A Review of *Epipremnum* (Araceae) in Cultivation

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ABSTRACT

A review of *Epipremnum* species in cultivation is presented in order to clarify their identities and the names that should be applied.

KEY WORDS

Epipremnum pinnatum, Epipremnum aureum, Epipremnum amplissimum, Epipremnum giganteum, Araceae.

INTRODUCTION

Epipremnum Schott comprises 14 species of slender to gigantic root-climbing lianes distributed from S. Japan (Ryukyu Is.) to Australia (Queensland) and from India (Manipur) to the Cook Islands (Rarotonga). The widespread *E. pinnatum* (L.) Engl. accounts for most of these distributional extremes while the remaining species have a more restricted natural range.

Variegated clones of *E. aureum* (Linden & André) G.S. Bunting are extremely popular as cultivated plants worldwide—perhaps constituting the most commonly cultivated aroid—and the golden variegated form of this species is frequently met with as an escape from horticulture throughout the tropics.

Two additional species are occasionally found in cultivation, *E. amplissimum* (Schott.) Engl. and *E. giganteum* (Roxb.) Schott.

Considerable misapplication of names exists in horticulture with regard in particular to *E. pinnatum* and *E. aureum*. This obfuscation is due in part to the extraordinary variability of *E. pinnatum* and thus a tendency to disbelief that such radically different plants can belong to the same species, a problem exacerbated by the radically different appearance of the juvenile and adult phases of this species, and in part due to the great reluctance of nurseries to accept and utilize the current name for *E. aureum*, a species often seen offered from commercial sources as *Pothos aureus* Linden & André, a name obsolete now for more than 120 years.

IDENTIFICATION

The key character to distinguish *E. pinnatum* and *E. aureum* from ***all other climbing aroids is*** the presence of prominent irregular longitudinal whitish ridges along the stems.

Non-flowering adult plants can be confused with (in cultivation much rarer) *Rhaphidophora korthalsii* Schott. The stems of *R. korthalsii* lack the prominent irregular whitish longitudinal ridges and distinctive matte to sub-lustrous pale brown muricate epidermis typical of *E. pinnatum* while leaves of *R. korthalsii* almost always have more than one primary lateral vein per pinna. The feeding roots of *R. korthalsii* are prominently scaly while those of *E. pinnatum* are lenticellate-corky. The pre-adult stage of *R. korthalsii* is a shingle climber with oblong-elliptic to ovate laminae that are slightly falcate, directed upwards and overlap in the manner of roof tiles.

Confusion is also possible between *E. pinnatum* and *Amydrium zippelianum*.

The most easily observed distinguishing feature concerns the petiolar sheath. *Epipremnum pinnatum* has the sheath extending to half way along the apical geniculum while in *Amydrium* the sheath reaches only to the top of the basal geniculum, the remainder of the petiole being terete with two sharply defined low keels running its length to merge with the base of the leaf lamina. *Amydrium zippelianum* has one primary lateral vein and two prominent interprimary veins (one on each side) per pinna; *E. pinnatum* has one primary lateral vein per pinna and the interprimaries are not particularly conspicuous. The leaflet tips of the *Amydrium* species are acute to acuminate, while those of *E. pinnatum* are truncate with the distal margin extended into a fragile thread of tissue.

Epipremnum pinnatum (L.) Engl. in *Engl., Pflanzenr.*, IV, 23B: 60 (1908). *Pothos pinnatus* L., Sp. Pl. ed. 2: 1324 (1763). *Monstera pinnata* (L.) Schott, Wiener Z. Kunst 4: 1028 (1830). *Scindapsus pinnatus* (L.) Schott in H.W.Schott & S.L.Endlicher, Melet. Bot.: 21 (1832). *Rhaphidophora pinnata* (L.) Schott, Bonplandia 5: 45 (1857).

Polypodium laciniatum Burm.f., Fl. Indica: 231 (1768). *Rhaphidophora laciniata* (Burm.f.) Merr., Philipp. J. Sci. 19: 342 (1921).

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Scindapsus forsteri Endl., Ann. Wiener Mus. Naturgesch. 1: 161 (1836).

Scindapsus dilaceratus K.Koch & Sello, Index Seminum (B) 1853(App.): 5 (1853). *Monstera dilacerata* (K.Koch & Sello) K.Koch, Index Seminum (B) 1855(App.): 5 (1855). *Tornelia dilacerata* (K.Koch & Sello) Schott, Prodr. Syst. Aroid.: 356 (1860). *Rhaphidophora dilacerata* (K.Koch & Sello) K.Koch in E.von Regel, Gartenflora: 5 (1864).

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Rhaphidophora wallichii Schott, Prodr. Syst. Aroid.: 383 (1860).

Rhaphidophora cunninghamii Schott, Bonplandia 9: 367 (1861).

