

16. CORISPERMUM Linnaeus, Sp. Pl. 1: 4. 1753.

虫实属 chong shi shu

Herbs annual, usually covered with dendroid and stellate hairs. Leaves flat or flattened, filiform or linear to lanceolate, margin entire; veins 1–3. Flowers solitary in bract axils, bisexual, forming dense or loose, spikelike inflorescences on upper stem and branches; bractlets absent. Perianth segments 1–3 or absent, unequal, membranous, upper segment larger, lower 2 segments smaller or absent. Stamens 1–3 or 5; filaments linear, flattened, usually longer than perianth; anthers oblong, 2-loculed, longitudinally dehiscent. Ovary ovoid or ellipsoid, compressed; style short; stigmas 2. Fruit a utricle, compressed, oblong to orbicular in outline, abaxially convex, adaxially plane or slightly concave, margin usually winged, entire or erose, plane or crisped, apex emarginate or rounded to acute, beaked; beak with a 2-fid tip formed from style bases; pericarp adnate to seed. Seed vertical; embryo horseshoe-shaped; radicle inferior; perisperm copious.

About 60 species: N hemisphere, mostly in Asia, but several species in Europe and North America; 27 species (12 endemic) in China.

Despite several attempts at regional taxonomic revisions, representatives of this taxonomically complicated genus are still insufficiently known in China. Several entities (species and varieties) are reported in China from only one to several localities and probably represent local forms of more widespread, variable species. Characters used for segregation of some species and infraspecific entities are very unreliable and variable (e.g., plant size, branching habit, degree of pubescence, color, shape of inflorescence etc.). For example, young plants are normally more pubescent than old ones, which sometimes become nearly glabrous at maturity. Many plants at maturity become yellowish or reddish to deep beet-red, which often greatly depends on environmental conditions. The branching habit depends, among other factors, on the populational structure: plants in dense stands are often less branched than plants growing in rarefied populations. The most reliable diagnostic characters are those of utricles; however, even these characters should be used carefully. When collecting *Corispermum*, representative series of specimens showing variability patterns and possible hybridization processes in populations are very desirable.

The number of species of *Corispermum* occurring in China is probably exaggerated. Variability ranges and hybridization patterns of taxa are also poorly understood. To reveal these peculiarities of *Corispermum* species in China, field observation and populational and experimental studies are desirable, with comparative data on *Corispermum* from adjacent territories.

In our opinion, the best solution at the present state of our knowledge of *Corispermum* in China would be to refrain from hasty decisions and attempts to reduce the number of taxa by uniting poorly known entities. Because of that, the present treatment mainly follows the treatment by T sien and Ma in FRPS (1979), especially in the key and descriptions. However, we have inserted necessary taxonomic and nomenclatural comments drawing attention to particular problems.

- 1a. Utricle apex \pm emarginate.
 - 2a. Plants usually small, of montane habitats; branches prostrate or ascending.
 - 3a. Utricle ovate, covered with stellate hairs 27. *C. lepidocarpum*
 - 3b. Utricle obovate or oblong-obovate, glabrous.
 - 4a. Plants much branched, branches crowded; bracts lanceolate to ovate, not sickle-shaped 26. *C. lhasaense*
 - 4b. Plants few branched; bracts sickle-shaped.
 - 5a. Utricle yellow-green, obovate, ca. 5×4 mm, wing yellow-green, ca. 1 mm wide 24. *C. pseudofalcatum*
 - 5b. Utricle dark green, oblong-obovate, $3.5-4 \times 2.5-3$ mm, wing light yellow, ca. 0.5 mm wide 25. *C. falcatum*
 - 2b. Plants large; branches ascending.
 - 6a. Spikelike inflorescence narrowly cylindric, slender, loose (dense in *C. platypterum*); bracts ovate to lanceolate, usually 1-veined, with narrowly membranous margin.
 - 7a. Utricle oblong-elliptic, wing 0.4–0.7 mm wide 21. *C. elongatum*
 - 7b. Utricle suborbicular, wing ca. 1 mm wide.
 - 8a. Spikelike inflorescence dense; bracts ovate to lanceolate; utricle $4-5 \times 3.5-4.5$ mm 22. *C. platypterum*
 - 8b. Spikelike inflorescence loose and interrupted; bracts lanceolate; utricle $4.5-5.5 \times 3.9-5$ mm 23. *C. stenolepis*
 - 6b. Spikelike inflorescence clavate, stout, crowded; bracts ovate to broadly so, usually 3-veined, with broadly membranous margin.
 - 9a. Utricle orbicular, suborbicular, or ovate.
 - 10a. Utricle yellow-green, brown punctate and bullate, obovate, $3.7-4.5 \times 2.9-4$ mm, wing light yellow 19. *C. dilutum*
 - 10b. Utricle light yellow, dark punctate, orbicular or suborbicular, $3-4.5 \times 3-4.3$ mm, wing of lighter color than utricle body 20. *C. confertum*
 - 9b. Utricle oblong-elliptic to broadly elliptic-obovate.
 - 11a. Utricle $4.9-6 \times 3.5-4.2$ mm; spikelike inflorescence $7-12 \times 1-1.5$ cm, bracts subherbaceous 16. *C. macrocarpum*
 - 11b. Utricle less than 4.5 mm; spikelike inflorescence usually $3-6(-7) \times 0.8-1$ cm, bracts submembranous.

