

did not make a mistake since he repeated the epithet and also referred to the locality as Kemaon.

For the *Flora of British India* (1892) J.D. Hooker altered the spelling once more, this time to *kumaonensis*, no doubt because the place was normally spelled Kumaon.

Although the spelling with an 'a' which follows Wallich and Don, has normally been accepted, for reasons of priority Royle's spelling with an 'e' must now be considered to be correct.

Brian Mathew

FRIAR'S COWLS AND MOUSE PLANTS: THE GENUS ARISARUM

Peter Boyce

Of the European Araceae it is generally the largest, showiest or most strongly smelling species that attract the greatest attention, indeed *Dracunculus vulgaris* (L.) Schott which combines all three of these features, is perhaps the best known of all the aroids occurring in the Mediterranean area. In comparison with such competition, it is hardly surprising that the smaller, quietly coloured and relatively odourless species of *Arisarum* take second place. This is a great pity since this small genus of three species has much to offer both the horticulturist and botanist.

Arisarum was published in 1754 by Philip Miller for the plant described by Linnaeus as *Arum arisarum*. Linnaeus' concept of the genus *Arum* L. was considerably broader than that held today and included almost every European aroid known to him, together with a number of tropical Old and New World taxa. Although *Arum* and *Arisarum* are superficially similar, the inflorescence morphology of the two is quite different, and *Arisarum* is probably not very closely related to *Arum*. The connate-margined spathe-tube of *Arisarum* lacks the apical constriction typical of most *Arum* species, while the spathe-limb is much reduced in two species of *Arisarum* (*A. vulgare* Targ.-Tozz. and *A. simorrhinum* Durieu), and drawn out into a long, whip-like extension in *A. proboscideum* (L.) Savi, very different from the leaflike spathe-limb of *Arum*. The most important differences between *Arum* and *Arisarum* are, however, found in the flowers. In *Arisarum* the scattered, stipitate, staminate flowers each have a single



Arisarum proboscideum

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anther, while in *Arum* the staminate flowers are densely arranged, more-or-less sessile and each have three or four anthers. The few pistillate flowers in *Arisarum* consist of a bulbiform ovary with a stigma borne on a short style and exhibit basal placentation. In contrast, the numerous pistillate flowers in *Arum* have ovoid-cylindric ovaries, sessile stigmas and display parietal placentation. A further difference is that the staminodes and pistillodes typical of *Arum* are absent in *Arisarum*. On the basis of floral morphology *Arisarum* appears to be most closely related to *Pinellia* Tenore and *Arisaema* Martius, but the distinctive, pale green, prismatic fruit of *Arisarum*, together with differences in the arrangement of the flowers and connate spathe-tube margins clearly separate them. At present *Arisarum* is placed in a subtribe of its own, the *Arisarinae* Schott.

The distribution of *Arisarum* is interesting. One species, *A. vulgare*, occurs throughout the Mediterranean basin and in the Azores. In contrast, *A. simorrhinum* is restricted to south-west Spain, Portugal, Gibraltar, and the adjacent areas of the North African coast while *A. proboscideum* has two quite separate distributions in central and southern Italy and south-west Spain.

With such an extensive distribution, and some variation, it is not surprising that many 'species', have been described, separated from *A. vulgare* on the basis of minor differences in the spadix-appendix shape and size, spathe dimensions and coloration. Some forms of *A. vulgare* approach *A. simorrhinum* and have been transferred to that taxon by various authors (e.g. Talavera, 1986). This apparent introgression has also been cited as an argument in favour of sinking *A. simorrhinum* into *A. vulgare* (Maire, 1957). My own observations of *A. vulgare* and *A. simorrhinum* in south-west Spain have convinced me that much of this introgression is due to hybridization between the two species. In the many sites I investigated from Jerez de la Frontera eastwards to Malaga, *A. vulgare* and *A. simorrhinum* were growing together and a wide range of intermediates was present.

