

28. SUAEDA Forsskål ex J. F. Gmelin, *Onomat. Bot. Compl.* 8: 797. 1776, nom. cons.

碱蓬属 *jian peng shu*

Herbs annual, subshrubs, or shrubs, sometimes glaucous, glabrous, rarely pubescent. Stem erect, obliquely spreading, or prostrate. Leaves usually sessile and linear, terete or semiterete, rarely clavate or slightly compressed, fleshy, margin entire. Flowers small, bisexual, sometimes also female, usually 3 to numerous in glomerules, these axillary or on dwarf, axillary branchlets, sometimes dwarf branchlet base fused to leaf base and glomerule thus appearing to arise from petiole; bractlets 2 per flower, white, scale-like, membranous. Perianth subglobose, hemispheric, or urceolate, 5-parted or -lobed, slightly fleshy or herbaceous; segments abaxially thickened or becoming winglike or hornlike, rarely not modified, adaxially concave or cucullate. Stamens 5; filaments short, flattened; anthers cylindric, ellipsoid, or subglobose, without an appendage. Ovary ovoid or globose; stigmas 2 or 3(-5), usually recurved, papillate throughout. Utricle enclosed by perianth; pericarp membranous, free from seed. Seed horizontal or vertical, lenticular, reniform, ovoid, or globose; testa thinly leathery or membranous; embryo green or whitish, planospiral, slender; perisperm scant or absent.

About 100 species: Asia, Europe, North America, and seashores worldwide: 20 species (two endemic) in China.

- 1a. Glomerule borne on dwarf, axillary branchlet, dwarf branchlet base fused with petiole and thus glomerule appearing to be borne on petiole.
 - 2a. Subshrubs.
 - 3a. Leaves usually 3–5 mm, abruptly contracted at base; perianth parted to middle 1. *S. microphylla*
 - 3b. Leaves usually 5–15 mm, attenuate into short petiole at base; perianth parted to base 2. *S. dendroides*
 - 2b. Herbs annual.
 - 4a. Seed horizontal or oblique, ca. 2 mm in diam.; perianth appearing star-shaped in fruit 3. *S. glauca*
 - 4b. Seed vertical, not exceeding 1.5 mm in diam.; perianth not star-shaped in fruit.
 - 5a. Leaves filiform, semiterete, to 1 mm wide; seed sublustrous, without granular processes 4. *S. altissima*
 - 5b. Leaves linear, slightly compressed, 1.5–3 mm wide; seed not lustrous, with granular processes.
 - 6a. Flowers 3 or 4 per glomerule; perianth hemispheric to cupular, about as long as wide, 5-parted, segments slightly spreading at anthesis 5. *S. paradoxa*
 - 6b. Flowers mostly solitary, rarely 2 or 3 per glomerule; perianth cylindric to obovoid, longer than wide, 5-lobed, segments remaining closed at anthesis 6. *S. linifolia*
 - 1b. Glomerule borne in leaf axil or on dwarf, axillary branchlet, dwarf branchlet base not fused with petiole.
 - 7a. Inflorescence ± a terminal panicle; perianth saccate inflated in fruit 7. *S. physophora*
 - 7b. Inflorescence not a terminal panicle; perianth not inflated in fruit.
 - 8a. Perianth segments distinctly veined; stigmas 3–5; seed extremely convex, scarcely pitted.
 - 9a. Perianth segments with a longitudinal, winglike keel abaxially.
 - 10a. Leaf apex with a bristle; perianth segments keeled near apex, keel protruding beyond apex 8. *S. acuminata*
 - 10b. Leaf apex without a bristle; perianth segments keeled throughout length 9. *S. pterantha*
 - 9b. Perianth segments without a keel abaxially.
 - 11a. Glomerules numerous flowered; stigmas 3, plumose; plants large, woody 10. *S. rigida*
 - 11b. Glomerules 3–6-flowered; stigmas 3–5, not plumose; plants small, slender, herbaceous 11. *S. arcuata*
 - 8b. Perianth segments veinless; stigmas 2; seed slightly depressed, ± pitted.
 - 12a. Leaves obovate, succulent, apex rounded or obtuse; glomerules mostly borne on dwarf, axillary branchlets.
 - 13a. Perianth with a transverse, narrow, winglike process; seed distinctly pitted 12. *S. przewalskii*
 - 13b. Perianth with a more developed transverse wing; seed obscurely pitted 13. *S. kossinskyi*
 - 12b. Leaves not obovate, apex subobtuse or acute; glomerules all axillary.
 - 14a. Seed obscurely pitted; anthers 0.3–0.5 mm.
 - 15a. Shrubs small; leaf base articulate; stigmas erect, subulate 18. *S. australis*
 - 15b. Herbs annual; leaf base not articulate; stigmas divaricate or slightly curved, filiform.
 - 16a. Leaves usually sickle-shaped, apex obtuse 19. *S. crassifolia*
 - 16b. Leaves straight or irregularly curved, apex acute 20. *S. salsa*
 - 14b. Seed distinctly pitted; anthers ca. 0.2 mm.
 - 17a. Perianth segments appearing unequally cornate 14. *S. corniculata*
 - 17b. Perianth segments not as above.
 - 18a. Leaf apex obtuse or acute, not mucronate; plants usually prostrate 17. *S. prostrata*
 - 18b. Leaf apex usually distinctly mucronate; plants erect.
 - 19a. Perianth segments each with a developed transverse wing, wings together appearing dish-shaped and 2.5–3.5 mm in diam. 15. *S. heterophylla*