- 12a. Utricle oblong-obovate, 3.5–4 × 2.5–3 mm, wing strongly twisted 17. *C. retortum*
 12b. Utricle elliptic or oblong-elliptic, 3.7–4.5 × 2.8–3.2 mm, wing not twisted 18. *C. puberulum*
- Ib. Utricle apex rounded or acute, not emarginate.
- 13a. Utricle discoid, orbicular, or suborbicular, marginal wing absent or very narrow, slightly involute; leaves narrowly oblong or oblanceolate, 3(or 5)-veined 1. *C. patelliforme*
- 13b. Utricle not discoid, marginal wing (if present) not involute; leaves linear or oblanceolate, 1(or 3)-veined.
- 14a. Spikelike inflorescence stout, dense.
- 15a. Utricle elliptic to obovate 15. *C. orientale*
- 15b. Utricle elliptic, broadly so, or oblong-obovate.
- 16a. Spikelike inflorescence usually cylindric, 3–8 mm wide; utricle 2–3.5 × 1.5–2 mm 11. *C. chinganicum*
- 16b. Spikelike inflorescence usually clavate, 8–15 mm wide; utricle 3–6 × 2–3.5 mm.
- 17a. Spikelike inflorescence 1–7 cm, bracts lanceolate, with narrowly membranous margin 13. *C. huanghoense*
- 17b. Spikelike inflorescence 1–25 cm, bracts linear-lanceolate to ovate, with broadly membranous margin.
- 18a. Utricle oblong-obovate or broadly elliptic, 3–5 × 2–3.5 mm, hairy, base and apex rounded 12. *C. candelabrum*
- 18b. Utricle broadly elliptic, 3.5–4 × 2.5–3 mm, glabrous, base subcordate, apex rounded 14. *C. stauntonii*
- 14b. Spikelike inflorescence linear to narrowly cylindric, long, thin, loose, and at maturity often interrupted.
- 19a. Plants small, of montane habitats, 3–20 cm tall; spikelike inflorescence 2.5–5 cm.
- 20a. Utricle 2–3 × 1.5–2 mm, wing very narrow, hairy 8. *C. pamiricum*
- 20b. Utricle 3–4 × 2–2.5 mm, wing broad, slightly hairy.
- 21a. Plants usually reddish purple at maturity, stout; bracts oblanceolate to lanceolate; utricle oblong-obovate, wing slightly undulate or crisped, apex acute, distinctly subulate beaked 9. *C. dutreuilii*
- 21b. Plants green at maturity, slender; bracts lanceolate; utricle broadly elliptic or oblong-elliptic, wing neither undulate nor crisped, apex rounded or acute 10. *C. tibeticum*
- 19b. Plants usually large, 15–50 cm tall; spikelike inflorescence usually 5–10 cm.
- 22a. Utricle 1.5–3 mm, apex rounded.
- 23a. Utricle yellow-green, broadly obovate-elliptic, wing yellow-green 2. *C. lehmannianum*
- 23b. Utricle gray-green, elliptic, wing light yellow.
- 24a. Utricle 2.5–3 × 1.5–2 mm, smooth, margin distinctly winged 6. *C. heptapotamicum*
- 24b. Utricle 1.5–2.3 × 1–1.5 mm, abaxially sometimes tuberculate (i.e., with occasional “warts” formed by portions of pericarp not adherent to testa), margin nearly wingless 7. *C. mongolicum*
- 22b. Utricle 3–5 mm, apex acute.
- 25a. Plants small, 7–10 cm tall, less branched; spikelike inflorescence broader; utricle oblong to broadly elliptic, 4–5 × 2.5–3.5 mm, wing ca. 1/2 as wide as utricle body 5. *C. praecox*
- 25b. Plants large, usually ca. 35 cm tall, much branched; spikelike inflorescence slender; utricle obovate-oblong, 3–4 × ca. 2 mm, wing narrow, sometimes nearly absent.
- 26a. Utricle wingless or nearly so, never pubescent, margin usually entire; inflorescence narrowly cylindric, slender, normally interrupted and often reflexed at maturity 3. *C. declinatum*
- 26b. Utricle narrowly winged, pubescent or glabrescent at maturity, margin entire to erose or undulate; inflorescence cylindric, interrupted or not, normally erect at maturity 4. *C. tylocarpum*

1. *Corispermum patelliforme* Iljin, Izv. Glavn. Bot. Sada SSSR 28: 643. 1929.

碟果虫实 die guo chong shi

Plants 10–45 cm tall. Stem erect, much branched; branches obliquely spreading. Leaves narrowly elliptic or oblanceolate, 0.2–4.5 × 0.5–1 cm, base attenuate, apex rounded, mucronate. Spikelike inflorescence terete, crowded; bracts lanceolate to broadly ovate, 0.5–1.5 cm × 3–7 mm, base rounded, margin membranous, apex acute, mucronate. Perianth segments 3, upper one broadly ovate, ca. 1 × 1.5 mm, lower segments triangu-

lar, smaller. Stamens 5; filaments subulate, equaling or slightly longer than perianth segments. Utricle sublustrous, discoid, 2.6–4 mm, glabrous; wing very narrow, involute; beak obscure. Fl. and fr. Aug–Sep.

Dunes. NW Gansu, W Nei Mongol, Ningxia, Qinghai (Qaidam Pendi) [Mongolia].

This species, the only representative of *Corispermum* sect. *Patellisperma* Mosyakin, is probably the most ancient living representative of the genus, showing common characters with hypothetical ancestors of *Corispermum*, which were morphologically similar to

modern species of *Anthochlamys* Fenzl.

2. *Corispermum lehmannianum* Bunge, Mém. Acad. Imp. Sci. St.-Petersbourg, Sér. 6, Sci. Math. 7: 458. 1854.

倒披针叶虫实 dao pi zhen ye chong shi

Plants 7–35 cm tall. Stem erect, much branched; lower branches ascending, upper ones suberect. Leaves oblanceolate or oblong-lanceolate, 1.5–3.5 × 0.3–0.8 cm, 1-veined, base attenuate, apex rounded or acute, mucronate. Spikelike inflorescence slender, loose, usually 6–10 cm; bracts lanceolate to ovate, base rounded, apex acute or acuminate. Perianth segment 1, oblong or broadly elliptic, apex lacerate. Stamens 1(or 3). Utricle yellow-green, sublustrous, broadly elliptic, 2–3 × 1.5–2 mm, glabrous, base broadly cuneate, apex rounded; body obovate; wing distinct, margin irregularly denticulate; beak triangular, short, apex erect, bifid. Fl. and fr. May–Jul.

Dunes, sandy places, field margins. N Xinjiang [Afghanistan; C Asia, SW Asia (Iran)].

3. *Corispermum declinatum* Stephan ex Iljin, Trudy Prikl. Bot. 19(2): 69. 1928.

绳虫实 sheng chong shi

Plants 15–50 cm tall. Stem erect, much branched; lower branches ascending. Leaves linear, 2–6 cm × 1–3 mm, 1-veined, base attenuate, apex acuminate, mucronate. Spikelike inflorescence elongate, narrowly linear, loose and interrupted, at maturity often reflexed, 5–15 × 0.5 cm; bracts linear-lanceolate to lanceolate, 0.5–3 cm × 2–3 mm, 1-veined, base broadly cuneate, margin membranous, apex acuminate. Perianth segments 1(or 3), upper one broadly elliptic, apex entire or erose. Stamens 1(or 3); filaments ca. 1/2 as long as perianth segments. Utricle obovate-oblong, 3–4 × ca. 2 mm, glabrous, base broadly cuneate, apex triangular to rostrate, acute; body narrowly obovate to elongate, smooth or tuberculate; wing absent or obscure, margin entire; beak ca. 0.5 mm, apex erect, ca. 1/3 as long as beak. Fl. and fr. Jun–Sep.