As is suggested by the above paragraph there is a considerable synonymy associated with *A. vulgare*. However, this paper is not intended to be a revision of the nomenclature of *Arisarum* and for that reason I have omitted all infraspecific synonyms from the descriptions that follow.

CULTIVATION. *Arisarum* species are easily grown either in wide pans under frost-free glass in the case of *A. vulgare* and *A. simorrhinum*, or in a shady position outdoors for *A. proboscideum*. In mild localities

A. vulgare will be successful planted at the base of a south or west facing wall.

Arisarum vulgare is usually sold in the autumn as dry-packed tubers. These should be planted as early as possible to enable the plants to form a good root-system before winter. Planting too late will result in weak plants and small sized tubers the next year. *Arisarum simorrhinum* is sold in the same way as *A. vulgare*, although rarely seen. It has not proved to be as hardy as *A. vulgare* and definitely requires frost-free conditions.

The best way to buy *A. proboscideum* is as a growing plant. The tubers of this species are far more delicate than those of the other species, and suffer particularly badly if allowed to dry out. Pots of *A. proboscideum* are usually available from good garden centres in late spring.

A well-drained, loamy, slightly alkaline compost suits *A. vulgare* and *A. simorrhinum* best. Five tubers should be planted to a 15 cm pan and then covered with about 3 cm of compost and about 1 cm of grit. Finally the pans should be given a thorough soaking. Once growth is under way the pans should not be allowed to dry out, and feeding about once a week can be started. The flowering time depends upon the clone being grown, although in the UK the peak flowering period is generally in mid-autumn. When the plants have flowered, watering and feeding must be continued until the leaves begin to turn yellow, usually in late April or early May. Once the plants are dormant the pans should be placed somewhere warm and allowed to dry out. Unlike *Arum*, the tender *Arisarum* species require a warm, dry rest in order for them to flower well.

Arisarum proboscideum does not grow well under glass, for the summer heat seriously weakens this woodland species. Outdoor cultivation in a shady but not too dark, fairly damp position is best. Before planting, the soil should be dug well and any perennial weeds removed. If the soil is particularly acid a sprinkling of lime, about 50 g to the square metre, is beneficial. Once established, *A. proboscideum* should not be disturbed unless the colonies become too large or congested. If replanting becomes necessary it should be done in the spring.

Arisarum Miller, Gard. Dict. abrgd. ed. 4 (1754); Schott in Schott & Endl., Melet. Bot. 16 (1832); Blume, Rumphia 1: 89–91 (1836); Endl., Gen. Plant. 1(3): 234 (1837); Schott, Syn. Aroid. 4 (1856); Schott, Gen. Aroid. t.4 (1858); Schott, Prodr. Syst. Aroid. 22 (1860); Ender, Index

Aroid. 21–22 (1864); Pfeiffer, Nomen. Bot 1(1): 265 (1873); Engler in A. & C. DC., Monog. Phanerog. 2: 561 (1879); Engler in Engler & Prantl, Die Natürlich. Pflanzenfam. 2(3): 149–50 (1889); Engler, Das Pflanzenr. 73 (IV. 23F): 144 (1920). Type: *A. vulgare* Targ.-Tozz.

Arisaron Adans., Fam. 2: 470 (1763). Type: As for *Arisarum* Miller.

Balmisa Lag., Gen. et Sp. Pl. Nov. 17 (1816). Type: As for *Arisarum* Miller.

Homaida Rafin., Fl. Tellur. 3: 63 (1836) non Adans. (1763). Type:

