

21. ARISAEMA Martius, Flora 14: 459. 1831.

天南星属 *tian nan xing shu*

Li Heng (李恒 Li Hen), Zhu Guanghua (朱光华); Jin Murata

Herbs with tuber or rhizome, paradioecious (sex depending on nutrition and therefore variable from one year to another). Tuber usually renewed seasonally and producing some tubercles around, these separated from old tuber at end of growth season. Rhizome usually cylindrical, with many nodes, not renewed every year, usually preceding evergreen or wintergreen leaves. Roots usually growing at apex of tuber around cataphylls or at new nodes of rhizome. Cataphylls 3–5, herbaceous or membranous, surrounding basal part of shoot. Pseudostem consisting of basal cylindrical part of petiole present or absent. Leaves 1–3, long petiolate; petiole usually mottled, stout, smooth or verrucose; leaf blade 3-foliolate, palmate, pedate, or radiate. Inflorescence borne with or before leaves, solitary, pedunculate, emerging from pseudostem in tuberous or some rhizomatous plants or separately from petiole and directly surrounded by cataphylls in some rhizomatous plants; peduncle (excluding part within pseudostem) erect, stout, usually shorter than or sometimes equaling or longer than petioles (excluding part forming pseudostem). Spathe tubular proximally, expanded limb distally, deciduous, withering or rarely semipersistent; throat of spathe tube often widely spreading outward, with or without an auricle on each side, margins of throat ciliate or not; spathe limb occasionally with a long tail at apex. Spadix sessile, unisexual or bisexual; bisexual spadix female proximally, male distally, neuter (sterile) flowers sometimes present on appendix; appendix variable in shape, base stipitate or not, apex sometimes ending in long filiform flagellum. Ovaries with 1 basal locule with several orthotropous ovules; style usually indistinct; stigma peltate, papillose. Synandria of 2–6 fused stamens, sessile or on a united filament; anthers dehiscent by 2 apical pores or a single horseshoe-shaped slit or circumscissile into a ring. Neuter flowers filiform, subulate. Infructescence upright or nodding. Berries reddish, several seeded.

About 180 species: NE Africa, Asia (including Arabian Peninsula), E North America and Mexico; 78 species (45 endemic) in 12 sections in China; one additional species (endemic) is incompletely known.

Many Chinese species of *Arisaema* are of medicinal importance. For example, the tuber of *A. flavum* is used to treat fractures, traumatic injuries, and swellings; the tuber of *A. franchetianum* is used to treat enlarged lymph nodes, intestinal parasites, and snake and insect bites; the tubers of *A. erubescens*, *A. heterophyllum*, and *A. yunnanense* are used to treat coughs, epilepsy, and tetanus. Many species of *Arisaema* have been found to possess anticancer properties.

The following taxa were recorded in FRPS but are, in fact, not distributed in China: *Arisaema amurense* Maximowicz var. *serratum* Nakai (FRPS 13(2): 174. 1979; *A. amurense* f. *denticulatum* Makino; *A. amurense* var. *denticulatum* (Makino) Engler; *A. nikoense* Nakai), *A. angustatum* Franchet & Savatier (p. 171), *A. griffithii* Schott (p. 148), *A. griffithii* var. *verrucosum* (Schott) H. Hara (p. 149; *A. verrucosum* Schott), *A. japonicum* Blume (p. 179), *A. propinquum* Schott (p. 140), *A. serratum* (Thunberg) Schott var. *viridescens* Nakai (p. 180), *A. sikokianum* Franchet & Savatier (pp. 174–175), and *A. sikokianum* var. *serratum* (Makino) Handel-Mazzetti (p. 175; *A. sazensoo* (Blume) Makino var. *serratum* Makino).

- 1a. Plant basically evergreen; underground stems rhizomatous, purplish inside; pseudostem absent or present; phyllotaxy spiro-distichous 1. *A.* sect. *Anomala*
- 1b. Plant basically deciduous; underground stems tuberous or rarely rhizomatous, whitish inside; pseudostem present; phyllotaxy quincuncial or spiro-distichous.
 - 2a. Summer dormant; underground stems rhizomatous 9. *A.* sect. *Decipientia*
 - 2b. Winter dormant or semievergreen; underground stems tuberous or rarely rhizomatous.
 - 3a. Spadix appendix sessile, or if stipitate then leaf blade radiate.
 - 4a. Phyllotaxy spiro-distichous; leaf blade radiate; spadix appendix sessile or rarely stipitate 12. *A.* sect. *Sinarisaema*
 - 4b. Phyllotaxy quincuncial; leaf blade 3-foliolate or pedate; spadix appendix sessile.
 - 5a. Spadix appendix with neuter flowers at least in female inflorescence, or if not then leaf blade 3-foliolate and spadix bisexual.
 - 6a. Axillary buds solitary; leaf blade trisect 2. *A.* sect. *Fimbriata*
 - 6b. Axillary buds accompanying accessory buds; leaf blade pedatisect 3. *A.* sect. *Clavata*
 - 5b. Spadix appendix without neuter flowers, unisexual or bisexual.
 - 7a. Spadix appendix gradually tapered to apex, usually filiform, exerted from spathe, recurved or sigmoid 7. *A.* sect. *Tortuosa*
 - 7b. Spadix appendix subglobose, not exerted from spathe 8. *A.* sect. *Dochafa*
 - 3b. Spadix appendix stipitate; leaf blade trisect or pedatisect.
 - 8a. Phyllotaxy spiro-distichous 10. *A.* sect. *Pistillata*
 - 8b. Phyllotaxy quincuncial.
 - 9a. Leaf blade palmate or rarely radiate; ovary fusiform 11. *A.* sect. *Tenuipistillata*
 - 9b. Leaf blade trisect, or rarely palmate; ovary bottle-shaped.
 - 10a. Leaf blade 3-foliolate or palmate; inflorescence exceeding leaf blade 5. *A.* sect. *Nepenthoidea*
 - 10b. Leaf blade 3-foliolate; inflorescence below leaf blade.

- 11a. Appendix apex usually flagelliform, much exceeding spathe, pendulous, proximally thick and base expanded into a stipitate disk; anthers dehiscing by horseshoe-shaped or lunate slits 4. *A. sect. Arisaema*
- 11b. Appendix obclavate, nearly erect or slightly recurved, obtuse at apex and gradually narrowed at base into a stipe; anthers dehiscing by rounded or oblong pores 6. *A. sect. Franchetiana*

1. *Arisaema* sect. *Anomala* Gusman & L. Gusman, *Aroideana* 26: 40. 2003.

根茎组 gen jing zu

Plants with rhizome. Rhizome reddish purple inside. Phyllotaxy spiro-distichous. Leaf blade 3-foliolate or pedate, rarely simple. Spadix bisexual or rarely unisexual when mature; appendix sessile, terete, attenuate or long and pendulous distally, usually with numerous filiform neuter flowers.

About 20 species: wet tropical and subtropical Asia; 11 species (seven endemic) in China.

- 1a. Pseudostem distinct (more than 10 cm).
 - 2a. Leaf blade pedate or rarely 3-foliolate; neuter flowers occurring partly on spadix appendix.
 - 3a. Spathe basically green, throat of spathe tube not auriculate 8. *A. grapsospadix*
 - 3b. Spathe basically green, or dark purple dotted with paler purple, throat of spathe tube auriculate 9. *A. hainanense*
 - 2b. Leaf blade 3-foliolate; neuter flowers covering whole of spadix appendix.
 - 4a. Neuter flowers (distal ones) 3–5.5 cm 5. *A. victoriae*
 - 4b. Neuter flowers less than 0.7 cm.
 - 5a. Rhizome stout, more than 3 cm in diam.; spathe semitranslucent, without white mark 1. *A. petelotii*
 - 5b. Rhizome less than 2.5 cm in diam.; spathe opaque, with white mark 7. *A. rubrirhizomatum*
- 1b. Pseudostem absent or very short (less than 5 cm).
 - 6a. Budlike structure present at axil of neuter flowers 2. *A. smitinandii*
 - 6b. Budlike structure absent at axil of neuter flowers.
 - 7a. Apex of spadix appendix simple or nearly so.
 - 8a. Spathe tube throat broadly auriculate; spadix appendix with neuter flowers 11. *A. bannaense*
 - 8b. Spathe tube throat without auricles; spadix appendix without neuter flowers 10. *A. petiolulatum*
 - 7b. Apex of spadix appendix brushlike, covered with numerous neuter flowers.
 - 9a. Spathe limb basically purplish, tube thick; spadix appendix pendulous 4. *A. lihengianum*
 - 9b. Spathe limb basically green, tube slender; spadix appendix upright.
 - 10a. Spathe limb with single white mark at base 6. *A. pingbianense*
 - 10b. Spathe totally greenish, without marks 3. *A. menglaense*

1. *Arisaema petelotii* K. Krause, *Notizbl. Bot. Gart. Berlin-Dahlem* 11: 332. 1932.

紫根南星 zi gen nan xing

Plants dioecious. Rhizome lying underground or half underground, dark brown outside, purplish in section, thickly cylindrical, 7–18 × 4–6 cm. Leaves usually 2; petiole green or purplish green, to 60 cm, proximal 20–30 cm sheathing into pseudostem, encircled by several cataphylls; leaf blade green, 3-foliolate; central leaflet with petiolule 1–4 cm, blade elliptic to ovate, to 30 × 17 cm, base rounded; lateral leaflets similarly petiolulate, obliquely ovate, apex acuminate. Peduncle colored as petiole, 7–12 cm. Spathe green, without stripes, semitranslucent; tube narrowly funnelform, 4–7 cm, throat 2–3 cm in diam.; limb deltoid-ovate, to 7 × 5 cm, apex acute and cuspidate. Spadix bisexual when mature; appendix basically green, 4–6 cm, slender, covered with rather numerous filiform neuter flowers, brushlike. Berries reddish, ovoid, ca. 5 mm in diam. Fl. Jun–Jul, fr. Oct–Nov.

Humid forest floors and gravel slopes in shade; 800–1000 m. S Yunnan [Vietnam].

2. *Arisaema smitinandii* S. Y. Hu, *Dansk Bot. Ark.* 23: 455.

1968.

披发南星 pi fa nan xing

Arisaema tsangpoense J. T. Yin & Gusman.

Plants perennial, evergreen, basically dioecious. Rhizome ca. 5 × 2.5 cm. Pseudostem absent. Leaves 1–4 together; petiole dull dark brown to violet, with light brown transverse markings, cylindrical, ca. 25 × 0.5–1 cm; leaf blade pedate with 3–5 segments; leaflets petiolulate, greenish, lanceolate, membranous, apex acute ending in a short arista; central leaflet with petiolule to 3 cm, blade ca. 15 × 5 cm, lateral veins numerous, base cuneate; lateral leaflets with petiolule to 5 mm, blade 12–15 × 3–4 cm, base obliquely cuneate. Peduncle whitish, cylindrical, much shorter than petioles, ca. 2 × 0.5 cm, surrounded by 3 cataphylls; cataphylls light brown, oblong, ca. 2, 4, and 6 cm, respectively. Spathe: tube white-green, with numerous green longitudinal stripes, cylindrical, ca. 3 × 1.5 cm, throat margin widely recurved; limb arched over tube, green, with darker longitudinal veins, ovate-lanceolate, ca. 7 × 4 cm, apex acuminate, ending in a tail ca. 1 cm. Spadix unisexual; female zone conic, 13–15 × 5–10 mm; ovaries congested, green, fusiform, with 1 basal locule, each locule containing 3 ovules, fusiform and slightly curved; stigma disciform, borne on a short style;

male zone cylindric, ca. 2×0.5 cm; stamens loosely arranged, each consisting of 3–6 anthers, stipitate; thecae yellowish, subglobose, dehiscent by oblong pores; appendix sessile, dark green to purple, slender, $15\text{--}40 \times 1.5\text{--}3$ mm, covered with numerous ascending filiform neuter flowers throughout its length; neuter flowers in distal section accompanied by an axillary budlike structure. Fl. Nov.

Forests; 800–900 m. SE Xizang (Mêdog) [S Thailand].

Arisaema smitinandii was recorded from China by H. Li (Aroideana 30: 45–48. 2007). The specimens on which this record was based (*Mêdog Expedition 1090*, KUN [3 sheets]) are paratypes of the name *A. tsangpoense* J. T. Yin & Gusman (Ann. Bot. Fenn. 43: 156. 2006; and see subsequent discussion by Gusman, Aroideana 31: 124. 2008). One of us (Murata) agrees with Gusman (loc. cit.) in recognizing the Chinese plants as a distinct species, *A. tsangpoense*, unique in having a budlike structure present at the axil of the neuter flowers, whereas no such structure has been described or illustrated for *A. smitinandii*; furthermore, the peduncle is very short in *A. tsangpoense* but longer than the petiole in *A. smitinandii*. Murata believes that true *A. smitinandii* is actually a synonym of *A. chumponense* Gagnepain, which is endemic to Thailand. On the other hand, one of us (Li) believes that *A. smitinandii* and *A. tsangpoense* are conspecific because they have the same filiform neuter flowers on the spadix appendix. Li also believes that the budlike structure at the axil of the neuter flowers is merely an additional neuter flower and that differences in the number and shape of neuter flowers in *Arisaema* should not be used to distinguish species. Moreover, Li notes that variation in peduncle length is known in other species of *Arisaema* and, in the case of *A. smitinandii*, is probably the result of differing climatic conditions in the disjunct areas of the distribution. Li notes a similar disjunction in the distribution of *A. cuspidatum* Engler, known from the Naga Hills in NE India and from Penang and Selangor in W Peninsular Malaysia. However, P. Boyce (in reviewing this treatment) believes that *A. cuspidatum* is a junior synonym of *A. roxburghii* Kunth, which was described from Penang, and that the plant in the Naga Hills is *A. album* N. E. Brown.

3. *Arisaema menglaense* Y. H. Ji, H. Li & Z. F. Xu, Ann. Bot. Fenn. 41: 133. 2004.

勐腊南星 meng la nan xing

Plants perennial, evergreen, monoecious or male. Rhizome erect, light brown outside, violaceous in section, oblique or horizontal, cylindric, $5\text{--}6 \times 2.5\text{--}3$ cm, with numerous nodes bearing buds, roots 10–15 cm. Pseudostem absent. Cataphylls 5, flesh-colored, $5\text{--}8 \times 1.5\text{--}2$ cm, membranous, 2 encircling petiole and peduncle, 3 enclosing peduncle directly. Leaves 1 or 2, arising at different seasons from different rhizome nodes; petiole viridescens with inconspicuous white spots, cylindric, ca. $45 \text{ cm} \times 5\text{--}8$ mm; leaf blade green, 3-foliolate; central leaflet with petiolule ca. 1.7 cm, blade elliptic, ca. 21×11 cm, base cuneate, apex acuminate with acumen ca. 1 cm; lateral leaflets with petiolule ca. 1.5 cm, blade obliquely broadly lanceolate, ca. 20×8 cm, base broadly cuneate, apex acuminate with acumen 0.9–1 cm; lateral veins 7–9 on each side, collective vein 4–9 mm from margin. Peduncle green, cylindric, shorter than petioles, ca. 20×0.5 cm. Spathe green, with numerous longitudinal veins; tube funnel-shaped, ca. $7 \times 1.5\text{--}3$ cm, throat margin recurved to 8 mm wide; limb bent forward, oblong, ca. 6.5×4 cm. Bisexual spadix ca. 3.5 cm; female zone ca. 1.5 cm; female flowers densely arranged; ovary greenish, obovoid, ca. $2.5 \times 1\text{--}2$ mm; ovules 4, erect; male zone ca. 2 cm; synandria sparse;

synandria of 2 or 3 fused stamens; stalk ca. 2 mm; anthers 3, each comprising 2 thecae; thecae subglobose, ca. 1 mm in diam., dehiscent by an apical slit; appendix sessile, erect, proximally purple, distally green, ca. $5.5 \text{ cm} \times 1\text{--}4$ mm, usually exerted from spathe tube by ca. 1 cm, wholly covered by filiform neuter flowers; neuter flowers erect, green, 5–10 mm. Male spadix ca. $3 \text{ cm} \times 2$ mm; appendix ca. 5 cm. Fl. Dec–Feb.

• Tropical seasonal forests; 1000–1100 m. S Yunnan (Mengla).

This taxon is very close to *Arisaema omkoiense* Gusman (Syst. Geogr. Pl. 71: 3. 2001), from N Thailand, and *A. pingbianense*.

4. *Arisaema lihengianum* J. Murata & S. K. Wu, J. Jap. Bot. 78: 83. 2003 [*“lihenganum”*].

李恒南星 li heng nan xing

Plants to 50 cm tall, monoecious or male. Rhizome creeping horizontally, purplish to brownish outside, red-purple inside, subcylindric, to $13 \times$ ca. 4 cm, branching. Cataphylls to 20 cm, some encircling peduncle directly. Leaf 1, expanding simultaneously with inflorescence; petiole purplish brown, mottled with green, to 30 cm, lacking pseudostem; leaf blade 3-foliolate; petiolules 3.5–4.5 cm; leaflets subequal in size, to 25×15 cm; central leaflet oblong-elliptic, base rounded-cuneate, apex acuminate and caudate; lateral leaflets oblique. Peduncle 11–20 cm. Spathe tube white or pale green, narrowly funnel-form, $4.5\text{--}6 \times 7\text{--}9$ cm when opened; limb proximal half white, distal half dark red-purple, narrowly deltoid to narrowly deltoid-ovate, $15\text{--}20 \times 5\text{--}6.5$ cm, apex acuminate. Spadix bisexual after sex change; female zone $20\text{--}30 \times$ ca. 10 mm; female flowers green, bottle-shaped; male zone $10\text{--}20 \times$ ca. 8 mm; male flowers basically white; appendix sessile, 13–16 cm, slender, exerted from throat of spathe and pendulous, proximally white, distally dark red-purple, throughout with numerous filiform neuter flowers 3–5 cm.

• Limestone crevices under bushy evergreen forests; ca. 1000 m. W Guangxi (Napo).

5. *Arisaema victoriae* V. D. Nguyen, Aroideana 23: 38. 2000.

马尾南星 ma wei nan xing

Arisaema hippocaudatum S. C. Chen & H. Li.

Rhizome oblique or horizontal, light brown outside, violaceous in section, cylindric, $3\text{--}6 \times 2\text{--}3$ cm. Cataphylls 3 or 4, grayish brown with purplish and black spots, longest one 10–15 cm, apex mucronate. Leaves 2; petiole green, marked with purple, to 30 cm, proximal 15–25 cm forming pseudostem; leaf blade 3-foliolate, paler and evidently veined abaxially, shiny green adaxially; central leaflet elliptic, $9.5\text{--}10 \times 3.2\text{--}3.5$ cm, aristate at apex, with a tip 8–11 mm; lateral ones slightly smaller. Peduncle erect, overtopping leaves. Spathe green tinged except for white center, ca. 12 cm, with proximal margins incurved or \pm overlapping to form a cylindric tube to 6×2.7 cm, scarcely or slightly auriculate at throat; limb subovate-lanceolate, ca. 8×4 cm, apex aristate and recurved. Male spadix subsessile, ca. 16 cm; fertile zone green, subterete, gradually attenuate distally, ca. 4 cm, loosely flowered; male flowers stipitate, usually diandrous; stipe 0.2–0.9 mm; thecae ellipsoid, 0.4–0.7 mm; appendix extending beyond throat of spathe tube,

recurved, greenish, horsetail-shaped, ca. 12 cm, with many filiform subulate neuter flowers; proximal neuter flowers scattered, 3–4 mm; distal ones numerous and crowded, 2.5–5.5 cm. Female spadix unknown. Fl. Jun.

Limestone crevices on hilltops; 600–700 m. Guangxi (Du'an) [Vietnam].

One of us (Murata) recognizes *Arisaema hippocaudatum* S. C. Chen & H. Li (Acta Bot. Yunnan. 24: 607. 2002) as a rare Chinese species known only from the type and *A. victoriae* as endemic to Vietnam. In *A. victoriae*, the main axis of the spadix appendix is distinct and much longer than the branches (neuter flowers) as in *A. lihengianum*, whereas in *A. hippocaudatum*, the main axis is not clear and (if still present) is of a similar size and shape to the branches in its distal part. On the other hand, one of us (Li) believes that the two entities are conspecific, based on observations of cultivated plants.

6. *Arisaema pingbianense* H. Li, Bull. Bot. Res., Harbin 8(3): 99. 1988.

屏边南星 ping bian nan xing

Plants monoecious and male. Rhizome prolonged and thin, 10–15 × 1–2 cm, nodes swollen and globose. Cataphylls 3, pale green with violet spots, encircling peduncle. Leaves 2, arising at different seasons from different rhizome nodes; petiole green, cylindrical, to 20 cm × 3–4 mm, base shortly sheathing; leaf blade 3-foliolate, green, membranous; central leaflet with petiolule ca. 1.7 cm, blade elliptic, 9–13.5 × 4–5.5 cm, base cuneate; lateral leaflets with petiolule 3–6 mm, blade obliquely ovate-lanceolate, base oblique, apex acuminate with acumen 1.5–2 cm; lateral veins 5–7 on each side, collective vein 1–2 mm from margin. Peduncle encircled by cataphyll, green, cylindrical, shorter than petioles, ca. 15 cm. Spathe tube subcylindrical, 4–4.5 × ca. 1 cm, throat margins spreading outward; limb green, with a rounded white area ca. 1.5 cm in diam. at proximal part, oblong, 3.5–4 cm, apex abruptly acuminate with a filiform tip. Spadix bisexual after sex change; proximal female zone congested with female flowers; ovary green, obovoid; distal male zone with sparse male flowers; synandria of 2 or 3 fused stamens; anthers brown to creamy white, globose, dehiscing by 2 apical pores; appendix nearly filiform, ca. 3 cm, distal ca. 1 cm covered with numerous filiform neuter flowers, brushlike; neuter flowers slightly recurved, brown or green, filiform, 2–3 mm. Fl. Dec.

• Secondary evergreen forests; 1000–1600 m. SE Yunnan.

7. *Arisaema rubrirhizomatum* H. Li & J. Murata, sp. nov.

红根南星 hong gen nan xing

Type: China. Yunnan: Malipo, Xiajinchang, 1700–1850 m, limestone area along stream, 21 Feb 1994, S. K. Wu, Y. P. Yang, J. Murata & T. Kawahara 243 (holotype, TI).

Haec species Arisaemati victoriae V. D. Nguyen et A. hippocaudato S. C. Chen & H. Li similis, sed ab eis appendice spadicis ex ore tubi spathae non exserta atque floribus neutrus brevibus minus quam 7 mm longis differt.