Sandy wastelands, riversides, field margins, roadsides. Gansu, Hebei, Liaoning, Nei Mongol, Shaanxi, Shanxi, Xinjiang [Mongolia, Russia (S Siberia)]; NC Asia; locally naturalized in E Europe].

The authorship of *Corispermum declinatum* has been constantly erroneously cited as “Stephan ex Steven.” However, Steven (Mém. Soc. Imp. Naturalistes Moscou 5: 334. 1817) never accepted *C. declinatum* as a species, but cited it as a synonym of *C. hyssopifolium* Linnaeus var. “a.” The first valid publication of the name was by Iljin in 1928.

4. *Corispermum tylocarpum* Hance, J. Bot. 6: 47. 1868.

毛果绳虫实 mao guo sheng chong shi

Corispermum declinatum Stephan ex Iljin var. *tylocarpum* (Hance) C. P. Tsien & C. G. Ma; *C. gmelinii* Bunge; *C. rostratum* A. Baranov & B. Skvortsov ex W. Wang.

Plants 10–50 cm tall. Stem erect, much branched. Leaves linear to linear-lanceolate, 2–6 cm × 2–4 mm, 1-veined, base attenuate, apex acuminate, mucronate. Spikelike inflorescence elongate, linear-cylindric, interrupted to ± dense, 5–10(–15) × 0.5–0.7 cm; bracts linear-lanceolate to narrowly ovate, 0.5–3 cm × 2–3 mm, 1(–3)-veined, base broadly cuneate, margin

membranous, apex acuminate. Perianth segments 1(or 3). Stamens 1(or 3). Utricle obovate-oblong, 3–4 × ca. 2 mm, glabrous or covered with dendroid or stellate hairs, base broadly cuneate, apex acute; body narrowly obovate, smooth or slightly tuberculate; wing very narrow, margin entire or irregularly erose. Fl. and fr. Jun–Sep.

Sandy wastelands, riversides, field margins, roadsides. Hebei, N Jiangsu, Liaoning, Nei Mongol, Shanxi, Xinjiang [E Mongolia].

Corispermum tylocarpum is closely related to *C. declinatum*. Plants of typical *C. declinatum* never have pubescent utricles; they are usually more slender, and the utricles are normally narrower and wingless. Patterns of distribution of *C. declinatum* s.str. and *C. tylocarpum* in China are insufficiently known because of confusion of these closely related entities.

5. *Corispermum praecox* C. P. Tsien & C. G. Ma, Acta Phytotax. Sin. 16(1): 117. 1978.

早熟虫实 zao shu chong shi

Plants 7–10 cm tall. Stem erect, few branched. Leaves linear, 1.5–3 cm × ca. 1 mm, 1-veined, sparsely covered with stellate hairs, base attenuate, apex acute, mucronate. Inflorescence spikelike, elongate, loose; bracts linear-lanceolate to ovate, 0.5–2 cm × 2–3 mm. Perianth segment 1, broadly elliptic, apex irregularly denticulate. Stamens 1(or 3), ca. 1.5 × as long as perianth segment. Utricle oblong-elliptic, 4–5 × 2.5–3.5 mm, densely stellate hairy, base truncate or subcordate, apex acute; wing usually ca. 1/2 as wide as body, slightly crisped, margin irregularly denticulate; beak ca. 1 mm, apex 1/4–1/3 as long as beak. Fl. and fr. May–Jun.

• Dunes. NE Henan (Fengqiu, Kaifeng).

Judging from its elongate fruit body, this little-known species seems to be closely related to *C. tylocarpum*. However, the unusually broad wing makes its affiliation with that species doubtful.

6. *Corispermum heptapotamicum* Iljin, Trudy Bot. Inst. Acad. Nauk SSSR, Ser. 1, Fl. Sist. Vyssh. Rast. 3: 165. 1937.

中亚虫实 zhong ya chong shi

Plants 10–40 cm tall. Stem erect, much branched, densely hairy; lower branches ascending or subprostrate. Leaves linear or oblanceolate, 1.5–4 cm × 4–8 mm, 1-veined, hairy, base attenuate, apex acute, mucronate. Spikelike inflorescence elongate, 5–15 cm; bracts linear, lanceolate, or ovate, 0.4–1.7 cm × 1.5–2.5 mm, hairy, base attenuate or rounded, margin narrowly membranous, apex acute or acuminate. Perianth segments 1(or 3), upper one oblong, apex acute. Stamens 1(or 3). Utricle gray-green, elliptic, 2.5–3 × 1.5–2 mm, glabrous, base broadly cuneate, apex rounded; wing yellow-green, narrow, margin entire or erose; beak terete, apex erect. Fl. and fr. Jul–Sep.

Sandy places, dunes. W Gansu, S Xinjiang [E Kazakhstan].

Plants with pubescent utricles but otherwise almost identical to *C. heptapotamicum* were described as *C. korovinii* Iljin (Izv. Glavn. Bot. Sada SSSR 28: 641. 1929). Such plants may be found in W Xinjiang.

7. *Corispermum mongolicum* Iljin, Izv. Glavn. Bot. Sada SSSR 28: 648. 1929.

蒙古虫实 meng gu chong shi

Plants 10–35 cm tall. Stem erect, terete, hairy, branched; lowest branches prostrate or ascending, upper ones obliquely spreading. Leaves linear or lanceolate, 1.5–2.5 cm × 2–5 mm, 1-veined, base attenuate, apex acute, mucronate. Spikelike inflorescence elongate, terete, loose, 3–6 cm; bracts linear-lanceolate to ovate, 0.5–2 cm × ca. 2 mm, base attenuate, apex acuminate. Perianth segment 1, oblong or broadly elliptic, apex irregularly denticulate. Stamens 1–5. Utricle gray-green, sublustrous, broadly elliptic, 1.5–3 × 1–1.5 mm, sometimes with postulate processes, glabrous, base cuneate, apex rounded; wing narrow or obscure, margin entire; beak very short, apex ca. 1/2 as long as beak. Fl. and fr. Jul–Sep.

Sandy areas of Gobi desert, dunes, sandy meadows. Gansu, W Nei Mongol, Ningxia, W Xinjiang [Mongolia, Russia (W Siberia)].

8. *Corispermum pamiricum* Iljin, Trudy Bot. Inst. Acad. Nauk SSSR, Ser. 1, Fl. Sist. Vyssh. Rast. 3: 165. 1937.