- 19b. Perianth segments each with a triangular, short, winglike process, processes together appearing star-shaped and not more than 2 mm in diam. 16. *S. stellatiflora*

1. Suaeda microphylla Pallas, Ill. Pl. 52. 1803.

小叶碱蓬 xiao ye jian peng

Chenopodina microphylla (Pallas) Moquin-Tandon; *Lerchea microphylla* (Pallas) Kuntze; *Schoberia microphylla* (Pallas) C. A. Meyer.

Subshrubs to 1 m tall. Stems erect, much branched, gray-brown, somewhat glaucous when young, terete, ribbed, densely pubescent when young; branches spreading, rigid. Leaves gray-green, terete, slightly arcuate, lower ones to 1 cm × 1 mm, upper ones shorter, usually not more than 3 mm, base abruptly contracted, apex mucronate. Glomerules inserted on petiole, usually 3–5-flowered. Flowers bisexual and sometimes female. Perianth gray-green, 5-parted to middle, fleshy; segments oblong, abaxially convex, slightly enlarged in fruit, proximally slightly swollen, apex cucullate. Stamens 5; anthers oblong, ca. 0.5 mm. Style obscure; stigmas 2 or 3. Utricle enclosed by perianth; pericarp black-brown, membranous. Seed vertical or horizontal, black, sublustrous, ovoid, ca. 1.1 mm, obscurely pitted, rim margin obtuse.

Gobi desert, saline-alkaline deserts, dunes, lake shores. N Xinjiang [C Asia, SW Asia (Caucasus)].

2. Suaeda dendroides (C. A. Meyer) Moquin-Tandon, *Chenop. Monogr. Enum.* 126. 1840.

木碱蓬 mu jian peng

Schoberia dendroides C. A. Meyer, *Verz. Pfl. Casp. Meer.* 159. 1831; *Chenopodina dendroides* (C. A. Meyer) Moquin-Tandon.

Subshrubs, 20–60 cm tall. Stems erect, much branched; bark gray-brown to gray-white; branchlets light yellow, slender, ribbed. Leaves gray-green, linear, compressed, 0.8–1.5 cm × 1–1.5 mm, base attenuate into a short petiole, apex obtuse. Glomerules inserted on petiole, usually 5–10-flowered. Flowers bisexual. Perianth green, subglobose, fleshy; segments oblong to ovate, distinctly veined, margin membranous, apex cucullate. Stamens 5; anthers oblong to broadly ovate, ca. 0.8 mm. Style obscure; stigmas 2 or 3. Seed horizontal or vertical, sublustrous, not pitted. Fl. Jun.

Rocky slopes, deserts. N Xinjiang [C Asia, SW Asia (Caucasus)].

3. Suaeda glauca (Bunge) Bunge, *Bull. Acad. Imp. Sci. Saint-Petersbourg* 25: 362. 1879.

碱蓬 jian peng

Schoberia glauca Bunge, *Enum. Pl. China Bor.* 56. 1833; *Chenopodina glauca* (Bunge) Moquin-Tandon; *Salsola asparagoides* Miquel; *Suaeda asparagoides* (Miquel) Makino; *Suaeda stauntonii* Moquin-Tandon.