A. proboscideum (L.) Savi.

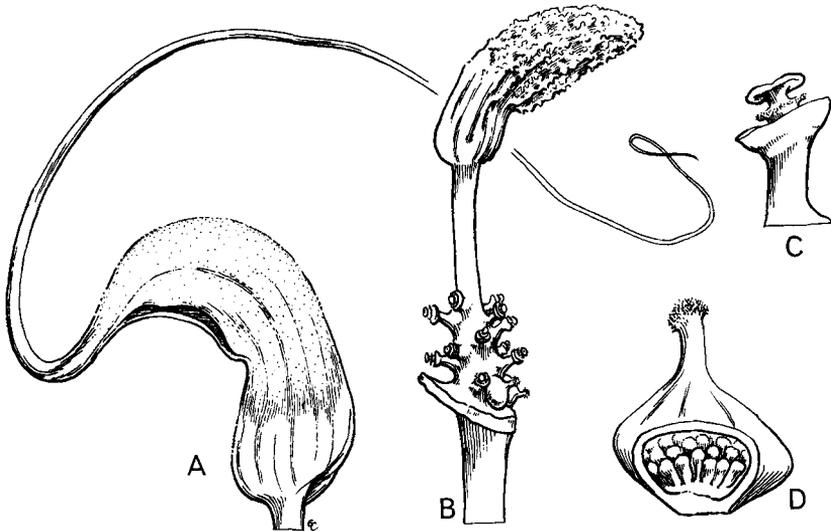
DESCRIPTION. *Herb* growing from a tuberous/stoloniferous (*A. simorrhinum* and *A. vulgare*) or slender, rhizomatous (*A. proboscideum*) rootstock. *Roots* of two types: contractile roots fusiform; feeding roots slender-cylindric. *Leaves* borne at the tip and along the length of rhizomes and stolons and from the apex of tubers; petiole slender, 3–17 cm long, 1–3 mm in diameter, furnished with a 1.5–2.5 cm long sheath at the base (usually buried), lower $\frac{1}{3}$ of petiole encased by a papery cataphyll; leaf-lamina sagittate-hastate to ovate- or sagittate-cordate, 3.5–14 cm long, 2.5–7 cm wide, mid-green to deep green, occasionally spotted or clouded silver-grey on the upper surface in *A. vulgare* and *A. simorrhinum*. *Inflorescence* arising from the tubers in those species with a tuberous/stoloniferous rootstock, or from the end of the rhizomes; emerging from the petiole-sheath, opening beneath or above the foliage, smelling variously of stagnant ponds, mushrooms or damp paper. *Peduncle* slender, terete, 1.5–22 cm long, 2–3.5 mm in diameter. *Spathe-tube* cylindric to subglobose, 2–5 cm long, 1.5–2 cm in diameter, margins connate along their whole length, exterior green, greenish brown, purplish brown or deep chocolate-brown, white or at least paler basally, this colour often extending up the basal $\frac{1}{3}$ of the spathe-tube as a series of longitudinal stripes. *Spathe-limb* either ovate to rounded and minutely apiculate, or drawn out into a whip-like appendage, 2–3.5 cm long excluding the 4–8 cm long appendage, 1.5–2 cm wide, glossy or matt, occasionally densely papillose. *Spadix* stipitate or sessile, included within or exerted from the spathe, 2–6 cm long, 1.5–6 mm wide, appendix globose to grossly swollen, 2–10 mm wide, ovate, subclavate or cylindric, surface smooth or lamellate, dull green, brownish, or off-white, (rarely deep purple in *A. simorrhinum*). *Staminate flowers* each consisting of a single, stipitate stamen, *c.* 1.5 mm in diameter; stipe 1–2 mm long, cream, often purple basally; theca dehiscing by an apical slit. *Pistillate flowers* each consisting of a bulbiform, 1-loculate, multi-ovulate ovary, 2–3 mm long, 1.5–2 mm wide, with basal placentation; style 0.5–1 mm long; stigma capitate, *c.* 1 mm in diameter. *Inflorescence* few-berried, individual fruits 5–6 mm long, 5–6 mm in diameter, 3–6-seeded, prismatic, flattened apically, the edges somewhat rough, pale green, often with a faint purple tinge. *Seeds* ovoid, *c.* 2.5 mm in diameter; testa leathery, slightly reticulate, pale fawn.

