times \frac{1}{4}$; C venation detail (abaxial surface) $\times 3$; D inflorescence prior to opening $\times 2$; E spadix detail $\times 12$. Drawn from V. D. Nguyen & Croat 77830 by Linda Gurr.
Fig. 2. Amydrium hainanense. A fertile shoot x 1/4; B immature infructescence x 3/5; C spadix detail x 3. Drawn from V. D. Nguyen & Croat 77830 by Linda Gurr.

Scindapsus medius Zoll. & Moritzi, Syst. Verz.: 82 (1846); Anadendrum medium (Zoll. & Moritzi) Schott, Bonplandia 5: 45 (1857); Epipremnum medium (Zoll. & Moritzi) Engl. in A. & C. DC., Monogr. Phan. 2: 250 (1879); Epipremnopsis media (Zoll. & Moritzi) Engl. in Engl., Pflanzenr. 37 (IV. 23B): 1: 1908). Type as above.

Rhaphidophora huegelii Schott, Bonplandia 5: 45 (1857); Scindapsus huegelii (Schott) Ender, Index Aroid.: 74 (1864); Epipremnopsis huegelii (Schott) Engl. in Engl., Pflanzenr. 37 (IV. 23B): 138 (1908) (‘huegeliana’). Type: Philippines: Luzon, Manila Huegel (W).


Type: Philippines: Leyte, Palo, Jan. 1906 (fr.), Elmer 7291 (holotype B!; isotype L!).


[Rhaphidophora kerrii Gagnep., nom. nud. in sched. K et P]

For a detailed description of A. medium see Nicolson (1968).

Distribution. Brunei Darussalam, Indonesia (Java, Kalimantan, Maluku, Sumatra), Malaysia (Peninsular, Sabah, Sarawak), Myanmar, Philippines, Thailand.

Geographically representative selection of Thai and Indochinese collections studied.

Myanmar. Tenasserim: Zimba Valley, 24 Nov. 1924 (fl.), Parker 2273 (K).

ECOLOGY. Low to mid-elevation humid to wet primary to disturbed evergreen forest on a variety of substrates; 65 – 1500 m.

An unmistakable aroid liane by virtue of the mature leaves with prominently reticulate venation, perforations and pinnation (see Mayo et al. 1997: 117, pl.13, B) and ripe fruits with domed stylar tissue resembling white berries (see Boyce & Resslar 1999).

Juvenile specimens can be confused with Rhaphidophora korthalsii Hassk. and R. tetrasperma Hook. f., particularly in regions where the three taxa are sympatric, e.g., in southern Peninsular Thailand. However, both the Rhaphidophora have a shingling juvenile stage (see Boyce 1998) whereas A. medium has spreading leaves.


Creeping and root-climbing liane to 8 m. Stem slender, 3 – 5 mm diam.; internodes 3 – 5 cm long, epidermis rough. Foliage leaves scattered, interspersed with few to rather many cataphyll-bearing nodes; petiole slender, 5.5 – 9 (– 15) cm; sheath narrow, extending to c. half way along petiole, soon degrading into free fibres and falling to leave an obscure scar; (foliage) leaf lamina oblong-ovate to oblong-lanceolate, entire, stiffly chartaceous to coriaceous, light green when fresh, after drying dark brown to black-brown, 9 – 23 x 4 – 8 cm, apex acute, base rounded, cuneate to cordate (the latter in juvenile leaves), slightly to strongly asymmetric; lateral veins many, diverging at c. 30° from midrib, reaching and forming marginal vein. Inflorescence solitary; peduncle terete, stout, 3.5 – 6 x 0.2 – 0.3 cm diam., epidermis rough, pale green; spathe fusiform in bud, c. 7 x c. 2.2 cm at widest point green, opening cymbiform, depressed-ovate, 8 – 9 x 11.5 cm (i.e. wider than long),
notably thickened, soon falling to leave a prominent wide scar, yellow-green to yellow; spadix stipitate; stipe 5 – 10 mm; fertile portion of spadix obovoid, c. 4 x 1.8 cm, apex obtuse, narrowed towards the base. Flowers: filaments 4 mm long; anthers oblong, 3 mm long; ovary 5 – 6-angular, cylindric, 4 x 5 mm; stylar region truncate; stigma sessile, nearly circular. Fruits green ripening through yellow to orange-red, malodorous (fide H. Li (1979)) or pleasantly smelling and sweet tasting (fide Dzu, pers. obs.). Seeds 1 – 2, brown, obovate, kidney-shaped, 2 mm long. Fig. 3.