帕米尔虫实 pa mi er chong shi

Plants 5–15 cm tall. Stem branched from base; branches prostrate or ascending. Leaves linear, 1–2.5 cm × ca. 1 mm, 1-veined, hairy, base attenuate, apex acute, mucronate. Spikelike inflorescence terete, slightly crowded, usually 3–5 cm; bracts linear-lanceolate to ovate, 0.5–1.5 cm × 1–2 mm, base rounded, margin distinctly membranous, apex acute or acuminate. Perianth segment 1, orbicular, apex irregularly lacerate. Stamens 1–3, exerted beyond perianth segment. Utricle brown with a few black spots, obovate-elliptic, 2–3 × 1.5–2 mm, glabrous, subglabrous, or densely covered with stellate hairs, base and apex rounded; wing same color as body, narrow, margin entire; beak thick, short, apex erect, ca. 1/3 as long as beak. Fl. and fr. Jul–Aug.

Sandy field margins and lake shores; ca. 4400 m. Gansu, Xinjiang, Xizang [C Asia (Pamir mountains)].

- 1a. Utricle glabrous or subglabrous 8a. var. *pamiricum*
1b. Utricle densely covered with stellate hairs 8b. var. *pilocarpum*

8a. *Corispermum pamiricum* var. *pamiricum*

帕米尔虫实(原变种) pa mi er chong shi (yuan bian zhong)

Utricle glabrous or subglabrous.

Sandy field margins; high elevations. Gansu, Xinjiang, Xizang [C Asia (Pamir mountains)].

8b. *Corispermum pamiricum* var. *pilocarpum* C. P. Tsien & C. G. Ma, Acta Phytotax. Sin. 16(1): 118. 1978.

毛果帕米尔虫实 mao guo pa mi er chong shi

Utricle densely covered with stellate hairs.

- Sandy lake shores; ca. 4400 m. W Xizang (Rutog).

Corispermum gelidum Iljin (described from the Pamir mountains), with undulate wing margins and pubescent utricles, is related to both *C. pamiricum* and *C. tibeticum*, and is probably even the same taxon as *C. pamiricum* var. *pilocarpum*. Additional studies of these rare and little-

known entities would be desirable.

9. *Corispermum dutreuilii* Iljin, Trudy Bot. Inst. Acad. Nauk SSSR, Ser. 1, Fl. Sist. Vyssh. Rast. 3: 162. 1937.

粗喙虫实 cu hui chong shi

Corispermum tibeticum Iljin, p.p.

Plants 5–15 cm tall. Stem erect, green or reddish purple, sparsely hairy, few branched from base; lowest branches ascending or prostrate, upper ones obliquely spreading. Leaves linear or oblanceolate, to 3.5 cm × 3–5 mm, 1-veined, base attenuate, apex acute, mucronate. Spikelike inflorescence 2–14 cm, ± crowded; bracts oblanceolate or linear to lanceolate, 0.5–3 cm × 1–5 mm, 1-veined, base attenuate or rounded, margin usually membranous, apex acute, mucronate, erect in fruit. Perianth segment 1, ovate, apex irregularly lacerate. Stamens 1 (or 3), longer than perianth segments. Utricle oblong-obovate, 3–4 × 2–2.5 mm; wing broad, thick, slightly crisped, margin irregularly denticulate-toothed. Fl. and fr. Jul–Aug.

Sandy places in valleys, sandy field margins. Gansu, Xinjiang, NW Xizang (Ngari) [C Asia (Pamir mountains)].

Grubov (Rast. Tsentral. Azii 2: 58. 1966) placed this name in the synonymy of *Corispermum tibeticum*. He stated that the main difference between these entities is the presence in utricles of *C. dutreuilii* of a winged rostrum (“a fruit crown”) separated from the main part of the wing. According to Grubov, this is not a stable diagnostic character. Indeed, the “crown” is well developed only in some utricles of the type specimen deposited at LE (however, most of the fruits are immature). Additional studies of this species (or form?) would be desirable.

10. *Corispermum tibeticum* Iljin, Izv. Glavn. Bot. Sada SSSR 28: 644. 1929.

藏虫实 zang chong shi

Corispermum ladakhianum Grey-Wilson & Wadhwa.

Plants 5–20 cm tall. Stem branching mostly from base; lower branches ascending or prostrate, upper ones obliquely spreading. Leaves linear, 2–3.5 cm, 1-veined, base attenuate, apex acute, mucronate. Spikelike inflorescence elongate, terete, loose, 2–7 cm; bracts narrowly ovate, sometimes slightly sickle-shaped, narrower than or as wide as utricles, margin narrowly membranous. Perianth segment 1, suborbicular, apex irregularly denticulate. Stamens 1–5. Utricle broadly elliptic or oblong-elliptic, 3–4 × 2–2.5 mm, glabrous, base subcordate or rounded, apex acute or rounded; wing light yellow, 1/6–1/3 as wide as body, margin irregularly denticulate; beak ca. 1 mm, apex ca. 1/3 as long as beak. Fl. and fr. Jul–Sep.

Sandy places, riversides; high elevations. Qinghai, Xizang [Kashmir, Pakistan; C Asia (Pamir mountains)].

11. *Corispermum chinganicum* Iljin, Izv. Glavn. Bot. Sada SSSR 28: 648. 1929.

兴安虫实 xing an chong shi

Plants 10–50 cm tall. Stem green or reddish purple, branched from base, lower branches ascending, upper branches obliquely spreading. Leaves linear, 2–5 cm × ca. 2 mm, 1-

veined, base attenuate, apex acuminate, mucronate. Spikelike inflorescence terete, 4–5 cm × 3–8 mm; bracts lanceolate, ovate, or broadly ovate, mostly 3-veined, margin broadly membranous, apex acute or acuminate. Perianth segments 3, rarely absent, upper one broadly elliptic, apex irregularly denticulate, lower segments subtriangular, smaller. Stamens 5, exerted from perianth. Utricle sublustrous, with a few brown spots, oblong-obovate or broadly elliptic, 2–4 × 1.5–2 mm, glabrous, subglabrous, or covered on both sides with stellate hairs, base cordate, apex rounded; wing distinct, light yellow, margin entire; beak apex 1/4–1/3 as long as beak. Fl. and fr. Jun–Aug.

Dunes, lake shores, meadows. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia [Mongolia, Russia (SE Siberia)].

Corispermum chinganicum seems to be related to *C. pallasii* Steven s.l., approaching narrow-winged and small-fruited plants of this aggregate (known in Europe as *C. membranaceum* Iljin or *C. pallasii* subsp. *membranaceum* (Iljin) Tzvelev) and some North American entities (*C. americanum* (Nuttall) Nuttall and *C. villosum* Rydberg), which, however, never have pubescent utricles. Relationships of these taxa of the *C. pallasii* group deserve special comparative studies throughout the range of the group.

