



Photographs: Bleddyn Wynn-Jones

Three new Crûg Farm introductions

A new *Lilium* species with a curious dispersal mechanism, a new *Ypsilandra* variety and a new *Cardiandra* hybrid are described by JULIAN SHAW

A NEW *LILIUM* SPECIES

Reports of an unusual lily found in Vietnam by Bleddyn and Sue Wynn-Jones of Crûg Farm Plants nursery filtered through early in 2007 (Anon. 2007a, b). At the time, it was thought to be the long-lost *Lilium arboricola* which was last found by Frank Kingdon Ward in Upper Burma in 1953, because it shares the epiphytic habit of that species (Stearn 1954, Brickell & Sharman 1986). However, when plants in cultivation flowered during the

summer of 2007 it became apparent that similarities with *L. arboricola* were superficial and that this was a new taxon. It is described and formally named below.

Lilium eupetes J.M.H. Shaw, sp. nov.
Species habitu cum *Lilium arboricola* Stearn optimae congruens, sed differt tepalis atro-purpuris, non reflexis.
Type: Vietnam, Lào Cai province, 22 Nov 2006. B&S Wynn-Jones 11721 (holotype WSY).

Lilium eupetes, a new species of lily from Vietnam where it grows epiphytically on large forest trees

Additional material examined: Vietnam, Lào Cai province, Nov 2006. BSWJ 11796 (Herb. BSWJ; photo WSY); floral parts from cultivated plant, Crûg Farm Plants, Oct 2007, BSWJ 11722 (WSY).

At first glance appearing like *Lilium arboricola* Stearn which is related to the *L. primulinum* group, but differing in the maroon-purple petals forming an open stellate-campulate flower instead of the reflexed apple-green petals of *L. arboricola*. The flowers are superficially similar to those of *L. souliei* and *L. taliense*, but these species differ in many details, including a lack of axillary bulbils. Several other little known *Lilium* species, including *L. puerense* Y.Y. Qian, *L. rockii* R.H. Miao and *L. pyi* H. Léveillé are recorded from adjacent Yunnan, but based on the information given in the account of *Lilium* in *Flora of China* (Songyun & Tamura 2000) they cannot be equated with these collections from Vietnam. Since it has not been possible to find a match for the Vietnamese collections they are referred to a new species.

Origin of name

The specific epithet, *eupetes*, is from a Greek word meaning 'flying well'. This refers to the mode of disseminating the bulbils which form in the leaf axils. The bulbils are attached firmly to the base of the subtending leaf. As the end of the growing season nears and the plant begins to senesce, the leaves gradually wither and as they do, curl into a circular shape. The leaf eventually detaches from the stem and due to its circular shape spins through the air carrying its propagule to new habitats. This mode of dispersal is apparently unique.



The epiphytic *Lilium eupetes* in fruit, growing wild in north Vietnam (above left). The maroon flowers (top right) are usually solitary and the scaly bulb (above right) is about 2.5cm in diameter - any larger and it might have difficulty remaining on the tree. One of the most distinctive features of this new species is the aerial dispersal of the bulbils (right): they are buoyed on air currents by the dead leaf

Description

Bulb globose, 2.5cm diameter; scales yellowish-white, ovate-clubshaped or oblong with an acute apex. Stem erect, glabrous, green, height to 45cm, rooting at base above the bulb. Leaves 17–19, alternate, lanceolate or narrowly elliptic, (3–) 5–6.5 x 10–16mm, light green with reddish midrib and a short narrow petiolar region, mid-vein raised on upper side of leaf, both surfaces glabrous, margin entire. Axils of upper leaves often with 1–3 small, green, conical bulbils. Leaves curling into a circle at senescence, detaching from stem but retaining bulbils. Flower usually solitary, rarely 2, nodding, campanulate-

stellate; pedicel maroon. Tepals stellate; pedicel maroon. Tepals maroon-red on inner surface; the outer tepals 4 x 1.6cm, ovate-lanceolate, strongly concave and shaped like the hull of a boat, minutely pustulate and greenish towards the apex but only on the outer surface; apex acuminate, slightly recurved; inner tepals 4 x 1cm, with raised green midrib on outer surface; nectariferous zones papillose, greenish-yellow. Stamens curving outwards, shorter than style; filaments bright red, glabrous, c.1.6mm long; anthers 11–12mm long; connective red; pollen orange. Ovary cylindrical, bright shiny red, slightly shorter than anthers; style maroon, extending beyond stamens, gently curved;

stigma white, hardly broader than style, hardly lobed. Capsule oblong, 3 x c.1.5cm, light brown; pedicel curved upwards in fruit. Seeds numerous, discoid, c.2mm diameter, light brown.

