

22. DIODIA Linnaeus, Sp. Pl. 1: 104. 1753.

双角草属 *shuang jiao cao shu*

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Herbs [or sometimes small shrubs], annual or perennial, unarmed. Raphides present. Leaves opposite or sometimes apparently verticillate due to clustered leaves on unexpanded axillary stems, sessile to shortly petiolate, without domatia; stipules persistent, interpetiolar and fused to petioles, sheath truncate to rounded and often membranous, setose. Inflorescences axillary and sometimes also terminal, glomerulate or capitate, few to several flowered, sessile, bracteate or bracts reduced. Flowers sessile, bisexual, monomorphic. Calyx limb deeply 2- or 4-lobed; lobes sometimes unequal in pairs. Corolla white, pink, or pale purple, funnellform or salverform, inside variously glabrous or pubescent; lobes 4, valvate in bud. Stamens 4, inserted in corolla throat, exerted; filaments developed; anthers dorsifixed. Ovary 2-celled, ovules 1 in each cell, axile and attached at middle of septum; stigmas 2, capitate to linear, exerted. Fruit schizocarpous or indehiscent, ellipsoid to obovoid, papery to cartilaginous, bony, or corky, with calyx limb persistent; mericarps (i.e., cocci) 2, indehiscent, with 1 seed, ellipsoid to plano-convex; seeds ellipsoid-oblong, medium-sized, often sulcate to convex on adaxial (i.e., ventral) surface; endosperm corneous; embryo straight; cotyledons broad; radicle hypogynous.

About 50 species: warm temperate and tropical America and Africa, with several American species naturalized in the Old World tropics; two species (both introduced) in China.

Measurements and characters in brackets below are found in plants of other regions and are included here to aid future identifications of these species, which may be introduced more than once in China and have more variation here than currently documented.

- 1a. Plants erect; fruit papery to bony, 3–3.5 mm, usually separating and dispersing as 2 indehiscent mericarps 1. *D. teres*
1b. Plants prostrate to weakly ascending; fruit corky, 6–9 mm, usually not separating into mericarps 2. *D. virginiana*

1. *Diodia teres* Walter, Fl. Carol. 87. 1788.

山东丰花草 *shan dong feng hua cao*

Borreria shandongensis F. Z. Li & X. D. Chen; *Diodella teres* (Walter) Small; *Spermacoce shandongensis* (F. Z. Li & X. D. Chen) Govaerts.

Herbs, annual, erect, to 30[–50] cm tall; stems somewhat flattened to slightly [or sharply] 4-angled, pilosulous [and/or pilose to glabrescent]. Leaves sessile; blade drying papery, linear-lanceolate, [8–]20–40 × [1–]3–5[–7] mm, both surfaces hispidulous, base obtuse [to rounded or subcordate], margin weakly [to strongly] revolute, apex acute to acuminate; secondary veins indistinct; stipule sheaths truncate, 1–2.5 mm, pilosulous to glabrescent, with 5–9 setae 1–7 mm. Flowers 1[–3] per axil or 1[–6] per node; bracts reduced. Calyx pilosulous to glabrescent; ovary portion obovoid, 0.5–0.8 mm; limb deeply lobed; lobes lanceolate, ca. 1 mm, pilosulous to glabrescent. Corolla pink [to pale purple or blue], funnellform, hispidulous to glabrescent outside; tube [1.5–]4[–7] mm, glabrescent inside; lobes elliptic-oblong, 0.5–2 mm. Fruit obovoid, [1.5–]3–3.5 mm, papery to bony, hispid to hispidulous, separating into 2 mericarps each with a Y-shaped sulcus on adaxial surface; seeds ca. 2.5 mm, yellowish brown when dry, longitudinally 1-grooved. Fl. and fr. Aug–Sep.

Disturbed, often degraded open ground. S Fujian (Jinmen), Shandong (Qingdao) [native to Antilles and North and South America; adventive in N Africa, Japan, Korea, and Madagascar].

Diodia teres has not been widely reported previously from Asia, but it is known from Japan (Honshu, 18 Oct 1995, *S. Tsugaru & G. Murata 22898*, MO!) at a similar latitude to its occurrence in China and probably should be expected elsewhere.

2. *Diodia virginiana* Linnaeus, Sp. Pl. 1: 104. 1753.

双角草 *shuang jiao cao*

Herbs, perennial, prostrate to weakly ascending, to 60 cm tall; stems 4-angled, retrorse pilose or -pilosulous along angles. Leaves petiolate; petiole ca. 3 mm; blade drying papery, elliptic-lanceolate to oblanceolate, 20–32 × 4–8 mm, both surfaces glabrescent, base cuneate and sometimes oblique, apex acute; secondary veins 4 or 5 pairs; stipule sheaths truncate to rounded, 2–3 mm, glabrous, with 3–5 setae 1–4 mm. Flowers 1 or sometimes 2 or 3 per axil, 2 or sometimes 4–6 per node; bracts reduced. Calyx villous to pilose; ovary portion obconic, ca. 1 mm; lobes narrowly triangular-lanceolate, [2–]5–7[–10] mm, often unequal on an individual flower. Corolla white, glabrous inside and outside; tube 5.5–6 mm; lobes triangular, 4–5[–6] mm, sometimes pubescent adaxially. Fruit corky, ellipsoid, 6–9 × 4–6 mm, distinctly 8-ridged, pilose or villous to glabrescent, usually not separating into mericarps; seeds 5–6 × 2–3 mm, reticulate. Fl. and fr. Aug–Sep.

Bamboo forest sides. Naturalized in Taiwan [native to C and E North America; perhaps naturalized in Mexico and Central America; adventive in Japan].

This species is rather widely but infrequently and locally naturalized in tropical and subtropical areas, especially near seaports (Taylor, *Monogr. Syst. Bot. Missouri Bot. Gard.* 85(3): 2206–2284. 2001), and probably should be expected elsewhere in Asia. The plants are usually found in microsites with moving water, and apparently the fruit are frequently water-dispersed.

Hsieh and Chaw (*Bot. Bull. Acad. Sin.* 28: 44–45. 1987) gave the number of calyx lobes as 2; this is the first report of this condition for *Diodia virginiana*, and their illustration of the flowers suggest that there may at least sometimes be 4 lobes. They also gave some unusual measurements for the corolla of their plant, with the tube said to be 15 mm and the limb to 18 mm wide; both of these are exceptionally large measurements that are unknown in other plants of this species.

Fl. China 19: 98–99. 2011.