- 1a. Utricle glabrous or subglabrous 11a. var. *chinganicum*
1b. Utricle covered on both sides
with stellate hairs 11b. var. *stellipile*

11a. *Corispermum chinganicum* var. *chinganicum*

兴安虫实(原变种) xing an chong shi (yuan bian zhong)

Corispermum chinganicum var. *microcarpum* Iljin.

Utricle glabrous or subglabrous.

Dunes, lake shores, meadows. Gansu, Hebei, Heilongjiang, Jilin, Liaoning, Nei Mongol, Ningxia [Mongolia, Russia (SE Siberia)].

11b. *Corispermum chinganicum* var. *stellipile* C. P. Tsien & C. G. Ma, Acta Phytotax. Sin. 16(1): 118. 1978.

毛果虫实 mao guo chong shi

Utricle covered on both sides with stellate hairs.

• Dunes, lake shores, meadows. Heilongjiang, Nei Mongol.

12. *Corispermum candelabrum* Iljin, Izv. Glavn. Bot. Sada SSSR 28: 645. 1929.

烛台虫实 zhu tai chong shi

?*Corispermum macrocarpum* Bunge ex Maximowicz var. *elongatum* W. Wang & P. Y. Fu, p.p.; *C. thelelegium* Kitagawa.

Plants 10–60 cm tall. Stem erect, green or reddish purple, sparsely hairy, branched mostly from base; branches ascending. Leaves linear, to 4.5 cm × 2–5.5 mm, 1-veined, base attenuate, apex acute, mucronate. Spikelike inflorescence terete or clavate, crowded, usually 4–6 × 0.8–1 cm; bracts linear-lanceolate to broadly ovate, 0.5–1.6 cm × 2–4 mm, usually 3-veined, margin membranous, apex acute or acuminate. Perianth segments 1 or 3, upper one oblong or broadly obovate, 1–1.5 mm, apex rounded, irregularly denticulate, abaxial segments triangular, smaller. Stamens 5, exerted from perianth. Utricle oblong-

obovate or broadly elliptic, 3–5 × 2–3.5 mm, abaxially sometimes tuberculate, base rounded or cordate, apex rounded; wing distinct, 1/4–1/2 as long as body, margin irregularly denticulate or entire; beak short, thick, apex 1/3–1/2 as long as beak. Fl. and fr. Jul–Sep.

• Dunes, sandy places on riversides. N Hebei, W Liaoning, Nei Mongol.

13. *Corispermum huanghoense* C. P. Tsien & C. G. Ma, Acta Phytotax. Sin. 16(1): 118. 1978.

黄河虫实 huang he chong shi

Plants 10–20 cm tall. Stem erect, green, covered with stellate hairs, branched from base; lower branches ascending, upper ones obliquely spreading. Leaves green, striate, linear, 5–8 cm × ca. 1 mm, 1-veined, base attenuate, apex acuminate, mucronate. Spikelike inflorescence broadly elliptic or clavate, crowded, usually 1–3 cm; bracts lanceolate to ovate, 0.5–2.5 cm × 2.5–5 mm, 1–3-veined, hairy, base rounded or attenuate, margin narrowly membranous, apex acuminate, mucronate. Perianth segment usually 1, apex denticulate. Stamens usually 3, slightly exerted from perianth. Utricle dark punctate abaxially, elliptic or broadly so, 4.5–6 × 3–3.5 mm, covered with stellate hairs, base broadly cuneate, apex acute; wing ca. 2/3 as wide or nearly as wide as body, margin irregularly denticulate; beak 1.2–1.8 mm, apex 1/4–1/3 as long as beak. Fl. and fr. May–Jun.

• Dunes. NE Henan (Fengqiu, Kaifeng).

Corispermum huanghoense seems to be closely related to *C. candelabrum*.

14. *Corispermum stauntonii* Moquin-Tandon, Chenop. Monogr. Enum. 104. 1840.

华虫实 hua chong shi

Plants 15–50 cm tall. Stem erect, green, terete, sparsely covered with stellate hairs, branched from base; lower branches ascending, upper ones obliquely spreading. Leaves linear, 2–4 cm × 2–3 mm, 1-veined, sparsely hairy, base attenuate, apex acuminate, mucronate. Spikelike inflorescence cylindrical or clavate, crowded, usually 2–5 × 0.8–1 cm; bracts linear-lanceolate to ovate, 0.5–1 cm × 2–5 mm, usually 3-veined, base rounded, margin membranous, apex acute or acuminate, mucronate. Perianth segments usually 3, upper one broadly elliptic or ovate, apex rounded, irregularly denticulate, lower segments subtriangular, smaller, sometimes not developed. Stamens 3–5, exerted from perianth. Utricle brown punctate, broadly elliptic, 3.5–4 × 2.5–3 mm, glabrous, base usually cordate, apex rounded; wing 1/3–1/2 as wide as body, margin irregularly denticulate; beak short, thick, apex 1/4–1/3 as long as beak. Fl. and fr. Jul–Sep.

• Sandy places, dunes. Hebei, Heilongjiang, Liaoning, Nei Mongol.

This species is closely related to *Corispermum pallasii* Steven, *C. elongatum*, and some other species of *C.* subsect. *Pallasiana* Mosyakin.

15. *Corispermum orientale* Lamarck, Encycl. 2: 111. 1786.

东方虫实 dong fang chong shi

Plants 15–30 cm tall. Stem erect, terete, branched from base; lower branches ascending, upper ones obliquely spreading. Leaves linear, 1.5–3 cm × 1.5–3 mm, 1-veined, base attenuate, apex acute, mucronate. Spikelike inflorescence terete or clavate, slightly curved, crowded, 1–4 cm; bracts lanceolate to ovate, 3–5 × 2–3 mm, broader than utricle, 1–3-veined, densely hairy, base rounded, margin broadly membranous, apex acute or acuminate. Perianth segment 1, broadly elliptic, apex irregularly denticulate. Stamen usually 1, exserted from perianth. Utricle sublustrous, subovate, 2.5–3 × 2–2.5 mm, glabrous, base subcordate or rounded, apex rounded; wing yellow-green, broad, 1/4–1/3 as wide as body, margin entire; beak short, thin, apex 1/4–1/3 as long as beak. Fl. and fr. Jul–Sep.

Dunes. N Xinjiang [Kazakhstan, W Mongolia, Russia (SE European part, SW Siberia)].

Records of *Corispermum orientale* from Europe (except the Lower Volga region of Russia) and North America are based on misidentifications.