Habitat

This species grows in mosses on vertical trunks and horizontal branches of large forest trees, well above the ground, at altitudes of 1,900–2,000m. *Lilium arboricola* occupies similar habitats in northern Burma. An interesting parallel is provided by *Hippeastrum arboricola* in forests around El Dorado, Misiones province, Argentina, where it can be found about 25m above the ground.

Conservation and cultivation

Lilium eupetes is known from several localities in Lào Cai province. The exact locality details are withheld in the interests of conservation. It is feared that teams of bulb collectors from China may illegally cross the border in an attempt to locate the populations and remove the plants, which are then likely to appear on the internet offered for sale as nursery-grown stock. Some Vietnamese orchids have suffered this fate already and are almost extinct in the wild.

Seed has germinated well in cultivation and pans of seedlings have been distributed to several institutions. Not enough is known about its requirements to give reliable advice on cultivation.

A NEW *YPSILANDRA*

While collecting on Vietnam's highest mountain, Mount Fansipan, Bleddyn Wynn-Jones of Crùg Farm Plants, encountered a *Ypsilandra* which is believed to be endemic to the region. After herbarium study it became apparent that it falls within *Y. yunnanensis* W.W. Sm. & Jeffrey, and it is consequently described as a variety of that species.

Ypsilandra yunnanensis W.W. Sm. & Jeffrey var. *fansipanensis* J.M.H. Shaw, var. nov.

Ex affinitate var. *yunnanensi*, ab foliorum forma et numero, staminibus longioribus, et floribus numero distinctus. Type: Cultivated flowering plant pressed on 2 Oct 2007, originally collected from Vietnam, Lào Cai province, Mt. Fansipan, 2,700m, 1 Dec 2006, B&S Wynn-Jones 11839 (holotype WSY; isotype Herb. BWJ, sterile plant from same locality). The holotype is a plant, collected in the field as a sterile rosette and grown on to flowering at Crùg Farm Plants, north Wales.

Most similar to *Y. yunnanensis* var.



Ypsilandra yunnanensis var. *fansipanensis*; inflorescence (top) and habit (above)

yunnanensis, but differs in the regular shape, size and greater number of leaves, longer stamens that often slightly exceeded the tepals, and capitate inflorescence with more flowers.

Description

Rhizome short, vertical, c.10 x 7mm, brown with numerous annular scars; active roots arising from rhizome apex just below leaves, 1–1.5mm diameter, to 25–30cm long, hirsute. Leaves c.22

in a rosette around the rhizome apex, spatulate, 7–7.5 x 1.7–1.9cm at widest point, gradually narrowed to a petiole; veins prominent on underside; apex acute; margin slightly inrolled. Scape to 31cm, grooved, with numerous bract-like leaves. Bract-like leaves not imbricated, 11–20 x 2–6mm, becoming smaller towards apex. Pedicels 5.5–9mm long, each subtended by a narrow bract, equalling or slightly shorter than petiole. Tepals white or cream, 4.5–5 x 1.7–2mm, spatulate, apex rounded. Stamens 4.6–5mm long, exerted slightly beyond tepals at anthesis; filaments white, 5mm long; anthers bright blue before dehiscence, 0.6–0.9mm long; pollen creamy-white. Ovary apically 3-lobed, dark blue-black at anthesis; style 1.5–1.8mm; stigma deeply 3-lobed, lobes 0.8–1mm, recurved, yellowish. Capsule and seeds unknown.

The original description of *Ypsilandra yunnanensis* by Smith & Jeffrey (1916) cites four different collections at E which are regarded as syntypes since none is singled out as a holotype. They are G. Forrest 8956 and 12055 both from the Shweli-Salween divide, Yunnan, China; Kingdon Ward 163 from northwest Yunnan, and Kingdon Ward 1808 from the Burmese-Chinese border. Duplicates of Forrest 8956 and 12055 have been examined at K and BM. It appears that the description of *Y. yunnanensis* in *Flora of China* (Xinqi & Tamura 2000) is based on these syntypes and does not account for the variation seen in the many other collections available, hence it appears to apply to var. *yunnanensis*. It is certainly more

IDENTIFICATION KEY TO *YPSILANDRA* IN CULTIVATION

1a	Stigma not capitate, deeply 3-lobed; style less than 2mm long	<i>Y. yunnanensis</i>
1b	Stigma capitate, not or hardly 3-lobed; style over 5mm long	2
2a	Tepals 6–10mm long; stamens 1–2cm, clearly longer than tepals	<i>Y. tibetica</i>
2b	Tepals 4–5mm long; stamens 5–6mm long, slightly longer than tepals	<i>Y. cavaleriei</i>

restrictive than the original description, which is curious since the *Flora* account chooses not to recognise any varieties. Plants similar to this *Flora of China* description are also illustrated in the *Iconographia of Chinese Plants* (Anon. 1976).