Herbs annual, to 1 m tall. Stem erect, much branched above, light green, stout, ribbed; branches ascending or oblique, long, slender. Leaves gray-green, filiform-linear, slightly up-curved, semiterete, usually 1.5–5 × ca. 0.15 cm, glabrous, base contracted, apex subacute. Glomerules mostly inserted near

base of leaves, 1–5-flowered. Flowers bisexual or sometimes some female. Perianth yellow-green, cupular, 1–1.5 mm (in bisexual flowers) or gray-green, subglobose, ca. 0.7 mm in diam., fleshy (in female flowers); segments ovate-triangular, enlarged in fruit, becoming black when dry, and together star-shaped, apex obtuse. Stamens 5; anthers obovate to oblong, ca. 0.9 mm. Stigmas 2, black-brown, slightly recurved. Utricle enclosed in perianth; pericarp membranous. Seed horizontal or oblique, black, sublustrous, lenticular, ca. 2 mm in diam., distinctly granular pitted, rim margin obtuse or acute; perisperm scant. Fl. and fr. Jul–Sep.

Saline-alkaline soils on beaches, wastelands, canal banks, field margins. Gansu, Hebei, Heilongjiang, Henan, Jiangsu, Nei Mongol, Ningxia, Qinghai, Shandong, Shanxi, Xinjiang, Zhejiang [Japan, Korea, Mongolia, Russia (Far East, SE Siberia)].

The seed oil is used in industry.

4. Suaeda altissima (Linnaeus) Pallas, Ill. Pl. 49. 1803.

高碱蓬 gao jian peng

Chenopodium altissimum Linnaeus, *Sp. Pl.* 1: 221. 1753; *Lerchea altissima* (Linnaeus) Medikus; *Schoberia leiosperma* C. A. Meyer.

Herbs annual, to 1 m tall. Stem erect, much branched, stout; branches obliquely spreading, terete, slightly ribbed. Leaves dense, filiform, usually irregularly curved, semiterete, 0.5–2 cm × 0.6–0.8 mm, base constricted into short petiole, apex acuminate. Glomerules inserted on petiole, 2–5-flowered or more. Flowers bisexual. Perianth obovoid to subglobose, 1–1.4 mm; segments ovate to suborbicular, abaxially fleshy near apex, slightly cucullate, margin membranous. Stamens 5, usually not all developed; anthers shortly oblong, 0.4–0.5 mm. Style obscure; stigmas usually 3, plumose. Utricle enclosed in perianth; pericarp brown, membranous. Seed vertical, black, ovoid, ca. 1.2 mm, obscurely pitted, rim margin obtuse; radicle inferior. Fl. and fr. Jul–Sep.

Gobi desert, wastelands, pool banks. N Xinjiang [Russia (SW Siberia)]; C and SW Asia, S Europe].

5. Suaeda paradoxa (Bunge) Bunge, *Trudy Imp. S.-Peterburgsk. Bot. Sada* 6: 427. 1880.

奇异碱蓬 qi yi jian peng

Belovia paradoxa Bunge, *Beitr. Fl. Russl.* 286. 1852.

Herbs annual, to 1 m tall. Stem erect, much or little branched, terete, slightly ribbed, glabrous, base to 7 mm in diam.; branches obliquely spreading. Leaves obliquely spreading, linear, straight or lower ones slightly curved, abaxially convex, adaxially plane, usually 1–3 cm × 1.5–2.5 mm, base attenuate into short petiole, apex acute. Glomerules inserted on petiole on upper branches, usually 3- or 4-flowered. Flowers bisexual. Perianth hemispheric or subcupular, about as long as wide, 5-parted; segments spreading at anthesis, oblong, unequal, keeled abaxially near apex, obscurely 3-veined, apex

cucullate. Anthers exerted, oblong, ca. 0.6 mm. Stigmas 3 or 4, minute. Utricle enclosed in perianth; pericarp membranous, adnate to seed. Seed vertical, black, obliquely ovoid, slightly compressed, ca. 1.5 × 1.1 mm, granular pitted, rim margin obtuse; radicle inferior. Fl. and fr. Jul–Oct.

Moist saline-alkaline soils in mountain ravines, wastelands, beside water, roadsides. Qinghai (Qaidam Pendi), N Xinjiang [C Asia].

6. Suaeda linifolia Pallas, Ill. Pl. 47. 1803.

亚麻叶碱蓬 ya ma ye jian peng

Chenopodium linifolium (Pallas) Roemer & Schultes; *Lerchea linifolia* (Pallas) Kuntze; *Schanginia linifolia* (Pallas) C. A. Meyer.