16. *Corispermum macrocarpum* Bunge ex Maximowicz, Prim. Fl. Amur. 226. 1859.

大果虫实 da guo chong shi

Corispermum macrocarpum var. *elongatum* P. Y. Fu & W. Wang, p.p.; *C. macrocarpum* var. *microstachyum* P. Y. Fu & W. Wang; *C. macrocarpum* var. *rubrum* P. Y. Fu & W. Wang.

Plants 20–50 cm. Stem erect, green or slightly reddish purple, much branched; lower branches ascending, upper ones obliquely spreading. Leaves green, linear, 4–7 cm × 1.5–5 mm, 1-veined, base attenuate, apex acuminate, mucronate. Spikelike inflorescence clavate, slightly curved, crowded, usually 7–12 × 1–1.5 cm; bracts lanceolate to ovate, smaller than leaves, subherbaceous, usually 3-veined, base rounded, margin membranous, apex acute or acuminate. Perianth segments 1(or 3). Stamens usually 5, exserted from perianth. Utricle usually dark brown punctate, broadly elliptic or obovate-oblong, 5–6 × 3.5–4.2 mm, glabrous or covered with stellate hairs, base rounded or cordate, apex emarginate; wing lighter colored than body, 1.2–1.5 mm wide, margin entire or slightly irregularly denticulate; beak 1–1.5 mm, apex 1/5–1/4 as long as beak. Fl. and fr. Jul–Sep.

Dunes. Heilongjiang, W Liaoning [Russia (Far East)].

Several minor forms and varieties were described under this species (e.g., var. *elongatum* and var. *microstachyum*). Plants with pubescent utricles were treated as var. *rubrum*. However, pubescence of utricles and shape of inflorescences are very variable characters in this species. Sometimes initially pubescent utricles become glabrous at maturity.

17. *Corispermum retortum* W. Wang & P. Y. Fu, Fl. Pl. Herb. Chin. Bor.-Orient. 2: 110. 1959.

扭果虫实 niu guo chong shi

Plants 30–40 cm tall. Stem erect, much branched mostly from upper middle part. Leaves linear, 4–5 cm × ca. 2 mm, 1-veined, base attenuate, apex acuminate, mucronate. Spikelike

inflorescence clavate, distally crowded, slightly arcuate, usually 5–6 cm × ca. 1 cm wide at widest point; lower bracts linear-lanceolate to lanceolate, 3–6 × as long as utricle, narrower than utricle, margin membranous only on basal bracts, apex acuminate, mucronate; upper bracts narrowly to broadly ovate, wider than utricle, 3-veined, margin membranous, apex acute to acuminate, mucronate. Perianth segment 1, elliptic, apex irregularly crenate or lacerate. Stamen 1, exserted from perianth. Utricle black-brown, with dark spots, sublustrous, oblong-obovate, 3.5–4 × 2.5–3 mm, glabrous, base cordate, apex emarginate; wing lighter colored than body, usually 1/3–1/2 as wide as body, margin strongly undulate or crisped; beak apex ca. 1/3 as long as beak. Fl. and fr. Jul–Sep.

• Sandy meadows. Heilongjiang.

One of us (Mosyakin) notes that *Corispermum retortum* is probably just a deviant form of a species of *C.* subsect. *Pallasiana* Mosyakin, perhaps *C. elongatum* s.l. Occasional plants with unusually dark and undulate-winged utricles rarely occur in populations of other representatives of that subsection, even among European plants of *C. pallasii* Steven (introduced in Europe, native to Siberia). The little-known plant *C. ulopterum* Fenzl (from the shores of Lake Baikal in Russia), also characterized by dark utricles and strongly undulate-crisped wings, is probably a local form or variety of *C. redowskii* Fischer ex Steven.

18. *Corispermum puberulum* Iljin, Izv. Glavn. Bot. Sada SSSR 28: 645. 1929.

软毛虫实 ruan mao chong shi

Corispermum puberulum var. *ellipsocarpum* C. P. Tsien & C. G. Ma.

Plants 15–35(–50) cm tall. Stem erect, branched mostly from base; lowest branches ascending, upper ones obliquely spreading. Leaves linear, 2.5–4 cm × 3–5 mm, 1-veined, base attenuate, apex acuminate, mucronate. Spikelike inflorescence terete or clavate, straight or slightly curved, crowded, usually 3–5(–7) × ca. 0.8 cm; bracts lanceolate to ovate, 0.5–1.5 cm × 3–4 mm, 1–3-veined, base rounded, margin membranous, apex acute or acuminate. Perianth segments 1–3, upper one broadly elliptic or suborbicular, apex irregularly denticulate, lower segments smaller or not developed. Stamens 1–5. Utricle broadly elliptic or obovate-oblong, 3.5–4(–4.5) × 2.8–3.5 mm, few tuberculate or dark punctate abaxially, hairy or sometimes glabrous, base truncate or caudate, apex distinctly emarginate; wing broad, 1/2–2/3 as wide as body, margin irregularly denticulate; beak apex 1/4–1/3 as long as beak. Fl. and fr. Jul–Sep.

• Sandy places on riversides and beaches. Hebei (Weichang), Heilongjiang (Harbin), W Liaoning, E Shandong (Yantai).

Corispermum puberulum was treated as a synonym of *C. elongatum* by Grubov (Rast. Tsentral. Azii 2: 54. 1966), who also noted the extreme variability in pubescence and dimensions of the utricle. However, Baranov (J. Jap. Bot. 44: 165–166, 199–200, 203–204. 1969) indicated some differences in utricle characters of these two entities and treated them as two distinct species.

Taller plants (30–50 cm) with longer inflorescences (5–7 cm) and larger (3.7–4.5 × 2.8–3.2 mm), glabrous utricles were described as *Corispermum puberulum* var. *ellipsocarpum* and reported from Hebei (Weichang), W Liaoning, and Heilongjiang (Harbin). The typical

variety is reported from Heilongjiang (Harbin) and E Shandong (Yantai).

19. *Corispermum dilutum* (Kitagawa) C. P. Tsien & C. G. Ma, Acta Phytotax. Sin. 16(1): 119. 1978.

辽西虫实 liao xi chong shi

Corispermum thelegium Kitagawa var. *dilutum* Kitagawa, Rep. First Sci. Exped. Manch., Sect. 4, 2: 105. 1935; *C. dilutum* var. *hebecarpum* C. P. Tsien & C. G. Ma.