KEY TO THE SPECIES

1. Inflorescence borne below the foliage; spathe deep purple-brown to chocolate-brown, spathe-tube usually white up to *c.* $\frac{1}{3}$ of the way up; spadix-appendix enclosed within the spathe or barely exerted from it 2
- Inflorescence borne above the foliage; spathe brownish green to green, usually with longitudinal white to pale green stripes, somewhat glossy; spadix-appendix exerted from the spathe. **A. vulgare**
2. Spathe chocolate-brown, apex drawn out into a whip-like extension 4–8 cm long; spadix-appendix entirely enclosed within the spathe, apex grossly swollen, lower surface with prominent, longitudinal lamellae; leaf-lamina sagittate-hastate, acute; petioles concolorous, pale green to mid-green **A. proboscideum**
- Spathe purple-brown, apex minutely apiculate; spadix-appendix barely exerted from the spathe, apex moderately to slightly swollen, smooth; leaf-lamina ovate-cordate to sagittate-cordate; petioles with numerous purple spots and lines **A. simorrhinum**

142. ARISARUM PROBOSCIDEUM

A. proboscideum (L.) Savi in Mem. Acad. Pistojesse 6 (1816); Schott, Syn. Aroid. 4 (1856); Schott, Prodr. Syst. Aroid. 24 (1860); Engler in A. &



Arisarum proboscideum. A, inflorescence, $\times 1\frac{1}{2}$; B, spadix, $\times 2$; C, anther, $\times 10$; D, ovary with part of side wall removed, $\times 10$. Drawn by Eleanor Catherine.



Arisarum simorrhinum

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C. DC., Monog. Phanerog. 2: 565 (1879), Engler, Das Pflanzenr. 73 (IV. 23F): 148 (1920); Rix and Phillips, The Bulb Book 159 (1981). Type: in Apenninis (holotype not traced).

DISTRIBUTION. Southern and central Italy and south-west Spain.

HABITAT. Deciduous and evergreen woodland, dense maquis, often in quite deep shade. Normally only present in the open as a relict of felled woodland.

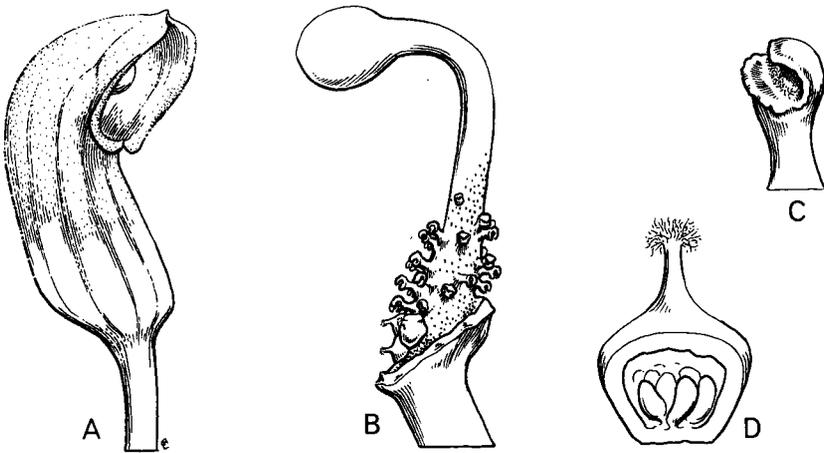
The common name of mouse plant reflects the similarity of the spadix-appendix to a mouse's tail. With a little imagination, mice can be seen hiding below the leaves.

143. ARISARUM SIMORRHINUM

A. simorrhinum Durieu in Ducharte, Rev. Bot. 1: 360 (1846); Durieu, Explorat. Sci. l'Alger t.44 (1846); Schott, Syn. Aroid. 4 (1856); Schott, Prod. Syst. Aroid. 24 (1860); Engler in A. & C.DC., Monog. Phanerog. 2: 264 (1879); Engler, Das Pflanzenr. 73 (IV. 23F): 148 (1920). Type: Algeria, Durieu s.n. (holotype P).

DISTRIBUTION. South-east Spain, Portugal, Morocco.

HABITAT. Garigue or open limestone hillsides, sometimes beneath *Pinus* or in short grass. Often forming considerable colonies.