Herbs annual, 20–70 cm tall. Stem erect, densely or sparsely branched, terete, slightly striate, base to 6 mm in diam.; branches obliquely spreading, long, usually thin. Leaves usually obliquely spreading or suberect, linear, semiterete or compressed, 1–2.5 cm × 2–3 mm, base contracted, appearing shortly petiolate, apex acuminate. Glomerules inserted on petiole, not or only shortly pedunculate, usually 1-flowered, sometimes 2- or 3-flowered; bracts and bractlets ovate, membranous. Flowers bisexual and female. Perianth cylindric to obovoid, 1.5–3 × 1–2 mm, 5-lobed, fleshy; segments usually remaining closed at anthesis, slightly cucullate. Anthers oblong, ca. 0.4 mm. Stigmas 2 or 3, exerted, filiform, very short. Utricle completely enclosed by perianth; pericarp membranous. Seed vertical, black, glaucous, not lustrous, obliquely ovoid, slightly compressed, 1.5–2 × 1.2–1.5 mm, pitted, rim margin obtuse; radicle inferior. Fl. and fr. Jul–Oct.

Gobi desert, strongly saline-alkaline deserts, dry prairies, wet banks. Xinjiang [Russia (SE European part, SW Siberia); C Asia].

7. Suaeda physophora Pallas, Ill. Pl. 51. 1803.

囊果碱蓬 nang guo jian peng

Chenopodium physophorum (Pallas) Moquin-Tandon; *Lerchea physophora* (Pallas) Kuntze; *Salsola physophora* (Pallas) Schrader.

Subshrubs usually 30–80 cm tall. Stems much branched; bark gray-brown, lacinate; annual branches erect or slightly decumbent, pallid. Leaves sessile, blue-gray-green, linear, usually slightly arcuate, semiterete, 3–6 cm × 2–3 mm, base slightly contracted, apex acute to acuminate. Glomerules 1–3-flowered, inserted in bract axils, forming a paniculate inflorescence at apex of dwarf branchlets. Flowers bisexual and female. Perianth subglobose, 5-lobed; segments ovate, incurved, unequal, not keeled, apex obtuse; fruiting perianth enclosing utricle, slightly red tinged, enlarged, appearing saccate, ca. 5 mm in diam. Anthers oblong, ca. 0.8 mm. Style very short; stigmas 2 or 3. Seed horizontal, depressed globose, ca. 3 mm in diam.; testa not lustrous, membranous; radicle not protruding. Fl. and fr. Jul–Sep.

Gobi desert, arid saline-alkaline slopes and alluvial plains. W Gansu, N Xinjiang [Russia (NE Caucasus, SE European part, W Siberia); C Asia].

8. Suaeda acuminata (C. A. Meyer) Moquin-Tandon, Ann. Sci. Nat. (Paris) 23: 309. 1831.

刺毛碱蓬 ci mao jian peng

Schoberia acuminata C. A. Meyer in Ledebour, Icon. Pl. 1: 11. 1829.

Herbs annual, 20–50 cm tall. Root gray-brown. Stem erect, usually much branched, terete; branches gray-green, sometimes light reddish, slightly compressed, subglabrous. Leaves sessile, gray-green, linear, terete, 0.5–1.5 cm × 1–1.5 mm, apex obtuse or subacute and with a bristle, bristle light yellow, ca. 3 mm. Glomerules axillary, usually 3-flowered, central flower larger, bisexual, lateral flowers female; bractlets ovate or ovate-lanceolate, margin slightly serrate, apex acuminate. Perianth segments abaxially with a longitudinal keel near apex and keel extending beyond apex as a longitudinal wing, abaxially slightly keeled in fruit, apex cucullate. Anthers broadly ovate to oblong, ca. 0.6 mm. Ovary narrowly ovoid, apex slightly concave; style obscure; stigmas 3, minute. Utricle enclosed by perianth; pericarp free from seed. Seed horizontal, vertical, or oblique, red-brown to black, sublustrous, subovoid, 0.8–1 mm, smooth, rim margin obtuse; radicle inferior. Fl. and fr. Jun–Sep.

Saline-alkaline deserts, slopes, dunes. N Xinjiang [Mongolia, Russia (SE European part, SW Siberia); C and SW Asia, SE Europe].

9. Suaeda pterantha (Karelin & Kirilov) Bunge, Trudy Imp. S.-Peterburgsk. Bot. Sada 6: 430. 1880.

纵翅碱蓬 zong chi jian peng

Schoberia pterantha Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 14: 734. 1841; *Lerchea pterantha* (Karelin & Kirilov) Kuntze; *S. pygmaea* Karelin & Kirilov; *Suaeda pygmaea* (Karelin & Kirilov) Iljin (1936), not Moquin-Tandon (1840); *S. roborowskii* Iljin.