Rhaphidophora vitiensis Schott, Bonplandia 9: 367 (1861). *Rhaphidophora pertusa* (Roxb.) Schott var. *vitiensis* (Schott) Engl.

Scindapsus bipinnatifidus Teijsm. & Binn., Cat. Hort. Bot. Bogor.: 65 (1866).

Epipremnum elegans Engl., Bull. Soc. Tosc. Ortic. 4: 269 (1879).

Philodendron dilaceratum Engl. in A.L.P.de Candolle & A.C.P.de Candolle, Monogr. Phan. 2: 265 (1879).

Rhaphidophora lovellae F.M.Bailey, Queensland Agric. J. 1: 453 (1897).

Epipremnum mirabile f. *multisectum* Engl., Bot. Jahrb. Syst. 25: 12 (1898). *Epipremnum pinnatum* f. *multisectum* (Engl.) Engl. in Engl., Pflanzenr., IV, 23B: 63 (1908).

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Epipremnum robinsonii K.Krause, Notizbl. Königl. Bot. Gart. Berlin 5: 266 (1912).

Epipremnum formosanum Hayata, Icon. Pl. Formosan. 5: 239 (1915). *Rhaphi-*

dophora formosana (Hayata) M. Hotta, Mem. Fac. Sci. Kyoto Univ., Ser. Biol. 4: 83 (1970), *nom. illeg.*

Epipremnum elegans Engl. fma. *ternatensis* Alderw., Bull. Jard. Bot. Buit. ser.3, 4: 169 (1922).

Rhaphidophora neocaledonica Guillaumin, Bull. Soc. Bot. France 84: 160 (1937).

Epipremnum glaucicephalum Elmer, Leafl. Philipp. Bot. 10(133): 3620 (1938). *nom. inval., descr. angl.*

CULTIVATED FORMS

The most commonly cultivated form of *E. pinnatum* has dark green semi-glossy adult leaves that are broadly elliptic-oblong with copious pinnations and micro-perforations. It is a vigorous climbing plant, easily reaching 5 m where a suitable climbing surface is provided. Once mature (climbing to more than 2 m) this form flowers regularly, producing clusters of dull yellow spathed inflorescences and then fruiting prolifically. It is not clear from where this form originates although vegetatively it is close in appearance to *E. pinnatum* from Luzon, Philippines. There appears to be no cultivar name applied to this form.

'Cebu Blue'

A cultivar with pale blue-grey leaves, the colour intensifying in bright light. The leaf blade is narrowly elliptic with a few, deep (nearly reaching the mid-rib) divisions per side and only few micro-perforations. Inflorescences are produced singly or in pairs. The spathe interior is pale green. This plant originates from Cebu Island, Philippines.

'Key Leaf'

A juvenile form in which the greater portion of the leaf blade is reduced to a long, narrow strip of undulating tissue along either side of the mid rib and expanding to form the basal lobes, the whole leaf resembling a key. I have not seen the adult stage of this plant and do not know whether the leaf shape is maintained to adulthood.

'New Guinea'

A cultivar in which the small deep green, glossy leaves are profusely micro-perforated but never pinnately divided. Most often seen as a juvenile, this plant will readily begin to climb and reach adulthood at which stage the leaf size increases but still no division occurs. This plant originates from western Papua New Guinea.

MISAPPLIED NAMES

'Ginny'

Epipremnum pinnatum 'Ginny', *Philodendron imbe* 'Ginny' and 'dwarf *Monstera pertusa*' are all referable to *Rhaphidophora tetrasperma* Hook.f. a species restricted to Peninsular Malaysia (Kelantan, Perak) and southern Thailand.

Epipremnum aureum (Linden & André) G.S. Bunting, *Ann. Missouri Bot. Gard.* 50: 28 (1964, '1963'). *Epipremnum pinnatum* (L.) Engl. cv. Aureum (see Nicolson, Allertonia 1: 347, 1978). *Pothos aureus* Linden & André, Ill. Hort. 27: 69 (1880). *Scindapsus aureus* (Linden & André) Engl. in Engl., Pflanzenr. 37 (IV.23B): 80 (1908). *Rhaphidophora aurea* (Linden & André) Birdsey, Baileya 10: 159 (1963, '1962'). *Rhaphidophora aurea* (Linden & André) Furtado, Gard. Bull. Singapore 20: 379 (1964), *comb. superfl.*

Epipremnum mooreense Nadeaud, J. de Botanique 13:6 (1899).

