429. PINELLIA CORDATA
Araceae

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Summary. The taxonomy and distribution of *Pinellia cordata* N.E.Br. (*Araceae*) are discussed. Notes on the distinguishing features between this and other entire-leaved *Pinellia* species are given and brief outlines of its history, cultivation requirements and ethnobotany are presented. A complete botanical description, watercolour illustration and floral diagnoses are provided.

Pinellia Ten. is a genus of nine species of small tuberous-stemmed aroids from temperate and subtropical east Asia closely related to the much larger genus *Arisaema* Mart. (see, e.g. Mayo *et al.*, 1997). *Pinellia* may be distinguished from *Arisaema* by the fusion of the female part of the inflorescence to the inside of the spathe, the presence of a fleshy annulus at the throat of the lower spathe where it expands into the limb and by fruits ripening white to pale green and enclosed by the persistent lower spathe. Several species are in cultivation, the best known being the Chinese and Korean *P. ternata* (Thunb.) Breitenb. with slim green (purplish in some cultivars) inflorescences and 3-foliolate leaves. *Pinellia ternata* is apt to become weedy through the production of small bulbils on the aerial parts of the plant, and is perhaps better grown away from choicer species for fear of it out-competing them. Other species met with in cultivation are the Japanese *P. tripartita* (Bl.) Schott (see *Bot. Mag.* plate 95, 1988) and the Chinese *P. pedatisecta* Schott. Although the last named has quite attractive pedatisect leaves, in general all these pinellias lack the charisma of many aroids. On the other hand, *P. cordata* N.E.Br., figured here, has many charms.

Originating from south-eastern China, *P. cordata* is one of five species notable for their rounded to cordate-based entire leaves. All seem to be eminently desirable horticultural subjects, although presently only *P. cordata* is in cultivation in the West. *Pinellia cordata* is distinguished from these other entire-leaved species by the combined characters of being tuberous and possessing bulbils at the base of the leaf blade and inside tip of the petiolar sheath. Two other tuberous species (*P. polyphylla* S.L. Hu and *P. integrifolia* N.E.Br.) entirely lack bulbils, while the other species in which bulbils are present (*P. fujianensis* H. Li) has a rhizome rather than a

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tuber and, further, carries bulbils only at the base of the leaf, not on the petiolar sheath. The fifth species in the group, *P. peltata* P'ei, is distinguished by its peltate leaf; i.e. the petiole is inserted on the back rather than base of the leaf, in the manner of some waterlilies.

The clone illustrated here is notable for the particularly handsome markings on the leaves – silver veins on rich deep green, with a purple underside and petiole – and has become widely distributed in cultivation; currently it is probably the most frequently grown representative of this species. The leaves are also consistently larger than normal for this species, making other clones look 'scrawny', according to Ellen Hornig, of Seneca Hill Perennials, Ithaca, New York. However, leaf size largely depends upon cultivation and their dimensions are proportionate to the size and vigour of the tuber. Additionally, plants grown in shade will have larger leaves than those exposed to brighter conditions. When well grown the first leaf may be up to 25 cm long, looking like a miniature version of an *Alocasia* or *Caladium* and giving a very exotic appearance to the cold greenhouse.

Hiding below or amongst the leaves, the inflorescence is not immediately conspicuous. The spathe in this clone is greenish-buff with reddish veins, paler within, while the cream spadix appendix is sigmoidal and long-exserted from the spathe, curving up to appear above the foliage. The inflorescence is strongly, but pleasantly, fragrant, the smell perhaps best described as pineapple that is slightly past its peak, and one or two will perfume a small glasshouse. New leaves and inflorescences are produced throughout the summer growing season, although individual leaves are short-lived. Secondary leaves are smaller than those of the first flush. So far as can be determined, this clone became widely introduced into Western gardens in 1992, when Mr Hideo Yamazaki of Toyama Shi, Japan, sent tubercles to the (North) American Rock Garden Society's seed exchange, from which the first author received some. In 1998 Roy Herold, of North Reading, Massachusetts, mentioned its superior nature on the Internet-based Arisaema Enthusiasts Group; correspondence and an exchange of tubers established that these were the same clone from the same source. Mr Herold proposed to the Arisaema Enthusiasts Group on 25 September 1998 that the clone should be given the cultivar name 'Yamazaki', in recognition of its originator. Although not validly published through this electronic medium, the name has

been adopted by many growers, and has appeared in print in the 1999 catalogue of Seneca Hill Perennials. It is clear that it is a distinct, selected clone, and as such it deserves recognition through the application of a cultivar name. Enquiries by Roy Herold to Mr Yamazaki about its origins, and asking permission to use his name have unfortunately received no reply, but we recommend that the name 'Yamazaki' should be used to distinguish this superior clone unless a prior Japanese name is found to exist.

CULTIVATION. *Pinellia cordata* is easily grown in a well-drained, humus-rich medium in light shade. It is frost-hardy (surviving in Mr Herold's Massachusetts garden in USDA Zone 5B/6A), but garden-grown plants are seldom as well-developed as those grown under glass, and are very vulnerable to slug damage. When grown in pots it is best kept cool and dry while dormant in winter; like all aroids it requires an ample supply of nutrients, with annual repotting in spring. A weekly liquid feed while in active growth is beneficial, but care should be taken in its application as the leaves are easily marked with chemical residues. A deep, free-standing pot is useful as the leaves can then hang clear of contact with other surfaces and can be better appreciated.