Plants basically dioecious. Rhizome erect, oblique, or horizontal, dark brown outside, purple in section, cylindrical or conic, 2–5 × 1–2 cm. Cataphylls 3, encircling pseudostem, lanceolate, membranous, outermost one 1–2 cm, innermost one 18–19 cm.

Leaves 1 or 2; petiole purplish green or olive-green with pale green spots, 30–50 cm, proximal 20–30 cm sheathing into pseudostem; leaf blade green, leathery, 3-foliolate; central leaflet with petiolule 1–4 cm, blade elliptic or oblong to lanceolate, 12–26 × 5–12 cm, base cuneate; lateral leaflets sessile or with short petiolule 1–4 cm, blade oblong-lanceolate or obliquely ovate, 10–20 × 3.5–11 cm, apex acuminate. Peduncle colored as petiole, slightly longer than petioles, 30–50 cm. Spathe green with a white area ca. 2 cm in diam. at proximal part of limb; tube 3–5 × 1.5–1.8 cm, throat spreading outward; limb deltoid-ovate, 5–7 × 3.5–5 cm, apex acute. Spadix basically unisexual; female zone ca. 2.2 × 1.5 cm; ovary obconic; ovules 2–4; synandria of 5 stamens, sessile; male zone ca. 3.5 cm × 5 mm, rarely with a few male flowers above; anthers ovoid, dehiscing by 2 apical slits; appendix dark purplish, 4–5 cm, slender, from base to apex covered with rather numerous filiform or subclavate neuter flowers, brushlike. Berries reddish, ovoid, ca. 5 mm in diam. Seed 1, yellowish, ca. 3.5 mm in diam., rugose. Fl. Feb–May, fr. Jul.

• Evergreen forests, thickets, along streams, in limestone mountain areas; 1000–1900 m. SE Yunnan.

8. *Arisaema grapsospadix* Hayata, Icon. Pl. Formosan. 5: 244. 1915.

毛笔南星 mao bi nan xing

Arisaema nanjenense T. C. Huang & M. J. Wu; *A. quinquefolium* Hayata.

Rhizome oblong-ovoid, 3–5 × 1.5–2.2 cm. Leaves 2(or 3); petiole 18–30 cm, proximal 13–25 cm sheathing into pseudostem, dull purplish green, mottled with dark purple and orange, surrounded by several cataphylls; leaf blade 3- or 5-foliolate; leaflets base rounded to cuneate, margin entire, apex acute to acuminate, often mucronate at tip; central leaflet with petiolule 1–2.5 cm, blade elliptic to lanceolate; lateral leaflets with petiolule 3–10 mm, blade lanceolate to oblong, oblique at base. Spathe greenish on both surfaces with a semilunate white spot in throat; tube cylindrical, (3–)4–6 × 1–1.7 cm; limb triangular-ovate, 1.5–2 cm wide, apex acute. Spadix bisexual in mature plants; female zone ca. 2.5 cm × 5 mm; ovary obliquely conic-ovoid; stigma subsessile, pilose; ovules 4; male zone ca. 1.8 cm × 4–5 mm; synandria lax, of 3 stamens; anthers dehiscing by 2 apical pores; appendix narrowly pyramidal, 6–7 cm, distal part filiform and weakly curved, distal 1.2–2 cm covered with filiform neuter flowers ca. 3 mm. Berries red, conic-ovoid. Seeds 2 or 3, cream-yellow spotted with dark purple. Fl. Mar, fr. Jul.

• Low to middle elevations. S Taiwan.

9. *Arisaema hainanense* C. Y. Wu ex H. Li, Y. Shiao & S. L. Tseng, Acta Phytotax. Sin. 15(2): 107. 1977.

黎婆花 li po hua

Rhizome cylindrical, ca. 5 × 2–3 cm. Leaves 2; petiole dull green, unmarked or mottled with brown-purple, to 50 cm, proximal 10–30 cm sheathing into pseudostem; leaf blade pedate, papery; leaflets pale green abaxially, dull green adaxially; central leaflet with petiolule 1–2 cm, blade elliptic, 14–16 × 6–8 cm, base broadly cuneate, apex abruptly acuminate, sometimes

caudate; lateral leaflets subsessile or with petiolule 5–10 mm, blade 13–15 × 5–6 cm; outermost ones obliquely elliptic, ca. 10 × 3 cm. Peduncle green, equaling or longer than petioles by 3–5 cm. Spathe tube green, with longitudinal white stripe on back up to base of limb, funnellform, 4–5.2 cm, throat obliquely truncate, outcurved for ca. 2 mm; limb dark purple with purplish spots, or green with purple reticulation, or totally olive-green, ovate, 4–4.7 × ca. 2.7 cm, acuminate and caudate at apex. Spadix bisexual when mature; female zone 2–2.5 cm; male zone 1–1.5 cm; synandria lax; anthers 1–3, stipitate; thecae oblong, dehiscing by lateral slits; appendix sessile, erect or sometimes recurved at apex, narrowly cylindrical or fusiform, 4–5 cm × 1.5–2.5 mm, proximal 3–4 mm covered with many erect filiform neuter flowers 3–4 mm. Infructescence 4–5 cm. Berries reddish, ovoid, ca. 6 × 4 mm. Fl. Jun, mature fr. Nov.

• Evergreen rain forests in valleys and on slopes; 400–2100 m. Hainan.

10. *Arisaema petiolulatum* J. D. Hooker, Fl. Brit. India 6: 498. 1894.

三匹箭 san pi jian

Arisaema inkiangense H. Li; *A. inkiangense* var. *maculatum* H. Li.

Plants monoecious and male, evergreen. Rhizome pale yellow outside, purple or violet in section, cylindrical. Cataphylls withering, yellowish red to creamy red, narrowly lanceolate, membranous. Leaf 1; petiole encircled by cataphylls, pale, unspotted, to 40 cm, base sheathing for ca. 1.5 cm; leaf blade pale green abaxially, green adaxially, papery, 3-foliolate; central leaflet with petiolule ca. 2 cm, blade elliptic, 9–25 × 5.8–10 cm, base obtuse or shortly cuneate, apex acuminate; lateral leaflets with petiolule 5–10 mm, blade elliptic-lanceolate, 8–20 × 3.5–9.5 cm, base obliquely rounded. Peduncle encircled by 2 cataphylls, separated from petiole, terete, 25–35 × 1.2–1.5 cm. Spathe tube greenish white, with ca. 1 cm white base, ca. 5 cm × 8 mm, throat margin narrowly auriculate, outwardly recurved, auricle ca. 8 mm wide; limb arching, green with a large rounded white area at base, ovate-lanceolate, ca. 6 × 3 cm, membranous, with a tail ca. 5 mm. Spadix bisexual in mature plants, unisexual (male) in small plants. Bisexual spadix: basal female zone cylindrical, ca. 1.5 cm, ca. 5 mm in diam. at base, densely flowered; ovary oblong; ovules 2–4, basal, erect; style short but distinct; stigma capitate, pilosulose; continual male zone ca. 1.5 cm with sparse male flowers; synandria of 2 or 3 stamens; an-

thers sessile, or filaments ca. 1 mm; thecae subglobose, opening by an apical slit; appendix erect, sessile, green, narrowly cylindrical, without neuter flowers, distally slightly rugose. Unisexual spadix: male zone ca. 2 cm, ca. 3.5 mm in diam. with a stipe ca. 2 mm; appendix as in bisexual spadix, with or without 2 or 3 subulate neuter flowers in proximal part. Fl. Oct–Nov.

Dense forests, in mountain valleys; 400–1700 m. Yunnan [NE India, N Myanmar].

11. *Arisaema bannaense* H. Li, Bull. Bot. Res., Harbin 8(3): 101. 1988.

版纳南星 ban na nan xing

Plants evergreen. Rhizome yellowish outside, purplish inside, robust, 8–9 × 3–4 cm, rooting on whole surface and in different directions. Leaves 3–5 together, separately arranged on rhizome back, perhaps from different seasons; petiole pale green with dark green striae and whitish spots, or pinkish brown with black or dark brown short striae and sparse spots, cylindrical, 28–60 × 0.4–2 cm, encircled by cataphylls; leaf blade pale green abaxially, green adaxially, subpapery, 3-foliolate; leaflets entire, base obtuse, apex acuminate with acumen 1–2 cm; central leaflet with petiolule 2.8–4.6 cm, blade green with scattered pale brown and black spots, elliptic to oblong, 14–24 × 6–10 cm, base cuneate to rounded; lateral leaflets with petiolule 5–10 mm, blade lanceolate, oblique, 12–24 × 4.5–10 cm, base obliquely rounded; cataphylls 2 or 3, colored as petiole, 5–20 cm. Peduncle encircled in cataphylls, colored as petiole, to 70 cm. Spathe green; tube 6–8 × 1.5–2 cm, throat margins spreading, auriculate; limb arching, obovate, ca. 5 × 3.5–4 cm, apex acuminate or acute. Spadix bisexual and unisexual (male). Bisexual spadix: female zone ca. 2 cm × 7 mm; ovary pale green, ovoid; style short; stigma pale white, disciform; male zone ca. 1.5 cm × 3 mm, sparsely covered by male flowers; appendix erect, greenish white, cylindrical, ca. 3 cm × 1.5–3 mm, apex subclavate, verrucose to echinate. Male spadix: male zone ca. 6.7 cm, base ca. 6 mm in diam.; male flowers dense, of 2–4 stamens, subsessile; anthers violet to cream-yellow, ovoid or subglobose, dehiscing by an apical united slit; appendix cylindrical, ca. 4.2 cm × 3 mm, base usually with some male flowers, apex subclavate, rugose, ca. 4 mm in diam. Berry orange-red, obovoid, ca. 5 × 4 mm. Fl. Feb–Mar, fr. Oct.

• Primary tropical rain forests; 700–1000 m. S Yunnan.

Arisaema bannaense is quite similar to *A. garrettii* Gagnepain, from Thailand. The species are possibly distinct only in the shape of the apical part of the spadix appendix. According to observations by Murata in S Yunnan, the appendix of *A. bannaense* is always subclavate, acuminate, and verrucate to muricate, and the apex is exerted from the spathe tube so that it is clearly seen from outside. In specimens examined by Murata, the appendix of *A. garrettii* is columnar, with a rounded apex, and equaling the spathe tube in length so that the apex is hardly seen from outside. The two taxa may be allopatric varieties.

2. *Arisaema* sect. *Fimbriata* (Engler) H. Li in C. Y. Wu & H. Li, Fl. Reipubl. Popularis Sin. 13(2): 123. 1979.

线花组 xian hua zu

Arisaema [unranked] *Fimbriata* Engler, Pflanzenr. 73(IV. 23F): 151. 1920.

Tuber subglobose. Leaf blade 3-foliolate. Spadix appendix sessile, attenuate distally, with neuter flowers at least in female inflorescence, or if lacking then spadix bisexual.

About 14 species: tropical and subtropical Asia; six species (four endemic) in China.

- 1a. Epiphyte; leaves appearing much later than inflorescences; spathe with long filiform tail to 60 cm 17. *A. lackneri*
- 1b. Geophyte; leaves coetaneous with inflorescences; spathe without tail.
 - 2a. Spadix bisexual when mature; neuter flowers absent 12. *A. lidaense*
 - 2b. Spadix unisexual; neuter flowers present at least in female inflorescences.
 - 3a. Spathe totally green, throat margins auriculate 16. *A. sinii*
 - 3b. Spathe color contrasted with white and green, throat margins not auriculate.
 - 4a. Spathe with white mark at base of limb 15. *A. calcareum*
 - 4b. Spathe limb color transversely demarcated between proximal white part and distal green part.
 - 5a. Spathe limb deltoid-ovate, not narrowed at base 13. *A. penicillatum*
 - 5b. Spathe limb ovate, narrowed at base 14. *A. austroyunnanense*

12. *Arisaema lidaense* J. Murata & S. K. Wu, J. Jap. Bot. 78: 81. 2003.

文山南星 wen shan nan xing

Plants to 30(–40) cm tall, but usually smaller. Tuber depressed globose, 1–2 cm in diam., with distinct axillary buds. Cataphylls 2 or 3, surrounding pseudostem, purplish green, without distinct marks. Leaf usually 1, expanding earlier than inflorescence; petiole 20–40 cm, proximal (3–)5–12(–15) cm sheathing into pseudostem; leaf blade 3-foliolate; leaflets sessile, subequal in size; central one narrowly elliptic, 7–14(–16) × 2–4.5(–5.5) cm, base attenuate, apex long acuminate; lateral ones oblique. Inflorescence bisexual after sex change; peduncle usually shorter than petioles (much shorter in bisexual inflorescence), 8–15 cm, downcurved when fruiting. Spathe green with white patch on back of throat, 4–9 cm; tube narrowly cylindrical, 2.5–5 cm, not expanded at throat; limb ovate to broadly ovate, 1.5–4 cm, apex acuminate. Bisexual spadix narrowly cylindrical; female zone to 1.4 cm; female flowers congested, green, ellipsoid; male zone to 10 mm; male flowers with white or purple anthers; appendix upright or weakly incurved, green, usually without projections, gradually narrowed to apex, not exerted from spathe, 3–4.5 cm. Infructescence pendulous. $2n = 24^*$.

• Limestone crevices; ca. 1300 m. SE Yunnan (Wenshan).

13. *Arisaema penicillatum* N. E. Brown, J. Linn. Soc., Bot. 18: 248. 1880.

画笔南星 hua bi nan xing

Arisaema matsudae Hayata.

Tuber globose, 1–2(–3) cm in diam. Cataphylls lanceolate, ca. 8 cm. Leaves 2; petiole 25–30 cm, below middle sheathing into pseudostem; leaf blade 3-foliolate; central leaflet petiolulate, elliptic, ca. 14 × 6 cm; lateral ones sessile, shorter than terminal, oblong-lanceolate, ca. 10 × 4 cm, base oblique, apex acuminate; collective vein 0.3–2 mm from margin. Peduncle as long as or longer than petioles. Spathe tube pale green, cylindrical, 4–6 × 1.2–2 cm, throat margins spreading but not recurved; limb transversely demarcated between proximal white part and distal green part, oblong, 2–5 cm, apex acuminate with tip. Spadix unisexual. Female spadix: female zone green, pyramidal, ca. 1.5 cm; ovary ovoid; ovules 5, apex constricted into a short style; stigma capitate; appendix green, narrowly cylindrical, 4–5 cm × 2–3 mm, base ca. 2 cm and apex 8–10 mm, covered with broadly filiform neuter flowers (1.5–2 mm). Male spadix: male zone narrowly conic, 3–4 cm, with sparse male flowers;

synandria of 3 stamens; anthers ovoid, opening by longitudinal apical slits; appendix filiform, 3–4 cm, at apical 1–1.5 cm covered with filiform or subulate neuter flowers (1–2 mm). Fl. Apr–Jun.

• Understories of dense forests; below 1000 m. Guangdong, Guangxi, Hainan, Taiwan.

A Chinese record of *Arisaema laminatum* Blume (Benth., Fl. Hongk. 342. 1861) is referable to *A. penicillatum*.

14. *Arisaema austroyunnanense* H. Li, Acta Phytotax. Sin. 15(2): 105. 1977 [*“austro-yunnanense”*].

滇南南星 dian nan nan xing

Tuber globose, 1–2 cm in diam. Cataphylls green, acute. Leaf 1; petiole green, proximally sheathing into pseudostem; leaf blade 3-foliolate; leaflets glaucous abaxially, green adaxially; central leaflet with petiolule ca. 15 mm, blade ovate or ovate-oblong, 8–10 × 2.8–6 cm, base obtuse, apex abruptly acuminate; lateral leaflets with petiolule 3–5 mm, blade ovate-lanceolate, 9–10 × 4.8–5 cm, base rounded, oblique, apex acuminate. Peduncle as long as petioles, slender. Spathe small, ca. 6.5 cm in total; tube pale green, funnellform, ca. 2.8 cm, throat ca. 1.5 cm in diam., margins obliquely truncate, not auriculate; limb erect, dark green, ovate-lanceolate, ca. 3 × 1.5 cm, apex acuminate with a short tail at tip, base slightly constricted, with a white ca. 5 mm high basal zone. Spadix unisexual. Male spadix slender; male flowers sparse; synandria of 2–4 stamens, subsessile; thecae subglobose, opening by an apical slit; appendix erect, ca. 2.2 cm, slender, with several scattered, short, subulate neuter flowers from base to apex; neuter flowers less than 1 mm. Female spadix unknown. Fl. May.

Tropical forests; ca. 800 m. S Yunnan (Jinghong, Simao) [Vietnam].

Chinese records of *Arisaema balansae* Engler (H. Li, Bull. Bot. Res., Harbin 8(3): 99. 1988) and *A. ramulosum* Alderwerelt van Rosenburgh (Gusman & Gusman, Gen. *Arisaema*, 220. 2006; Gusman, Aroideana 30: 43. 2007, p.p., as to Vietnamese element; Yin & Gusman, Aroideana 31: 98–100. 2008) are referable to *A. austroyunnanense*. In the treatment of *Arisaema* in Flora Malesiana (Murata, in press), *A. laminatum* will be recognized in a broad sense including *A. ramulosum* and *A. austroyunnanense*. Gusman et al. (loc. cit.) separated *A. ramulosum* from *A. laminatum*; they did not refer to *A. austroyunnanense*, but it may have been included in their concept of *A. ramulosum*. In the present treatment, however, it seems best to recognize *A. austroyunnanense* as a separate species because it has been known by a single specimen (the type) and we cannot consider variation in China. Gusman et al. (loc. cit.) also reported *A. barbatum* Buchet (Notul. Syst. (Paris) 1: 366. 1911) from S Yunnan (Xishuang-

banna) by presenting a photograph. However, this record requires confirmation because it does not seem to fit typical *A. barbatum*, from Java, and no herbarium specimen is available at present.

15. *Arisaema calcareum* H. Li, Acta Phytotax. Sin. 15(2): 106. 1977.

金江南星 jin jiang nan xing

Arisaema jinshajiangense H. Li.

Plants deciduous, to 120 cm tall and 60 cm wide. Tuber subglobose or cylindric, 2.5–6 cm in diam. Cataphylls 3, flesh-colored, longitudinally striped and mottled, lanceolate, 2–40 cm, apex obtuse for shortest. Leaves 2, subopposite; petiole light green, plain or stained with purple, to 60 cm, proximal part to 45 cm sheathing into pseudostem; leaf blade 3-foliolate; leaflets abaxially paler, sometimes flushed carmine, adaxially green and with impressed, thin, and light green veins and a broad, white-green central midvein, margins entire, base convex and petiolulate, apex acuminate; central leaflet with petiolule to 4 cm, blade subrhombic, shorter than lateral ones, 20–50 × 10–25 cm, base cuneate; lateral leaflets with petiolule to 2 cm, blade ovate, 20–55 × 10–25 cm. Inflorescence unisexual, emerging when leaves unfold and held nearly at foliage level; peduncle pale green, shorter than petioles, 10–20 × ca. 1 cm. Spathe tube green with white stripes, basally white, cylindric, ca. 7 × 1.5 cm, throat not expanded; limb curved forward, green with conspicuous white stripes and a white spot at throat level, oblong-lanceolate, ca. 6 × 2.5 cm, apex long acuminate. Spadix: ovaries congested, ovoid, ca. 2.5 × 2 mm; ovules ca. 2; stigma penicillate, borne on a short style; male flowers unknown; appendix slightly exerted from tube, erect, pale green, cylindric, 6–8 cm × ca. 5 mm, slightly narrowed to both ends, base with scattered hornlike projections (these curved, 3–5 mm, often brown and bifid at apex), apex rounded. Fruiting spike upright. Fl. Jun–Jul, fr. Oct.

• Among shrubs. Yunnan.

16. *Arisaema sinii* K. Krause, Notizbl. Bot. Gart. Berlin-Dahlem 10: 1047. 1930.

瑶山南星 yao shan nan xing

Plants dioecious. Tuber depressed globose, ca. 2 × 1.5 cm, renewed seasonally, proceeding from a whorl of roots and a few globose offsets at apex around shoot. Cataphylls 2 or 3, whitish green, 5–12 cm, membranous, apex acuminate. Leaves 1 or 2; petiole light green, unspotted, 20–30 cm, basal 10–12 cm sheathing into pseudostem; leaf blade glaucous abaxially, green adaxially, 3-foliolate; leaflets sessile, apex acuminate, with a short tail at tip; collective vein distinct, 3–7 mm from margin; central leaflet rhombic, 8–15.5 × 6–13 cm, base cuneate; lateral leaflets obliquely ovate-rhombic, 9–18 × 6–11 cm, base obtuse on outer side, attenuate on inner side. Peduncle emerging from

pseudostem, green without spots, 21–25 cm, shorter than petioles, curved forward after flowering. Spathe pale green; tube white at base, funnellform, 3.3–5 cm × 10–15 mm, throat margins auriculate, recurved outward; limb arching forward and downward, ovate, 4–6 × 2.6–3.9 cm, with longitudinal white lines inside, apex occasionally with a tubular tail 5.5–7.5 cm. Spadix unisexual. Female spadix: female zone green, conic, ca. 15 × 8 mm; ovaries densely distributed, globose; stigma sessile and rounded with serrate margin; appendix sessile, erect, pale green, cylindric, ca. 2.5 cm × 3.5 mm, attenuate to base, usually with a few subulate neuter flowers ca. 3 mm at base. Male spadix: male zone 1–1.5 cm; synandria of 2 or 3 stamens, violet; thecae globose, dehiscing by apical pore; appendix as in female spadix, erect, 2.2–3 cm, without neuter flowers. Inflorescence curved forward or pendulous. Fl. May.

• Evergreen forests, secondary *Pinus* forests, grasslands in limestone areas; 1000–2600 m. Guangxi, Guizhou, Hunan, Sichuan, Yunnan.

17. *Arisaema lackneri* Engler, Notizbl. Königl. Bot. Gart. Berlin 2: 186. 1898.

勐海南星 meng hai nan xing

Arisaema menghaiense J. T. Yin, H. Li & Z. F. Xu.