Herbs annual, 15–60 cm tall. Root brown. Stem erect, much branched, terete; branches obliquely or slightly spreading, usually slightly curved above. Leaves gray-green, linear to narrowly elliptic, 0.5–1 cm × 1–2 mm, abaxially convex, adaxially plane, base attenuate, apex shortly acuminate. Glomerules axillary, usually 3–6-flowered; bractlets ovate to ovate-lanceolate, margin slightly toothed. Flowers bisexual and female. Perianth segments usually oblique, 3-winged, abaxially with a longitudinal keel throughout length, apex cucullate. Anthers broadly ovate to oblong, ca. 0.6 mm. Ovary ovoid, apex slightly concave; style absent; stigmas 2 or 3, minute. Utricle enclosed by perianth; pericarp free from seed. Seed horizontal, vertical, or oblique, red-brown to black, sublustrous, ovoid, 0.8–1 × 0.7–0.8 mm, smooth, rim margin obtuse. Fl. and fr. Jul–Oct.

Arid slopes, wastelands. Xinjiang [Russia (SW Siberia); C Asia].

Suaeda pterantha is most probably a synonym of *S. acuminata*.

10. Suaeda rigida H. W. Kung & G. L. Chu, Acta Phytotax. Sin. 16(1): 121. 1978.

硬枝碱蓬 ying zhi jian peng

Herbs annual, large. Stem erect, stout, woody, brown to

gray-brown, somewhat smooth, base to 1.5 cm in diam.; branches obliquely spreading, rigid; branchlets slender, somewhat curved. Leaves subhorizontal, linear, terete, 1–1.5 cm × 1.5–2 mm, base attenuate, apex subobtusate or acute. Glomerules axillary, densely numerous flowered. Flowers bisexual and female. Perianth green, parted to below middle; segments narrowly oblong, usually unequal, 3-winged, abaxially fleshy near apex in fruit, margin membranous, apex cucullate. Stamens 5; filaments not exerted, filiform; anthers broadly ovate to shortly oblong, ca. 0.5 mm. Ovary ovoid; style very short; stigmas 3, sometimes 4 or 5, usually exerted, black, plumose. Pericarp membranous, free from seed. Seed vertical, red-brown to black, obliquely ovoid, ca. 1.1 × 0.9 mm, somewhat reticulate lineate.

• Under *Populus* trees by desert streams. S Xinjiang.

Suaeda rigida may be a synonym of *S. turkestanica* Litvinov.

11. Suaeda arcuata Bunge, Beitr. Fl. Russl. 285. 1852.

五蕊碱蓬 wu rui jian peng

Suaeda lipskii Litvinov.

Herbs annual, 10–20 cm tall. Stem erect, few-branched, slender. Leaves linear, somewhat compressed, usually 0.5–1.5 cm × 0.7–2 mm, base attenuate, apex acute. Glomerules axillary, densely 3–6-flowered; bractlets ovate, margin slightly toothed, apex mostly caudate. Flowers bisexual and female. Perianth 5-parted; segments cucullate, unequal, 3-veined, margin membranous. Stamens 5; anthers oblong-elliptic, 0.5–0.8 mm. Ovary narrowly ovoid, apex slightly concave; style absent; stigmas 3–5, exerted, capillary. Utricle not seen. Fl. Sep.

Under *Tamarix* by desert streams. SW Xinjiang [C Asia].

12. Suaeda przewalskii Bunge, Bull. Acad. Imp. Sci. Saint-Petersbourg 25: 260. 1879.

阿拉善碱蓬 a la shan jian peng

Herbs annual, green, purplish, or reddish purple, 20–40 cm tall. Stems several, prostrate or decumbent, branched, usually somewhat curved, terete; branches sparse, slender. Leaves sessile or subsessile, appearing somewhat ovoid, 1–1.5 cm × ca. 5 mm at widest point, fleshy, succulent, base attenuate, apex rounded. Glomerules borne in leaf axils and on dwarf, axillary branchlets, usually 3–10-flowered; bractlets entire at margin. Flowers bisexual and female. Perianth depressed subglobose, 5-parted; segments broadly ovate, with narrowly triangular, unequal wings extending at base abaxially in fruit. Anthers oblong, ca. 0.5 mm. Stigmas 2, minute. Utricle enclosed by perianth; pericarp adnate to seed. Seed horizontal, reniform or subglobose, ca. 0.5 mm, margin obtuse; testa black, scarcely lustrous, thinly leathery or membranous, clearly foveolate pitted. Fl. and fr. Jun–Oct.

Inter-dunes, lake shores, saline-alkaline bottomlands. W Gansu, W Nei Mongol, Ningxia [Mongolia].

13. Suaeda kossinskyi Iljin, Izv. Glavn. Bot. Sada SSSR 25: 201. 1926.

肥叶碱蓬 fei ye jian peng

Bienertia kossinskyi (Iljin) Tzvelev.