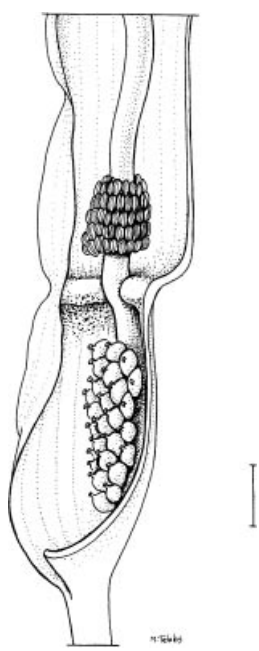
Seed set is sparse in cultivation and propagation is most easily achieved by collecting and planting the tubercles that form at the insertion of the petiole and lamina and at the base of the petiole. This is best done as the leaves wither, when they are easily detached. The tubercles must not be allowed to become desiccated, so should either be planted immediately or stored through the winter in a little potting medium in a plastic bag kept in a cool place such as the salad drawer of a refrigerator.

Pinellia cordata N.E.Br. in J. Linn. Soc., Bot. 36: 173 (1903); Engl. in Engler, A. (ed.), Das Pflanzenr. 21 (IV.23B): 22 (1905); Hisauchi in J. Jap. Bot. 26(1): 27–28 (1951); H. Li in Wu, C.Y. & Li, H., Fl. Reip. Pop. Sinicae 13(2): 203, pl. 40, 8–10 (1979); Mayo, Bogner & P.C. Boyce, Genera of Araceae, 268–270, pl. 97J-N, pl. 128D (1997). Lectotype (selected here): China, Zhejiang (Chekiang), foot of Tientai Mt., Feb. 1890, *Faber 82* (K!). Brown (1903) cites two specimens in the protologue. One of these, *Shearer s.n.* [Jianhgxi (Kiangsi), Kieukian, 1893) consists only of three separate leaves while the *Faber* collection chosen here as the lectotype comprises two complete, fertile plants.

P. browniana Dunn in J. Linn. Soc., Bot. 38: 370 (1908). Types: China, Fujian (Fukien), Fong Kong Tze, near Fuzhou (Foochow), April–June 1905, *Dunn*

Hongkong Herb. 3711 (BM!); Fujian (Fukien), Tam Chuk Hang, near Fuzhou (Foochow), April–June 1905, *Dunn Hongkong Herb. 3718* (BM!).

DESCRIPTION. *Tuberous, seasonally dormant perennial. Tuber* globose, 1–1.5 cm diam., offsetting freely. *Leaves* 1–3 per tuber at any one time, successively produced throughout the growing season; petiole sheathing for the lowermost aerial 2 cm, terete, 12–25 cm, pale to mid-green, usually purple-tinged, ovoid bulbils present at the top of the petiolar sheath and at leaf blade/petiole junction; leaf blade oblong to ovate, basally cordate to sagittate, apex acute to weakly acuminate, 4–25 × 2–5.75 cm, deep lustrous green above with lateral and intramarginal veins variously pronounced silvery grey, greenish to deep purple below. *Inflorescence* solitary per leaf, spathe carried level with the foliage but spadix appendix greatly exceeding leaves. *Peduncle* resembling but shorter than petiole, 3.7–18 cm long. *Spathe* green, purplish yellow or violet-tinged, 3–7 cm long; lower part clasping to weakly convolute, with the throat almost closed by a fleshy internal annulus, 1.2–2 cm × 4–7 mm; limb elliptic, spreading, weakly cucullate, apex obtuse or acute, erect or slightly incurved, 1.8–4.5 × 1.2–3 cm. *Spadix* sigmoidly exserted and greatly exceeding spathe. *Female zone* adnate to spathe-tube from base to annulus, 1–1.2 cm long, bearing gynoecia on the side away from the



Pinellia cordata. Inflorescence, spathe longitudinally sectioned to show female zone adnate to lower spathe and annulus at the lower spathe/spathe limb junction. Scale bar = 2 mm. Drawn by Margaret Tebbs.

spathe. *Male zone* free from spathe-limb, held above annulus, cylindric, 5–7 × 2–3 mm. *Stamens* each consisting of 2 fused stamens, filament short, connective slender; anther oblong at top, 2-celled, dehiscing by apical pores, dull yellow. *Gynoecium* 1-loculed, 1-ovuled. *Ovaries* bottle-shaped, 2–2.5 × 1.5–1.8 mm, green. *Style* short, stout; stigma button-shaped, papillate and wet at receptivity, white. *Ovule* basal, erect to semierect. *Appendix* tortuous, distal three-quarters erect, 6.5–20 cm long, cream, pale green to violet-green, the whole strongly fragrant of fermenting fruit. *Infructescence* enclosed within the green persistent lower spathe, comprised of a few, oblong-ovate, acute at apex, pale green single-seeded berries.

DISTRIBUTION. Southeast China (Anhui, Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi and Zhejiang provinces).

HABITAT. Evergreen and semi-evergreen forests, stream sides, moist meadows, cliffs, rock debris; below 800 m.

FLOWERING TIME. In habitat March–June. Flowering sporadically throughout the growing season, March–October, in cultivation.

ETHNOBOTANY. In common with many other aroids, *Pinellia* is used to treat a number of medical problems. According to Chinese aroid authority Professor Li Hen, the tuber is poisonous. It is used for the treatment of detoxification of viper bites, lumbago, allergic reaction; externally to treat traumatic injury, abscesses, neck lymphosarcoma, breast mastitis and draining of pus.

REFERENCE

Mayo, S.J., Bogner, J. & Boyce, P.C. (1997). *Genera of Araceae*. Royal Botanic Gardens, Kew.