Plants 10–30 cm tall. Stem erect, green or lower part purplish, terete, branched from base; lower branches ascending or prostrate, upper ones obliquely spreading. Leaves linear, 2.5–4.5 cm × 2–6 mm, 1-veined, sparsely hairy, base attenuate, apex acute, mucronate. Spikelike inflorescence obovoid or clavate, crowded, 3–10 × 1–1.5 cm; bracts lanceolate to ovate, 1–2 cm × 4–6 mm, 3-veined, base rounded, margin membranous, distinctly papillate, apex acute. Perianth segments 3, upper one broadly elliptic or suborbicular, ca. 1.2 mm, apex rounded, irregularly toothed, lower segments triangular, smaller. Stamens 3–5. Utricle yellow-green, brown punctate, obovate, 3.5–4.5 × 3–4 mm, with vesicular processes, glabrous or pubescent, base cordate or subcordate, apex distinctly emarginate; wing light yellow, ca. 0.7 mm wide, margin irregularly denticulate or entire; beak ca. 0.8 mm, apex 1/3–1/2 as long as beak. Fl. and fr. Jul–Sep.

• Dunes, inter-dunes, sandy places on riversides; ca. 600 m. W Liaoning (Chifeng), Nei Mongol (Ju Ud Meng).

Plants with pubescent utricles were described as *Corispermum dilutum* var. *hebecarpum*.

20. *Corispermum confertum* Bunge in Maximowicz, Prim. Fl. Amur. 225. 1859.

密穗虫实 mi sui chong shi

Plants 20–40 cm tall. Stem erect, terete, stout, rigid; lowest branches ascending, upper ones obliquely spreading. Leaves linear, 2–4 cm × ca. 2 mm, 1-veined, base attenuate, apex acuminate, mucronate. Spikelike inflorescence clavate, slightly curved, crowded, usually 30–50 × 6–10 cm; bracts lanceolate to broadly ovate, 1–3-veined, base rounded, margin broadly membranous, apex acute or acuminate. Perianth segments 3, upper one oblong or suborbicular, 1–1.5 mm, apex rounded, irregularly denticulate, lower segments triangular, smaller, sometimes obscure. Stamens 5, longer than perianth. Utricle orbicular or suborbicular, 3–4.5 × 3–4.3 mm, base cordate, apex obtuse-emarginate; wing lighter colored than body, ca. 1 mm wide, margin entire; beak ca. 1 mm, apex ca. 1/3 as long as beak. Fl. and fr. Jul–Aug.

Sandy places, dunes. Jilin, Heilongjiang, Liaoning [Russia (Far East)].

Plants traditionally assigned to *Corispermum confertum* intergrade with *C. elongatum*. Consequently, the former species has been treated as a synonym of the latter in most recent treatments of the genus. We agree with this opinion, but at present prefer to leave these two taxa separated until a new, comprehensive treatment of *C.* subsect. *Pallasiana* Mosyakin is available. This subsection houses several closely related, Far Eastern, Siberian, North American, and partly C Asian taxa, one of which, *C. pallasii* Steven (*C. leptopterum* (Ascherson) Iljin; *C. sibir-*

icum Iljin subsp. *baicalense* Iljin), is widely naturalized in Europe and native or naturalized in North America. Other, related Asian taxa, such as *C. bardunovii* Popov ex Lomonosova, *C. elongatum*, *C. sibiricum*, *C. stantonii*, and some others, may also be treated in the future as infraspecific entities (subspecies or varieties) under *C. pallasii* s.l.

21. *Corispermum elongatum* Bunge in Maximowicz, Prim. Fl. Amur. 224. 1859.

长穗虫实 chang sui chong shi

Plants 20–40 cm tall. Stem erect, terete, sparsely hairy, much branched; lowest branches ascending, upper ones usually obliquely spreading. Leaves dark green, linear, 3–5 cm × 2–4 mm, 1-veined, base attenuate, apex acuminate, mucronate. Spikelike inflorescence terete, loose, usually 5–8 × ca. 0.6 cm; bracts green, lanceolate to ovate, 1–3-veined, base rounded, margin membranous, apex acute. Perianth segments 3. Stamens 5, exerted from perianth. Utricle oblong-elliptic, 3–4 × 1.5–3 mm, glabrous, base broadly cuneate, apex emarginate; wing 0.4–0.7 mm wide, margin entire; beak ca. 0.7 mm, apex 1/5–1/3 as long as beak. Fl. and fr. Jul–Sep.

Sandy places on beaches, dunes, inter-dunes. Heilongjiang, Jilin, Liaoning, Ningxia (Zhongwei) [Russia (Far East, SE Siberia)].

22. *Corispermum platypterum* Kitagawa, Rep. First Sci. Exped. Manch., Sect. 4, 2: 100. 1935.

宽翅虫实 kuan chi chong shi

Plants 30–50 cm tall. Stem green, terete, sparsely hairy; branches slender, 10–25 cm. Leaves linear, 3–6 cm × 1–2 mm, 1-veined, base attenuate, margin entire, apex acuminate, mucronate. Spikelike inflorescence slender, terete, loose; bracts ovate to lanceolate, 1.5–3 cm × 1–1.5 mm, distinctly narrower than utricles, margin narrowly membranous. Perianth segments 1–3, upper one ovate, ca. 1.5 mm, membranous, base sub-rounded, apex rounded, irregularly denticulate, lower segments triangular, smaller. Stamens 3–5; filaments ca. 1.5 × as long as perianth segments. Utricle suborbicular, 4–5 × 3.5–4.5 mm, glabrous, base broadly cuneate or cordate, apex acute-emarginate; wing ca. 1 mm wide, margin irregularly denticulate; beak ca. 1.2 mm, apex ca. 1/4 as long as beak. Fl. and fr. Jul–Sep.

• Dunes, sandy places on beaches, sandy fields. NE Hebei, Jilin, Liaoning.

23. *Corispermum stenolepis* Kitagawa, Rep. First Sci. Exped. Manch., Sect. 4, 2: 102. 1935.

细苞虫实 xi bao chong shi

Corispermum stenolepis var. *psilocarpum* Kitagawa.

Plants 15–40 cm tall. Stem erect, terete, branched mostly from upper-middle part; branches slender, 10–35 cm. Leaves linear, 3.5–4.5 cm × ca. 1 mm, 1-veined, base attenuate, margin entire, apex acuminate, mucronate. Spikelike inflorescence slender, loose; bracts linear-lanceolate to lanceolate, 0.6–3.5 cm × 1–2 mm, narrower than utricles, apex acuminate, mucronate. Perianth segment 1, broadly elliptic, 0.9–1.2 × ca. 0.6 mm. Stamens 1–3; filaments longer than perianth segments. Utricle suborbicular, 4.5–5.5 × 4–5 mm, glabrous, subglabrous, or covered with stellate hairs, base cordate, apex deeply emar-

ginate; wing equaling or slightly wider than body, margin irregularly denticulate; beak 1.5–1.7 mm, apex ca. 1/4 as long as beak, recurved. Fl. and fr. Aug–Sep.