Smaller plants from high altitudes in the Himalayas have been described as var. *bimalaica* Hara (1978), which is based on Stainton, Sykes & Williams 6090, a collection from Central Nepal (BM!). This variety is well described in *Flora of Bhutan* (Noltie 1994), and is also known from southeast Tibet. The Austrian botanist Handel-Mazzetti also described a little known var. *micantha* Hand.-Mazz. (1936), based on a collection from China (Anon. 1976), which may turn out to be an earlier name for var. *bimalaica* Hara. However, the holotype, probably at Vienna, has not been seen for this study. It is possible that a further variety might be recognisable based on collections from southeast Tibet with unusually long leaves.

Dr Nguyen Van Du of the Institute of Ecology and Biological



Cardiandra x agricola, a deliberate hybrid created to expand the range of forms and colours in cultivation

Resources (HN), Hanoi, has kindly examined a further collection (Oct 2007, KWJ 12279, Lào Cai province, Sapa district, Hoang Lien National Park at 2910m. Habitat: dense bamboo forest on high mountain). He has confirmed my findings and noted that var. *fansipanensis* has much longer pedicels at 5–7mm long (2–3mm in var. *yunnanensis*), and filaments 8–10mm long.

Since the genus *Ypsilandra* has been introduced to cultivation since

publication of *The European Garden Flora* (Cambridge University Press 1984–2000), it does not appear in that work. Therefore, a key to species in cultivation is provided (p41).

Field observations recorded on herbarium sheets indicate that flower colour varies greatly in the wild. By relating these notes to the relative age of the collections, it appears that the flowers open white or pale pink and gradually, with age, begin to darken, some becoming spotted with purple or turning green during the process. Thus, flower colour is probably related to ageing rather than being indicative of plants with flowers of different colour that could be selected in cultivation.

Cultivation and propagation

This *Ypsilandra* is easily grown in an open, humus-rich compost in an unheated polytunnel at Crùg Farm Plants. It can be propagated by seed, and from leaf cuttings from the basal rosette in a manner similar to *Heloniopsis*.

**A GARDEN HYBRID
CARDIANDRA**

Cardiandra is a small genus of 2 to 5 species of herbaceous hydrangeas from Japan, Taiwan and adjacent China that are beginning to make an

IDENTIFICATION KEY TO CULTIVATED SPECIES OF <i>CARDIANDRA</i>	
1a Showy sterile flowers absent	<i>C. amamiobsimensis</i>
1b Showy sterile flowers present	2
2a Sepals of sterile flowers equal, triangular, marginal teeth absent or 1 large one	<i>C. alternifolia</i>
2b Sepals of sterile flowers unequal, elliptic to lanceolate, margin with teeth	3
3a Sepals of sterile flowers 2, lanceolate, 23–40mm long	<i>C. formosana</i>
3b Sepals of sterile flowers 2–3, elliptic-lanceolate, 10–25mm long	<i>C. x agricola</i>

COMPARISON OF HYBRID <i>CARDIANDRA</i> WITH ITS PARENTS		
<i>C. alternifolia</i>	<i>C. x agricola</i>	<i>C. formosana</i>
Sterile flowers with 3 sub-equal sepals	Sterile flowers with 2 or 3 unequal sepals	Sterile flowers with 2 unequal sepals
Sepals 9–10mm	Sepals 10–25mm	Sepals 23–40mm
Sepal margins entire or with a single tooth	Sepal margins toothed	Sepal margins toothed in lower part
Sepals triangular	Sepals elliptic-lanceolate	Sepals lanceolate
Leaf margins with 3 teeth per cm	Leaf margins with 3–4 teeth per cm	Leaf margins with 5–6 teeth per cm

appearance in western gardens (Phillips & Rix 1991, Hinkley 1999). The genus was reviewed by Ohba (1985), and has since been treated in several modern Floras (Huang 1993, Wei & Bartholomew 2001, Ohba, 2003). The *Hydrangeaceae* are a group of special interest at Crûg Farm Plants where this hybrid was intentionally produced. The epithet *agricola*, literally 'dwelling on a farm', refers to the origin of this hybrid at Crûg Farm Plants.

***Cardiandra* × *agricola* J.M.H. Shaw, hybr. nov.**

Hybrida hortensis e *Cardiandra alternifolia* (Siebold) Siebold & Zucc., et *C. formosana* Hayata genita, floribus sterilibus magnitudine et forma florum sterilium (sepalis ovatis-lanceolatis, 1–25mm longis) et aliis characteribus inter parentes media. Type: Cultivated seedling, Crûg Farm Plants, north Wales, Oct 2007. B&SWJ s.n. (holotype WSY). Voucher specimens for both parental plants, *C. alternifolia* var. *alternifolia* BSWJ 5719 from Ikegawa, route 494 to Omogokei Gorge, Shikoku, Japan, 1500m, and *C. formosana* BSWJ 3615 from Hsitou experimental forest, National Taiwan University, Nantou County, Taiwan, 1550m, are also deposited at WSY along with the holotype.