Herbs annual, 10–20 cm tall. Root black-brown, terete. Stem erect, mostly branched from base; branches prostrate or ascending, yellow-white, terete, somewhat ribbed above, glabrous. Leaves subsessile, fleshy, base broadly cuneate, apex rounded; leaves on stem and main branches linear, semiterete, to 1.5 cm × 2 mm; leaves on lateral branches narrowly ovate to obovate, slightly compressed, 3–4 × 2–3 mm. Glomerules borne in leaf axils and on axillary, dwarf, usually bifurcate, leafless branchlets, usually 2–5-flowered. Flowers bisexual and female. Perianth depressed, 5-parted; segments subtriangular, base extended into an irregular, transverse wing in fruit. Stamens 1 or 2 developed; filaments not exerted, flattened filiform; anthers ovate-oblong, ca. 0.3 mm. Style obscure; stigmas 2, divaricate, minute. Seed horizontal, depressed globose or lenticular, 0.8–1.2 mm in diam.; testa red-brown to black, sublustrous, membranous or thinly leathery, obscurely reticular lineate. Fl. and fr. Aug–Oct.

Moist strongly saline-alkaline soils. N Xinjiang [C Asia, SE Europe (Lower Volga region of Russia)].

14. Suaeda corniculata (C. A. Meyer) Bunge, Trudy Imp. S.-Peterburgsk. Bot. Sada 6: 429. 1880.

角果碱蓬 jiao guo jian peng

Herbs annual, to 60 cm tall, glabrous. Stem prostrate, decumbent, or erect, light green, somewhat curved, terete, slightly ribbed; branches obliquely spreading, slightly curved, slender. Leaves sessile, linear, straight or lower ones slightly curved, semiterete or compressed, 0.3–2 cm × 0.5–2 mm, base somewhat contracted, apex obtuse or acute. Glomerules arranged into spikes on upper branches, usually 3–6-flowered. Flowers bisexual and female. Perianth depressed, 5-parted; segments unequal, abaxially extended and thickened, appearing unequally cornate, apex obtuse. Filaments slightly exerted, short; anthers yellow-white, subglobose, minute, 0.15–0.2 mm. Style obscure; stigmas 2. Utricle depressed globose; pericarp free from seed. Seed horizontal or oblique, lenticular, 1–1.5 mm in diam.; testa black, sublustrous, leathery, distinctly pitted, rim margin sub-obtuse. Fl. and fr. Aug–Sep.

Saline-alkaline deserts, lake shores, riversides. W Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia, N Qinghai, Xinjiang, Xizang [Mongolia, Russia (S European part, S Siberia); C Asia, SE Europe (SE Ukraine)].

- 1a. Stem decumbent or erect; leaves semiterete, 1–2 cm × 0.5–1 mm 14a. var. *corniculata*
- 1b. Stem prostrate; leaves compressed, 0.3–1.2 cm × 1.5–2 mm 14b. var. *olufsenii*

14a. Suaeda corniculata var. **corniculata**

角果碱蓬(原变种) jiao guo jian peng (yuan bian zhong)

Schoberia corniculata C. A. Mey in Ledebour, Fl. Alt. 1: 399. 1829; *Lerchea corniculata* (C. A. Meyer) Kuntze; *Suaeda corniculata* Bunge var. *microcarpa* Fu & W. Wang.

Stem decumbent or erect. Leaves semiterete, 1–2 cm × 0.5–1 mm.

Saline-alkaline deserts, lake shores, riversides. W Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia, N Qinghai, Xinjiang [Mongolia, Russia (S European part, S Siberia); C Asia, SE Europe (SE Ukraine)].

14b. Suaeda corniculata var. **olufsenii** (Paulsen) G. L. Chu in H. W. Kung & C. P. Tsien, Fl. Reipubl. Popularis Sin. 25(2): 128. 1979.

藏角果碱蓬 zang jiao guo jian peng

Suaeda olufsenii Paulsen, Vidensk. Meddel. Dansk Naturhist. Foren. Kjøbenhavn 6(5): 194. 1903.

Stem prostrate. Leaves compressed, 0.3–1.2 cm × 1.5–2 mm.

River banks, sandy places on lake shores. Xizang [C Asia (Pamir mountains)].

This taxon should perhaps be treated at specific rank.

15. Suaeda heterophylla (Karelin & Kirilov) Bunge, Trudy Imp. S.-Peterburgsk. Bot. Sada 6: 429. 1880.

盘果碱蓬 pan guo jian peng

Schoberia heterophylla Karelin & Kirilov, Bull. Soc. Imp. Naturalistes Moscou 14: 734. 1841; *Breza heterophylla* (Karelin & Kirilov) Moquin-Tandon; *Lerchea heterophylla* (Karelin & Kirilov) Kuntze.