**Distribution.** China (Guangxi, Guizhou, Hubei, Hunan, Sichuan and Yunnan, *fide* Li 1979); N Vietnam (Ha Giang).

**Geographically Representative Selection of Collections Studied.**

**China.** Guangxi: Ling-yun, 13 July 1937 (sterile), X. Liu 28605 (MO); Nam dan, 7 Oct. 1937 (fr.), Z. Huang 410;8 (MO); no further data (fr.), C. Wang 41058 (GH). Guizhou: Feb. 1905 (sterile), Esquirol 246 (type of Rhaphidophora dunniana); 25 July 1983 (fl.), Xiang Qian Team 2461 (KUN). Yunnan: Houang Tsao-pa (juvenile) Cavalerie 7372 (E, K); Xichou, Fadou, 28 Sept. 1960 (fl.), H. Li 142 (KUN).

**Vietnam.** Ha Giang: Dong Van, 12 Nov. 1997 (fr.), V. D. Nguyen 214 (HN); Hoang Su Phi, Ho Thau, on the road to Chin lung thy, 16 Nov. 1997 (fr.), V. D. Nguyen 221 (HN).

**Ecology.** Evergreen humid to wet forest, terrestrial when juvenile, climbing on trees or over rocks at maturity; 550 – 1900 m.

Although widespread and often abundant in nature *Amydrium sinense* is usually encountered as the juvenile form with small ovate-cordate leaves scattered along lengthy, flexuous creeping stems and is therefore frequently overlooked. Only periodically does one encounter the adult fertile climbing stage in which the leaves, although of a similar shape, are considerably larger and congested along a stout stem.

As with *Amydrium hainanense*, the discovery of *A. sinense* in northern Vietnam is not a surprise, although that this discovery should be an adult fertile specimen is a little unexpected. *A. sinense* may be much more widespread in Vietnam, but probably overlooked as a juvenile *Anadendrum*.

Li (1979) notes that the stems and leaves of *A. sinense* are used for treating traumatic injury, fractures and angina pectoris.


Fig. 3. *Amydrium sinense*. A juvenile shoot × 1/3; B fertile shoot × 1/2; C lamina (abaxial view) × 1/2; D venation detail (abaxial surface) × 3; E spadix detail × 2. Drawn from V. D. Nguyen 221 by Linda Gurr.


For a detailed description of A. zippelianum see Boyce (1995).

DISTRIBUTION. Indonesia (Irian Jaya, Maluku, Sulawesi), Papua New Guinea, Philippines.

ECOLOGY. Primary to disturbed lowland to mid-elevation rainforest. 30 – 1800 m.

The characters distinguishing A. magnificum and A. zippelianum cited (with caution) by Nicolson (1968) have since been shown to be unreliable (Hay 1990; Boyce 1995). Bogner (pers. comm.) remarked that populations of A. zippelianum in the Philippines (referable to A. magnificum in Nicolson 1968) divided into those in which plants had mature leaves with drooping leaflets and those which had spreading leaflets. The significance of this character is not fully understood and does not correlate with the stipitate vs. sessile spadix and asperolous vs. smooth petioles and peduncles hitherto used to distinguish A. magnificum and A. zippelianum. Mature, flowering plants in cultivation at K originating from the Philippines (i.e. referable to A. magnificum) and Papua New Guinea (referable to A. zippelianum) are indistinguishable.
REFERENCES