Epiphytes, dioecious. Tuber depressed globose, ca. 5 × 10 cm, renewed seasonally, purple outside with brown spots 1–1.5 mm in diam.; roots whitish, 2–7 cm × 1–2 mm. Leaf solitary, coetaneous with fruit; petiole green, without spots, cylindric, 20–30 × ca. 1 cm, smooth; leaf blade greenish, membranous, 3-foliolate; leaflets petiolulate; central leaflet with petiolule ca. 15 mm, blade ovate, ca. 20 × 10 cm, base cuneate, apex acute; lateral veins numerous; collective vein 2–3 mm from margin; lateral leaflets with petiolule 8–11 mm, blade obliquely ovate-lanceolate, ca. 21 × 8 cm, base obliquely cuneate, apex acuminate with filiform tail 5–8 mm. Inflorescences unisexual, appearing before leaf; peduncle white, terete, ca. 26 × 0.3 cm (male), ca. 25 × 1 cm (female), surrounded by cataphylls; cataphylls 3, pale green, oblong, 18–23 cm, membranous, apex obtuse. Spathe tube green, cylindric, ca. 6 × 1.5 cm, throat margin broadly auriculate, strongly outwardly recurved; limb arched, greenish purple, ovate-lanceolate, ca. 6 × 5 cm, apex acuminate with a purple tail to 60 cm. Female spadix densely flowered; ovaries green, 1-loculed, ovoid; stigmas subsessile, disciform; ovules 5 or 6, basal, erect; appendix as in male spadix. Male spadix with basal fertile part cylindric, ca. 3.8 × 0.5–0.6 cm, densely flowered; synandria subsessile, purple; anthers 4–6, subglobose, dehiscing by an apical slit; appendix sessile, greenish, cylindric, ca. 3.8 × 0.3 cm, apex obtuse, with a few subulate neuter flowers in basal part. Inflorescence cylindric, ca. 5.2 × 1–1.5 cm. Fl. Apr, fr. May.

About 1800 m. S Yunnan (Menghai) [N Myanmar].

3. *Arisaema* sect. *Clavata* (Engler) H. Hara, Bull. Univ. Mus. Univ. Tokyo 2: 347. 1971.

云台南星组 yun tai nan xing zu

Arisaema [unranked] *Clavata* Engler, Pflanzenr. 73(IV. 23F): 171. 1920.

Underground stems tuberous, whitish inside, axillary buds with accessory buds. Phyllotaxy quincuncial, normal leaves pedate. Spadix appendix sessile, with neuter flowers in proximal part.

Six species: C China to Japan; four species (all endemic) in China.

- 1a. Appendix narrowly fusiform, attenuate distally, slightly bent outward 20. *A. hunanense*
- 1b. Appendix cylindrical, erect, apex rounded, capitate or creased.
 - 2a. Appendix slender, erect, apex abruptly capitate and echinate, slightly exerted from spathe tube 21. *A. clavatum*
 - 2b. Appendix stout, not capitate, long exerted from spathe tube.
 - 3a. Appendix smooth 18. *A. silvestrii*
 - 3b. Appendix twisted and creased in distal section 19. *A. ilanense*

18. *Arisaema silvestrii* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 22: 262. 1915.

云台南星 yun tai nan xing

Arisaema dubois-reymondiae Engler; *A. zanlanscianense* Pampanini.

Tuber subglobose, ca. 2 cm in diam. Cataphylls 3, greenish brown, membranous, apex obtuse. Leaves 2; petiole green, 24–35 cm, basal 10–18 cm sheathing and forming pseudostem, free part 13–30 cm; leaf blade pedate; leaflets 7–9, sessile to subsessile, oblanceolate or oblong to elliptic, base cuneate, margin entire, apex acuminate; rachis between central and lateral leaflets 1–2.5 cm, rachis between outer leaflets 5–10 mm; central leaflet subsessile, 7–20 × 2.5–5 cm; outermost leaflets 5–12 × 1.5–2.5 cm. Peduncle shorter than petioles, 13–17 cm, exerted from pseudostem 3–5 cm. Spathe greenish white with 3–5 white stripes inside or (in female) dark purple with pinkish white stripes, ca. 15 cm in total; tube funnelform, 5.5–6 × 2–2.5 cm at throat; limb oblong or oblong-ovate, 7–8 × 3–3.5 cm, acute at apex with an acumen 5–10 mm. Spadix unisexual; male zone ca. 2 cm; synandria lax; anthers 2–4, thecae globose, dehiscing by apical pores; female zone ca. 2 × 1 cm; ovary green; style short; stigma punctate. Appendix sessile, erect, greenish or purplish, cylindrical, 4–7(–14) cm × 2–5 mm, proximal part covered with a few acute neuter flowers. Fl. Apr–May.

• Bamboo forests, evergreen forests, thickets; below 1800 m. Anhui, Fujian, Guangdong, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shanxi, Zhejiang.

19. *Arisaema ilanense* J. C. Wang, Bot. Bull. Acad. Sin. 37: 71. 1996.

宜兰南星 yi lan nan xing

Tuber depressed globose, 1.3–3 cm in diam. Cataphylls 3–5, whitish to greenish, fleshy, apex mucronate. Leaves 2; petiole terete, 20–55 cm, basal 10–30 cm sheathing and forming pseudostem; leaf blade pedate; leaflets 7–15, sessile, oblanceolate to elliptic, base cuneate, apex acuminate; central one 10–22 × 2–4.5 cm, longer than or equal to adjacent one. Peduncle 11.5–37 cm, free part 1.5–7 cm, usually much shorter than free part of petiole. Spathe tube pale to greenish yellow outside, dark purple inside, gradually becoming pale to reddish brown proximally, cylindrical, slightly auriculate at throat, 6–9 × 1.3–2 cm; limb pale greenish yellow outside, dark purple inside, ovate, 6–10 × 3–5 cm, apex acute or sometimes acuminate. Spadix unisexual, 1.5–2.4 cm in male, 1.5–3.4 cm in female. Appendix distinctly exerted from spathe tube, proximally reddish, distally dark purple to black, clavate, 9–15 cm, proximally gradually narrowed toward floriferous part or sometimes stipitate at base with some echinate neuter flowers, distally bent outward or

slightly downward. Fl. Feb–Mar.

• Broad-leaved forests; 1600–1900 m. N Taiwan.

20. *Arisaema hunanense* Handel-Mazzetti, Symb. Sin. 7: 1365. 1936.

湘南星 xiang nan xing

Tuber depressed globose, ca. 2 cm in diam. Cataphylls to 15 cm. Leaves 2; petiole 45–55 cm, proximal half sheathing and forming pseudostem; leaf blade pedate; leaflets 7–9, oblanceolate; central leaflet shortly petiolulate, larger than lateral ones; rachis between central and lateral leaflets 4–6 mm. Peduncle shorter than petioles, free part 3–6 cm. Spathe reddish inside; tube cylindrical, ca. 7 × 2 cm, throat slightly recurved, not auriculate; limb ovate-lanceolate, ca. 6 cm, apex long acuminate. Spadix unisexual; male ca. 1.5 cm; female ca. 2.5 cm; ovary elliptic, ca. 3 mm; style short; stigma small, pilose. Appendix sessile, suberect or slightly recurved, narrowly pyramidal, 4–7 cm × ca. 4.5 mm, narrowed toward base and apex, basal ca. 1.5 cm in female spadix usually with acute neuter flowers 4–5 mm, smooth in male spadix. Fl. Mar–May.

• Forests, streamsides; 200–800 m. Chongqing, Guangdong, Hubei, Hunan, E Sichuan.

21. *Arisaema clavatum* Buchet, Notul. Syst. (Paris) 2: 121. 1911.

棒头南星 bang tou nan xing

Tuber subglobose or ovoid-globose, 2–4 cm in diam. Cataphylls green, to 20 cm, membranous, apex obtuse or acute. Leaves 2; petiole green, 40–60 cm, proximal half sheathing; leaf blade pedate; leaflets (7–)11–15, sessile, oblong or oblanceolate, papery, base cuneate, margin entire, apex abruptly acuminate and caudate; central 5 leaflets nearly equal, 10–19 × 3–6 cm, outward gradually smaller, outermost one 2–4 × 0.5–1.5 cm; rachis between leaflets 5–15 mm. Spathe green, sometimes purplish, with white stripes or not, 7.5–16 cm in total; tube cylindrical or narrowly funnelform, 3.5–8 × 1.3–2.5 cm, throat obliquely truncate or rounded, not recurved; limb oblong, 5–8 × 3–3.5 cm, apex acute. Spadix unisexual; male cylindrical, 1.2–1.7 cm × ca. 3 mm; synandria purple; anthers 2 or 3; thecae globose, dehiscing by apical pores; female conic or elliptic, 2–2.5 cm × 7–8 mm; ovary greenish, obovoid; ovules 3 or 4; stigma subglobose, ca. 1 mm. Appendix sessile, green to purple, narrowly cylindrical, 2.6–7 cm, slender, ca. 1.5 mm in diam., basal 2–3 cm sparsely covered with acute and hooked neuter flowers (1–3 mm), apex abruptly swollen into a clavate head 3–10 × 2–4 mm, densely clavate-echinate. Fl. Apr–Jun.

• Bamboo thickets, broad-leaved forests; 600–1400 m. Chongqing, N Guizhou, W Hubei, Sichuan.

4. *Arisaema* sect. *Arisaema*

天南星组 *tian nan xing zu*

Plants with tuber or rarely with robust rhizome. Leaf usually solitary; leaf blade 3-foliolate, or rarely quinate. Spathe tube sometimes lamellate inside; limb curved forward, usually widened into wings, sometimes galeate. Spadix appendix proximally swollen into a disk and stipitate, distally usually filiform and long exserted from spathe, or subcylindric and not exserted from spathe. Thecae united at apex, dehiscing by a single horseshoe-shaped slit.

About 17 species: mostly in Himalayan region and SW China; 16 species (seven endemic) in China.

- 1a. Lateral veins of leaflets numerous, parallel 26. *A. costatum*
- 1b. Lateral veins not parallel.
 - 2a. Central leaflet obovate, obcordate, or obdeltate, shorter than wide.
 - 3a. Spadix appendix not or slightly exserted from spathe.
 - 4a. Spadix appendix filiform 32. *A. bonatianum*
 - 4b. Spadix appendix subcylindric, apex rounded.
 - 5a. Pseudostem, petiole, and peduncle verrucose or finely asperate 33. *A. asperatum*
 - 5b. Pseudostem, petiole, and peduncle smooth 34. *A. brucei*
 - 3b. Spadix appendix distinctly exserted from spathe.
 - 6a. Inflorescence ca. as high as leaf blade 35. *A. wilsonii*
 - 6b. Inflorescence distinctly below leaf blade.
 - 7a. Spadix appendix basally densely rugose 31. *A. handelii*
 - 7b. Spadix appendix smooth throughout.
 - 8a. Spathe smaller, tube 1.5–3.5 cm 37. *A. parvum*
 - 8b. Spathe larger, tube 3–5 cm 36. *A. elephas*
 - 2b. Central leaflet elliptic, ovate, or rhombic, longer than wide and as long as lateral lobes.
 - 9a. Underground stems rhizomatous or spathe throat galeate-auriculate; all leaflets petiolulate.
 - 10a. Spathe limb not winged sideways; stems thickly rhizomatous 30. *A. speciosum*
 - 10b. Spathe limb winged sideways and galeate-auriculate.
 - 11a. Underground stems rhizomatous, cylindric 23. *A. dahaiense*
 - 11b. Underground stems tuberous, subglobose 22. *A. lingyunense*
 - 9b. Underground stems tuberous; spathe throat not galeate-auriculate; leaflets basically sessile.
 - 12a. Spathe tube lamellate inside.
 - 13a. Spathe limb not winged sideways 27. *A. utile*
 - 13b. Spathe limb winged sideways and vexillate 28. *A. vexillatum*
 - 12b. Spathe tube not lamellate inside.
 - 14a. Spathe limb ovate-lanceolate, apex long acuminate to caudate 25. *A. intermedium*
 - 14b. Spathe limb obovate, apex cucullate or 3-lobed.
 - 15a. Leaflets covered with golden scales abaxially; spathe limb cucullate 24. *A. pianmaense*
 - 15b. Leaflets without trichomes; spathe limb distinctly 3-lobed 29. *A. tengsungense*

22. *Arisaema lingyunense* H. Li, Acta Phytotax. Sin. 15(2): 107. 1977.

凌云南星 *ling yun nan xing*

Plants dioecious. Tuber subglobose, 3–7 cm in diam., with many small tubercles. Leaf solitary, emerging after anthesis; petiole ca. 30 cm, basal part forming pseudostem; leaf blade 3-foliolate; leaflets with petiolules 1–1.5 cm; central leaflet rhombic, ca. 24 × 14 cm; lateral leaflets oblique, outer side often ca. 2 × as wide as inner side, ca. 20 × 13 cm, base cuneate at inner side, rounded at outer side. Peduncle shorter than petioles, ca. 25 cm × 5 mm. Spathe purple with white lines; tube funnel-form, ca. 8 × 2.5 cm, without lamella inside; limb incurved, galeate, lateral margins elongated into broad wings, with whitish reticulate networks on both sides, ca. 20 × 20 cm, base constricted, apex rounded with an acumen 3–4 cm. Spadix unisexual; female zone conic, ca. 3 × 2 cm; ovary cylindric, ca. 5 mm; ovules 2, basal, erect, fusiform; style short; stigma disciform; male zone cylindric, ca. 3 cm × 9 mm; synandria of 2 or 3

stamens; anthers stipitate, dehiscing by horseshoe-shaped slit; appendix purple, flagellate, ca. 44 cm (female) to 143 cm (male) in total, proximal 13–14 cm subcylindric, ca. 1.5 cm in diam., base attenuate, not truncate, stipe ca. 1.8 cm × 8 mm (female), ca. 4 × 3 mm (male), distal filiform part ca. 30 cm (female) to 130 cm, pendulous. Berries red. Fl. Apr–Jun, fr. Jul.

Swamps by mountain streams; 1400–3000 m. Guangxi [W Myanmar].

23. *Arisaema dahaiense* H. Li, Acta Phytotax. Sin. 15(2): 107. 1977.

会泽南星 *hui ze nan xing*

Arisaema dulongense H. Li.

Plants dioecious. Rhizome horizontal, outside pale brown, inside yellowish, cylindric, 7–8 × 5.5–8 cm, bearing some offsets around. Cataphylls 2 or 3, deciduous, transparent, pink, 30–60 cm, membranous. Leaf 1; petiole violet, greenish distally, smooth and not spotted, ca. 80 cm, ca. 3 cm in diam. in proxi-

mal pseudostem part; leaf blade 3-foliolate; leaflets with petioles 2–3.5 cm, blade greenish abaxially, green adaxially, papery, usually covered with hairs; central leaflet narrowly ovate, to 25 × 18 cm, base rounded, apex acuminate with a long tail; lateral leaflets obliquely ovate, to 18 × 17 cm in outline, base outside ca. 2 × as wide as inside, auriculate. Peduncle erect, pinkish green, not spotted, to 25 cm. Spathe dark purple with whitish longitudinal lines; tube cylindrical, 8–9 × 2–3 cm, throat margins slightly recurved, smooth on both sides; limb galeate, oblong, 8–10 cm, apex acuminate, tip with an acumen 2.5–5 cm; lateral sides widened, membranous, as wings, with whitish reticulate networks, whitish longitudinal lines from tube connected at middle of limb. Spadix unisexual; female zone subconic, ca. 2.2 × 1.3 cm; ovary pale green, cylindrical; stigma sessile; appendix violet, base truncate with a stipe ca. 8 mm, proximally narrowly pyramidal, distally pendulous, filiform, to 50 cm or more in total, somewhat longer in female spadix, smooth; male zone cylindrical, ca. 4 cm × 3–8 mm (ca. 8 mm in diam. at base), dark violet; synandria violet consisting of 3 or 4 stamens; connected filaments violet, ca. 1.5 mm; thecae fused, violet, dehiscing by horseshoe-shaped slit. Fl. Mar–Apr. $2n = 26$.

Evergreen forest margins; 1400–2600 m. NE and NW Yunnan (Dulong Jiang, Huize) [N Myanmar].

24. *Arisaema pianmaense* H. Li, Acta Bot. Yunnan., Suppl. 5: 9. 1992.

片马南星 pian ma nan xing

Plants dioecious. Tuber depressed globose, 3–4 cm in diam. Cataphylls 2 or 3, whitish with purple spots, to 21 cm, membranous, apex acute. Leaf solitary; petiole pale green, with purple spots, terete, 30–50 cm, basal part forming pseudostem; leaf blade 3-foliolate; leaflets subsessile, abaxially grayish green and densely covered with matted hairs and sparse golden scales, adaxially green and with dense papillae; central leaflet elliptic, 15–35 × 8–19 cm, base cuneate, apex acute; lateral leaflets obliquely ovate-oblong, outer base ca. 2 × as wide as inner side, rounded. Peduncle terete, 18–32 cm. Spathe purple with whitish longitudinal lines; tube cylindrical, 6–7 × 1.5–2 cm, throat margins slightly recurved; limb obovate-spatulate, 7–8 × 4–5 cm, apex abruptly acuminate with a tail 2–3 cm, strongly downcurved. Spadix unisexual; female zone ca. 2.5 cm; ovary pale green, subcylindrical; stigma sessile, concave; appendix subsessile, purple, proximally narrowly conic, distally tapering and drawn into flagellum, in total 24–30 cm, pendulous, base truncate; male zone ca. 2 cm; synandria of 2 or 3 stamens, connected filaments distinct; anther purple, fused from 2 thecae, dehiscing by horseshoe-shaped slit. Fl. May.

• Mixed forests; ca. 2700 m. W Yunnan (Lushui).

25. *Arisaema intermedium* Blume, Rumphia 1: 102. 1835.

高原南星 gao yuan nan xing

Plants dioecious. Tuber depressed globose, 2–4 cm in diam. Cataphylls 2 or 3, green to purple, 16–20 cm. Leaves 1 or 2; petiole green, 15–50 × 1–1.5 cm, basal part forming pseudostem; leaf blade 3-foliolate; leaflets sessile or shortly petiolulate; central leaflet ovate, rhombic, or elliptic, (7–)9–12 × 3–

11 cm, base cuneate, apex acute to acuminate; lateral leaflets obliquely ovate or rhombic, as large as central leaflet. Peduncle green and unmarked, shorter than petioles, 10–26 cm. Spathe green, rarely dark purple, with green or white lines; tube broadly cylindrical, (3–)4–8 × 1.5–2.5 cm, smooth inside, throat margins obliquely truncate, not auriculate; limb dark purple, yellowish green, or green, 7–16 × 2–6.5 cm, apex acuminate-caudate into a tail 2–20 cm. Spadix unisexual; female zone ca. 1.5 cm; ovary obovoid; style short; stigma small; male zone ca. 2 cm; synandria of 4 stamens, yellow, dehiscing by horseshoe-shaped slit. Appendix dark purple, narrowly flagellate, 15–60 cm in total, proximally swollen fusiform or cylindrical, smooth, distally curving and exerted from tube, gradually drawn into flagellum, sigmoid and pendulous in distal part. Fl. May, ?Sep. $2n = 28$.

Mountain slopes, grassy places; 2600–3400 m. S Xizang, Yunnan [India (Darjeeling, Himachal Pradesh, Uttarakhand), Kashmir, Nepal].

26. *Arisaema costatum* (Wallich) Martius ex Schott & Endlicher, Melet. Bot. 17. 1832.

多脉南星 duo mai nan xing

Arum costatum Wallich, Tent. Fl. Nepal. 28. 1824.

Plants dioecious. Tuber brown outside, white inside, depressed globose, 3–5 cm in diam. Cataphylls 3, ca. 50 × 25 cm, membranous. Leaf solitary; petiole green, often slightly purplish, terete, 30–50 cm, proximal 1/4–1/3 sheathing into pseudostem, ca. 1 cm in diam.; leaf blade 3-foliolate; leaflets pale green abaxially, deep green adaxially, shortly petiolulate or subsessile; terminal elliptic or oblong, 16–30 × 9–16 cm, base auriculate and rounded, inner base narrowly cuneate, apex acuminate; lateral veins very numerous and running almost parallel, distinctly raised abaxially, impressed adaxially. Peduncle emerging from pseudostem, shorter than petioles, 25–45 cm. Spathe dark purple, with white longitudinal lines; tube cylindrical, 4–8 cm, slightly costate inside, but in Xizang specimens almost smooth inside, throat margins slightly recurved; limb incurved, narrowly ovate-oblong, 3–4 cm, apex acuminate with a filiform tail. Spadix unisexual; female zone 2.4–3.5 cm; ovary green; style short; stigma white, disciform; appendix pendulous from spathe, dark purple, very long flagelliform, 20–50 cm, inflated toward base, base truncate, swollen disciform, with a stipe 3–5 mm, smooth throughout; male zone 2–3.7 cm; synandria of 3–5 stamens; connected filaments distinct; thecae dehiscing by a horseshoe-shaped slit. Fl. Jul.

Grasslands in forest areas; 2300–2400 m. S Xizang (Dinggyê, Nyalam) [Nepal].

Molecular phylogeny has revealed that *Arisaema costatum* is not closest to the other members of *A. sect. Arisaema* but is instead monophyletic with African species that have radiate leaves (Renner, Zhang & Murata, Amer. J. Bot. 91: 881–888. 2004).

27. *Arisaema utile* J. D. Hooker ex Schott, Prodr. Syst. Aroid. 30. 1860.

网檐南星 wang yan nan xing

Plants dioecious. Tuber depressed globose, 3–10 cm in diam., with small tubercles. Cataphylls to 9 cm, membranous.

Leaf solitary; petiole green with dark purple spots, 20–40 cm, proximal 1/3 sheathing into pseudostem; leaf blade 3-foliolate; leaflets sessile or subsessile, green with reddish margin; veins raised, often reddish abaxially; central leaflet broadly rhombic or ovate-rhombic, sometimes broader than long, 7–15 × 6–11 cm, base broadly cuneate, apex acuminate; lateral leaflets obliquely ovate, 11–14 × 7–9 cm, base rounded to subtruncate, apex acuminate. Peduncle shorter than petioles, 20–22 cm. Spathe tube purplish brown with longitudinal whitish lines, cylindrical, 4–5 × 1.5–2 cm, longitudinally lamellate inside, throat margins slightly recurved; limb strongly incurved, dark purple with white longitudinal and reticulate lines (at margin), obovate, 7–8 × 3–5 cm, apex acuminate. Spadix unisexual; female zone conic, 2.6–6 cm; ovary green, obovoid; stigma subsessile, dark purple; male zone 1.5–2 cm × ca. 4 mm; synandria of 2–5 stamens; connected filaments distinct, 0.5–1 mm; anther dehiscing by horseshoe-shaped slit. Appendix brown, flagelliform, 11–20 cm, thickened toward base 5–15 mm wide, base truncate and stipitate. Fl. May.