Herbs annual, 20–50 cm tall. Stem erect or decumbent, much branched, terete, slightly ribbed; upper branches usually ascending. Leaves blue-gray-green, slightly glaucous, linear to filiform-linear, terete, 1–2 cm × 1–1.5 mm, base attenuate, apex subobtusely, awned; upper leaves shorter and broader. Glomerules axillary, usually 3–5-flowered. Flowers sessile, bisexual. Perianth green, depressed, 5-parted; segments triangular, base extending into a triangular wing, wing usually rounded, wings together appearing dish-shaped, 2.5–3.5 mm in diam. Anthers subglobose, minute, ca. 0.2 mm in diam. Style obscure; stigmas 2. Seed horizontal, black or red-brown, sublustrous, depressed ovoid or lenticular, ca. 1 mm in diam., distinctly pitted. Fl. and fr. Jul–Sep.

Strongly saline-alkaline places of Gobi desert, riversides, lake shores, sometimes in fields. W Gansu, Ningxia, N Qinghai, Xinjiang, Xizang [C Asia, SW Asia (Caucasus, Iran), SE Europe (Lower Volga region of Russia)].

16. Suaeda stellatiflora G. L. Chu, Acta Phytotax. Sin. 16(1): 122. 1978.

星花碱蓬 xing hua jian peng

Herbs annual, 20–80 cm tall. Stem prostrate or decumbent, usually much branched, somewhat ribbed. Leaves subsessile, linear, slightly curved, semiterete, 0.5–1 cm × ca. 1 mm, base slightly depressed, apex acute or obtuse, awned; leaves of upper stem and branches lanceolate to ovate, shorter, abaxially convex, adaxially plane. Glomerules axillary, usually 2–5-flowered. Flowers bisexual. Perianth depressed, 5-parted, somewhat fleshy; segments extended at base into a transverse, obtusely triangular, equal wing, wings together appearing star-shaped, 1.5–2 mm in diam. Stamens 5; filaments not exerted, filiform;

anthers hemispheric, ca. 0.5 mm in diam. Style obscure; stigmas 2, minute. Pericarp free from seed. Seed horizontal, lenticular, 0.9–1 mm in diam.; testa red-brown to black, thinly leathery or membranous, distinctly pitted, rim margin obtuse. Fl. and fr. Jul–Sep.

• Inter-dunes, saline-alkaline wastelands, lake shores, canal banks; 900–2200 m. W Gansu, Xinjiang.

17. Suaeda prostrata Pallas, Ill. Pl. 55. 1803.

平卧碱蓬 ping wo jian peng

Suaeda maritima (Linnaeus) Dumortier var. *vulgaris* Moquin-Tandon; *Chenopodina maritima* (Linnaeus) Moquin-Tandon var. *vulgaris* (Moquin-Tandon) Moquin-Tandon.

Herbs annual, 20–50 cm tall, glabrous. Stem prostrate or obliquely spreading, somewhat ribbed, base branched and slightly woody; upper branches subhorizontal, equal. Leaves gray-green, linear, semiterete, slightly compressed, 0.5–1.5 cm × 1–1.5 mm, base slightly contracted, apex subobtusely or acute; leaves of lateral branches shorter than others, equaling or longer than perianth. Glomerules axillary, 2- to numerous flowered. Flowers bisexual. Perianth green, 5-parted, somewhat fleshy; segments thickened and cucullate in fruit, base extending into an irregular, winglike or tongue-like process. Filaments slightly exerted; anthers broadly oblong or subglobose, ca. 0.2 mm. Style obscure; stigmas 2, black-brown. Utricle depressed; pericarp light yellow-brown, membranous. Seed black, sublustrous, depressed ovoid or lenticular, 1.2–1.5 mm in diam., distinctly pitted. Fl. and fr. Jul–Oct.

Strongly saline-alkaline places. W Gansu, Hebei, N Jiangsu, Nei Mongol, Ningxia, N Shaanxi, Shanxi, N Xinjiang [Russia (S European part, S Siberia); C and SW Asia, SE Europe].

18. Suaeda australis (R. Brown) Moquin-Tandon, Ann. Sci. Nat. (Paris) 23: 318. 1831.

南方碱蓬 nan fang jian peng

Chenopodium australe R. Brown, Prodr. 407. 1810.