Arisarum simorrhinum. A, inflorescence, $\times 1\frac{1}{2}$; B, spadix, $\times 2$; C, anther, $\times 10$; D, ovary with part of front wall removed, $\times 10$. Drawn by Eleanor Catherine.

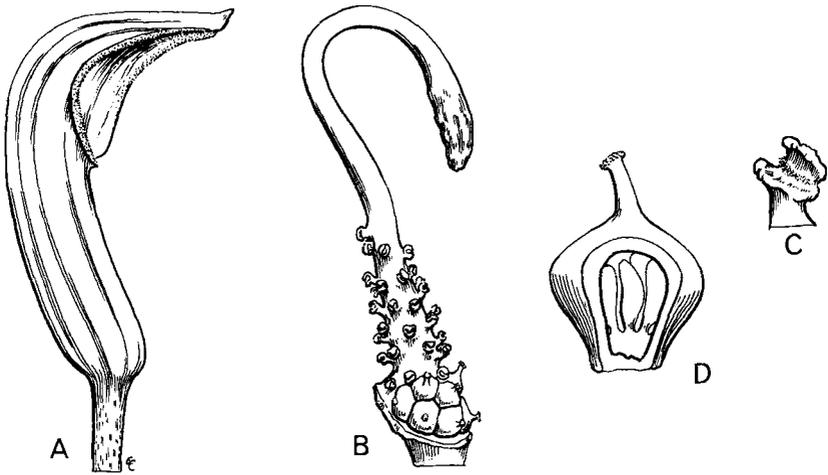


Arisarum vulgare

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144. ARISARUM VULGARE

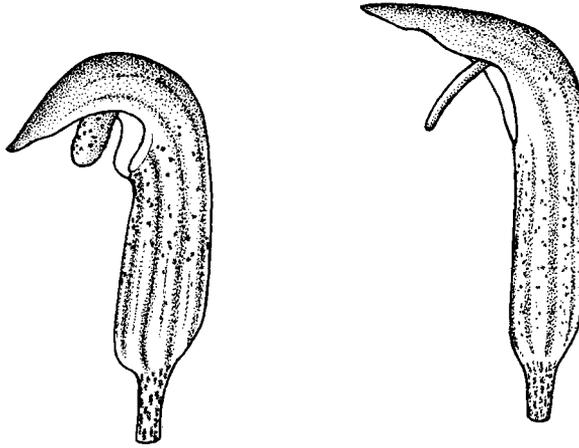
A. vulgare (L.) Targ.-Tozz. in Ann. Mus. Firenze 2(2): 67 (1810); Schott, Syn. Aroid. 4 (1856); Schott, Prodr. Syst. Aroid. 22 (1860); Engler in A. & C. DC., Monog. Phanerog. 2: 561 (1879); Engler, Das Pflanzenr. 73 (IV. 23F): 145 (1920); Polunin and Huxley, Fl. of the Med. pl. 221 (1981). Type: in Mauritaniae, Italiae, Lusitaniae, Hispaniae, Galoprovinciae nemoribus (holotype Herb. Linn. 1079/10 – microfiche!).



Arisarum vulgare. A, inflorescence, $\times 1\frac{1}{2}$; B, spadix, $\times 2$; C, anther, $\times 10$; D, ovary with part of side wall removed, $\times 10$. Drawn by Eleanor Catherine.

DISTRIBUTION. Around the Mediterranean basin from Portugal to Israel and from southern France to Egypt. Also present in the Azores.

HABITAT. Garigue, limestone hillsides, open maquis, especially beneath *Pinus*, undisturbed olive groves and roadsides, more rarely on consolidated sand.



Arisarum vulgare. Variation in the shape of the inflorescence, $\times 1$. Drawn by Ann Farrer.

The English vernacular name friar's cowl refers to the hooded appearance of the spathe-limb: similar names are found in French, Spanish and German.

REFERENCES

- Maire, R. (1957). *Fl. l'Afr. Nord* 4: 239–243.
Talavera, S. (1986). *Arisarum simorrhinum* Durieu en Andalucia occidental. *Lagascalia* 14: 114–116.