Tsuga forest margins, thickets; 2800–3100 m. Xizang, Yunnan [Bhutan, N India, Kashmir, Myanmar, Nepal, Pakistan].

28. *Arisaema vexillatum* H. Hara & H. Ohashi, J. Jap. Bot. 48: 99. 1973.

细腰南星 xi yao nan xing

Plants dioecious. Tuber brown outside, white inside, depressed globose, 1.5–3 cm in diam. Cataphylls 2 or 3, pink to purple, to 8 cm, membranous. Leaf solitary; petiole greenish, not spotted, terete, 15–18 cm, basal part forming pseudostem, smooth, not verrucose; leaf blade 3-foliolate; leaflets subsessile, green usually with bluish margins; central leaflet broadly obovate or rhombic, 4–5(–11) × 4–5(–10.5) cm, apex abruptly acuminate or rounded with an acumen 2–3 mm; lateral leaflets larger than central one, ovate or rhombic, 8–9(–15) × 4(–9) cm, base cuneate, slightly oblique, apex acuminate. Peduncle greenish as petiole, shorter than petioles, 6–10 cm. Spathe tube dark purple with whitish longitudinal lines, cylindrical, 4.5–5 × 1.5–2 cm, throat obliquely truncate, slightly recurved, not auriculate, inside distinctly lamellate, throat abruptly constricted into an intermediate zone 1.5–2 cm wide; limb above intermediate zone strongly dilated, reniform or subcordate, 3–5 × 4–7 cm, purple with whitish reticulate networks, apex rounded with a tubular tail 3–4 cm. Spadix unisexual; female zone conic, ca. 1.2 cm × 8 mm; ovary green; stigma subsessile, dark purple, ovoid; male zone cylindrical, ca. 2 cm × 5 mm; synandria of 3 or 4 stamens; connected filaments purple, distinct; anthers yellowish, globose, dehiscing by horseshoe-shaped slit. Appendix purple, flagellate, recurved distally following spathe limb, 9–11 cm, base swollen, 4–5 mm in diam., truncate and stipitate; stipe 8–10 mm. Fl. Jun.

Thickets, grasslands on slopes; 3500–3700 m. S Xizang [E Nepal].

29. *Arisaema tengtsungense* H. Li, Acta Phytotax. Sin. 15(2): 106. 1977.

腾冲南星 teng chong nan xing

Arisaema tengtsungense var. *pentaphyllum* H. Li.

Plants dioecious. Tuber globose, 1–2 cm in diam. Cataphylls 2, whitish pink, short, 2–4 cm, membranous. Leaf solitary; petiole terete, 14–77 cm, basal part forming pseudostem; leaf blade 3-foliolate or rarely quinately; leaflets sessile, pale green abaxially, green adaxially; central leaflet elliptic or ovate-elliptic, 5–14 × 3–7 cm, base cuneate, apex acuminate; lateral leaflets obliquely ovate to ovate-lanceolate, 6–12 × 3–9 cm, base cuneate at inner side, rounded at outer side. Peduncle shorter than petioles, 7–25 cm, emerging from pseudostem. Spathe tube purple with white longitudinal lines, funnel-shaped, ca. 7 × 1.9 cm, throat oblique, not auriculate, slightly recurved; limb dark purple with indistinct whitish lines, galeate, oblong in outline, 5–6.6 × 3–3.5 cm, incurved, apex deeply 3-lobed; middle lobe smaller, lanceolate, ca. 5 × 2 mm; lateral lobes oblong, ca. 1.5 × 1.3 cm, apex rounded. Spadix unisexual; male zone cylindrical, 1–1.5 cm; synandria of 2 or 3 stamens; anthers subsessile, globose, dehiscing by horseshoe-shaped slit; appendix pendulous, flagelliform, 8–15 cm, basal 2–3 cm narrowly conic, 2–3.5 mm in diam., base truncate and stipitate; stipe slender, 3–4 mm. Female spadix unknown. Fl. Jun–Jul.

Evergreen forests, *Rhododendron* thickets on mountain summits; 2600–3200 m. W Yunnan (Jingdong, Lushui, Tengchong) [N Myanmar].

30. *Arisaema speciosum* (Wallich) Martius ex Schott & Endlicher, Melet. Bot. 17. 1832.

美丽南星 mei li nan xing

Arum speciosum Wallich, Tent. Fl. Nepal. 29. 1824; *A. eminens* Schott; *A. speciosum* var. *eminens* (Schott) Engler.

Plants dioecious. Rhizome cylindrical, 4–10 × 2–4 cm. Cataphylls 2 or 3, reddish brown, inner one to 15 cm. Leaf solitary; petiole pale green, not spotted, 15–50 cm, base forming pseudostem, 1–1.5 cm in diam.; leaf blade 3-foliolate; leaflets with petiolules 1–1.5 cm, pale green with narrow red margin, not spotted; central leaflet dull adaxially, ovate or oblong, 11–13 × 4–7 cm, base cuneate, apex acuminate or acute; lateral leaflets obliquely oblong to lanceolate, larger than central leaflet, 13–16 × 4.5–6.5 cm, base strongly oblique (one side cuneate, other deeply cordate), apex abruptly shortly acuminate. Peduncle whitish with tiny brown dots, much shorter than petioles, 2.5–10 cm. Spathe dark purple, with whitish longitudinal lines; tube cylindrical, 4–10 × 1–3 cm, throat margins obliquely truncate, slightly outcurved; limb arching over spadix, oblong-lanceolate, 8–20 × 6–8 cm, margins narrowly recurved, apically gradually acuminate, drooping. Spadix unisexual; female zone subconic, ca. 1.7 × 1.2 cm; ovary obovoid; stigma sessile, punctate; male zone cylindrical, ca. 2.5 cm × 5 mm; male flowers purple; synandria of 3–5 stamens; connected filaments distinct; thecae dehiscing by a single horseshoe-shaped slit. Appendix pink to dark purple, very narrowly conic, filiform distally, 20–80 cm, base to 8 mm in diam., narrowed into a stipe ca. 1 cm. Fruiting peduncle erect. Berries red, obovoid-obconic, angulate. Fl. Apr–Jun, fr. Oct.

Broad-leaved forests; 2400–2800 m. S Xizang [Bhutan, NE India, Nepal].

31. *Arisaema handelii* Stapf ex Handel-Mazzetti, Symb. Sin. 7: 1367. 1936.

疣序南星 you xu nan xing

Plants dioecious. Tuber depressed globose, 2–4.5 cm in diam., with many fimbriate roots. Cataphylls 1 or 2, whitish green, flushed purplish, 17–36 × 1–1.5 cm, membranous, apex acute, sometimes obtuse. Leaf solitary; petiole dark green, unmarked, 17–55 cm, smooth, base forming pseudostem; leaf blade 3-foliolate; leaflets pale green abaxially, green adaxially, margin crisped or shallowly crenulate, petiolulate; central leaflet with petiolule 1–3 cm, blade obovate to obcordate, ca. 16 × 20 cm, apex depressed or concave with a short mucro; lateral leaflets with petiolule winged and 1–2 cm, blade broadly rhombic or obliquely ovate, 19–26 × 15–20 cm, base obliquely rounded or truncate, decurrent to petiolule, apex abruptly acuminate or acute, sometimes with filiform tail ca. 1.5 cm. Peduncle whitish green to dark green, unmarked, much shorter than petioles, emerging from pseudostem, 15–20 cm, smooth. Spathe green, purple, or dark green with broad white stripes; tube funnelliform, 5–6 cm, ca. 2 cm in diam. at base, ca. 4 cm in diam. at throat, not auriculate; limb slightly incurved or suberect, oblong, ca. 15 × 4–6 cm, apex acuminate, sometimes with a filiform tail 2–3 cm. Spadix unisexual; female zone 3–4.5 cm; ovaries dense; stigma sessile; male zone cylindrical, 3.4–4 × 1–1.5 cm; synandria with stipe 2–3 mm; anthers usually 4, globose, each dehiscing by horseshoe-shaped slit. Appendix whitish, narrowly conic, basal 4–6 cm densely papillose or rugose, ca. 1.5 cm in diam., abruptly narrowed at base into stipe ca. 6 × 5 mm, distal part smooth and gradually drawn into flagellum to 38 cm in total, exerted from spathe tube and tortuous, pendulous in distal flagellate part. Fl. May–Jun.

• *Picea* forests, secondary forests; 2800–3500 m. SE Xizang (Zayü), NW Yunnan (Dêqên, Weixi).

32. *Arisaema bonatianum* Engler, Pflanzenr. 73(IV. 23F): 214. 1920.

丹珠南星 dan zhu nan xing

Arisaema danzhuense H. Li; *A. salwinense* Handel-Mazzetti; *A. smithii* K. Krause.

Plants perennial, dioecious. Tuber brown outside, subglobose, 1.5–5 cm in diam., bearing 5–10 tubercles 0.5–1 cm in diam. Cataphylls 2 or 3, greenish, oblong-elliptic, to 20 × 5 cm, membranous. Leaf solitary; petiole greenish, cylindrical, 40–60 × 0.5–2.5 cm, densely verruculose with whitish spinules, sheathed in proximal 1/3 forming pseudostem; leaf blade 3-foliolate; leaflets sessile or subsessile, greenish abaxially, green adaxially with dark purple spots, margins purple; midrib and lateral veins raised abaxially, verruculose with whitish spinules; central leaflet depressed rhombic, 15–21 × 16–20 cm, base broadly cuneate, apex acute; lateral veins 7 per side; collective veins 3, 1–15 mm from margin; lateral leaflets obliquely ovate, 20–30 × 15–21 cm, base broadly cuneate, apex acuminate. Peduncle emerging from pseudostem, greenish, 40–50 × 0.7–1.2 cm, verruculose and spinulose. Spathe greenish or dark purple with white stripes, adaxially with ca. 20 longitudinal lamellae 1–3 mm wide; tube cylindrical, ca. 5 × 3 cm, throat margins slightly recurved; limb incurved, oblong, ca. 8 × 2–5 cm, apex

rounded with acumen ca. 0.5 cm. Spadix unisexual; female zone cylindrical, ca. 5.5 × 0.7–1.6 cm; ovary pale green with green stripes, oblong-ovoid, ca. 5 × 2 mm; ovules 9, subbasal; style short; stigma white, pilose; male zone cylindrical, ca. 3 × 0.8 cm; synandria stipitate; stipe ca. 1 mm; anthers 3–5 (mostly 4), whitish, obovoid, dehiscing by a horseshoe-shaped slit. Appendix flagelliform, ca. 14 cm, distal part greenish, tortuous, smooth, base swollen to 6 mm in diam., truncate and stipitate, stipe ca. 3 mm.

• Mountains, among shrubs on slopes, meadows by rivers; 2800–3000 m. S Sichuan, NW Yunnan.

33. *Arisaema asperatum* N. E. Brown, J. Linn. Soc., Bot. 36: 176. 1903.

刺柄南星 ci bing nan xing

Arisaema cochleatum Stapf ex H. Li.

Plants dioecious. Tuber depressed globose, ca. 3 cm in diam. Cataphylls 2 or 3, purplish, 15–20 cm. Leaf solitary; petiole 30–50 cm, with dense whitish papillose spines, basal ca. 5 cm sheathing into pseudostem; leaf blade 3-foliolate; central leaflet broadly obovate, 16–23 × 18–27 cm, base cuneate, apex truncate or concave with acute acumen; lateral leaflets rhombic-oblong, 17–28 × 15–22 cm; all leaflets spinose at midrib abaxially. Peduncle 25–60 cm, verrucose, scabrid. Spathe dark purple, with whitish green stripes; tube cylindrical, 5–6 cm, throat margins not recurved or auriculate; limb suberect, oblanceolate or ovate-lanceolate, 8–12 cm, apex acuminate. Spadix unisexual; female zone conic, 2–3 cm; ovary subcylindrical; stigma sessile, disciform; male zone cylindrical, ca. 3 cm; synandria lax, shortly stipitate; anthers 2 or 3, yellowish, depressed globose, dehiscing by horseshoe-shaped slit. Appendix cylindrical, 6.5–9 cm, base abruptly thickened, 2.5–4 mm in diam., truncate, with stipe 3–5 mm, apex slightly recurved, not pendulous. Fl. May–Jun.

• Forests, thickets; 1300–2900 m. Chongqing, S Gansu, W Henan, W Hubei, NE Hunan, Shanxi, E Sichuan.

34. *Arisaema brucei* H. Li, R. Li & J. Murata, **sp. nov.**

贝氏南星 bei shi nan xing

Type: China. Yunnan: Gongshan, Gaoligong Shan, Dulong Jiang valley, between Xishaofang and Bapo, 2570 m, evergreen broad-leaved forest, 17 Jul 2002, H. Li, R. Li & Z. L. Dao 15020 (holotype, KUN; isotype, CAS).

Haec species *Arisaemati asperato* N. E. Brown *similis*, *sed ab eo planta glabra, folii segmento intermedio elliptico, spathae lamina oblonga brunea ad apicem albido-reticulata differt.*

Plants dioecious. Tuber subglobose, 1.8–2 cm in diam. Cataphylls not seen. Leaf solitary; petiole 24–30 cm, glabrous, proximal 5–7 cm sheathing into pseudostem; leaf blade 3-foliolate; leaflets subsessile, green with purple margins, glabrous, margins subcrenulate or crenate; terminal leaflet elliptic, ca. 11 × 4–6 cm, base cuneate, apex acuminate; lateral veins 12–15 per side, collective vein 0.5–1.5 mm from margin; lateral leaflets lanceolate, oblique, ca. 11 × 3.3–3.5 cm, base cuneate, apex long acuminate. Peduncle shorter than petioles, 12.5–16 cm. Spathe suberect, 12–13 cm; tube brown with whitish stripes, obconic, 4.5–5 × 1.7–2 cm, throat margins obliquely truncate,

slightly recurved, not auriculate; limb slightly incurved, dark brown with whitish stripes, oblong, 7.5–8 × 2.4–3 cm, base not constricted, apex acuminate with white reticulate stripes. Spadix unisexual; male zone cylindrical, 1.3–1.7 cm; synandria lax, stipitate; filaments 1.5–2 mm; anthers 2–4, dehiscing by horseshoe-shaped slits; appendix distally curved, cylindrical, ca. 6 cm in total, proximal 2.5–3 cm suberect, ca. 3 mm in diam., abruptly swollen toward base, base conic, 4–5 mm in diam., truncate, with stipe ca. 4.5 × 1.3 mm, apex attenuate, obtuse. Female spadix unknown. Fl. Jul.

• Evergreen broad-leaved forests slightly disturbed by roads; 2500–2600 m. NW Yunnan (Gongshan).

This species is named in honor of Dr. Bruce Bartholomew of the California Academy of Sciences, U.S.A., a senior researcher of the biodiversity of the Gaoligong Shan in W Yunnan, where he has collected extensively almost every year since 1998.

35. *Arisaema wilsonii* Engler, *Pflanzenr.* 73(IV. 23F): 212. 1920.

川中南星 *chuan zhong nan xing*

Arisaema wilsonii var. *forrestii* Engler.

Plants dioecious. Tuber dark brown outside, whitish inside, globose, 5–7 cm in diam., bearing some tubercles around. Cataphylls 3 or 4, dark purple, with tiny greenish stripes, to 30 × 7 cm, apex obtuse. Leaf 1 (or 2); petiole to 130 cm, basal part sheathing into short pseudostem; leaf blade 3-foliolate; leaflets sessile, dull abaxially, light green adaxially, margins usually cristate or crenulate; midrib and lateral veins raised abaxially; central leaflet depressed obovate, 15–26 × 18–28 cm, base cordate, apex nearly truncate with a broad and short acumen; lateral leaflets rhombic or obliquely ovate, longer than central one, to 37 × 24 cm, apex abruptly acuminate. Peduncle yellowish green, shorter than petioles, ca. 35 cm, papillose. Spathe purple with yellowish stripes; tube cylindrical, 6–8 × ca. 3 cm, throat margins slightly recurved; limb oblong or obovate-oblong, 10–15 × 5–8 cm, apex abruptly acute with an acuminate tail 3–4 cm, incurved. Spadix unisexual; female zone conic, ca. 2 × 1.3 cm; ovary green, obconic; style distinct; stigma purple; male zone 5.5–6 cm × 6–7 mm; synandria stipitate, lax; anthers 3 or 4, reniform, dehiscing by horseshoe-shaped slit. Appendix robust, greenish dark purple, to 23 cm in total, proximally narrowly pyramidal, ca. 1.4 cm in diam., base truncate with a stipe ca. 10 × 7–8 mm, distally gradually narrowed into flagellum, tortuous, sometimes pendulous. Berries red, oblong, ca. 10 × 7 mm when mature. Fl. May, fr. Jun.

• Broad-leaved forests, forest margins, grassy slopes; 1900–3200 m. Gansu, Sichuan (Emei Shan), SE Xizang, W Yunnan.

The long peduncle, which lifts the inflorescence as high as the leaf blade, is probably an adaptation to its grassy habitat and makes this species comparable to the Himalayan *Arisaema propinquum* Schott.

5. *Arisaema* sect. *Nepenthoidea* (Engler) H. Hara, *Bull. Univ. Mus. Univ. Tokyo* 2: 325. 1971.

猪笼南星组 *zhu long nan xing zu*

Arisaema [unranked] *Nepenthoidea* Engler, *Pflanzenr.* 73(IV. 23F): 208. 1920.

36. *Arisaema elephas* Buchet, *Notul. Syst. (Paris)* 1: 370. 1911.

象南星 *xiang nan xing*

Arisaema dilatatum Buchet; *A. rhombiforme* Buchet.

Plants dioecious. Tuber subglobose, 2–5 cm in diam. Cataphylls usually 2, reddish brown, to 13 cm, acute. Leaf solitary; petiole green, 20–30 cm, often verrucose, base forming pseudostem, ca. 2 cm in diam.; leaf blade 3-foliolate; leaflets green with cristate margins; central leaflet sessile, obovate to obcordate, 5–10 × 6–13 cm, base narrowly cuneate, apex abruptly acute; lateral leaflets obliquely oblong or ovate, 7–14 × 5–10 cm, base broadly cuneate, apex acute. Spathe purple with green or whitish stripes; tube cylindrical, 3–5 × 2–2.5 cm, throat margins obliquely truncate, neither recurved nor auriculate; limb incurved or suberect, dark purple, oblong, 7–10 × ca. 4 cm, apex abruptly acuminate. Peduncle green, 11–15 cm, often verrucose. Spadix unisexual; female zone cylindrical, ca. 2 × 1.2 cm; ovary green, oblong-ovoid; style green, short; stigma white or purple, pilose; male zone cylindrical, ca. 3 × 1.1 cm; synandria stipitate; stipe reddish, 2–3 mm; anthers 2–5, yellow, obovoid, dehiscing by a horseshoe-shaped slit. Appendix sigmoid, to 20 cm in total, proximal 4–5 cm whitish or purplish to dark purple, cylindrical, ca. 8 mm in diam., abruptly narrowed at base into stipe ca. 8 mm, distally narrowed into flagellum. Berries red, oblong. Seeds 5–8, pale brown, ovoid. Fl. Jun–Jul, fr. Aug.

Coniferous forests, bamboo forests, meadows, usually among mossy rocks; 1800–4000 m. Chongqing, Gansu, Guizhou, Sichuan, Xizang, Yunnan [Bhutan, Myanmar].

37. *Arisaema parvum* N. E. Brown, *J. Linn. Soc., Bot.* 29: 320. 1893.

小南星 *xiao nan xing*

Plants dioecious. Tuber globose, 1.2–1.8 cm. Cataphylls 3–4.5 cm, acute. Leaf solitary; petiole green, 6–18 cm, smooth, base forming pseudostem; leaf blade 3-foliolate; central leaflet obovate or obcordate, 1.8–5.5 × 2–6 cm, base cuneate usually with red margins, apex truncate or concave, with a short acumen; lateral leaflets obliquely ovate, 3–8 × 3–7 cm, acuminate. Peduncle green, shorter than petioles, 5–12 cm, smooth. Spathe tube color rather demarcated between dark purple (or dark carmine) proximal part and greenish distal part with whitish stripes, cylindrical, 1.5–3.5 × 1.3–1.5 cm, throat obliquely truncate, not recurved; limb greenish, broadly lanceolate, 3–6 × ca. 3.5 cm, apex acute or acuminate, incurved. Spadix unisexual; male zone ca. 6 mm; synandria stipitate; anthers usually 2, yellow, dehiscing by horseshoe-shaped slit; appendix shorter than spathe, 5–6 cm, slender, base suddenly expanded into a disk, stipitate, distally recurved. Female spadix unknown. Fl. May–Jun.

• Alpine grasslands, meadows; 3000–3600 m. W Sichuan (Kangding), SE Xizang, Yunnan (Dali, Luquan, Yangbi).

Underground stems tuberous. Phyllotaxy quincuncial. Leaves 3-foliolate or pedate (to 9-foliolate), usually glaucous abaxially. Inflorescence emergent and unfolded before leaves. Spadix appendix erect, terete, base stipitate.

Three species: SW China to E Himalayas; three species (one endemic) in China.

- 1a. Leaves 7–9-foliolate; peduncle shorter than petioles 40. *A. meleagris*
1b. Leaves 3–5(–7)-foliolate; peduncle longer than petioles.
2a. Leaves 3-foliolate 38. *A. wattii*
2b. Leaves (3–)5(–7)-foliolate 39. *A. nepenthoides*

38. *Arisaema wattii* J. D. Hooker, Fl. Brit. India 6: 498. 1893.

双耳南星 shuang er nan xing

Arisaema biauriculatum W. W. Smith ex Handel-Mazzetti;
A. pangii H. Li.

Plants dioecious. Tuber depressed globose, 2.3–5 cm in diam. Cataphylls 3 or 4, green or violet, with purplish spots, 15–20 cm, apex acute or obtuse. Leaves 2; petiole yellow-green with dark brown spots consisting of tiny striae, finally to 60 cm, proximal 1/3–1/2 forming pseudostem; leaf blade 3-foliolate; leaflets sessile, green; central leaflet elliptic, 15–30 × 4–10 cm, base cuneate, apex acuminate; lateral leaflets narrowly obovate, oblique, as long as central one, base auriculate, rounded on outer side, narrowly cuneate on inner side. Inflorescence emerging before leaves; peduncle as long as petioles. Spathe purplish brown or purplish green, 11–13 cm in total; tube cylindrical, 4.5–6.5 × 1–2 cm, throat margins with horizontal auricle 1.5–2.5 cm wide; limb broadly ovate, 6–7 × 3.5–5 cm, base slightly constricted, apex shortly acuminate. Spadix unisexual; female zone conic, 1.5–2 × ca. 1 cm; ovary obovoid; ovules 4, basal; style short; stigma disciform; male zone 1.5–3 cm; synandria lax; anthers 2, shortly stipitate, purple, dehiscing by apical pore. Appendix erect, whitish green, cylindrical, 2.5–4.5 cm × 4.5–5 mm, base truncate with a stipe 5–7 mm, middle part slightly constricted, apex obtuse. Berries red. Seeds 4, ovoid. Fl. Apr–May, fr. Jun–Sep.