Shrubs small, 20–50 cm tall. Stems much branched, usually bearing adventitious roots below, gray-brown to light yellow, leaf scars remaining distinct. Leaves usually obliquely spreading, gray-green or reddish purple, linear, straight or slightly curved, semiterete, 1–2.5 cm × 2–3 mm, base attenuate, articulated, apex acute or obtuse; upper leaves shorter, narrowly ovate to elliptic, abaxially convex, adaxially plane. Glomerules axillary, 1–5-flowered. Flowers bisexual. Perianth green or reddish purple, slightly depressed, 5-parted, somewhat fleshy; segments ovate-oblong, thickened in fruit, veinless, margin submembranous. Anthers broadly ovate, ca. 0.5 mm. Style obscure; stigmas 2, not recurved, yellow-brown to black-brown, nearly subulate, papillate. Utricle depressed globose; pericarp membranous, free from seed. Seed black-brown, sublustrous, lenticular, 0.8–1 mm in diam., slightly pitted. Fl. and fr. Jul–Nov.

Mangrove forest margins, sandy places on beaches, seashores. Fujian, Guangdong, Guangxi, Jiangsu, Taiwan [S Japan; SE Asia, Australia].

19. Suaeda crassifolia Pallas, Ill. Pl. 54. 1803.

镰叶碱蓬 lian ye jian peng

Schoberia obtusifolia Bunge; *Suaeda drepanophylla* Litvinov.

Herbs annual, 20–50 cm tall. Stem erect, usually much branched, pallid or yellow-white, terete below, slightly ribbed above, glabrous. Leaves usually blue-green, upcurved sickle-shaped, linear, terete, 0.5–1.5 cm × 1.5–2 mm, base somewhat contracted, apex obtuse; upper leaves shorter, broadly elliptic to suborbicular. Glomerules 4–12-flowered or more, forming an interrupted spikelike panicle; bractlets ovate or obovate, apical margin slightly toothed. Flowers bisexual and sometimes female. Perianth star-shaped, 1.5–2 mm in diam.; segments ovate, unequal, base extended into cornate and triangular processes. Stamens 5; anthers broadly elliptic, ca. 0.3 mm. Style obscure; stigmas 2, black-brown. Seed horizontal or oblique, red-brown to black, sublustrous, ovoid or slightly depressed, ca. 1 × 0.8 mm, finely lineate. Fl. Jun–Jul, fr. Aug–Sep.

Saline-alkaline deserts, river banks, lake shores. S Xinjiang [C Asia, SW Asia (E Caucasus, N Iran), SE Europe (Lower Volga region of Russia)].

20. *Suaeda salsa* (Linnaeus) Pallas, III. Pl. 46. 1803.

盐地碱蓬 yan di jian peng

Chenopodium salsum Linnaeus, Sp. Pl. 1: 221. 1753; *Chenopodina salsa* (Linnaeus) Moquin-Tandon; *Lerchea salsa* (Linnaeus) Medikus; *Salsola salsa* (Linnaeus) Linnaeus; *Schoberia salsa* (Linnaeus) C. A. Meyer; *Suaeda heteroptera* Kitagawa; *S. heteroptera* var. *tenuiramea* P. Y. Fu & W. Wang; *S. ussuriensis* Iljin.

Herbs annual, green or purple-red, 20–80 cm tall. Stem erect, branching mostly above, yellow-brown, terete, somewhat ribbed, glabrous; branches spreading or oblique, slender. Leaves sessile, linear, semiterete, usually 1–2.5 cm × 1–2 mm, apex subobtuse or acute; upper leaves shorter. Glomerules axillary, usually 3–5-flowered, arranged into interrupted spikes on branches; bractlets ovate, margin subentire. Flowers bisexual and sometimes female. Perianth hemispheric, abaxially plane; segments ovate, somewhat fleshy, abaxially slightly thickened in fruit, sometimes base extended into a triangular or narrow, winglike process, margin membranous, apex obtuse. Anthers ovoid or oblong, 0.3–0.4 mm. Style obscure; stigmas 2, usually black-brown, papillate. Utricle enclosed in perianth; pericarp membranous, usually broken after ripening. Seed horizontal, black, sublustrous, lenticular or obliquely ovoid, 0.8–1.5 mm in diam., obscurely reticulate lineate, rim margin obtuse. Fl. and fr. Jul–Oct.

Saline and alkaline soils on beaches, lake shores. NW Gansu, Hebei, Heilongjiang, Jiangsu, Jilin, Liaoning, Nei Mongol, Ningxia, Qinghai, N Shaanxi, Shandong, Shanxi, Xinjiang, Zhejiang [Korea, Mongolia; Asia, Europe].