• Riversides, dunes. W Jilin, W Liaoning (Chaoyang), Nei Mongol (Ju Ud Meng).

Plants with glabrous utricles were described as *Corispermum stenolepis* var. *psilocarpum* and reported from W Jilin. However, the typical variety also seems to have utricles glabrous or nearly so (there is no indication of utricle pubescence in the protologue of the species), and thus these infraspecific entities probably do not merit any formal taxonomic recognition.

Corispermum stenolepis and *C. platypterum* are related to *C. macrocarpum* and the North American *C. pallidum* Mosyakin (*C. subsect. Platyptera* Mosyakin).

24. *Corispermum pseudofalcatum* C. P. Tsien & C. G. Ma, *Acta Phytotax. Sin.* 16(1): 119. 1978.

假镰叶虫实 jia lian ye chong shi

Plants ca. 20 cm tall. Stem erect, terete, sparsely stellate hairy, branched from base; lower branches ascending, upper ones obliquely spreading. Leaves linear, 2–3 cm × ca. 3 mm, fleshy, 1-veined, sparsely stellate hairy, base attenuate, apex acute, mucronate. Spikelike inflorescence terete, crowded; bracts lanceolate to narrowly ovate, 0.6–1.5 cm × 2–3 mm, narrower than utricle, usually 1-veined, base attenuate to rounded, margin membranous on upper bracts, apex acute to acuminate. Perianth segment 1, ovate or oblong-ovate, ca. 1.5 mm, apex rounded, irregularly denticulate. Stamens 1(or 3), ca. 1.5 × as long as perianth. Utricle yellow-green, obovate, 4.5–5 × 3.5–4.5 mm, irregularly rugose abaxially, glabrous, base cordate or subcordate, apex shallowly emarginate; wing yellow-green, ca. 1 mm wide, margin irregularly denticulate; beak ca. 1.5 mm, apex 1/5–1/4 as long as beak. Fl. and fr. Jul–Aug.

• High elevations. Xizang (Xigazê).

Corispermum pseudofalcatum is closely related to *C. falcatum*. Additional studies of the variability patterns of these entities would be desirable to clarify their status.

25. *Corispermum falcatum* Iljin, *Izv. Glavn. Bot. Sada SSSR* 28: 644. 1929.

镰叶虫实 lian ye chong shi

Plants 5–12 cm. Stem few branched, mostly in lower part; branches obliquely spreading or prostrate, longer than main stem, terete. Leaves green, linear, 1.5–2.5 cm × 1.5–2.5 mm, slightly fleshy, 1-veined, base attenuate, margin entire, apex acute, mucronate. Spikelike inflorescence terete, crowded; bracts lanceolate, usually sickle-shaped, 1–2 cm × 2.5–3 mm, slightly narrower than or equaling utricle, 1-veined, base attenuate or rounded, margin entire, narrowly membranous, apex acute, mucronate. Perianth segments 1(or 3), upper one ovate or oblong-ovate, apex lacerate, denticulate, lower segments very small or absent. Stamens 1–3, 1.5–2 × as long as perianth segments. Utricle dark green, obovate-elliptic, 3.5–4 × 2.5–3 mm, glabrous, base rounded, apex widely emarginate; wing light yellow, ca. 0.5 mm wide, margin irregularly denticulate; beak ca. 1 mm, apices 2, crossed, ca. 1/2 as long as beak. Fl.

and fr. Jul–Sep.

• Sandy places in valleys. Qinghai (Qaidam Pendi), Xizang (Gyangzê, Xigazê).

26. *Corispermum lhasaense* C. P. Tsien & C. G. Ma, *Acta Phytotax. Sin.* 16(1): 119. 1978.

拉萨虫实 la sa chong shi

Plants 15–20 cm tall. Stem terete, finely ribbed, much branched; branches crowded, 10–20 cm. Leaves linear, 2–3 cm × 2–3 mm, subfleshy, 1-veined, base attenuate, apex pungent, mucronate. Spikelike inflorescence terete, crowded, usually 3–5 × ca. 0.7 cm; bracts usually lanceolate to ovate, equaling or broader than utricle, slightly keeled abaxially, rough, usually 1-veined, base rounded, margin broadly membranous, apex acute, mucronate. Perianth segment 1, oblong or broadly elliptic, ca.

1.4 × 0.4 mm. Stamen 1; filament 1–1.5 × as long as perianth. Utricle sublustrous, oblong-obovate, 4–5 × 3–3.5 mm, glabrous, base subcordate, apex obtuse-emarginate; wing ca. 1.7 mm wide, margin irregularly shallowly toothed; beak ca. 1 mm, apices 2, ca. 1/2 as long as beak. Fl. and fr. Jul–Sep.

- Sandy places on riversides; ca. 3600 m. Xizang (Lhasa).

Corispermum lhasaense is very closely related to *C. falcatum*. Additional studies would be desirable to clarify the status of this little-known entity.

27. *Corispermum lepidocarpum* Grubov, Bot. Mater. Gerb. Bot. Inst. Komarova Acad. Nauk SSSR 21: 125. 1961.

鳞果虫实 lin guo chong shi

Plants 10–12 cm tall. Stem few branched from base; branches obliquely spreading, equaling or longer than stem, terete. Leaves linear, 2–2.5 cm × ca. 2 mm, 1-veined, base attenuate, apex acute, mucronate. Spikelike inflorescence terete or clavate, crowded; bracts lanceolate to ovate, 0.6–2 cm × 2–3 mm, narrower than utricle, 1-veined, base attenuate to rounded, margin membranous, apex acuminate, mucronate. Perianth segment 1, ovate or broadly so, 1–1.5 × ca. 1 mm, apex truncate or rounded, erose, Stamens 1–3; filament of middle one ca. 2 × as long as perianth, others usually not developed. Utricle with a few brown spots, sublustrous, ovate, 4.5–5.5 × 3–4.5 mm, covered with stellate hairs, base truncate or subcordate, apex acute, deeply and narrowly emarginate; wing ca. 1 mm wide, margin irregularly incised; beak ca. 1.5 mm, apex ca. 1/5 as long as beak, slightly curved. Fl. and fr. Jul–Aug.

- Sandy places near rivers. E Xizang (Gyaca, Mainling, Nyingchi).