Mixed broad-leaved forests, mossy evergreen forests, grassy slopes; 2100–3300 m. SE Xizang (Mêdog), Yunnan [NE India (Assam, Manipur), NE Myanmar (W slope of Gaoligong Shan)].

39. *Arisaema nepenthoides* (Wallich) Martius ex Schott & Endlicher, Melet. Bot. 17. 1832.

猪笼南星 zhu long nan xing

Arum nepenthoides Wallich, Tent. Fl. Nepal. 26. 1824.

Tuber depressed globose, 6–7 cm in diam. Cataphylls, petioles, and peduncle reddish or greenish, densely covered with dark green, dark brown, or black irregular spots consisting of parallel striae. Cataphylls 3, to 25 cm, obtuse at apex. Petiole to 90 cm, basal 10–50 cm sheathing, forming pseudostem; leaf blade digitate; leaflets 5(–7), glaucous abaxially, dull green adaxially, central leaflet with petiolule 2–3 cm, lateral 2 leaflets sessile; central leaflet oblanceolate, 16–20 × 4–5 cm; outermost leaflets 12–14 × 3–4 cm, extremely oblique, narrowly cuneate at inner base, distinctly auriculate semiovate at outer side. Peduncle emerging from pseudostem, shorter or longer than

petioles. Spathe tube yellowish with brownish or dark brown spots at both sides, cylindrical, 3–8 × 1.2–2.5 cm, throat broadly auriculate, auricles semiobicular, to 2 cm wide, outcurved; limb arching, yellowish with numerous black spots, triangular-ovate, 3–10 × 2–5 cm, apex acuminate. Spadix unisexual; female zone cylindrical, 2–2.5 cm × 8–12 mm; ovaries dense, green, obovoid; stigma yellowish; male zone ca. 1.5 cm; synandria lax; anthers 1–3, violet, shortly stipitate; thecae globose, dehiscing by apical pores. Appendix erect, whitish green, cylindrical, 6–8 cm × 4.5–5 mm, base truncate with stipe 5–7 mm, middle part slightly constricted, apex obtuse. Fl. May–Jun. $2n = 26, 26 + 1B$.

Tsuga or *Quercus* forests, forest banks and margins; 2700–3600 m. S Xizang, Yunnan [Bhutan, NE India (Darjeeling, Sikkim), N Myanmar, Nepal].

A Chinese record of *Arisaema ochraceum* Schott (Lacaita, J. Linn. Soc., Bot. 43: 483. 1916) is referable to *A. nepenthoides*.

40. *Arisaema meleagris* Buchet, Notul. Syst. (Paris) 2: 122. 1911.

褐斑南星 he ban nan xing

Arisaema meleagris var. *sinuatum* Buchet; *A. paichuanense* Z. Y. Zhu; *A. shimienense* H. Li.

Tuber subglobose or depressed globose, 1–2.5 cm in diam. Cataphylls 2.4–12 cm, membranous, apex obtuse. Leaf solitary, pedate; petiole green with brown spots, 10–23 cm, proximally forming pseudostem; leaflets 7–9(–12), lanceolate, 3 cm (outermost one) to 10 × 1–2.5 cm, base acute, margin entire, usually erose, apex acuminate; central 3 subequal, remote, sessile; rachis between leaflets 5–10 mm. Peduncle green with brown spots, shorter than petioles, 5–15 cm. Spathe purplish brown with numerous dark brown spots, 6–9 cm in total; tube cylindrical, 3–4 cm × 8–12 mm, throat auriculate and outcurved; limb suberect, dark purple at apex, ovate to elliptic, ca. 3.5 × 2 cm, apex acute or acuminate. Spadix unisexual; female zone ca. 7 × 4 mm; ovary yellow-green, obovoid; stigma subsessile, subglobose; male zone ca. 7 mm; synandria lax; anthers 2–4, sessile; thecae subglobose, dehiscing by lateral slits. Appendix erect, purple in basal and apical parts, whitish with purple spots at base, subcylindrical, 2.5–3.5 mm, base narrowed into stipe 5–10 mm, apex obtuse. Fl. May–Jun.

• Broad-leaved forests, bamboo thickets; 2000–3000 m. Chongqing (Chengkou), Sichuan, Yunnan (Dali, Zhenxiang).

This species is similar to *Arisaema auriculatum* in *A.* sect. *Tortuosa* in its small size, range of variation of leaf shape, and coloration of the spathe.

6. *Arisaema* sect. *Franchetiana* (Engler) H. Hara, Bull. Univ. Mus. Univ. Tokyo 2: 326. 1971.

象头花组 *xiang tou hua zu*

Arisaema [unranked] *Franchetiana* Engler, Pflanzenr. 73(IV. 23F): 148. 1920.

Tuber purple outside, globose, base of axillary buds swelling. Leaves 1 or 2; leaf blade 3-foliolate. Spadix unisexual; thecae opening by an apical pore or slit; appendix suberect or apex outwardly recurved, pyramidal or subcylindric, robust, base attenuate into a stipe.

Four species: SW China, N Myanmar; four species (three endemic) in China.

Putative intrasectional hybrids are frequently observed.

- 1a. Spathe unfolded before leaf blade, limb shorter than tube, erect or curved forward but not galeate.
 - 2a. Spathe basically white, tube thick 41. *A. candidissimum*
 - 2b. Spathe basically purple, tube slender 43. *A. lichiangense*
- 1b. Spathe unfolded after leaf blade, limb longer than tube, arched and pendulous.
 - 3a. Spathe arched and galeate, enclosing spadix appendix 42. *A. franchetianum*
 - 3b. Spathe arched but not galeate, spadix appendix seen from outside 44. *A. fargesii*

41. *Arisaema candidissimum* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 10: 8. 1917.

白苞南星 *bai bao nan xing*

Plants dioecious. Tuber depressed globose, 3–5 cm in diam. Cataphylls 3 or 4, pinkish brown, sparsely spotted with whitish dots, 5–24 × 4–5 cm, membranous, apex obtuse, convolute, encircling pseudostem. Leaf solitary; petiole entirely green, 15–35 cm, base forming pseudostem, ca. 1.2 cm in diam., smooth; leaf blade 3-foliolate, papery; leaflets sessile, ovate or nearly orbicular, apex rounded or acute; central leaflet 6–8 × 7–9 cm (at anthesis and much expanded later), base shortly cuneate; lateral leaflets slightly oblique, 5–6 × 4–8 cm. Inflorescence arising before leaves. Spathe pale green or white with green or purple longitudinal lines; tube cylindrical, 3–4 × ca. 2 cm, throat margins recurved; limb ovate to ovate-lanceolate, 5–6 × 3–4 cm, apex with a tail 2–3 cm. Spadix unisexual; female zone oblong, ca. 2 × 1 cm; ovary green, obovoid; stigma subsessile, rounded; male zone cylindrical, 1.6–2 cm × 3–4 mm; synandria consisting of 2 or 3 anthers; thecae yellow, subglobose, opening by apical pores. Appendix suberect or erect, white or pale green, funnel-shaped, subcylindric, 3–4.5 cm × 2–5 mm, naked, base attenuate, subsessile to stipitate, apex acute or obtuse.

• *Quercus* forests, valley thickets; 2200–3300 m. Sichuan, Xizang, Yunnan.

42. *Arisaema franchetianum* Engler, Bot. Jahrb. Syst. 1: 487. 1881.

象头花 *xiang tou hua*

Arisaema delavayi Buchet; *A. purpureogaleatum* Engler.

Plants dioecious. Tuber renewed seasonally, creamy red outside, depressed globose, 1–6 cm in diam., bearing many tubercles around. Cataphylls 2 or 3, pale brown with purplish spots, membranous. Leaf solitary; petiole creamy red or pale green, without spots, 20–50 cm, base forming pseudostem, 1–2 cm in diam.; leaf blade 3-foliolate; leaflets sessile or subsessile, subleathery; central leaflet ovate, broadly elliptic, or subovate, 7–23 × 6–22 cm, base shortly cuneate to rounded, apex abruptly

attenuate; lateral leaflets obliquely elliptic, 6–20 × 5–19 cm, base cuneate. Peduncle erect in flowering, recurved at fruiting, brown with white dots, shorter than petioles, 10–30 cm. Spathe dirty purple or dark purple with white or greenish white longitudinal lines; tube cylindrical, 4–6 × 1.2–2 cm, throat margins slightly recurved; limb galeate-recurved, 4.5–11 × 3–5 cm, apex long acuminate with a tubular tail 5–6 cm, whiplike, pendulous. Spadix unisexual; female zone cylindrical, 1.2–3.8 cm × 8–20 mm; ovaries dense, greenish purple, ca. 5 mm; ovules 2, basal, erect; stigma convex; male zone narrowly conic. Appendix recurved from middle, sometimes suberect, 1.5–4 cm × 2.5–6 mm, base attenuate into short stipe, 4–8 mm in diam., apex 1–2 mm in diam. Fl. May–Jul, fr. Sep–Oct.

Forests, thickets, grasslands; 900–3000 m. Guangxi, Guizhou, Hunan, Sichuan, Yunnan [N Myanmar].

43. *Arisaema lichiangense* W. W. Smith, Notes Roy. Bot. Gard. Edinburgh 8: 178. 1914.

丽江南星 *li jiang nan xing*

Plants dioecious. Tuber renewed seasonally, brown outside, yellowish white inside, subglobose, 3–4.5 cm in diam., usually with tubercles. Cataphylls 3, brown with purple dots, membranous, inner one 7–15 cm, purplish brown with whitish spots. Leaf solitary; petiole purplish brown with some whitish dots, 20–37 cm, basal 4–5 cm sheathing into pseudostem; leaf blade 3-foliolate; leaflets sessile, sometimes shortly petiolulate, green, broadly ovate or subrhombic, subleathery, base broadly cuneate or rounded, margin entire, apex acute or abruptly acuminate; central leaflet 6–15 × 6.5–13 cm; lateral leaflets smaller, 5.5–13 × 4.5–10 cm, base oblique. Peduncle purplish brown with tiny whitish dots, shorter than petioles, 13–24 cm. Spathe purple or purplish red, with whitish or greenish longitudinal lines, 7–10 cm in total; tube broadly cylindrical, ca. 2.5 × 1.3–1.5 cm, throat margins slightly recurved; limb erect or slightly recurved, ovate-lanceolate, 3.5–4 cm, apex long acuminate, with a connective whitish intramarginal line along distal part. Spadix unisexual; female zone subconic, ca. 10 × 6–7 mm; ovary green, obconic; ovules 3, basal, erect; stigma sessile, disciform; male zone cylindrical, 9–15 × 2–3 mm; synandria of 1 or 2 stamens; anthers sessile or distal ones subsessile; thecae

purple, globose, opening by an apical pore. Appendix whitish purple proximally, dark purple distally, 6–7 cm (including stipe), base swollen, 3–4 mm in diam., attenuate into stipe ca. 10 × 1 mm. Fl. Jun–Jul.

• *Pinus* forests, deciduous broad-leaved forests in valleys, secondary thickets; 2400–3200 m. SW Sichuan, NW Yunnan.

44. *Arisaema fargesii* Buchet, Notul. Syst. (Paris) 1: 371. 1911.

螃蟹七 pang xie qi

Arisaema bogneri P. C. Boyce & H. Li.

Plants dioecious. Tuber subglobose, 3–5 cm in diam., with a few tubercles. Cataphylls 3, brown, inner one ca. 15 cm. Leaf solitary; petiole 20–40 cm, base 6–7 mm in diam., proximal 1/4 sheathing into pseudostem; leaf blade 3-foliolate; leaflets sessile, membranous; central leaflet rhombic or ovate-oblong to ovate, 12–32 × 9–27 cm, base shortly cuneate or combined with

lateral leaflets, apex acute; lateral leaflets obliquely elliptic, outer side semiovate, 9–23 × 6–16 cm. Peduncle emerging from pseudostem, slender and shorter than petioles, 18–26 cm. Spathe purple with whitish longitudinal lines; tube subcylindric, 4–8 × 1.5–2 cm, throat margins recurved and auriculate; limb arching or suberect, narrowly triangular, 6–12 × 4–4.5 cm, apex long acuminate with a tail 1–4 cm. Spadix unisexual; female zone ca. 2 cm; ovary obovoid; stigma subsessile, papillose; male zone cylindric, 2.5–3 cm × 4–5 mm; synandria of 2–4 stamens; thecae ovoid, opening by an apical pore. Appendix robust, suberect or slightly recurved, narrowly conic, long acuminate toward apex, 4.5–9 cm, proximal part 7–15 mm in diam., base attenuate into a short stipe, apex obtuse, ca. 5 mm in diam. Fl. May–Jun.

• Forests, thickets, in rocks; 900–2000 m. Chongqing, S Gansu, W Hubei, Hunan, Sichuan, E Xizang, NW Yunnan (Gongshan).

7. *Arisaema* sect. *Tortuosa* (Engler) H. Hara, Bull. Univ. Mus. Univ. Tokyo 2: 344. 1971.

曲序组 qu xu zu

Arisaema [unranked] *Tortuosa* Engler, Pflanzenz. 73(IV. 23F): 185. 1920; *Flagellarisaema* Nakai.

Underground stems tuberous. Phyllotaxy quincuncial. Leaves 1 or 2(or 3); leaf blade 3-foliolate or pedate. Spathe limb erect or incurved, usually ovate. Spadix: thecae dehiscing by apical lunate slit or by pore; appendix elongate, sigmoid, tortuous, base gradually attenuate and sessile, without neuter flowers.

About 18 species: E Asia, North America; 12 species (seven endemic) in China.

- 1a. Spathe basically purplish.
 - 2a. Flowering in autumn; spathe throat not auriculate 55. *A. thunbergii*
 - 2b. Flowering in spring; spathe throat broadly auriculate.
 - 3a. Spathe limb basally narrowed, not united with oblong auricles, showing 3-lobed appearance 49. *A. auriculatum*
 - 3b. Spathe limb basally expanded and united with expanded part of spathe throat, showing single cordate appearance 56. *A. cordatum*
- 1b. Spathe basically green or white.
 - 4a. Spathe white.
 - 5a. Leaf blade 3-foliolate; mature spadix bisexual 53. *A. odoratum*
 - 5b. Leaf blade pedately 5–7(–9)-foliolate; mature spadix female 54. *A. mairei*
 - 4b. Spathe green.
 - 6a. Central leaflet much smaller than adjacent lateral leaflets 51. *A. heterophyllum*
 - 6b. Central leaflet ca. as large as or larger than adjacent lateral leaflets.
 - 7a. Spadix bisexual when mature 50. *A. tortuosum*
 - 7b. Spadix female when mature.
 - 8a. Leaf blade (1–)3–5-foliolate; leaflets linear to narrowly oblong; ovary fusiform 45. *A. saxatile*
 - 8b. Leaf blade 3- or 5- or more foliolate; leaflets lanceolate to oblong; ovary bottle-shaped.
 - 9a. Spadix appendix filiform, 8–16 cm, usually pendulous.
 - 10a. Leaf blade 3-foliolate; mature spadix bisexual 48. *A. prazeri*
 - 10b. Leaf blade 5–9-foliolate; mature spadix female 52. *A. aridum*
 - 9b. Spadix appendix narrowly attenuate, less than 7 cm, curved forward.
 - 11a. Leaf blade 3-foliolate 46. *A. yunnanense*
 - 11b. Leaf blade 5-foliolate 47. *A. quinquelobatum*

45. *Arisaema saxatile* Buchet, Notul. Syst. (Paris) 2: 124. 1911.

银南星 yin nan xing

Arisaema bathycoleum Handel-Mazzetti; *A. lineare* Buchet.

Plants dioecious. Tuber renewed seasonally, depressed globose, 1–2 cm in diam. Cataphylls 2, creamy green, mem-

branous, acute. Leaves 1 or 2; petiole green without spots, 9–25 cm, proximally forming pseudostem; leaf blade 3-foliolate or pedately 5-foliolate; leaflets sessile or subsessile, green, narrowly lanceolate or elliptic, papery, margin entire; terminal leaflet 4–12 × 0.5–2.5 cm. Peduncle emerging from pseudostem, green, usually longer than petioles, 15–28 cm. Spathe green or pale green; tube funnelform, 5–6 × 1–2 cm, throat mar-

gin obliquely truncate, slightly recurved; limb ovate-lanceolate, apex acute or acuminate. Spadix unisexual; female zone cylindrical, 2–2.5 × ca. 0.7 cm; ovary yellowish green, fusiform, style short; stigma capitate; male zone cylindrical, ca. 2.2 cm × 4 mm; male flower of 2 or 3 stamens; anthers violet, globose, 2-theccous, dehiscent by apical pore; appendix in male spadix sessile, recurved or twining, pale green, proximally narrowly cylindrical, distally filiform, to 20 cm, naked, base ca. 3 mm in diam.; appendix in female spadix recurved, usually purple, 4–5 cm, much shorter than appendix in male spadix. Berries red, 1–4-seeded. Fl. Jun, fr. Aug.

• *Pinus* forests, grassy slopes, alpine grasslands; 1600–3400 m. Sichuan, Yunnan.

46. *Arisaema yunnanense* Buchet, Notul. Syst. (Paris) 1: 367. 1911.

山珠南星 shan zhu nan xing

Arisaema talense Engler; *A. talense* var. *latisectum* Engler.

Plants dioecious. Tuber renewed seasonally, pale brown outside, white inside, depressed globose or globose, 0.5–4 cm in diam., with some offsets above; offsets sessile, globose. Cataphylls 2, green, sometimes purplish, 3–25 cm, papery, apex obtuse. Leaves 1 (or 2); petiole green, without spots, 40–70 cm, basal 2/3 sheathing into pseudostem, encircled by cataphylls; leaf blade green on both surfaces, 3-foliolate; central leaflet with petiolule 0–1.5 cm, blade elliptic, sometimes ovate, 10–19 × 5–12 cm, base cuneate or obtuse, apex acuminate; lateral leaflets sessile or shortly petiolulate, ovate to lanceolate, 9–15 × 5.5–9 cm, base obliquely cuneate. Peduncle emerging from pseudostem, green, without spots, longer (male) or shorter than petioles, 20–75 cm. Spathe green, with longitudinal white lines; tube 2–2.5 × 1–1.4 cm, throat margin obliquely truncate, not auriculate; limb arching from base, ovate, ca. 5 × 3.5 cm, apex acuminate. Spadix unisexual; female zone conic, ca. 1.5 cm; ovary green, obovoid; ovules 3, basal; style ca. 0.5 mm; stigma depressed globose; male zone pyramidal, 1.5–2 cm, base 3–5 mm in diam.; synandria of 2 or 3 stamens; thecae violet, globose, opening by an apical pore. Appendix recurved outward or downward, pale green, cylindrical, narrowed distally, 3.5–6 cm, base 2–2.5 mm in diam., naked. Berries red, subcylindrical. Seeds 2 or 3, ovoid-globose. Fl. May–Jul, mature fr. Aug–Sep. $2n = 48$.

Pinus and *Pinus-Quercus* forests, grassy slopes, roadsides, thickets; 700–3200 m. Guizhou, Sichuan, Yunnan [N Myanmar].

47. *Arisaema quinquelobatum* H. Li & J. Murata, **sp. nov.**

五叶山珠南星 wu ye shan zhu nan xing

Type: China. Yunnan: Lijiang, Hutiaoxia (虎跳峡, “Tiger Leaping Gorge”), 1860 m, 20 Jun 1995, J. Murata, X. Cheng, H. Takahashi, J. Ohno & H. Murata s.n. (holotype, TI).

Haec species quoad inflorescentiam eadem ac Arisaema yunnanense Buchet est, sed ab eo foliis 5-foliolatis et chromosomatum numero diploideo $2n = 24$ differt.

Plants dioecious, 10–40 cm tall. Tuber depressed globose, 1–5 cm in diam., with some tubercles around. Leaves 1 or 2;

petiole 10–45 cm, proximal 6–28 cm forming pseudostem, usually greenish, unspotted; leaf blade palmately 5-foliolate; leaflets green, narrowly elliptic to elliptic, 4–13.5 × 1–7 cm, base cuneate, margin entire, apex acuminate. Inflorescence unfolding after leaf blade; peduncle longer than petioles. Spathe green, with longitudinal white lines; tube 2–2.5 × 1–1.4 cm, throat margin obliquely truncate, not auriculate; limb arching from base, ovate, ca. 5 × 3.5 cm, apex acuminate. Spadix unisexual; female zone conic, ca. 1.5 cm; ovary green, bottle-shaped; ovules 3, basal; style ca. 0.5 mm; stigma depressed globose; male zone pale green, pyramidal, 1.5–2 cm, base 3–5 mm in diam.; synandria of 2 or 3 stamens; thecae violet or cream-colored, globose, opening by apical pore; pollen verrucate between conic spines. Appendix recurved outward or downward, green, narrowly conic, 3.5–6 cm, base 2–2.5 mm in diam. Berries red, subcylindrical. Seeds 2 or 3, ovoid-globose. Fl. May–Jul, mature fr. Aug–Sep. $2n = 24^*$.

• *Pinus-Quercus* forests, grassy slopes, roadsides, thickets; 1800–2100 m. NC and NW Yunnan (Lijiang, Wuding, Yuanmou, Zhongdian).

This species is considered to be the diploid ancestor of *Arisaema yunnanense*, which is tetraploid, with $2n = 48$ chromosomes. It also differs from *A. yunnanense* in having always quinate leaves.

48. *Arisaema prazeri* J. D. Hooker, Fl. Brit. India 6: 501. 1893.

河谷南星 he gu nan xing

Arisaema prazeri var. *variegatum* Engler; *A. prazeri* var. *viride* Engler.