ORIGINS

The type description of *Pothos aureus* states that the original plant came to Linden's nursery from the Solomon Islands, but this cannot be substantiated; certainly plants equating to *E. aureum* have never to my knowledge been collected as *wild* plants in the Solomon Islands. However, the wild provenance of *E. aureum* was recently resolved following examination of

the type of Nadeaud's *Epipremnum mooreense,* a plant collected from natural forest on Moorea (French Polynesia) and which is clearly identical with *E. aureum* as here defined. The type of *E. mooreense* is of the non-variegated form and it seems likely that the golden variegated form introduced into cultivation in the 19th Century was collected as a horticultural selection. Such selections are common among 19th Century plant introductions (e.g. *Codiaeum, Polyscias,* etc.) at a time when plant hunters were often on the look out for horticultural novelties and furthermore frequently gave intentionally misleading information as to the origin of a potentially important new horticultural introduction.

Epipremnum aureum has a tortuous nomenclatural history. It was first published as *Pothos aureus* Linden & André based on sterile juvenile material. The choice of generic placement, notwithstanding the manifestly different appearance of the plant to any species of *Pothos* as then circumscribed, remained unchallenged until Engler (*in* Engler & Krause, 1908) removed the species, still unflowered, to *Scindapsus,* the generic choice was influenced by the mature plant's overall appearance. There it remained until Birdsey (1962) reported the first recorded flowerings, in Puerto Rico and at the Fairchild Tropical Garden, Florida, and thus for the first time the critical ovule characters (several ovules on an intrusive placenta) that showed the plant to belong to *Epipremnum sensu* Engler & Krause (1908) although Birdsey chose to follow Bakhuizen's (1958) unorthodox generic ideas and transferred *Pothos aureus* to *Rhaphidophora* as *R. aurea.*

Furtado (1964), seemingly unaware of Birdsey's publication, published the same combination when reporting the flowering of "*P. aurea*" in Singapore. Furtado based his generic placement upon D.H. Nicolson's hand-written annotations to Engler & Krause's (1908) key; Nicolson at that time also following Bakhuizen's generic concepts.

Bunting (1964), transferring *Pothos aureus* to *Epipremnum,* remarked that "*flowering material is very similar to that of E. pinnatum, and must be included in that genus*" and went on to reiterate the characters he regarded as distinct for *Epipremnum* compared with *Rhaphidophora.*

Nicolson's (Nicolson, 1978) paper discussing *E. aureum* and *E. pinnatum* stated that he felt that there were insufficient differences for them to remain distinct species and concluded by proposing that *E. aureum* be regarded as cultivar of *E. pinnatum.* In the same paper Nicolson also laid to rest the long-standing nomenclatural problems associated with the names *Epipremnum* and *Rhaphidophora* that formed the cornerstone of Bakhuizen's paper (Bakhuizen, 1958). Nicolson's 1978 generic circumscription and cultivar status of '*aureum*' were incorporated into floras of Fiji and Sri Lanka (Nicolson, 1979, 1988), various checklists (e.g. Hay *et al.,* 1995) and revisions (e.g. Boyce, 1998).

EPIPREMNUM AUREUM VS. EPIPREMNUM PINNATUM

There exists a suite of vegetative characters that consistently separate *E. pinnatum* and *E. aureum.* In young pre-adult plants the leaf laminae are different in shape and texture. Those of *E. aureum* are ovate to ovate-lanceolate and thicker in texture than the lanceolate to elliptic pre-adult leaves typical of *E. pinnatum.* As plants progress through the pre-adult stage and approach maturity more differences become apparent. The distinctive netted sheath-remains, present in *E. pinnatum,* are absent in *E. aureum* while the leaf lamina 'pin-holes' characteristic of *E. pinnatum* are far fewer in number, do not develop to any degree and hardly ever perforate, while leaf division by means of pinnation is sporadic and occurs only as solitary to few irregular rather shallow pinnations. Leaf texture remains consistently thicker than for *E. pinnatum* and leaf lamina shape remains more or less constant, the lamina simply increasing in size and not perceptibly altering shape. Massive flagellate foraging shoots develop, often in some quantity, and a profusion of promi-

nently lenticellate robust feeding roots is produced, many of which remain hanging free and reach the ground. Overall the plants are considerably more robust and produce many climbing stems (*E. pinnatum* is generally noticeably less robust and few-stemmed).

Most literature emphasises the shy-flowering nature of *E. aureum*. Enquiries at Bogor confirmed that the numerous plants cultivated there of both the variegated and the wholly green plants of *E. aureum* are shy flowering. This is in marked contrast to *E. pinnatum,* which flowers profusely wherever it occurs in the wild and in cultivation.

CULTIVATED FORMS

On the whole no formal attempt will be made to support or otherwise the veracity of a cultivar name except to state, as appropriate, the registration date with the Vaste Keurings Commissie (VKC) and where the distinctness of particular cultivar would not perhaps withstand close scrutiny.