The hybrid is intermediate between its parents, and differs most noticeably in the size and shape of

the sepals of the sterile flowers, which are elliptic-lanceolate and 10–25mm long. The seedlings are very variable and several have been selected to provide a range of cultivars. This heterogeneity probably reflects the considerable variation found in *C. alternifolia* in the wild and a number of infraspecific names exist to describe this variation. Some of these variants and their names could be useful in horticulture. Desirable plants include f. *formosa* Honda with nearly all flowers with showy sepals, and f. *mirabilis* (Takeda) Sugim. ex H. Ohba with 4–5 petaloid sepals to 2cm long. For detailed treatment see Ohba (1985, 2003).

As only *C. alternifolia* is treated in *The European Garden Flora* (Gardner 1995), a key to taxa in cultivation is provided (p42).

Cultivation and propagation

The species are easy to cultivate in moist, humus-rich soil in semi-shade, where they gradually spread to form attractive clumps. The hybrid is likely to have the same requirements. Propagation is by seed, and division of the rhizome; the latter is likely to be more appropriate for the hybrid.

JULIAN MH SHAW is a Senior Registrar in the RHS Botany Department

REFERENCES

- Anon. (2007a) Plant Focus. *The Plantsman* n.s. 6(2): 73
 Anon. (2007b) News. *The Garden* 132(5): 289
 Anon. (1976) *Ypsilandra yunnanensis*. *Iconogr. Cormophyt. Sin.* 5: 425, f. 7680
 Brickell, C & Sharman, F (1986) *The Vanishing Garden*. John Murray, London.
 Gardner, MF (1995) *Cardiandra*. In Cullen, J et al. (eds) *The European Garden Flora. Vol 4*. Cambridge University Press, Cambridge
 Handel-Mazzetti, H (1936) *Ypsilandra*. *Symb. Sin.* 7: 1192–1193
 Hara, H. (1978) *Ypsilandra*. In Hara, H, Stearn, WT & Williams, LHJ (eds) *An Enumeration of the Flowering Plants of Nepal. Vol 1*. British Museum (Natural History), London
 Hinkley, DJ (1999) *The Explorer's Garden*. Timber Press, Portland, Oregon.
 Huang, T-C (1993) *Cardiandra*. In Editorial Committee for Flora of Taiwan (eds) *Flora of Taiwan*. National Science Council, Taipei, Taiwan
 Li, H (1977) *Cardiandra*. In Editorial Committee for Flora of Taiwan (eds) *Flora of Taiwan*. ed. 1. National Science Council, Taipei, Taiwan
 Noltie, HJ (1994) *Flora of Bhutan. Vol 3, part 1*. Royal Botanic Garden, Edinburgh
 Ohba, H (1985) A systematic revision of the genus *Cardiandra*. Part 1. Characters. *J. Jap. Bot.* 60: 139–147
 Ohba, H (1985) A systematic revision of the genus *Cardiandra*. Part 2. Taxonomic treatment. *J. Jap. Bot.* 60: 161–171
 Ohba, H (2003) *Cardiandra*. In Iwatsuki, K, Yamazaki, T, Boufford, DE & Ohba, H (eds) *Flora of Japan Vol 2b*. Kodansha, Tokyo
 Phillips, R & Rix, M (1991) *Perennials. Vol 2*. Pan Books, London
 Smith, WW & Jeffrey, JF (1916) Diagnoses specierum novarum. *Notes Roy. Bot. Gard. Edinburgh* 9: 143–144
 Songyun, L & Tamura, MN (2000) *Lilium*. In Flora of China Editorial Committee (eds) *Flora of China. Vol 24*. Science Press, Beijing, and Missouri Botanical Garden Press, St Louis
 Stearn, WT (1954) *Lilium arboricola*, Kingdon Ward's epiphytic Burmese lily. *Gard. Chron.* 25 Sept 1954: 126–127
 Wei, Z & Bartholomew, B (2001) *Cardiandra*. In Flora of China Editorial Committee (eds) *Flora of China. Vol 8*. Science Press, Beijing, and Missouri Botanical Garden Press, St Louis
 Xinqi, C & Tamura, MN (2000) *Ypsilandra*. In Flora of China Editorial Committee (eds) *Flora of China. Vol 24*. Science Press, Beijing, and Missouri Botanical Garden Press, St Louis

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