Plants monoecious and male. Tuber renewed seasonally, subglobose, 1–3 cm in diam. Cataphylls 2 or 3, grayish green, with dark purple striae and spots, 10–28 cm. Leaves 1 or 2; petiole grayish with purple striae and spots, 25–70 cm, proximal 1/2–3/4 sheathing into pseudostem; leaf blade green, membranous, 3-foliolate; leaflets subsessile; central leaflet ovate-lanceolate, 22–25 × 9–10 cm, base cuneate, apex acuminate; lateral leaflets obliquely ovate, 17–18 × 5–10 cm. Peduncle shorter than petioles. Spathe green with white longitudinal stripes on back; tube cylindrical, 4–5 × ca. 1 cm, throat margin obliquely truncate, not auriculate; limb erect, lanceolate, 6–10 × 1.5–2.5 cm, apex acuminate, with short tail. Spadix bisexual or male. Male spadix: male zone ca. 3 cm, base 4–5 mm in diam.; synandria of 2 stamens; thecae purple, ovoid, opening by an apical longitudinal slit. Bisexual spadix: female zone proximal, cylindrical, 2.3–3 cm × 5–6 mm; ovary green, obovoid; ovules 3; stigma subsessile; male zone distal, 1–3.5 cm × ca. 4 mm; synandria as in male spadix. Appendix pendulous, usually dark purple, filiform, to 80 cm. Fl. Jun.

Tropical thickets, evergreen forests, in limestone areas; 100–1500 m. Yunnan [Myanmar, Thailand].

49. *Arisaema auriculatum* Buchet, Notul. Syst. (Paris) 2: 123. 1911.

长耳南星 chang er nan xing

Arisaema auriculatum var. *hungyaense* (H. Li) Gusman & L. Gusman; *A. hungyaense* H. Li; *A. omeiense* P. C. Kao.

Plants dioecious. Tuber globose, small, 1–2 cm in diam., shortly stoloniferous. Cataphylls 3, brownish purple with tiny

black striae, to 18 cm, apex obtuse. Leaf solitary; petiole greenish with some grayish spots, 20–30 cm, proximal 1/3 sheathing into pseudostem; leaf blade pedate; leaflets (7–)9–15, sessile, oblanceolate or oblong, base attenuate, margin entire or erose, apex acuminate; central leaflet usually larger than or equaling lateral ones; lateral leaflets 10–12 × 2.5–3.5 cm, outermost ones 1.5–4 × 0.3–1.5 cm. Inflorescence emerging before leaf; peduncle grayish green with whitish spots, shorter than petioles, 12–25 cm. Spathe 7–12 cm in total; tube green or pale brown, densely flushed with dark purple or dark brown spots, narrowly cylindrical, 4–6 cm × 7–15 mm; limb deeply 3-lobed; lobes green or purple, often flushed with dark purple or black spots on back; lateral lobes oblong or oblanceolate, 20–25 × ca. 7 mm, spreading into auricles at tube throat; central lobe ovate to elliptic, 2–3 × 1.4–1.8 cm, base constricted, apex acuminate, incurved. Spadix unisexual; female zone conic, 12–15 × 6–7 mm; ovaries dense, green, ovoid; stigma subsessile; male zone 1.5–2 cm, slender; synandria lax; anthers sessile, violet, globose; thecae dehiscing from apical pore. Appendix sessile, ascending, sigmoid, dark violet, flagelliform to filiform, 7–12 cm, 1–2 mm in diam. in basal part. Infructescence subglobose. Berries red. Fl. Apr–Jun.

• Mixed evergreen forests, bamboo forests, secondary forests, wet places in valleys; 1400–3100 m. NW Hunan, Sichuan, Yunnan.

50. *Arisaema tortuosum* (Wallich) Schott in Schott & Endlicher, Melet. Bot. 17. 1832.

曲序南星 qu xu nan xing

Arum tortuosum Wallich, Pl. Asiat. Rar. 2: 10. 1831; *Arisaema helleborifolium* Schott; *A. tortuosum* var. *helleborifolium* (Schott) Engler.

Plants monoecious or male. Tuber depressed globose, 2–6 cm in diam. Cataphylls and petiole variously blotched with pinkish, gray dark brownish, or purplish. Leaves (1 or) 2 or 3; petiole 5–30(–180) cm, proximal 2/3–5/6 sheathing into pseudostem; leaf blade pedate; leaflets 5–17, shortly petiolulate or sessile, greenish abaxially, dull green adaxially, variously shaped, rhombic-ovate or oblong to lanceolate, base cuneate, apex abruptly acuminate; central leaflet 5–30 × 1–7 cm; lateral leaflets gradually smaller to outermost. Peduncle emerging from pseudostem, 30–45(–200) cm, usually exceeding leaves. Spathe light green, usually glaucous green or dark purple; tube cylindrical or funnelliform, 2.5–7 × 1.5–3 cm, throat margins obliquely truncate, not recurved; limb slightly incurved, ovate or oblong, 4–12 × 2–5 cm, apex shortly acuminate. Spadix bisexual or male. Bisexual spadix: proximal part female, 2–4 cm; ovary broadly ovoid; style short; stigma disciform; male zone 2–3 cm. Male spadix: male zone ca. 4 cm; synandria widely spaced, stalked (1–3 mm), cream to orange, consisting of 2 or 3(–5) anthers; thecae dehiscing by lateral slits. Appendix ascending, sigmoid, green, glaucous, or dark purple, gradually tapering from sessile base to very acute apex, 7–23 mm, 3–12 mm in diam. at base, smooth. Infructescence upright, subglobose. Berries red. Seeds 3–5. Fl. Jun, fr. Aug.

Rocky slopes, path sides, streamsides, especially in disturbed areas; 1300–2900 m. Sichuan, Xizang, Yunnan [Bhutan, India, Nepal].

51. *Arisaema heterophyllum* Blume, Rumphia 1: 110. 1835.

天南星 tian nan xing

Arisaema ambiguum Engler; *A. brachyspathum* Hayata; *A. kwangtungense* Merrill; *A. limprichtii* K. Krause; *A. manshuricum* Nakai; *A. multisectum* Engler; *A. stenospathum* Handel-Mazzetti; *A. takeoi* Hayata; *A. thunbergii* Blume var. *heterophyllum* (Blume) Engler; *Heteroarisaema heterophyllum* (Blume) Nakai; *H. manshuricum* (Nakai) Nakai.

Plants monoecious and male. Tuber depressed globose, 2–6 cm in diam. Cataphylls 4 or 5, membranous. Leaf usually solitary; petiole glaucous, 30–60 cm, proximal 3/4 sheathing into pseudostem; leaf blade pedate; leaflets 11–19(–21), shortly petiolulate or sessile, pale greenish abaxially, dull green adaxially, variously shaped, oblanceolate, oblong, or linear-oblong, base cuneate, apex acuminate; central leaflet 3–15 × 0.7–5.8 cm, often much shorter than lateral leaflets; first outer leaflets 7.7–24.2(–31) × (0.7–)2–6.5 cm, gradually smaller to outermost leaflets, distance between leaflets 0.5–5 cm. Peduncle usually longer than petioles, 50–80 cm. Spathe tube glaucous outside, whitish green inside, cylindrical, 3.2–8 × 1–2.5 cm, throat slightly recurved; limb strongly incurved, pale greenish to pale yellow abaxially, deep green adaxially, ovate, 2.5–8 × 4–9 cm. Spadix bisexual or male. Bisexual spadix: female zone proximal, 1–2.2 cm; ovary globose; style distinct; stigma punctate; ovules 3 or 4; male zone distal, 1.5–3.2 cm; synandria lax; occasionally with echinate neuter flowers. Male spadix: male zone 3–5 cm × 3–5 mm; synandria stalked, consisting of 2 or 3 anthers, each with 2 thecae dehiscing by apical slits. Appendix ascending, sigmoid, pale whitish, gradually tapering from sessile base to very acute apex, ca. 20 cm, 5–11 mm in diam. at base. Berries yellowish red or red, cylindrical, ca. 5 mm. Seed usually 1, clavate. Fl. Apr–May, fr. Jul–Sep.

Forests, thickets, grasslands; below 2700 m. Almost throughout China, except Xizang [Japan, Korea].

52. *Arisaema aridum* H. Li, Acta Phytotax. Sin. 15(2): 107. 1977.

旱生南星 han sheng nan xing

Arisaema yunnanense Buchet var. *aridum* (H. Li) Gusman & L. Gusman.

Plants dioecious. Tuber nearly globose, 1–3 cm in diam. Cataphylls 2 or 3, to 17 cm. Leaves 1 or 2; petiole green, unmarked, 16–50 cm, proximal 1/4–1/2 sheathing into pseudostem; leaf blade pedate; leaflets 5–9, pale greenish abaxially, green adaxially, linear to narrowly lanceolate, sessile; central leaflet 15–20 × 1–1.5 cm; lateral leaflets gradually smaller and shorter toward outermost, outermost ones 2–3 cm × 1–5 mm. Peduncle green, 10–50 cm, shorter or longer than petioles. Spathe yellowish green, 5–15 cm in total; tube narrowly cylindrical, 2.2–6 cm × 4–20 mm, throat obliquely truncate, not recurved; limb suberect, ovate to narrowly ovate, 4–7 × 1–2 cm, apex acuminate. Spadix unisexual; female zone 1.2–2.5 cm; ovary whitish green, obovoid; ovules 3; stigma with short stipe;

male zone cylindrical, 1.8–3 cm, densely flowered; synandria sessile, consisting of 2–4 anthers, each with 2 thecae dehiscing by apical pores. Appendix sessile, sigmoid or simply curved forward, yellowish green to violet, 4–17 cm × 2.5–4 mm. Fl. Apr–Jun.

• Grassy slopes, valley thickets along Jinsha Jiang; 1800–2800 m. NW Yunnan.

53. *Arisaema odoratum* J. Murata & S. K. Wu, J. Jap. Bot. 69: 153. 1994.

香南星 xiang nan xing

Plants monoecious or male. Tuber subglobose. Cataphylls 2 or 3, membranous. Leaves 1 or 2; petiole green to purplish, unmarked, 13–22 cm, basal 4–7 cm sheathing into pseudostem; leaf blade 3-foliolate; leaflets sessile, ovate to oblong, base cuneate, margin entire, apex acuminate. Inflorescence fragrant; peduncle green, nearly as long as petiole. Spathe white, 7–8 cm; tube funnelliform, gradually opening to blade; limb ovate or oblong to narrowly oblong, 5.5–6 × 1.7–4 cm, apex acute to acuminate, bending forward. Spadix male or bisexual; female flowers green or cream-colored, congested in basal part of spadix; male flowers white. Appendix extremely fragrant, sessile, dull green, becoming orange, whip-shaped, 5–9 cm, bent down from throat of spathe. $2n = 22^*$.

• Humid grassy slopes at forest margins; ca. 1400 m. NC Yunnan (Dayao).

54. *Arisaema mairei* H. Léveillé, Cat. Pl. Yun-Nan, 10. 1915.

乌蒙南星 wu meng nan xing

Arisaema maireanum Engler; *A. wumengense* H. Li.

Plants dioecious. Tuber renewed seasonally, dark brown outside, whitish inside, depressed globose, ca. 3 × 4–5 cm. Cataphylls 2 or 3, greenish with pink and whitish blotches or whitish with brownish apex, 17–18 × ca. 2.7 cm, papery, apex obtuse. Leaves 2; petiole green but sheathing part often with dark brown short stripes, 30–40 cm, proximal 25–30 cm sheathing into pseudostem, encircled in cataphylls; leaf blade pedate, 5–7-foliolate or palmate-digitate; leaflets sessile, base connected and closed, light green abaxially, dull green adaxially; central leaflet subsessile, elliptic to broadly oblong, base acute, apex acute or acuminate; lateral leaflets as central one but somewhat smaller, outermost ones ca. 8 × 3 cm. Peduncle green, unmarked or with whitish dots, usually shorter than petioles, 33–36 cm. Spathe emerging from pseudostem; tube greenish outside, white inside, unmarked, cylindrical, ca. 4 × 1.4–2 cm, smooth, throat slightly recurved, not auriculate; limb white, unmarked, narrowly ovate, 9–11 × 3.7–5.5 cm, apex acute or acuminate, slightly incurved. Spadix unisexual; female zone greenish, conic, ca. 1.5 × 1 cm; ovary obovoid; style pyramidal, short; stigma small, papillose; male zone cylindrical, 1.5–2 cm × ca. 3 mm; synandria dense, subsessile; anthers 2 or 3, yellowish, thecae globose, dehiscing by apical pores. Appendix sessile, dark green throughout or whitish in basal 2–3 cm, green in middle ca. 1.5 cm, dull brownish purple distally, cylindrical,

narrowed distally, ca. 14 cm in total, 3–5 mm in diam., part exerted from spathe tube recurved and pendulous, apex filiform. Fl. Jun–Jul.

• Thickets, grassy slopes, riversides; 1900–2000 m. S Sichuan (Huidong), Yunnan (Huize, Luquan).

55. *Arisaema thunbergii* Blume subsp. **autumnale** J. C. Wang, J. Murata & H. Ohashi, Bot. Bull. Acad. Sin. 37: 75. 1996.

东台南星 dong tai nan xing

Plants dioecious. Tuber depressed globose, 3–6 cm in diam. Cataphylls purplish to brownish, membranous, apex mucronate. Leaf solitary; petiole terete, 25–50 cm, proximally forming pseudostem; leaf blade pedate; leaflets 11–15, oblanceolate to elliptic, base cuneate, apex acuminate; central leaflet 10–28 × 2–7.5 cm. Peduncle usually shorter than petioles, 15–35 cm. Spathe white or pale yellow with dark to bronze-purple or reddish purple stripes; tube white or pale yellow with longitudinal purple stripes outside and dark purple stripes inside, cylindrical, auriculate at throat, 5–7 × 2–2.5 cm; limb triangular-ovate, 7–10 × 4–5 cm, apex acute to acuminate. Spadix unisexual; female zone cylindrical, 1.5–2 cm; male zone 3–4 cm; synandria stipitate, consisting of 4 anthers, thecae dehiscing from lateral slits. Appendix long exerted from spathe, filiform, 40–60 cm, proximally narrowly cylindrical, smooth, gradually narrowed at both ends, distally bent downward and pendulous. Fl. May–Jul.

• Forests, thickets; near sea level to 1100 m. E and N Taiwan.

A Chinese record of *Arisaema thunbergii* subsp. *urashima* (H. Hara) H. Ohashi & J. Murata from Taiwan (J. C. Wang, Taiwania 37: 54–57. 1992) is referable to *A. thunbergii* subsp. *autumnale*.

56. *Arisaema cordatum* N. E. Brown, J. Linn. Soc., Bot. 36: 177. 1903.

心檐南星 xin yan nan xing

Arisaema brevistipitatum Merrill.

Plants dioecious. Tuber globose, 1–1.5 cm in diam. Cataphylls 2 or 3, ca. 5 cm, membranous. Leaf solitary; petiole 10–30 cm, slender, base forming short pseudostem; leaf blade pedate; leaflets (5–)7, sessile, light greenish, oblong, 7–10 × 1.5–3 cm, membranous, base broadly cuneate, apex acute to abruptly acuminate. Inflorescence emerging before leaf unfolds; peduncle 3–10 cm, slender. Spathe basically purplish; tube cream-colored, outside stained with purplish, inside dark purple, funnelliform, 3–3.5 × 1–1.4 cm, throat margins broadly expanded to limb; limb broadly cordate, ca. 6 × 4 cm, apex acuminate and involute, surrounding spadix appendix. Spadix unisexual; female zone ca. 1 cm; ovary fusiform; male zone ca. 1 cm × 3 mm, shortly stipitate; synandria consisting of 2 anthers, thecae globose, dehiscing by apical pores. Appendix sessile, 15–27 cm, proximally fusiform, to 4 mm in diam., distally upright, exerted through involute apex of spathe limb, filiform. Fl. Apr.

• Guangdong, Guangxi.

8. Arisaema sect. Dochafa (Schott) H. Hara, Bull. Univ. Mus. Univ. Tokyo 2: 344. 1971.

黄檐组 huang yan zu

Dochafa Schott, Syn. Aroid. 24. 1856.

Tuber subglobose. Leaves 1 or 2; leaf blade pedate. Spathe small; tube ovoid; limb incurved, ovate. Spadix bisexual and male. Appendix ellipsoid, small. Inflorescence nodding.

One species: arid and cool areas at high elevations (2200–4000 m) in Africa, SW Asia (Arabian Peninsula), and the Sino-Himalayan region.

57. Arisaema flavum (Forsskål) Schott subsp. **tibeticum** J. Murata, J. Jap. Bot. 65(3): 71. 1990.

黄苞南星 huang bao nan xing

Arisaema daochengense P. C. Kao; *A. flavum* var. *tibeticum* (J. Murata) Gusman & L. Gusman.

Plants monoecious and male. Tuber subglobose, 1.5–2.5 cm in diam. Cataphylls 3–5, green, 8–25 cm. Leaves 1 or 2; petiole green to purplish, unmarked, 11–35 cm, sheathing for ca. 4/5 length forming pseudostem; leaf blade pedate; leaflets 5–11(–15), sessile, glaucous abaxially, green adaxially, oblong-lanceolate or obovate-lanceolate, base cuneate, apex acuminate; central leaflet largest, 9–12 × 3–5 cm; outer (lateral leaflets) gradually decreasing to outermost (1.5–4 × 1–1.2 cm). Peduncle emerging from pseudostem, green, 15–30 cm. Spathe smallest in genus, 2.5–6 cm in total; tube yellowish green, ovoid to globose, 1–1.5 × 1–1.4 cm, constricted at dark purple throat with nectar inside; limb yellow or green, inside dark purple at least at basal part, oblong-ovate, 1.5–4.5 × 0.8–2 cm,

apex acuminate, slightly incurved. Spadix bisexual or male, very short, 1–2 cm in total; female zone proximal, 3–7 × 5–7 mm; ovaries congested, greenish, obovoid; stigma sessile; male zone distal, light yellow, cylindrical, 3–7 × 2–3 mm; synandria congested, usually consisting of 2 anthers; thecae sessile, dehiscent by apical pore. Appendix yellowish or yellow green, ellipsoid, 2–5 × ca. 1.5 mm, very short, rugose when dry. Mature inflorescence nodding, subglobose, ca. 4 cm in diam. Berries obovoid, 3–4 × 3–5 mm. Seeds 3, pale yellowish, 2–2.5 mm. Fl. May–Jun.

Rocky slopes, thickets, croplands, field sides; 2200–4400 m. W Sichuan, SE Xizang, NW Yunnan [Bhutan, NE India].

According to chromosome number and plant size, Murata (J. Jap. Bot. 65(3): 65–73. 1990) divided *Arisaema flavum* into three subspecies: subsp. *abbreviatum* (Schott) J. Murata ($2n = 56$, tetraploid) including C and W Himalayan (Afghanistan to Nepal) and Arabian (Oman) plants; subsp. *flavum* ($2n = 56$, tetraploid) including African and Arabian plants; and subsp. *tibeticum* ($2n = 28$, diploid) including plants from Bhutan, China, and NE India.

9. Arisaema sect. Decipentia (Engler) H. Li in C. Y. Wu & H. Li, Fl. Reipubl. Popularis Sin. 13(2): 166. 1979.

雪里见组 xue li jian zu

Arisaema [unranked] *Decipentia* Engler, Pflanzenr. 73(IV. 23F): 195. 1920.

Underground stem a cylindrical rhizome, branched. Leaves 2, pedate. Spathe auriculate at throat, long caudate at apex. Appendix stipitate, erect with truncate base, obtuse or narrowed at apex.

One species: SW China, NE India, Myanmar, Vietnam.

58. Arisaema decipiens Schott, Oesterr. Bot. Wochenbl. 7: 373. 1857.

雪里见 xue li jian

Arisaema guixiense S. Y. Liu; *A. rhizomatum* C. E. C. Fischer; *A. rhizomatum* var. *nudum* C. E. C. Fischer; *A. rhizomatum* var. *viride* C. E. C. Fischer.

Rhizome cylindrical, to 9 × 2.5 cm. Cataphylls 3 or 4, yellowish purple with dark brown or whitish spots, 2–15 cm. Leaves 2; petiole greenish or reddish with dark green or dark purple spots, 15–90 cm; leaf blade pedate, palmate; leaflets (3–)5–7, petiolulate, greenish and sometimes with purple spots abaxially, dark green adaxially, narrowly oblong to elliptic, base cuneate, apex acuminate; central leaflet with petiolule devel-

oped to 5 cm, blade 8–18 × 3–8 cm; outermost leaflets 5–6 × 1.5–2 cm. Spathe green, usually with dark purple dots; tube cylindrical, white toward base, 4–6 × 1.5–2 cm, throat obliquely truncate, slightly outcurved; limb deep green, lanceolate to ovate-lanceolate, 4–9.5 × 3–3.5 cm, apex acuminate and caudate, tail 6–10 cm, curved forward. Spadix unisexual; female zone conic, 1.5–2 cm, 7–13 mm in diam. at base; ovary green, bottle-shaped; stigma sessile, purple; male zone 2–2.5 cm; synandria lax; anthers 2 or 3; thecae dehiscing by lateral slits. Appendix erect, green, usually with dark purple dots, terete, 5–7 × ca. 0.7 cm, rugose or echinate, base stipitate, apex rounded. Berries red. Seeds 1–3, obovoid, ca. 5 mm. Fl. Sep–Jan.

Evergreen forests, mossy forests, thickets, bamboo thickets, on and between rocks; 600–1600 m. Guangxi, Guizhou, Hunan, Sichuan, SE Xizang, Yunnan [NE India, Myanmar, Vietnam].

10. Arisaema sect. Pistillata (Engler) Nakai, Bot. Mag. (Tokyo) 43: 525. 1929.

花南星组 hua nan xing zu

Arisaema [unranked] *Pistillata* Engler, Pflanzenr. 73(IV. 23F): 151. 1920.

Plants with tubers, paradioecious. Phyllotaxy spiro-distichous. Leaves 1 or 2; leaf blade 3-foliolate or pedately multifoliolate. Spadix unisexual; thecae dehiscing by an apical elliptic or oblong slit; appendix erect, slightly exerted from spathe tube, cylindrical,

base nearly truncate and stipitate, apex obtuse.

About 57 species: E Asia, North America; six species (three endemic) in China.