'Aureum' (VKC registered 28 July 1988)

Equating to the typical plant, although this is not to imply that 'Aureum' in cultivation can be traced back to Linden's original introduction. As a juvenile this plant has leaves that are variegated with large, discrete jagged golden yellow patches over dark green. As plants reach adulthood the yellow leaf markings increase in area until in mature individuals leaves are not infrequently for the most part yellow. Stems are variegated with yellow marbling over green.

'Golden Pothos' (VKC registered 13 September 1990)

A cultivar with wholly clear golden yellow leaves and stems. Mature plants 'Golden Pothos' are rare in cultivation. It is perhaps unfortunate that the registered name should utilize 'Pothos' and thus, however obscurely, imply some form of relationship to *Pothos*.

'Hawaiian'

'Hawaiian' is very close in appearance to 'Wilcoxii' in having leaves with dense but fragmented yellow variegation.

'Jade'

'Jade' has plain rich green leaves and may to equate with reverted 'Aureum', which in turn is indistinguishable from wild type (i.e. Moorea) *E. aureum,* although the heavier textured leaves of the juveniles also suggest that it may be a reversion of 'Marble Queen'. 'Tropic Green' is very close in appearance to 'Jade'. 'Jade Pothos' is indistinguishable.

'Johanna Queen' (VKC registered 8 April 1993)

'Johanna Queen' has dark green leaves with irregular pale green marbling. Rare in cultivation and seemingly not currently commercially available.

'Marble Queen' (VKC registered 28 July 1988)

'Marble Queen' is, after 'Aureum', the cultivar most often grown in Europe. The leaves are variegated in the same manner as 'Aureum' except that the yellow coloration is replaced with pale cream or white. The stems are marbled cream or white on green. I have not seen a mature plant of 'Marble Queen'.

'Mayan Gold'

Clear golden yellow leaves. Very similar to 'Golden Pothos' although the leaf color is richer.

'Neon'

'Neon' has acid green-yellow leaves without any other markings. The stems are slightly darker in color.

'Tropic Green'

'Tropic Green' is a plain green leaved cultivar close to wild type *E. aureum*. Perhaps the same as 'Jade'

'Wilcoxii'

'Wilcoxii', while similar to 'Aureum', has dense yellow variegation that is much more fragmented, giving the leaf a golden- and green-marbled appearance. 'Wilcoxii Gold' is indistinguishable.

Epipremnum amplissimum (Schott) Engl., *Bot. Jahrb. Syst.* 1: 182 (1881). *Rhaphidophora amplissima* Schott, Ann. Mus. Bot. Lugduno-Batavi 1: 129 (1863).
Rhaphidophora chevalieri Hort. non Gagnep.
Rhaphidophora chevalieri 'Exotica'
Rhaphidophora 'Exotica'
Scindapsus siamensis Hort. non. Engl.
Scindapsus 'Exotica'

Epipremnum amplissimum is most often cultivated as a pre-adult plant at which stage the narrowly elliptic rather soft-textured leaves are jagged pale bluish grey splashes. As the plant matures the leaves become longer and broader and develop a harder texture while the variegation mostly disappears, although occasionally a mature plant of *E. amplissimum* may retain some traces of these grey markings.

Plants of *Epipremnum amplissimum* appear in the trade under a variety of names the origins of which are obscure although 'Exotica' and '*siamensis* Exotica' both appear in editions of Graf's *Exotica*. Most of the names imply an origin in Thailand or Vietnam (*R. chevalieri* is a quite different species from Vietnam) but in fact E. *amplissimum* is native to New Guinea, the western tropical Pacific and far east as Vanuatu and scattered localities in Northern Australia.

Epipremnum giganteum (Roxb.) Schott, *Bonplandia* 5 (1857) 45. *Pothos gigantea* Roxb., Fl. Ind. 1: 455 (1820). *Monstera gigantea* (Roxb.) Schott, Wiener Z. Kunst 4: 1028 (1830). *Scindapsus giganteus* (Roxb.) Schott in H.W.Schott & S.L.Endlicher, Melet. Bot.: 21 (1832). *Rhaphidophora gigantea* (Roxb.) Ridl., Mat. Fl. Mal. Pen. 345 (1907).

Epipremnum giganteum is one of the most readily recognizable species by virtue of the bright green thinly coriaceous oblong leaf lamina with prominent, dense, striate venation.

Specimens in shade tend towards 'legginess' with widely separated leaves and duller leaf laminae but specimens in exposed situations exhibit a dense habit with the leaf colour intensified to emerald green and further enhanced by a red or yellow tint taken on by the hyaline margin of the lamina. Such plants are most attractive.

This is the only *Epipremnum* species that seems to flower regularly on both clinging and free stems (even on the same plant, *Boyce & Hay* independent pers. obser.). The inflorescences are solitary with the newly opened spathe deep golden yellow and produce a strong smell of peanut butter.

Not common in cultivation, although large (usually unidentified) plants are occasionally seen in old established collections, especially in Florida.

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