- 1a. Spathe blade cucullate-galeate 61. *A. ringens*
- 1b. Spathe blade flat, not cucullate-galeate.
 - 2a. Underground stem obovoid, stoloniferous 59. *A. xuanweiense*
 - 2b. Underground stem a subglobose tuber, not stoloniferous.
 - 3a. Tuber bluish green outside; leaf blade always 3-foliolate, glaucous abaxially, always entire; infructescence nodding 60. *A. lobatum*
 - 3b. Tuber whitish outside; leaf blade pedate with 5 or more leaflets, or rarely 3-foliolate, usually not glaucous abaxially, occasionally serrate or dentate; infructescence upright.
 - 4a. Pseudostem much shorter than petioles (except sheath part) 62. *A. amurense*
 - 4b. Pseudostem longer than petioles.
 - 5a. Leaflets usually 5–7; spathe tube funnellform, throat oblique, scarcely recurved 63. *A. bockii*
 - 5b. Leaflets usually 7 or more; spathe tube cylindric, throat horizontal, narrowly recurved 64. *A. peninsulae*

59. *Arisaema xuanweiense* H. Li, Kew Bull. 55: 419. 2000.

宣威南星 xuan wei nan xing

Plants dioecious. Rhizome vertical, 3–5 cm × 7–10 mm, producing stolons. Cataphylls 2 or 3, whitish green, 3–8 cm, membranous, acuminate at apex. Leaves 1 or 2; petiole greenish, 15–18 cm, proximally forming pseudostem; leaf blade 3-foliolate, pale green abaxially, green adaxially; leaflets sessile, serrate; central leaflet suborbicular, 8.8–11 × 6–8.5 cm, base obtuse, apex acute; lateral veins 5 per side, parallel, collective vein 2–3 mm from margin; lateral leaflets obliquely ovate, 8.5–10.8 × 5.8–8.2 cm, base rounded, apex acuminate. Peduncle greenish, terete, to 18 cm. Spathe nearly erect, ca. 9.5 cm; tube green, cylindric, ca. 4 × 1.5 cm, basal ca. 1 cm white, throat obliquely truncate, straight or slightly recurved; limb green with whitish stripes, abaxially with a large (ca. 1 cm) oblong white area, incurved, ovate, ca. 5.5 × 4 cm, apex acuminate with a tail ca. 8 cm. Spadix unisexual; female zone subconic, ca. 15 mm; flowers dense; ovary green; stigma sessile; appendix erect, whitish green, cylindric, ca. 35 × 3.5 mm in total, base subtruncate, ca. 5 mm in diam., stipitate; stipe ca. 3 × 2 mm. Male spadix unknown. Fl. Apr.

• About 2200 m. NE Yunnan (Xuanwei).

60. *Arisaema lobatum* Engler, Bot. Jahrb. Syst. 1: 487. 1881.

花南星 hua nan xing

Arisaema lobatum var. *latisectum* Engler; *A. lobatum* var. *rosthornianum* Engler; *A. onoticum* Buchet; *A. pictum* N. E. Brown ex Hemsley.

Plants dioecious. Tuber bluish green outside, globose, 2–4 cm in diam. Cataphylls 3, brown, usually with reddish spots, 15–20 cm, apex acute or obtuse. Leaves 1 or 2; petiole greenish or olive-green with purple spots, 17–35 cm, proximal 1/3–1/2 sheathing into pseudostem; leaf blade 3-foliolate, pale greenish with pink raised veins abaxially, green with pale green veins adaxially; central leaflet with petiolule 1.5–5 cm, blade oblong or elliptic, 8–22 × 4–10 cm, base narrowly attenuate or obtuse, apex acuminate; lateral leaflets sessile, oblique, oblong, 3–23 × 2–8 cm, outer base auriculate and rounded. Inflorescence unfolded before leaves; peduncle nearly as long as petiole, but usually shorter. Spathe pale purplish or pale olive-green with purple stripes; tube funnellform, 4–7 × 1–2.5 cm, throat not

auriculate, obliquely truncate, narrowly recurved or not; limb incurved or nearly erect, usually with whitish stripes inside, broadly lanceolate or ovate, 4–7 × 2.5–3 cm, constricted to base, apex acuminate, usually with a tail 3–5 cm. Spadix unisexual; female zone cylindric or subglobose, 1–2 cm; ovary green, obovoid; style short; stigma disciform; male zone cylindric, 1.5–2.5 cm; synandria lax; anthers 2 or 3, stipitate; thecae violet, ovoid, dehiscing by apical pore. Appendix erect, pale green to whitish green, cylindric, middle slightly constricted, base truncate and stipitate, apex obtuse; stipe 6–8 mm. Infructescence nodding. Fl. Apr–Jul. $2n = 28^*$, 56^* , 84^* .

• Forests, thickets, grassy slopes; 600–3300 m. Anhui, Chongqing, Gansu, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shanxi, Sichuan, Yunnan, Zhejiang.

61. *Arisaema ringens* (Thunberg) Schott in Schott & Endlicher, Melet. Bot. 17. 1832.

普陀南星 pu tuo nan xing

Arum ringens Thunberg, Trans. Linn. Soc. London 2: 337. 1794; *Arisaema arisanense* Hayata; *A. taihokense* Hosokawa.

Plants dioecious. Tuber depressed globose, 2–5 cm in diam. Cataphylls greenish to purplish. Leaves 2; petiole greenish and unmarked, 15–35 cm, proximal 1/3 sheathing into pseudostem; leaf blade 3-foliolate; leaflets sessile, glaucous abaxially, green adaxially, margin entire, apex long acuminate with a tail ca. 2 cm; central leaflet ovate-lanceolate to rhombic-elliptic, 16–22 × more than 10 cm, base cuneate; lateral leaflets obliquely ovate, 15–18 × 10–13 cm, apex filiform-caudate. Peduncle greenish, unmarked, shorter than petioles, to 25 cm. Spathe yellowish green to green; tube yellowish green to green outside, purplish red with white or pale yellowish green striations inside, cylindric, gradually opening to an auriculate throat, 3–3.5 × 1–2 cm; limb concave and incurved, saccate, apex caudate. Spadix unisexual; female zone conic, ca. 1.8 × 1.2 cm; ovary greenish, obovoid; stigma subsessile, pilose; male zone sessile, cylindric, ca. 1.5 cm × 8 mm; synandria subsessile; anthers 2 or 3; thecae globose, dehiscing by an apical pore. Appendix erect, white, narrowly conic, 2–6 cm × 5–10 mm, base truncate and stipitate, apex obtuse; stipe 3–10 mm. Infructescence erect. Fl. Apr. $2n = 28$.

Low elevations. Jiangsu, Taiwan, Zhejiang [Japan, Korea].

62. *Arisaema amurense* Maximowicz, Mém. Acad. Imp. Sci. St.-Petersbourg Divers Savans 9 [Prim. Fl. Amur.]: 264. 1859.

东北南星 dong bei nan xing

Arisaema amurense var. *robustum* Engler; *A. amurense* var. *violaceum* Engler.

Tuber depressed globose, 6–7 cm in diam. Leaves 2(or 3); petiole (5–)7–30 cm, proximal 3/4 sheathing and forming pseudostem; leaf blade 3-foliolate or pedately 5-foliolate; rachis between leaflets 0–6 cm; leaflets sometimes covered with fine whitish marks, obovate to narrowly oblong, 7–11 × 4–7 cm, base cuneate, margin entire or serrate, occasionally denticulate, apex acute; central leaflet with petiolule 5–25 mm; lateral leaflets remote from central one for 1–30 mm; outermost leaflets sessile, 9–15 cm, oblique, cuneate at base on inner side, auriculate or rounded on outer side. Peduncle shorter than petioles. Spathe greenish to dark purple, usually with pale purplish stripes; tube funnellform to cylindrical, ca. 5 cm, ca. 2 cm in diam. at throat, throat obliquely truncate, not auriculate; limb ovate-lanceolate to oblong, 3–4 cm, apex acuminate. Spadix unisexual; female zone subconic, ca. 2 cm, ca. 1 cm in diam. at base; ovary obovoid; ovules 4; stigma spherical; male zone cylindrical, ca. 2 cm × 2–3 mm; synandria lax, nearly sessile; anthers 2 or 3; thecae globose, dehiscent by apical pores. Appendix stipitate, erect, cylindrical and robust, 3–5.5 cm × 4–5(–7) mm, base truncate, apex obtuse. Berries red, narrowly conic. Seeds 4, red, ovoid, smooth. Fl. May, mature fr. Sep. $2n = 28, 56$.

Deciduous forests, mixed forests, woods, by streams; below 100–200 m. Hebei, Heilongjiang, Henan, Jilin, Liaoning, Nei Mongol, Ningxia, Shandong, Shanxi [Korea, Russia (SE Siberia)].

63. *Arisaema bockii* Engler, Bot. Jahrb. Syst. 29: 235. 1900.

灯台莲 deng tai lian

Arisaema engleri Pampanini; *A. sazensoo* (Blume) Makino var. *henryanum* Engler; *A. sikokianum* Franchet & Savatier var. *henryanum* (Engler) H. Li.

Tuber depressed globose, 2–5 cm in diam. Cataphylls cream-colored, to 22 cm, membranous, apex obtuse. Leaves 2; petiole green or pale green, 30–40 cm, basal 20–33 cm sheathing and forming pseudostem; leaf blade pedate; leaflets 5–7, green adaxially, oblong or ovate-oblong to ovate, membranous, base cuneate to rounded, margin entire and usually dentate, apex acuminate; central leaflet with petiolule 1–6 cm, blade 10–21 × 4–11 cm; outer 2 leaflets sharing a common lateral petiolule as long as terminal petiolule; outermost leaflet strongly oblique at base, 4–15 × 5–6 cm. Peduncle emerging from pseudostem, green tinged purplish, ca. 35 cm, free part ca. 13 cm. Spathe dark purple with greenish stripes, ca. 17.5 cm in

total; tube narrowly funnellform, ca. 8 cm, ca. 1.5 cm in diam. at base, ca. 3.5 cm in diam. at throat, throat obliquely truncate, not auriculate or recurved; limb arching, ovate, ca. 9 × 4–5 cm, apex acuminate or acute. Spadix unisexual; female zone ca. 1.2 cm × 7 mm; ovary green; style short; stigma punctate, base truncate and stipitate, apex obtuse; male zone cylindrical, ca. 3 cm × 1 mm; synandria lax, dark purple; anthers 1–3, stipitate; thecae sessile, globose, dehiscent by apical pores. Appendix shorter and wider in male, ca. 4 cm × 6–8 mm, stipe 5–7 mm; longer and narrower in female, ca. 5 cm × 3–5 mm, stipe to 20 mm. Infructescence erect, pyramidal, ca. 10 × 5 cm. Berries yellow, oblong-conic, 7–8 mm in diam. Seeds 2–4, ovoid, smooth. Fl. May, mature fr. Oct. $2n = 26^*$.

• Forest margins, streamsides, on rocks, in valleys; 600–1500 m. Anhui, Fujian, Guangdong, Guangxi, Guizhou, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Zhejiang.

64. *Arisaema peninsulae* Nakai, Bot. Mag. (Tokyo) 43: 537. 1929.

细齿南星 xi chi nan xing

Arisaema angustatum Franchet & Savatier var. *peninsulae* (Nakai) Nakai.

Tuber depressed globose, 1.5–5.5 cm in diam. Cataphylls 3, brownish with purple spots, 3–10 cm. Leaves 2; petiole 35–93 cm; pseudostem (sheathing part) 29–77 cm; leaf blade pedate; leaflets 7–17(–23); rachis well developed between terminal and lateral ones, and between lateral ones; leaflets narrowly elliptic, obovate-lanceolate, or ovate-oblong, base cuneate, margin entire or serrate, apex acuminate; central leaflet with petiolule 1–4 cm, blade 9–18 × 3.5–9 cm, gradually smaller outward; lateral leaflets remote from central one for 1–4 cm, shortly petiolulate or sessile, ca. as large as central one; outer lateral leaflets sessile and much smaller than central leaflet. Peduncle erect, 30–80 cm. Spathe usually green with white stripes, or purplish to dark purple with whitish stripes; tube 5–8 × ca. 1.5 cm, throat obliquely truncate, scarcely recurved; limb incurved, usually green, or dark purple, oblong, 5–6 × 4–5 cm, apex acuminate. Spadix unisexual; female zone 1.5–3 cm × 5–7 mm; ovaries dense, narrowly ovoid; style short; stigma disciform; male zone 1–1.5 cm; synandria dense, sessile; anthers 2 or 3; thecae globose, dehiscent by apical pores. Appendix erect, cylindrical, 3.5–4 cm × 3–6 mm, base truncate and stipitate, apex obtuse; stipe 4–5 mm. Berries reddish yellow, ovoid-globose, ca. 8 × 7 mm. Seeds 2 or 3, yellow-brown, ca. 4 mm in diam., rugose. Fl. May–Jun, mature fr. Sep.

Forests; below 500 m. Heilongjiang, Henan, Jilin [Japan, Korea].

Chinese records of *Arisaema serratum* (Thunberg) Schott (e.g., in FRPS 13(2): 179. 1979) are referable to *A. peninsulae*.

11. *Arisaema* sect. *Tenuipistillata* Engler, Pflanzenz. 73(IV. 23F): 151, 195. 1920.

细柄组 xi bing zu

Plants dioecious. Tuber subglobose. Phyllotaxy quincuncial. Leaves 1 or 2, pedate or palmate. Spathe limb ovate or ovate-lanceolate, involute. Ovary bottle-shaped. Thecae dehiscent by lateral slits or by apical pores. Appendix erect or slightly incurved, narrowly cylindrical, thickened to base, stipitate.

Three species: Himalayas and Xizang-Qinghai plateau; three species (two endemic) in China.

- 1a. Spathe throat margin auriculate; leaflet apex long acuminate with tail ca. 6 cm 67. *A. souliei*
- 1b. Spathe throat margin oblique or slightly recurved; leaflet apex acuminate.
 - 2a. Spadix appendix exerted from spathe throat, distally often suddenly recurved; leaflets 3(or 7 or 9) 65. *A. jacquemontii*
 - 2b. Spadix appendix included in spathe tube, cylindric, erect; leaflets 3–6 66. *A. wardii*

65. *Arisaema jacquemontii* Blume, Rumphia 1: 95. 1835.

藏南缘南星 zang nan lü nan xing

Tuber subglobose, 1.2–3 cm in diam. Cataphylls 1 or 2, whitish, occasionally brown, to 20 cm, membranous, apex acute or obtuse. Pseudostem, petiole, and peduncle pale green, unmarked. Leaves 1 or 2; petiole (2.5–)20–52 cm, proximal 4/5 sheathing and forming pseudostem; leaf blade palmate; leaflets 5(or 7 or 9), sessile, ovate, oblong, or lanceolate, base attenuate, apex acuminate; central leaflet 7–18 × 2.5–7 cm; lateral leaflets 3–7 × 0.8–2.5 cm. Peduncle as long as petioles. Spathe green outside, greenish inside; tube cylindric, 2.5–8 cm × 8–20 mm, throat obliquely truncate, not recurved; limb arching over spadix, ovate to narrowly ovate or oblong-triangular, 2.5–5(–9) × 1–2.5(–3.5) cm, apex acuminate into ascending filiform tail 2.5–6 cm. Spadix unisexual; female zone 1.5–3 cm × 5–7 mm; ovary greenish, narrowly ovoid; stigma spherical; male zone cylindric, 2–3 cm × 3–3.5 mm; synandria sessile, lax, cream-colored or tinged dark purplish; anthers 2–4, dehiscing by apical pores or slits. Appendix greenish proximally, purplish distally, 2–8 cm × ca. 1 mm, distal part emergent from spathe tube horizontal to decurved, tapering, base swollen, truncate to 3–5 mm in diam., shortly stipitate, smooth. Fl. Jun–Jul. $2n = 52$.

Coniferous forests, open grassy places in forests, *Juniperus* or *Rhododendron* thickets, forest margins; 3000–4300 m. S Xizang [Afghanistan, Bangladesh, Bhutan, N India, Kashmir, Nepal, Pakistan].

66. *Arisaema wardii* C. Marquand & Airy Shaw, J. Linn. Soc., Bot. 48: 228. 1929.

隐序南星 yin xu nan xing

Tuber globose, 1.5–2.2 cm in diam. Cataphylls 2 or 3, 9–10 cm, obtuse at apex. Petiole 12–25 cm, proximal 2/3 sheathing into pseudostem; leaf blade palmate or radiate; leaflets 3–6, sessile, oblong, 2–11 × 1–3 cm, base cuneate, apex acuminate, usually caudate. Peduncle shorter or longer than petioles, 10–18 cm. Spathe green, unmarked or with whitish stripes; tube funnellform, 2–6.5 × ca. 1.5 cm, throat obliquely truncate, not auriculate, not recurved; limb triangular-ovate or

ovate-lanceolate, 2–7 × 1.5–4 cm, apex acuminate and caudate with filiform tail 3–5 cm. Spadix unisexual; female zone cylindric, ca. 2.2 cm × 5–6 mm; ovary green, ovoid; style short; stigma spherical; male zone cylindric, 1.5–2.5 cm × 2–3 mm; synandria dense, sessile; anthers 2 or 3, dehiscing by lateral slits. Appendix erect, green, cylindric, 2–3.2 cm, 2.3–5 mm in diam. at base, base swollen and stipitate, apex obtuse; stipe 1.5–3 mm. Infructescence cylindric, ca. 5 × 1.5 cm. Berries yellowish red, ovoid, ca. 5 mm in diam. Seeds 1–3, pale brownish or brown, ovoid, reticulate rugose. Fl. May–Jul.

• Coniferous forests, grassy places; 2400–4200 m. E Qinghai, S Shanxi, S Xizang, W Yunnan.

67. *Arisaema souliei* Buchet, Notul. Syst. (Paris) 2: 127. 1911.

东俄洛南星 dong e luo nan xing

Arisaema brevispathum Buchet; *A. xiangchengense* H. Li & A. M. Li.

Tuber subglobose, ca. 3 cm in diam. Cataphylls obtuse at apex. Leaves 1 or 2; petiole 40–70 cm, proximal half sheathing into pseudostem; leaf blade radiate to palmate; leaflets 6–9, usually 7, broadly oblong-lanceolate, base long cuneate, apex acuminate and caudate with filiform tail ca. 6 cm; central leaflet 10–25 × ca. 5.8 cm. Peduncle shorter than petioles, 20–40 cm. Spathe green or distally dark brown with whitish stripes, 15–20 cm (including tail); tube cylindric, 5–10 × 1–2 cm, throat obliquely truncate, slightly recurved or not; limb suberect, ovate to ovate-lanceolate, 4.5–5 × ca. 3.5 cm, apex acuminate into filiform tail to 4–5 cm. Spadix unisexual; female zone 2.5–3 cm × 6–7 mm; ovules 5–9, bottle-shaped; male zone ca. 2 cm × 2.5 mm; synandria sessile; anthers 2. Appendix stipitate, ca. 9 cm in male spadix, 5–6 cm in female, base whitish, swollen, ca. 3 mm in diam. in male spadix, ca. 6 mm in diam. in female, gradually narrowed distally, apex exerted from tube, erect or recurved, dark brown, 1–1.5 mm in diam.

• *Quercus* thickets, deforested slopes; ca. 3500 m. Chongqing (Chengkou), Sichuan.

12. *Arisaema* sect. *Sinarisaema* Nakai, J. Jap. Bot. 25: 6. 1950.

伞叶组 san ye zu

Tuber subglobose. Phyllotaxy spiro-distichous. Leaves 1 or 2, radiate. Spathe limb incurved or erect. Spadix unisexual; anthers dehiscing by apical pores or rarely circumscissile; appendix cylindric, terete, or clavate, or rarely degenerate, sessile or rarely stipitate, usually with acute neuter flowers at proximal part.

About 14 species: S and SE Asia, Himalayas; 11 species (seven endemic) in China.

- 1a. Apex of spadix appendix distinctly echinate or rugose; spathe margin entire.
 - 2a. Spadix appendix rugose 77. *A. taiwanense*
 - 2b. Spadix appendix echinate.
 - 3a. Tuber stoloniferous 72. *A. echinoides*
 - 3b. Tuber not stoloniferous 71. *A. echinatum*
- 1b. Apex of spadix appendix smooth, or rarely slender and slightly creased, or degenerate, if apex rugose then spathe margin ciliate around throat.

- 4a. Spadix appendix degenerate; spathe limb ± erect, involute 68. *A. exappendiculatum*
 4b. Spadix appendix terete, stipitate or not.
 5a. Pseudostem and peduncle much shorter than petioles, inflorescence positioned just above ground 69. *A. zhui*
 5b. Pseudostem and/or petiole long, inflorescence distant from ground.
 6a. Spathe basically yellow.
 7a. Underground stem subglobose tuber; spathe not striped; (?neuter flowers absent; ?infructescence nodding) 76. *A. jingdongense*
 7b. Underground stem subcylindric, longer than wide; spathe tube longitudinally striped with white and purple; neuter flowers present; infructescence upright 75. *A. muratae*
 6b. Spathe basically green or purple.
 8a. Plants stoloniferous; spadix appendix upright or curved forward.
 9a. Spadix appendix slender, frequently curved forward at apex; infructescence upright 78. *A. concinnum*
 9b. Spadix appendix cylindric; spathe margin ciliate around throat; infructescence nodding 73. *A. ciliatum*
 8b. Plants without stolons; spadix appendix upright.
 10a. Spathe tube cylindric, basically greenish, limb occasionally tinged with purple 74. *A. erubescens*
 10b. Spathe tube funnellform, usually purple outside, white inside 70. *A. sukotaiense*

68. *Arisaema exappendiculatum* H. Hara, J. Jap. Bot. 40: 21. 1965.

圈药南星 *quan yao nan xing*

Tuber depressed globose, 2–5 cm in diam., sometimes with thick creeping stolons. Cataphylls purple. Leaf solitary; petiole green, sometimes dark purple, 23–55 cm, proximally sheathing into pseudostem; leaf blade radiate; leaflets 7–13, sessile, oblanceolate, 8–22 × 2–4 cm, base cuneate, apex long acuminate. Peduncle green, sometimes purplish, much shorter than petioles. Spathe green, occasionally dark purple, slightly glaucous inside; tube pale green, without distinct stripes, cylindric, 2–7 × 1.2–2 cm, not broadened nor spreading at throat; limb suberect, ovate-lanceolate, 8–15 × 2.5–3 cm (at base), generally with inrolled margins, convolute, tapering into a long caudate apex 5–8 cm. Spadix unisexual, 1.5–3 cm including appendix; female zone ca. 1.2 cm in diam. at base; ovary green, turbinate, slightly angular, apex apiculate; stigma small; male zone 7–8 mm in diam. at base; synandria lax; anthers stipitate, circumscissile at apex. Appendix absent, or very rarely broadly cylindric, to 1.5 cm. Fl. May–Jun.

Forests on slopes, grasslands between forests; 2400–2500 m. S Xizang [Nepal].

69. *Arisaema zhui* H. Li, Kew Bull. 55: 423. 2000.

维明南星 *wei ming nan xing*

Tuber depressed globose, 3–4 cm in diam., with a few tubercles around. Cataphylls, petiole, and peduncle greenish, unmarked. Cataphylls 2, membranous. Leaves 1 or 2; petiole 32–36 cm × 5–8 mm, basal 3–4 cm sheathing into pseudostem; leaf blade radiate; leaflets 11–13, sessile, pale green abaxially, green adaxially, narrowly elliptic, unequal, (including filiform tail) 1–1.5 × 1.1–2.2 cm. Peduncle emerging from pseudostem, much shorter than petioles, only ca. 7 cm. Spathe dark purple, with whitish stripes; tube whitish green inside, funnellform, short, ca. 3.8 × 1.5 cm, gradually opening to throat, throat obliquely truncate, not recurved; limb incurved, purple-green with indistinct stripes outside, dark purple with greenish stripes inside, triangular-ovate, 6.5–9 (male) × ca. 4 cm, apex abruptly acuminate and long caudate with filiform tail ca. 2 cm (female) to 4.5 cm (male). Spadix unisexual; female zone ca. 1.5 cm;

ovaries dense, green, ovoid-globose; ovules 4, basal, erect; stigma subsessile, punctate; male zone ca. 2.4 cm × 3–4 mm; synandria dense, subsessile; anthers 2–6, violet, globose, dehiscent by apical pores. Appendix yellowish or greenish, with tiny purple dots, cylindric, distally slightly swollen, 3–3.6 cm × 3–6 mm, base truncate with purple stipe ca. 5 mm, apex obtuse. Fl. Jun.

- About 4000 m. NW Yunnan (Dèqên: Meili Xueshan).

70. *Arisaema sukotaiense* Gagnepain, Notul. Syst. (Paris) 9: 129. 1941.

中泰南星 *zhong tai nan xing*

Plants deciduous. Tuber subglobose, cream-colored, 3–4 × 5–7 cm. Cataphyll pink, with brown mottling, 1–20 cm. Leaf solitary; petiole red-brown or olive-green with transverse paler mottling, 60–80 cm, proximal 35–45 cm forming pseudostem, ca. 1.5 cm in diam. at base; leaf blade radiate; leaflets 12–14, sessile to subsessile, glaucous with slightly prominent carmine or green veins abaxially, shiny green adaxially, elliptic, 20–30 × 3–4 cm, base cuneate, margin flat or undulate, green or red, apex acuminate, often prolonged into a carmine thread to 9 cm; veins slightly impressed adaxially. Peduncle green with paler mottling, becoming red-violet toward inflorescence, shorter than petioles, 35–60 cm × 4–5 mm. Spathe tube outside pruinose, dark purple or pale olive-green with thin white stripes, inside pale carmine with white stripes, funnellform, 7–8 cm, 1.2–1.5 cm in diam. at base, 3–4.5 cm in diam. apically; throat margins straight, dark carmine; limb horizontal, outside dark purple, with very faint paler stripes, inside dark purple, pale green at base, with broad white stripes anastomosing in a central white spot at throat level, ovate, 9–10 × 5–6 cm, nearly as long as tube, apex acuminate, prolonged into a purple, filamentous tail to 20 cm. Spadix unisexual; female zone of same shape and size as male zone; ovaries dense, pale green, bottle-shaped, 1.5–2 mm in diam.; stigma sessile, penicillate, surrounded by black annulus; male zone subcylindric, 2–3 × ca. 0.6 cm; synandria loosely arranged, consisting of 2–4 anthers; anthers lilac, subsessile or borne on a white-green short stalk; thecae dehiscent by an oblong pore; pollen white. Appendix sessile, slightly exserted from spathe tube, erect, cylindric, to 7 cm × 5 mm, middle part green sometimes with carmine

stripes above neuter flowers, apex white-green, rounded, even or spongy; neuter flowers upcurved, green, 3–4 mm, numerous in female spadix only. Infructescence cylindric, ca. 5×1.5 – 2.5 cm, borne on a nodding peduncle. Berries dense, red-orange with black stigmatic remains, ca. 7×3 mm, 1- or 2-seeded. Seeds globose, ca. 2 mm; testa cream-colored. Fl. May–Jun, fr. Oct.

Mountain forests along roadsides, sometimes growing as an epiphyte on mossy tree trunks; 1200–2500 m. S Yunnan [N Thailand].

71. *Arisaema echinatum* (Wallich) Schott in Schott & Endlicher, Melet. Bot. 17. 1832.

刺棒南星 ci bang nan xing

Arum echinatum Wallich, Pl. Asiat. Rar. 2: 30. 1831.

Tuber depressed globose, 2–4 cm in diam. Cataphylls 2, green, 4–20 cm. Cataphylls, petiole, and peduncle green, unmarked. Leaf solitary; petiole ca. 30 cm, basal ca. 6 cm sheathing into pseudostem; leaf blade radiate; leaflets 7–11, sessile, glaucous abaxially, green adaxially, narrowly elliptic or oblanceolate, unequal, attenuate to base, apex long acuminate, sometimes caudate with a short filiform tail; central leaflet ca. 12.5×2.8 cm; outer leaflets 7 – $8.5 \times$ ca. 1.4 cm. Peduncle emerging from petiole sheath, much shorter than petioles, ca. 17 cm. Spathe green, not marked by spots or stripes; tube cylindric, ca. 5.5×1.5 cm, slightly recurved at throat; limb slightly outcurved at base, otherwise incurved, ovate, ca. 8×5 cm, long caudate, with filiform tail to 8 cm. Spadix unisexual; female zone conic, ca. 2.3×1.4 cm, flowers dense; ovary green, subglobose; stigma punctate, violet; male zone 1.5 – 3 cm, 3 – 5 mm in diam. at base; synandria lax; anthers 4, dehiscing by apical pores. Appendix green, cylindric, ca. 4 cm \times 5 – 6 mm, base abruptly narrowed and stipitate, apex obtuse and echinate; stipe ca. 5 mm. Fl. Jun.

Forested slopes; 2600–3100 m. S and SE Xizang (Gyirong, Nyingchi, Zayü), W Yunnan (Baoshan, Gaoligong Shan, Lijiang) [Bhutan, India (Sikkim), Nepal].

Himalayan plants differ from those in Gaoligong Shan in having the spathe green, white striped outside, and dark purple inside.

72. *Arisaema echinoides* H. Li, Kew Bull. 55: 425. 2000.

拟刺棒南星 ni ci bang nan xing

Tuber subglobose, ca. 2 cm in diam., stoloniferous. Cataphylls membranous, acute at apex. Leaf solitary; petiole ca. 24 cm, proximally forming pseudostem; leaf blade radiate; leaflets 9, sessile, oblanceolate, 13 – 16×2 – 3 cm, base cuneate, apex acuminate. Peduncle shorter than petioles, ca. 10 cm. Spathe tube purple with numerous longitudinal white stripes, cylindric, ca. 5.1 cm, broadly auriculate and recurved at throat; limb dark purple with white midrib, oblong-ovate, ca. 7×4 cm, base slightly constricted, apex abruptly acuminate; pinnate veins 4 or 5 on each side, ascending and connected into intramarginal vein remote from margin for 2–3 mm. Spadix white, unisexual; female zone conic, ca. 1.8 cm \times 7 mm, flowers dense; male zone ca. 1.8 cm; synandria sessile; anthers 2 or 3, globose, dehiscing by apical pores. Appendix erect, ca. 3 cm \times 5 – 7 mm, thickened, base truncate and stipitate, apex obtuse and densely echinate; stipe ca. 7×3 mm. Fl. May–Jun.

• Forests, thickets, in shade; 2900–3300 m. NW Yunnan (Lijiang).

73. *Arisaema ciliatum* H. Li, Acta Phytotax. Sin. 15(2): 108. 1977.

缘毛南星 yuan mao nan xing

Arisaema ciliatum var. *liubaense* Gusman & Gouda.

Tuber depressed globose, 2–2.5 cm in diam., stoloniferous. Cataphylls 3, 10–20 cm, membranous. Cataphylls, petiole, and peduncle green, occasionally purplish, unmarked. Leaf solitary; petiole 20–70 cm, basal 15–40 cm sheathing into pseudostem; leaf blade radiate; leaflets 11–14, sessile, narrowly elliptic, base cuneate, apex acuminate and caudate. Peduncle shorter than petioles, 20 – 50×1.2 – 1.4 cm. Spathe purple or dark purple, with numerous white stripes, or green; tube cylindric, 4 – 5×1 – 1.2 cm, throat obliquely truncate, not auriculate, ciliate; limb suberect to incurved, narrowly lanceolate, 4.5 – 5.5×2.1 – 4 cm, apex long acuminate and caudate with violet filiform tail 2–5 cm. Spadix unisexual; female zone conic, ca. 1.5 cm, ca. 7 mm in diam. at base; ovary green; style conic; stigma purple, punctate; male zone narrowly conic, 2–3 cm, ca. 3 mm in diam. at base; synandria lax, shortly stipitate; anthers 2 or 3, yellow, dehiscing by apical pores. Appendix erect, violet, occasionally greenish, cylindric, 3.2 – 5.5 cm \times 3 – 4 mm, gradually narrowed to base, apex obtuse and verrucose, with acute neuter flowers on proximal part. Infructescence nodding. Fl. Jun.

• *Pinus* forests, *Quercus* thickets, grasslands; 2600–3600 m. Sichuan (Baoping, Gongga Shan), NW Yunnan (Lijiang, Zhongdian).

74. *Arisaema erubescens* (Wallich) Schott in Schott & Endlicher, Melet. Bot. 17. 1832.

一把伞南星 yi ba san nan xing

Arum erubescens Wallich, Pl. Asiat. Rar. 2: 30. 1831; *Arisaema alienatum* Schott var. *formosanum* Hayata; *A. biradiatifolium* Kitamura; *A. brevipes* Engler; *A. consanguineum* Schott; *A. consanguineum* subsp. *kelung-insulare* (Hayata) Gusman; *A. erubescens* var. *consanguineum* (Schott) Engler; *A. formosanum* (Hayata) Hayata; *A. formosanum* var. *bicolorifolium* T. C. Huang; *A. formosanum* f. *stenophyllum* Hayata; *A. fraternum* Schott; *A. hypoglaucum* Craib; *A. kelung-insulare* Hayata; *A. kerrii* Craib (1912); *A. kerrii* Gagnepain (1941); *A. linearifolium* J. T. Yin & Gusman; *A. oblanceolatum* Kitamura; *A. tatarinowii* Schott; *A. undulatum* K. Krause; *A. vituperatum* Schott.

Tuber depressed globose, 2–7 cm in diam. Cataphylls 3, dark green, with whitish striae or spots, to 55 cm, acute at apex. Petiole and peduncle green, smooth, unmarked. Leaf solitary, occasionally 2; petiole to $100 \times$ ca. 2 cm, proximal ca. 50 cm sheathing into pseudostem; leaf blade radiate; leaflets 18–23, sessile, green abaxially, dull green adaxially, narrowly elliptic or narrowly linear, 16 – 28 cm \times 2 – 20 mm, base cuneate, apex long acuminate and caudate, with filiform tail 7–10 cm; veins raised abaxially, impressed adaxially; lateral veins numerous, obliquely ascending. Peduncle shorter than petioles, to 75 cm, free part ca. 9 cm. Spathe green, with indistinct whitish stripes or not; tube cylindric, 6 – $7 \times$ ca. 1.5 cm, auriculate and recurved

at throat; limb deep green sometimes with purple margin outside, pale green inside, triangular-ovate, 8–12 × 4–8 cm, apex acuminate with long purple filiform tail, arching; tail to 35 cm, pendulous. Spadix unisexual; female zone conic, ca. 3.5 × 1.5 cm; ovary green, obovoid; stigma sessile, spherical, pilose; male zone cylindrical, 4–4.5 cm × 4–5 mm; synandria dark violet; anthers subsessile, 2 or 3, dehiscent by apical pores. Appendix pale green, cylindrical or narrowly conic, ca. 7 cm × 2–4 mm, with some acute neuter flowers at base. Infructescence nodding. Berries red. Fl. Jun–Jul.

Pinus forests, mixed forests, thickets, grassy slopes, lakesides, between rocks; below 3200 m. Anhui, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hebei, Henan, Hubei, Hunan, Jiangxi, Shaanxi, Shandong, Shanxi, Sichuan, Taiwan, Yunnan, Zhejiang [Bhutan, NE India, Laos, Myanmar, Nepal, N Thailand, Vietnam].

H. Hara (Bull. Univ. Mus. Univ. Tokyo 2: 321–354. 1971) noted that *Arisaema consanguineum* is characterized by having a threadlike appendage at the apex of the leaflets and spathe (but sometimes absent), a sessile spadix appendage with neuter flowers at least in the female spadix, and a nodding infructescence, whereas *A. erubescens* lacks a threadlike appendage on the leaflets and spathe, has a stipitate spadix appendage without neuter flowers, and has an upright infructescence. In the present treatment, we follow many Chinese floras in recognizing a wide range of variation for Chinese *A. erubescens* including both types of plants. One of us (Murata), until recently, considered that only true *A. consanguineum* is distributed in China, but he found the second type of plants, which share some characteristics with *A. erubescens*, north of Kunming City. However, these plants have a threadlike appendage on the leaflets and spathe and do not fit true *A. erubescens* (nor *A. consanguineum* in the strict sense) and could represent a new species. A revision of the whole *A. erubescens*-*A. consanguineum* group is now required.

75. *Arisaema muratae* Gusman & J. T. Yin, Ann. Bot. Fenn. 44: 231. 2007.

邑田南星 *yi tian nan xing*

Plants to 1 m tall and 50 cm in diam. Tuber green and brown outside, subcylindric, ca. 5 × 5–6.5 cm, with short globose offsets. Cataphylls olive-green or pink with dark and pale transverse markings, to 50 cm. Leaf usually solitary; petiole similar in color and pattern to pseudostem, cylindrical, to 80 cm, proximally forming pseudostem to 40 × ca. 3 cm, green with cream-colored stripes and transverse vermilion markings; leaf blade radiate, with up to 11 segments; leaflets subsessile or shortly petiolulate, glaucous abaxially, shiny green adaxially, elliptic, 20–25 × 6–7 cm, base cuneate, margin undulate, green, entire or serrate, apex long acuminate; veins deeply impressed adaxially. Inflorescence emerging when leaf unfolds and carried beneath foliage; peduncle olive-green, flushed pink and pruinose apically, to 55 cm, shorter than petioles, ca. 1 cm in diam. at base. Spathe tube carmine outside with longitudinal pale stripes, with white ring at base and yellow-green near throat, yellow-green inside with dotted purple stripes mainly in proximal half, cylindrical, broadly recurved at throat margin, to 8 × ca. 1.8 cm, at middle ca. 1.2 cm in diam.; limb horizontal, slightly translucent, yellow-green with paler veins both outside and inside, yellow at apex and turning carmine at tip, lanceolate, ca. 5 × 4 cm, shorter than tube, acuminate into tail to 15 cm. Spadix unisexual; female zone slightly conic, 2–3 × 1–1.5

cm; ovaries dense, pale yellow-green, bottle-shaped, 1-loculed; ovules ca. 3, basal, fusiform; stigma sessile, white, penicillate; neuter flowers absent or few in male spadix, numerous in female, located just above fertile part, upcurved, stiff, ca. 5 mm; male zone cylindrical to slightly conic, 4–5.5 × 1–1.3 cm; synandria dense, each consisting of 2–4 anthers, stalked; thecae purple proximally and carmine distally, dehiscent by elongated pores; pollen blue; appendix sessile, slightly protruding from spathe tube, whitish with carmine longitudinal stripes, obscurely crimson and wrinkled at apex, cylindrical, clavate, 4–5 cm in male spadix, 5–6 cm in female, ca. 4 mm in diam. at base, ca. 7 mm in diam. at apex. Infructescence borne on upright peduncle, cylindrical, ca. 10 × 4 cm; rachis pale pink. Berries dense, red-orange, ca. 14 × 8 mm, distally rounded and smooth, up to 3-seeded. Seeds globose, ca. 6 mm in diam.; testa gray.

• Evergreen broad-leaved forests; 1200–2400 m. Yunnan (Yingjiang).

76. *Arisaema jingdongense* H. Peng & H. Li, Acta Phytotax. Sin. 33: 97. 1995.

景东南星 *jing dong nan xing*

Arisaema cangshanense X. D. Dong.

Tuber subglobose, ca. 2.5 cm in diam. Cataphylls 3, pale green with purple spots, to 30 cm. Leaf solitary; petiole greenish, unmarked, ca. 65 cm, proximal 3/4 sheathing into pseudostem; leaf blade radiate; leaflets 7, sessile, pale green abaxially, deep green adaxially, oblong-lanceolate, 7–8 × 1.4–1.6 cm, margin entire, apex acuminate. Peduncle shorter than petioles, ca. 55 cm × 2.5–3 mm. Spathe yellowish, without white stripes; tube cylindrical, ca. 4 cm × 9 mm, recurved at throat; limb arching, triangular-oblong, ca. 7.5 × 3 cm, apex acuminate with a filiform tail 4–5 cm. Spadix unisexual; male zone ca. 3 cm; synandria dense; appendix hidden in spathe tube, orange-yellow, clavate, ca. 3.5 cm × 4 mm, smooth, apex obtuse. Female spadix unknown. Fl. Jun.

• Evergreen broad-leaved forests; 2400–2500 m. Yunnan (Diancang Shan, Jingdong).

77. *Arisaema taiwanense* J. Murata, J. Jap. Bot. 60: 353. 1985.

蓬莱南星 *peng lai nan xing*

Tuber depressed globose, 2–6 cm in diam. Cataphylls greenish or reddish, often with purple-brown marks. Leaf solitary; petiole white or pale green, usually mottled with purple-brown marks, 12–70 cm, proximal 2–30 cm sheathing into pseudostem; leaf blade radiate; leaflets 7–15, glaucous abaxially, green adaxially, oblanceolate, apex filiform, caudate, with a threadlike pendulous tail at tip. Peduncle distinctly shorter than petioles, 3–45 cm. Spathe purplish red to dark purple, with fine green dots between veins outside; tube white or pale yellowish green with purple stripes inside, obconic, gradually opening to auriculate throat, 2–6 × 3.7–8 cm; limb dark purple, ovate to broadly ovate, 3–8 × 3.5–8 cm, scarcely with pale veins on inner surface, apex acute to acuminate with a prolonged filiform tail to 40 cm. Spadix 3–10 cm including appendix, unisexual; female zone conic, 2.8–3 cm × ca. 12 mm, base

narrower, with abundant aculeate neuter flowers, apex slightly enlarged, strongly rugose; male zone cylindric, ca. 4 cm × 7 mm; synandria consisting of 3 or 4 subsessile anthers; appendix sessile, whitish distally, broadly cylindric, 1.7–7 cm × 4–13 mm, strongly or weakly rugose at apex. Fl. May–Jun.

- Common throughout the island; middle elevations. Taiwan.

- 1a. Peduncle 10–45 cm, 5–15 cm exerted from pseudostem; petiole and peduncle mottled with purple-brown marks; spadix appendix 5–7 cm 77a. var. *taiwanense*
- 1b. Peduncle 3–15 cm, 1–5 cm exerted from pseudostem; petiole and peduncle unmarked; spadix appendix 1.8–2.5 cm 77b. var. *brevipedunculatum*

77a. *Arisaema taiwanense* var. *taiwanense*

蓬萊南星(原变种) peng lai nan xing (yuan bian zhong)

Cataphylls, petiole, and peduncle mottled with purple-brown marks. Peduncle 10–45 cm, 5–15 cm exerted from pseudostem. Spathe tube 3.8–5 × 5–8 cm when opened; limb weakly concave and arched, 5–7 cm except for threadlike tip, 4–6.5 cm wide. Spadix appendix 5–7 cm × 4–13 mm. Fl. May. $2n = 28^*$.

- Taiwan.

77b. *Arisaema taiwanense* var. *brevipedunculatum* J. Murata, J. Jap. Bot. 60: 356. 1985.

短梗蓬萊南星 duan geng peng lai nan xing

Cataphylls, petiole, and peduncle unmarked. Peduncle 3–15 cm, 1–5 cm exerted from pseudostem. Spathe tube 2–4 × 3.7–6 cm when opened; limb concave and arched, 3–5 cm except for threadlike tip, 3.5–7 cm wide. Spadix appendix 1.8–2.5(–3.5) cm × 4–8 mm. Fl. May–Jun.

- Middle elevations. E and S Taiwan.

78. *Arisaema concinnum* Schott, Bonplandia (Hannover) 7: 27. 1859.

皱序南星 zhou xu nan xing

Tuber depressed globose, to 5 cm in diam., stoloniferous. Cataphylls 3, 10–20 cm, membranous. Leaf solitary; petiole 30–50 cm, proximal 20–30 cm forming pseudostem, green or purplish, scarcely marked; leaf blade radiate; leaflets 7–13, sessile, oblanceolate to elliptic, base cuneate, apex acuminate and caudate. Peduncle shorter than petioles, 15–20 cm. Spathe dark purple or green, with longitudinal white stripes; tube cylindric, 4–8 × 1.5–2 cm, throat obliquely truncate, not auriculate; limb ovate to deltoid-ovate to narrowly deltoid-ovate, 2–4 cm wide, apex long acuminate and caudate, to 15 cm including filiform tail. Spadix unisexual; female zone conic, 1.5–2 cm, 7–10 mm in diam. at base; ovary green; male zone narrowly conic, 2–3 cm; synandria lax; anthers 2 or 3, dehiscent by apical pores; appendix erect, dark purple or green, narrowly cylindric-clavate, 4–7 cm × 2–4 mm, apex bent forward and verrucate. Inflorescence upright. Fl. Jun.

- Alpine meadows; 2000–3500 m. Xizang.

Incompletely known species

***Arisaema nangtciangense* Pampanini, Nuovo Giorn. Bot. Ital., n.s., 22: 261. 1915.**

南漳南星 nan zhang nan xing

Tuber globose. Cataphylls 7–10 cm, obtuse and cuspidate at apex. Leaves 2; petiole slender, ca. 20 cm, proximal ca. 15

cm sheathing; leaf blade pedate; leaflets 7, lanceolate, 14–20 × 5.5–6 cm, entire, acuminate; central leaflet shortly petiolulate, larger than lateral ones. Peduncle ca. 15 cm, nearly equaling sheath. Female zone in spadix ca. 2 cm (in fruit), shortly stipitate; appendix ca. 3.5 cm.

- Humid places. Hubei (“Nangqiang”).

